



Energy Community Regulatory Board

**Electricity Balancing Models
in the Energy Community**

- An Assessment Report -

February 2011

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1. EXECUTIVE SUMMARY

Balancing of electricity flows is of core relevance for the functioning of electricity transmission systems and – beyond that – develops towards becoming one of the pivotal point for network development and regional market integration: linking the national markets to a regional and more dynamic market will develop strong impact on the load flow situation and might also affect grid stability. The envisaged integration of renewable energy sources – especially the integration of wind energy – additionally creates challenge for system operators.

The present report provides an **overview about the development status of national electricity markets** in the Energy Community Contracting Parties, selected neighboring European Member States and Georgia as Observer country to the Energy Community.

The analysis shows that the approaches for balancing as well as the stage of development of really functional and transparent balancing markets **vary** within the 8th Region. To a large extent the results linked to the overall development state of the electricity market.

The report finally concludes on a number of **recommendations** for measures to be set in the Energy Community related to electricity balancing.

2. INTRODUCTION

2.1 The Energy Community

The Energy Community extends the European Union's (EU) internal energy market to South East Europe (SEE). By signing the Energy Community Treaty¹ the signatory parties² agreed to implement the *acquis communautaire* on electricity, gas, environment, competition and renewables³ with a view to realize the objectives of the Treaty and to create a regional gas and electricity market within South East Europe (SEE) capable of attracting investment.

Given the small size of the national markets it is commonly understood that following a **harmonised regional approach** for the energy market of the Energy Community remains the key requirement for the promotion of investments in the Region.

The Energy Community Regulatory Board (ECRB)⁴ operates based on Article 58 of the Energy Community Treaty. 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.

2.2 Scope

Electricity transmission system – as a consequence of the fluctuating load patterns - have to provide for base load and peak load capability with predefined safety as well as fault tolerance margins. Given that transmission systems typically do not have buffering capacities and electricity produced has to be consumed immediately grid balancing is an important tool for guaranteeing grid safety.

Linking the national markets to a regional and more dynamic market has a strong impact on the load flow situation and in a worst case scenario also on the grid stability. The envisaged integration of renewable energy sources - especially the integration of wind energy – additionally creates challenge for system operators.

¹ The Energy Community has been established by the Treaty establishing Energy Community, signed in October 2005 in Athens and entering into force on 1 July 2006. Treaty establishing the Energy Community (hereinafter "The Treaty"). The Treaty was signed in October 2005 in Athens, Greece and entered into force on 1 July 2006. Details on the Energy Community and ECRB see www.energy-community.org;

² The **Parties** to the Treaty are the European Community, on the one hand, and eight **Contracting Parties**, namely, Albania, Bosnia & Herzegovina, Croatia, former Yugoslav Republic of Macedonia, Moldova, Montenegro, Serbia and UNMIK. As of March 2009, 14 European Union Member States have the status of **Participants**. Georgia, Norway and Turkey take part as **Observers**. Ukraine signed the Treaty on 24th September 2010 and will move from an Observer to a Contracting Party status after its ratification (expected still for 2010).

³ For details of the relevant *acquis* see: http://www.energy-community.org/portal/page/portal/ENC_HOME/ENERGY_COMMUNITY/Legal/Treaty

⁴ For details see www.ecrb.eu.

Having in mind the relevance of the topic, the ECRB identified balancing as key priority and area of work of the Electricity Working group in 2010. As starting point for any potential future harmonization steps across borders the present report provides an overview of the **existing balancing models in the jurisdictions of the 8th Region** recognizing and describing its characteristics, obstacles, regulatory framework, prospects and time schedules for introducing balancing mechanisms or making changes in existing mechanisms.

2.3 Methodology

For analysing the above outlined scope of work a **questionnaire** has been sent to the regulatory authorities of Contracting Parties of the Energy Community, Observer Countries and Neighbouring Participants. For the purpose of this report Ukraine is still displayed as Observer Country. Ukraine signed the Energy Community Treaty on 24 September 2010 and will turn from the status of an Observer Country to a Contracting Party following the ratification of the Energy Community Treaty. The necessary ratification has not yet been executed by cut off date of the present report, i.e. 16 December 2010.

Data displayed in this report reflects the **information provided by regulatory authorities**.

3. BALANCING SCHEMES IN THE ENERGY COMMUNITY CONTRACTING PARTIES

This section describes the main characteristics of existing balancing schemes in the Contracting Parties of the Energy Community.

3.1 ALBANIA

The following table provides an overview on the balancing status and model in Albania.

Table 1: Overview of balancing market in Albania

Requested Balancing Energy [MWh]	2007	2008	2009
	N/A ⁵	100.000	110.000
Responsible for preparing legal framework	Regulator		
Responsible for Balancing	TSO		
Responsible for Balancing Market Operation	TSO		
Responsible for Market Monitoring	Regulator		

3.1.1 Legal Basis for Balancing

The Albanian Energy Law defines the general market model and stipulates that detailed balancing rules have to be set by the Regulatory Authority (ERE) after consultation with the TSO (OST).

