Energy Community Regulatory Board

Gas Transmission Balancing in the Energy Community

March 2013

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1 INTRODUCTION

1.1 THE ENERGY COMMUNITY REGULATORY BOARD

The Energy Community Regulatory Board (**ECRB**)[1] operates based on Article 58 of the Energy Community Treaty[2]. As an institution of the Energy Community the ECRB advises the Energy Community Ministerial Council and Permanent High Level Group on details of statutory, technical and regulatory rules and should make recommendations in the case of cross-border disputes between regulators. With a view to contributing to the realization of core objectives of the Treaty – such as market integration, facilitation of investments, competition and security of supply in South East Europe – the ECRB engages in streamlining of regulatory measures and providing stable regulatory market framework. The key objective of the cooperation of energy regulators within the ECRB is to support the harmonized development of regulatory rules in the Energy Community. The ECRB also takes the role of a coordination body between the national regulators with a view to exchanging knowledge and developing common best practice solutions for implementing the Treaty in a harmonized way.[3]

1.2 SCOPE

Fair and transparent rules for gas balancing are one of the key elements for non-discriminatory gas market operation: only where shippers and users are well informed about their balancing status and related costs and face a transparent cost allocation model for imbalances, trading can happen in a non-discriminatory way and effective market access for new entrants may be facilitated.

Gas markets in the Energy Community are still on a **low development level**. The 2010 ECRB assessment paper on gas market models in the Energy Community[4] showed that balancing rules are barely established. In its 2010 report the ECRB in particular emphasized the discrimination potential of non-existing or poorly designed balancing rules and underlined the related negative impact on market opening. While acknowledging that market oriented purchase of balancing gas requires the existence of market structures, the ECRB noted that even in a non-competitive situation certain criteria for non-discriminatory, transparent and objective purchase can be defined by the regulator as part of its legal tasks[5] and recommended the development of a minimum set of very essential gas balancing rules.

[1] For details see: http://www.ecrb.eu/portal/page/portal/ECRB_HOME
[2] Signed in Athens on 25 October 2005. Following ratification, the Treaty entered into force on 1 July 2006. For details on the Treaty and the Energy Community see: www.energy-community.org.
[3] For more details on the ECRB, its members, organisation and Work Program please refer to www.ecrb.eu.
[4] http://www.ecrb.eu/portal/page/portal/ECRB_HOME/ECRB_DOCUMENTS/PUBLICATIONS/Gas/2010/Gas%20Market%20Models_approved%2016th%20ECRB.pdf
[5] Article 25 (2) lit b Directive 2003/55/EC.

Having in mind that the Decision of the Ministerial Council of the Energy Community on the implementation of the **3rd package** (Directives 2009/72/EC and 2009/73/EC and Regulations (EC) 714/2009 and 715/2009[6]) also involves application of the European network codes in the Energy Community Contracting Parties once made legally binding on European level[7], the present discussion paper also reflects the requirements of the ACER Framework Guidelines (FG) on Gas Balancing in Transmission Systems[8] and the Network Code (NC) on Gas Balancing of Transmission Networks submitted by ENTSO-G[9] for further procedure to the European Commission and ACER. In the light of the different status of development of the gas markets in the Energy Community and also reflecting their less advanced status compared to most of the European markets, the present report aims at presenting a possible **step-wise approach for implementing the European balancing rules in the Energy Community** markets.

While noting that the 3rd package provisions are not yet applicable in the Energy Community, the present report also analyses **gaps between the balancing approaches currently applied in the Contracting Parties with the requirements of the 3rd package**, ACER's gas balancing FG and the gas balancing NC prepared by ENTSO-G. This approach in particular also takes into account the technical need for interconnected systems to operate on streamlined rules. Finally, for the purpose of creating recommendations that may contribute to the regional compatibility of balancing regimes in South-East Europe, the analysis also includes a description of balancing regimes in several EU Neighboring Countries.

While recognizing the technical role of the transmission system operators in maintaining the transmission networks within their operational limits (physical balancing)[10], **the present discussion paper focuses on the analysis of the commercial balancing between TSOs and other market participants**.

1.3 METHODOLOGY

The present discussion paper is based on **information and data provided by national regulators**. Some additional information on gas balancing has been compiled from available secondary legislation of Contracting Parties and EU neighboring countries.

The analysis of the present report is limited to those jurisdictions for which input has been provided by national regulators, namely: Albania, Austria, Bosnia and Herzegovina, Croatia, former Yugoslav Republic of Macedonia, Greece, Hungary, Moldova, Serbia Kosovo*[11] and Ukraine.

[6] http://www.energy-community.org/pls/portal/docs/1146182.PDF

[7] The ECRB and PHLG of the Energy Community adopted Procedural Act laying down the rules governing the adoption of Guidelines and Network Codes in the Energy Community, please see more at: http://www.energy-community.org/pls/portal/docs/1636177.PDF (PHLG Procedural Act 01/2012) and http://www.ecrb.eu/portal/page/portal/ECRB_HOME/ECRB_ABOUT/RULES/PA%202012-02_Network%20Codes_approved.pdf (ECRB Procedural Act 2012/02).

[8] http://www.acer.europa.eu/Gas/Framework%20guidelines_and_network%20codes/Documents/FG%20Gas%20Balancing_final_public.pdf

[9] http://www.entsog.eu/public/uploads/files/publications/Balancing/2012/BAL350-12_121026_Network%20Code%20on%20Balancing_FINAL.PDF.

[10] Articles 2 (4) Directive and 8 (1) Directive 2003/55/EC. Articles 2 (4) Directive and 13 (1) Directive 2009/73/EC.

[11] Asterix hereinafter referring to "This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence". The Contracting Party to the Energy Community is the United Nations Interim Mission in Kosovo (UNMIK; pursuant to United Nations Security Council Resolution 1244).

