



# Balancing Network Code Implementation and Effect Monitoring Report

2017

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PART I

# Third ENTSOG Monitoring Report on Implementation of BAL NC

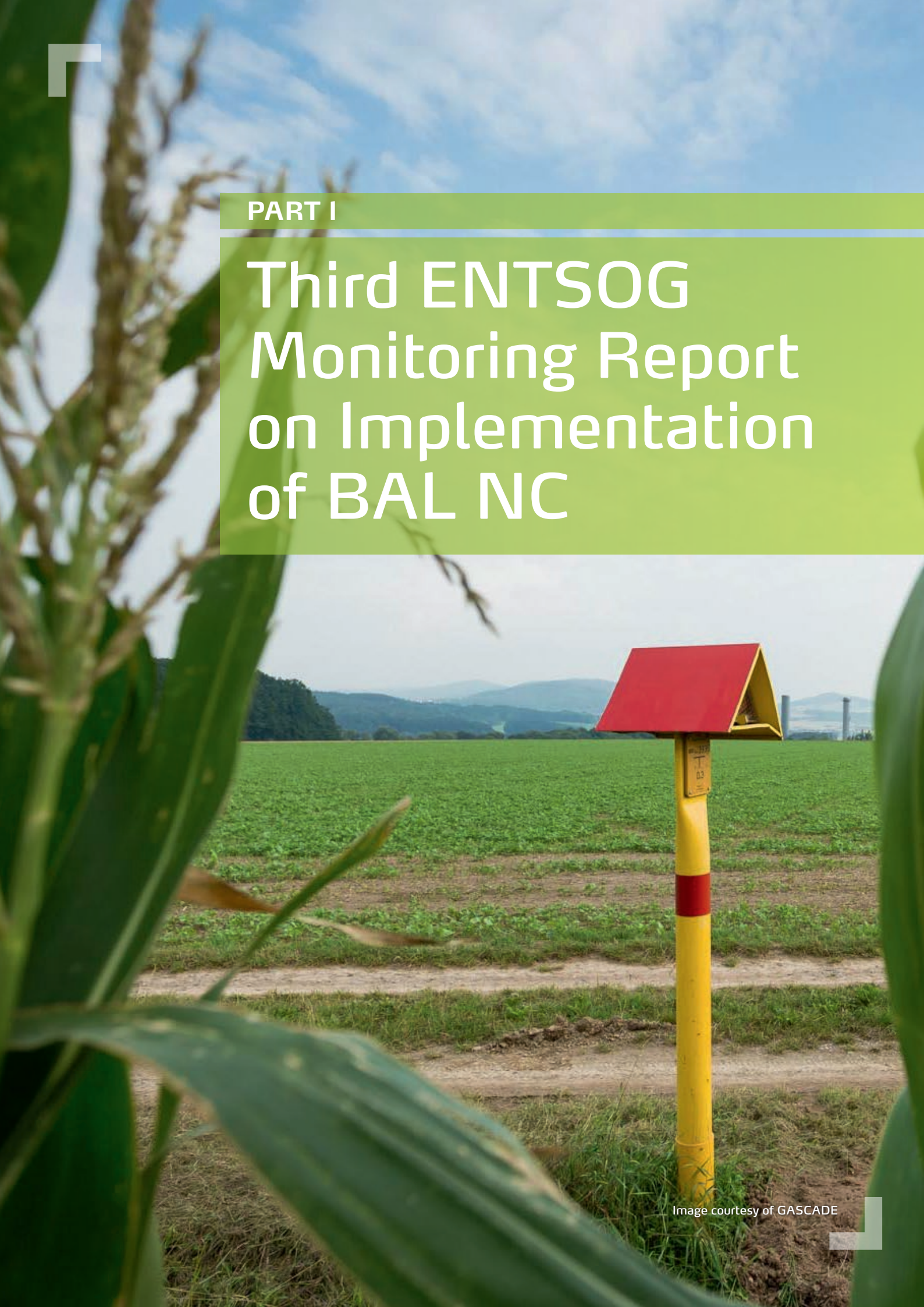



Image courtesy of GASCADE

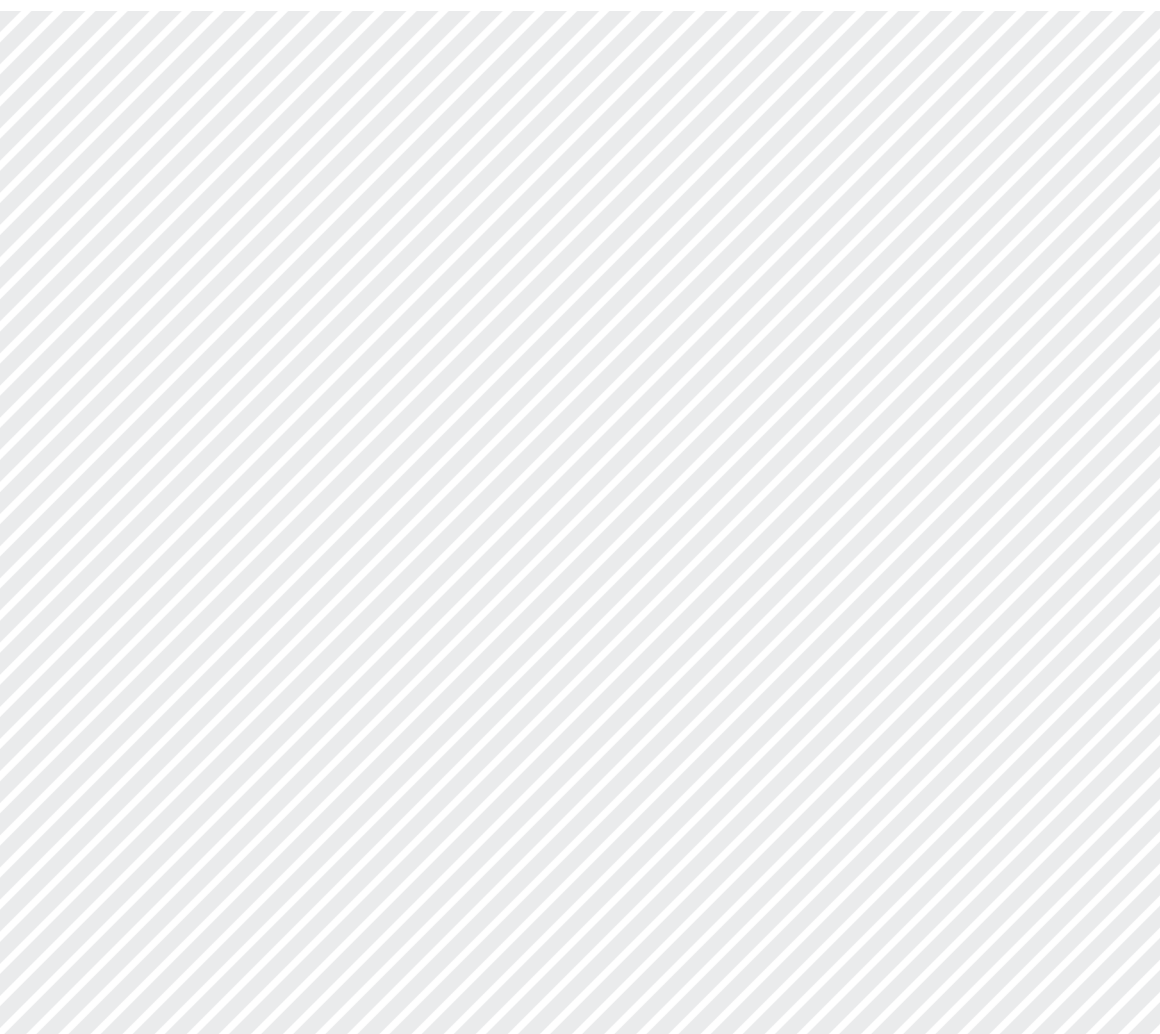




# Executive Summary

The document represents the third ENTSOG Monitoring Report on the implementation of the Balancing Network Code with the aim of monitoring the status of its implementation in the EU by 1 October 2017.

Both ACER and ENTSOG are required to publish monitoring reports – on implementation as well as on effects of the network codes, based for ENTSOG on the provisions of Article 8(8) of Regulation (EC) no. 715/2009 which empower ENTSOG to monitor and analyse the implementation of the network codes.



Out of 28 EU Member States, the Report evaluates 25 countries (AT, BE/LU, BG, CZ, DE, DK, EE, EL, ES, FR, HU, HR, IE, IT, LT, LV, NL, PL, PT, SE, SI, SK, RO, UK-GB and UK-NI). Three countries (Cyprus, Finland and Malta) held a derogation meaning that the application of the NC BAL is not mandatory. Estonia also held a derogation but has responded on a voluntary base. UK is mentioned as UK-GB and UK-NI due to two different balancing regimes in place.

The Code foresees three implementation deadlines: 1 October 2015, 1 October 2016 and up to April 2019. For 10 countries (AT, BE/LU, DE, DK, FR, HU, NL, SI, UK-GB) the code has been applicable already by 1 October 2015. For another five countries (CZ, ES, IT, HR, PT) which have applied for the provision of Article 52(1) of the NC BAL, the deadline for full implementation of the Code was by 1 October 2016.

Instead of full implementation, 11 countries (BG, DE, EL, IE, LT, LV, PL, RO, SE, SK and UK-NI) applied for interim measures for up to five years from the entry into force of the Code (i. e. until April 2019).

The main findings of this Report are the following:

- ▲ 19 countries indicated having implemented the merit order in accordance with Art. 9 with title products at the first place or using only title products whereas 7 countries rely only on balancing services.
- ▲ The information provisions according Art. 32 BAL NC (3 types of information) are provided by 23 countries and partially by 2 countries.

- ▲ 20 countries have put in place an information model for daily and non-daily metered off-takes. 12 uses the Base Case model, 6 the Variant 1 and 2 countries Variant 2. Two countries are still discussing implementation whereas two other countries said that is not necessary since they do not have Non-Daily Metered off-takes connected to their network. Estonia has not chosen yet since they are still holding a derogation.

- ▲ The cost benefit analysis (CBA) deadline regarding the information provisions passed in April 2016. 7 countries reported that this CBA has been complete.

- ▲ Daily imbalance charge provisions are in place in 17 countries while the 8 others are using interim imbalance charge.

- ▲ Of the five countries that have already implemented WDOs, two countries stated a change which reduces WDO obligation.

- ▲ Five countries reported to have offered Linepack flexibility service by 1 October 2017.

- ▲ 11 countries have applied interim measures (balancing platform, balancing services, interim daily imbalance charge and/or tolerances). Some countries have or will reduce progressively the level of their tolerances.

- ▲ Four merges of balancing zones (whose two cross-borders) are announced for the next years:
  - In France in November 2018,
  - Between Denmark and Sweden, subject to NRAs' agreement, in April 2019,
  - Among the three Baltic States (joint maybe by Finland) by 2020 and
  - In Germany by 2022 at the latest.



# 1 Introduction

NC BAL was published on 27 March 2014 and applies to balancing zones within the borders of the EU. It establishes rules for natural gas balancing, including network-related rules on nomination procedures, imbalance charges, settlement processes associated with daily imbalance charges and provisions on operational balancing. Its implementation shall also account for the specific nature of interconnectors.<sup>1)</sup> For countries like Cyprus, Estonia, Finland, Luxembourg and Malta that hold derogation on the basis of Article 49 of Directive 2009/73/EC, it is not mandatory to apply NC BAL. Since May 2017, Latvia does not hold a derogation anymore.

In this implementation report ENTSG continues to monitor the implementation of NC BAL by 1 October 2017 in accordance with Article 8(8) of Regulation (EC) No 715/2009. The results will also be published in 2018 in the ENTSG Annual Report 2017.

ENTSG sent a questionnaire on implementation monitoring of NC BAL on 28 November 2017 to TSOs of the following 23 EU countries including Latvia (AT, BE, BG, CZ, DE, DK, EL, ES, FR, HU, HR, IE, IT, LT, LV, NL, PL, PT, SE, SI, SK, RO, UK-GB, UK-NI) where the NC BAL applies. Voluntary responses were received from Luxembourg and Estonia. Thus, data has been gathered from a total of 25 countries and 31 balancing zones. (Further details are provided in Annex I).

This report uses the information provided by TSOs in each EU country as a data basis. Some TSOs indicated that their responses to the questionnaire were provided in cooperation with their respective NRA.

The following section presents the implementation status of NC BAL by 1 October 2017 and a summary of the main results. Specific comments and explanations are shown where relevant. Some more detailed information provided by the TSOs for each country is shown in the annexes to the report.

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1) Recital (8) of BAL NC. Due to the specific nature of interconnectors, IUK and BBL implemented the BAL network code on an “in=out” principle, whereby a network user’s delivery nominations must equal its offtake nominations. As such, network users cannot be exposed to an imbalance and there is no need to take balancing actions. Therefore, many of the requirements of NC BAL do not apply. Where BAL does apply, e.g. relevant rules on nominations, IUK and BBL have taken all reasonable steps to ensure compliance with the requirements. This approach was approved by the relevant NRAs.



## 2 Evaluation of Responses to Questionnaire

The BAL NC has been applicable since 1 October 2015 but contains a provision allowing its application by 1 October 2016 if allowed by the national regulatory authority ('NRA') following the TSO's justified request and in case that no interim measures are applied. For those countries the deadline for full implementation of the code has also passed by 1 October 2016.

Instead of full implementation, interim measures can be implemented for up to five years<sup>1)</sup> from the entry into force of the Code (i.e. until 16 April 2019). Such interim measures must be applied consistently with the options laid down in articles 45–53 of the BAL NC as well as the general principles of the Code, while all other provisions in the Code are to have been implemented by 1 October 2015.

Since the various gas networks and markets differ from each other in their characteristics, the adopted Code grants NRAs and TSOs with a high degree of flexibility in their national implementation. For ten countries (AT, BE/LU, DE, DK, FR, HU, NL, SI, UK-GB) BAL NC was applicable by 1 October 2015 and for five countries (CZ, ES, IT, HR, PT) BAL NC by 1 October 2016 as allowed by the national regulatory authority. Nine other countries in addition to Germany and UK (BG, DE<sup>2)</sup>, EL, IE, LT, LV, PL, RO, SE, SK, and UK-NI) applied for interim measures until April 2019. Estonia is holding a derogation until 2020.

1) And additional 5 years for the case of the interim measure of a balancing platform, pursuant to Article 47(3) of the NC.

2) Germany is doubled categorised as it applied in addition to its implemented trading platform an additional balancing platform under interim measures.



Image courtesy of Reganosa

**The following key-challenges** have existed or still exist during or following the BAL NC implementation phase in specific areas of concern:

Low level of market liquidity and lack of flexible sources for balancing purposes (BG, DK, EL, IE, PL-L, PT, UK-NI);

- ▲ IT challenges (BG, CZ, IT, PT);
- ▲ Adjustment of legislation (BG, CZ, EL, HR, RO);
- ▲ Forecasting party (EE);
- ▲ Allocation at 3<sup>rd</sup> country entry exit point (LV);
- ▲ Change of gas day (UK-GB).

### **Main updates compared to last year**

In Austria, the organisation responsible for balancing – namely the Market Area Manager – has changed. AGGM Austrian Gas Grid Management AG instead of Gas Connect Austria GmbH is responsible since 1 June 2017.

Denmark stated that an adjustment on price reference from a mix of day-ahead and within-day to strictly within-day has been done since last year.

Greece stated that the articles of the nominations chapter are fully implemented at all entry and exit points of the Greek balancing zone, except the LNG entry point. Croatia introduced a trading platform and STSP by 1 April 2017.

Hungary put in place a small adjustment from 1 April 2017. Ireland undertook a tender process to procure the services of a Trading Platform Provider. EBI has been awarded the contract. The EBI Platform went live in September 2017. GNI expect to be able to trade on the platform from May 2018 when all associated contractual, IT and internal processes are completed.

Latvia have introduced a balancing regime from May 2017 following the end of their derogation.

Portugal stated that a new set of rules has been established by the National Regulator in September 2017, regarding, among other, the access of network users to short-term capacity products at internal points, by enabling the access to within-day capacity products at UGS and LNG Terminal interconnections with the same rules as for interconnection points, on a dedicated capacity platform.

Romania stated that due to the difficulties in implementation, a joint working group of Transgaz/ANRE/DG ENER/ACER/ENTSOG was set up to implement a fully functional Entry Exit system aligned with the specific European regulations. Slovakia has started a discussion regarding implementation of the trading platform with the relevant stakeholders. Slovenia stated that they publish Linepack.

UK-NI stated that the forecasting party arrangements have been fully implemented.

### **Merge of balancing zones**

Germany stated that the amended German Gas Network Access Regulation of 2017 foresees a merger of the two existing market areas by 1 April 2022 at the latest.

Denmark and Sweden plan to merge the Swedish balancing zone with the Danish balancing zone subject to a decision to take in April 2018, the approval of the merge by the NRAs. Their decision-making process will be conducted in parallel to the TSOs implementation process. The plan is to have the merger implemented in April 2019. The project name of the balancing zone is “Joint Balancing Zone” (JBZ). France stated that as from 1 November 2018 it is planned to merge the two remaining balancing zones, PEG Nord and TRS. The resulting balancing zone will be called TRF including a unique VTP called PEG. It is planned to merge the gas markets of Lithuania, Latvia, and Estonia into a single Entry-Exit system, including a single virtual trading point and a single balancing area. According to the plan, this regional gas market in the Baltic States will become operational in 2020. Furthermore, when the gas interconnection between Estonia and Finland is in place, it is expected that Finland will join the single regional market.

## 2.1 BALANCING SYSTEM (CHAPTER II OF BAL NC)

Gas transfer between two balancing portfolios within one balancing zone shall be done by disposing and acquiring trade notifications submitted to the TSO in respect of the gas day. The intention is to incentivise network users to optimise their gas portfolios efficiently, so that the need for TSOs to undertake actions would be minimised. Independently from their applied implementation deadline, all countries must implement trade notifications by 1 October 2016.

It is the case except for Greece who plans to implement trade notifications by the first half of 2018. Network Users who hold capacity (even 1 kWh/d) at an entry or exit point of Greek NGTS would be able to buy or sell natural gas at the Virtual Nominations Point (VNP). This transaction takes place within the framework of the nomination/re-nomination procedure, where Network Users are able to submit delivery/offtake nominations at the VNP, without being obliged to include any physical natural gas delivery or offtake (by nominating at an entry or exit point).

Some limitations for trade notifications have been reported in Romania where the notifications in the VTP may be made only within the forecasted imbalance.

The two following tables indicate the lead-time for trade notifications and the allocation rule applied in case of mismatch of the trade notifications between the two counterparties of the trade.

Sweden will in April 2018 take a decision to create a common balancing zone with Denmark. If this will be done, trade notifications will be handled completely within 30 min. In Slovenia it is still under consideration to reduce the lead-time under 30 minutes.

When trade notification quantities are not equal, the TSO shall allocate either the lower notification quantities or reject both trade notifications. Two countries (FR and IT) responded to use both mechanism and two other countries (HU, LT) answered that such a mechanism was not needed.

**Lead-time of submitted trade notification by October 2017**

Lead-time of submitted trade notification	Countries
≤ 30 min	BE/LU, CZ, DE, ES, FR, HU, IE, IT, LT, NL, PT, UK-NI
≤ 2 hours	AT, BG, DK, EE, HR, LV, PL, RO, SI, SK, UK-GB, EL
> 2 hours	SE

**Table 1: Lead-time of submitted trade notification by October 2017**

**Allocation rules of quantities in case of mismatches of trade notifications by 1 October 2017**

Allocation rules of quantities in case of mismatches of trade notifications	Countries
Lesser rule	AT, BE/LU, BG, CZ, DE, DK, EE, FR <sup>a)</sup> , IT <sup>b)</sup> , LV, NL, PL, PT, SE, SK, EL
Reject both trade notification	ES, HR, IE, RO, SI, UK-GB, UK-NI
No allocation rule	HU <sup>c)</sup> , LT <sup>d)</sup>

- a) In France, in case of mismatch of notification quantities, the lesser rule is applied. When the re-notifications quantities are still not equal, they are rejected.
- b) In Italy, in case of mismatch of notification quantities of OTC trading both trade notifications are rejected, while in case of mismatch of notification quantities of a trade on a gas exchange the lesser rule is applied. Curtailments or rejections are also possible in case of lacking financial guarantees coverage.
- c) Hungary stated that a mismatch is not possible in case of trades. Offer/accept method is in use.
- d) Lithuania stated that a notification is provided by seller, which is registered in NRA and trade notifications has to be agreed with buyer.

**Table 2: Allocation rules of quantities in case of mismatches of trade notifications by 1 October 2017**

## 2.2 OPERATIONAL BALANCING (CHAPTER III OF BAL NC)

### 2.2.1 Merit Order, STSP and Balancing Services

#### Merit Order and STSP:

BAL NC describes the order of products to be used by TSO for balancing actions as the so-called “Merit Order”. When procuring balancing actions, TSOs must first use the four STSPs (title products, locational products, temporal products and/or temporal locational products) traded on a trading platform for delivery on a within-day or day-ahead basis for seven days a week.

Within the STSP order the TSO must prioritise the use of title products where and to which extent appropriate over any other available STSP and then using, if any, other balancing products or contracts (‘balancing services’).<sup>18</sup> of 25 countries (AT, BE/LU, BG, CZ, DE, DK, ES, FR, HR, HU, IT, LT, LV, NL, PL, SK and SI) reported the implementation of a merit order according to Art. 9 of BAL NC, while 6 countries (EE, EL, IE, PT, RO and UK-NI) implemented a merit order with balancing services only – mainly under interim measures.

However, in Portugal, the trading platform, Mibgas, is not yet operating in the respective balancing zone. For the purpose of making available balancing actions to the TSO, NRA implemented balancing services based on ad hoc auctions triggered as per TSO needs. This is to be maintained during a transitional period until MIBGAS’ trading platform and STSPs become available.

Sweden uses other interim measures. UK-GB listed all the products available to them in their role as residual balancer, however these are not used in any merit order.

#### Changes compared to last year:

Austria and BE/LU trade now on Powernext Pegas. Czech Republic stated that the usage of trading product in adjacent balancing zone has been switched from third to second place and balancing service has been moved to the last place of the merit order. Germany stated that a new balancing service “Demand Side Management” was introduced at the 4<sup>th</sup> rank of the merit order list. This balancing service is only tendered and contracted for security of supply reasons. For NCG, The WD temporal locational product on the balancing platform in merit order rank 3 was terminated in November 2016. The balancing service “flexibility service” in merit order rank 4 was already terminated in May 2016.

