

Concept model for the coordinated balancing zone

Study about cooperation model for common balancing zone for gas
systems

Contents

Executive summary

Work Package I: Description of target model for merged balancing zone

- [Aim and contents of concept model description](#)
- [Regional single entry-exit market zone](#)
- [Definitions for balance responsibility](#)
- [Market Area Manager: MAM](#)
- [MAM structure](#)
- [Chain of balance responsibility](#)
- [MAM functionalities divided: options analysed](#)
- [Roles and Responsibilities](#)
- [Data exchange](#)
- [Contractual relationships](#)
- [Preferred MAM model as final target \(conclusion by TSOs\)](#)
- [Road to common balancing zone](#)
- [Analysis of Common Balancing Zone model via TSO-TSO Framework Model](#)

Work Package II: Harmonised balancing products and rules

- [Requirements for nominations and trade notifications](#)
- [Short term balancing products](#)
- [Allocation rules for entry-exit points](#)
- [Models for information provision](#)
- [Imbalance settlement, price and financial neutrality](#)

Work Package III: Operational balancing by TSOs

- [Operational balancing in common balancing zone](#)
- [Allocation of gas flows in common VTP area in case of congestion](#)
- [Overall description of Operational balancing design \(one possible option\)](#)
- [Decision-making regarding balancing actions](#)

Roadmap (action plan) forward

Annexes

- [Annex 1: Comparison of current balancing setup](#)
- [Annex 2: Glossary of Terms and Abbreviations](#)
- [Annex 3: Data exchange for balancing](#)

Executive summary (1)

This report describes the concept model for the merged balancing zone for establishing single Baltic(-Finnish) regional market zone.

The Work Package 1 describes the target model for the merged balancing zone. It provides the definitions related to balancing, explains the concept of MAM (Market Area Manager) which will be a central function to operate the market (TSO cooperation in the form of separate entity or in the form of establishing a joint IT platform for common functions), and describes the chain of balance responsibility.

In case the balancing actions will be carried out via MAM entity the two functionality options have been analysed whereas the selected option 1 has more responsibilities delegated from TSO to the central MAM function for the sake of convenience for market participants creating a single point of contact and the use of the single platform for network users in the whole region.

In case the balancing actions will be carried out as TSO-TSO cooperation via joint IT platform the functions will be divided between TSOs and could also be carried out on rotational basis if that proves to be more effective.

However, this report focuses on the functions of MAM and not so much the form of MAM which is analysed in a separate TSOs' report covering the virtual trading hub and regional gas exchange design issues. The report considers MAM as a central function dependent on the form. The TSO-TSO cooperation model as a way to operate the market is explained in detail at the end of Work Package 1.

The roles and responsibilities of the defined market players – TSOs, MAM, BPM, network users, traders – are analysed and decided, and the data exchange paths between market participants are established considering TSOs owned MAM function as central. Two different data exchange models have been analysed and both have been deemed as suitable.

Contractual relationships are defined with four main agreements: balance agreement between MAM and BPM, network agreement between TSO and a network user, service agreement between TSO and MAM, and trading agreements for trading via VTP.

Executive summary (2)

The Work Package 2 describes the harmonized balancing products and balancing rules. It defines the requirements for nominations and re-nominations as well as VTP trade notifications. Balancing Network code (BAL NC) sets out standardized products for short-term balancing which will be the base on agreeing on the region's common products.

There are six types of relevant entry-exit points: IPs between balancing zone areas (e.g. GIPL and Balticconnector), entry-exit points with 3rd countries, single VTP point, entry points for UGS and LNG, daily and non-daily metered exit points to consumers having connection to the transmission system. Regarding the non-daily metered off-takes the different information models are described and the most appropriate for Baltic market selected which unlike others consists day-ahead as well as within day forecasts.

Finally the Work Package 3 focuses on operational balancing. Operational balancing is considered as an important challenge for the TSOs and the decision making process between TSOs and MAM needs to be clearly established.

The development plan for the common balancing zone foresees starting with the MAM function establishment as well as detailed description of the rules as the most important tasks for 2018 following the relevant IT developments and approval of the rules in 2019 in order to fulfil the deadline of 2020 for the Baltic(-Finnish) common entry-exit zone.

Work Package I

Description of target model for merged balancing zone

Aim and contents of concept model description

This work package contains the TSOs' proposal for target model based on analyses completed by TSOs, including: description of the target model and of the actions and responsibilities of related parties as well as establishment of joint Market area manager (MAM) function.

The contents include:

- a. An overview about regional single entry-exit market model
- b. Description of the overall target model for common balancing zone
- c. Description of the main functionalities and responsibilities for each role
- d. Description of the MAM functions and operational balancing design

Regional single entry-exit market zone



- It is foreseen that the gas markets of Lithuania, Latvia, Estonia and possibly Finland will merge and form a single entry-exit system with a single balancing area of the East Baltic sea region. The area between entry and exit points will set a virtual trading point.
- From a commercial perspective (capacity booking, pricing, nomination of flows) there would be no interconnection points between Member States:
 - IP Kiemėnai (LT-LV)
 - IP Karksi (LV-EE) and
 - IP Balticconnector (EE-FI), once Balticconnector is commissioned and Finland makes a decision to join merged balancing zone
- The gas which was injected through entry points, would be traded in the wholesale market in the single virtual trading point. The merged entry-exit system would also form a single balancing area

Entry points:

- Imatra (RU-FI) or Balticconnector (EE-FI) depending on Finland's decision
- Narva (RU-EE) (until 01.01.2019)
- Varska (RU-EE)
- Izborsk/Korneti (RU-EE/LV)
- Misso (RU-EE)
- Kotlovka (BY-LT)
- Klaipėda LNG (LT)
- GIPL (LT-PL), once GIPL is commissioned

Exit points:

- Misso (RU-EE)
- Narva (RU-EE)
- Varska (RU-EE)
- Šakiai (LT-RU)
- GIPL (LT-PL)
- LT domestic exit
- LV domestic exit
- EE domestic exit
- FI domestic exit or Balticconnector (EE-FI) depending on Finland's decision

Gas storage entry and exit points:

- Inčukalns UGS entry
- Inčukalns UGS exit

Definitions for balance responsibility

DEFINITION FOR BALANCE MODEL STUDY

BALANCE PORTFOLIO MANAGER (BPM) is an entity who:

- Is responsible to balance a grouping of a network user's inputs and off-takes in its portfolio by signing balance agreement with TSO (delegated to MAM)
- BPM is always a network user and/or a trading participant

NETWORK USER (NU) is an entity who:

- Transport gas to/from transmission network via entry-exit points and/or
- Trades gas to/from VTP point as trading participant and/or
- book and use capacity on the relevant TSOs' network under a transport contract.

If NU is not itself a BPM, it must have agreement with some BPM.

SUPPLIER is an entity who:

- Sells gas to final customer.
- If he trades gas to/from VTP point, then supplier is also a trading participant and/or NU
- Must have balance responsibility via some BPM

USER: metering point of consumer, producer, LNG, network operator's consumption (incl. losses); shall be included in some BPM portfolio.