3.1.2 Balancing Model

The Albanian Transmission System Operator is responsible for balancing while the balancing energy is **exclusively provided** by KESH-Gen, the state owned generating company. This procedure is defined in secondary legislation.

KESH Gen has to offer ancillary services according to a previously **negotiated contract**. This contract has to be **approved by the regulator**. The TSO may purchase additional ancillary services from KESH Gen or from Small Power Producers, Independent Power Producers, Traders or Qualified Suppliers to the extent

⁵ For the purpose of this report "N/A" shall mean "not available". Non-availability of data is to a prevailing extent reasoned by a balancing market not existing in the specific jurisdiction.

necessary and available. Although it is possible to buy electricity from traders it is not foreseen to use balancing energy **from abroad**.

The TSOs' System Dispatch Operator controls and manages any imbalance in the system utilizing balancing market capabilities in accordance with the Market Rules as described in Grid Code. The **balancing timeframe** is 1 hour.

Although there are no penalties for imbalances there is the obligation to inform the TSO about future deviations from the schedule.

3.1.3 Treatment of Renewables as regards balancing

The regulator is authorized to grant the status of **privileged producers** to producers generating electric power using renewable energy sources with an installed capacity of less than 25 MW and in case of using a hydroelectric energy source up to 10 MW. These privileged producers enjoy a prioritized treatment by the TSO when dispatching the generated electric power. KESH – Gen can become a Balance Responsible Party for such privileged producers by overtaking financial responsibility for the net imbalance of any market participant.

3.1.4 Monitoring

In theory compliance with the balancing rules is monitored by the regulatory authority. The TSO is responsible for the collection of required data. However, the process of monitoring will in praxis only start once a balancing market has been established.

3.2 BOSNIA AND HERZEGOVINA

The following table provides an overview on the balancing status and model in Bosnia and Herzegovina.

Table 2: Overview of balancing market in Herzegovina

Requested Balancing Energy [MWh]	2007	2008	2009
	N/A	N/A	N/A
Responsible for preparing legal framework	ISO		
Responsible for Balancing	ISO		
Responsible for Balancing Market Operation	ISO		
Responsible for Market Monitoring	Regulator		

3.2.1 Legal Basis for Balancing

In Bosnia and Herzegovina the Energy Law only defines a general market model and stipulates that the detailed balancing rules have to be set by the ISO and approved by the regulatory authority.

3.2.2 Balancing Model

The Balancing Model is based on **Balance Responsible Parties** acting on a common balancing market which is operated by the Independent System Operator. According to the Market Rules a Balance Responsible Party is a Market Participant that overtakes financial responsibility for the net imbalance (balancing generation, consumption and exchange) or for the net imbalance of a group of Market Participants, including balancing of its own activities. At the present stage of market opening, the only Balance Responsible Parties are the incumbent power utilities.

Balancing energy is exclusively provided by the three incumbent power utilities. According to the grid code there is an obligation for power generators to provide balancing energy. Ancillary service and balancing energy providers are pre- defined on annual basis by decision of the regulator.

The Independent System Operator is entitled to use balancing energy from domestic production as well as energy from **abroad**. When using balancing energy from abroad an explicit allocation for cross border capacity based on clearing price approach takes place. In addition it is possible to use residual capacity for balancing purposes or to use capacity within the Transmission Reliability Margin.

3.2.3 Treatment of Renewables

There are no special regulations concerning balancing of renewable energy sources.

3.2.4 Monitoring

The compliance with the balancing rules is monitored by the regulatory authority. The ISO is responsible for the collection of required data (monthly reports).

3.3 CROATIA

The following table provides an overview on the balancing status and model in Croatia.

Table 3: Overview of balancing market in Croatia

Requested Balancing Energy [MWh]	2007	2008	2009
	N/A	N/A	N/A
Responsible for preparing legal framework	Market Operator/TSO		
Responsible for Balancing	TSO		
Responsible for Balancing Market Operation	Market Operator		
Responsible for Market Monitoring	Market Operator		

3.3.1 Legal Basis for Balancing

Croatian legislation does not define a balancing model but provides requirements for the secondary legislation to be developed on balancing. More precisely legislation requires that

- electricity market rules
- rules on balancing the electric power system
- the methodology on providing balancing energy services

have to be **elaborated by the Market Operator**, HEP-OPS and **approved by the regulator** (HERA).

3.3.2 Balancing Model

The Croatian TSO (HEP-OPS) is responsible for balancing. Balancing energy is **exclusively provided** by the incumbent generator (HEP GENERATION). This exclusivity is defined in the *Rules On Balancing The Electric Power System* and the *Methodology On Providing Balancing Energy Services In The Electric Power System*. Prices for balancing energy in 2009 are shown in Table 4.