Croatia stated that they have introduced a trading platform starting on 1 April 2017. Before that day, only Day-Ahead locational products were offered on a balancing platform. Now, Day-Ahead and Within-Day title and locational standard products are offered on this trading platform.

Italy stated that as of 1 October 2016 the merit order and the standard products are in line with BAL NC.

Table 3 summarises the STSP products offered.

Short Term Standardised Products (STSPs)		
STSP	Trading platform	Balancing Platform
Title products	AT, BE/LU, CZ, DE, DK, ES, FR, HR, HU, IT, LT, NL, PL-H, SI, UK-GB, PL-T	BG, SK, PL-L, PL-T
Locational products	DE, ES, FR, HR, HU, IT, UK-GB	DE, PL
Temporal products	DE-NCG, NL	
Temporal locational products	DE-NCG	

**Table 3:** Short Term Standardised Products (STSPs) offered in own balancing zone by 1 October 2017



### Short Term Standardised Products (STSPs)

Where locational or temporal products have been used, the countries stated that it was only done when it was more economic and efficient than purchasing and selling title products.

The Netherlands stated that the End-of-day product has the highest liquidity, because the number of providers is the highest. Therefore, the EOD-product is assumed to be the most cost-efficient. There are two types of products GTS can buy or sell. The product GTS buys or sells, depends on the value of the SBS forecast (and thus the size of the imbalance). GTS will buy or sell a temporal product in case there is a larger imbalance.

While trading short term standardised products, the TSO shall prioritise the use of within-day products over day-ahead products where and to the extent appropriate. Three countries react on this point. Czech Republic stated that the decision between WD and DA product is based on technical conditions of the network system. Latvia stated that they do not prioritise the use of within-day product over day-ahead product and Slovakia has only day-ahead title products and no within-day products.

### Balancing Services:

When STSPs are not likely to sufficiently address the needs of the market or network, the TSO is also allowed to procure balancing services.

Most of the countries reported that they have balancing services in place because of the absence of liquidity. Germany stated that Balancing Services are contracted for emergency situations and are only used when no corresponding short-term offers are available. Priority is given to STSPs, meaning that available short-term offers are used first regardless of the commodity price.

An annual review of the usage of balancing services is obligatory according to the BAL NC. 8 of 16 countries (CZ, DE, HR, LT, PL, RO, SI and UK-NI) confirmed having done this review. Czech Republic stated that they have balancing services in place but that they have not used it so far. In Germany due to a policy paper of the Federal Ministry for Economic Affairs and Energy from 16 December 2015 both MAMs are required to tender and contract Long Term Options and Demand Side Management for security of supply reasons. For the market area GASPOOL: In the current situation there is still a need for the usage of Flexibility Products, but it will be analysed for the future.

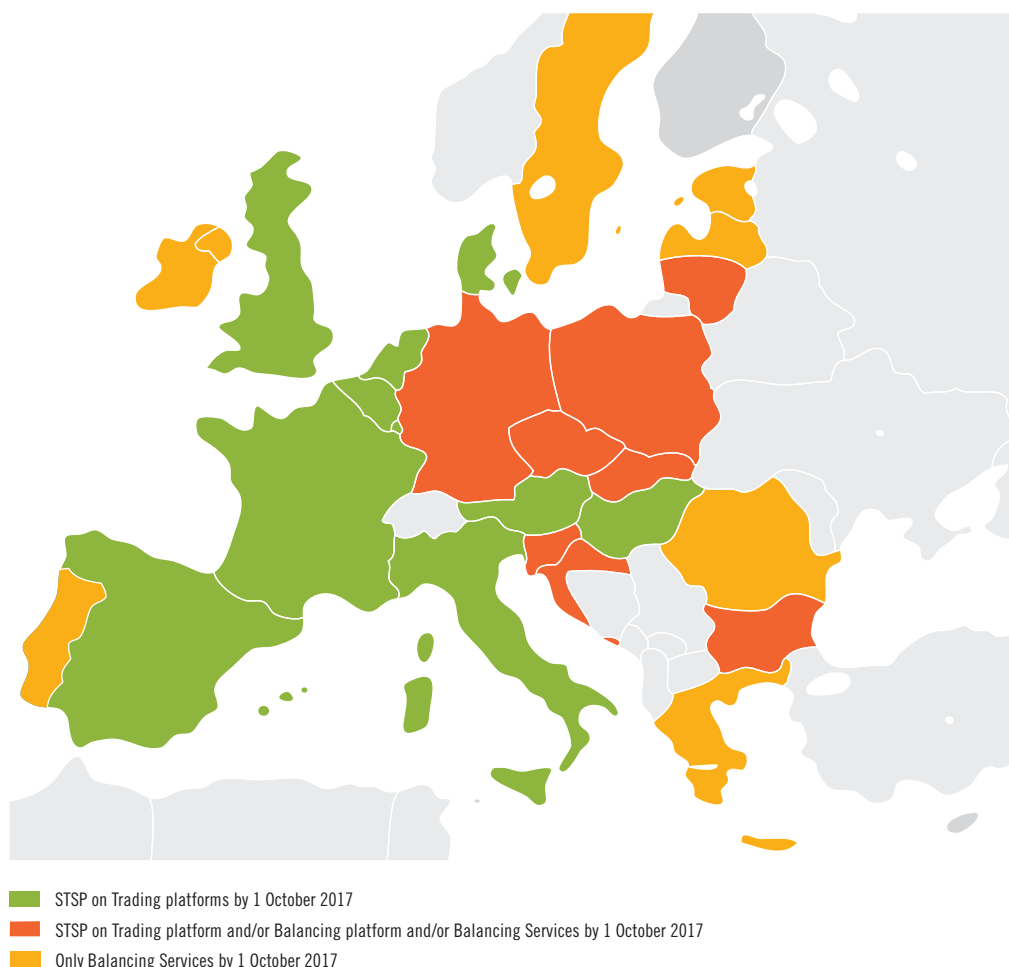
Croatia stated that STSPs are sufficient; balancing service has been contracted but it was never used. Lithuania and Slovenia stated that the use of balancing services has been reduced in 2017.

In the PL-H zone this service has been implemented because there is no locational product available at the trading platform. Romania and Slovakia stated that subsequent to the analysis performed they concluded that the balancing services are still necessary.

Ireland stated that standardised products would not better meet the TSO's operational requirements nor could the use of balancing services be reduced for the next year. The residual balancing requirements for Northern Ireland do not appear to have been especially affected by the new arrangements put in place in October 2015, as balancing activity is fairly typical compared to previous years. Steps taken by the NI TSOs to encourage market development through the re-design of the balancing gas tender and associated processes have been only been partially successful. Bulgaria stated that the analysis is still ongoing. Greece stated that the review is not required since no STSP are in place yet. Map 1 on the following page gives an overview of the STSP and balancing services in place.

Reported use of balancing services	
Balancing services	Country
Balancing services	BG, CZ, DE, EE, EL, HR, IE, LT, LV, PL-H, PT, RO, SI, SK, UK-NI

**Table 4:** Reported use of balancing services accord. to Art. 8 of BAL NC by 1 October 2017



**Map 1:** STSP and balancing services in own balancing zone by 1 October 2017

### 2.2.2 Trading Platform, trading in Adjacent Zones and Cross-border cooperation

A trading platform provides sufficient support to both the network user and the TSO to procure gas via Short Term Standardised Products (STSPs) when balancing actions are needed.

17 countries (AT, BE/LU, CZ, DE, DK, ES, FR, HR, HU, IT, LT, LV, NL, PL, SI, UK-GB) have a trading platform in place by 1 October 2017 according to Article 10 of BAL NC. Croatia stated that they have implemented a trading platform by 1 April 2017. Portugal stated that they expect to implement the trading platform in 2018.

TSOs may seek NRA approval for trading STSPs in adjacent zones as an alternative to the trading title products or locational products in their own balancing zone.

Four countries (CZ, DE, PL, SK) have implemented this option. Poland stated that their NRA approved the TSO's request to trade within the adjacent balancing zone GASPOOL on the European Energy Exchange AG trading platform.

Germany stated that NCG and GASPOOL are registered as shippers in the Netherlands with Gasunie Transport Services B.V. and are trading at the Virtual Trading Point TTF. NCG and GASPOOL are using the Trading Platforms of PEGAS for trading activities at the TTF. In addition, NCG is using the ICE Index for trading activities. Slovakia is using the Market Area East – Austria PEGAS CEGH Gas Exchange only as a backup to existing balancing platform.

Regarding the cross-border cooperation between TSOs when establishing any new STSP, only Latvia reported having done it in accordance with to Art. 7.7 of BAL NC compared to 1 October 2016. From 1 July Implicit Capacity Allocation (ICA) mechanism was launched, and it made available gas exchange (Get Baltic) for all system users in the three Baltic States. By using ICA mechanism users have access to day

ahead products from neighboring countries connecting Lithuania, Latvia and Estonia. System users can buy gas deliveries for day ahead with transportation to destination (from one system to another) included in price of the product (gas + transportation). By implementing ICA, they also made available within day products within TSO system (no ICA for within day products).

### 2.2.3 Incentives

According to the provision of Article 11(1) of NC BAL, the NRA can incentivise the TSO to undertake balancing actions efficiently or to maximise the undertaking of balancing actions through trade in STSP.

Four countries (AT, ES, IT and UK-GB) indicated that an incentive mechanism was implemented. Austria stated physical balancing of TSOs is done primarily by the usage of Linepack. Incentive mechanisms for each Balance Group imbalance are installed to keep network (Linepack) stable in an intended period. If necessary, the MAM is entitled to procure volumes at the VTP for rebalancing imbalances on behalf and account for each Balancing Group.

Spain stated that according to their NRA's Circular implementing the Balancing Network Code, the incentives scheme is based on the performance of Enagás in its role of Technical Manager of the System. It takes into account the market options available to the transmission system operator for the selection and use of balancing actions and it is subject to periodical review by the National Authority for Markets and Competition.

Italy stated that the incentive mechanism measures introduced aimed at the improvement of the information to the market and the efficiency of the TSO balancing actions. In particular, performance indicators have been defined by the Italian NRA according to the following three mechanisms:

1. Offtakes forecast at the redelivery transport points (D-1 forecast vs. actual);
2. Efficient TSO balancing actions for the gas day D: difference between the TSO prices (max. buy/min. sell) vs. WAP (Weighted Average Price);
3. Residual balancing for the Gas Day D (use of Linepack and, only if necessary, operation storage within a predefined range).

UK-GB stated that to ensure the GB TSO does not incur excessive costs for the industry, the NRA incentivises the GB TSO to balance and trade efficiently through Residual Balancing incentives. The TSO is incentivised in two ways:

1. To minimise the price spread of its balancing actions (to restrict the impact of such actions on the market price); and
2. To minimise the change in the Linepack volumes between the start and end of the day. By seeking to resolve any system imbalances of the relevant day, the costs of such are targeted to those responsible for the imbalance.

## 2.3 NOMINATIONS (CHAPTER IV OF BAL NC)

Nominations are a central part of BAL NC since the information received by TSOs from a Network User's gas nomination is essential to the safe and efficient balancing of the network. This information enables TSOs to also predict where and to what extent gas imbalances are likely to occur. BAL NC sets out basic nomination and re-nomination rules for TSOs and shippers to follow when nominating and re-nominating gas quantities.

All 25 countries (AT, BE/LU, BG, CZ, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LT, LV, NL, PL, PT, RO, SE, SI, SK, UK-GB and UK-NI) have reported the implementation of nomination rules at all IPs by 1 October 2017.

### 2.3.1 Hourly Re-nomination Cycle and Standard Re-Nomination Lead-time of Two Hours

24 countries (AT, BE, BG, CZ, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LV, LT, NL, PL, PT, RO, SE, SI, SK, UK-GB and UK-NI) reported that the hourly re-nomination cycle and standard re-nomination lead-time of two hours are applied at all IPs according to Article 15(3) of BAL NC by 1 October 2017.

Luxembourg stated that at the IP Remich between Germany and Luxembourg the re-nomination lead time is two hours and 15 minutes. The additional time is used by Creos Luxembourg to re-nominate in case suppliers do not fulfil their nominations obligations/restrictions based on the forecast offtake at this IP.

### 2.3.2 Nomination and Re-nomination Provisions for Bundled Capacities

Where TSOs offer bundled capacities at IPs, the nomination and re-nomination provisions according to Article 12(3) of BAL NC shall also apply to single nominations and re-nominations for bundled capacity products.

11 Countries (CZ, ES<sup>1)</sup>, FR, IE, IT, NL, PL, PT<sup>1)</sup>, SI, SK, UK-GB and UK-NI) have a single nomination established at all interconnection points. 6 Countries (AT, BE/LU, DE, HR and RO) coop-

erated with the adjacent TSO(s) for the purpose of implementing nomination and re-nomination rules for bundled capacity products at interconnection points and basically agreed on the main parts of the process also there are still some details to finalise. DK stated that a single nomination will be implemented later this year. Hungary stated that single nomination is available at HU/HR and HU/RO and under discussion at HU/AT.

1) The TSO cooperation ended up with the establishment of single nomination at both France and Portugal Interconnection Points after the survey period.



### 2.3.3 Agreed Default Nomination Rule with Adjacent TSO if Valid Nomination (before deadline) is Not Sent by NU

In absence of a valid nomination sent by the network user before the nomination deadline, the respective TSO shall apply the default nomination rule agreed between these TSOs.

In total 23 countries (AT, BG, BE/LU, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LT, LV, NL, PL, PT, RO, SE, SI, UK-GB and UK-NI) confirmed having a default nomination rule agreed for this case with the adjacent TSO. Two countries (CZ and SK) indicated no agreement with adjacent TSOs.

Mainly two default rules (“lesser rule” and “zero”) are reported by 24 countries as a default nomination rule. The interconnection points (IPs) where hourly and daily nominations coexist in fourteen countries (AT, BE/LU, CZ, DE, EE, FR, HR, IT, NL, PL, SI, SK and UK-GB) can be found in Annex V.

Annex V also lists the countries where NRAs have determined that the nomination and re-nomination procedures are required at points other than the IPs.

Agreed default nomination rule by 1 October 2017	
Agreed default nomination rule	Countries
Lesser rule	AT, BE/LU, DK, HR, IE, LT, SE, SI, UK-NI, IT <sup>a)</sup>
Zero	DE, EL <sup>b)</sup> , ES <sup>c)</sup> , EE, FR, HU, LV, NL, PL <sup>d)</sup> , PT, RO, SK <sup>e)</sup> , UK-GB
Last confirmed quantity	BG, RO <sup>f)</sup>
No	CZ

- a) In absence of a nomination sent by the network user, the lesser rule is applied considering the most recent available information sent by the user with the following priority order: weekly planning, monthly planning (in case of no information, the user's nomination is zero).
- b) In Greece: In case a network user does not submit a daily nomination, or it has been rejected by the TSO, the network user's nomination shall be equal to zero. In case of re-nominations the provisions of Reg (EU) 2014/312 apply. For the IP with BULGARTRANS-GAZ: In case a network user does not submit a daily nomination or re-nomination, or it has been rejected by the TSO, the network user nomination shall be considered equal to the last Confirmed Quantity, up to the booked capacity for that network user.”
- c) The only case the zero rule is needed to be applied is when a valid nomination was not sent by NU in any time for the concerned gas day. Regarding adjacent TSO answers and in order to be consistent with it we ask to change to zero rule.
- d) The default nomination rule applicable in the absence of a valid nomination is that nomination is a zero for entire gas day. However, this rule was not agreed between the adjacent TSOs.
- e) Slovakia stated that on some IPs they have an agreement on Default Nomination Rule and on some IPs the agreement is in progress.
- f) The zero rule for the IP with Hungary; The last confirmed quantity for the IP with Bulgaria.

**Table 5:** Agreed default nomination rule by 1 October 2017

## 2.4 DAILY IMBALANCE CHARGES (CHAPTER V OF BAL NC)

The daily imbalance charge mechanism is intended to incentivise network users to balance their portfolios. Out of balance, network users are bound to pay or are entitled to receive (as appropriate) daily imbalance charges depending on their balancing position on a particular gas day. The daily imbalance charge is a cost-reflective mechanism and shall take account of the prices associated with transmission system operator's balancing actions, if any, and small adjustment. It should have been implemented by all countries by 1 October 2016, except for those countries that applied for interim imbalance charge.

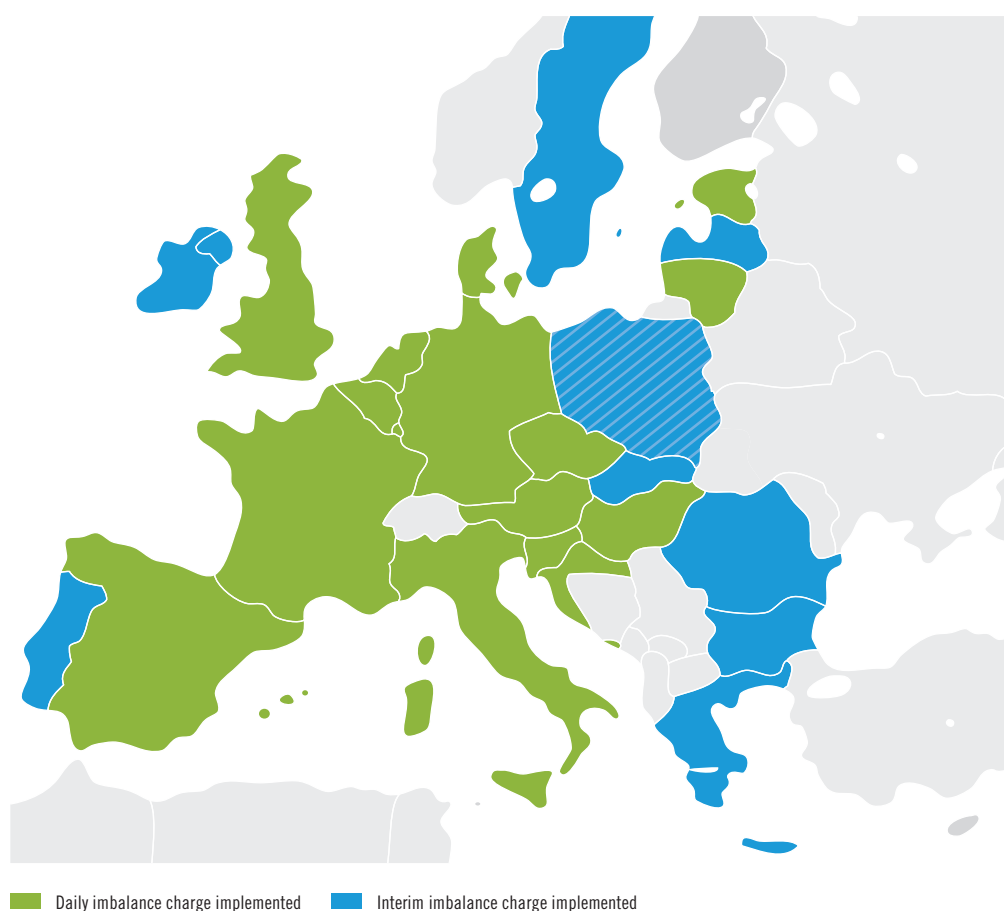
The map below shows that 18 countries reported the implementation of daily imbalance charge methodology by 1 October 2017 whereas 9 countries reported implementing the interim imbalance charge as an interim measure. UK and Poland are using the two alternatives, of course, not in the same balancing zone.

### Daily imbalance charge calculation methodology (Art. 20)

According to BAL NC provisions, the daily imbalance charge calculation methodology shall define the calculation of the daily imbalance quantity, the derivation of the applicable price and any other necessary parameter.

The methodology approved by the NRA has to be published on a relevant website. 22 countries (BE/LU, BG, CZ, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LT, LVNL, PL, PT, RO, SI, UK-GB) provided the link to the published daily imbalance charge calculation methodology or to the published interim imbalance charge.

Austria stated that the market price is published on the website of CEGH, which is [www.cegh.at](http://www.cegh.at). In Sweden a neutral method based on possible locational trades within the applied interim measures is applied. Slovakia stated that they are using the Balancing Platform for setting the price for Imbalance Charge calculation. UK-NI stated that is an ongoing assessment.



**Map 2:** Implementation of Daily imbalance charge vs. Interim imbalance charge by 1 Oct. 2017

## Daily imbalance quantity calculation (Art. 21)

As part of the calculation methodology, the approved daily imbalance quantity shall be calculated for each network user's portfolio as the difference between the inputs and off-takes for each gas day. In all the 25 countries the daily imbalance quantity is calculated for each network user's balancing portfolio for each gas day.

## Applicable price (Art. 22)

As part of the calculation methodology, the applicable price for the daily imbalance charge calculation shall take into account the TSO sell/buy prices, the weighted average price (WAP) of the gas and a small adjustment. Out of 18 countries where the daily imbalance charge methodology applies, 15 countries (BE/LU, CZ, DE, DK, ES, FR, HR, HU, IT, LT, PL-H, PT, SI and UK-GB) reported the determination of the applicable price by 1 October 2017. 10 countries (AT, BG, EE, EL, IE, LV, NL, PL-L, PL-T, RO, SE, SK, UK-NI) have not implemented the provisions.

Austria stated that daily imbalances are settled at the exchange of the VTP in the name and on behalf of the respective Balance Group Responsible Party (BGRP) if the BGRPs do not balance themselves after receiving an imbalance notification. Thus, the imbalance charge is the market price at the exchange.

Bulgaria stated that until the establishment of a liquid short-term market, the applicable price is based on the administratively regulated price.

## Small adjustment (Art. 22.6)

As part of the approved calculation methodology, the small adjustment contributes to determine the marginal sell and buy price. Its role is to incentivise network users to balance their inputs and off-takes.