TRADING PARTICIPANT is a market participant who trades via VTP

Must have balance responsibility via some BPM or directly via contract with MAM

COMMERCIAL BALANCING means balancing actions that a BPM undertakes to maintain a balance portfolio in balance. Balancing actions may entail gas transfers between balancing portfolios and physical gas inputs to and off-takes from the balance portfolio.

DEFINITION BASED ON REGULATION

BALANCING PORTFOLIO means a grouping of a network user's inputs and off-takes.

Additional requirement for NU under BAL NC: The respective rights and obligations (...) with regard to NUs shall only apply to those NUs which have concluded a legally binding agreement, being a transport contract or another contract.

NETWORK USER means a customer or a potential customer of a TSO and TSOs themselves in so far as it is necessary for them to carry out their functions in relation to transmission.

Additional requirement for NU under CAM NC: Joint booking platforms shall apply the following rules : [...] in order to use the services of the booking platforms NUs shall accede to and be compliant with all applicable legal and contractual requirements that enable them to book and use capacity on the relevant TSOs' network under a transport contract.

SUPPLY means the sale, including resale, of natural gas, including LNG, to customers; Art. 2 (7), Directive

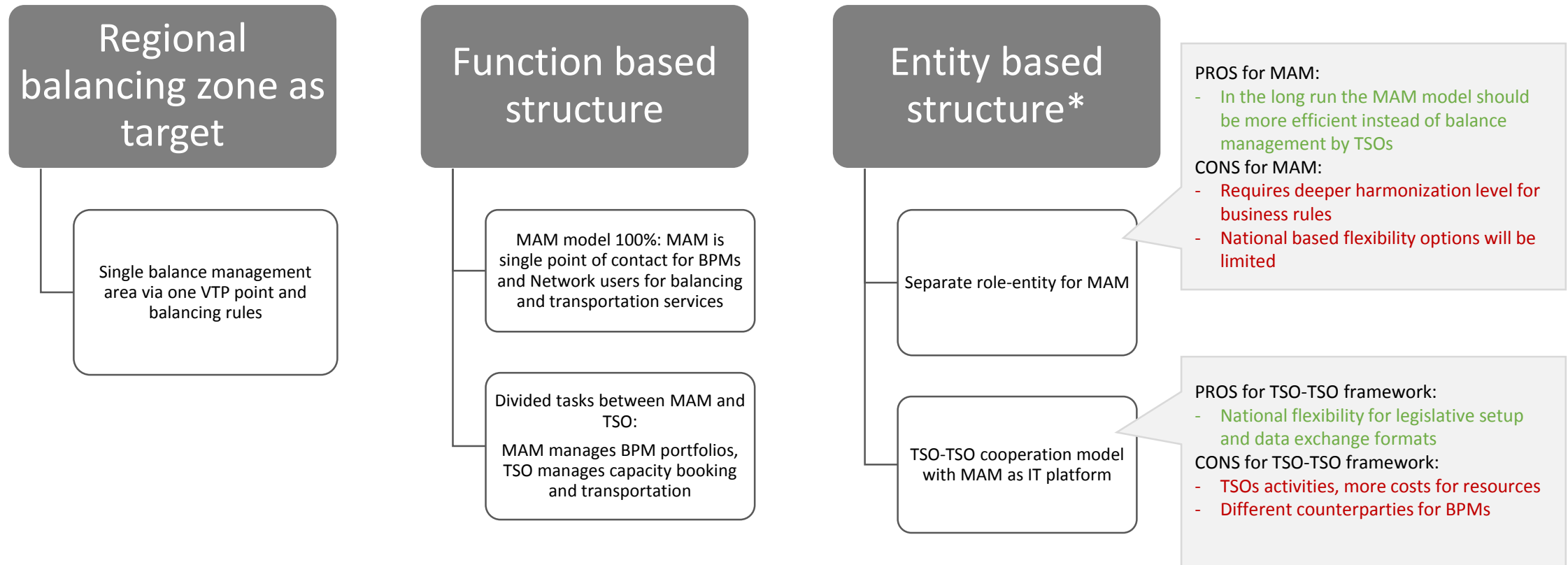
SYSTEM USER means a natural or legal person supplying to, or being supplied by, the system. Art. 2 (23), Directive

TRADING PARTICIPANT means a NU or a TSO holding a contract with the trading platform operator and satisfying the conditions necessary to transact on the trading platform.

OPERATIONAL BALANCING means that the TSO undertakes balancing actions in order to (a) maintain the transmission network within its operational limits; (b) achieve an end of day linepack position in the transmission network different from the one anticipated on the basis of expected inputs and off-takes for that gas day, consistent with economic and efficient operation of the transmission network. (NC BAL)

BALANCING ACTION means an action undertaken by the TSO to change the gas flows onto or off the transmission network, excluding those actions related to gas unaccounted for as off-taken from the system and gas used by the TSO for the operation of the system. (NC BAL)

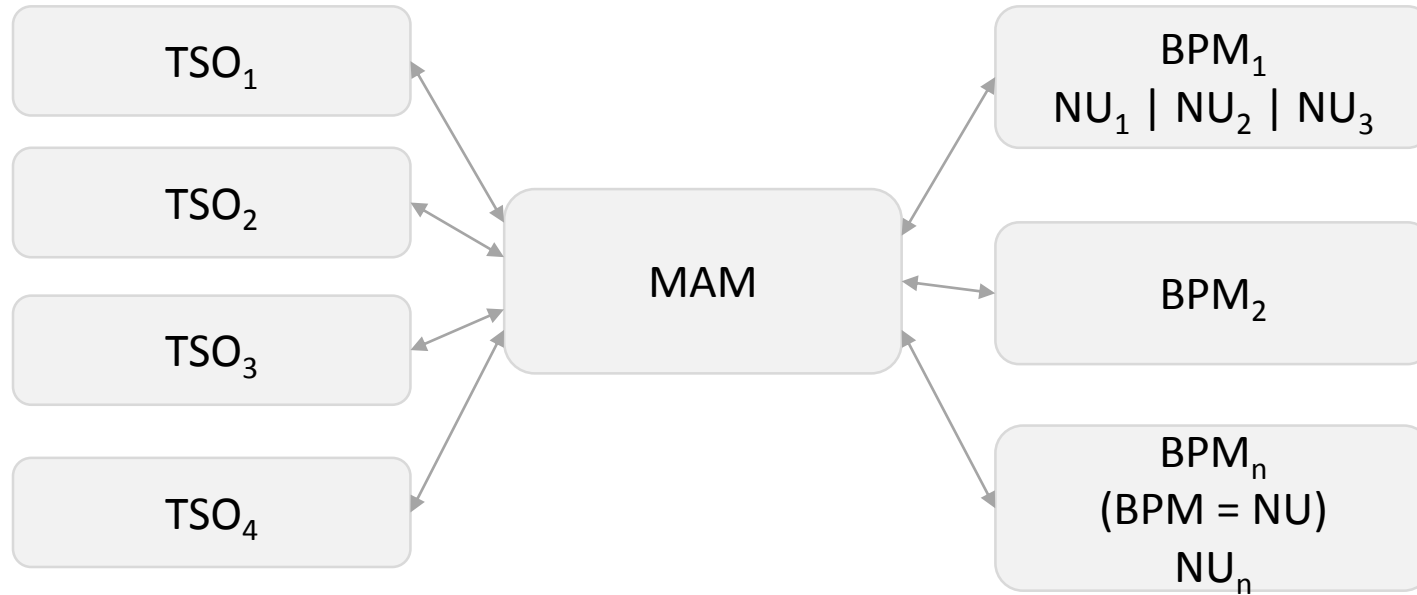
Balancing and transportation services in common market zone



MAM would perform the functions as defined by the market framework and its MAM service agreement with the TSOs

* This report analyses the function based structure of the common balancing zone. The entity based structure is further analysed in „Analysis of MAM alternatives“.

