

European Gas Target Model – review and update

Annex 6

Tools for gas market integration and connection

January 2015

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1 Preliminary remarks

This schedule offers information on tools for gas market integration and connection as foreseen in the ACER Gas Target Model.

Specifically the following gas market integration tools are presented:

1. Market merger
2. Trading region
3. Satellite market

Additionally, the following market connection tool is presented:

4. Market coupling (implicit allocation)

Finally, in a separate chapter, categories of costs and benefits are listed that should be considered when analysing the cost/benefits of implementing a specific tool for a specific constellation of gas markets.

2 Market integration and market connection

The starting point for the following deliberations is a European gas market organised as foreseen by Regulation (EC) No 715/2009 into a set of entry/exit-systems (interchangeably also termed 'gas market areas') each of which coinciding with a balancing zone featuring a virtual point (also termed 'hub').

For the purposes of this document a 'gas market' is used to refer to the sum of gas (wholesale) trading activities (spot to forward (inclusive)) with delivery agreed on a (single) specific hub.

It follows from this definition that trading on separate hubs (i.e. with different delivery points) is considered as taking place in separate markets.

Consequently, we speak of **market integration**, if

1. two (or more) formerly separate hubs are merged (this is the case for the market merger and the trading region approach) or
2. an (end user) market relinquishes its own hub and 'co-uses' a neighbouring hub (adding to the trading activity there) (this is the case for the satellite market approach).

The result of market integration is that the wholesale price of gas within the newly created larger market becomes uniform (for the same traded product and the same trading time and venue).

Alternatively, we speak of **market connection** if measures are taken to improve arbitrage between two (or more) neighbouring gas hubs aimed at reducing but not necessarily always fully cancelling price differences between them (by more gas flow from the lower priced market to the higher priced

market). The participating hubs are maintained as separate delivery points for traded gas in this process.

Market connection is furthered by two concepts:

1. Increasing free interconnection capacity between markets
2. Making sure that the available interconnection capacity is used as efficiently as possible under a given tariff regime

Increasing free interconnection capacity is the domain of the various network development plans, the guidelines for trans-European energy infrastructure, the CMP Annex to Regulation No 715/2009 and the NC CAM Annex to Regulation No 715/2009 and therefore requires no further discussion in this document.

The efficient use of available interconnection capacity is furthered by the market coupling tool (implicit allocation) discussed in chapter 4.1.

3 Gas market integration tools

General notes:

- All tools in this section are described in the context of a cross-border application.
- The concepts may of course also be applied inside a country with two or more national market areas; this will simplify implementation since less alignment should be required.
- All tools are described for a case where two gas market areas are to be integrated or more efficiently connected; all but the satellite market tool apply mutatis mutandis to three or more market areas.
- For sake of clarity the tools are described in specific manifestations. These can of course be adapted to fit the circumstances of their application. In some cases alternatives are explicitly mentioned. To further highlight adaptation potential, optional elements of a tool are marked like this: [O].

3.1 Market merger

3.1.1 Starting point

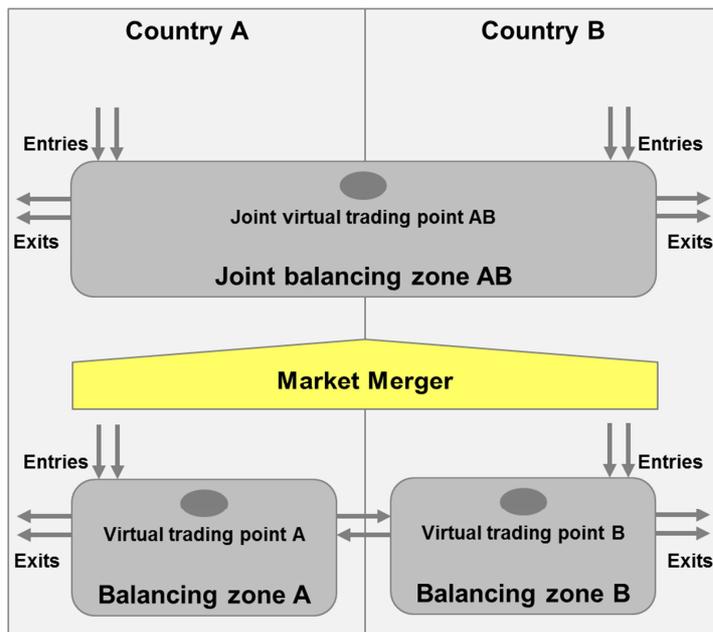
The market merger approach may be considered if both of the following conditions apply:

1. Two adjacent gas market areas are directly connected with each other (or plan on establishing such capacity).
 - Note: there is no absolute value for the required size of such interconnection capacity. However, the larger the available interconnection capacity is, the more straightforward the integrated cross-border capacity model will be.
2. Both gas markets have at least one other relevant entry point from another gas market (source).
 - Note: if this second condition is not fulfilled, a market merger can still be realised, but the satellite market would be a much simpler solution in this case, and deliver most of the same benefits.