## Daily imbalance charge calculation (Art. 23)

The reduction of network users' daily imbalance quantities to zero each day, instead of rolling over to subsequent days, is an important element of a daily imbalance charge methodology. In 22 countries (BE/LU, BG, CZ, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LT, LV, PL, PT, SE, SK, SI, UK-GB and UK-NI) network users' daily imbalance quantities are reduced to zero each day on payment of the daily imbalance charges. In Austria, if the imbalances are below tradable volumes (<24 MWh/d) they will be considered as carry-forward for the next gas day. Due to the

Description of small adjustment	
The value of the small adjustment for determining the marginal buy/sell price (Art. 22.7).	
AT	Not applicable. The imbalance charge is the market price at the exchange.
BE/LU	Small adjustment causer = 3 %, small adjustment helper = 0 % Causer means that the network user's imbalance is in the same direction (excess or shortfall) as the global market position. Helper means that the network user's balancing position goes in the opposite direction as the one of the global market position
BG	+/- 10 %
CZ	+/- 2 to 5 % depending on the value of the aggregate imbalance
DE	+/- 2 %
DK	+/- 0.5 % (3 % in certain cases)
EE	Under development
EL	Interim imbalance charge implemented
ES	+/- 2.5 %
FR	+/- 2.5 %
HR	Under development
HU	0
IE	Interim imbalance charge implemented
IT	0,108 €/MWh applied to the WAP for determining both the marginal buy price and the marginal sell price
LT	+/- 10 %
NL	Not applicable. The daily imbalance charge is always zero, because the daily imbalance volume is always zero. The imbalance quantities are absorbed by the Linepack Flexibility Service according to art. 21.2.
PL	+/- 10 %
PT	+/- 2.5 %
RO	Interim imbalance charge implemented
SE	Interim imbalance charge implemented
SI	+/- 10 %
SK	Interim imbalance charge implemented
UK-GB	0.0379 pence/kWh
UK-NI	Interim imbalance charge implemented

**Table 6:** Description of small adjustment

Linepack flexibility service offered in Czech Republic, daily imbalance charge is paid only for a part of the individual imbalance that exceeds a specific range and the imbalance quantity within the range rolls over to subsequent days. In the Netherlands the daily imbalance quantities are absorbed by the offered Linepack flexibility service according to art. 21.2 of BAL NC.

## 2.5 WITHIN DAY OBLIGATIONS (CHAPTER VI OF BAL NC)

In order to incentivise network users to manage their within day position in view of minimising TSOs need to undertake balancing actions, BAL NC allows TSOs to implement Within Day Obligations (WDOs) which are a set of rules approved by the NRAs regarding network users' inputs and off-takes within the gas day. As stated in the previous report, five countries (AT, BE/LU, DE and NL) have already implemented WDOs.

Austria stated that the methodology changed on 1 June 2017. The method applies only if the market is short on an hourly base and not on cumulative hourly imbalances on a given gas day and the relevant fees were reduced.

Germany stated that from 1 October 2016 the regime of within-day obligations has changed.

As opposed to the former system the portfolio within-day charges are only applicable when the MAM is buying and selling gas in the first rank of the merit order list on the same gas day. In such a case, the applicable charge is determined by the difference of the weighted average buy and sell prices divided by two.

Bulgaria stated that during a public consultation held in the course of the Balancing rules elaboration, the TSO proposed WDOs. However, there were not implemented since the network users expressed their opinion that the restrictions are severe for their portfolios management.

Three countries (BE/LU and NL) applied a System Wide WDO whereas two countries (AT and DE) applied a Portfolio Based WDO.

## 2.6 NEUTRALITY (CHAPTER VII OF BAL NC)

To ensure that it has neither to bear costs stemming from network users imbalanced positions nor perverse incentives to intervene or not in the market, TSO shall be neutral to the charges in relation to its balancing activities. Any costs or revenues arising from balancing activities shall be passed by TSO to network users. According to BAL NC provisions, NRAs shall approve and publish the methodology for the calculation of the neutrality charges for balancing and TSOs shall publish the aggregate neutrality charges for balancing at least monthly.

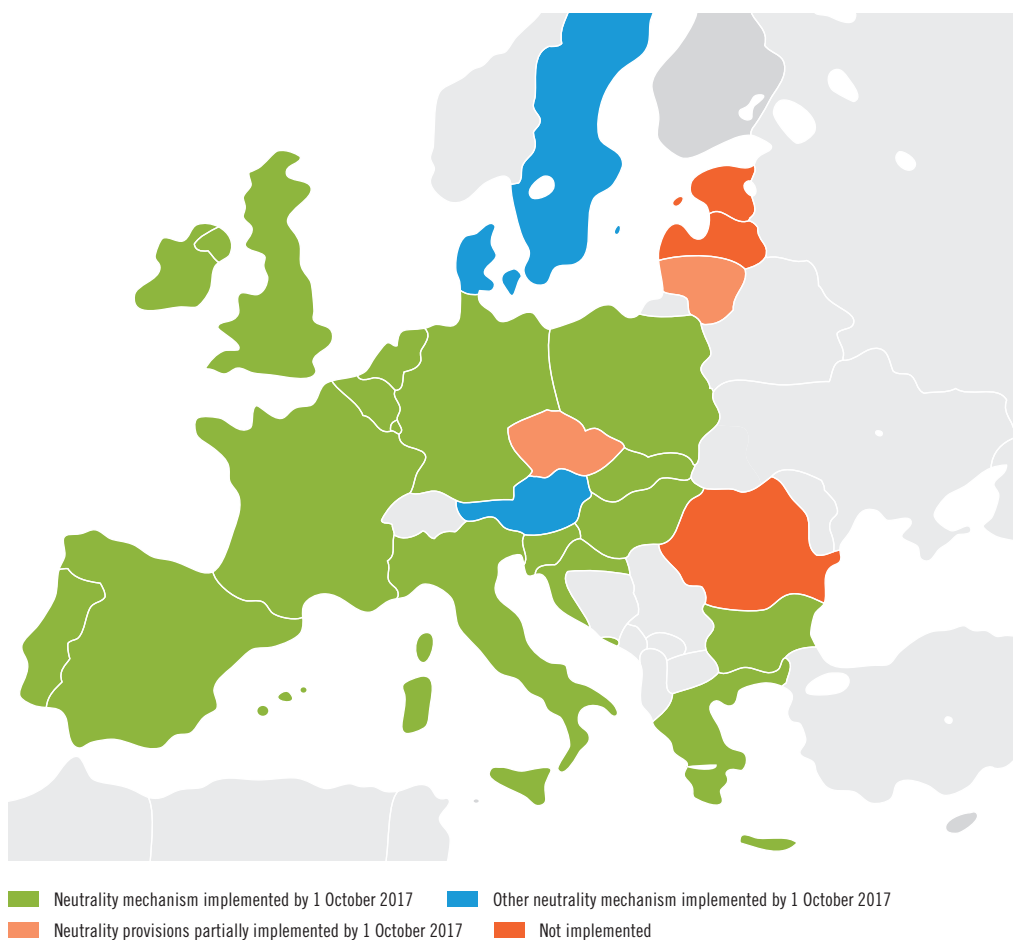
The neutrality provisions must be implemented by all countries by 1 October 2016. Map 3 illustrates that 17 countries (BE/LU, BG, DE, EL, ES, FR, HR, HU, IE, IT, NL, PL, PT, SK, SI, UK-GB and UK-NI) reported implementing neutrality provisions, while 2 countries (CZ, LT) partially implemented them. Czech Republic stated that neutrality charge is not applied. Principle of neutrality of balancing is ensured by price regulation (correction factor in the regulatory formula).

Lithuania stated that balancing neutrality charge are not shown separately on invoices. Thereafter, there is no sufficient supporting information with the invoices. For the 6 other countries, the following reasons are invoked: Austria stated that in case of a daily imbalance >24 MWh, balancing actions per balancing group are triggered by MAM in the name and on behalf of the BGR. No costs/revenues for the MAM, the BGR pays/receives the market price to/from the VTP. Those balancing incentive mark-ups generate income, which is accumulated and used to reduce transmission charges in future periods.

As the balancing incentive mark-ups were massively reduced since their introduction, the effect in total is small. As the MAM did not take measures for physical balancing, the total sum of the balancing incentive mark-up for 2013–2015 was returned to the network users via lower tariffs. Denmark stated that the Danish NRA has approved that Energinet does not have to implement the neutrality arrangements, based on two main parameters: 1) the balancing economy is close to being balanced and 2) the economy of Energinet is a rest-in-itself economy, and is thereby neutral in itself.

Estonia stated that neutrality arrangement shall be implemented for merged regional balancing zone. Latvia stated that neutrality will be achieved by adjusting tariffs during tariff review cycle. Romania stated that the methodology on neutrality was approved and published by ANRE in the Official Gazette on 28 September 2017. Sweden stated that the amounts gained or lost due to balancing actions are almost negligible.





**Map 3:** Neutrality implementation by 1 October 2017

## 2.7 INFORMATION PROVISION (CHAPTER VIII OF BAL NC)

21 countries (AT, BE/LU, BG, CZ, DE, DK, EL, ES, FR, HR, HU, IE, IT, LV, NL, PL, PT, SK, SI and UK-GB and UK-NI) indicated having

implemented the information provisions while 4 countries (EE, LT, RO, SE) have not fully implemented it.

### 2.7.1 Types of Information According to Article 32 of BAL NC

BAL NC outlines the information that TSOs must provide to network users during the gas day since network users are responsible for balancing their balancing portfolios in order to minimise the need for TSOs to undertake balancing actions. This information, according to article 32 of BAL NC, covers:

1. Overall status of the transmission network;
2. The transmission system operator's balancing actions; and
3. Network user's inputs and off-takes for the gas day.

The information provisions must be implemented by all countries.

23 respondents (AT, BE/LU, BG, CZ, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LT, LV, NL, PL, PT, SI, SK, UK-GB and UK-NI) reported that all three types of information have been implemented and are provided to the network users by 1 October 2017. While 2 countries (SE and RO) partially implemented the provisions with two types of information.

### 2.7.2 Information Model

Three different information models for daily and non-daily metered off-takes are allowed in BAL NC. These are a 'base case' model, a 'variant 1' and a 'variant 2'. In Article 35 and 36 of BAL NC it is specified how allocation data is calculated and how and whether forecasts are provided.

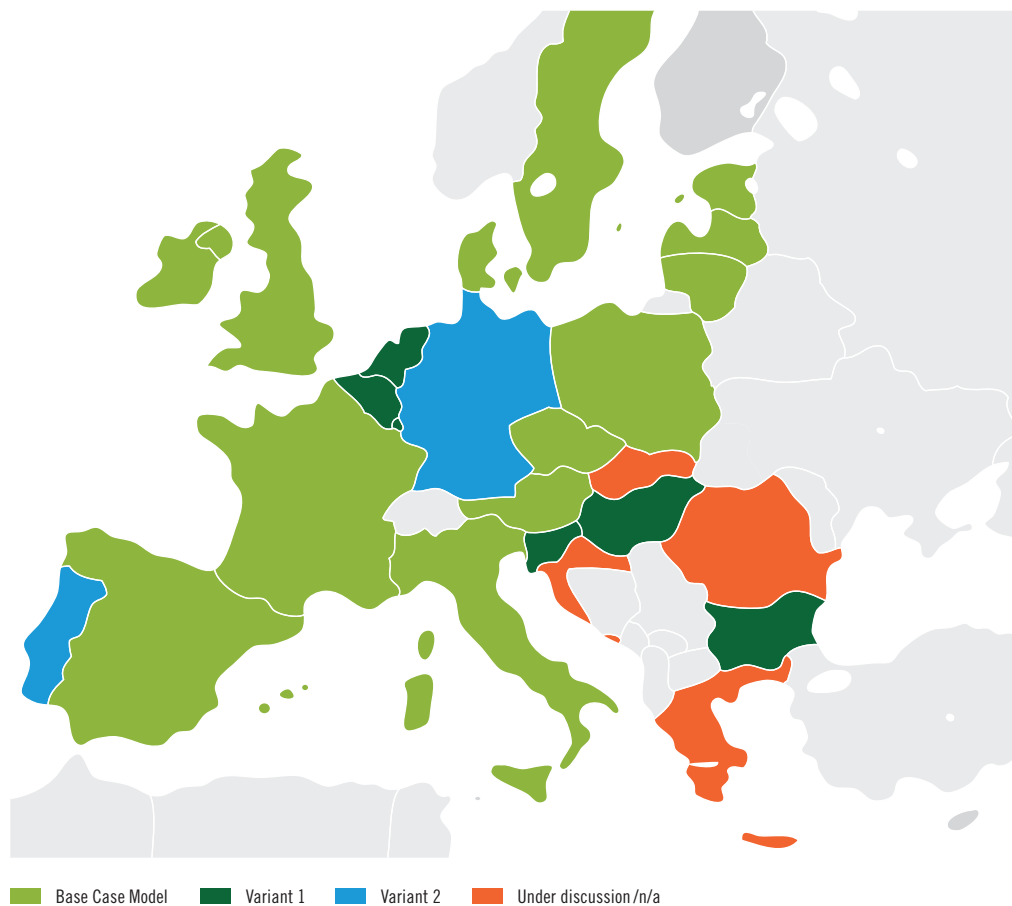
According to the definitions in BAL NC, 'base case' means the model for information provision where the information on non-daily metered off-takes consists of day ahead and within day forecasts; 'variant 1' means the model for information provision where the information on non-daily metered and daily metered off-takes is based on apportionment of measured flows during the gas day and 'variant 2' means the model for information provision where the information on non-daily metered off-takes is a day ahead forecast.

Details per country on the information model adopted can be found in Annex VI.

The following map illustrates which information model applied in the respective countries by 1 October 2017.

21 countries (AT, BE/LU, BG, CZ, DE, DK, EE, ES, FR, HU, IE, IT, LT, LV, NL, PL<sup>1)</sup>, PT, SE, SI, UK-GB and UK-NI) reported having chosen an information model by 1 October 2017. Croatia and Romania responded that it is still in progress. Slovakia repeated since having no non-daily metered off-take points connected to the transmission system it is not necessary. Greece stated that their NRA is investigating the adoption of the most suitable information model.

1) For the Polish TGPS balancing zone the information model provisions are reported as not applicable as it has no non-daily metered off-takes and no DSO is connected to the system.



Map 4: Information model chosen by NRA by 1 October 2017

### 2.7.3 Provision of Final Allocation Data

BAL NC does not define a time limit for TSOs to provide each network user with the final allocation for its inputs and off-takes and the final daily imbalance quantity. Such a time limit shall be defined at national level.

All 25 countries (AT, BE/LU, BG, CZ, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LT, LV, NL, PL, PT, RO, SE, SI, SK, UK-GB and UK-NI) indicated that the timeframe for initial allocation is no later than the end of D+1. Details per country on the timeframe in which final allocation data, used for the calculation of the daily imbalance charges, is submitted to network users can be found in Annex VI.

### 2.7.4 Cost Benefit Analysis (CBA)

BAL NC foresees that the assessment of costs and benefits regarding the (1) frequency, (2) reduction of related timelines and (3) improvement of accuracy of the information shall be provided by 16 April 2016. TSOs should have done a cost benefit analysis (according to art. 38) within two years as from the entry into force of BAL NC (i.e. before the 16 April 2016). 7 countries (AT, EE, FR, LT, NL, PL and UK-GB) reported that the complete CBA had been performed.

Austria has done their CBA consultation from 9 October to 3 November 2017. The outcome of their CBA is that no changes are foreseen.

Estonia stated that data exchange rules are to be implemented once the national legislation is updated.

France stated that NRA has decided there is no CBA report to perform since the market requests are dealt in the stakeholder concertation process which is a permanent discussion forum.

Lithuania stated that the analysis is submitted to NRA and that the NRA has not made the decision yet. Netherlands and Poland stated that there are no relevant changes. Great Britain reported having performed its CBA including a public consultation to get feedback from stakeholders. The outcome is that UK-GB is looking into providing real time gas quality data.

Two countries (DK, SI) stated that they have done the CBA partially. Denmark stated that the CBA was conducted before the implementation, and lead to increasing the information provision frequency from 2 to 5 times a day. It was clear from this analysis, that increasing the information to more than 5 times a day would be extremely costly for the DSOs, as this would require new measurement equipment for within-day metered sites. Therefore, 5 times/day was the final result of the CBA.

Slovenia stated that TSO is closely following the development of the balancing and trading platforms. The situation on the balancing market is on regular basis communicated to the market participants. UK-NI reported that the CBA is in progress.

Five countries have applied the provision of Article 52(1) of NC BAL (CZ, ES, HR, IT and PT).

Czech Republic stated that NC BAL has been effective in their domestic legislation for only a year and a half, which is too short for any conclusive analysis. However, discussion about conducting such analysis in the future takes place. Spain indicated that the BAL NC was fully implemented by 1 October 2016. The NRA's Circular implementing the Balancing Network Code establishes that before 30 September 2018, Enagás in its role of Technical Manager of the System, in collaboration with the transmission and distributors operators, will produce a report. Italy and Portugal indicated to evaluate the CBA results that two years should be counted from the implementation date (1 oct 2016) of the BAL NC provisions and not from the entry into force.

Hungary and Croatia stated that the CBA is in progress. Two countries (Bulgaria and Belgium) stated that the CBA is planned for Q1 2018. Germany stated that, against the background that information provision was modified by 1 October 2016, the NRA has prolonged the time line for the CBA to October 2018. Thus, the effects of the new information provisions regime can be analysed on a sufficient data base and proper experiences.

## 2.7.5 Establishing a Forecasting Party

The forecasting party is responsible for forecasting a network user's non-daily metered off-takes and where appropriate its subsequent allocation. After prior consultation with TSOs and DSOs concerned, BAL NC foresees designating a forecasting party by balancing zone. This may be a TSO, a DSO or a third party. Table 6 below illustrates that 19 countries reported designating a forecasting party.

4 countries have a third party for the forecasting of the NDM consumption.

In Austria the Third Party is the Distribution Area Manager (DAM). In Czech Republic the forecasting task is fulfilled by the Market operator (OTE), which is an independent subject on the market. In Spain ENAGAS in its role of the Technical Manager of the System must define the demand forecast in collaboration with the DSO and TSOs and their networks consumers.

The Netherlands reported that so-called EDSN serves as the forecasting party. In Romania and Estonia, it is still in progress while in four countries (BG, EL, SE and SK) the designation of a forecasting party is not currently foreseen. In Sweden network users currently have agreed that they will forecast themselves. Bulgaria stated that, since they have variant 1, it does not require a forecasting party. Greece stated that there are no non-daily metered off-takes. 6 countries (CZ, DK, FR, IE, NL, UK-GB) have a forecasting party which has reported on the accuracy of the forecast of NDM-off takes.

**Overview of designated and implemented forecasting party by 1 October 2017**

FORECASTING PARTY				
TSO	DSO	Third party	Under discussion	No forecasting party foreseen
BE/LU, DK, FR, HR, IE, IT, PT, SI, UK-GB, UK-NI (10 countries)	DE, HU, LT, LV, PL (5)	AT, CZ, ES, NL (4)	EE, RO (2)	BG, EL, SE, SK (4)

**Table 6:** Overview of designated and implemented forecasting party by 1 October 2017

## 2.7.6 Cooperation of DSO(s), Forecasting party (-ies) towards TSO

Each DSO associated to a balancing zone and each forecasting party shall provide the TSO in the respective balancing zone with the information necessary for the information provision to the network users. It includes inputs and off-takes on the distribution system.

20 countries (AT, BE/LU, CZ, DE, DK, ES, FR, HR, HU, IE, IT, LT, LV, NL, PL, PT, SE, SI, UK-GB and UK-NI) reported that the TSO has cooperated with the DSO and forecasting party to define the information its format and the providing procedure in order to ensure the due provision of information by the TSO to the network users. 5 countries have not done it: BG, EE, EL, RO and SK.



## 2.8 LINEPACK FLEXIBILITY SERVICE (CHAPTER IX OF BAL NC)

TSOs may offer a Linepack Flexibility Service (LFS) to the shippers under the NRA's approval of the related terms and conditions. This commercial service which utilises the flexibility within the transmission system shall be consistent with the responsibility of the shipper to balance its inputs and off-takes throughout the gas day. 5 countries (CZ, FR, NL, PT and SE) reported offering Linepack Flexibility Service prior to or on 1 October 2017.

France stated that it incentivises shippers to contribute to the balancing of the system and

mitigate imbalances due to NDM delivery points. The Netherlands stated that their network users (and accordingly the NRA) have decided that they prefer this option above the cash out regime. Portugal stated that the main reason for offering LFS to the market was to provide a tool for NU to accommodate imbalances considering the start-up phase of new rules in force and the need to prevent possible undesirable extra costs for the system. This was only possible as there was available Linepack flexibility not needed for the TSO's own balancing operations.





## 2.9 INTERIM MEASURES (CHAPTER X OF THE BAL NC)

BAL NC offers the flexibility of implementing interim measures in the absence of sufficient liquidity in the short-term wholesale gas market in order to have enough time to develop a more liquid and competitive short-term market.

There are four types of interim measures:

### ▲ **Balancing platform (Art. 47 of BAL NC)**

A balancing platform can be established for the purpose of TSOs balancing in case the short-term wholesale gas market has or is anticipated to have insufficient liquidity or where temporal and locational products required cannot reasonably be procured on this market. A balancing platform is a trading platform where a transmission system operator is a trading participant to all trades.

### ▲ **Alternative to a balancing platform (Art. 48 of BAL NC)**

If a trading platform was not implemented since short term wholesale gas market has or is anticipated to have insufficient liquidity, BAL NC offers TSOs with the flexibility of implementing a balancing platform. Where a balancing platform cannot increase the liquidity of the short-term wholesale gas market as a result of insufficient interconnection capacity between balancing zones, an alternative to a balancing platform, such as a balancing service, may be used in order to enable TSO to undertake efficient balancing actions.