Table 4: Prices for balancing energy in 2009 in Croatia (EUR/MWh)

Month Time of day	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	0–6h	43	36	28	25	23	25	39	39	40	41	39
6–17 h, 23–24 h	86	72	56	50	46	49	79	79	80	81	78	78
17–23 h	103	86	68	60	55	59	94	95	96	98	93	93

3.3.3 Treatment of Renewables

Legislation foresees **special treatment** for balancing energy produced from renewable energy sources and a special tariff for electricity produced from such sources. The TSO has the obligation to act as Balance Responsible Party for renewable energy.

3.3.4 Monitoring

Compliance with the balancing rules is monitored by the Market Operator (HROTE).

3.4 FORMER YUGOSLAV REPUBLIC OF MACEDONIA

The following table provides an overview on the balancing status and model in the Former Yugoslav Republic of Macedonia.

Table 5: Overview of balancing market in FYRo Macedonia

Requested Balancing Energy [MWh]	2007	2008	2009
	N/A	75.912	29.858
Responsible for preparing legal framework	Market Operator and Regulator		
Responsible for Balancing	TSO		
Responsible for Balancing Market Operation	Market Operator		
Responsible for Market Monitoring	Regulator		

3.4.1 Legal Basis for Balancing

The Energy Law defines a general market model and provides that the detailed balancing rules have to be **set by the Market Operator** in the market rules. The market rules have to be **approved by the Regulator**.

The market rules have been proposed by the Market Operator but have not been approved by the regulator so far and are thus not obligatory. Energy Regulatory Commission of the Republic of Macedonia and Market operator (AD MEPSO) have different positions for several issues. Also, until the end the year 2010, the Macedonian parliament will adopt new energy Law. In accordance with draft Energy Law, ERC is obliged to adopt the Market Rules.

3.4.2 Balancing Model

The TSO (MEPSO) is responsible for balancing the electricity grid in the Former Yugoslav Republic of Macedonia. According to the law, balancing energy is **exclusively provided** by the regulated generation company. There is no obligation for other generators than the regulated generator to provide balancing energy.

The timeframe for **imbalance settlement** is 1 week. The **price** for balancing energy in 2009 added up to 67,5 €/MWh.

The balancing market is operated by the Electricity Market Operator. The balancing market organization is based on balancing groups. Such balancing groups can be formed either by a number of or one single electricity market participant. Appropriate metering as well as financial guarantees for each member of the balancing group are required.

It is not foreseen to use balancing energy from **abroad**, although it is allowed by legislation, but it is not practiced.

3.4.3 Treatment of Renewables

Legislation includes **special rules** concerning balancing for renewable energy sources. Generators that use renewable energy sources with an installed capacity lower than 1MW are not allowed to become Balancing Responsible Parties. Furthermore suppliers of tariff consumers are obliged to act as Balancing Responsible Party for renewable energy sources.

3.4.4 Monitoring

Compliance with the balancing rules is monitored by the **regulatory authority** on monthly basis.

3.5 MOLDOVA

The following table provides an overview on the balancing status and model in Moldova.

Table 6: Overview of balancing market in Moldova

Requested Balancing Energy [MWh]	2007	2008	2009
	N/A	N/A	N/A
Responsible for preparing legal framework	Regulator		
Responsible for Balancing	TSO		
Responsible for Balancing Market Operation	TSO		
Responsible for Market Monitoring	Regulator		

3.5.1 Legal Basis for Balancing

In Moldova the **Electricity Act** defines the general market model and stipulates that detailed balancing rules have to be set by the regulator after consultation with the TSO.

3.5.2 Balancing Model

According to the Power Market Rules distribution network operators and eligible customers have to sign **contracts** for procurement of balancing electricity after bilateral negotiations.

The producer or supplier of electricity is chosen from those entities that have possibility to provide balancing electricity after reaching an agreement about the price for balancing electricity. In principle it is possible to use balancing energy from abroad. The duration of the contract depends on negotiations.

3.5.3 Monitoring

Compliance with the balancing rules is monitored by the **regulatory authority**. The TSO is responsible for the collection of required data.

3.6 SERBIA

The following table provides an overview on the balancing status and model in Serbia.

Table 7: Overview of balancing market in Serbia

Requested Balancing Energy [MWh]	2007	2008	2009
	N/A	N/A	N/A
Responsible for preparing legal framework	N/A		
Responsible for Balancing	TSO		
Responsible for Balancing Market Operation	TSO		
Responsible for Market Monitoring	Regulator		

3.6.1 Legal Basis for Balancing

Serbian primary and secondary legislation does not define specific balancing rules. The Energy Law, however, requires the **TSO to procure** system services including balancing⁶. The TSO is obliged to fulfil this responsibility:

- Based on the principle of minimum expenses
- Following non-discrimination between energy entities it procures system services from
- In compliance with the contract concluded with energy entities that render system services.