Under these circumstances the two markets can gain (traded) market volume driving market efficiency by merging into a single wholesale market and an integrated balancing zone incorporating all end users using the market merger concept as described below.

3.1.2 Description

In the case of a market merger, two neighbouring gas market areas (A, B) fully merge their balancing zones into one unified cross-border balancing zone (underpinned by an integrated cross-border entry/exit-system) and consequently also merge their virtual points (since one balancing zone can have only one virtual point).



The main features of the market merger concept are:

1. A single integrated cross-border balancing zone including the gas transmission and gas distribution systems of the merged market areas (in other words: the zone reaches from the entries into the merged market areas down to the end users).
2. The cross-border balancing zone is underpinned by an integrated cross-border entry/exit-system reaching down to end users.
 - The interconnection capacity between TSOs and DSOs is (booked and) paid for by the DSOs (and cannot and need not be booked by shippers). The cost of the booked interconnection capacity is allocated on the DSOs exit tariffs.
 - The tariffs in the entry/exit zone are calculated according to the NC TAR, potentially leading to cross-border inter-TSO compensation requiring alignment among affected regulators (potentially including alignment on the underlying national mechanisms of determining allowed revenue).
3. All entries and exits of gas into/from the transmission and distribution systems included in the cross-border balancing zone are balanced in an integrated (i.e. single) balancing system.
4. [O] All systems underlying the balancing system, including metering and allocation rules for end-user loads, are harmonised cross-border.
 - Alternatively the system of balancing neutrality charges needs to foresee a differentiation of such charges for the two countries (so that a higher balancing neutrality charge is levied onto the national market that, due to its specific metering and/or allocation rules, uses more system energy and vice versa).

5. The balancing rules are fully harmonised cross-border.
6. A cross-border balancing entity ('market area operator') is established that is also in charge of system energy management for the merged markets in collaboration with the merged markets' TSOs.
 - o Regulatory oversight of the cross-border balancing entity needs to be clarified among the regulators (and potentially also the legislators) of the merged markets.
7. Obligations to be fulfilled by suppliers (e.g. licenses, minimum storage requirements, etc.) need to be harmonised (and administrative responsibility must be clarified) if they cannot be explicitly (and separately) fulfilled and monitored with regard to supply and trading activities in only one of the two merged markets.
8. Obligations of TSOs and the market area operator with regard to security of supply must be reviewed and – if they are affected by the cross-border entry/exit and balancing zone – need to be adjusted so that they can be fulfilled and monitored in the context of the cross-border market area.

3.1.3 Main advantages and drawbacks

Main advantages

- The concept realises an integrated gas wholesale market for gas markets A and B.
 - o This includes the spot as well as the (much more important) forward market.
- The concept realises an integrated balancing zone incorporating all end users and hence realises the largest balancing cost synergies of all market integration concepts.

Main drawbacks

- Metering, allocation and balancing rules need to be fully harmonised cross-border, requiring regulatory cooperation and potentially legislative action in both countries.
 - o Note: see alternative (differentiated balancing neutrality charges) mentioned in chapter 3.1.2.
- Issues regarding the clarification of administrative (regulatory etc.) competencies and oversight arise, potentially requiring legislative action.
- Cross-border inter-TSO compensation may be required which (even if it leads to no economic distortions relative to the pre-merger state) may require lengthy discussions.

3.1.4 Examples

The wave of German market area mergers in recent years demonstrated that market areas and balancing zones including several TSOs can be formed without triggering a necessity for merging the TSOs themselves.

Since all affected market areas were subject to the same jurisdiction, harmonisation was of course easier in these cases than in a cross-border context.

An upcoming example in a cross-border context is the BeLux project aimed at merging the Belgian (high calorific) gas market with the Luxembourgian gas market.

