



Entry-Exit Regimes in Gas

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Part A: Entry-exit regimes

Part B: Market area integration

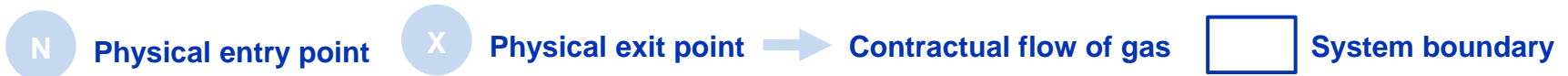
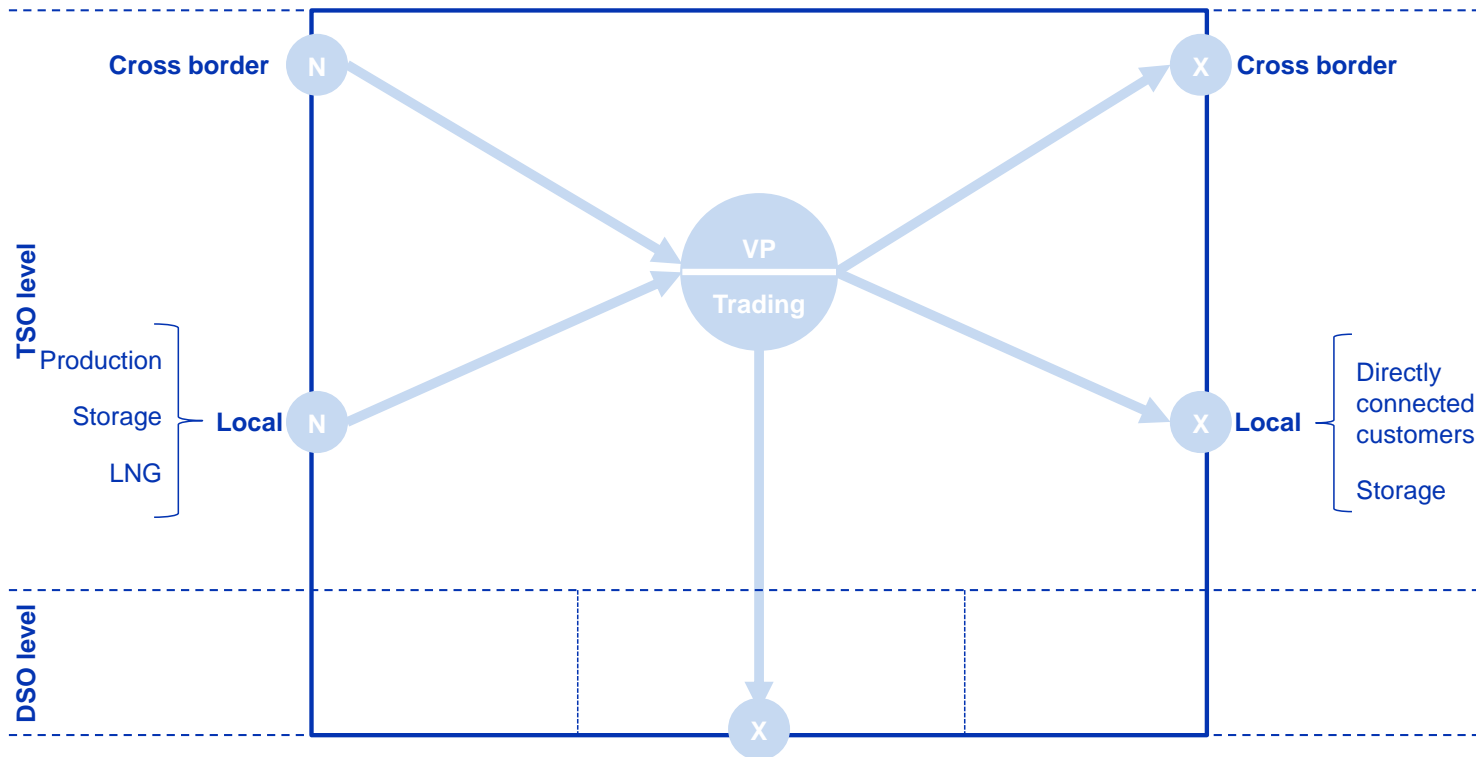
Introduction / Scope of the DNV KEMA Study

The study provides an assessment of how particular design features of entry-exit systems may lead to barriers for entrance of new players and cross border trade.