2 THE ENERGY COMMUNITY LEGISLATION ON GAS BALANCING

For proper understanding of the information provided in this report it is relevant to know that both **gas infrastructure and market development stages in the Energy Community vary significantly**. Namely, in some Contracting Parties gas infrastructure does not exist at all (Albania[12], Montenegro, Kosovo*), in some of them it only started developing (the former Yugoslav Republic of Macedonia, Bosnia and Herzegovina), while other are characterized by intermediate (Croatia, Serbia) or high level of infrastructure development (Moldova, Ukraine). With the exception of Moldova and Ukraine, where market based arrangements still have to be introduced, the gas market development in other Contracting Parties follows the achieved level of infrastructure development. Among analyzed EU Neighboring Markets Greece is characterized by intermediate stage of both infrastructure and market development, while Italy, Hungary and Austria reached an advanced level of development.

Due to the non- existence of gas markets in Albania, Montenegro and Kosovo*, the present report does not provide an in depth analysis of their balancing regimes. However, it has to be noted that basic provisions regarding gas balancing are included in the national legislation also in these jurisdictions.

The most important requirements for non-discriminatory and cost- reflective gas balancing in the Energy Community have been established by applying the so called **2nd package** of EU energy legislation, more in particularly Directive 2003/55/EC[13] and Regulation (EC) 1775/2005[14]. According to the legal requirements, it is the task of transmission system operators to adopt and publish objective, non- discriminatory and transparent balancing rules (including tariffs), following the methodologies for calculating or establishing the terms and conditions for the provision of balancing services, fixed or approved prior to the entry into force by the regulatory authorities[15]. More detailed provisions related to balancing rules are determined by Article 7 of Regulation (EC) 1775/2005 regulating the design of tolerance levels, imbalance charges, penalty charges, provision of information on the balancing status and harmonization of balancing rules among different gas markets.

In order to highlight the importance of market- based gas transmission balancing, but also to facilitate its implementation, the **3rd package** (Directive 2009/73/EC[16] and Regulation (EC) 715/2009[17]) introduces new provisions related to regional[18] and cross-regional[19] cooperation of transmission system operators and substantially changed the rules for balancing. Having in mind the forthcoming implementation of 3rd Package in the Energy Community Contracting Parties[20], the list of most important changes of the 3rd package are presented below[21]:

[12] In Albania some very limited gas infrastructure is available, but not used.
[13] Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in natural gas and repealing Directive 98/30/EC; OJ L 176 of 15.7.2003, p 57 et seqq.
[14] Regulation (EC) No 1775/2005 of the European Parliament and of the Council of 28 September 2005 on conditions for access to the natural gas transmission networks; OJ L 289 of 3.11.2005, p 1 et seqq.
[15] Articles 8 (2) and 25 (2b) Directive 2003/55/EC Articles 13 (2) and 41 (6b) Directive 2009/73/EC.
[16] Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC; OJ L 211 of 14.8.2009, p 94 et seqq.
[17] Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks repealing Regulation(EC) No 1775/2005 ; OJ L 211 of 14.8.2009, p 36 et seqq.
[18] Article 12 of Regulation (EC) 715/2009
[19] Article 8 of Regulation (EC) 715/2009
[20] Deadline for implementation 1st January 2015; cf chapter 1.2.
[21] Article 41(6b) Directive 2009/73/EC, Article 21 (2) Regulation (EC) 715/2009.

- Provision of balancing services should be performed in the most economic manner and should provide incentives for network users to balance their inputs and off-takes. The methodologies for calculation or establishment of terms and conditions for provision of balancing services should take this scope into account;

- Although the requirement that balancing rules shall reflect genuine system needs - taking into account the resources available to the TSO - remained unchanged, an explicit requirement that balancing rules have to be market-based has been introduced[22]. Consequently the provisions related to design of tolerance levels and penalty charges have been abandoned.

- Information on the balancing status - that TSOs have to provide to the network users - should not only reflect the level of information available but also the settlement period for which imbalance charges are calculated. Moreover, this information has to be free of charge.

- The provisions of Regulation (EC) 1775/2005 and Regulation (EC) 715/2009 related to the calculation of imbalance charges[23] and harmonization of balancing regimes including streamlining of structures and levels of balancing charges in order to enable gas trade remain unchanged.

Finally, for the purpose of facilitating cross-border trade and market integration, the 3rd package envisages for ENTSO-G to, among others, prepare a network code for balancing, including network-related rules on nomination procedure, ruled for imbalance charges and operational balancing between TSOs' systems[24]. This network code has been prepared by ENTSO-G.

3 GAS BALANCING IN THE ENERGY COMMUNITY AND NEIGHBORING EU MEMBER STATES

3.1 FLEXIBILITY SOURCES

Provision of balancing services relies on the availability of sources from which energy can be purchased from. In order to maintain transmission networks within their operational limits, TSOs perform balancing actions that, according to the **ENTSOG's Network Code on Gas Balancing**, may be undertaken by buying and selling of Short Term Standardised Products on a Trading Platform (or alternatively, under certain conditions, on a Balancing Platform) and/or by using of balancing services[25]. The choice of arrangement(s) for providing balancing service depends on sources of flexibility available to a TSO. The table below shows the available flexibility sources for TSOs in Contracting Parties and EU neighboring countries.

[22] There is no definition or clarification of "market- based balancing" in the 3rd Package but a definition is given by ACER's Framework Guidelines on Gas Balancing in Transmission systems (http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Framework_Guidelines/FG%20on%20Gas%20Balancing%20in%20TS/FG%20Gas%20Balancing_final_public.pdf): "*The network code on gas balancing shall require TSO's procurement and sale of flexible gas and balancing services to be market-based. As such, TSOs should use the wholesale gas market to procure gas in a transparent and non-discriminatory manner, as far as possible on an equal footing with network users and by maximizing the amount of their balancing needs to be fulfilled though buying and selling of within-day products.*"

[23] Cost-reflective, providing incentives for network users to balance their inputs and off-takes, avoiding cross- subsidization and not hampering new entrants; transparency of methodologies.