Overview of the Interim measures applied by 1 October 2017				
Country	Balancing platform	Alternative to a balancing platform	Interim daily imbalance charge	Tolerances
BG	–	In place	In place (administrated price)	In place (5 % of the exit capacity of each NU)
DE	In place	–	–	–
EL	Planned (H1/2018)	In place	In place (administrated price)	In place (+/– 10 %)
IE	–	In place	In place (proxy for market price)	In place (different level for all entry- and exit points)
LT	–	–	–	In place (+/– 5 % during Oct-April and +/- 15 % during May-Sept)
LV	–	In place	In place	–
PL	In place	–	In place for L-gas (price derived from balancing platform trades) and TGPS (proxy for market price)	In place for H-gas
RO	–	In place	In place (proxy for market price)	In place (5 %)
SE	In place	–	In place (price derived from balancing platform trades)	–
SK	In place	In place	In place (price derived from balancing platform trades)	–
UK-NI	–	In place	In place (proxy for market price)	In place (different for exit points)

**Table 7:** Overview of the Interim measures applied by 1 October 2017

#### ▲ **Interim imbalance charge** **(Art. 49 of BAL NC)**

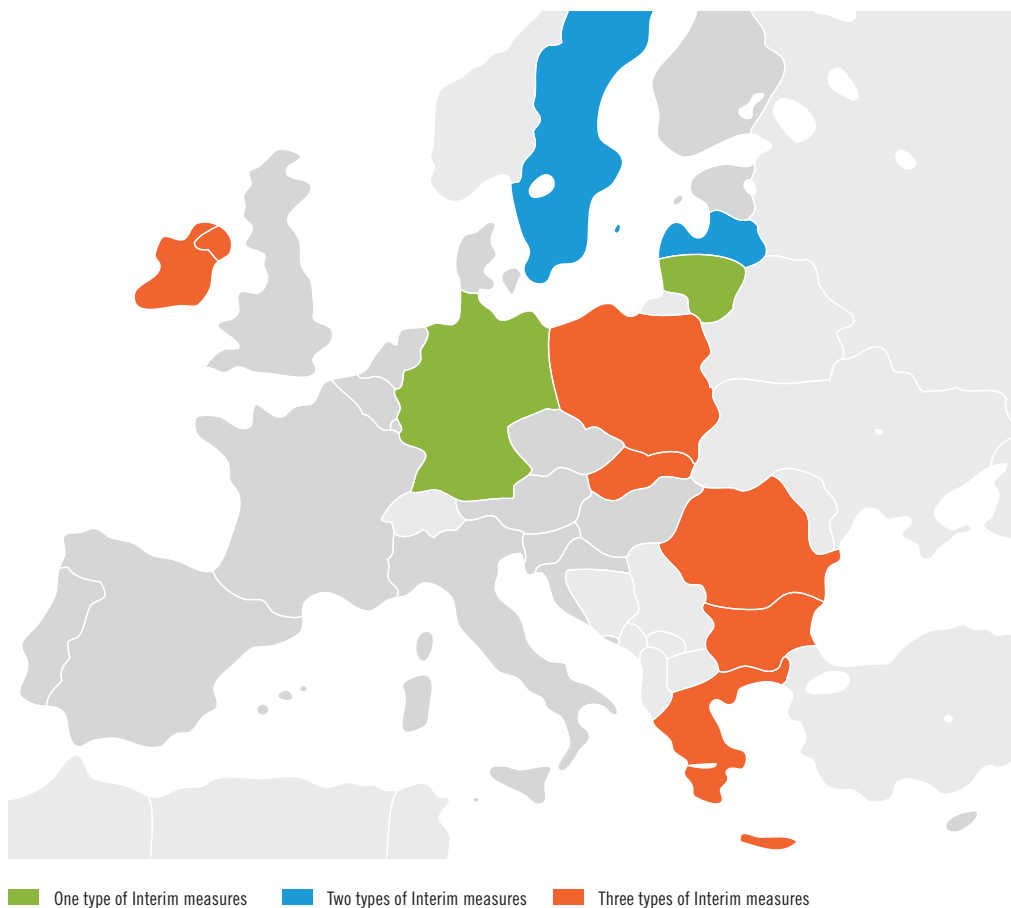
In the absence of sufficient liquidity of the short-term wholesale gas market, TSOs may apply interim imbalance charge which shall substitute the daily imbalance charge calculation methodology.

#### ▲ **Usage of tolerances** **(Art. 50 of BAL NC)**

The tolerances are meant to reduce network user's financial exposure to the marginal sell or buy price in respect of a part of or the network user's entire daily imbalance quantity for the gas day.

Table 7 provides an overview of the 11 countries (BG, DE, EL, IE, LT, LV, PL, RO, SE, SK and UK-NI) which have interim measures in place. All these countries except two (DE and PL-H<sup>1)</sup>) which stated other reasons, reported that the absence of sufficient liquidity in short term wholesale gas market was the reason for applying interim measures.

1) Poland applied for interim measures due to lack of locational products offered on the trading platform and no possibility of trading on short term markets (day ahead and intra-day) for up to 22 hours, 7 days a week, which will enable liquid balancing throughout the gas day.



**Map 5:** Interim measure overview of current application by 1 Oct. 2017



### **Publication of updated interim imbalance report**

Implementation of interim measures requires publishing the first interim measures report approved by the NRA and as well as any subsequent updated reports, if necessary on an annual basis. On 1 October 2017 the following countries have published their updated interim measures reports (BG, DE, PL, RO, SK and UK-NI).

### **Plans to remove interim measures**

According to BAL NC provisions, TSO should identify the steps that will be taken to remove the interim measures, including the criteria for making these steps and for an assessment of the related timing. All countries foresee the usage of interim measures until April 2019 (except DE and UK-NI).

Bulgaria stated that they plan to reduce tolerance from 5 % to 3 % and to remove it in 2019. Germany stated that both MAMs have decided to terminate the use of the locational commodity products on the balancing platform by 1 January 2018. As a consequence, the application of interim measures will end on that date.

Greece stated that the tolerances have been reduced down from  $\pm 10\%$  to  $\pm 3\%$  as of 1 January 2018, according to the provisions of the Network Code, and will be eliminated by April 2019. Latvia stated that current procurement ends on the 31 October 2018, until that time STSP product usage on exchange will be evaluated. Exchange exists in region, however liquidity is low, therefore creating balancing platform, would be additional unneeded expenses, and until liquidity increase it was decided to procure balancing services. They have planned to implement from the 1 November 2018 a tolerance of 5 % of entry-allocation. Poland is going to reduce the tolerance by 1<sup>st</sup> April 2018 from 5 % to 2,5 %. UK-NI stated that the design of the Balancing Services tender process will aim to encourage market liquidity by encouraging participation and trade at the NI BP and should end by 1 October 2020.

# 3 Conclusion

NC BAL has been applicable since 1 October 2015 but allows its application to be postponed until 1 October 2016. Instead of full implementation, interim measures can be implemented for up to five years<sup>1)</sup> from the entry into force of the Code (i. e. until 16 April 2019) while all the other provisions in the BAL NC shall be implemented by 1 October 2015.

15 countries (AT, BE/LU, CZ, DE, DK, ES, FR, HR, HU, IT, NL, PT, SI, UK-GB) have fully implemented the NC BAL while 11 countries (BG, DE, EL, IE, LT, LV, PL, RO, SE, SK and UK-NI) applied for interim measures until April 2019.

19 countries indicated having implemented the merit order in accordance with Art. 9 with title products at the first place or using only title products whereas 7 countries rely only on balancing services.

20 countries have put in place an information model for daily and non-daily metered off-takes: 12 uses the Base Case model, 6 the Variant 1 and 2 countries Variant 2. Two countries are still discussing implementation whereas two other countries said that is not necessary since they do not have NDM off-takes connected to their network. Estonia has not chosen yet since they are still holding a derogation.

The cost benefit analysis (CBA) deadline regarding the information provisions passed in April 2016 and only 7 countries reported that this CBA has been complete.

Within-day obligations and Linepack Flexibility Service are still used only by a few countries. However, of the five countries that have already implemented WDOs, two countries stated a change which reduces WDO obligation. Still five countries reported to have offered Linepack flexibility service by 1 October 2017.

11 countries have applied interim measures (balancing platform, balancing services, interim daily imbalance charge and/or tolerances). Some countries have or will reduce progressively the level of their tolerances.

The remaining challenge regarding the implementation of the Code will be this ordered removal of interim measures.

The following two planned cross-border merges of balancing zones may help to solve this lack of market liquidity for the countries using interim measures:

- ▲ Between Denmark and Sweden, subject to NRAs' agreement, in April 2019,
- ▲ Among the three Baltic States (joint maybe by Finland) by 2020.

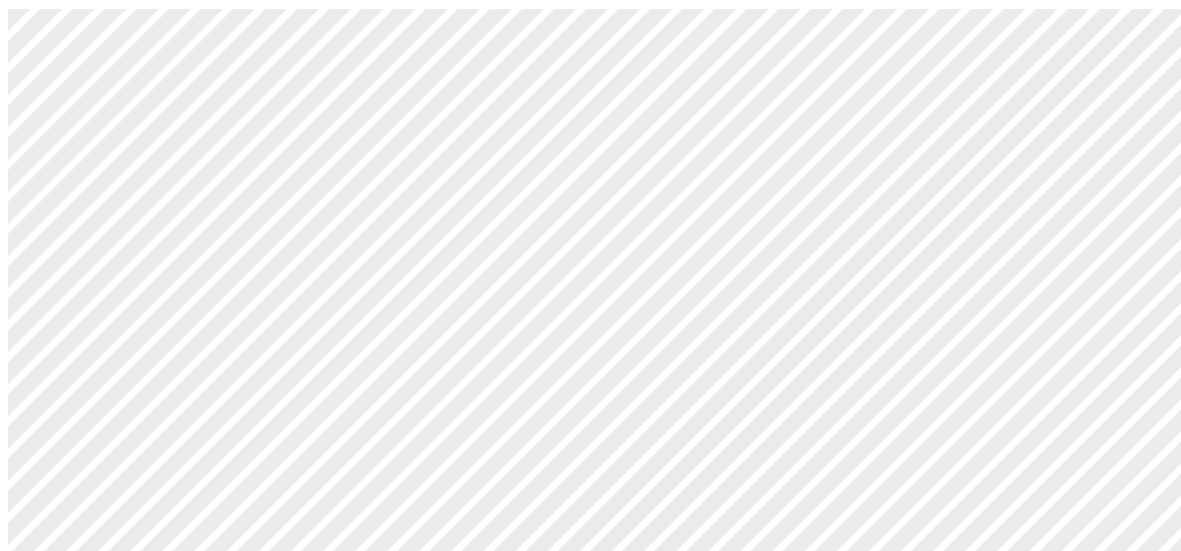
1) And additional 5 years for the case of the interim measure of a balancing platform, pursuant to Article 47 (3) of the NC.

# 4 Annexes

## Annex I: List of Abbreviations

### Abbreviations

<b>ACER</b>	Agency for the Cooperation of Energy Regulators
<b>BAL NC</b>	Balancing Network Code
<b>ENTSOG</b>	European Network of Transmission System Operators for Gas
<b>EC</b>	European Commission
<b>EU</b>	European Union
<b>ICA</b>	Implicit Capacity Allocation
<b>IDM/DM/ NDM</b>	Intraday metered/Daily metered/Non-daily metered
<b>IP</b>	Interconnection Point
<b>MAM</b>	Market Area Manager
<b>MS</b>	Member State
<b>NRA</b>	National Regulatory Authority
<b>STSP(s)</b>	Short-Term Standardised Product(s)
<b>TSO</b>	Transmission System Operator
<b>WDO(s)</b>	Within Day Obligation(s)





## Annex II: Overview of countries with their balancing zones

Overview of countries with their balancing zones		
ACRONYM	COUNTRY	BALANCING ZONE
AT	Austria	Austria - Market Area East <sup>1)</sup>
BE/LU-H	Belgium and Luxembourg <sup>2)</sup>	BELUX H-gas (with LU)
BE/LU-L	Belgium	BELUX L-gas
BG-N	Bulgaria	National balancing zone (NGTN)
BG-T		Transit balancing zone (GTNTT)
CZ	Czech Republic	Czech Republic
DE-GASPOOL	Germany	Gaspool Germany Market Area
DE-NCG		Net Connect Germany (NCG) Market Area
DK	Denmark	Denmark
EE	Estonia <sup>3)</sup>	
EL	Greece	Greece
ES	Spain	Spain
FR-PEG NORD	France	PEG Nord
FR-TRS		Trading Region South
HR	Croatia	Croatia
HU	Hungary	Hungary
IE	Ireland	Ireland
IT	Italy	Italy
LT	Lithuania	Lithuania
LV	Latvia	Latvia
NL	The Netherlands <sup>4)</sup>	The Netherlands (GTS)
PL-H	Poland	High-methane gas balancing area (H-gas)
PL-L		Low methane balancing area (L-gas)
PL-T		TGPS gas balancing area (TGPS)
PT	Portugal	Portugal
RO	Romania	Romania
SE	Sweden	Sweden
SI	Slovenia	Slovenia
SK	Slovakia	Slovakia
UK-GB <sup>5)</sup>	Great Britain	Great Britain (NBP)
UK-NI	Northern Ireland	Northern Ireland

- 1) In Austria 3 market areas exist in total, but transmission systems with an entry-exit-system are only available in the market area east balancing zone (with two TSOs) – therefore two replies have been submitted.
- 2) Belgium and Luxembourg established the first cross-border balancing zone BELUX (H-gas). In Belgium an additional L-gas balancing zone BELUX (L-gas) exists.
- 3) In Estonia no entry exit system has been established yet.
- 4) For NL the NC BAL is legally applicable on both TSOs GTS and BBL Company in the Dutch balancing zone. But BBL Company, is allowed by the NRAs ACM and Ofgem to continue the in=out regime, by definition no imbalances can occur on the pipeline. Therefore, only articles not dealing with actual balancing of the grid have a practical meaning for BBL Company. (BBL has received derogation from ACM and Ofgem for the majority of the NC Balancing (all Articles except for Articles 12 – 18 on nominations and relevant aspects of Articles 32 – 42 on Information Provision).
- 5) For the UK two replies were submitted. This reflects the fact that in the UK there are two balancing zones, one covering Great Britain and one covering Northern Ireland. These balancing zones are in different transmission networks and are regulated by different NRAs. In this report Great Britain will be referred to as UK-GB and Northern Ireland as UK-NI.

# Annex III: Ranking of products in the balancing merit order per country/balancing zone by 1 October 2017

Ranking of products in the balancing merit order per country/balancing zone by 1 October 2017						
COUNTRY/ BAL. ZONE	TRADING PLATFORM/ BALANCING PLATFORM, PUBLIC TENDER, OTHER PROCEDURE (ART. 8.4)	NAME OF THE TRADING PLATFORM/ BALANCING PLATFORM	RANKING IN THE BALANCING MERIT ORDER	CLASSIFICATION OF THE BALANCING PRODUCT	NAME OF THE BALANCING PRODUCT (PLEASE INSERT NAME.)	GAS QUALITY (PLEASE CHOOSE OPTION IN THE LIST)
<b>AT = AUSTRIAN MARKET AREA EAST</b>	Trading platform (Art. 10)	Pegas	1	WD title	Pegas Spot Cegh VTP	
<b>BELUX H-GAS</b>	Trading platform (Art. 10)	Powernext – Pegas	1	WD title	ZTP WD	H-gas
<b>BELUX L-GAS</b>	Trading platform (Art. 10)	Powernext – Pegas	1	WD title	ZTP L WD	L-gas
<b>BG</b>	N/A		1	WD title	WD title	global
	N/A		2	DA title	DA title	global
	N/A		3	IM product (Art. 45)	Gas from storage facility	global
	Public Tender (Art. 8.3)		4	Balancing service (Art. 8.3)	Balancing service (Art. 8.3)	global
<b>CZ</b>	Trading platform (Art. 10)	OTE	1	DA title		H-gas
	Trading platform (Art. 10)	OTE	2	WD title		H-gas
	Trading platform (Art. 10)	Pegas	3	WD title		H-gas
	Trading platform (Art. 10)	Pegas	4	WD title		H-gas
	Public Tender (Art.8.3)		5	Balancing Services (Art. 8.3)		H-gas
<b>GASPOOL</b>	Trading platform (Art. 10)	PEGAS	1	WD title/DA title	Title Market Transaction	global
	Trading platform (Art. 10)	PEGAS	2	WD title/DA title	Title Market Transaction	H-gas, L-gas
	Trading platform (Art. 10)	PEGAS	2	WD – DA locational	Locational Market Transaction	H-gas, L-gas
	Balancing Platform (Art. 47)	GASPOOL	3	WD – DA locational	Locational Market Transaction	H-gas, L-gas
	Public Tender (Art. 8.3)	GASPOOL	4	Balancing Services (Art. 8.3)	Flexibility Product	H-gas, L-gas
	Public Tender (Art. 8.3)	GASPOOL	4	Balancing Services (Art. 8.3)	Long Term Options (Rest of the Day)	H-gas, L-gas
	Public Tender (Art. 8.3)	GASPOOL	4	Balancing Services (Art. 8.3)	Demand Side Management	H-gas, L-gas
<b>NCG</b>	Trading platform (Art. 10)	PEGAS	1	WD title/DA title	Title Market Transaction	global
	Trading platform (Art. 10)	PEGAS	1	WD temporal	Title Market Transaction	global
	Trading platform (Art. 10)	PEGAS	2	WD title/DA title	Title Market Transaction	H-gas, L-gas
	Trading platform (Art. 10)	PEGAS and ICE	2	WD title/DA title	Title Market Transaction	L-gas
	Trading platform (Art. 10)	PEGAS	2	WD – DA locational	Locational Market Transaction	H-gas, L-gas
	Trading platform (Art. 10)	PEGAS	2	WD temporal	Title Market Transaction	L-gas
	Trading platform (Art. 10)	PEGAS	2	WD temporal locational	Locational Market Transaction	L-gas, global
	Balancing Platform (Art. 47)	NCG	3	WD – DA locational	Locational Market Transaction	H-gas, L-gas
	Public Tender (Art. 8.3)	NCG	4	Balancing Services (Art. 8.3)	Demand Side Management	global
	Public Tender (Art. 8.3)	NCG	4	Balancing Services (Art. 8.3)	Long Term Options (Rest of the Day)	H-gas
	Public Tender (Art. 8.3)	NCG	4	Balancing Services (Art. 8.3)	Long Term Options (Rest of the Day) (Day Ahead) (hourly)	H-gas, L-gas

## Ranking of products in the balancing merit order per country/balancing zone by 1 October 2017

COUNTRY/ BAL. ZONE	TRADING PLATFORM/ BALANCING PLATFORM, PUBLIC TENDER, OTHER PROCEDURE (ART. 8.4)	NAME OF THE TRADING PLATFORM/ BALANCING PLATFORM	RANKING IN THE BALANCING MERIT ORDER	CLASSIFICATION OF THE BALANCING PRODUCT	NAME OF THE BALANCING PRODUCT (PLEASE INSERT NAME.)	GAS QUALITY (PLEASE CHOOSE OPTION IN THE LIST)
DK	Trading platform (Art. 10)	Gaspoint Noric	1	WD title	TSO WD yellow zone trade	H-gas
EE	N/A	N/A	1	DA title	Long term balancing services	H-gas
EL	Public Tender (Art. 8.3)		1	Balancing Services (Art. 8.3)	LNG	global
ES	Trading platform (Art. 10)	MIBGAS	1	WD title	GWDES	H-gas
	Trading platform (Art. 10)	MIBGAS	2	DA-Title	GDAES	H-gas
	Trading platform (Art. 10)	MIBGAS	3	WD locational		H-gas
	Trading platform (Art. 10)	MIBGAS	4	DA locational		H-gas
PEG NORD	Trading platform (Art. 10)	PEGAS	1	WD title	PEGAS spot	global
	Trading platform (Art. 10)	PEGAS	2	WD locational	Locational	global
TRS	Trading platform (Art. 10)	PEGAS	1	WD title	PEGAS spot WD TRS EoD Product	global
	Trading platform (Art. 10)	PEGAS	2	WD locational	Locational	global
HR	Trading platform (Art. 10)	Plinska trgovinska platforma	1	WD title	Unutar dana NAZIVNI PROIZVOD	global
	Trading platform (Art. 10)	Plinska trgovinska platforma	2	WD locational	Unutar dana LOKACIJSKI PROIZVOD	global
	Trading platform (Art. 10)	Plinska trgovinska platforma	3	DA title	Unutar dana LOKACIJSKI PROIZVOD	global
	Trading platform (Art. 10)	Plinska trgovinska platforma	4	DA locational	Dan unaprijed	global
	Public Tender (Art. 8.3)		5	Balancing Services (Art. 8.3)	USLUGA URAVNOTEŽENJA	global
HU	Trading platform (Art. 10)	FGSZ Trading Platform	1	WD title	MGPwd	H-gas
	Trading platform (Art. 10)	FGSZ Trading Platform	2	DA title	MGPda	H-gas
	Trading platform (Art. 10)	FGSZ Trading Platform	3	WD locational	HEGwd	H-gas
	Trading platform (Art. 10)	FGSZ Trading Platform	4	DA locational	HEGda	H-gas
IT	Trading platform (Art. 10)	MGAS Platform (managed by GME)	1	WD title	STSP title	global
	Trading platform (Art. 10)	MGAS Platform (managed by GME)	1	WD locational	STSP locational	global
	Trading platform (Art. 10)	MGAS Platform (managed by GME)	2	DA title	STSP title	global
	Trading platform (Art. 10)	MGAS Platform (managed by GME)	2 <sup>1)</sup>	DA locational	STSP locational	global
IE	Public Tender (Art. 8.3)		1	Balancing Services (Art. 8.3)	1) Gas Sales Agreement for Balancing Gas Buys and 2) Gas Sales Agreement for Balancing Gas Sells	H-gas

1) STSPs locational are alternative to the STSPs title. They are used by TSO if changes to the gas flows are necessary at given Entry/Exit Points of the network.