3.2 Trading region

3.2.1 Starting point

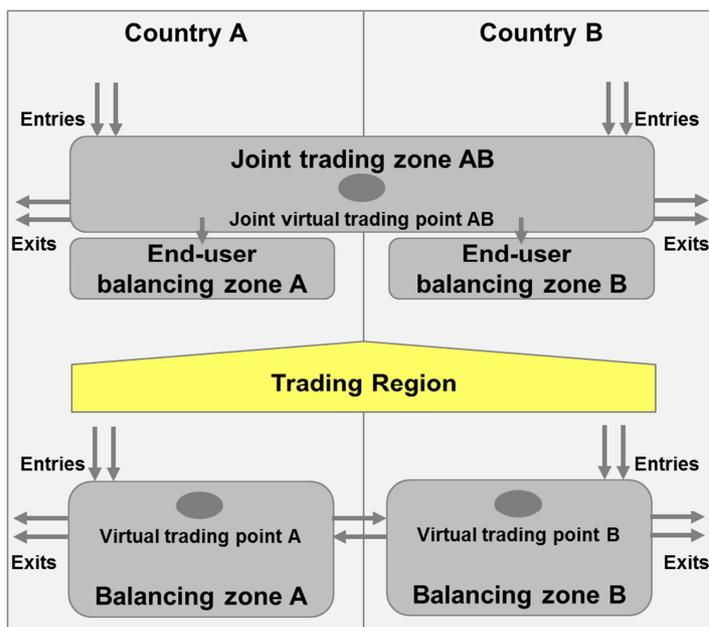
The trading region approach may be considered if both of the following conditions apply:

1. Two adjacent gas market areas are directly connected with each other (or plan on establishing such capacity).
 - Note: as in the case of a market area merger there is no absolute value for the required size of such interconnection capacity. However, the larger the available interconnection capacity is, the more straightforward the integrated cross-border capacity model will be.
2. Both gas markets have at least one other relevant entry point from another gas market (source).
 - Note: if this second condition is not fulfilled, a trading region can still be realised, but the satellite market would be a much simpler solution in this case, and deliver most of the same benefits.

Under these circumstances the two markets can gain wholesale market volume driving market efficiency by combining their demand and supply volumes into a single wholesale market using the trading region concept as described below.

3.2.2 Description

In the case of a trading region, two neighbouring gas market areas (A, B) merge their virtual points, creating an integrated gas wholesale market, but refrain from fully merging their national end user (load) balancing systems.



The main features of the trading region concept are:

1. One integrated cross-border balancing zone (the 'trading balancing zone' or 'trading zone') is established covering all gas transmission systems (and only them) in markets A and B.
 - Specifically the trading zone includes all entries of gas into and all exits of gas out of the included gas transmission systems as well as a (single) joint virtual point.
2. The cross-border trading balancing zone is underpinned by an integrated cross-border entry/exit-system.
 - The tariffs in the entry/exit zone are calculated according to the NC TAR, potentially leading to cross-border inter-TSO compensation requiring alignment among affected regulators (potentially including alignment of the underlying national mechanisms for determining the allowed or target revenue).
3. The balancing of end user loads in the two gas market areas is kept separate in national balancing zones ('end user balancing zones' or 'end user zones') A and B corresponding to the distribution grids of each of the participating markets.
 - This saves further harmonisation work on metering, allocation and balancing rules (which may be done at a later stage, paving the way for a full market merger).
 - As far as physical constraints allow, all distribution grids in each country should be integrated into a single national end user zone.
4. [O] The exit capacity from the entry/exit-system (underlying the trading zone) to the national distribution grids (underlying the two national end user zones) is booked by one entity per country (the 'end user balancing managers' A and B).
 - This is easily possible because all of the gas required in the end user zones originates from the trading zone.
 - This is also efficient, since it enables simple direct access for all suppliers active in the end user zones to the hub in the trading zone while avoiding any capacity utilisation risk as well as negative portfolio effects regarding transport cost and reducing operative transport management cost (all benefits with regard to the interconnection capacity from the trading zone to the end user zones).
 - An alternative to the booking of exit capacity would be the regulated allocation of exit-cost to the distribution grid operators in the end user zones.
 - In all cases the cost of the required interconnection capacity is ultimately allocated to the exit tariffs of the distribution systems.