- Assessment of design choices of entry-exit systems in EU Member States, identifying:
 - Key success factors → Essential for the effective functioning entry-exit system
 - Barriers → Limiting the entrance of new market players and cross border trade
- Assessment focused on four different topics related to network access:
 1. Design of the entry-exit system
 2. Licensing and contractual framework
 3. Capacity products and pricing
 4. Balancing and imbalance settlement
 - } Particular focus of this presentation
 - } Issues addressed in network codes CAM/BAL
- Full report and appendices available online:
http://ec.europa.eu/energy/gas_electricity/studies/gas_en.htm

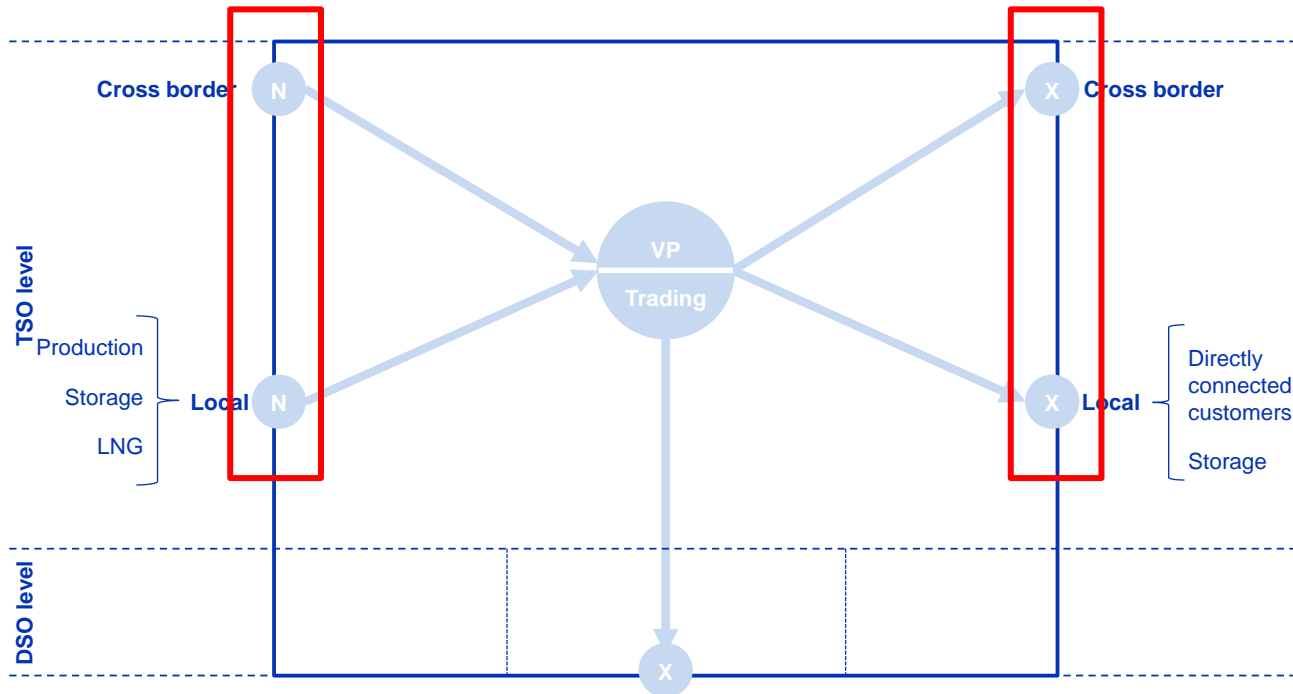
The Entry-Exit System / Full-Fledged Model


We developed a schematic representation to represent the main features of the 'full-fledged' model.