[24] Article 8(6j) Regulation (EC) 715/2009.

[25] Please see Chapter IV of NC on Gas Balancing of Transmission Networks

Table 1: Flexibility Sources

Contracting Party	Linepack	Production	Storage	Balancing services of adjacent TSOs (OBA)	Flexible contracts with suppliers	Contracts with interruptible users
Bosnia and Herzegovina	yes	no	no	no	no	no
Croatia	yes	yes	yes	yes	yes	yes
FYR of Macedonia	yes	no	no	no	no	no
Moldova	yes	no	no	no	yes	no
Serbia	yes, only for intraday imbalance	yes, very limited	yes	no[26]	no[27]	no[28]
Ukraine	yes	yes	yes	no	no	no
EU Neighboring Country						
Austria	yes[29]	no	yes	yes	no	no
Greece	no	no	no	no	yes	no
Italy	no	no	yes	no	yes	yes
Hungary	yes	no	yes	yes	no	yes

Besides linepack, TSOs of Contracting Parties usually do not have enough flexibility sources; the exemptions are Croatia and Ukraine, with substantial domestic production and storage capacity and Serbia with available storage capacity. Among the analyzed EU neighboring countries, TSOs of both Austria and Hungary may use linepack, storage and operational balancing agreements as sources of flexibility, while Greece has very limited sources, namely only flexible contracts with suppliers. In Italy TSOs might use storage, flexible contracts with suppliers and contract with interruptible users for the purpose of balancing. It has to be noted that the development of competitive market structure has to be considered as an even more essential tool for providing commercial flexibility for the purchase of balancing energy in markets - such as the Energy Community gas markets - that face lack of physical flexibility sources.

[26] Envisaged by the network code under preparation.
[27] As above.
[28] As above.
[29] Including the use of the linepack of the distribution system to a certain extent

3.2 BALANCING REGIMES

This chapter provides a summary of the main principles and arrangements regarding procurement of balancing gas and imbalance settlement in the Energy Community Contracting Parties and neighbouring EU countries. The information has been collected mainly from the regulatory authorities but also from publicly available secondary legislation. The majority of the table structures is created based on the KEMA/REKK "Study on methodologies for gas transmission network tariffs and gas balancing fees in Europe"[30].

While table 2 describes the general balancing model and the role of the regulator, table 3 informs which tools for purchase of balancing energy are used in those systems that foresee market oriented purchase. Only participation in the wholesale market may be treated as market-based procurement of balancing services according to the FG on Gas Balancing in Transmission Systems (see fn. 22), However, having in mind that the 2nd package applicable in the Energy Community so far and also the FG also allow for certain interim measures (cf chapter 3.2 FG) a wider definition of market-based balancing arrangements has been taken from the KEMA/REKK *Study on methodologies for gas transmission network tariffs and gas balancing fees in Europe*[31] for the purpose of this analysis as described in table 3.

Table 2: Principles

Contracting Party	Balancing model applied	Is balancing regime approved by the regulator?
Bosnia and Herzegovina[32]	TSO has to provide balancing energy without specific purchase requirements	yes
Croatia	Market based (after expiry of transition period 30.03.2014.)	yes
FYR of Macedonia	TSO has to provide balancing energy without specific purchase requirements	yes, indirectly by approving network code
Moldova	TSO has to provide balancing energy without specific purchase requirements	not yet
Serbia	TSO has to provide balancing energy without specific purchase requirements [33]	Yes
Ukraine	TSO has to provide balancing energy without specific purchase requirements	Yes, indirectly according to the provisions of Chapter 2 of the Procedure for Accessing the Unified Gas Transit System of Ukraine, approved by the resolution of NERC from 19.04.2012 #420
EU Neighboring Country		

[30] http://ec.europa.eu/energy/gas_electricity/studies/doc/gas/2009_12_gas_transmission_and_balancing.pdf
[31] http://ec.europa.eu/energy/gas_electricity/studies/doc/gas/2009_12_gas_transmission_and_balancing.pdf
[32] Information provided by RERS for BIH Entity Republika Srpska throughout the document
[33] As per the new Energy Law, the balancing rules and imbalance charges will be elaborated in the Transmission Network Code (TSO submitted proposal to the AERS for approval in September 2012).

Austria	Market based	yes
Greece	TSO has to provide balancing energy and acquires balancing gas through international tender	yes
Italy	Market based	yes
Hungary	Market based	yes

Table 3: Procurement of balancing energy

Contracting Party	Tender	Balancing market	Participation in the wholesale market
Albania	n.a.	n.a.	n.a.
Bosnia and Herzegovina	no	no	no
Croatia	yes, for annual balancing energy supplier[34]	yes, for daily balancing energy supplier[35]	no
FYR of Macedonia	no	no	no
Moldova	no	no	no
Montenegro	n.a.	n.a.	n.a.
Serbia	no[36]	no	no
Ukraine	no	no	no
UNMIK	n.a.	n.a.	n.a.
EU Neighboring Country			
Austria	no	no	yes
Greece	yes	no	n.a.
Italy	yes	yes	yes
Hungary	no	yes	no

[34] Provided by law but not in force yet. Note the interim model described on page 11.
[35] Provided by law but not in force yet. Note the interim model described on page 11.
[36] Tender procedure will be a possible option for the TSO to provide for balancing gas as a first step.