5. Shippers shift gas from the trading zone to end user zones A and/or B by nominating the desired flows, which are allocated as nominated.
6. The end user managers (or another assigned entity) are also in charge of physically balancing the end user zones. For this purpose they use the virtual point of the trading zone and the interconnection capacity from the trading zone to the end user zones booked by them (or made available to them).
7. The trading zone itself requires no balancing in the strict sense of the word (i.e. the use of system energy to balance end user load forecasting errors).
 - This is due to (a) that there are no end user loads in the trading zone (these are all allocated to the end user zones) and (b) that all flows in and out of the trading zone (and all trades on the virtual point) are allocated as nominated.
 - This does not mean however that the hub in the trading zone is not firm, it simply means that system users in the trading zone are asked to keep their nominations in balance at all times for the forthcoming balancing periods and only in the rare event that a system user should fail to do so, should corrective action be taken by the manager of the trading zone (buying and/or selling the nominated imbalance for the transgressing system user 'at cost').
 - Hence the trading region can be structured so that the establishment of a single cross-border balancing entity for the trading zone can be avoided.
 - Alternatively, a cross-border balancing entity may be established (triggering a requirement for clarifying administrative responsibilities for overseeing that entity).
8. Obligations to be fulfilled by suppliers (e.g. licenses, minimum storage requirement, etc.) need to be harmonised (and administrative responsibilities must be clarified) if they cannot be explicitly (and separately) fulfilled (and monitored) with regard to supply and trading activities in one of the two markets included in the trading region.
 - This should however be easier than in the case of a market merger, since the two national end user markets are still organised in separate balancing zones.
9. Obligations of TSOs and the market area operator with regards to security of supply must be reviewed and – if they are affected by the cross-border trading zone – need to be adjusted so that they can be fulfilled and monitored in the context of the cross-border trading region.

3.2.3 Main advantages and drawbacks

Main advantages

- The concept realises an integrated gas wholesale market for gas markets A and B.
 - This includes the spot as well as the (much more important) forward market.
- The concept can be implemented fairly quickly because no cross-border alignment of end user balancing rules (and potentially also the underlying metering and allocation rules) is required.
- Issues of clarifying regulatory responsibilities and oversight arise to a lesser extent than in the case of a market merger, because only the trading zone extends cross-border; all end user balancing remains in the national context.

Main drawbacks

- The end user balancing systems are not merged between gas markets A and B. This leaves related synergies untapped (that could be tapped using the market merger concept).
- Cross-border inter-TSO compensation may be required which (even if it leads to no economic distortions relative to the pre-merger state) may require lengthy discussions.

3.2.4 Examples

An example for the application of the trading region concept is the CEE Trading Region (CEETR) project to integrate the gas wholesale markets of Austria, the Czech and the Slovak Republic. The project is currently in a post-feasibility status.

Further information can be found here:

<http://www.e-control.at/portal/page/portal/medienbibliothek/publikationen/dokumente/pdfs/CEETR-Basic-Model-Part-I-Principles-CEE-TradingRegion-121105.pdf>

3.3 Satellite market

3.3.1 Starting point

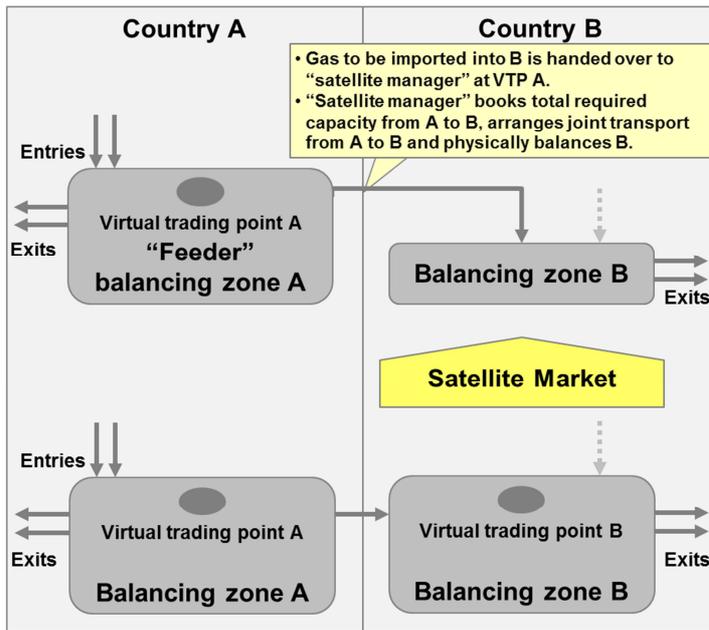
The satellite market approach may be considered if both of the following conditions apply:

1. A gas market area (the 'satellite market area' or 'satellite') neighbours another gas market area (the 'feeder market area' or 'feeder') with a (better) functioning gas market than the satellite, and
2. the satellite has no significant imports of gas from other markets but from the feeder (so that in effect it receives (almost) all of its traded-market gas from the feeder).