Ranking of products in the balancing merit order per country/balancing zone by 1 October 2017						
COUNTRY/ BAL. ZONE	TRADING PLATFORM/ BALANCING PLATFORM, PUBLIC TENDER, OTHER PROCEDURE (ART. 8.4)	NAME OF THE TRADING PLATFORM/ BALANCING PLATFORM	RANKING IN THE BALANCING MERIT ORDER	CLASSIFICATION OF THE BALANCING PRODUCT	NAME OF THE BALANCING PRODUCT (PLEASE INSERT NAME)	GAS QUALITY (PLEASE CHOOSE OPTION IN THE LIST)
LT	Trading platform (Art. 10)	Get Baltic	1	WD title		global
	Trading platform (Art. 10)	Get Baltic	2	DA title		global
	Public Tender (Art. 8.3)		3	Balancing Services (Art. 8.3)	Gas sell-purchase agreement	global
LV	Public Tender (Art. 8.3)		1	WD locational	Technical balancing services procurement	H-gas
	Other Procedure (Art. 8.4)		2	WD locational	Auction of UGS storage for system stability purposes	H-gas
NL-GTS	Trading platform (Art. 10)	ICE Endex Within-Day Market	1	WD title		global
	Trading platform (Art. 10)	ICE Endex Within-Day Market	2	WD temporal	TTF Next Hour	global
PL H-GAS	Trading platform (Art. 10)	Towarowa Gielda Energii S.A.	1	WD title	RDBG	H-gas
	Trading platform (Art. 10)	Towarowa Gielda Energii S.A.	2	DA title	GAS_BASE	H-gas
	Balancing Platform (Art. 47)	Balancing Services Market	3	IM product (Art.45)	delivery of gaseous fuel at the entry point (PWE)	H-gas
	Balancing Platform (Art. 47)	Balancing Services Market	4	IM product (Art.45)	off-take of gaseous fuel at an exit point (PWY)	H-gas
	Balancing Platform (Art. 47)	Balancing Services Market	5	IM product (Art.45)	reduction of Gaseous Fuel supply at an entry point (PWE)	H-gas
	Trading platform (Art. 10)	PEGAS	6	WD title	GASPOOL WD	H-gas
	Trading platform (Art. 10)	PEGAS	7	DA title	GASPOOL DA	H-gas
	Public Tender (Art. 8.3)	N/A	8	Balancing Services (Art. 8.3)	Balancing service	H-gas
PL L-GAS	Balancing Platform (Art. 47)	Balancing Services Market	1	IM product (Art. 45)	delivery of gaseous fuel at a virtual exit point WPWYOSP)	L-gas
	Balancing Platform (Art. 47)	Balancing Services Market	2	IM product (Art. 45)	off-take of gaseous fuel at a virtual entry point WPWYOSP)	L-gas
	Balancing Platform (Art. 47)	Balancing Services Market	3	IM product (Art. 45)	delivery of gaseous fuel at the entry point (PWE)	L-gas
	Balancing Platform (Art. 47)	Balancing Services Market	4	IM product (Art. 45)	off-take of gaseous fuel at an exit point (PWY)	L-gas
	Balancing Platform (Art. 47)	Balancing Services Market	5	IM product (Art. 45)	reduction of Gaseous Fuel supply at an entry point (PWE)	L-gas
	Public Tender (Art. 8.3)	n/a	6	Balancing Services (Art. 8.3)	Balancing service	L-gas

## Ranking of products in the balancing merit order per country/balancing zone by 1 October 2017

COUNTRY/ BAL. ZONE	TRADING PLATFORM/ BALANCING PLATFORM, PUBLIC TENDER, OTHER PROCEDURE (ART. 8.4)	NAME OF THE TRADING PLATFORM/ BALANCING PLATFORM	RANKING IN THE BALANCING MERIT ORDER	CLASSIFICATION OF THE BALANCING PRODUCT	NAME OF THE BALANCING PRODUCT (PLEASE INSERT NAME.)	GAS QUALITY (PLEASE CHOOSE OPTION IN THE LIST)
PL TGPS-GAS	Trading platform (Art. 10)	Towarowa Gielda Energii S.A. (TGE)	1	DA title	SGT_BASE	H-gas
	Trading platform (Art. 10)	PEGAS	2	WD title	GASPOOL WD	H-gas
	Trading platform (Art. 10)	Towarowa Gielda Energii S.A. (TGE)	3	WD title	RDBG	H-gas
	Trading platform (Art. 10)	PEGAS	4	DA title	GASPOOL DA	H-gas
	Trading platform (Art. 10)	Towarowa Gielda Energii S.A. (TGE)	5	DA title	GAS_BASE	H-gas
	Balancing Platform (Art. 47)	Balancing Services Market	6	IM product (Art. 45)	delivery of gaseous fuel at a virtual exit point (WPWYOSP)	H-gas
	Balancing Platform (Art. 47)	Balancing Services Market	7	IM product (Art. 45)	off-take of gaseous fuel at a virtual entry point (WPWEOSP)	H-gas
	Balancing Platform (Art. 47)	Balancing Services Market	8	IM product (Art. 45)	delivery of gaseous fuel at the entry point (PWE)	H-gas
	Balancing Platform (Art. 47)	Balancing Services Market	9	IM product (Art. 45)	off-take of gaseous fuel at an exit point (PWY)	H-gas
	Balancing Platform (Art. 47)	Balancing Services Market	10	IM product (Art. 45)	reduction of Gaseous Fuel supply at an entry point (PWE)	H-gas
RO	Public Tender (Art. 8.3)	STEGN (Gas Ex- change provided by "Romanian Com- modities Exchange")	1	Balancing Services (Art. 8.3)	Natural Gas, traded on daily basis, for balancing purpose	H-gas
	Other Procedure (Art. 8.4)	N/A	2	Balancing Services (Art. 8.4)	Underground Storage Services	H-gas
SI	Trading platform (Art. 10)	VTP-SI	1	WD title	WDTP	H-gas
	Trading platform (Art. 10)	VTP-SI	2	DA title	DATP	H-gas
	Public Tender (Art. 8.3)	N/A	3	Balancing Services (Art. 8.3)	BALS	H-gas
SK	Balancing Platform (Art. 47)	Balancing Platform	1	IM product (Art. 45)	EUS sell/buy	Global
	Public Tender (Art. 8.3)		2	Balancing Services (Art. 8.3)		Global
	Trading platform (Art. 10)	PEGAS CEGH Gas Exchange	3	DA title	CEGH DA	Global
NBP	Trading platform (Art. 10)	WEBICE	N/A	WD – DA title	OCM TITLE DAY	
	Trading platform (Art. 10)	WEBICE	N/A	WD – DA physical	OCM PHYSICAL DAY	
	Trading platform (Art. 10)	WEBICE	N/A	WD – DA locational	OCM LOCATIONAL DAY	
	Trading platform (Art. 10)	WEBICE	N/A	Multi day locational	OCM LOC 2 – 7 DAY	
	Trading platform (Art. 10)	WEBICE	N/A	Multi day DSR locational	OCM DSR LOC 2 – 7 DAY	
UK-NI	Public Tender (Art. 8.3)	N/A	1	Balancing Services (Art. 8.3)	NI Balancing Gas Contracts (Buy/Sell)	H-gas



## Annex IV: Incentive mechanism for TSO to optimise their balancing actions

Incentive mechanism for TSO to optimise their balancing actions	
COUNTRY	SHORT EXPLANATION OF HOW THE MECHANISM WORKS AND INCENTIVISES THE TSO TO OPTIMISE THEIR BALANCING ACTIONS.
AT	Physical balancing of TSOs has to be done primarily by the usage of Linepack. If necessary, the Market Area Manager procures volumes at the VTP to the best achievable market price according to his GTC.
ES	According to the NRA's Circular implementing the Balancing Network Code, the incentives scheme is based on the performance of Enagás in its role of Technical Manager of the System. It takes into account the market options available to the transmission system operator for the selection and use of balancing actions and it is subject to periodical review by the National Authority for Markets and Competition.
IT	The incentive mechanism introduces measures aimed at the improvement of the information to the market and the efficiency of the TSO balancing actions. In particular, performance indicators have been defined by the Italian NRA according to the following three mechanisms: <ol style="list-style-type: none"> <li>1) Network offtakes forecast (D-1 forecast vs. actual)</li> <li>2) Efficient TSO balancing actions (difference for the gas Day D, between TSO prices (max. buy/min. sell) vs. WAP)</li> <li>3) Residual balancing (use of Linepack and, if necessary, operation storage within a predefined range)</li> </ol>
UK-GB	To ensure the GB TSO does not incur excessive costs for the industry, the NRA already incentivises the GB TSO to balance and trade efficiently through 'Residual Balancing' Incentives. The TSO is incentivised in two ways: (1) To minimise the price spread of its balancing actions (to restrict the impact of such actions on the market price); and (2) To minimise the change in the Linepack volumes between the start and end of the day. By seeking resolve any system imbalances on the relevant day the costs of such are targeted to those responsible for the imbalance.



## Annex V: Overview of IPs with coexistence of hourly and daily regimes and other points where (re-) nomination rules apply

Overview of IPs with coexistence of hourly and daily regimes and other points where (re-) nomination rules apply		
COUNTRY	INDICATION OF IPS WHERE HOURLY AND DAILY NOMINATION REGIMES CO-EXIST AT THE TWO SIDES OF ONE (OR MORE) IP(S) OF YOUR BALANCING ZONE (ART. 16)?	DID THE NRA DETERMINE THAT THE NOMINATION AND RE-NOMINATION PROCEDURE IS REQUIRED AT POINTS OTHER THAN IPS ACCORDING TO ART. 18 AND DO THE PRINCIPLES APPLY ACCORDING TO ART. 18.2? (PLEASE INDICATE THESE OTHER POINTS E. G. STORAGE POINTS, LNG POINTS, END CONSUMER POINTS.)
AT	IP Arnoldstein (AT)	—
BE/LU <sup>1)</sup>	Alveringem (BE/FR), Blaregnies (BE)/Blaregnies Troll (FR) (Blaregnies Segeo)	—
BG	—	Domestic end-points
CZ	Waidhaus (CZ/DE), Brandov Opal (CZ/DE), Brandov Stegal Hora sv. Kateřiny – Olbernhau (CZ/DE), Hora sv. Kateřiny (CZ/DE), Český Těšín (CZ/PL)	Virtual storage points, directly connected customers
DE	Obergailbach (FR)/Medelsheim (DE)	Storages
EE	EE_LV border	—
EL	—	The same rules apply in all entry and exit points of the Greek NGTS apart from the LNG entry point (Agia Triada).
ES	—	The provisions relating to nomination processes apply to: 1. All entry points to transmission network: LNG, storage, VIP for European interconnections and IP with third countries 2. The following exits of the transmission network: connection to LNG, storage, VIP for European interconnections and IP with third countries 3. Other exit points Enagás, in its role of Technical System Manager considers necessary
FR	GRTgaz – Taisnières FR/BE), Obergailbach (FR/DE), Jura (FR/CH), Oltingue (FR/CH) TIGF – No	—
HR	Rogatec (HR/SI), Dravaszerdahely (HR/HU)	All entry and exit points
HU	—	—
IE	—	Storage Points and Domestic Entry and Exit Points

1) In Belgium and Luxembourg, the stakeholders have been consulted regarding harmonisation: Stakeholders are aware of the situation and did not raise any problem. Contracts were not adapted.

## Overview of IPs with coexistence of hourly and daily regimes and other points where (re-) nomination rules apply

COUNTRY	INDICATION OF IPs WHERE HOURLY AND DAILY NOMINATION REGIMES CO-EXIST AT THE TWO SIDES OF ONE (OR MORE) IP(S) OF YOUR BALANCING ZONE (ART. 16)?	DID THE NRA DETERMINE THAT THE NOMINATION AND RE-NOMINATION PROCEDURE IS REQUIRED AT POINTS OTHER THAN IPs ACCORDING TO ART. 18 AND DO THE PRINCIPLES APPLY ACCORDING TO ART. 18.2? (PLEASE INDICATE THESE OTHER POINTS E. G. STORAGE POINTS, LNG POINTS, END CONSUMER POINTS.)
IT	Tarvisio/Arnoldstein IP between Italy and Austria	Non-EU entry/exit points (Gela, Mazara del Vallo, Passo Gries, Bizzarone, San Marino), LNG entry points, storage entry/exit points, indigenous production (natural gas and biomethane) entry points, delivery to other transmission networks, redelivery points (distribution, final customers).
LT	–	LNG point, domestic exit point.
LV	–	No exceptions for IPs
NL	BBL <sup>2)</sup> : Bacton (BBL)/Bacton (IUK) GTS – No	GTS – All network points except the ones to DSO-networks.
PL	PL H-gas: Cieszyn (PL)/Cesky Tesin (CZ)	H-gas: The nominations are required regarding storage points, LNG point, end consumers points, production facilities. a H-gas: The nominations are required regarding storage points, LNG point, end consumers points, production facilities. L-gas: The nominations are required regarding end consumers points. TGPS: n/a
PT	–	Nominations are required for all network connection points with storage facilities, LNG Terminal facilities and directly connected end consumers
RO	–	The entry points in the NTS from the production fields, from the underground storages; Exit points from the NTS towards the end consumers, towards the distribution systems and towards the underground storages.
SE	–	–
SK	IP Baumgarten (SK/AT)	–
SI	IP Gorizia (IT)/ Šempeter (SI) <sup>3)</sup>	Aggregated end consumer points
UK-GB	Bacton (IUK)/Bacton (BBL)	–

2) In the Netherlands the stakeholders have been consulted regarding harmonisation:  
[https://www.bblcompany.com/about-bbl/consultations-implementation-information/\\$1125/\\$1126](https://www.bblcompany.com/about-bbl/consultations-implementation-information/$1125/$1126).

3) In Slovenia, TSO collects all nominations on hourly bases. In the matching process, TSO aggregates hourly nominations of network users to daily values in order to meet the agreed format for data exchange with adjacent TSO. Since TSO is capable to exchange data with adjacent TSO both on hourly or daily level, the interconnection point was declared as a point where hourly and daily regime for nominations co-exist.

## Annex VI: Information provision (forecast and allocation)

Information provision (forecast and allocation)					
INFORMATION MODEL\UNIT	FREQUENCY OF FORECAST UPDATES OR OF APPORTIONMENT OF MEASURED FLOWS PER DAY				
	INTRADAY METERED INPUTS AND OFF-TAKES (Art. 34.2)	DAILY METERED OFF-TAKES (apply only for variant 1) (Art. 35.1)	NON-DAILY METERED OFF-TAKES (Art. 36.1)		
			D-1	D	
		NUMBER OF UPDATES (measured flows)/day	NUMBER OF UPDATES (apportionment of measured flows)/day	NUMBER OF FORECASTS/DAY [D-1]	NUMBER OF UPDATES/DAY [D]
AT	BASE CASE	24, hourly update for final customers above 50 MW contracted capacity	n/a	1	3
BE/LU	VARIANT 1	24	24	n/a	24
BG	VARIANT 1	24	24	n/a	24
CZ	BASE CASE	n/a	n/a	1w	2
DE	VARIANT 2	24	n/a	1	n/a
DK	BASE CASE	5	n/a	1	5
EE	No info model in place				
EL	No info model in place	2	n/a	n/a	n/a
ES	BASE CASE	2	n/a	1	2
FR – PEG NORD	BASE CASE	every hour	n/a	every hour	every hour
FR – TRS	BASE CASE	every hour	n/a	every hour	every hour
HR	No info model in place	2			
HU	VARIANT 1	2	1		
IE	BASE CASE	24	n/a	1	4
IT	BASE CASE	2	n/a	1	2
LT	BASE CASE		n/a	1	2
LV	BASE CASE	Balancing implemented as of May 2017	n/a		
NL	VARIANT 1	287	n/a	n/a	287
PL – HGAS	BASE CASE	2	n/a	1	2
PL – LGAS	BASE CASE	2	n/a	1	2
PL – TGPS	n/a	n/a	n/a	n/a	n/a
PT	VARIANT 2	3	n/a	1	n/a
RO	No info model in place	no forecast nor updates provided			
SE	BASE CASE	2	n/a		
SK	No info model in place	24			
SI	VARIANT 1	2	2	n/a	2
UK-GB	BASE CASE	n/a GB does not have any intra-day meters	n/a	4	5
UK-NI	BASE CASE	n/a	n/a	1	3

## Information provision (forecast and allocation)

INFORMATION MODEL\UNIT		TIME OF PROVIDED FORECASTS OR OF PROVIDED APPORTIONMENT OF MEASURED FLOWS PER DAY						
		INTRADAY METERED INPUTS AND OFF-TAKES (Art. 34)		DAILY METERED OFF-TAKES (apply only for variant 1) (Art. 35.2)		NON-DAILY METERED OFF-TAKES (Art. 36)		
						D-1	D	
		1 <sup>st</sup> UPDATE ON D (measured flows, Art. 34.3) [hour – hh:mm; winter time]	2 <sup>nd</sup> UPDATE ON D (measured flows, Art. 34.4) [hour – hh:mm; winter time]	1 <sup>st</sup> UPDATE ON D (apportionment of measured flows) [hour – hh:mm; winter time]	2 <sup>nd</sup> UPDATE ON D (apportionment of measured flows) [hour – hh:mm; winter time]	FORECAST (Art. 36.1.A) [hour – hh:mm; winter time]	1 <sup>st</sup> UPDATE ON D (forecast (Art. 36.2)/apportionment of measured flows (Art. 36.4)) [hour – hh:mm; winter time]	2 <sup>nd</sup> UPDATE ON D (forecast (Art. 36.3)/apportionment of measured flows (Art. 36.4)) [hour – hh:mm; winter time]
AT	BASE CASE	7:25 (for final customers above 50 MW contracted capacity)	8:25 (for final customers above 50 MW contracted capacity)	n/a	n/a	12:00	12:00	17:00
BE/LU	VARIANT 1	7:00	8:00	7:00	8:00	n/a	7:00	8:00
BG	VARIANT 1	hourly	hourly	hourly	hourly	n/a	hourly	hourly
CZ	BASE CASE	n/a	n/a	n/a	n/a	13:00	13:00	23:00
DE	VARIANT 2	immediately after the first hour of the gas-day	immediately after the second hour of the gas-day	n/a	n/a	12:00	n/a	n/a
DK	BASE CASE	13:30	16:30	n/a	n/a	13:00	13:30	16:30
EE	No info model in place							
EL	No info model in place	14.00 CET (winter and summer time)	19.00 CET (winter and summer time)	n/a	n/a	n/a	n/a	n/a
ES	BASE CASE	14:00 CET	21:00 CET			13:00 CET	14:00 CET	21:00 CET
FR – PEG NORD	BASE CASE	every hour		n/a	n/a	14:00:00	every hour	
FR – TRS	BASE CASE	every hour		n/a	n/a	14:00:00	every hour	
HR	No info model in place	6:00 – 10:00	6:00 – 18:00					
HU	VARIANT 1	14:00	18:00	D + 1 14:00				
IE	BASE CASE	6:00	7:00	n/a	n/a	8:30	8:30	15:30 / 20:30 / 23:30
IT	BASE CASE	14:00 CET	18:00 CET	n/a	n/a	13:00 CET	14:00 CET	18:00 CET
LT	BASE CASE			n/a	n/a	10:00 UTC	11:00 UTC	13:00 UTC
LV	BASE CASE	–	–	n/a	n/a			
NL	VARIANT 1	6:05	6:10	n/a	n/a	n/a	6:05	6:10
PL – HGAS	BASE CASE	13:00	17:00	n/a	n/a	12:00	13:00	19:00
PL – LGAS	BASE CASE	13:00	17:00	n/a	n/a	12:00	13:00	19:00
PL – TGPS	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
PT	VARIANT 2	13:00	20:00	n/a	n/a	12:00	n/a	n/a
RO	No info model in place	no within-day measured flows provided				no forecast nor updates provided		
SE	BASE CASE	12:00	15:00	n/a	n/a			
SK	No info model in place	6:20	7:20					
SI	VARIANT 1	14:00	20:00	14:00	20:00	n/a	14:00	20:00
UK-GB	BASE CASE	n/a	n/a	n/a	n/a	UK time: 12:00, 14:00, 18:00, 01:00	UK time: 12:00	UK time: 15:00, 18:00, 21:30, 01:00
UK-NI	BASE CASE	n/a	n/a	n/a	n/a	By 08:00 D-1	By 12:00 D	By 16:00 D



## Information provision (forecast and allocation)

INFORMATION MODEL\UNIT		PERIOD OF PROVIDED ALLOCATION (ART. 37)		
		INITIAL ALLOCATION FOR DAY D		FINAL ALLOCATION FOR DAY D (ART. 37.3)
		NO INTERIM MEASURES (Art. 37.1)	INTERIM MEASURES APPLIED (Art. 37.2)	
		NUMBER OF DAYS OR HOURS AFTER DAY D	NUMBER OF DAYS OR HOURS AFTER DAY D	NUMBER OF DAYS OR HOURS AFTER DAY D
AT	BASE CASE	aggregated provisional consumption per supplier (for final customers above 10 MW contracted capacity) provided on D + 1, 12:00, by DSO		8 (resp. 10) working days after the respective month the final allocation data for final customers are provided by the DSO's to balance group responsible parties and suppliers
BE/LU	VARIANT 1	0		0
BG	VARIANT 1	6 hours		5 days after month M
CZ	BASE CASE	7 hours		11 days after the end of month
DE	VARIANT 2	7 hours		M+ 2 M – 10 WD
DK	BASE CASE	6 hours		Next month/14 months after
EE	No info model in place			
EL	No info model in place	7 hours	n/a	10 working days
ES	BASE CASE	1 day		m (month) + 15
FR – PEG NORD	BASE CASE	D + 1	n/a	10 <sup>th</sup> working day M + 1
FR – TRS	BASE CASE	D + 1	n/a	10 <sup>th</sup> working day M + 1
HR	No info model in place	4 hours		10 days after month
HU	VARIANT 1	D+1 14:00		
IE	BASE CASE	D + 1		D+5
IT	BASE CASE	by 6 hours	n/a	28 days after the end of the month M for each day of the month M
LT	BASE CASE	6 hours		3 working days after the end of the month
LV	BASE CASE			
NL	VARIANT 1	15 minutes after ending of D (06:15)	n/a	15 minutes after ending of D (06:15)
PL – HGAS	BASE CASE	6 h	n/a	without undue delay after the end of the gas month such settlement relates to, and no later than to 26 <sup>th</sup> day of the following gas month
PL – LGAS	BASE CASE	6 h	n/a	without undue delay after the end of the gas month such settlement relates to, and no later than to 26 <sup>th</sup> day of the following gas month
PL – TGPS	n/a	n/a	n/a	no later than to 7 <sup>th</sup> day of the following gas month.
PT	VARIANT 2	24 h		4 <sup>th</sup> working day of M + 1
RO	No info model in place	D + 8 h		M + 10 D
SE	BASE CASE	6 hours		15-54 days
SK	No info model in place	1 day		10 days after the end of month
SI	VARIANT 1	4 hours	n/a	10 working days in month M + 1 for the month M
UK-GB	BASE CASE	D + 1	n/a	Entry = M + 15 Exit = D + 5
UK-NI	BASE CASE	n/a	1	5





PART II

# Second ENTSOG Report on Effect Monitoring of BAL NC



Image courtesy of Eustream





# Executive Summary

Following Article 8(8) of Regulation (EC) No 715/2009, European Network of Transmission System Operators (ENTSOG) shall monitor the effects of the Balancing Network Code (BAL NC) in the European market. The second ENTSOG report on effect monitoring covers the implementation of the BAL NC on 31 balancing zones across 25 EU countries for the gas year (GY) 2016/2017.

ENTSOG introduces 5 indicators (BAL.1 to BAL.5) in order to show certain effects of the implementation of the BAL NC.

The 25 countries (AT, BG, BE/LU, CZ, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LT, LV, NL, PL, PT, SE, SI, SK, RO, UK-GB and UK-NI) where the BAL NC applies are clustered into three groups related to their chosen implementation deadline as follow:

- ▲ **Cluster 2015:** AT, BE/LU, DE, DK, FR, HU, NL, SI and UK-GB (10 countries)
- ▲ **Cluster 2016:** CZ, ES, HR, IT and PT (5 countries)
- ▲ **Cluster 2019 + Estonia:** BG, EE, EL, IE, LT, LV, PL, SE, SK, RO and UK-NI (11 countries since UK is clustered two times: UK-GB in cluster 2015 and UK-NI in cluster 2019). Estonia holds a derogation but has responded on a voluntary base. For the presentation of the indicators, Estonia will be added to this cluster.

In 16 countries (AT, BE/LU, CZ, DE, DK, ES, FR, HR, HU, IT, LT, NL, PL, SI and UK-GB), TSOs rely mainly or exclusively on WD title products for their balancing actions.

Portugal, Estonia and 7 countries of cluster 2019 (BG, EL, IE, LV, SE, RO and UK-NI) use only balancing services whereas Slovakia use only balancing platform. This analysis has to be taken with caution for Portugal, Latvia, Romania and Slovakia, since in these balancing zones, TSOs have taken only a few balancing actions during the year (for 7 days or less).