3.6.2 Balancing Model

The Serbian TSO (PE EMS) is performing all balancing services and activates tertiary reserve using a merit order list, defined by PE EPS in advance. In emergency cases it is possible to use balancing energy from neighbouring TSOs by using “residual” capacity. The activation of tertiary reserve is executed per minute, but the timeframe for imbalance settlement is 1 hour.

⁶ Stipulated in Article 92 para 1 2) and 10), Article 93 para 4, and Article 95.

Balancing energy is purchased by **advance contract after bilateral negotiations**. The incumbent (PE EPS) hereby is contracting in the name and for the account of the five generating companies that are part of PE EPS's company holding. It is worth noting that relevant contract is related to the provision of balancing reserve but not to the provision of balancing energy. Contracts are negotiated for the duration of 1 year, which is practiced duration for such contracts.

The relevant five generators are those that actually have the technical capabilities to provide most of the balancing energy. However, there is **no exclusivity** or obligation to sign the contracts – they are a result of will of the contracting parties and in accordance with pricing methodology. There is also no obligation for generators - except for those that already have a contract with the TSO - to provide balancing energy.

3.6.3 Treatment of Renewables

There are two governmental decrees dealing with renewable Energy Sources and Balancing:

- Decree On Conditions For Obtaining The Status Of Privileged Generator And Criteria For Assessing The Fulfilment Of These Conditions (“Official Gazette of the Republic of Serbia” No. 72/2009)
- Decree On Incentive Measures For Generation From RES And Combined Heat And Power Generation (“Official Gazette of the Republic of Serbia” No. 99/2009)

But there is no special tariff for balancing energy for renewable energy sources. PE EPS is the balancing responsible party for renewable energy generators.

In General there are no penalties for imbalance but exceptionally energy entities having only cross-border transactions are penalized in the case of imbalanced schedules.

3.6.4 Monitoring

The compliance with the balancing rules is monitored by the regulatory authority. The TSO is responsible for the collection of required data on continuous basis.

3.7 UNMIK

The following table provides an overview on the balancing status and model in UNMIK.

Table 8: Overview of balancing market in UNMIK

Requested Balancing Energy [MWh]	2007	2008	2009
	N/A	N/A	N/A
Responsible for preparing legal framework	Prepared by the TSO (KOSTT) and approved by the Energy regulatory office		
Responsible for Balancing	TSO (KOSTT)		
Responsible for Balancing Market Operation	TSO (KOSTT)		
Responsible for Market Monitoring	Energy regulatory office, Competition Authority		

3.7.1 Legal Basis for Balancing

The balancing rules have to be defined by secondary legislation; Balancing Rules should be prepared by TSO (KOSTT) and approved by regulator.

3.7.2 Balancing Model

According to the Grid Code and Market Rules the TSO is responsible for balancing. The balancing energy is exclusively provided by TSO. Currently KEK JSC, as the only supplier in Kosovo, is responsible for balancing following the instructions of the TSO. Due to the lack of generation and import KEK JSC applies load shedding. The exclusive provider is defined by the Transitional Market Rules. There is no legal obligation for generation companies to provide balancing energy.

Given that a balancing market in practice is not operational, penalties and imbalance charges are not in place yet. However, the introduction of penalties in the Market Rules is under discussion.

Legally, there is no limitation for using balancing energy from abroad.

3.7.1 Treatment of Renewables

Rules related to renewable energy sources are in the process of finalization. These rules are expected to determine the responsibilities regarding the balancing.

3.7.2 Monitoring

In theory⁷ compliance with the balancing rules is monitored by the **regulatory authority**. The TSO is responsible for data collection.

⁷ A balancing market in praxi is not operational.

4. BALANCING SCHEMES IN SELECTED ENERGY COMMUNITY PARTICIPANT COUNTRIES

This section summarizes the state of play regarding balancing schemes in the neighboring Participant Countries of the Energy Community: Greece, Hungary, Italy and Romania.

4.1 GREECE

The following table provides an overview on the balancing status and model in Greece.

Table 9: Overview of balancing market in Greece

Requested Balancing Energy [MWh]	2007	2008	2009
	N/A	N/A	N/A
Responsible for preparing legal framework	Prepared by the TSO and approved by the Minister, after the consenting opinion of the Regulator		
Responsible for Balancing	TSO		
Responsible for Balancing Market Operation	TSO		
Responsible for Market Monitoring	Regulator		

4.1.1 Legal Basis for Balancing

The Energy Law defines the general market model and stipulates that detailed balancing rules have to be set in the Grid and Market Operation Code, prepared by the TSO and approved by the Minister after the consenting opinion of the Regulator. In this respect the law refers to a balancing settlement mechanism where imbalances are settled based on common rules for all market participants in a way that incentivizes generators to be available and follow the dispatch instructions of the TSO. Imbalance charges should follow the “causer pays” principle.