Under these preconditions it is possible and reasonable to co-use the feeder's hub (and hence its market price) in the satellite using the concept as described below.

3.3.2 Description

Under the concept of satellite market, a gas market area (the 'satellite') does not maintain/establish its own gas hub but co-uses the hub of its main directly neighbouring gas market area (the 'feeder market area').



The main features of the satellite market approach are:

1. The balancing systems of the satellite market area and the feeder market area remain separate.
2. The interconnection capacity from the feeder market area into the satellite market area is booked by a designated entity of the satellite market area (the 'satellite manager').
 - This is easily possible because all of the gas required in the satellite originates from the feeder.
 - This is also efficient, since it enables simple direct access of all suppliers active in the satellite to the hub of the feeder while avoiding any capacity utilisation risk as well as negative portfolio effects regarding transport cost and reducing operative transport management cost (all benefits with regard to the interconnection capacity from the feeder to the satellite).
 - The cost of the booked interconnection capacity is ultimately allocated to the exit tariffs of the satellite.

3. A supplier supplies gas into the satellite market by handing it over to the satellite manager at the virtual point of the feeder by way of a nominated transfer of gas. From there on, transport to the satellite is managed by the satellite manager.
4. The satellite manager is also in charge of physically balancing the satellite. To achieve this he uses the gas market on the virtual hub of the feeder and the interconnection capacity from feeder to satellite booked by him.

3.3.3 Main advantages and drawbacks

Main advantages

- The concept realises an integrated gas wholesale market for the satellite and the feeder market.
 - This includes the spot as well as the essential (and in many cases currently underdeveloped or even missing) forward market.
- If the preconditions are met, the concept can be implemented easily and quickly without triggering any cross-border alignment of market rules or requiring any cross-border institutions.
 - Note: if the preconditions of the satellite market concept are met, the preconditions for a market area merger or a trading region are also met (this is however not true the other way around). The satellite market concept is just easier to apply while realising all of the trading region's benefits and most of the market merger's benefits.
- The implementation of the concept is basically the choice of the satellite and does not affect market organization or operation of the feeder. The feeder has a positive externality though, benefitting from an increase in traded market liquidity.
- There are no issues with clarifying regulatory responsibilities and oversight, since no cross-border institutions or balancing zones are established.

Main drawbacks

- The end user balancing systems are not merged between satellite and feeder. This leaves related synergies untapped (that could be tapped using the market merger approach).
- Note: the preconditions for the satellite market are quite strict, but this is not a drawback of the concept; they merely restrict its application.

3.3.4 Examples

An example for the application of the satellite market concept is the integration of the Austrian gas market areas Vorarlberg and Tirol with the German gas market area NetConnect Germany. This market integration is operational.

Further information can be found here (German only):

<http://www.e-control.at/de/marktteilnehmer/gas/gasmarkt/marktmodell-tirol-und-vorarlberg>

4 Market connection tools

4.1 Market coupling (implicit allocation)

4.1.1 Starting point

The market coupling (implicit allocation) approach may be considered if the following condition applies:

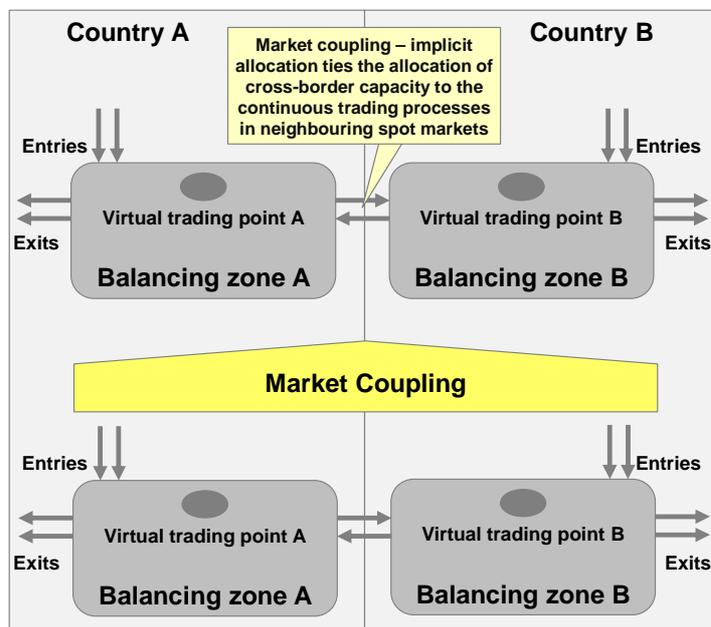
- Two gas markets are physically connected

Below market coupling (implicit allocation) is termed “implicit allocation”.