MAM relations structure



The MAM structure is simple:

- MAM function would be connected from one side to the region's TSOs and from the other side with the BPMs
- MAM would perform the functions as defined by the market framework and its MAM service agreement with the TSOs

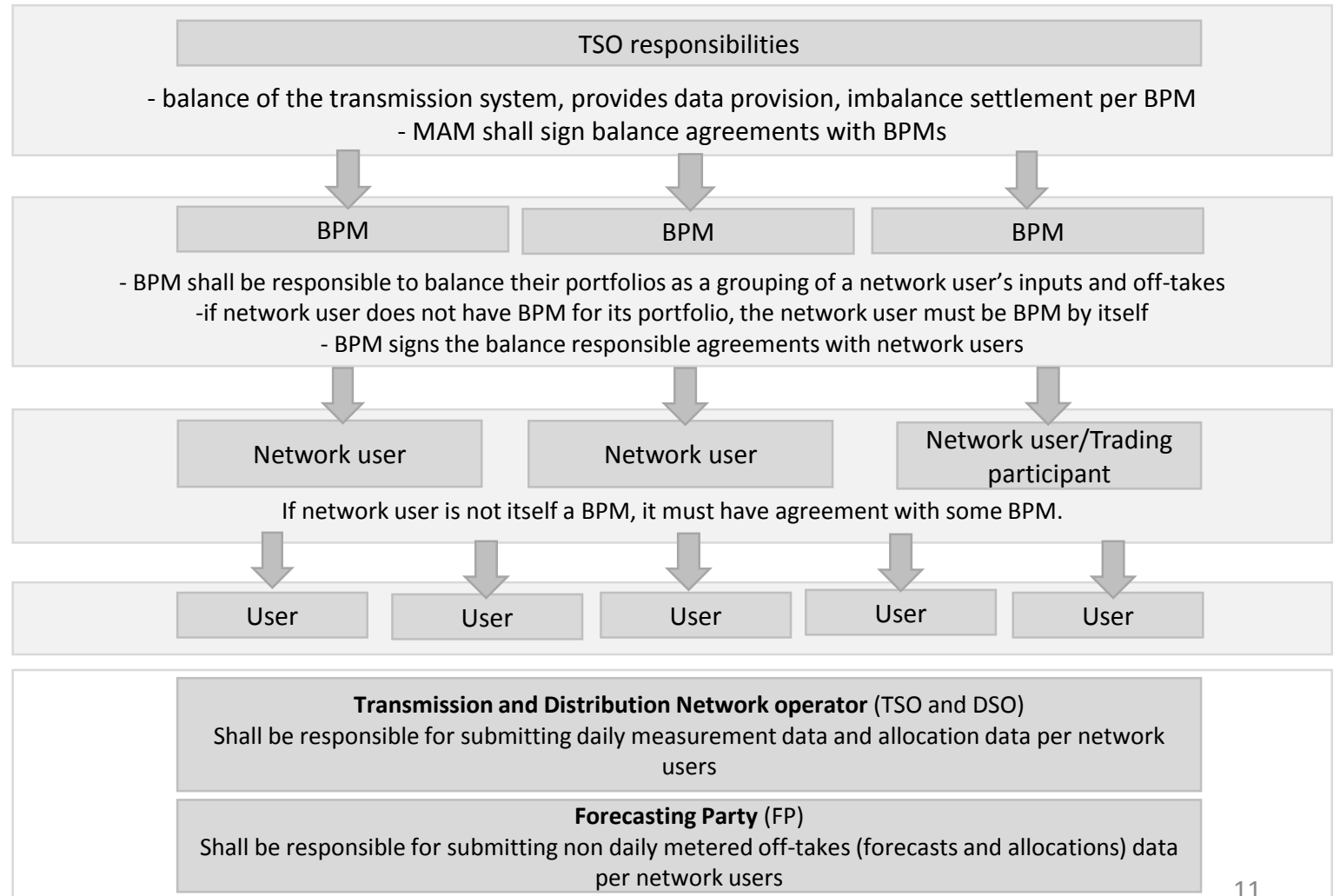
Who would act as MAM has been addressed in MAM alternatives analysis.

Chain of balance responsibility

Balance portfolio managers (BPMs) are to bear the responsibility of balancing their (network users) inputs against their off-takes.

TSO responsibility is to carry out operational balancing and to ensure the integrity of the transportation systems through balancing actions when needed. TSOs have to take balancing actions based on a merit-order of balancing measures by purchasing and sale of standardized short term products.

In general the functionalities relevant from the balance responsibility point of view could be divided between TSO(s) and MAM function, therefore the two most supported options are described next to provide reasoning for the preferred model.



MAM functionalities divided: options analysed

The functionalities listed below can either be fulfilled by TSO(s) or the TSO could delegate the task to MAM. Option 2 depicts the common division for the functionalities between MAM and TSO and Option 1 reflects the situation with most tasks delegated to MAM.

Option 1 seems to bring more benefits

Functionality	Description	Task performed by		Pros and cons
		Option 1	Option 2	
Balancing Group Management	Managing contractual relationships with BPMs (including concluding balancing agreements)	MAM	MAM	<p>OPTION 1</p> <ul style="list-style-type: none"> Convenience to market participants and TSOs - creation of a single point of contact and use of single (web) interface for network users in the Baltics (one-stop-shop) Cost reduction as no duplication of functions and systems Requires comprehensive set of TSO-MAM agreements and data exchanges May require higher upfront investments <p>OPTION 2</p> <ul style="list-style-type: none"> Two parallel processes / Additional layer for nomination/notification process (more complex / higher transaction costs) Retaining some functions at TSO levels may facilitate initial implementation but likely to be more costly in the long run Requires slightly less comprehensive set of TSO-MAM agreements and data exchanges
Performing trade notification procedures	Receiving of trade notifications for VTP, matching trade notifications, sending trade notification approvals	MAM	MAM	
Aggregating balancing positions per BPMs	Imbalance position calculation (during the gas day and after)	MAM	MAM	
Performing imbalance settlement and invoicing	Includes data collection, calculation verifications, reporting, invoicing, also imbalance gas price determination	MAM	MAM	
Operational balancing activities using short term balancing products and balancing services	Includes the recognition of need for balancing actions, facilitating the TSO's decision making process regarding balancing actions, facilitating the execution of balancing actions and related financial remunerations	MAM	MAM	
Provision of Data	Includes the timely and transparent balancing related data provision as required by the legislation and regulations	MAM	MAM	
Organizing entry and exit transmission capacity booking to network users	Includes the organising of capacity auctions as required by the legislation and regulations taking into account that capacity will be allocated not only through auctions: auctions and other capacity booking procedures	MAM	TSO	
Accepting gas flow nominations at entry and exit points from network users	Receiving of nominations, facilitating matching process, rejecting nominations, facilitating the re-nomination process	MAM	TSO	
Allocating gas flow at entry and exit points to network users	Providing allocations per set rules	MAM	TSO	