4.1.2 Balancing Model⁸

The Greek **TSO** (HTSO / DESMIE) is responsible for balancing. Balancing is not performed through a separate balancing market, but as an extension of the day ahead market⁹ through the Imbalance Settlement Mechanism, according to the following rules:

⁸ As of 30 September 2010.

- All imbalances – referring to the differences between the day-ahead schedule and the real production or withdrawal of electricity – are settled through the Imbalance Settlement Mechanism.
- The timeframe for the imbalance settlement is 1 hour.
- During real-time operation, balancing energy is provided by the responsible body following a market based approach that operates based on the economic merit order of offers submitted by committed units on the day-ahead market.
- As soon as the relevant meter measurements are available, the imbalances are settled according to the following rule: each imbalanced party pays or receives an amount, depending on whether it injected or withdrew energy from the system, equal to the product of the ex-post clearing price and its imbalance quantity.
- The ex-post clearing price results from the re-run of the day-ahead scheduling algorithm under the realized values of the stochastic variables and corresponds to the “Market Clearing Price” (i.e. uniform price).
- Moreover, a cost recovery mechanism has been included, aiming to ensure that generators will receive at least their marginal cost whenever they operate. The aim of the imbalance mechanism methodology is to minimize the total cost of system operation by giving the proper incentives for “proper behavior” to the market participants.
- It is also possible to use balancing energy from abroad by using the Transmission Reliability Margin (TRM).

The Balancing Settlement is **performed by the TSO**. Under certain circumstances (emergency cases) it is possible to use balancing energy from abroad by using the residual capacity of interconnectors.

4.1.3 Treatment of Renewables

There are no special regulations concerning balancing for renewable energy sources.

4.1.4 Monitoring

Compliance with the balancing rules is monitored by the regulatory authority. The TSO is responsible for the collection of the required data and the operation of the market according to the Code.

⁹ Participation to the wholesale market is mandatory and thus all energy injected to and withdrawn from the system by the market participants – producers (for each of their units), suppliers, importers, exporters - . must be traded on the day ahead market.

4.2 HUNGARY

The following table provides an overview on the balancing status and model in Hungary.

Table 10: Overview of balancing market in Hungary

Requested Balancing Energy [MWh]	2007	2008	2009
	N/A	N/A	N/A
Responsible for preparing legal framework	TSO		
Responsible for Balancing	TSO		
Responsible for Balancing Market Operation	TSO		
Responsible for Market Monitoring	Regulator		

4.2.1 Legal Basis for Balancing

The Hungarian Energy Law defines the general market model and stipulates that detailed balancing rules have to be set by the TSO and approved by the regulator.

4.2.2 Balancing Model

The Hungarian **TSO** (MAVIR) is responsible for balancing and operates also the balancing market. The Balancing Market is based on a **balancing group model**. The establishment of a balancing group requires a contract with the TSO. Leader of a balancing group could be any market participant. The Electricity Act foresees an obligation for generators to provide balancing energy.

The timeframe for imbalance settlement is 1/4h hour. The prices for balancing energy differ for each timeframe and they are calculated following a cost based approach.

Balancing energy is purchased via auctions¹⁰ and advance contract¹¹, whereby advance contracts are only used for short time demand. It is also possible to use balancing energy from abroad provided that the necessary transmission capacity has been allocated via an auction¹² or by capacity reservation in advance.

¹⁰ The "Pay as Bid" methodology is used for price determination.

¹¹ Following a tender procedure a contract with a third party is concluded in advance for exclusive provision of balancing energy for one calendar year.

¹² The "Pay as Bid" methodology is used for price determination.

4.2.3 Monitoring

Compliance with the balancing rules is monitored by the **regulatory authority**. The ISO is responsible for the collection of required data (monthly reports).

4.3 ITALY

The following table provides an overview on the balancing status and model in Italy.

Table 11: Overview of balancing market in Italy

Requested Balancing Energy [MWh]	2007	2008	2009
	1.000.000	1.000.000	1.000.000
Responsible for preparing legal framework	Ministry of Energy		
Responsible for Balancing	TSO		
Responsible for Balancing Market Operation	Market Operator (GME)		
Responsible for Market Monitoring	Regulator		

4.3.1 Legal Basis for Balancing

The Italian Law defines the general market model and stipulates that detailed balancing rules have to be set by the TSO and approved by the regulator.

4.3.2 Balancing Model

The **TSO** (TERNA) is responsible for balancing and acquires the balancing energy on the Balancing Market (*Mercato di Bilanciamento*) that is managed by GME as Market Operator.

- The allocation of balancing energy takes place based on auctions¹³ or advance contract¹⁴, whereby advance contracts are only used for short time demand.
- The balancing market concept is based on balancing groups consisting of small generators (<10 MVA) per market zone and customers per market zone.

¹³ The "Pay as Bid" methodology is used for price determination.

¹⁴ A contract with a third party is concluded in advance on monthly or yearly basis for exclusive provision of balancing energy.