To avoid confusion please note that implicit allocation differs significantly from implicit auctioning which is a term used in power markets in connection with “market coupling” (see box below describing the main differences).

4.1.2 Description

The concept of implicit allocation involves two neighbouring gas markets (A, B) with two separate spot markets which establish a process between them that closely ties the allocation of cross-border day-ahead (and potentially also intra-day) capacity to the continuous trading process of gas in each of these markets.



The main features of implicit allocation are (description for day-ahead spot implicit allocation; the same principles may be applied mutatis mutandis to within-day implicit allocation as well):

1. The balancing systems and hence the virtual points of market areas A and B remain separate.
2. In both markets A and B a spot market is operated – as is common in gas – on the basis of continuous trading.
3. All day-ahead capacity between market areas A and B (“DAC”) is made available to the implicit allocation process.
 - The total DAC consists of all technical capacity not booked by shippers and all booked but unused technical capacity made available for booking again (e.g. under the provisions of the CMP annex). Implicit allocation does not require that longer-term bookings of shippers (months, quarters, years) are abolished.
 - It is an implementation decision of the participating markets whether a share of the total technical interconnection capacity shall be excluded from booking by shippers at all to secure it for the implicit allocation process. In principle, the implicit allocation described here is an add-on process to the cross-border activities performed by suppliers/traders on the basis of interconnection capacities booked by them.
 - In principal, the amount of DAC that is made available to implicit allocation may be limited to less than a 100% of available DAC. This means however that in parallel to the implicit allocation of DAC an explicit auctioning of DAC needs to be established which gives rise to a number of additional questions including a disparity of pricing regimes for the same product at the same time; implicit allocation operates (see below) on the basis of fixed, regulated prices whereas explicit auctioning operates on the basis of auction derived prices (on top of the regulated reserve price).
 - The DAC to be used for implicit allocation must be freely allocable (in order to grant access to the virtual points on either side of the market) as well as firm (in order to guarantee delivery of the gas that is traded cross-border).
 - If the coupled gas markets have more than one interconnection point, these points need/should to be combined into a single virtual interconnection point (or have the same price).
4. The DAC is priced at a fixed regulated price per MWh (for flat delivery of gas during the next gas day).
5. The operator(s) of spot markets A and B is/are provided with exclusive access to the DAC (or the portion of DAC foreseen for implicit allocation).
 - There are various options as to how many parties are involved in running the implicit allocation process. For brevity the following description assumes that the same entity operates spot markets in market A and B and is in charge of the implicit allocation of DAC; this is, however, not a necessity for the implementation of implicit allocation. It appears however inefficient to have several implicit allocation operators operating in parallel for the same combination of markets.

6. The operator provides a gas-market platform in markets A and B where traders can enter their offers for gas if they want to sell gas, their requests for gas if they want to buy gas and where (other) traders can accept these offers or requests (by “clicking” them on the respective trading screens at any time they wish).
7. Offers and requests (i.e. orders) for the sale and purchase of gas are not only made available in the market A or B where they were initially made but also in the other market. The price of these orders is increased (in the case of offers) and decreased (in the case of requests) by the fixed regulated unit cost of transporting gas from market A to B (or vice versa) using DAC.
 - Example 1: if an offer for gas is made for 25 EUR/MWh in market A and the regulated unit price of DAC to market B (exit + entry) was 0,6 EUR/MWh, that same offer would be made available for acceptance by buyers in market B for $25+0.6=25.6$ EUR/MWh.
 - Example 2: if a request is made in market A to buy gas for 24 EUR/MWh and the unit price of DAC from market B (exit + entry) was 0,4 EUR/MWh, that same request would be made available for acceptance by sellers in market B for $24-0.4=23.6$ EUR/MWh.
8. Since both spot-markets operate in continuous trading mode, traders wanting to buy gas immediately can accept offers and requests not only from their own, but also from the neighbouring market. Any time an offer or request for gas is accepted by a trader that happens to be made initially in the neighbouring market, the respective share of DAC required for transporting the respective amount of gas is “implicitly allocated” to the respective traders making the cross-border transaction.
9. Cross-border trading stops once all DAC available to the implicit allocation process has been implicitly allocated to the traders that have conducted cross-border trades from the start of trading for the following day.
 - If during the continuous trading process traders make deals in opposite directions this (implicitly) creates additional DAC in the other direction.
10. The market operator collects the money from the cross-border buyer of gas and splits it up. The part paid for the gas itself is passed on to the seller of gas (in the other market) and the part paid for the transport (the regulated tariff) is passed on to the two TSOs operating the border point.
 - In example 1 above, a buyer of gas that accepted the offer for 25.6 EUR/MWh in market B would pay that price to the market operator who would pass on 25 EUR/MWh to the seller of gas in market A and 0.6 EUR/MWh to the two TSOs (split according to their respective shares in the total regulated price for DAC entry + exit).