Roles and Responsibilities

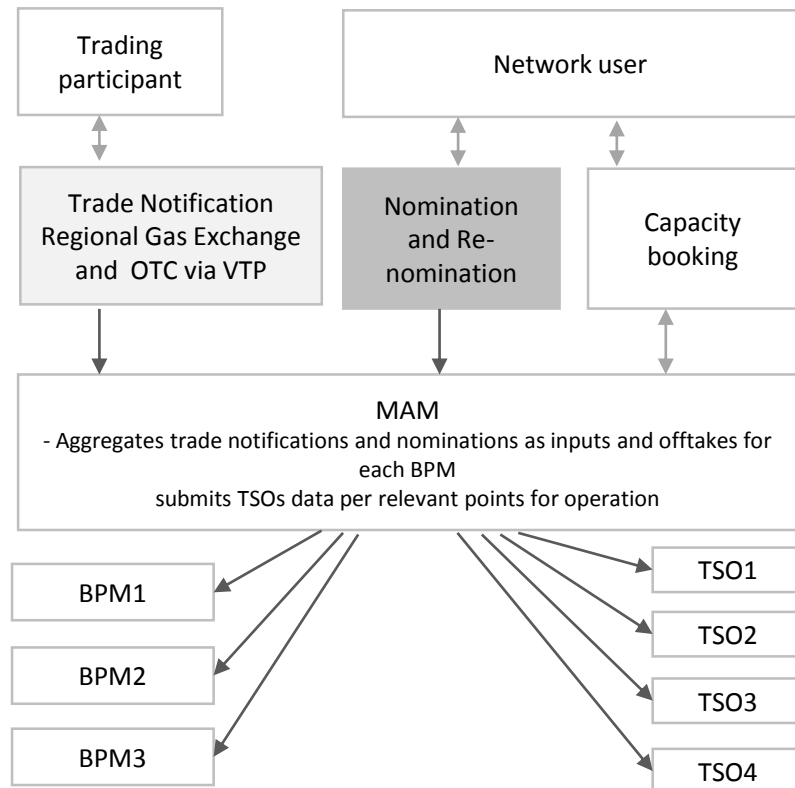
TSOs	MAM	BPM	Network users	VTP
<ul style="list-style-type: none"> Operate transmission system and organizes physical flows within the system Ensure operational balance of the transmission system and security of supply Provide to MAM all needed information necessary for nomination process, allocation of gas flows, commercial balancing and imbalance settlement 	<ul style="list-style-type: none"> Manages Balance Portfolios Accepts gas flow nominations at entry and exit points Performs trade notification matching, accepts notifications Provides to TSOs all needed information necessary for operational balancing and physical allocation of gas flows Aggregates imbalance positions of the BPMs Performs imbalance settlement and invoicing Uses Trading Platform and balancing services for operational balancing at the request of TSOs Provides transparency data Organizes entry and exit transmission capacity booking to network users Provides market surveillance and reporting 	<p>Addition to requirements for NU:</p> <ul style="list-style-type: none"> Balances inflows and outflows of its balancing portfolio Is eligible to trade gas at VTP or via bilateral contracts (OTC) Submits nominations to MAM Receives gas flow allocations from MAM Performs other requirements set by MAM Performs settlement for network users in its portfolio 	<ul style="list-style-type: none"> Buy transmission capacity from MAM Are eligible to trade gas at VTP or via bilateral contracts (OTC) Sign agreement with some BPM and perform requirements set by BPM Submit nominations to BPM/MAM Submit trade notification to BPM/MAM (OTC trade) 	<p>RGE:</p> <ul style="list-style-type: none"> Provides trading platform and gas products to trading participants Places short-term and other standardized products for balancing for trading Provides trade notifications of exchange to MAM Provides market surveillance and reporting Takes action to increase hub liquidity <p>OTC:</p> <ul style="list-style-type: none"> Operation of regional VTP ensured by MAM Provides trade notifications per NUs/BPMs

Data exchange

Two options data exchange schemes are foreseen regarding providing the trade notifications and nomination data to MAM :

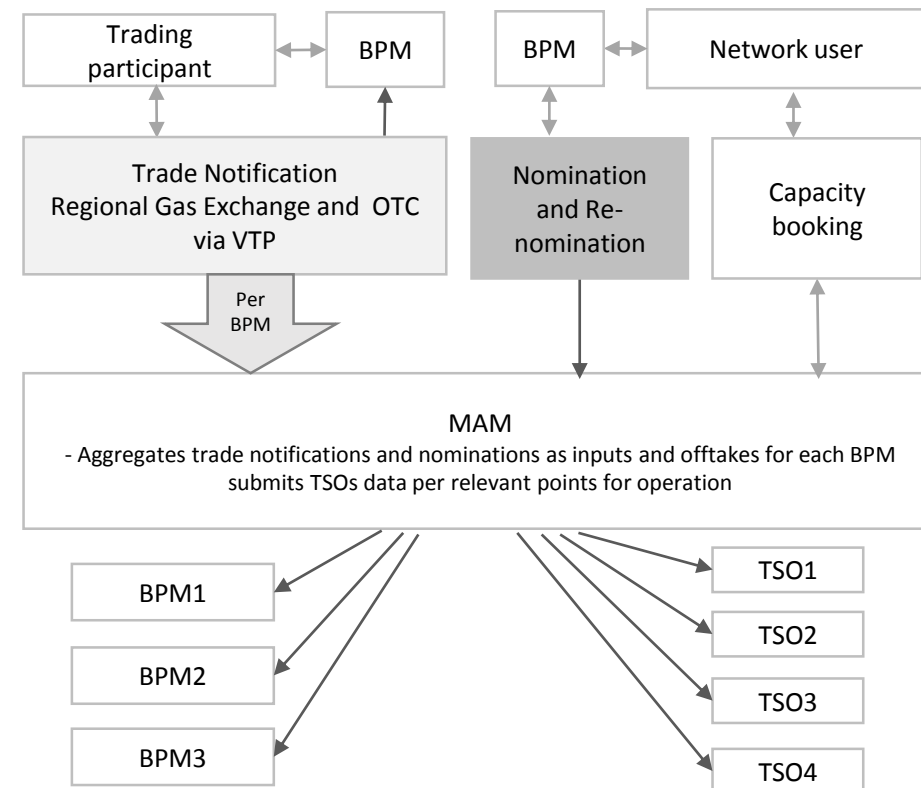
1. Data provided by transactions

(NU nominates own schedule)



2. Data provided by BPMs

(BPM single contract)



Contractual relationships

Currently there are many contracts that a market participants must conclude to act in the region – to act in all the countries more than 12 contracts are needed. In a single balancing zone the number of contracts necessary for the market participant would be much lower.