- The timeframe for imbalance settlement is 1 hour. Penalties for not fulfilling schedules exist.
- It is also possible to use balancing energy from abroad by using the Transmission Reliability Margin (TRM).

4.3.3 Treatment of Renewables

In Italy there is a special tariff for balancing energy for renewable energy sources. Furthermore it is possible that RES Generators decide that the GSE (public company) acts as their balancing responsible party.

4.3.4 Monitoring

The compliance with the balancing rules is monitored by the regulatory authority. The TSO is responsible for the collection of required data.

4.4 ROMANIA

The following table provides an overview on the balancing status and model in Romania.

Table 12: Overview of balancing market in Romania

Requested Balancing Energy [MWh]	2007	2008	2009
	3.492.000	3.546.000	3.206.000
Responsible for preparing legal framework	Ministry of Energy		
Responsible for Balancing	TSO		
Responsible for Balancing Market Operation	Market Operator		
Responsible for Market Monitoring	Regulator		

4.4.1 Legal Basis for Balancing

In Romania the Energy Law does not define the model requires secondary legislation to set balancing rules which is done in the so-called *Commercial Code* that has been approved by the Regulatory Authority (ANRE) in 2004.

4.4.2 Balancing Model

According to the Commercial Code¹⁵ the **TSO is responsible** for balancing. The TSO also acts as Balancing Market Operator, responsible for the registration of balancing market participants, for collecting and verification of offers and for calculating the quantities necessary for the settlement of transaction afferent to the balancing market.

Balancing energy is provided via auctions for which pay as bid is used for price determination.

All generators have the obligation to participate in the central balancing market¹⁶ that includes all Balancing Responsible Parties consisting of dispatchable units of producers and suppliers of consumers. Balancing Responsible Parties may form a balancing group if the forecast of annual production does not exceed 30% of net injected electricity of the previous and/ or if the forecast for annual consumption does not exceeds 30% of net consumption of the previous year¹⁷.

4.4.3 Treatment of Renewables

Currently there is no special regulation concerning balancing for renewable energy sources.

4.4.4 Monitoring

The compliance with the balancing rules is monitored by the **regulatory authority**. The regulator is also responsible for the collection of required data.

¹⁵ Commercial Code, Section 10

¹⁶ Commercial Code, chapter 3.4.

¹⁷ ANRE order no. 36/2005.

4.5 SLOVENIA

The following table provides an overview on the balancing status and model in Slovenia.

Table 13: Overview of balancing market in Slovenia

Requested Balancing Energy [MWh]	2007	2008	2009
	142.883	171.646	163.879
Responsible for preparing legal framework	Market Operator		
Responsible for Balancing	TSO		
Responsible for Balancing Market Operation	Market Operator		
Responsible for Market Monitoring	Regulator		

4.5.1 Legal Basis for Balancing

Slovenian legislation does not define the balancing model but requires them to be developed by secondary legislation that foresees that the *Rules on Balancing Market* have to be developed by the Market Operator after consultation with the TSO and are finally approved by the regulator.

The Grid Code defines that the TSO has to provide balancing energy by:

- purchase or sale at the balancing market once established;
- purchase or sale of electricity in Slovenian or foreign markets until the balancing market has been established; or
- activation of contracted reserve for tertiary control.

In praxis balancing rules have **not been proposed yet**. Therefore, for the time being only the second and the third option apply. Due to the relatively small Slovenian market and only two active players, implementation of balancing market on national level is difficult. A solution might be broader regional balancing market.

4.5.2 Balancing Model

According to Slovenian legislation the TSO (ELES) is responsible for balancing. It is envisaged that the Market Operator will operate the Balancing Market once established.

- The market organization is based on balancing groups. For the establishment of a balancing group the submission of an application to the Market Operator and fulfilment of all required conditions is mandatory. Anybody who fulfils the criteria published at the Market Operator’s homepage¹⁸ could lead a balancing group. The leader of a balancing group also acts as Balancing Responsible Party of this group.
- No Slovenian license or branch office registered in Slovenia is needed.
- There is no legal obligation for generators to provide balancing energy, except the participation of units larger than 10 MW in primary frequency control.

According to the market rules a balancing party failing to fulfil the schedules pays additional costs for the imbalanced energy, or receives lower payment for the energy supplied above the schedules. The Market Operator is responsible for calculation of these payments – on the basis of data supplied by the TSO – as well as for the whole settlement procedures in this process.

Deviations from the schedules are calculated on a 15-minute basis but are penalised on hourly basis since the schedules are also given on the hourly basis.

Balancing energy is paid by the TSO on the basis of various arrangements, as described in chapter 3.5.1. Prices are not publicly known.

Balancing energy is provided by advance contract concluded on a basis of a tender for tertiary reserve from the sources outside and inside Slovenia.