11. On the gas day D the market operator takes possession of all gas that has been sold cross-border from the respective sellers on the virtual point of the sellers' market, nominates the implicitly allocated DAC for transport of that gas and hands it over to the buyers on the virtual point of the buyers' market.

- Specifically the market operator will only nominate the balance of cross-border flows A→B and B→A.
- It is an implementation question to decide who shall bear the technical risk of transport of the gas that has been sold cross-border using implicitly allocated capacity.

The balancing systems and rules in the coupled markets remain principally unaffected by the market coupling process; gas flows on the implicitly allocated capacities must be allocated as nominated.

Main differences between market coupling (implicit allocation) as described in this document and market coupling in European power markets.

Market coupling is increasingly used in European power markets as a tool to more efficiently connect individual markets. The concept applied in power markets is however fundamentally different from the concept of market coupling (implicit allocation) described above.

In power market coupling, spot markets are operated based on auctions at distinct points in time and the capacity is allocated in the course of the auction. The price of the capacity is not fixed at the regulated price but depends on the prices and volumes of the bids and offers made and the availability of capacity. The capacity price paid to the TSOs may be as low as zero (in case of sufficient capacity to fulfil all profitable cross-border trades) but can also achieve very high values in case of congestion. So the implicit auction does not only auction the gas but simultaneously auctions the capacity, leading to an efficient outcome as regards capacity allocation. If there is sufficient cross-border capacity the price difference will also become zero in the process.

However the implicit allocation method described in this document allocates capacity to cross-border trades on a first-come first served basis at the regulated price with high process efficiency. Also, as opposed to power market coupling, implicit allocation as described above cannot drive price differences between the adjoining markets down to zero, even if there is abundant interconnection capacity. Instead the price difference will (given enough capacity) only be driven down to the regulated price of day-ahead-capacity.

For more information on power market coupling see for instance:

http://www.epexspot.com/en/market-coupling/documentation_nwe

4.1.3 Main advantages and drawbacks

Main advantages

- The model solves the so called “coordination problem” (shippers crossing a border without implicit allocation may face trouble in perfectly coordinating their bidding in the day-ahead DAC auctions with their gas trades on either side of the border).
- The model makes liquidity on either side of the border more “visible” on the other side of the border and more easily accessible for traders.
- The two preceding advantages may lead to better alignment of market prices in each of the coupled markets (with the limitation of the regulated price of DAC).

- Issues of cross-border alignment of market rules are reduced in comparison to the concepts of market merger and (to a lesser extent) compared to the trading region concept.
- Since the regulated price for DAC is still charged, the model does not require cross-border inter-TSO-compensation.
- Locational price signals between the coupled markets are maintained (potentially signalling investment requirements and their related benefits).

Main drawbacks

- Implicit allocation does not integrate the forward markets (but only furthers alignment of market prices). Therefore additional measures may be required to achieve fully functioning forward gas markets in the two coupled markets since this is an essential requirement of fully functioning gas wholesale markets as set out in the AGTM.
- The end user balancing systems are not merged between the markets. This leaves related synergies untapped (that could be tapped using the market merger approach).
- Implicit allocation is hard to square with the existence of competing market platforms (various brokers and exchanges), since the implicit allocation process cannot reasonably be split between several market operators without losing its efficiency. Consequently, regulatory oversight of the market operator(s) that are vested with monopoly access to day-ahead (and potentially also intra-day) capacity for the purpose of implicit allocation may be required.
- Implicit allocation does not lead to a unified spot price for both markets even if there is ample capacity available (since the regulated tariff for DAC will always have to be paid and will hence determine the minimum price difference between the markets) and in the case of congestion, the congestion rent is not collected by the TSO (which would be the case in an explicit auction) but by the traders who are quick enough to trade gas cross-border using the implicit allocation process (where they only have to pay the regulated price of DAC).