The Entry-Exit System / Full-Fledged Model

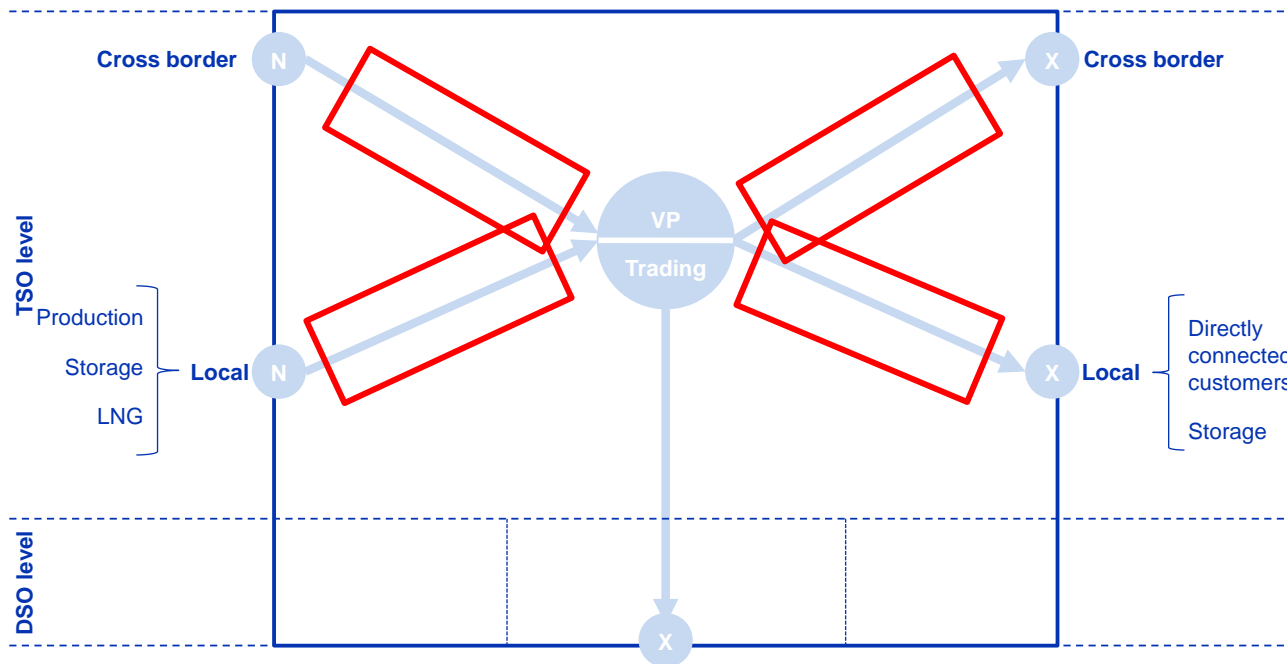
Schematic representation of the 'full-fledged' model. One of the main features is that network users contract entry and exit capacity separately.



 Network users can contract entry and exit capacity separately.