Contractual relationships within regional market framework with MAM established:

Agreement type	Contents	Involved Parties
Balance Agreement	Balance Responsibility, trade notification process and imbalance settlement, balance portfolio info	MAM and BPM
Network agreement	Capacity booking Balance Portfolio info (info regarding which balancing portfolio the NU belongs to) Data exchange to MAM (for NUs) Nominations and allocations	TSO and network user
Service agreement	Responsibilities, nominations/trade notification process, data exchange and settlement, capacity booking	TSO and MAM
Trading agreement	Trading via VTP	RGE/OTC and trading participant

Preferred balancing zone model as final target (conclusion by TSOs)

There are several possibilities how the functionalities could be divided between the Parties.

The most preferred model estimated by TSOs would foresee the target model as follows:

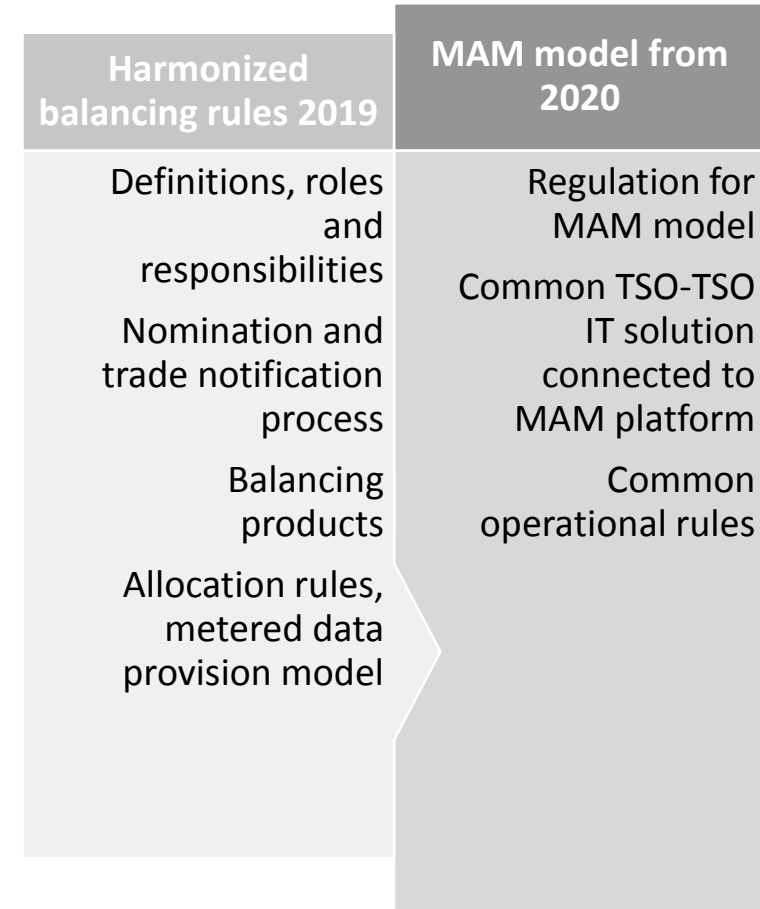
1. Regional single contractual point for balance portfolio management, including capacity booking and information exchange between network users and TSOs related to transmission services;
2. Single trade notification, nomination and re-nomination process per relevant points in zone;
3. Transparency and data provision;
4. System balancing using a merit order of products;
5. Harmonised imbalance settlement process per balance portfolios;
6. Harmonised daily imbalance charge and neutrality obligation of TSOs/MAM;
7. Harmonised TSO-TSO cooperation model for operational balancing

Road to common balancing zone

Pre-conditions for implementation of common balancing zone model

- Harmonized definitions and balancing rules
 - The use of standardized short term products and balancing services for operational balancing
 - Harmonized data provision rules and metered data provision by DSOs
- Limited physical congestion at interconnection points between TSOs (required in order to ensure that trades at the VTP between TSOs or by the MAM for balancing purposes can happen without restrictions)
- Creation of a central IT platform of the TSOs, MAM is required to ensure smooth communication across TSOs and between TSO and MAM
- Implementation of operational balancing agreements between TSOs to ensure that the flow of natural gas across TSOs' transportation systems is organised efficiently

As implementing the „separate MAM entity model“ is a challenge, then a stepwise approach could be used before the relevant functions are merged.



Analysis of Common Balancing Zone model via TSO-TSO Framework Model: MAM functions achieved via common IT platform

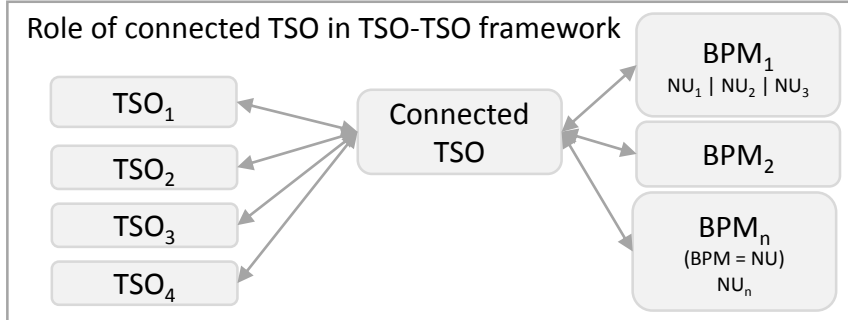
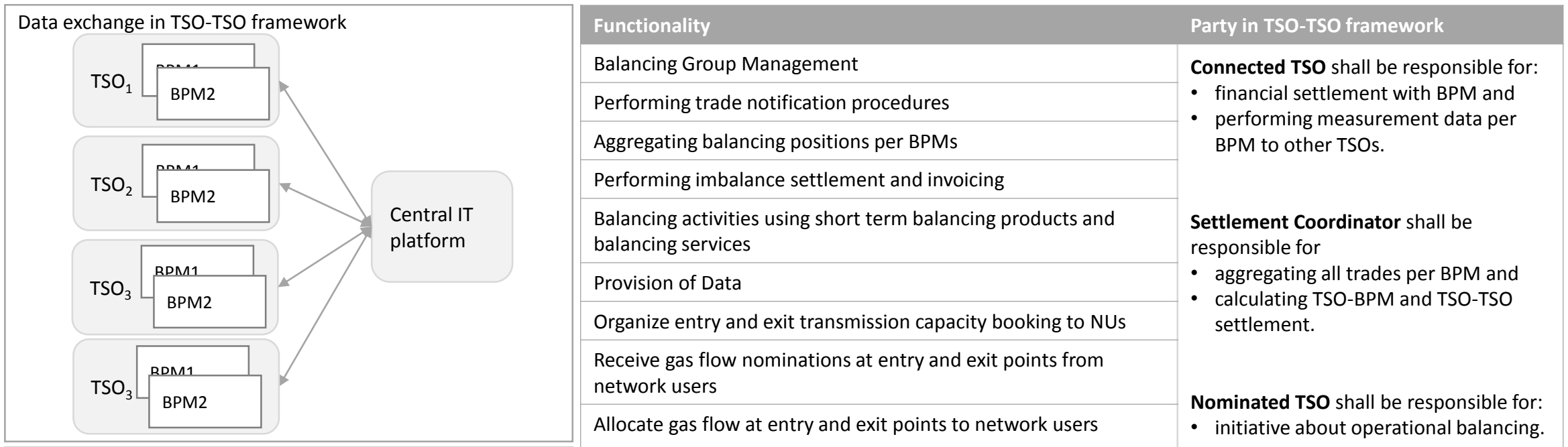
Assuming one entry-exit zone and one balancing zone for all of the region as in the MAM model as well as one VTP.