- In **Croatia** the ordinance on the organization of natural gas market[37] prescribes the provision of balancing energy on annual and daily basis, whereby the annual balancing energy supplier is selected via public tender procedure and daily balancing energy is provided either by the annual balancing energy supplier or any other supplier following a daily merit order list prepared by the gas market operator (HROTE[38]). However, at the moment an interim model is in place which requires the major wholesale supplier on transmission level to act as annual balancing energy supplier until 30.3.2014. Also in the interim period, balancing groups do not have to pay for balancing energy but only overrun charges (penalties) for the quantities exceeding the tolerance level. Overrun charges are calculated as percentage of quarterly prices determined and published by HROTE (indexed to petroleum products' prices)[39] multiplied by the overrun quantity.
- The network code for transport of natural gas of GAMA A.D. Skopje[40], transmission network operator in **FYR of Macedonia**, provides rules and procedures for physical and commercial balancing performed by the TSO, including definitions of tolerance levels and applicable overrun charges (penalties). However the applicable network code does not include a provision explaining *how* the TSO has to provide gas for balancing. It has to be noted here that the gas transmission system in FRY of Macedonia is very much underused which allows for granting broad tolerance levels without imbalance charges (cf chapter 3.3)..
- In **Bosnia and Herzegovina**, **Moldova** and **Ukraine** there are no clearly defined responsibilities of TSOs or other market players with respect to (commercial) balancing in transmission networks..
- The balancing related information in the tables for **Serbia** is based on the current practice of the TSO and other relevant market players. However, according to the Energy Law of 2011 a network code has to be prepared by the TSO and approved by the regulatory authority; this process is currently ongoing.
- In **Austria**, balancing and clearing of all natural gas in the market area - except for the discrepancies between consumer schedules and their actual consumption, the special balance group for distribution systems and discrepancies between biogas production schedules and metered biogas input - is the task of the market area manager. The market area manager calculates the market area's position on an hourly basis. The market area manager procures - including a certain time lag and by employing linepack - any physical balancing energy needed for within-day balancing of the transmission network on the natural gas exchange at the virtual trading point, on its own behalf and for its own account. Should this be insufficient to ensure network stability, the market area manager may impose within-day obligations on those balance groups that are causing the hourly imbalances and therefore endanger system stability[41].

[37] Available only in Croatian, please see at http://www.hera.hr/hrvatski/html/propisi_plin.html
[38] http://www.hrote.hr/default.aspx?id=117
[39] http://www.hrote.hr/default.aspx?id=120
[40] The document is currently not available in Internet (according to the Gas Law of 2011, the new network code has to be prepared by the system operator).
[41] Section 26 of the Gas Market Model Ordinance 2012, http://www.e-control.at/portal/page/portal/medienbibliothek/gas/dokumente/pdfs/MMO-VO_Beschluss%20endg-en_v2.pdf

- In **Greece**, the TSO DESFA S.A. is responsible for balancing deliveries and off-takes in the natural gas transmission system and providing balancing services to the users. The detailed balancing scheme is included in the Gas Network Code[42.] In summary, positive and negative imbalances of independent shippers are aggregated, while the TSO performs balancing actions (injection or withdrawal of gas) only when physical imbalance in the system occurs. Shippers have the right to trade imbalances. According to the provisions regarding gas balancing services, as included in the Greek legislation, DESFA S.A. prepares and submits every year to the regulatory authority an annual balancing plan for approval. The balancing plan includes the estimates of the TSO regarding balancing gas needs, as well as an evaluation of possible balancing gas supply sources for the following year. The plan also includes DESFA's proposal regarding the characteristics of the balancing contracts for the next year. To this effect, DESFA S.A. can either procure balancing gas directly from the long-term LNG contract of the incumbent (in line with an interim – transitional - provision of the Greek Gas Law), or procure balancing gas through a market based approach, in the form of an international tender procedure (in line with the basic provision of the Gas Law). All costs arising from the provision of balancing services are recovered by the TSO through relevant charges paid by the users, so that the TSO is cash neutral. The regulatory authority is responsible for approving the balancing costs and the methodology for allocating these costs to the transmission system users. All balancing charges and the methodology of their calculation, as well as the Daily Balancing Gas Price, are published on DESFA's website, in both Greek and English.
- In **Italy**, the regulator adopted *Resolution ARG/gas 45/11* which introduced a balancing mechanism for natural gas based on economic merit. The main advantage of this resolution is that by pricing balancing gas in an organized market, even users without gas in storage can balance their gas portfolio by buying balancing resources in a transparent and efficient way. Balancing gas procurement takes place in daily sessions on a platform organized and managed by the Energy Market Administrator (*Gestore dei mercati energetici,* GME), where the purchase and sale offers are compared by their economic merit. Gas operators can trade gas injected to the national network at a virtual point located, conceptually speaking, between entry and exit points on the network: the Virtual Trading Point (PSV). The actual spot market for natural gas, with the GME acting as central counterparty, was launched with the creation of the M-GAS. On this market, operators authorised to conduct transactions on the PSV may buy and sell quantities of natural gas on a spot basis. This market is divided into:
    - MGP-GAS (gas day- ahead market) and
    - MI-GAS (intra- day gas market).
- In **Hungary**, balancing of the gas transmission system is performed by use of a balancing platform available for both system and portfolio (trading) balancing.

With the (still theoretical) exception of Croatia, market based procurement of balancing energy is not practiced in the Contracting Parties.

- In Croatia a market orientated approach is foreseen in legislation but not executed yet;
- In Serbia, the introduction of market oriented procedures is discussed however not put into force so far.