The Entry-Exit System / Full-Fledged Model

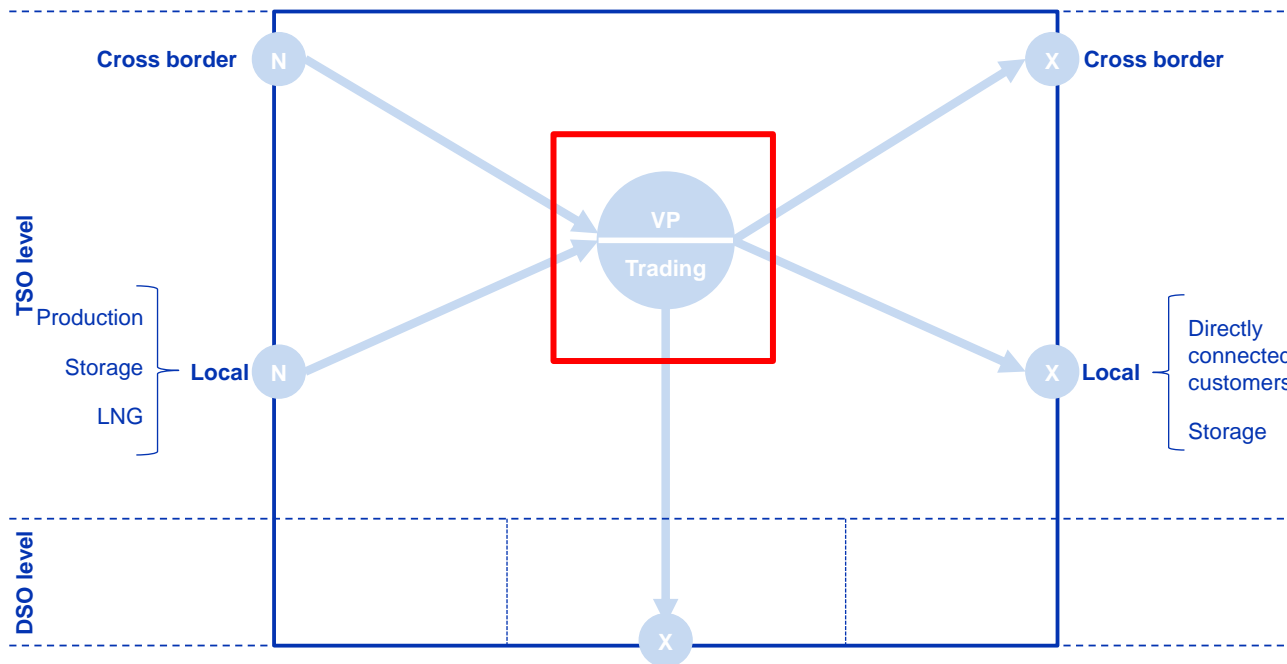
Schematic representation of the 'full-fledged' model. Another feature is that gas which has entered the system can be nominated to any off-take point.



Gas brought into the system at any entry point can be made available for off-take at any exit point within the system on a fully independent basis, without any restrictions

The Entry-Exit System / Full-Fledged Model

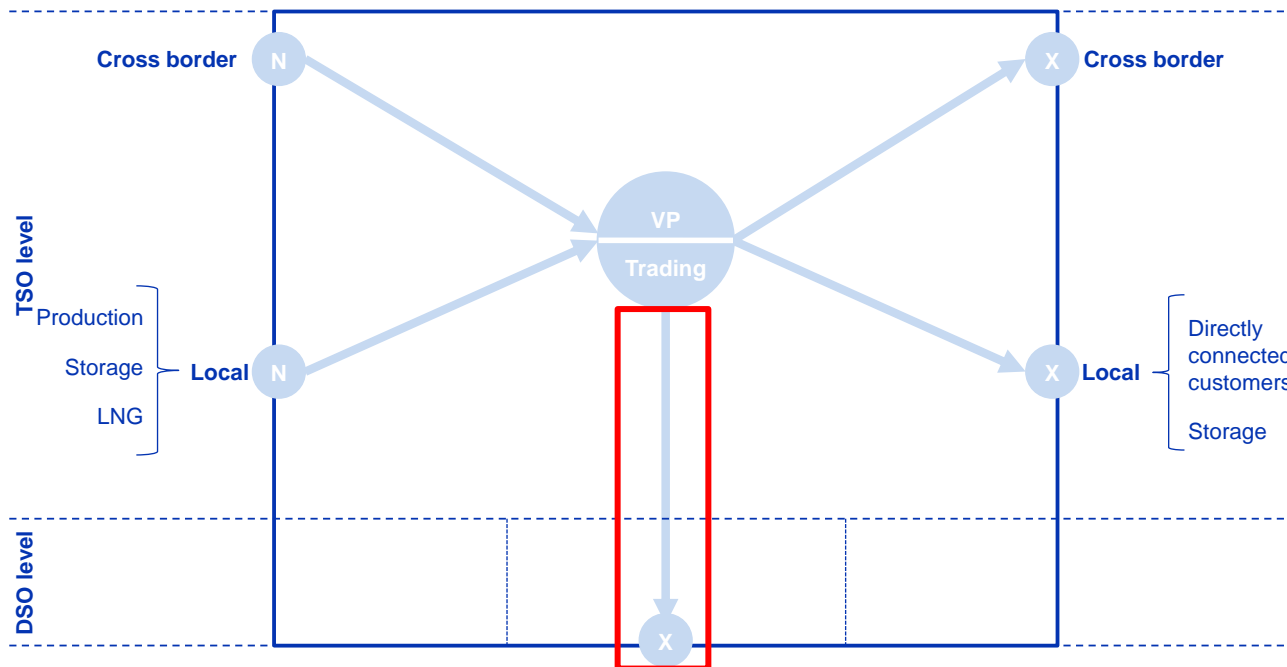
Schematic representation of the 'full-fledged' model. The virtual point is a fundamental feature of the entry-exit model.