Critical issues for TSOs, BPMs and NUs:

- Operational balance of the transmission system: need for coordination across TSOs
- Managing balance portfolios: balance portfolios are managed only in the respective TSO area for each BPM and NU
- Aggregation of balancing position: TSOs would need to communicate with each other the balancing position of each BPM - issue of coordination between TSOs on balance portfolio positions for the whole balancing zone, and BPMs need to provide and receive information with each TSO in the area in which they are active - final aggregation to be carried out by TSO with whom the BPM is registered
- Performance of imbalance settlement and invoice: settlement done at the TSO level however balance portfolio positions are calculated at the level of the common entry-exit zone – common settlement „budget“ shall be implemented
- Use of one trading platform for balancing: either use of a common balancing platform between TSOs or separate balancing platforms for each TSO

Analysis of Common Balancing Zone model via TSO-TSO Framework Model: MAM as common IT platform

In order to establish a common balancing zone one option is to establish a MAM function and another option is to use establish a TSO-TSO cooperation on essential functionalities. The following describes how the TSOs see the cooperation framework for the common balancing zone including the roles of connected and nominated TSO, settlement coordinator and central IT platform.



PROS for TSO-TSO framework usage:

- National flexibility for legislative setup and data exchange formats
- Improved cost efficiency via not requiring additional staffing/extra outsourced services (accounting, legal, rent costs of premises, server centres etc.)

CONS for TSO-TSO framework usage :

- IT development/cost
- TSOs activities, more costs for resources
- Different counter-parties for BPMs

Work Package II

Harmonised balancing products and rules

Requirements for nominations and trade notifications

Nomination/re-nomination

Nominations and re-nominations at entry and exit interconnection points shall contain at least the following information:

- the interconnection point;
- direction of the gas flow;
- the network user's identification and/or its balancing portfolio identification;
- start and end time of the gas flow for which a daily nomination or daily re-nomination is submitted (the start and end of gas day D);
- gas day D for which the nomination is submitted;
- the gas quantity requested by the user to be transported on gas day D

When nominations come in, they are tested against the capacity booked by user.

If the nomination is higher than this capacity, then available capacity is checked and additional capacity is allowed to be booked to the extent of available capacity and more than available (firm) capacity - as interruptible capacity. In case there is an interruption the NU will be notified of it.

VTP and trade notifications

The network users and gas traders may buy and sell natural gas at the Virtual Trading Point (VTP) for the respective balancing zone, including for the purpose of minimising the imbalances on their financial accounts. There shall be implemented single Virtual Trading Points (VTP) for common balancing zone for Baltic area.

Any VTP trade notification shall contain at least the following information:

- trade ID (unique number);
- the gas day on which the natural gas is traded;
- counterparties (codes) / the respective balancing portfolios;
- date and hour of concluding a trade;
- type of trade (purchase/sale);
- quantity [...] kWh.

Standardized trading products used for operational balancing purposes

The BAL NC Article 7 sets out the following short term standardized products to be traded **day ahead** or **within day**:

- Title product – quantities and trading participants defined
- Locational product – quantities, trading participants and additionally entry or exit point for the delivery is defined
- Temporal product – trading participants and additionally hourly quantities are defined
- Temporal locational product – trading participants, entry or exit point for the delivery and additionally hourly quantities are defined

Specific products have not yet been decided, the region's TSOs will have to define and agree on the common short term standardised products.

Allocation rules for entry-exit points

RELEVANT ENTRY-EXIT POINT	ALLOCATION RULE	ALLOCATION TIMELINE (GATE CLOSURE TIME)
Interconnection points between adjacent balancing zone areas	Allocated quantity = Confirmed quantity	Re-nomination GCT
Interconnection points with 3 rd countries	Allocated quantity ← Rules are to be defined by relevant TSOs	Actual daily measurements
VTP point	Allocated quantity = Confirmed notifications (lesser rule applied for confirmation)	GCT for product
Entry points for storage, LNG points	Allocated quantity = Confirmed quantity	GCT for product
Daily metered exit points	Allocated quantity = Measured quantity	Preliminary D+1 Final M+?
Non daily metered exit points	Allocated quantity = Base case quantity	Base case (next slides) VAR 1 D-1 (next slides) VAR 2 D+1 (next slides)

Models for information provision

- Balancing Network code allows for three possible models regarding the information on non daily metered off-takes:

Base case (initial D+1 data and M+X data as final)

- information on non daily metered off-takes consists of a **day ahead and within day forecasts**
- on gas day D-1, the TSO shall provide network users with a forecast of their non daily metered off-takes for gas day D no later than 12:00 UTC (winter time) or 11:00 UTC (daylight saving)
- on gas day D, the TSO shall provide network users with a minimum of two updates of the forecast of their non daily metered off-takes.
 - The first update shall be provided no later than 13:00 UTC (winter time) or 12:00 UTC (daylight saving)
 - The time of the second update provision shall be defined upon approval by the NRA and published by the TSO
- No later than the end of gas day D+1, the TSO shall provide each network user with an initial allocation for its inputs and off-takes on day D and an initial daily imbalance quantity. Final allocation shall be submitted M+X.
- **all gas delivered to the distribution system shall be allocated**

Variant 1 ((D+1 data shall be as final)

- information on non daily metered and daily metered off-takes is **based on apportionment of measured flows** during the gas day
- on gas day D the TSO shall provide network users with a minimum of two updates of their apportionment of measured flows for at least the aggregate daily metered off-takes according to either of the following two options, as decided by the TSO:
 - (a) each update covers gas flows from the beginning of this gas day D; or
 - (b) each update covers incremental gas flows after that reported in the previous update.
- Each update shall be provided within two hours from the end of the final hour of gas flows
- No later than the end of gas day D+1, the TSO shall provide each network user with an initial allocation for its inputs and off-takes on day D and an initial daily imbalance quantity
 - **all gas delivered to the distribution system shall be allocated**
- an initial allocation and an initial daily imbalance quantity shall be considered as the final allocation and the final daily imbalance quantity

Variant 2 (D+1 data shall be as final)

- information on non daily metered off-takes is a **day ahead forecast**
- on gas day D-1, the TSO shall provide network users with a forecast of their non daily metered off-takes for gas day D no later than 12:00 UTC (winter time) or 11:00 UTC (daylight saving)
- No later than the end of gas day D+1, the TSO shall provide each network user with an initial allocation for its inputs and off-takes on day D and an initial daily imbalance quantity
 - **non daily metered off-takes shall equal the forecast** of a network user's non daily metered off-takes provided day ahead

Most appropriate for the Baltic region

The TSO shall provide each BPM with information concerning the final allocation for its inputs and off-takes and the final daily imbalance quantity no later than XX:00 hrs on the Xth day of the month following the reporting month.