[42] http://www.desfa.gr/files/PR/N.%20KATSIS/ΕΛΛΗΝΙΚΗ%20ΝΟΜΟΘΕΣΙΑ/Microsoft%20Word%20-%20Unofficial%20Translation%20of%20the%20Network%20Code%20for%20the%20Regulation%20of%20the%20National%20Natural%20Gas%20System%20_2_.pdf

It has to be noted **that, based on currently applicable legislation, none of the Contracting Parties complies with the requirements of the FG Balancing** that only accepts purchase of balancing energy on the wholesale market as market based. In the light of the less advanced development status of the gas markets in the Energy Community compared to most of the European markets and also noting that the 3rd package is not applicable in the Contracting Parties, the market oriented attempts of Croatia and Serbia, however, need to receive positive reflection as interim steps towards compliance with the EU models. Fully fledged convergence with the EU provisions needs to remain the target for coherent operation of interconnected systems.

The lack of any rules for purchase of balancing gas and/or balancing services in Bosnia and Herzegovina, Moldova and Ukraine shows non-compliance even with the provisions of the 2nd package[43].This assessment certainly needs to acknowledge that market oriented purchase of balancing gas requires the existence of a market. Still, even in a non-competitive situation certain criteria for non-discriminatory, transparent and objective purchase can be defined by the regulator as part of its legal tasks[44].

On the other side, in **all four analyzed EU neighboring markets** gas balancing rules are differently designed but still assumed **market- based**, in line with the available flexibility sources, as discussed earlier in the text.

3.3 FINANCIAL TREATMENT OF IMBALANCES

It is a legal requirement for TSOs to define **imbalance charges** separately from other transmission charges. Imbalance charges have to be cost reflective to the extent possible and levied on the network users that were out of balance at the end of balancing period[45]. Table 4 provides an overview of the currently applied approaches in the Contracting Parties and neighboring EU Members States related to treatment of imbalances.

While the 3rd package requires balancing to be executed based on market based rules[46], the 2nd package still foresees rules on the definition of penalties and tolerance levels in case of non- market based balancing[47].

Additionally, the requirement of the Balancing FG that costs that cannot be directly attributed to specific network users may be shared across all network users[48] is reflected in the analysis hereinafter.

[43] Article 7 Regulation (EC) 1775/2005 requiring, at least, objective criteria for purchase of balancing energy.
[44] Article 25 (2) lit b Directive 2003/55/EC.
[45] Article 7(3) Regulation (EC) 1775/2005, Article 21 (3) Regulation (EC) 2009/71
[46] Article 21 (1) Regulation (EC) 2009/71.
[47] Article 7 (2-5) Regulation (EC) 1775/2005
[48] Article 5.1 FG on Balancing.

Table 4: Financial treatment of imbalances – settlement, cash out prices and penalties

Contracting Party	Tolerance level	Imbalance charges				Penalties[49]	Socialized over all network users	Other (combination of several methods)
		Non-market based		Market-based				
		Fixed in advance	Indexed	Average cost	Marginal cost			
Bosnia and Herzegovina	+/- 2% of contracted volumes	no	no	no	no	yes, if the daily imbalance adds up to +/- 2%, TSO will buy/sell gas at the price that is 80%/120% of balancing gas price[50]	no	no
Croatia	yes, the maximal cumulative daily tolerance level is 500.000kWh	no	yes, if a balance group is in a cumulative of daily imbalance for 3 consecutive days. The imbalance charge is based on quarterly prices determined and published by the gas market operator indexed to petroleum products prices[51]	yes	no	yes, 5% of imbalance charge	yes, for linepack within tolerances	no
FYR of Macedonia	+/- 10% of the contracted maximal	no	yes, if the daily quantities at the entry or at the exit point are higher than	no	no	no	no	no

[49] Payments made by network users to the TSOs in case imbalances exceed the allowed tolerance levels and that are normally defined not to reflect the actual costs incurred, but to incentivize network users to stay in balance.
[50] It is not clear from the Transmission network code of Gas Promet how the "balancing gas price" is determined.
[51] The gas market operator (HROTE) calculates the imbalance charge that can include also penalties and issues invoice to balancing group leader. Charges are then transferred to the TSO. See also explanations chapter 3.2.

	daily quantities		110% of the contracted maximal daily quantities, the user shall pay a daily imbalance fee based on the highest measured daily quantity; the fee as such is the based on average sale price [52]of the natural gas in this month.					
Moldova	no	no	no	no	no	no	yes	no
Serbia	no[53]	no	no[54]	no	no	no	yes	no
Ukraine	no	no	no	no	no	no	yes	no
EU Neighboring Country								
Austria	no	no	no	no	no	4EUR/MW for all imbalances (balancing incentive markup)	no	no
Greece	+/-10%	no	no	Yes (Cash out price = LNG FOB	no	Ranging from 5% to 50% of the cash out price depending on the excess of the imbalance to the	yes	no

[52] It is not clear from the Transmission network code of GAMA how is the "sale price" determined.
[53] The draft network code envisages that tolerance levels are going to be defined and imbalance charges are going to be paid according to the imbalance level.
[54] The draft network code envisages a non market based approach: the imbalance charge is planned to be indexed according to formula taking into account neutral gas price and level of imbalance.

				price + Commodity Charge of LNG TPA tariffs + levies and taxes		tolerance level.		
Italy	no	no	no	no	yes	no	no	no
Hungary	+/-2%, applicable for imbalance penalties only, end-of-day imbalance position is subject to full cash-out	no	no	yes	no	Yes, 0.05HUF/MJ	no	Neutrality pool concept is applied

The analysis shows that, with the exception of Croatia and FYR of Macedonia, **transparent rules for financial treatment of imbalances do not exist** in the Contracting Parties.