The virtual trading point offers the users the possibility to bilaterally transfer title of gas and/or swap imbalances between network users.

The Entry-Exit System / Full-Fledged Model

Schematic representation of the 'full-fledged' model. Ideally the shipper books the exit capacity only at the network level where final exit takes place.



Network users only book exit capacity on the level where the final exit takes place. Imbalances between injections and withdrawals are aggregated across all entry and exit points in a network user's portfolio, regardless of the network level.

The Entry-Exit System / Typical Deviations

The observed practical implementation in several Member States exhibits deviations from the 'full-fledged' entry-exit model.

Deviation	Schematic representation	Background
<ul style="list-style-type: none">No virtual point (VP)		Gas cannot easily change ownership and be rerouted to other entry-exit points.
<ul style="list-style-type: none">Non-freely allocable capacities		(Physical) limitations of the infrastructure prevent TSOs from offering all capacities as freely allocable (mandatory P2P relations).
<ul style="list-style-type: none">Explicit city gate bookings by shippers and separate balancing zones		Additional capacity contracts between TSO and DSO level. Distribution network may not be part of the balancing zone.

The Entry-Exit System / Typical Deviations

The observed practical implementation in several Member States exhibits deviations from the 'full-fledged' entry-exit model.

Deviation	Examples
■ No virtual point (VP)	<i>Estonia, Bulgaria, Finland, Greece, Lithuania, Luxembourg, Latvia, Slovenia</i>
■ Non-freely allocable capacities	■ Locational restrictions: <i>Belgium, Spain, Germany</i>
	■ Limited allocability: <i>Austria, Germany, France</i>
	■ Separate (legacy) transit contracts*: <i>Spain, Hungary, Italy, Slovenia</i>
	■ Separate transit systems: <i>Bulgaria, Romania, Poland</i>
■ Explicit city gate bookings by shippers and separate balancing zones	■ Separate capacity booking at city gate: <i>Hungary, Slovakia, Italy, Romania, Denmark</i>
	■ Separate balancing zone: <i>Austria (effectively), Slovakia</i>

* Table in figure 8 of report specifying MS with legacy transit contracts is wrong, will be updated.

Design of the Entry-Exit System / Barriers

In order to identify potential barriers, the major design features of the implemented systems were compared to the those of the 'full-fledged' entry-exit system.

Barrier	Issues
<ul style="list-style-type: none">Capacity products with limitations of free allocability	<ul style="list-style-type: none">Isolates flows from spot markets → price distortionsRequired to avoid congestion → P2P should be avoided
<ul style="list-style-type: none">Separation of direct border-to-border ("transit") transports	<ul style="list-style-type: none">Gas cannot reach the local marketsFlows not to market price signals
<ul style="list-style-type: none">Separation of a national system into multiple (entry-exit) systems	<ul style="list-style-type: none">Capacities have less/no restrictions of free allocabilitySeparations can negatively impact market development
<ul style="list-style-type: none">The integration of distribution into the entry-exit zone	<ul style="list-style-type: none">Potential increase in balancing costs for shippersBarrier for new entrants, benefits for larger shippers
<ul style="list-style-type: none">Absence of a virtual trading point	<ul style="list-style-type: none">Fundamental features of an entry-exit systemThe absence of a VP will limit trade to physical locations
<ul style="list-style-type: none">Co-existence of VPs and trading locations	<ul style="list-style-type: none">Undue separation → may split liquidity

Licensing and Contractual Framework / Overview

The analysis showed that the licensing formats and requirements are different between the Member States.