4.1.4 Examples

A practical example for implicit allocation is the pilot project of GRTgaz coupling the PEG Nord and PEG Sud markets which was launched in 2011 for a limited amount of the full interconnection capacity. A fundamental difference of the French concept to the approach described above is that the price of the capacity is more variable (i.e. it can deviate from the regulated price). Further information can be found here:

http://www.grtgaz.com/fileadmin/clients/fournisseurs/documents/en/15_more_about_market_coupling.pdf

NRAs in GRI NW studied implicit allocation in 2013 and decided to postpone any implementation decision to after the full implementation of CAM and CMP measures. Further information can be found here:

[http://www.acer.europa.eu/Gas/Regional %20Initiatives/North West GRI/Public%20Consultation/GRI_NW_Implicit_Allocation/Pages/default.aspx](http://www.acer.europa.eu/Gas/Regional%20Initiatives/North%20West%20GRI/Public%20Consultation/GRI_NW_Implicit_Allocation/Pages/default.aspx)

The Spanish NRA started a public consultation on various Iberian gas market integration models including implicit allocation. Further information can be found here:

http://www.acer.europa.eu/Gas/Regional_%20Intiatives/South_GRI/Public_Consultations/Pages/PC-on-the-integration-of-the-ES-PT-gas-markets.aspx

5 Categories relevant to the cost benefit analysis of market integration and connection projects

The AGTM foresees that every market integration/connection project shall be subjected to a cost/benefit analysis (CBA).

The principal goal of the CBA is to identify the net benefit to the end users of gas affected by a specific market integration or market connection project.

However not all costs and benefits accrue at the end user level from the start. Consequently, in the CBA, the cost and benefits should first be identified and assessed in the business segment where they initially emerge (e.g. gas wholesalers or TSOs) and then, where required, the mechanism by which these cost and benefits will trickle down to end users should be described.

For assessing the net benefits of a market integration or connection project, the following cost and benefit categories should be considered, taking their respective interrelations into account fully.

As always with CBAs, a quantification and monetisation of these effects is desired.

1. Investment effects

- Additional investments to increase interconnection capacities
- Saved investments from otherwise necessary network development measures
Note: some investments that are required from the perspective of a single market area (e.g. to fulfill certain security of supply obligations) may become irrelevant in the context of a larger market area where alternative routings can be realised in the context of a wider network.

2. Implementation one-off cost

- Project cost
- Set up cost of any required new (cross-border) entities

3. Network operating cost effects

- Impact of additional and saved investments on running cost
- Cost savings from reduced system energy volume requirements and also from improved prices for buying/selling system energy by the system operators
- Cost savings from optimised routing of gas flows (fuel gas)

- Additional operating cost for any new (cross-border) entities (e.g. a cross-border market area operator)
- Reduced operating cost for existing entities (e.g. the existing national market area operators)
- 4. Gas price / trading efficiency effects
 - Price reductions from the combined supply and demand curves
 - Lower bid/ask spreads in forward and spot markets from increased wholesale market liquidity
- 5. Retail competition effects
 - Lower retail margins from increased retail competition
- 6. Effects on operating cost for market participants
 - Reduction of structuring/flexibility requirements
 - Efficiency gains from joining operations of formerly separate balancing accounts
 - Efficiency gains from joining trading activities on formerly separate markets
 - Savings on hedging cost from increased relevance of the 'local' market price for indexing gas supply contracts
- 7. Effects of additional capacity constraints in the integrated capacity model
 - Reduced option value of transportation contracts potentially caused by an increase of capacity constraints

6 Abbreviations / Glossary

Abbreviation	Meaning
AGTM	Acer Gas Target Model
CBA	Cost Benefit Analysis
CEETR	Central and Eastern Europe Trading Region
CMP annex	Commission Decision of 24 August 2012 on amending Annex I to Regulation (EC) No 715/2009 of the European Parliament (Congestion Management Procedures)
DAC	Day-ahead capacity
DSO	Distribution system operator
Gas market	For the purposes of this document a 'gas market' is defined as the sum of gas (wholesale) trading activities (spot to forward (inclusive)) with delivery agreed on a (single) specific delivery hub.
NC CAM	Network Code on Capacity Allocation Mechanisms in Gas Transmission Systems
NC TAR	Network Code on Harmonised Transmission Tariff Structures for Gas
TSO	Transmission system operator