- The **Croatia**n model knows a tolerance level and uses an indexed method for setting the imbalance charge[55]. Also penalties are applied. Croatia thereby is the only Contracting Party for which principle compliance with the balancing rules of the 2nd and also 3rd package may be assumed - even if an in depth compliance assessment would still require a detailed analysis of the calculation methodology.
- In **FYR of Macedonia** imbalances not exceeding given tolerance level are not subject to financial settlement, but for those outside the tolerances there is an imbalance charge applied, defined as non-market based- indexed to sale price of gas. It has to be noted here that the gas transmission system in FRY of Macedonia is very much underused which allows for granting broad tolerance levels without imbalance charges (cf chapter 3.2).
- **Serbia** is in the process of developing balancing rules including a tolerance level and an indexed imbalance fee. Details of the model were not available by cut-off date of the present report. It is expected that the envisaged rules shall comply at least with the 2nd package. Currently balancing related costs are socialized over all network users.
- **Bosnia and Herzegovina** applies penalties.

In all other Contracting Parties transparent rules for financial treatment of imbalances do not exist i.e. the balancing related costs are socialized over all network users. This fact does not only raise concern because of the unfavorable effects on the entry of new suppliers but also identifies lack of compliance of regulatory authorities with their legal obligations to set and thereby ensure a transparent, objective and cost-reflective balancing framework. This fact is even more surprising having in mind that a significant number of the balancing rules should have been approved by the regulatory authorities (see table 2).

3.4 IMBALANCE SETTLEMENT TOOLS FOR NETWORK USERS

Commercial balancing can be done on different time schedules. The more time wise accurately commercial balancing is done, the more flexibility is provided to network users to balance their imbalance status. The shorter the balancing period, the more accurate and cost-reflective imbalances can be allocated.

Table 5 provides an overview of the commercial balancing intervals applied in the Energy Community and neighboring EU Member States.

Table 5: Commercial balancing intervals[56]

Contracting Party	Hourly	Daily	Monthly	other
Bosnia and Herzegovina	no	no	yes	no

[55] Even in the interim model applied until end March 2014; for details refer to chapter 3.2.
[56] Explaining when is the cash out done.

Croatia	no	yes, if a network user is in imbalance exceeding the tolerance level, 3 days in a row (however the cash out is done at the end of a month, but based on daily calculations)	yes, cumulative monthly imbalance exceeding the tolerance level at the last day of a month	no
FYR of Macedonia	no	no	yes	no
Moldova	n.a.	n.a.	n.a.	n.a.
Serbia	n.a.	n.a.	n.a[57].	n.a.
Ukraine	n.a.	n.a.	yes[58]	n.a.
EU Neighboring Country				
Austria	yes	Yes (incentive markup i.e. penalty monthly billed)	no	no
Greece	no	yes (daily balancing period and monthly cash out)	yes	no
Italy	no	yes	yes	no
Hungary	no	yes	no	no

The analysis shows that **monthly commercial balancing prevails in the Energy Community Contracting Parties**, to the extent implemented at all. The exemption, again, is Croatia, applying daily balancing (however the cash-out is done on monthly basis). Among analyzed **EU Member States** balancing is performed **daily** (in some cases in Austria also hourly), with different cash-out periods defined. The requirement of both Framework Guidelines and Network Code on balancing is that the balancing period, for which also the financial settlement is done, is one day (within- day obligation may also be introduced if necessary for stimulating network users to balance their flows also during the day).

With a view to limiting their balancing costs, network users have to be informed about their **imbalance status** to be enabled to react in time before running into (further) imbalance charges or even take measures that reduce their imbalance level. Instruments such as the right to re-nominate, trade or pool imbalances with other network users or groups of network users or even zones can be used for this purpose.

[57] The draft network code envisaged that imbalance determination will be on a daily level while cash out will be on a monthly basis.

[58] TSO calculates imbalances and notifies suppliers of any existing monthly imbalances

Already the 2nd package defines a set of requirements on the type and content of information to be made available by the TSO to network users: this range from a general publication need of the applicable balancing rules and charges and tolerances[59] to more specific requirements of well timed, reliable and online based provision of information[60].

The 3rd package adds concrete content and format description to the publication requirements including the obligation to provide information free of charge[61]: an amendment to Chapter 3 of Annex I to Regulation (EC) No 715/2009[62] lists all balancing related data and the required format of publication.

The following tables explain the flexibility tools available to network users in the Contracting Parties and neighboring EU Member States (table 9) as well as the level of information provided to them regarding their balancing status (tables 6, 7, 8).

Table 6: Information on balancing status

Contracting Party	Information on balancing status available	If available, info on balancing status free of charge
Bosnia and Herzegovina	required by network code, but not implemented	yes
Croatia	yes	yes
FYR of Macedonia	required by network code, but not implemented	yes
Moldova	no	n.a.
Serbia	no[63]	n.a.
Ukraine	yes (notification by TSO)	yes
EU Neighboring Country		
Austria	yes	yes
Greece	yes	yes
Italy	yes	yes
Hungary	Yes (required by network code, available, but data provided by DSOs not reliable enough)	yes

[59] Article 8 (2) Directive 2003/55/EC; Article 7 (2) Regulation (EC)1775/2005.
[60] Article 7 (6) Regulation (EC)1775/2005
[61] Article 21 (2) Regulation (EC) 715/2009.
[62] Commission Decision 2010/685/EU of 1O November 2010, OJ L 293, of 10.10.2010, p67 et seqq.
[63] After adoption of the network code it will available and free of charge.

In Croatia the information on the balancing status is available for the previous day for system imbalance and provisional balancing group imbalance as well as on the 10th day of a month for the previous month on final balancing group imbalances for each day.