In order to reduce its residual balancing role, a TSO should reduce the daily volume traded and/or the number of days it is taking balancing actions during the year. What will be interesting to follow is the yearly evolution for a given balancing zone since some intrinsic features of each network will make comparison among balancing zones tricky to interpret.

For this edition, we could only compare to last year the data of cluster 2015 and some countries of cluster 2019. Countries with WDOs (AT, BE/LU, NL) still have the lowest residual balancing role even if the balancing volumes have increased for BE/LU-H and NL. HU and UK-GB are in the same range. The other balancing zones of cluster 2015 except PEG Nord (DK, TRS, Gaspool, NCG and SI) shows decreases in volume and/or number of days. Germany still has the highest residual balancing role, due to their model: TSOs have to take into account gas quality conversion and the handling of Non-Daily Metered off-take volumes in addition to shipper imbalance volumes.

For the cluster 2019 when we were able to calculate an evolution, we have seen that LT, SE, IE, UK-NI and PL-H have reduced their daily traded volume and/or the number of trading/balancing days. Only the Greek figures are increasing.

Cluster 2016 countries show a similar behavior as cluster 2015 countries which do not have WDOs in place.

A correlation between daily shipper imbalances and the behavior of the TSO is visible. TSO actions are smaller in volume and in occurrence since they are able to handle some imbalances in their system before having to take a balancing action.

The report also presents a synthetic indicator: the yearly volume for balancing actions.

A new indicator BAL5 presents the real cost of being balanced by the TSO for some balancing zones. This real cost is slightly greater than the small adjustment. It is on purpose in order to incentivize the shippers to balance themselves. Indeed, it will be risky for them to take the small adjustment as a proxy of the cost of being balanced by the TSOs in their arbitrage/risk analysis.



Image courtesy of Net4Gas



# 1 Introduction

The BAL NC was published on 27 March 2014 and applies to balancing zones within the borders of the EU. It establishes rules for natural gas balancing, including network-related rules on nomination procedures, imbalance charges, settlement processes associated with daily imbalance charges and provisions on operational balancing. Its implementation shall also take into account the specific nature of interconnectors.<sup>1)</sup> For countries like Cyprus, Estonia, Finland, Luxembourg and Malta that hold derogation on the basis of Article 49 of Directive 2009/73/EC it is not mandatory to apply NC BAL. Since May 2017, Latvia does not hold a derogation anymore.

Following Article 8(8) of Regulation (EC) No 715/2009, ENTSG shall monitor the effects of the BAL NC in the European market.

Further details on countries and their balancing zones are provided in annex I of the Implementing Monitoring report.

ENTSG sent a questionnaire on 28 November 2017 to its members. The 25 countries (AT, BG, BE/LU, CZ, DE, DK, EE, EL, ES, FR, HR, HU, IE, IT, LT, LV, NL, PL, PT, SE, SI, SK, RO, UK-GB and UK-NI) which have responded are clustered into three groups related to their chosen implementation deadline as follow:

This report is analysing data sent by the TSOs for the period running from 1 October 2016 to 30 September 2017<sup>4)</sup>.

- ▲ **Cluster 2015:** AT, BE/LU, DE, DK, FR, HU, NL, SI and UK-GB (10 countries)
- ▲ **Cluster 2016:** CZ, ES, HR, IT and PT (5 countries)
- ▲ **Cluster 2019<sup>2)</sup>:** BG, EE, EL, IE, LT, LV, PL, SE, SK, RO and UK-NI<sup>3)</sup> (11 countries). Estonia holds a derogation but has responded on a voluntary base. For the presentation of the indicators, Estonia will be added to this cluster.

1) Recital (8) of BAL NC. Due to the specific nature of interconnectors, IUK and BBL implemented the BAL network code on an “in = out” principle, whereby a network user’s delivery nominations must equal its offtake nominations. As such, network users cannot be exposed to an imbalance and there is no need to take balancing actions. Therefore, many of the requirements of NC BAL do not apply. Where BAL does apply, e. g. relevant rules on nominations, IUK and BBL have taken all reasonable steps to ensure compliance with the requirements. This approach was approved by the relevant NRAs.

2) In Germany in addition to a trading platform, a balancing platform has been applied as an interim measure. All other provisions of the BAL NC have been reported as implemented. In order to avoid duplication, Germany is clustered only once in 2015 cluster.

3) UK is clustered two times: UK-GB in cluster 2015 and UK-NI in cluster 2019.

4) Except for Austria where the data concerning the Market Area Manager were only available from 1 October 2016 to 31 May 2017.

## 2 Description, Presentation of the Results and Analysis of the five Effect Monitoring Indicators

### 2.1 INDICATOR BAL.1: BALANCING MEANS USED BY TSO AS % OF TOTAL TSO BALANCING VOLUME

#### 2.1.1 Description

The BAL.1 indicator presents the percentage of use of all the balancing means a TSO can use: Short Term Standardised Products – STSP (i. e. title product, locational product, temporal product and temporal locational product) on trading platform(s), balancing platform or balancing services.

Article 9 of the BAL NC prioritises:

- ▲ The use of title products where and to the extent appropriate over any other available STSPs; and
- ▲ The use of Within-Day (WD) products over Day-Ahead (DA) products where and to the extent appropriate.

This indicator gives an accurate assessment of a well-functioning short-term balancing market.

BAL.1 INDICATOR	DEFINITION
<b>Balancing mean volume as % of total TSO balancing volume</b>	The BAL.1 indicator is calculated per gas day by dividing the quantity of gas traded by the TSO for each balancing mean (STSP, balancing platform and balancing services) through the total volume of all TSO balancing volumes. <b>Formula:</b> = Total traded volumes of Balancing mean by TSO / Total TSO balancing volume
<b>Unit</b>	in %
<b>Aim</b>	Maximisation of WD title product %

## 2.1.2 Results

Based on the data provided for Gas Year 2016/2017, the BAL.1 indicator has been calculated on a yearly basis for 29 balancing

zones in 25 countries<sup>1)</sup>. The results can be found below.

YEARLY BALANCING VOLUME AS PERCENTAGE OF TSO BALANCING ACTIONS									
Cluster	Balancing Zone	WD title	DA title	WD locational	DA locational	WD temporal	WD temporal locational	Balancing platform	Balancing Services
2015	AT	100.0							
	BELUX-H	100.0							
	BELUX-L	100.0							
	DE-GASPOOL	59.9	36.8	0.8	0.3			0.0	2.2
	DE-NCG	51.0	19.5	0.0	0.0	0.0	29.2	0.2	0.2
	DK	100.0							
	FR-PEGNord	98.1		1.9					
	FR-TRS	98.7		1.3					
	HU	99.8		0.1					
	NL	45.3				54.7			
	SI	26.8	72.4						0.8
	UK-GB	100.0							
2016	CZ	78.4	21.6						0.0
	ES	59.8	40.6						
	HR	21.3	0.0	0.0	0.0			78.6	0.0
	IT	99.4	0.6	0.0	0.0				
	PT								100.0
Interim measures	BG-N								100.0
	BG-T								100.0
	EL								100.0
	IE								100.0
	LT	10.3							89.7
	LV								100.0
	PL-H	99.9							0.1
	RO								100.0
	SE								100.0
	SK							100.0	
Degoration	UKI								100.0
	EE								100.0

\* Austria figures are only for 8 months (from 1 October 2016 to 31 May October 2017)

## 2.1.3 Analysis

The 15 countries of cluster 2015 and cluster 2016 (except Portugal), Poland High-Methane gas balancing area and Lithuania are relying mainly or almost exclusively on title products bought or sold on trading platform(s). 10 countries are even using only WD title products (at more than 98 %). Germany will remove its balancing platforms made for purchasing and selling locational products by 1 January 2018. Germany also stated that Balancing services are contracted for emergency situations and are

only used when no corresponding short-term offers are available. NCG is often using temporal locational products and NL is mainly using temporal products. This is due to the Within Day Obligations in place.

Slovenia, Czech Republic, Germany and Spain balance their system also via Day Ahead title products in addition to Within Day ones.

1) No TSO balancing actions have been taken on the PL-L and PL-T balancing zones.

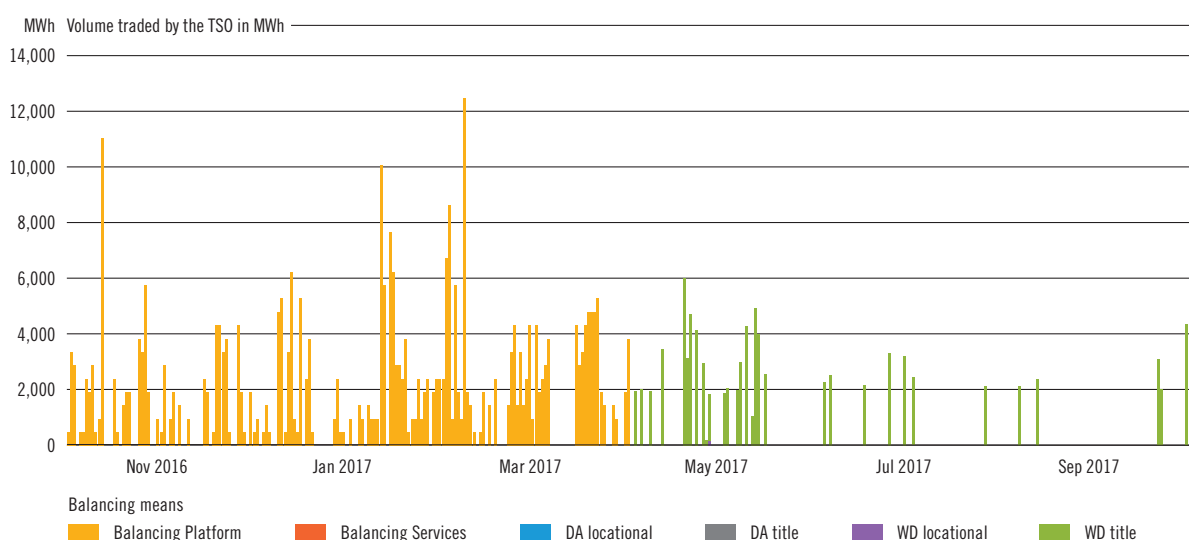
Croatia ratio could be misleading since they have moved from a balancing platform to a trading platform on the 1 April 2017. From this moment on, the TSO is only using WD title product (at 100%), see figure 1.

The same misinterpretation could be made with Lithuania which has reduced the use of balancing services in 2017 and has used only WD title product from 2 July 2017 on, see figure 2.

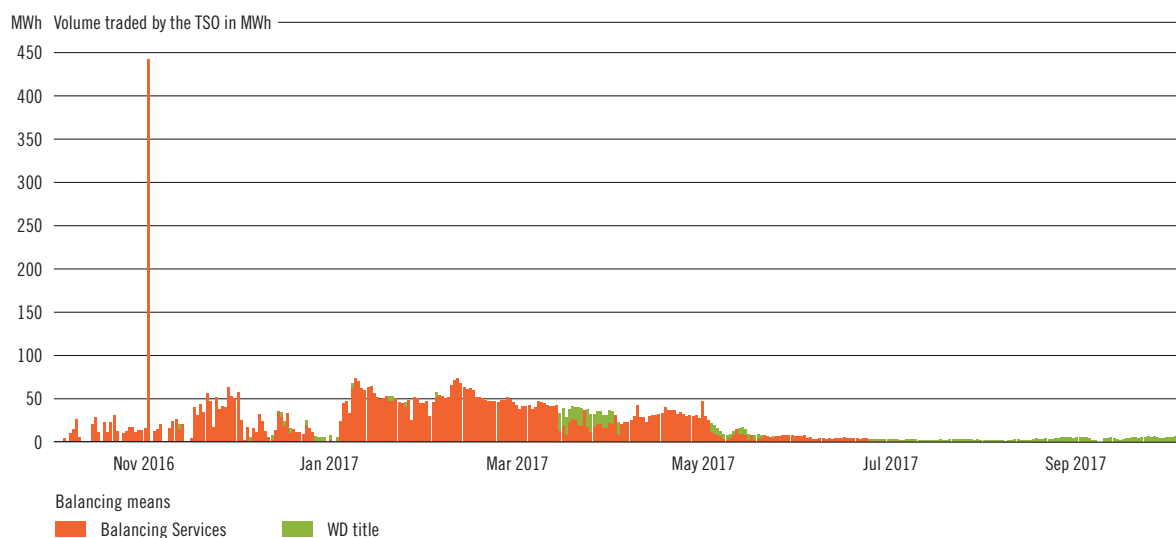
Portugal relies only on balancing services. However, only 7 balancing actions have been taken during the whole year and the implementation of the MIBGAS trading platform (is expect-

ed in 2018). MIBGAS is the trading platform in force in Spain since December 2015 and it will be expanded to Portugal in 2018.

Regarding the 9 other countries having interim measures in place or holding a derogation, Latvia, Slovakia and Romania have taken less than 5 balancing actions during the year via balancing services or balancing platform. For Bulgaria, Greece, Ireland, Sweden, Northern Ireland and Estonia, they are using only balancing services.



**Figure 1:** Daily volume of TSO balancing action in Croatia



**Figure 2:** Daily volume of TSO balancing action in Lithuania

## 2.2 INDICATOR BAL.2: TOTAL TSO BALANCING VOLUME AS % OF MARKET VOLUME

### 2.2.1 Description

The establishment of a residual balancing role for the TSO while leaving the primary balancing responsibility to the network users is one of the key principles of the BAL NC.

ENTSOG proposes an indicator BAL.2 which is calculated by dividing the daily total quantity of gas conducted by the TSO for balancing purposes through the daily total gas market entry volume.<sup>1)</sup> The entry volumes into the balancing zone (or market area)<sup>2)</sup> are used as the market volume. The entry volumes mean the quantity allocated at all entry points into a balancing zone (or market area) including e.g. virtual IPs, LNG, productions and storages and excluding entries from the VTP. As the TSO has the knowledge about its own traded gas volumes for balancing purposes as well as an overview of the gas entering and leaving the system, the data for the calculation of the indicator should be available for all TSOs.

The number of gas days when a TSO is taking balancing actions during a year shall not be seen as an indicator to compare balancing zones since it depends of intrinsic features of each balancing zone. On the contrary, the evolution from one year to the other, for a specific balancing zone, will demonstrate if the TSO residual balancing role is reducing or is increasing.

Finally, to take into account these two dimensions (daily balancing volume and number of days a TSO is taking balancing actions), a table with the yearly percentage of TSO gas traded compared to the market volume and another table with the yearly percentage of TSO gas traded compared to the domestic consumption are presented. The difference between these two tables is the removal of the cross-border flow and the injection in the underground storages which is assumed to be balanced (per se). If we would like, however, to compare balancing zones together, it could be better to take away the transit flow and the injection in the underground storages.

INDICATOR BAL.2	DEFINITION
<b>BAL.2: Total TSO balancing volume as % of market volume</b>	<p><b>The BAL.2</b> indicator is calculated (per gas day) by dividing the total quantity of gas traded by the TSO divided by the market volume within a balancing zone.</p> <p>The indicator is provided for each gas day in GY 2016/2017 when TSO balancing actions occur. If no balancing actions have been undertaken by the TSO for a gas day, the BAL.2 indicator is not calculated.</p> <p><b>Formula:</b> Indicator BAL.2 = Total quantity of gas traded by the TSO(s) for balancing purposes within a balancing zone/market volume.</p>
<b>Unit</b>	TSO balancing volume as % of market volume
<b>Aim</b>	Decrease of % rate, minimised value.

1) An indicator which is calculated by dividing the total quantity of gas traded by the TSO for balancing purposes through the total volume of all balancing trades in the market cannot be calculated without the knowledge of the trading purposes of the shippers. As neither ENTSOG nor the TSOs have this information, it is proposed to use the market entry volumes instead.

2) In France.



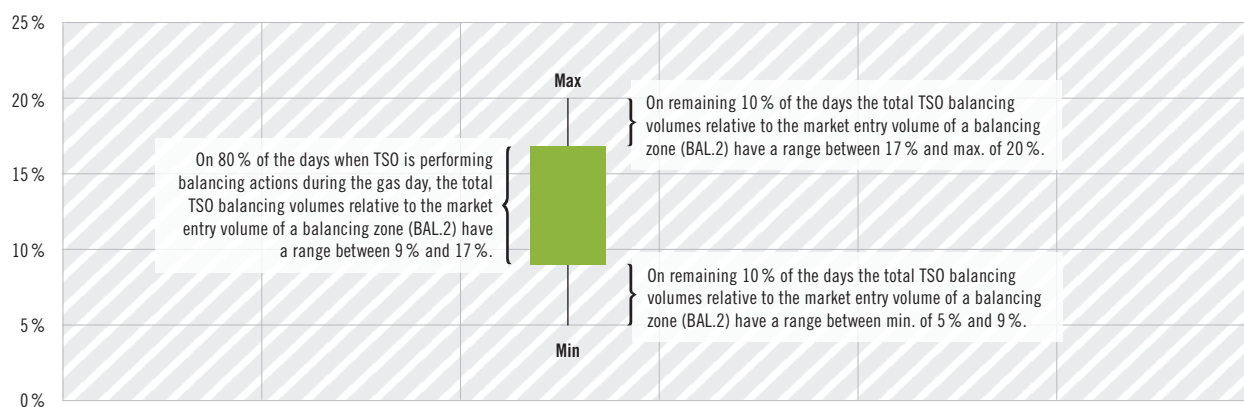
### 2.2.2 Presentation of the results

In Map 1 an example of BAL.2 in a graph with explanations is provided below.

The countries are clustered in the following maps regarding the applied implementation deadlines into cluster 2015 (Map 2), cluster 2016 (Map 3) and cluster 2019 + Estonia (Map 4). Annex I present the size of each balancing zones (total market entry volume and domestic end-consumption) for information. The total number of gas days when a TSO is taking

balancing actions is indicated per balancing zone/country in Annex II. The table in Annex III presents the yearly volume trade per TSO, the market entry volume and the percentage of TSO gas traded compared to the market volume.

The table in Annex IV presents the yearly volume trade per TSO, the domestic consumption and the percentage of TSO gas traded compared to the domestic consumption.



**Map 1:** Example of BAL.2 indicator on days with TSO balancing actions in GY 2016/2017

### 2.2.3 Results and analysis

Map 2 presents the fluctuation of the daily total balancing volumes conducted by the TSO relatively to the daily market volume in a balancing zone for the 10 countries of cluster 2015. The maximum range of the relative total balancing volumes is limited with the minimum and maximum of the performed TSO volume. The green box indicates the range in which the TSO is performing 80 % of its balancing actions relatively to the market entry volumes of a balancing zone.

The fluctuation of BAL.2 is very low in the balancing zones of 4 countries (AT<sup>1)</sup>, BE/LU and NL) which indicates relatively low balancing volumes performed by the TSOs due to the implementation of Within-Day-Obligations (WDOs). End of day actions occur in the two balancing zones (BE/LU) on a daily basis.

Three balancing zones (Gaspool, HU and UK-GB) show also a limited range of TSO balancing actions relative to the market volume. However, the number of days in the year the TSO or the Market Area Manager is taking balancing actions has also to be taken into account. Gaspool is taking balancing actions 231 days/year, UK-GB 109 days and Hungary 86 days. The number of actions during a year shall not be seen as an indicator since it depends of intrinsic features of the balancing zone. On the contrary, the evolution from one year to the other may be an indicator to follow. Hungary has reduced by one third the number of days it took balancing actions compared to previous year and have also dramatically reduced the volume of their actions.

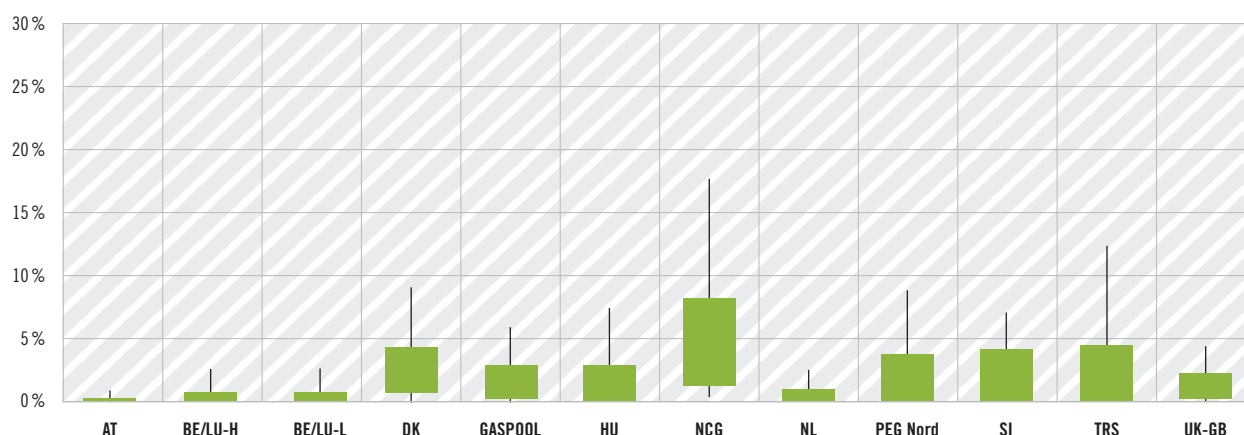
Four balancing zones (DK, PEG Nord, SI and TRS) have higher balancing actions ranges. However, they are reduced compared to last year. Regarding the number of days Denmark and Slovenia have reduced by one third the number of days they are taking balancing actions (90 days for DK and 200 days for SI in GY 2016/2017). The number of days in France TSOs are taking balancing actions is stable.

Regarding NCG, the indicator shows the highest values compared to the other balancing zones. Large amounts of balancing volumes are needed to cover the structuring demand in the L-gas grid of the market area. Since technical conversion is limited, NCG and GASPOOL are required to balance this using commercial conversion via the corresponding purchase and sale of balancing gas in the respective gas qualities. Furthermore, Germany has implemented Variant 2 model for its non-daily offtake points which is the other main reason for additional balancing actions. In the Variant 2 model the forecast in D-1 is binding for the shippers in D to balance their portfolio. Any resulting differences within day have to be balanced by the Market Area Managers. In addition, NCG is taking daily balancing actions.