Different formats for licensing are applied:

- Notification/registration
- License/approval
- Gas transmission contract gives the right to supply end consumers
- Specific license for supply and trade

Requirements of licensing: safeguarding minimum level of quality.

- Common requirements
- Additional requirements

Licensing and Contractual Framework / Requirements

The analysis showed that the licensing formats and requirements are different between the Member States.

Common requirements

Safeguarding the ability of the market party to perform its duties

- Legal entity
 - Operational and technical capabilities
 - Financial capabilities
 - Collateral
 - Customer services
 - Reporting
- Usual business practise

Additional requirements

Aim to protect end-consumers and guaranteeing security of supply

- Proof of ability to secure gas supplies
(*Belgium, Spain*)
- Mandatory diversification of entry bookings
(*France*)
- Diversification of gas sources
(*Poland*)
- Mandatory storage capacity
(*Italy, Poland*)



Licensing and Contractual Framework / Barriers

Barriers relate mainly to transparency / availability of information and specific additional requirements.

Barrier

Issues

- | | |
|--|---|
| <ul style="list-style-type: none">• Transparency and availability of information | <ul style="list-style-type: none">• Definitions differ significantly• Transparency and availability of information• Information sometimes only available in the local language |
| <ul style="list-style-type: none">• Additional requirements can form a barrier for spot market trade and liquidity | <ul style="list-style-type: none">• Difficult to fulfil by (smaller) market entrants• Might encourage purchasing under long term contracts → negative effects on spot market trade.• Trade-off between security of supply and competition/liquidity → careful monitoring required |

Capacity Products and Pricing / Overview

The capacity products used and their duration is not uniform throughout the Member States.

- Overview of capacity products available in Member States

annual																									
seasonal																									
quarterly																									
monthly																									
day-ahead																									
within day																									
	AT	BE	BG	CZ	DK	EE	FI	FR	DE	GR	HU	IE	IT	LV	LT	LU	NL	PL	PT	RO	SK	SI	ES	SE	UK

 Firm, Interruptible, Backhaul
  Firm, Interruptible
  Firm

- The majority of TSOs offer annual, monthly and day-ahead capacity
- In three Member States (BG, EE, LV) shippers can only book annual products

Capacity Products and Pricing / Barriers

A number of potential barriers related to the design and pricing of capacity products were identified.

Barrier	Issues
<ul style="list-style-type: none">• Limitations to free allocability of entry and exit capacity	<ul style="list-style-type: none">• Limitations might form a barrier for market access and trade• Restrictions should be reflected in the price of products
<ul style="list-style-type: none">• Absence of daily capacity products	<ul style="list-style-type: none">• Prevents traders from reacting to short term price signals
<ul style="list-style-type: none">• Different capacity contract duration	<ul style="list-style-type: none">• Cross border incompatibility may lead to higher risks and transaction costs
<ul style="list-style-type: none">• Differentiation of tariffs by consumer groups	<ul style="list-style-type: none">• Tariff differentiation can be discriminatory• Can create a barrier to entry

→ Most issues addressed in the network CAM

Imbalance Settlement / Overview

Differences in balancing and imbalance settlement arrangements across Member States may create barriers to new market entrants.

- A balancing model has two elements:
 - Residual balancing → maintenance of physical system stability
 - Imbalance settlement → ex-post commercial clearing of individual input-output deviations
- Many different design options are observed in the various Member States:

Feature	Options
Scope of balancing system	Integrated for transmission and distribution, separate
Balancing period	Daily, hourly, within-day obligations
Tolerances	Hourly, daily, weekly, monthly
Procurement of balancing gas	Wholesale, balancing market, tenders
Imbalance fees	Gas-in-kind, fixed fee, penalties, market based

Imbalance Settlement / Barriers

There are several areas of differences in balancing and imbalance settlement arrangements across Member States that may create barriers to new market entrants.