Table 7: Information details and format[64]

Contracting Party	Content				Format (how is information provided)			
	Calculation methodology for imbalance charges	Imbalance charges	Rules for balancing [*]	Flexibility and tolerance levels [*]	online	In a downloadable format [*]	In English[*]	In consistent units (kWhfor energy / m3 for volumes) [65] [*]
Bosnia and Herzegovina	no	no	yes	yes	yes	yes	no	yes
Croatia	yes	yes	yes	yes	yes	yes	no	yes
FYR of Macedonia	no	no	no	no	no	no	no	no
Moldova	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Serbia	n.a.[66]	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Ukraine	no	no	Partly described in the	no	no	no	no	no

[64] This table only reflect information that has to be published, but not information that TSOs have to make available to network users, such as in Art. 3.4.(3) of Commission decision amending Chapter 3 of Annex I to Regulation (EC) No 715/2009. Requirements marked with a [*] are not required by the 2nd package but part of the 3rd package (amendment to Chapter 3 of Annex I to Regulation (EC) No 715/2009).

[65] KWh with a combustion reference temperature of 298,15 K; m 3 at 273,15 K and 1,01325 bar.

[66] All the information stated in the table within the ``content`` will be available as envisaged by the network code under preparation

			Procedure for Accessing Unified Gas Transit System of Ukraine, approved by the resolution of NERC from 19.04.2012 #420					
EU Neighboring Country								
Austria	yes	yes	yes	yes	yes	yes	yes	yes
Greece	yes	yes	yes	yes	yes	yes	yes	yes
Italy	yes	yes	yes	yes	yes	yes	yes	yes
Hungary	yes	yes	yes	yes	yes	yes	no	MJ

Table 8: Information on amount of gas in the transmission system[67]

Contracting Party	Amount of gas at the start of each gas day	Forecast of the amount of gas at the end of each gas day	If imbalance charges calculated on hourly basis, is also the amount of gas in the system published on hourly basis?	Aggregate imbalance position for all users at the end of each balancing period	Forecast of the aggregated imbalance position of all users at the end of each gas day
Bosnia and Herzegovina	no	no	n.a.	no	no
Croatia	no[68]	no	n.a.	no[69]	no
FYR of Macedonia	no	no	n.a.	no	no
Moldova	no	no	n.a.	no	no
Serbia	no	no	n.a.	no	no
Ukraine	no	no	n.a.	no	no
EU Neighboring Country					
Austria	no	no	n.a.	yes	no
Greece	yes	yes	n.a.	yes	yes
Italy	n.a.	n.a.	n.a.	yes	yes
Hungary	yes	yes	n.a.	yes	no

Table 9: Imbalance settlement- possible activities of network users

Contracting Party	Re-nomination	Trading of imbalances (when)	Pooling of imbalances (entry-exit flows of the same network user)	Pooling of imbalances within a balancing group	Pooling of imbalances across several balancing zones
Bosnia and Herzegovina	no	no	no	no	no

[67] According to Art. 3.4.(5) of Commission decision amending Chapter 3 of Annex I to Regulation (EC) No 715/2009.
[68] Prescribed by the secondary legislation, but still not carried out in practice.
[69] Prescribed by the secondary legislation, but still not carried out in practice.

Croatia	yes, one day-ahead until midnight and one within-day re-nomination until 11.30 a.m.	no	yes	yes	n.a. (only one balancing zone exists)
FYR of Macedonia	yes	no	no	no	no
Moldova	no	no	no	no	no
Serbia	n.a[70].	n.a.	n.a.	n.a.	n.a.
Ukraine	yes	n.a.	n.a.	n.a.	n.a.
EU Neighboring Country					
Austria	yes	no	no	yes	no
Greece	n.a.	yes	n.a.	n.a.	n.a.
Italy	yes	no	no	no	no
Hungary	yes, limited	yes, day-ahead and within-day	no	no	no

The tables above prove that the TSOs in the majority of the **Energy Community Contracting Parties do not provide** relevant **information to network users** concerning the information on their **balancing status** (Croatia and Ukraine are exceptions). On the other side, in the analyzed **EU Member States** the TSOs **provide such information** regularly and free of charge. Even in case **network users** in the Energy Community Contracting Parties are provided adequate information on their balancing status, there is still only a **limited number of possibilities** for them **to reduce their imbalances**: re-nomination is widely used and only in Croatia pooling of own imbalances and imbalances within a balancing group. Network users in the investigated EU Member States have more possibilities available, beside re-nomination: pooling of imbalances within a balancing group is possible in Austria and trading of imbalances in Greece and Hungary.

[70] Re-nomination, pooling of imbalances (entry-exit flows of the same network users) and trade of imbalances after gas day are going to be the possible actions of network users, as per draft network code, no balancing zones envisaged

4 SUMMARY OF FINDINGS

The presented information on balancing regimes in the Energy Community Contracting Parties and several EU Member States lead to the following conclusions:

- Beside linepack, TSOs of the Energy Community Contracting Parties usually do not have enough **flexibility sources**; the exemptions are Croatia and Ukraine, with substantial domestic production and storage capacity and Serbia with available storage capacity. Among the analyzed EU Member States, the TSOs of both Austria and Hungary use linepack, storage and operational balancing agreements as sources of flexibility, while Greece has very limited sources, namely only flexible contracts with suppliers. In Italy TSOs might use storage, flexible contracts with suppliers and contract with interruptible users for the purpose of balancing.
- Regulatory authorities in most of the Contracting Parties approve at least indirectly **balancing rules** by approving network code or other document defining also rules on balancing; however balancing rules are still not defined in the majority of cases or only to the certain extent i.e. explaining how is the balancing performed but not including provisions on balancing gas/balancing services procurement. In all analyzed EU neighboring countries the regulators approve the gas balancing rules.
- With the, still theoretical, exception of Croatia, **market based procurement of balancing energy** is not practiced in the Contracting Parties. This means that the procurement of balancing gas/services is mainly facilitated by long-term contracts but also by using domestic flexibility (e.g. storage). On the other side, in all four analyzed EU Member States gas balancing rules are defined by using some kind of market- based arrangement.
- TSOs in Moldova, Serbia and Ukraine remunerate provision of balancing services by socializing balancing related costs, i.e. including them into the transmission tariff, **Imbalance charge**s are defined in Croatia and FYR of Macedonia, while penalty charges for imbalances are implemented in Bosnia and Herzegovina and Croatia, for imbalances outside the predefined tolerance levels. Penalties are also implemented in three analyzed EU neighboring countries, in addition to imbalance charges (in Austria, Greece and Hungary).
- If available at all, imbalance charges in the Contracting Parties are defined as administrative fixed charges, determined by the TSO or regulator; it is questionable whether so determined imbalance charges (or penalties, where applicable) are cost-based;
- Imbalances are normally recorded on daily basis, but settlement, including cash- out or penalties charging, are done on monthly or even longer basis in the Energy Community Contracting Parties, Austria, Italy and Greece; in Hungary both imbalance calculation and cash-out are done on a daily basis.