- There are three tertiary reserve products. For the first product only potential providers with balancing sources inside Slovenia can compete, while for the other two both Slovenian and foreign providers can compete. The final provider is selected by an auction for the period of one year and there are separate auctions for all three products.
- The three tertiary reserve products – apart from the location of source in the case of the first product - deviate as regards the number of activations and the duration of each activation. The total capacity of all three products equals to the capacity of the largest generation unit in the Slovenian power system, which is half of the installed capacity of the Krško Nuclear Power Plant¹⁹. This is in line with the requirements of ENTSO-E Operation Handbook.

Balance groups can use balancing energy **abroad** by using capacity allocated via auctions. Reserving of capacity in advance for balancing purposes is in principle not possible. Only the TSO can use the reliability margin for using the balancing energy contracted via auctions for tertiary reserve outside the Slovenian power system.

¹⁸ www.borzen.si.

¹⁹ The second half is provided by Croatia.

4.5.3 Treatment of Renewables

The only relevant provision regarding the treatment of renewables in the Energy Act is that the TSO has to give **priority** to energy produced from renewable energy sources and high efficient CHP facilities in dispatching. This may also include balancing, although such generation units are in principle not very suitable to be used for balancing purposes.

The Market Operator who is responsible for purchasing all energy produced from renewable energy sources and CHP produced in the national feed-in scheme. It is also Balancing Responsible Party for electricity produced in the national feed-in scheme. In practice this means that the Market Operator must accurately forecast hourly production of all power plants in the feed-in system, otherwise it is penalised for imbalances, as any other Balancing Responsible Party.

4.5.4 Monitoring

The compliance with the balancing rules is monitored by the **regulatory authority**. The Market Operator is responsible for the collection of required data upon request from the regulator.

5. BALANCING SCHEMES IN THE ENERGY COMMUNITY OBSERVER COUNTRIES

This section describes the balancing scheme of Georgia, the only Observer country that provided input to the present survey.

5.1 GEORGIA

The following table provides an overview on the balancing status and model in Georgia.

Table 14: Overview of balancing market in Georgia

Requested Balancing Energy [MWh]	2007	2008	2009
	1.383.710	1.385.610	1.202.277
Responsible for preparing legal framework	Ministry of Energy		
Responsible for Balancing	TSO		
Responsible for Balancing Market Operation	N/A		
Responsible for Market Monitoring	N/A		

5.1.1 Legal Basis for Balancing

Legislation foresees that balancing rules have to be defined by secondary legislation. Based on this, the Ministry of Energy has to develop the *Rules On Electricity Market*.

5.1.2 Balancing Model

The TSO and the System Commercial Operator are responsible for balancing. Balancing energy is purchased by **advance contract** following bilateral negotiations. Penalties for imbalance are in principle foreseen and determined according to the contract. There is also an obligation for generators to provide balancing energy.

According to the Law on Electricity and Natural Gas the System Commercial Operator is entitled to sale and purchase balancing electricity on monthly basis.

According to the legislation it is also possible to use balancing energy from **abroad**.



5.1.3 Monitoring

So far there is no procedure for monitoring.

6. SUMMARY

The analysis of the balancing regimes in the Energy Community Contracting Parties, (selected) Participant Countries and Observer Countries shows that the approaches for balancing as well as the stage of development of really functional and transparent balancing markets **vary** within the 8th Region and are in most cases linked to the overall state of development of the electricity market.

Two characteristic groups can be identified:

- Contracting Parties and Observer Countries are all characterized by relatively small size and by existence of dominant incumbent generation companies. Balancing models in these markets are in almost all cases non market based with only one balance service provider (incumbent generation company). Import of balancing energy in the majority of these countries is not allowed.
- Participant Countries that are at the same time EU Member States: some of them have real balancing markets established, while in others auctions are organised where TSOs choose providers of a part of balancing energy. Export of balancing energy in these countries is possible. An important factor also is that – with the exception of Slovenia - these markets are relatively large and have various types of generation facilities.

More in detail the analysis of the **Contracting Parties** shows the following:

- In two Contracting Parties - Serbia and the Former Yugoslav Republic of Macedonia - no legislation on balancing is in place so far at all.
- In all other Contracting Parties legislation on balancing exists and secondary legislation also covers balancing issues. The approaches chosen, however, largely vary – this already starts with the fact that the responsibility for designing balancing rules is allocated to different bodies – be it the regulator, Transmission System Operator (TSO)/Independent System Operator (ISO) or the Market Operator – in the single jurisdictions. This – to some extent – also explains the variety of different balancing mechanisms.
- TSOs or ISOs are in all countries responsible for balancing, as it is one of their core activities. In countries where Market Operators exist, they are as a rule responsible for running balancing market or at least clearing and settlement of imbalances.
- Although most of the Contracting Parties have foreseen already a more or less open balancing scheme - including balancing groups - the market in reality is still dominated by the incumbent generation companies, them being the only players having enough capacity for performing balancing and cross border exchanges in most cases being forbidden or at least limited. In several Contracting Parties this prioritized position of the incumbent has been even fixed within the legal framework.