Imbalance settlement, price and financial neutrality

BAL NC REQUIREMENTS:

- Daily imbalance quantity = inputs - off-takes
- The daily imbalance charge shall be cost reflective and shall take account of the prices associated with balancing actions, if any, and of the small adjustment (<10%)
- The daily imbalance charge calculation methodology to be applied for balancing zone shall be approved by all NRAs
- TSO (delegated to MAM) shall not gain or lose by the payment and receipt of daily imbalance charges, within day charges, balancing actions charges and other charges related to its balancing activities, which shall be considered as all the activities undertaken by the TSO (and MAM) to fulfil the balancing obligations
- The neutrality charge for balancing shall be paid by or to the BPMs concerned.
- The NRA shall set or approve and publish the methodology for the calculation of the neutrality charges for balancing, including their apportionment amongst BPMs and credit risk management rules.
- Neutrality charge for balancing means a charge amounting to the difference between the amounts received or receivable and the amounts paid or payable by the TSO (MAM) due to performance of its balancing activities which is payable to or recoverable from the relevant BPMs.

Reconciliation process will be agreed within the balance settlement rules.

Work Package III

Operational balancing by TSOs

Operational balancing in common balancing zone

As the common balancing zone means that from a commercial perspective (capacity booking, pricing, nomination of flows) there would be no IPs between Member States, there are several topics to be solved and rules to be developed:

1. Division of responsibilities between TSOs and MAM
2. Common balancing rules
3. Common technical capacity calculation rules (both for entry/exit points and for internal border points) and rules for creation of common grid model for balancing zone
4. Gas flow allocation (including for internal border points)
5. Operational information exchange, e.g. plant availability, pressure and gas composition, transmission network topology (e.g. if transmission network is divided into separate parts)
6. TSO-TSO and TSO-MAM information exchange
7. TSO-TSO and TSO-MAM settlement (operational balancing account) and cost allocation
8. Data exchange model for balancing

In current study abovementioned topics are not elaborated in detail, but in order to understand the essence of the issues there are added some examples about some of these topics (about operational balancing design, about division of responsibilities, about data exchange for balancing, about internal congestion management).

Overall description of Operational balancing design (one possible option)

Balancing actions

Necessity for balancing actions originates from following reasons:

- difference between network users inputs and off-takes
- need to maintain the transmission network within its operational limits
- for keeping the linepack position at needed levels (for example because of pressure conditions, for guaranteeing protected customers supply etc.)

Balancing gas is bought/sold through VTP or through concrete entry/exit point in case locational products are needed

Balancing actions are taken:

- through buying or selling of flexible gas by trading day-ahead or within-day in one or more of the short term standardized products buy/sell balancing gas on behalf of TSOs
- through utilization of balancing services (TSO will use this option only when standardised products will not or are not expected to keep transmission network within safe operational limits)

Responsibilities

MAM responsibilities :

- calculate aggregated difference between network users inputs and offtakes for every gas system in common balancing zone (imbalance)
- make suggestions to TSOs for balancing actions (in terms of volume)
- buy/sell balancing gas on behalf of TSOs both through utilization of short term standardized products and balancing services.

MAM does not take unilateral decisions regarding activation of balancing actions. Balancing actions are executed only when requested by TSO.

TSO responsibilities:

- determine need for balancing actions from TSO perspective
- evaluate suggestions by MAM for balancing actions together with TSOs own judgment for balancing need
- make requests to MAM for buying/selling balancing gas
- determine whether balancing gas can be traded through VTP or whether locational product is needed

Decision-making regarding balancing actions

In making decisions as to taking balancing actions the **TSO** shall be entitled to take into account such information as it shall judge appropriate, including:

- its own estimates of demand and profiles of demand within the day
- nomination information and actual meter readings at entry and exit points
- information provided by forecasting party
- operating information, e.g. plant availability, pressure and gas composition
- transmission network topology (e.g. if transmission network is divided into separate parts)

When deciding upon the appropriate balancing actions **TSO shall through MAM** prioritise to the extent appropriate (merit order):

1. Prioritise the use of within-day STSP over day ahead STSP
2. prioritise the use of title products over any other available short term standardised products;
3. locational products may be used when gas flow changes are needed at specific entry and/or exit points;
4. temporal products may be used when gas flow changes are needed within a specific period of time within the gas day;
5. temporal locational products may be used when gas flow changes are needed at specific entry and/or exit points and within a specific period of time within the gas day.
6. Detailed rules how decisions on operational balancing actions should be made will be described in separate **Operational Balancing Rules**.

Roadmap (action plan) forward

Milestone	Start	End	Party	Status
Approve the objectives and content of study (for TSOs)		12.2016	TSOs	✓
High level concept of the target model for common balancing zone, including: description of the MAM model, balancing rules/products setup, operational balancing items, data provision		09.2017	TSOs	✓ / ✗
Public consultation on the draft model of a common balancing zone		Q4 2017	TSOs	✗
Identify and notify ministries of high-level legislation items that need to be changed and developed		Q4 2017	TSOs	✓ / ✗
Work on the identified legislation changes	Q4 2017		Ministries	✗
Scope for consultancy for balancing rules	Q4 2017	Q4 2017	TSOs	✗
Balancing rules developed	Q1 2018	Q1 2018	TSOs	✗
Scope and specifications for IT analysis of the central IT platform	Q1 2018	Q2 2018	TSOs	✗
Scope for the central IT platform development	Q3 2018	Q4 2018	TSOs	✗
IT development procurement		2018	TSOs	✗
Details for operational balancing design and balancing rules to be developed, including roles and responsibilities between TSOs and MAM	2018	2018	TSOs + consultancy	✗
Identify and arrange legislation items to be changed or developed	Q2 2018	2019	Ministries	✗
Identify relevant modification / development needs of existing TSO IT systems	Q4 2018	2019	TSOs	✗
IT developments		2019	TSOs/MAM	✗
Pre-conditions acceptance (harmonised rules, legislation, IT setup)		2019	TSOs/MAM	✗
MAM activities: agreements, IT etc		2020	MAM	✗

Annexes

Annex 1: Comparison of current balancing setup

Annex 2: Glossary of Terms and Abbreviations

Annex 1: Comparison of current balancing setup

The following summarizes the status of relevant building block to be harmonized to achieve common balancing zone model.