Barrier	Issues
<ul style="list-style-type: none">• Differences in balancing services and products	<ul style="list-style-type: none">• Lack in harmonization results in lower transparency• More complicated market entry for new players
<ul style="list-style-type: none">• Separate imbalance settlement at DSO level	<ul style="list-style-type: none">• Risk related to supplying at DSO level might be a barrier and impede competition
<ul style="list-style-type: none">• Exclusion of certain network users from common balancing arrangements	<ul style="list-style-type: none">• In some cases groups of network users treated differently• Hinders a level playing field
<ul style="list-style-type: none">• Use of within-day obligations	<ul style="list-style-type: none">• Impose additional requirements• May create barriers for users with limited flexibility means
<ul style="list-style-type: none">• Absence of market based balancing	<ul style="list-style-type: none">• Can impede cross-border trading and regional integration• (New) market players can face unpredictable charges

→ Most issues addressed in the network BAL

Summary

Key Success Factors and Best Practices

- Elements which are essential for facilitating network access, whole sale trading and competition.
 - Independent booking and use of entry and exit capacities
 - Existence of a virtual point with unrestricted access
 - Availability of short term capacity products for trading between different entry-exit systems
- Best practices
 - Harmonised requirements for national licenses
 - Limitations of preconditions for network access
 - No fees for access to an use of the virtual point
 - Bundling of cross-border capacities
 - Establishment of organised market places connected to the VP
 - Integration of TSO networks and/or market areas

Summary

The barriers have been grouped as critical, potential and other issues.

Critical

- Absence of a virtual point
- Lack of short term capacity products for cross border trading
- Undue requirements for access to networks
- Exclusion of certain network users from balancing arrangements

Potential

- Limitations to free allocability of entry and exit capacity
- Differentiation of tariffs by consumer groups
- Requirements to have strictly balancing nomination portfolios
- Fees for using the virtual trading point

Other issues

- Unavailability of information in English
- Multiple virtual points

Part B: Market area integration

Market area integration / Results

Three different combinations of gas markets were considered. The costs and benefits of a potential integration were assessed.

■ Spain – Portugal:

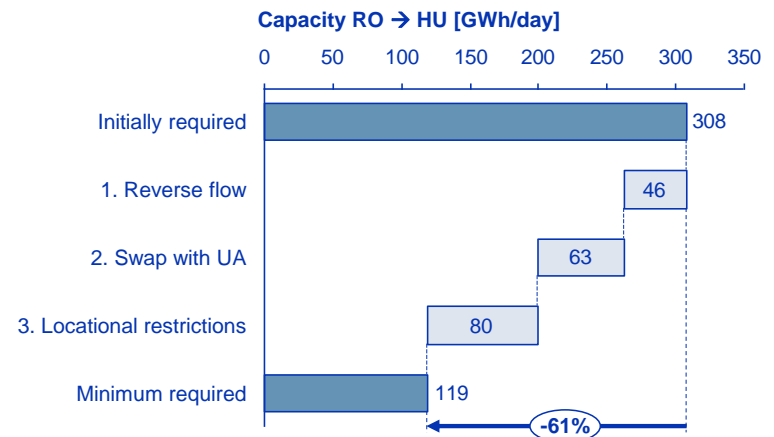
- Analysis shows at least moderate *net* benefits.
- Modelling approach assumes perfect competition (may underestimate).
- Benefits may increase if additional investments are avoided by using non-investitive measures.

■ Republic of Ireland, Northern Ireland and Great Britain

- Merger may lead to significant costs: interoperability, reverse flows and odorisation practises.
- Most of Ireland's gas is sourced on NBP already, it seems uncertain whether a merger of these markets will lead to any tangible benefits.

■ Hungary- Romania

- Current interconnection capacity limited.
- Large investments may be required, however:
 - Reverse flow existing interconnector
 - Swap with Ukraine
 - Locational restrictions on transit section
- Effect of including transit system in entry-exit system is significant.



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