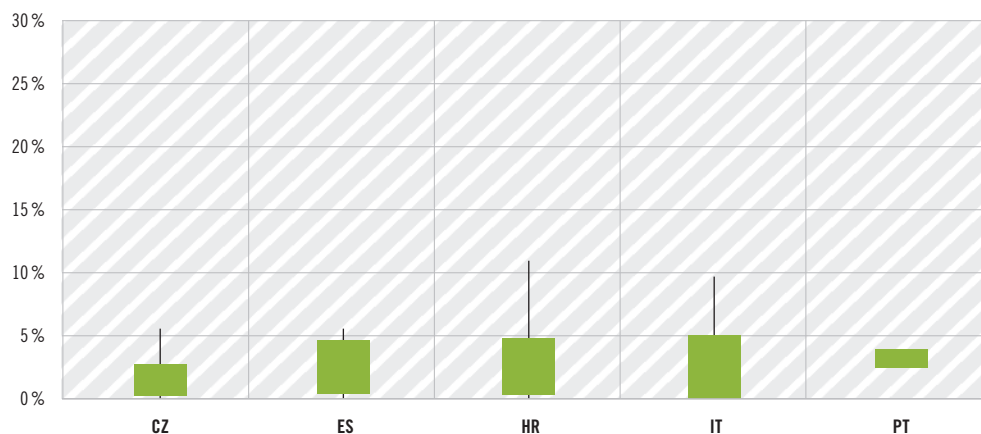
The yearly BAL.2. indicator in annex III shows a slightly different ranking. HU and UK-GB are performing as good as AT, BE/LU and NL. Then, DK and PEG Nord, TRS, Gaspool and SI. NCG balancing actions still has, by far, the highest share of the market volume.

The yearly ratio is reduced compared to previous year for 6 balancing zones (from -4 % to -64 %).

1) A yearly comparison for Austria has to be done with the restriction that the data for the actual report only cover 8 months, namely the period from 1 October 2016 to 31 May 2017.



Map 2: 2015 clustered countries – Daily BAL.2 indicator (in %) on days with TSO balancing actions



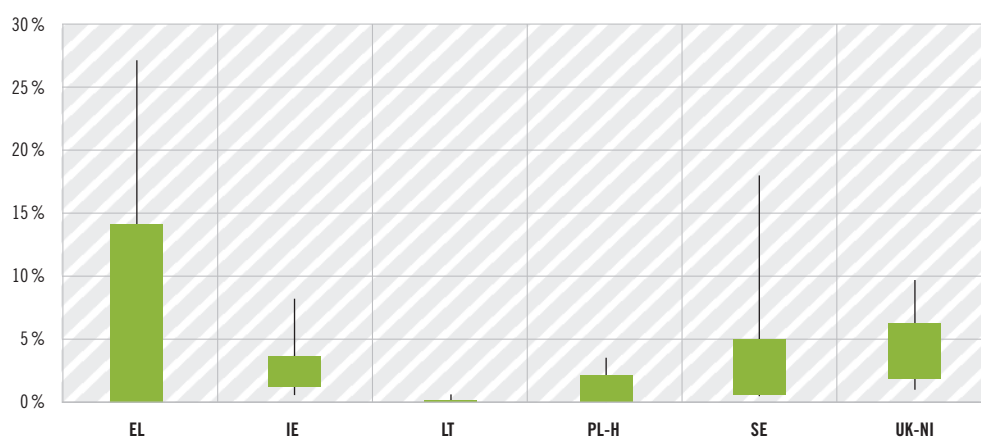
**Map 3:** 2016 clustered countries – Daily BAL.2 indicator (in %) on days with TSO balancing actions

Map 3 illustrates the BAL.2 indicator for 2016 cluster. The 5 countries (CZ, ES, HR, IT, PT) have a similar range of balancing actions than some countries of 2015: DK, FR and SI. Since cluster 2016 did not had to apply the BAL NC in the first edition of this report, we cannot compare the number of days they have taken actions from GY 2015/2016 to GY 2016/2017.

Italy took balancing actions on 270 days, Croatia 159 days, Spain 80 days, Czech Republic 48 days and Portugal only for 7 days. The yearly BAL.2. indicator in annex III shows a ranking correlated to the number of days when balancing actions are taken.

Map 4 shows countries which applied interim measures (cluster 2019 and Estonia who holds a derogation). Bulgarian and Estonian figures present a range of balancing actions very large. Romania, Latvia, Slovakia took less than 5 balancing actions during the year. In addition, there are no balancing actions on PL-L and PL-T balancing zones. So, the results of BAL2 for these balancing zones will not be presented and analysed.

However, Slovakia stated that the TSO takes care of the cross-border volume and the DSO takes balancing actions for Slovakia. On most Inter-connection points to their transmission network they have OBA (Operator Balancing Account) regimes, meaning that nominated quantity is equal to allocated quantity. Most of their imbalances arise from one IP, where there is no OBA regime, but these imbalances are very small, and they have a threshold of  $\pm 2,000$  MWh to start balancing action. There is mostly no need to balance these small imbalances as they are negative and positive in time. Most of the imbalances are from different nominated inputs/ outputs for individual shippers, but this happens only a few times per year. Lithuania has still, compared to last year, the smallest volume but balancing actions are taken almost daily. Poland High-methane gas balancing area has small volume and almost daily balancing actions.



**Map 4:** 2019 clustered countries + Estonia – Daily BAL.2 indicator (in %) on days with TSO balancing actions

Ireland, Northern Ireland and Sweden have larger balancing actions. Ireland traded volume are decreasing (–40% compared to GY 2015/2016) but the number of days is increasing from 70 to 104 days/year. Northern Ireland is slightly moving in the right direction since the volume and the number of days have been reduced. Sweden is stable except for the extreme maximal volume which dramatically raise (+80 %).

Greece has the largest range of balancing actions. However, the maximal volumes traded have been reduced by two thirds. The number

of days when balancing actions have been taken has increased from 32 %. The yearly BAL.2. indicator in annex III shows a slightly different ranking because PL-H has almost daily balancing actions: LT, then SE, IE, UK-NI and PL-H, finally Greece.

If you compare all the TSO balancing volume to the domestic consumption, the ranking does not really change (see Annex IV). UK-GB and HU are exchanging their rank. Italy is better ranked than Gaspool and SI. PL-H is before TRS.

## 2.3. INDICATOR BAL.3: NET TSO BALANCING VOLUME AS % OF MARKET VOLUME VS. INDICATOR BAL.4: NET SHIPPER IMBALANCE VOLUME AS % OF MARKET VOLUME

### 2.3.1 Description

#### 2.3.1.1 BAL.3

ENTSOG proposes a second indicator related to the residual balancing role of the TSO. This indicator BAL.3 is calculated by dividing the net quantity of gas traded by the TSO for balancing purposes through the market volume per gas day. It gives an indication if relatively more gas is bought or sold by the TSO due to balancing purposes at the end of the gas day. The entry volumes into the balancing zone (or market area) is used as the market volume. The entry volumes mean the quantity allocated at all entry points into a balancing zone (or market area)<sup>1)</sup> including e.g. virtual IPs, LNG, productions and storages and excluding entries from the VTP.

The prevailing direction, if any, of the TSO's balancing actions (i.e. buying or selling more than 65 % of the time) will also be analysed.

#### 2.3.1.2 BAL.4

ENTSOG proposes an indicator which is calculated by dividing the total daily net imbalance volume of shippers<sup>2)</sup> through the market volume. This indicator aims at assessing whether the overall system is in balance on a day-on-day principle and whether the network users contribute sufficiently to keeping the overall system in balance. The BAL.4 indicator is used in combination with BAL.3 in order to compare relatively the net imbalance volume of shippers and the counteracting net balancing volume of the TSO.

The prevailing direction, if any, of the market imbalance (short or long market more than 65 % of the time) will also be analysed.

1) In France.

2) As per Article 21 BAL NC the imbalance quantities shall be calculated by the TSO as a daily imbalance quantity for each NU's portfolio for each gas day.

INDICATOR BAL.3	DEFINITION
<b>BAL.3: Net TSO balancing volume as % of market volume</b>	<p>The <b>BAL.3</b> indicator is calculated by dividing the net quantity (SELL-BUY) of gas traded/conducted by the TSO divided by the market volume per gas day.</p> <p>If no balancing actions have been undertaken by the TSO for the gas day, the BAL.3 indicator is zero*.</p> <p><b>Formula:</b>  <b>Indicator BAL.3</b> = Net quantity of gas traded by the TSO(s) for balancing purposes within a balancing zone/market volume</p>
<b>Unit</b>	TSO balancing volume as % of market volume
<b>Aim</b>	Decrease of % rate, minimised value.

\* Last year BAL 3 was not calculated when the TSO was not taking a balancing action during the day. The rationale of the change is to be able to better compare BAL 3 and BAL 4.

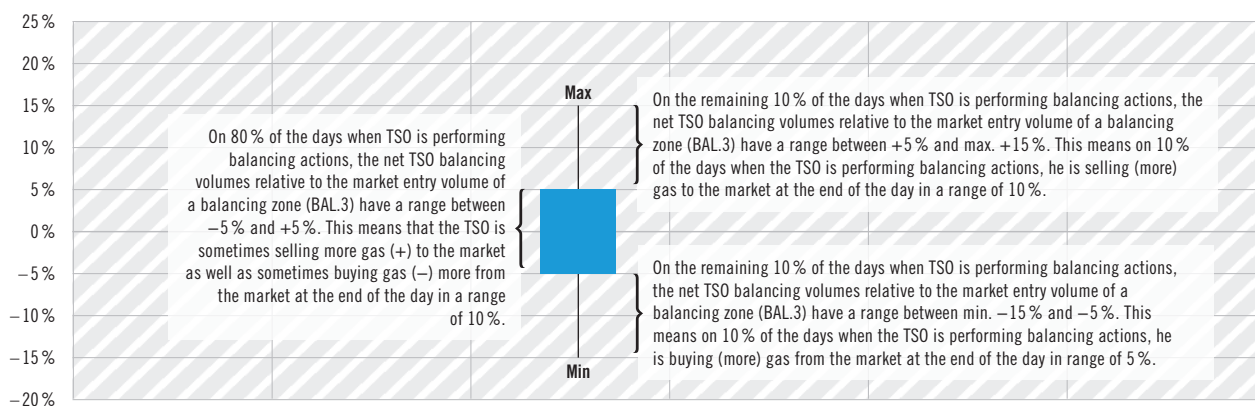
INDICATOR BAL.4	DEFINITION
<b>BAL.4: Net imbalance volume of shippers as % of market volume</b>	<p>The <b>BAL.4</b> indicator is calculated on a daily basis by dividing the total net imbalance volumes of shippers (long and short) at the end of gas day by the market volume at the end of gas day.</p> <p><b>Formula:</b>  Indicator BAL.4 = <math>\Sigma</math>Net imbalance volumes of shippers/market volume</p>
<b>Unit</b>	Shippers' imbalance volume as % of market volume
<b>Aim</b>	net imbalance volume of shippers equals net TSO balancing volumes, converge to zero

### 2.3.2 Presentation of the results

The daily BAL.3 indicator is compared to the daily BAL.4 indicator. Both indicators should be minimised and should have a limited range. Where differences of the two indicators per balancing zone/ country occur, further explanation might be needed to understand better how the system is overall balanced by the TSO on a daily basis.

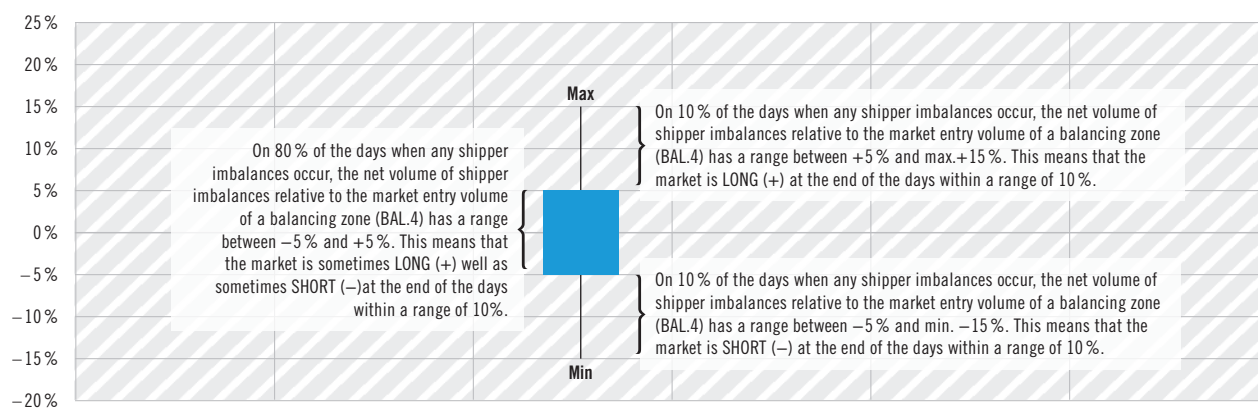
An example of BAL.3 in a balancing zone with general explanations related to the graph can be found in Map 5 below. It shows the range and the fluctuation of the net TSO balancing volumes conducted by the TSO at the end of the day relatively to the daily market volume in a balancing zone or a trading region (e.g. TRS). The maximum range of the relative net TSO balancing volumes is limited with the minimum and maximum of the performed TSO volume at the end of the day. The blue box indicates the range in which the TSO is performing 80 % of its balancing volumes relatively to the market (entry) volumes of a balancing zone.

An example of the indicator BAL.4 in a balancing zone with general explanations related to the graph can be found in Map 6 on the next page. It shows the range and the fluctuation of the net shipper imbalance volumes on a daily basis taken into account those days when shipper imbalances occur during GY 2016/2017. The maximum range of the relative net shipper imbalance volumes is limited with its minimum and maximum volumes during the aforementioned period. The orange box indicates the range of the net volume of shipper imbalances relative to the market (entry) volume of a balancing zone (BAL.4) on 80 % of the days when any shipper imbalances occur.



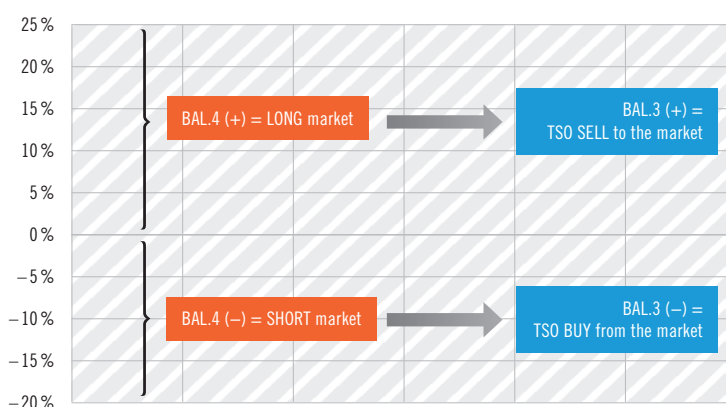
**Map 5:** Example with explanation of the daily BAL.3 indicator in % on days with TSO balancing actions in GY 2016/2017





**Map 6:** Example with explanation of the daily BAL.4 indicator in % on days with shipper imbalance volumes in GY 2016/2017

The relationship between BAL.4 and BAL.3 is illustrated in Map 7 below. If BAL.4 is positive, it means that the market is LONG (+), so there is too much gas at the end of the day in the market. In this case the TSO needs to provide the gas by e.g. selling gas to the rest of the market in order to keep the system balanced (positive BAL.3). If BAL.4 is negative, it means that the market is SHORT (-), so there is not enough gas at the end of the days in the market. In this case the TSO needs e.g. to buy gas from the rest of the market in order to keep the system balanced (negative BAL.3).



**Map 7:** Relationship between daily BAL.4 vs. BAL.3 indicator



### 2.3.3 Results and analysis

The countries are clustered in the following maps regarding the applied implementation deadlines into cluster 2015 (Map 8 and 9), cluster 2016 (Map 10) and cluster 2019 + Estonia (Map 11).

In Map 8 below illustrates that the countries applying WDOs (AT<sup>1)</sup>, BE/LU and NL) have very limited market imbalances at the end of the gas day.

The calculation BAL.3 and BAL.4 concerning Austria needs additional explanation as follows: basically, these results give an indication if relatively more gas is sold or bought for a balance zone. As the TSO (in the Market Area East concerning Austria it is the Market Area Manager or “MAM”) considers each portfolio of all balance group responsible (or “BGR”). The MAM is allowed to buy/sell volumes in the name and for the account of each BGR if the preconditions are fulfilled. These are fulfilled if the amount of a balance group imbalance is higher than 24 MWh, independently if the BGR is long or short. The MAM does not balance long volumes against short volumes within balance groups, so all MAM balancing actions are triggered by balance group responsible’ imbalances. So, if the basis for the calculation of the indicators is a netting of long and short volumes, the results for Austria are not representative as this netting does not make sense due to the fact that the trigger for the balancing actions are different.

In the two German market areas the daily net Shipper imbalances (BAL.4) are very limited relatively to the market entry volumes whereas the TSO balancing actions (BAL.3) are impor-

tant. The reason is the mechanism of Variant 2. Shippers do not have any portfolio imbalances for their NDM-customers, but GASPOOL and NCG may have to procure balancing energy when DSOs’ forecasts do not fit to the real demand. Shippers net imbalances result only from deviations in their forecast for the IDM-customers. In the NCG market area the limited Linepack in the L-gas grid requires hourly structuring and therefore TSO balancing actions occur every day.

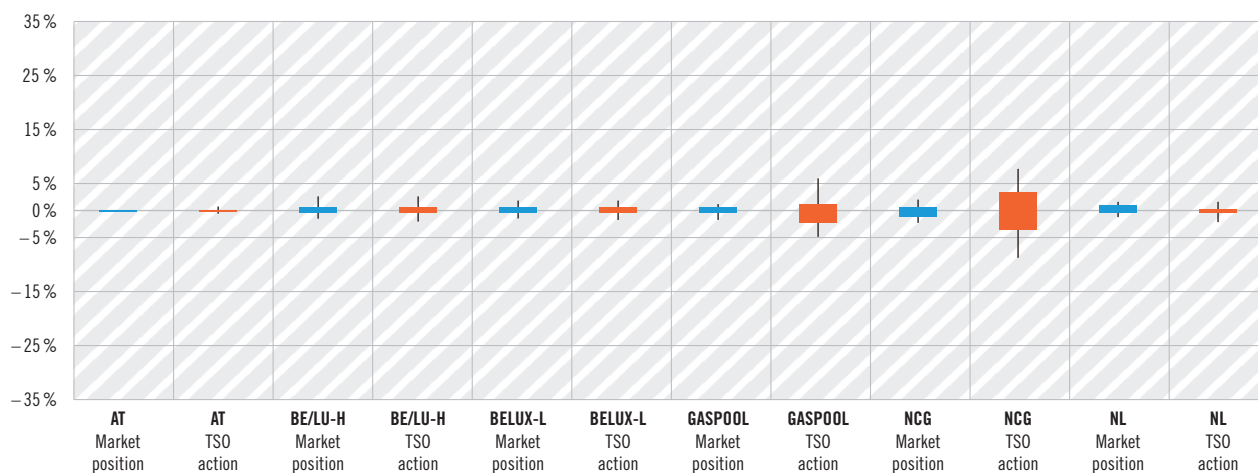
In the 5 other countries of cluster 2015 (DK, FR, HU, SI and UK-GB) on Map 9, the net TSO balancing volumes follow mainly the trend of the net shipper imbalances. The 80 % of the case box is smaller for the TSO balancing volumes than the one for the market imbalances since TSOs are not taking daily balancing actions whereas the market is daily imbalanced. UK-GB has the smallest extreme value (between 3.5 and 4.5 %), followed by HU and PEG Nord (6 to 9 % of imbalance of the market or of the TSO’s actions). DK, TRS and SI have larger maximal or minimal values; for market position, it goes from 13 % (TRS), to 17 % (SI) and up to 28 % (DK).

When Slovenian market is short, the extreme imbalance is greater than when the market is long.

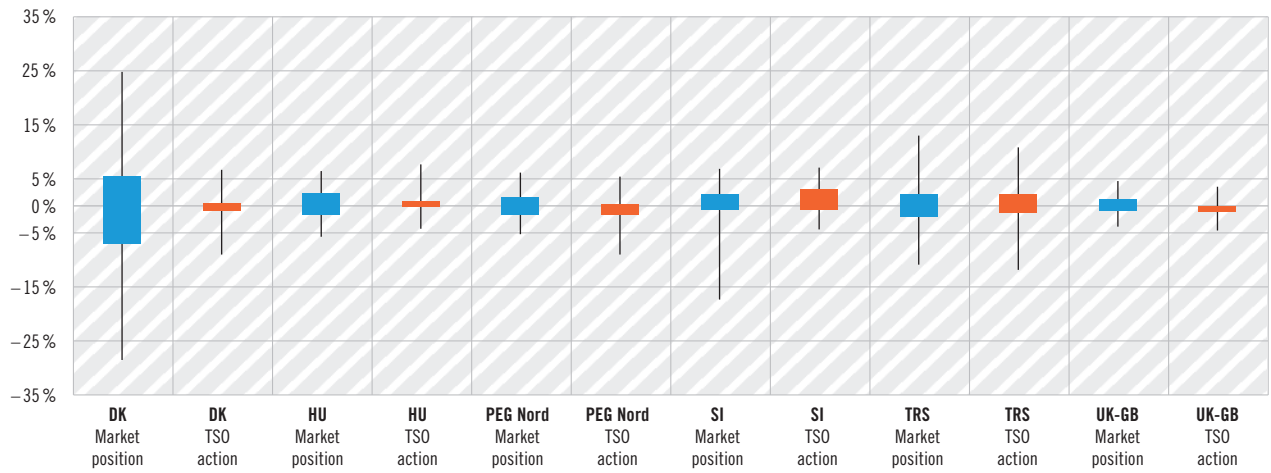
Map 10 next page presents the results of the cluster 2016 countries.

CZ and PT have the smallest imbalance volumes followed by Spain (except when the market is short, the maximal imbalance is large). Then, HR and IT have usually imbalances of the market and TSO actions smaller than 5 % of the daily market entry volume.

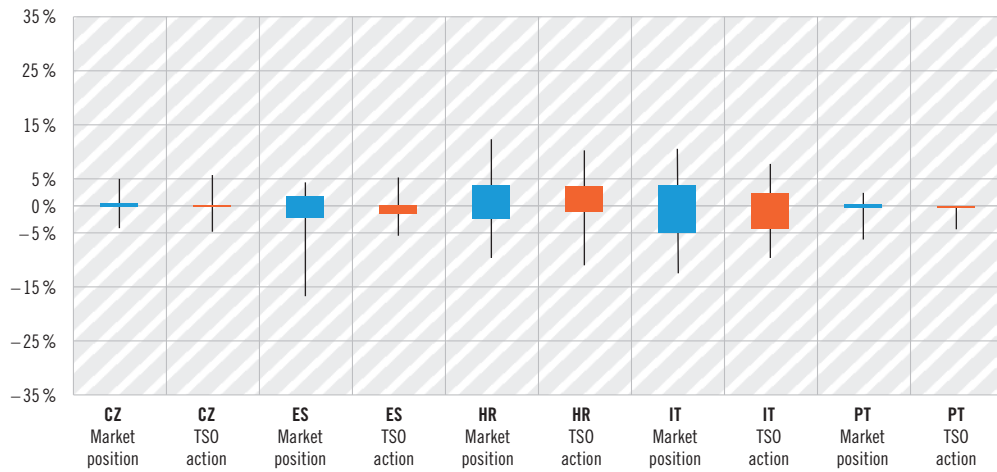
1) A yearly comparison for Austria has to be done with the restriction that the data for the actual report only cover 8 months, namely the period from 1<sup>st</sup> October 2016 to 31<sup>st</sup> May 2017.