- Most transactions related to balancing are made according to bilateral contracts between the - in most cases state owned - incumbent Generation Company and the TSO following bilateral negotiations. These bilateral negotiations per se limit transparency, market orientation of prices and create a barrier towards a functioning and open balancing market.
- Suboptimal functioning of the market is also related to the relatively small size of the Contracting Parties compared to other countries in the region like Romania or Italy.
- As renewable energy sources play an important role in the development plans of the Contracting Parties and having in mind their influence on grid balancing, secondary legislation in most several cases foresees special regimes for the prioritized treatment of electricity produced from renewable Energy Sources also as regards balancing. It seems likely that the integration of higher quantities of renewable energy will require stronger integration of balancing regimes.
- Although several Contracting Parties in principle allow the import of balancing energy from abroad - which is a precondition for regional balancing integration - this option is rarely used in reality. An exemption is Moldova which is importing the biggest share of its balancing energy from Ukraine.
- As regards the role of the Regulatory Authorities it is fair to say that they have in most of the Contracting Parties an important role in the process of establishing and monitoring the balancing mechanism. Only in Croatia the Market Operator has the monitoring function concerning balancing.

The picture is different for the **Participant Countries**. The analysis of the received data shows that these countries are as regards balancing mechanisms more advanced than the Contracting Parties. This is, however, also linked to the bigger size of the countries, the larger market size of independent power producers and their capability to provide balancing energy.

Experience from Slovenia shows that there is a close relation between market size and the possibility to implement a market based balancing scheme. Thus it has been suggested that a regional balancing market could be a suitable solution for smaller countries to overcome the problem of limited market liquidity.

It has to be stressed that electricity markets in the EC Contracted Parties are still in the establishing phase and have not yet achieved the final and desired status. This means that in many cases balancing markets are **not the first priority** there, although well designed and successfully operating balancing market is one of the prerequisites for well functioning liberalized wholesale and retail market.

7. CONCLUSIONS AND RECOMMENDATIONS

Balancing markets in the 8th region are still in the development phase. Due to the small sizes of the markets, balancing within their own power system is difficult and more expensive than it could be if balancing markets of these countries are integrated. The small size of these power systems often results in very expensive contracting of necessary reserve capacities (Tertiary Reserve) which - according to the ENTSO-E Operation Handbook - have to cover an outage of the largest generation unit in the national system/control area. If a system is small with at least one large generation unit, the necessary reserve capacities likewise large. Since the cost of providing reserve capacities are covered through network tariffs, electricity in such countries is more expensive for the customers than it could be if balancing markets were integrated with common provision of necessary reserve capacities.

RECOMMENDATION: Considerations on an **adjustment of the ENTSO-E Operation Handbook requirements related to necessary reserve capacities** should be started in close cooperation of regulators, TSOs and ENTSO-E with a view to enable contracting of reserve capacities for tertiary control in wider areas than Control Areas. Control Blocks or larger areas could be an appropriate solution. The proposal will need be further elaborated and discussed before being officially put forward.

In 2009 the European Regulators Group for Electricity and Gas (EREG) published Revised Guidelines of Good Practice (GGP) for Electricity Balancing Markets Integration. This document sets basic principles that should be observed in integrating electricity balancing markets. The document contains 14 Guidelines, i.e. principles to be followed in designing balancing markets.

RECOMMENDATION: It is recommended to **implement the EREG GGP on Electricity Balancing Markets Integration** also in the Energy Community.

For the current situation of market development in the Energy Community especially Guideline 11 is important stating:

"Full harmonization of balancing markets is not a prerequisite for cross-border balancing. Thus, in a step-wise process, cross-border balancing implementation should precede definition and implementation of a standard market design. But increased compatibility would be highly valuable and allow enhanced cross-border balancing exchanges.

Towards harmonizing national balancing markets design it is considered as a first priority to harmonize gate closure and technical characteristics of balancing services."

For the 8th Region this means that – in principle and very generally spoken – balancing markets would not necessarily have to be designed in a full harmonized way from the very beginning. Balancing markets integration could also be started by having different designs of balancing markets, although it should be

noted that very different balancing models in individual countries would make integration of these markets more difficult.

RECOMMENDATION: In a final step it is recommended to **establish a regional balancing scheme** which would definitely increase transparency and decrease costs. In any case the whole process of Regional Balancing Markets integration should be to the highest possible degree done in line with the ERGEG Guidelines of Good Practice.

Before a regional mechanism is established, either throughout whole 8th Region or in parts of it, all the countries that would like to participate in the mechanism, need to **establish national balancing mechanisms**.

Before regional balancing market becomes operational several questions, such as cross border balancing model (TSO-TSO model or TSO-Balancing Service Provider), and a number technical questions need to be solved. BETSEE Platform might serve as an important tool for the operation of Regional Balancing Market.