Building block	Status	HAR status for Baltic	HAR status with FI
TSO-TSO interoperability agreement	✓ / ✗	In progress	
Contents about trade notification, nomination and re-nominations	✓	In line with BAL NC	NA (no formal nominations)
Time-schedule for nomination	✓	D-1 15.00	NA
Time-schedule for re-nomination	✗	Shall be harmonised	NA
Balance Day and unit	✗ / ✓	Balance Day shall be harmonised (issue for EE)	gas day 0.00-0.00, unit one hour
Matching process	✓	In line with BAL NC	NA
Allocation rules for CB entry-exit points	✗	Shall be harmonised	NA
Allocation rules for VTP trade	✓	In line with BAL NC	NA (no VTP)
Harmonised definitions for the main functionalities and responsibilities	✗	Shall be harmonised based on EU regulation	-
Relevant information performed by TSOs	✗	Shall be harmonised based on BAL NC	-
Forecast model for non-remote data	✗	EE: -; LV: Base case; LT: Base case	-
Time-schedule for measurement data allocation	✗	Shall be harmonised	
Imbalance volume calculation principles	✓	Input – Offtake	-
Neutrality mechanism	✗	LT?	-
Daily imbalance charge calculation	✗	Shall be harmonised	hourly return & balancing gas based on margin & index
Daily imbalance charge publication	✗	EE: D+1; LV: LT:M+1	price is published in online service
Short Term Standard Product for Gas Balancing	✗	Shall be developed	for commercial balancing products called Gasum plus and minus

Annex 2: Glossary of terms and abbreviations (1)

- **Virtual trading point (VTP)** is an arrangement in entry-exit transportation systems that facilitates title transfer and trading downstream of entry and upstream of exit points
- **Virtual trading hub (VTH)** is an arrangement in entry-exit systems centred around a virtual trading point and comprising of a VTP, service providers, hub services, products, traders and liquidity
- **Transmission System Operator (TSO)** means a natural or legal person who carries out the function of transmission and is responsible for operating, ensuring the maintenance of, and, if necessary, developing the transmission system in a given area and, where applicable, its interconnections with other systems, and for ensuring the long-term ability of the system to meet reasonable demands for the transport of gas. (Art. 2 (4), Directive 2009/73/EC)
- **Market area manager (MAM)** is an entity dedicated to operating the virtual trading point and providing centralised services of a virtual trading hub like handling of trade notifications, allocation of gas quantities at the VTP, calculation of balancing positions, handling of imbalance charging and settlement etc. MAM is a term chosen to define a hub operator in the context of the establishment of the common gas market of the East Baltic region
- **Hub operator** is a synonym of a MAM often used in research papers or policy documents.
- **Regional gas exchange (RGE)** is an entity dedicated to act as an organised market place in the market of the region. It provides a trading platform and gas products to ensure transparent and anonymous trade of gas.
- **Trading Participant** means a network user or a TSO holding a contract with the trading platform operator and satisfying the conditions necessary to transact on the trading platform. (Art. 3 (5), BAL NC)
- **Network User** means a customer or a potential customer of a TSO, and TSOs themselves in so far as it is necessary for them to carry out their functions in relation to transmission. (Art. 2 (1)(11), Regulation 715/2009)
- **Trade Notification** - gas transfer between two balancing portfolios within one balancing zone shall be made through disposing and acquiring trade notifications submitted to the TSO in respect of the gas day (Art. 5 (1), BAL NC)
- **Nomination** means the prior reporting by the network user to the TSO of the actual flow that the network user wishes to inject into or withdraw from the system (Art. 2 (1)(7), Regulation 715/2009)

Annex 2: Glossary of terms and abbreviations (2)

BALANCING

- **Balancing action** means an action undertaken by the TSO to change the gas flows onto or off the transmission network, excluding those actions related to gas unaccounted for as off-taken from the system and gas used by the TSO for the operation of the system.
- **Neutrality charge** for balancing means a charge amounting to the difference between the amounts received or receivable and the amounts paid or payable by the TSO due to performance of its balancing activities which is payable to or recoverable from the relevant network users.
- **Balancing platform** means a trading platform where a TSO is a trading participant to all trades.
- **Balancing service** means a service provided to a TSO via a contract for gas required to meet short term fluctuations in gas demand or supply, which is not a short term standardised product.
- **Daily imbalance charge** means the amount of money a network user pays or receives in respect of a daily imbalance quantity.
- **Balancing portfolio** means a grouping of a network user's inputs and off-takes.
- **Balancing zone** means an entry-exit system to which a specific balancing regime is applicable and which may include distribution systems or part of them
- **Notification quantity** means the quantity of gas transferred between a TSO and a network user or network users or balancing portfolios, as appropriate.
- **Allocation** means the quantity of gas attributed to a network user by a TSO as an input or an off-take expressed in kWh for the purpose of determining the daily imbalance quantity.
- **Within day charge** means a charge levied or a payment made by a TSO on or to a network user as a result of a within day obligation.
- **Within day obligation (WDO)** means a set of rules regarding network users' inputs and off-takes within the gas day imposed by a TSO on network users.

Annex 2: Glossary of terms and abbreviations (3)

Metered data provision and requirements (BAL NC):

- **Allocation** means the quantity of gas attributed to a network user by a TSO as an input or an off-take expressed in kWh for the purpose of determining the daily imbalance quantity.
- **daily metered** means that the gas quantity is measured and collected once per gas day;
- **Intraday metered** means that the gas quantity is measured and collected a minimum of two times within the gas day;
- **Non daily metered** means that the gas quantity is measured and collected less frequently than once per gas day.
- **Base case** means the model for information provision where the information on non daily metered off-takes consists of a day ahead and within day forecasts;
- **Variant 1** means the model for information provision where the information on non daily metered and daily metered off-takes is based on apportionment of measured flows during the gas day;
- **Variant 2** means the model for information provision where the information on non daily metered off-takes is a day ahead forecast

- (1) Each distribution system operator (DSO) associated to a balancing zone and each forecasting party shall provide the transmission system operator (TSO) in the respective balancing zone with the information necessary for information provision to the network users. This shall include inputs and off-takes on the DSO regardless whether that system is a part of the balancing zone or not.
- (2) Information obligations of the DSOs towards the TSO - The DSO shall provide the TSO with information on the intraday and daily metered inputs and off-takes on the DSO consistent with the information requirements set out in Articles 34(2) to (6), 35 and 37.
- (3) Information obligations of the DSOs towards the forecasting party – DSOs are responsible for providing the forecasting party with sufficient and updated information for the purpose of the methodology for the forecast of a network user’s non daily metered off-takes application as set out in Article 42(2).
- (4) Information obligations of the forecasting party towards the TSO – The forecasting party shall provide the TSO with forecasts of network user’s non daily metered off-takes and subsequent allocations consistent with the information requirements set out in Articles 36 and 37. The methodology for the forecast of a network user’s non daily metered off-takes shall be based on a statistical demand model, with each non daily metered off-take assigned with a load profile, consisting of a formula of the variation in gas demand versus variables such as temperature, day of week, customer type and holiday seasons. The methodology shall be subject to consultation before its adoption.

elering
GENERATING OPPORTUNITIES

conexus
BAL TIC GRID



Gasum