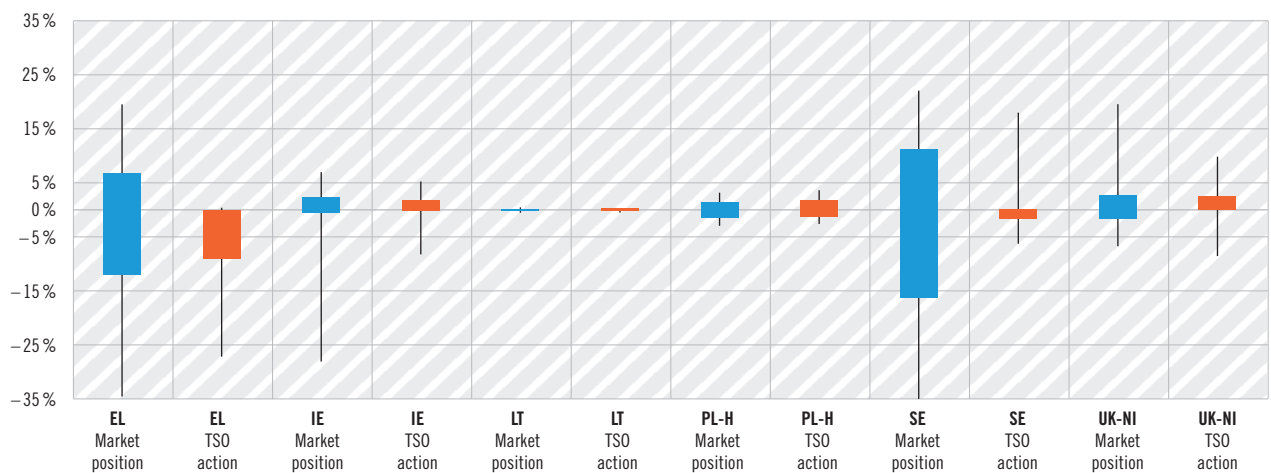
Map 8: Cluster 2015 countries: Daily BAL.4 vs. BAL.3 for countries applying WDOs



**Map 9:** Cluster 2015 countries: Daily BAL.4 vs. BAL.3



**Map 10:** Cluster 2016 countries: Daily BAL.4 vs. BAL.3



**Map 11:** Cluster Interim Measures countries: Daily BAL.4 vs. BAL.3

Map 11 left page shows some countries of the Interim Measures cluster. In Lithuania and in the Polish H-gas balancing zone the range of the net TSO balancing volumes is limited and can be mostly explained by the net shipper imbalance volumes which have a very similar range.

In Ireland and Northern Ireland on 80 % of the days the net shipper imbalances and the TSO balancing actions have a limited fluctuation range, but on few days some high peaks occur up to 20 % in UK-NI and 28 % in IE. These extreme situations happen for a short market for IE and for a long market for UK-NI whereas the TSOs balancing actions are more balanced between buying and selling actions. Sweden and Greece have important market imbalance range on average and regarding peak days. TSO actions are more important for buying situation in Greece and for selling situation in Sweden. Slovakia as a transit country has big market entry volumes compared to the very small inland consumption volumes. The daily net shipper imbalances are minimal and have a very limited fluctuation. Compared to this the TSO balancing actions occur on only 4 days in GY 2016/2017

as the TSO indicated to perform balancing actions only when the overall system imbalance exceeds a certain threshold. In those cases, the net TSO balancing volumes are still very small.

For five countries (BG, EE, LV, RO and SK) BAL.3 and BAL.4 have not been compared.

Prevailing directions: On 9 balancing zones<sup>1)</sup> (EE, EL, ES, Gaspool, LT, NL, PEG Nord, SE and UK-GB) TSOs are buying more than 65 % of the time whereas on 3 balancing zones (IE, SI and UK-NI), TSOs are selling more than 65 % of the time. On the other balancing zones, TSO's balancing actions are in one direction or the other (buy or sell) in the range of 35 % – 65 %. See Annex V for more details. For 4 “buying” balancing zones, it is due to the market which is short (EE, EL, Gaspool and LT). For ES, PEG Nord, SE and UK-GB, the market is quite balanced over the year, i.e. around 50 % of short days and 50 % of long days. For the “selling” balancing zones, it is due to markets that are long more than 65 % of the time for IE and SI and slightly long market for UK-NI (58 % of the time).

## 2.4. INDICATOR BAL.5: AVERAGE SHIPPER'S COST OF BEING BALANCED BY A TSO

### 2.4.1 Description

The daily cash out price is defined in article 22.1 and 22.2 of the BAL NC as follow:

For the purpose of daily imbalance charge calculation, the applicable price shall be the marginal sell price when the market is long or the marginal buy price when the market is short.

Daily Marginal Buy Price (€/MWh) = the higher of:

- (i) the highest price of any purchases of title products in which the transmission system operator is involved in respect of the gas day; or
- (ii) the weighted average price of gas in respect of that gas day, plus a small adjustment.

Marginal sell Price (€/MWh) = the lower of:

- (i) the lowest price of any sales of title products in which the transmission system operator is involved in respect of the gas day; or
- (ii) the weighted average price of gas in respect of that gas day, minus a small adjustment.

A shipper does not know in advance if the cost of being balanced by a TSO will be the small adjustment or a higher cost. It is on purpose in order to incentive the shipper to balance itself. BAL.5 is the real ex-post cost of being balanced by a TSO. It is calculated as follows:

DEFINITION	
<b>Average shipper's cost of being balanced by a TSO</b>	<p>The average cost for shippers' imbalance is the additional cost compared to the daily Weighted Average Price (WAP) of the title product. It should be calculated as a percentage of this daily WAP.</p> <p><b>Formula:</b></p> <p><b>Average long shippers' cost of being balanced by a TSO [in %] =</b>  <math>\Sigma 1\text{-Daily Marginal Sell Price} / \text{daily WAP}</math></p> <p><b>Average short shippers' cost of being balanced by a TSO [in %] =</b>  <math>\Sigma 1\text{-Daily Marginal Buy Price} / \text{daily WAP}</math></p>

1) It is also the case for LV, PT, RO and SK but on these 4 balancing zones TSOs are taking less than 5 balancing actions/year.



## 2.4.2 Results

This new indicator has only been calculated for a few countries where the data were available: BE/LU-H, DE, ES, FR, IT, PL-H and UK-GB. The next report will take into account more countries. For Italy, the small adjustment is an absolute value (0.108€/MWh). It has been transformed in a percentage of the yearly average of the daily WAP. The same treatment has been done for UK-GB which small adjustment value is 0.0379p/kWh. Regarding BE/LU-H, the small

adjustment is different if the shipper is a “causer” or a “helper”: The small adjustment for causer is 3 % whereas the small adjustment for helper is 0 %. Causer means that the network user’s imbalance is in the same direction (excess or shortfall) as the global market position. Helper means that the network user’s balancing position goes in the opposite direction as the one of the global market position. In the graphic, only the 3 % value has been represented.

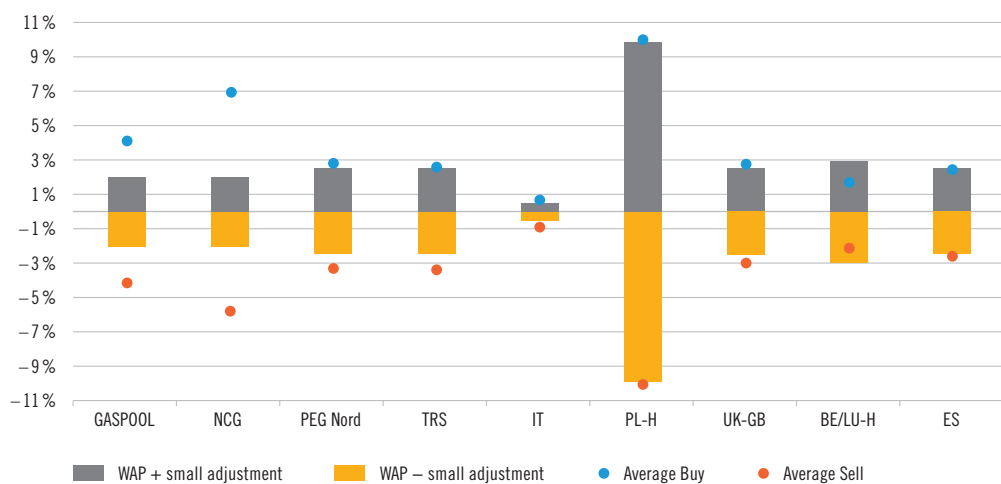


Figure 3: Average shipper's cost of being balanced by a TSO (in % of the WAP)

## 2.4.3 Analysis

In Germany, the cost of being balanced by the TSO is larger than the small adjustment (2 to 3.5 times larger). It is a way to incentive shippers to balanced themselves. Since Variant 2 is implemented in Germany, shippers know day-ahead their imbalance position for Non-Daily Metered end-customers. Indeed, for this information provision model, the allocation is equal to the day-ahead forecast. So, shippers know in advance their volume risk but not their price risk.

In Italy, France and UK-GB, the cost of being balanced by the TSO is slightly greater than the value of the small adjustment (from 8 % to 41 % larger). Shipper may be confident that the cost will be closed to the small adjustment on average. However, the days the system is tight, the cost could be much higher than the small adjustment. It was designed with this aim in the BAL NC, i.e. a shipper may take the small adjustment as a proxy for the cost of being balanced by the TSO knowing that when the system is tight it will be exposed to a higher cost.

In Poland and in Spain, the cost of being balanced by the TSO is equal to the value of the small adjustment. In Poland, the small adjustment is set at the maximal value allowed by the BAL NC, i.e. 10 %. It is difficult to have a TSO deal at a price larger than the WAP +/- 10 %.

In the BE/LU-H zone, the average cost of being balanced by the TSO is smaller than the “causer” small adjustment value. It is because when a shipper’s balancing position goes in the opposite direction as the one of the global market position, it will be cashed out at the WAP (i.e. without a small adjustment).



# 3 Conclusion

In 16 countries (AT, BE/LU, CZ, DE, DK, ES, FR, HR, HU, IT, LT, NL, PL, SI and UK-GB), TSOs rely mainly or exclusively on title products for their balancing actions.

Portugal, Estonia and 7 countries of cluster 2019 (BG, EL, IE, LV, SE, RO and UK-NI) use only balancing services whereas Slovakia use only balancing platform. This analysis has to be taken with caution for Portugal, Latvia, Romania and Slovakia, since in these balancing zones, TSOs have taken only a few balancing actions during the year (for 7 days or less).

In order to reduce its residual balancing role, a TSO should reduce the daily volume traded and/or the number of days it is taking balancing actions during the year. What will be interesting to follow is the yearly evolution for a given balancing zone since some intrinsic features of each network will make comparison among balancing zones tricky to interpret.

For this edition, we could only compare to last year the data of cluster 2015 and some countries of cluster 2019. Countries with WDOs (AT, BE/LU, NL) still have the lowest residual balancing role even if the balancing volumes have increased for BE/LU-H and NL. HU and UK-GB are in the same range. The other balancing zones of cluster 2015 except PEG Nord (DK, TRS, Gaspool, NCG and SI) shows decreases in volume and/or number of days. Germany still has the highest residual balancing role, due to their model: TSOs have to take into account gas quality conversion and the handling of NDM off-take volumes in addition to shipper imbalance volumes.

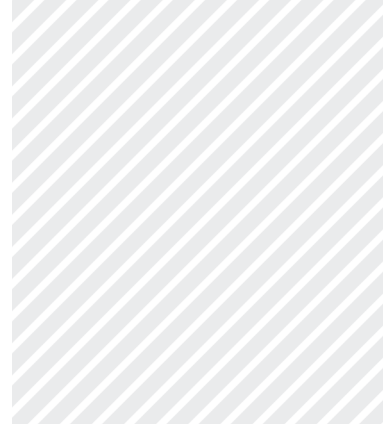
For the cluster 2019 when we were able to calculate an evolution, we have seen that LT, SE, IE, UK-NI and PL-H have reduced their daily traded volume and/or the number of trading/balancing days. Only the Greek figures are increasing.

Cluster 2016 countries show a similar behavior as cluster 2015 countries which do not have WDOs in place.

A correlation between daily shipper imbalances and the behavior of the TSO is visible. TSO actions are smaller in volume and in occurrence since they are able to handle some imbalances in their system before having to take balancing actions.

The report also presents a synthetic indicator: the yearly volume for balancing actions.

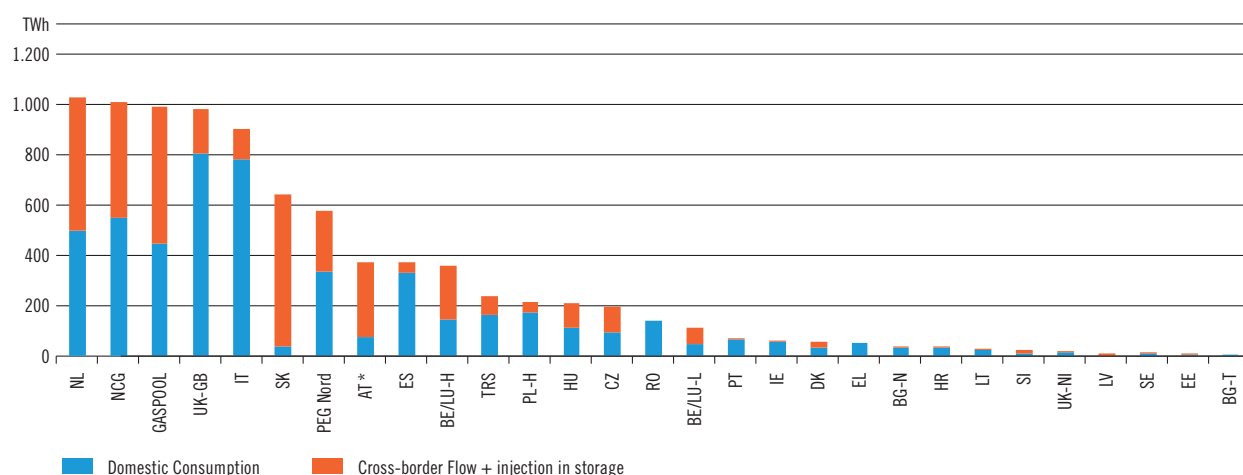
A new indicator BAL.5 presents the real cost of being balanced by the TSO for some balancing zones. This real cost is slightly greater than the small adjustment. It is on purpose in order to incentive the shippers to balance themselves. Indeed, it will be risky for them to take the small adjustment as a proxy of the cost of being balanced by the TSOs in their arbitrage/risk analysis.





## 4 Annexes

### Annex I: Yearly market (entry) volumes and domestic consumption



\* Austria figures are only for 8 months (from 1 October 2016 to 31 May October 2017)

Figure 4: Yearly Market Entry Volume (in TWh)

## Annex II: Number of days a TSO has taken balancing actions

NUMBER OF DAYS A TSO HAS TAKEN BALANCING ACTIONS			
Cluster	Balancing zone	Number of days TSO took balancing actions during the year 2016/2017	Evolution compared to last year
2015	AT	145	– *
	BELUX-H	365	0 %
	BELUX-L	365	0 %
	DE-GASPOOL	231	–9 %
	DE-NCG	365	0 %
	DK	90	–36 %
	FR-PEG Nord	119	1 %
	FR-TRS	158	–2 %
	HU	86	–33 %
	NL	178	34 %
	SI	200	–32 %
	UK-GB	109	7 %
2016	CZ	48	–
	ES	80	–
	HR	159	–
	IT	270	–
	PT	7	–
Interim measures	BG-N	365	–
	BG-T	365	–
	EL	195	32 %
	IE	104	7 %
	LT	347	–4 %
	LV	2	–
	PL-H	365	7 %
	RO	1	–
	SE	85	25 %
	SK	4	–33 %
	UK-NI	71	–11 %
Derogation	EE	31	–

\* Austria figures are only for 8 months (from 1 October 2016 to 31 May 2017)

## Annex III: Yearly volume trade per TSO, market entry volume and percentage of TSO gas traded compared to the market volume

YEARLY VOLUME TRADE PER TSO, MARKET ENTRY VOLUME AND PERCENTAGE OF TSO GAS TRADED COMPARED TO THE MARKET VOLUME					
Cluster	Balancing Zone	Yearly TSO balancing volume (in MWh)	Yearly entry market volume (in MWh)	GY 2016/2017 Bal.2 Indicator (in %)	Variation compared to GY2015/2016
Cluster 2015	AT *	158,512	373,014,839	0.04	–
	NL	2,550,089	1,029,483,441	0.25	104 %
	UK-GB	3,143,770	979,465,472	0.32	4 %
	HU	726,845	210,780,949	0.34	–64 %
	BELUX-L	422,272	111,705,948	0.38	1 %
	BELUX-H	1,412,219	356,520,731	0.40	45 %
	DK	344,182	56,927,043	0.60	–22 %
	PEG Nord	3,656,770	577,783,874	0.63	10 %
	TRS	2,125,910	240,284,794	0.88	–24 %
	GASPOOL	10,030,974	991,620,921	1.01	–4 %
	SI	262,404	25,482,798	1.03	–59 %
	NCG	45,910,016	1,007,979,642	4.55	–13 %
Cluster 2016	PT	42,000	70,534,212	0.06	
	CZ	459,504	198,089,134	0.23	
	ES	1,806,856	372,685,848	0.48	
	HR	422,464	35,639,557	1.19	
	IT	15,711,351	902,430,945	1.74	
Cluster 2019 + Estonia	SK	8,600	641,111,485	0.001	
	RO	5,300	140,451,635	0.004	
	LT	7,873	27,351,439	0.03	–59 %
	LV	23,850	11,919,791	0.20	
	SE	44,880	9,356,639	0.48	–3 %
	IE	342,100	58,577,511	0.58	–45 %
	UK-NI	119,300	16,812,597	0.71	–30 %
	PL-H	1,989,238	213,004,055	0.93	–9 %
	EL	1,749,165	51,912,796	3.37	50 %
	BG-N	1,570,621	36,948,376	4.25	
	EE	296,606	5,392,773	5.50	
	BG-T	219,467	661,110	33.20	

\* Austria figures are only for 8 months (from 1 October 2016 to 31 May October 2017)

## Annex IV: Yearly volume trade per TSO, domestic consumption and percentage of TSO gas traded compared to the domestic consumption

YEARLY VOLUME TRADE PER TSO, DOMESTIC CONSUMPTION AND PERCENTAGE OF TSO GAS TRADED COMPARED TO THE DOMESTIC CONSUMPTION				
Cluster	Balancing Zone	Yearly TSO balancing volume (in MWh)	Domestic consumption (in MWh)	GY 2016/2017 Bal.2 Indicator (in %)
Cluster 2015	AT *	158,512	73,487,831	0.22
	UK-GB	3,143,770	803,178,559	0.39
	NL	2,550,089	496,214,568	0.51
	HU	726,845	110,669,571	0.66
	BELU-L	422,272	48,412,152	0.87
	BELU-H	1,412,219	145,293,194	0.97
	DK	344,182	31,889,396	1.08
	PEG Nord	3,656,770	334,791,804	1.09
	TRS	2,125,910	162,923,360	1.30
	GASPOOL	10,030,974	448,494,420	2.24
	SI	262,404	9,757,163	2.69
	NCG	45,910,016	547,795,270	8.38
Cluster 2016	PT	42,000	67,732,883	0.06
	CZ	459,504	91,862,379	0.50
	ES	1,806,856	330,843,302	0.55
	HR	422,464	31,449,052	1.34
	IT	15,711,351	779,025,740	2.02
Cluster 2019 + Estonia	RO	5,300	141,222,353	0.004
	SK	8,600	36,374,034	0.024
	LT	7,873	24,851,232	0.03
	SE	44,880	9,322,032	0.48
	IE	342,100	55,839,558	0.61
	UK-NI	119,300	16,735,558	0.71
	LV	23850,000	2,794,506	0.853
	PL-H	1,989,238	174,497,913	1.14
	EL	1,749,165	53,465,480	3.27
	BG-N	1,570,621	33,928,439	4.63
	EE	296,606	5,382,162	5.51
	BG-T	219,467	844,901	25.98

\* Austria figures are only for 8 months (from 1 October 2016 to 31 May October 2017)



## Annex V: Numbers of days during the year TSO are taking buy actions and sell actions

NUMBERS OF DAYS DURING THE YEAR TSO ARE TAKING BUY ACTIONS AND SELL ACTIONS				
Balancing Zone	Number of days in GY 2016/2017 the TSO is buying gas	Number of days in GY 2016/2017 the TSO is selling gas	Number of days without balancing actions	Percentage of days TSO is buying compared to the number of days TSO is taking actions
AT	64	81	98	44 %
BELUX-H	168	197		46 %
BELUX-L	175	190		48 %
BG-N	188	177		52 %
BG-T	134	231		37 %
CZ	20	28	317	42 %
DK	51	39	275	57 %
EE	24	7	334	77 %
EL	195		170	100 %
ES	63	17	285	79 %
GASPOOL	149	82	134	65 %
HR	57	102	206	36 %
HU	37	49	279	43 %
IE	9	95	261	9 %
IT	166	104	95	61 %
LT	347		18	100 %
LV	2		151	100 %
NCG	170	195		47 %
NL	115	63	187	65 %
PEG Nord	81	38	246	68 %
PL-H	151	214		41 %
PT	7		358	100 %
RO	1		364	100 %
SE	68	17	280	80 %
SI	55	145	165	28 %
SK	3	1	361	75 %
TRS	74	84	207	47 %
UK-GB	71	38	256	65 %
UK-NI	25	46	294	35 %

\* Austria figures are only for 8 months (from 1 October 2016 to 31 May October 2017)

**Content approved** April 2018

**Publisher** ENTSOG AISBL  
Avenue de Cortenbergh 100  
1000 Brussels, Belgium

**Design** DreiDreizehn GmbH, Berlin, Germany  
[www.313.de](http://www.313.de)

**Cover image** Courtesy of Snam



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