- Transmission network users[71] in the Contracting Parties usually do not have the possibility to balance their own input and output before the cash- out takes place, mainly because there is no information on their balancing status, but also because they do not have access to liquid wholesale market to buy/sell flexible gas. On the other side, network users in the investigated EU Member States have better opportunities to balance their flows- information on balancing status is available, also to a substantial degree in line with Commission decision amending Chapter 3 of Annex I Regulation (EC) 715/2009.

- In case **network users** in the Energy Community Contracting Parties have adequate information on balancing status, there is still only **limited number of possibilities** for them **to reduce their imbalances**: re-nomination is widely used and only in Croatia pooling of own imbalances and imbalances within a balancing group. The network users in investigated EU Member States have more possibilities available, beside re-nomination: pooling of imbalances within balancing group in Austria and trading of imbalances in Greece and Hungary.

5 RECOMMENDATIONS

Having regard to the, on average, low level of gas infrastructure and poor liquidity of gas markets, including the above presented limited experience with market-based balancing regimes, but also to the already mentioned decision of the Energy Community Contracting Parties to implement EU Guidelines and Network Codes prepared by ACER and ENTSOG, it is recommended for regulatory authorities and transmission system operators of the Energy Community Contracting Parties to consider the following basic principles for **mid- term harmonization** of balancing regimes[72]:

- With the purpose of reducing the activities of TSOs related to balancing of the network, **network users shall be incentivized to balance** their own entry and exit gas flows in efficient way. As a basic precondition to this, network users need to have information on their balancing status. Information on balancing status needs to be provided by TSOs in timely manner, following the established balancing intervals, preferably daily[73]. Even if the imbalance settlement is not done on the **daily** base, **providing information on balancing status** at the end of every day would give clear signals to network users to plan their actions efficiently[74]. For non-daily metered network users TSOs need to provide detailed day-ahead forecasts (or load profiles, as applicable).

[71] NC on Gas Balancing of Transmission Networks defines network user as a customer of a TSO holding with such TSO a legally binding agreement defining the respective rights and obligations related to at least balancing
[72] Approximately 5 years, taking into consideration 3rd Package implementation of CPs and timeline for allowed transitional measures in FG and NC on Gas Balancing
[73] Please note that FG on Gas Balancing requires that imbalance settlement is done on a daily basis. Introduction of within- day obligations is also possible under given circumstances.
[74] FG on Gas Balancing requires from TSOs to provide information at least twice a day.

- Having in mind the limited availability of flexibility sources to the TSOs, both regulatory authorities and TSOs need to contribute to the development of wholesale markets to enable releasing of surplus gas by TSOs and trading of flexible gas by network users. This may be done by creating **market rules allowing for both bilateral trade and exchange, prescribing at least rules for trading of gas for balancing purposes**[75]**.**

- Provided that interconnection capacity is available, TSOs of Contracting Parties could establish a **common balancing platform for the purpose of flexible gas trade**. This might in the future bring more liquidity into the Region but also serve as a benchmark for later development of a common wholesale gas market.

- At the same time, the volumes of flexible gas provided via long-term contracts for balancing services need to be reduced, to the extent possible. Any engagement into new contract for balancing services has to be justified by TSO to the regulator and consequently approved by regulator.

- **Nomination and re-nomination** rules need to be in line with applicable capacity allocation mechanisms, but also to allow for minimally one day-ahead and one gas day (intraday) re-nomination.[76]

- Using of **linepack** as flexibility source for balancing purposes should also be transparent and non-discriminatory; it may be also sold as commercial product, at a cost-reflective or market-based price.

- **Imbalance charges** need to be created separately from transmission charges. They should be determined so to reflect the actual costs incurred by the network users. Small adjustment is allowed in order to incentivize network users to balance their inputs and off-takes before TSO perform imbalance settlement and charge for imbalances. In case gas for balancing is provided via a balancing platform or the contract, imbalance charges may be set as administered price, approved by the regulator, but still incentivizing self-balancing of network users. If network users do not have access to sources of flexible gas (and/or associated infrastructure), tolerance levels without imbalance charges may be introduced, provided they are approved by the regulator.

- Regulatory authorities of the Energy Community Contracting Parties should regularly consult relevant TSOs in order to identify possibilities for cross-border balancing cooperation (e.g. for establishing common balancing platform).

More in general, the **incompliances with the Energy Community acquis (2nd package) and the 3rd package of both TSOs and national regulators identified in the present report raise concerns and urge for settlement in line with the legal requirements**.

[75] Procurement of balancing services on the balancing platform, instead of participation in the wholesale market, is allowed by ACER's Framework Guidelines on Balancing as interim measure. Please see also ENTSOG's Balancing Network Code, interim measures prescribed by Articles 46 to 49, in this concrete case Article 49(i).
[76] See Article 25 of NC on Gas Balancing on transitional measures for nominations