



# Entry-Exit Regimes in Gas

David Balmert / Bert Kiewiet

ACER GTM Workshop  
Vienna, October 8, 2013



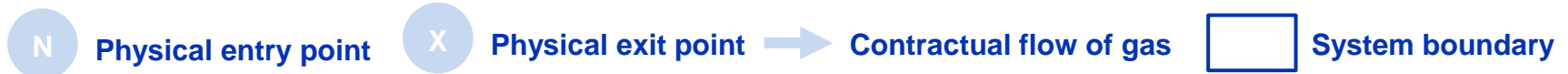
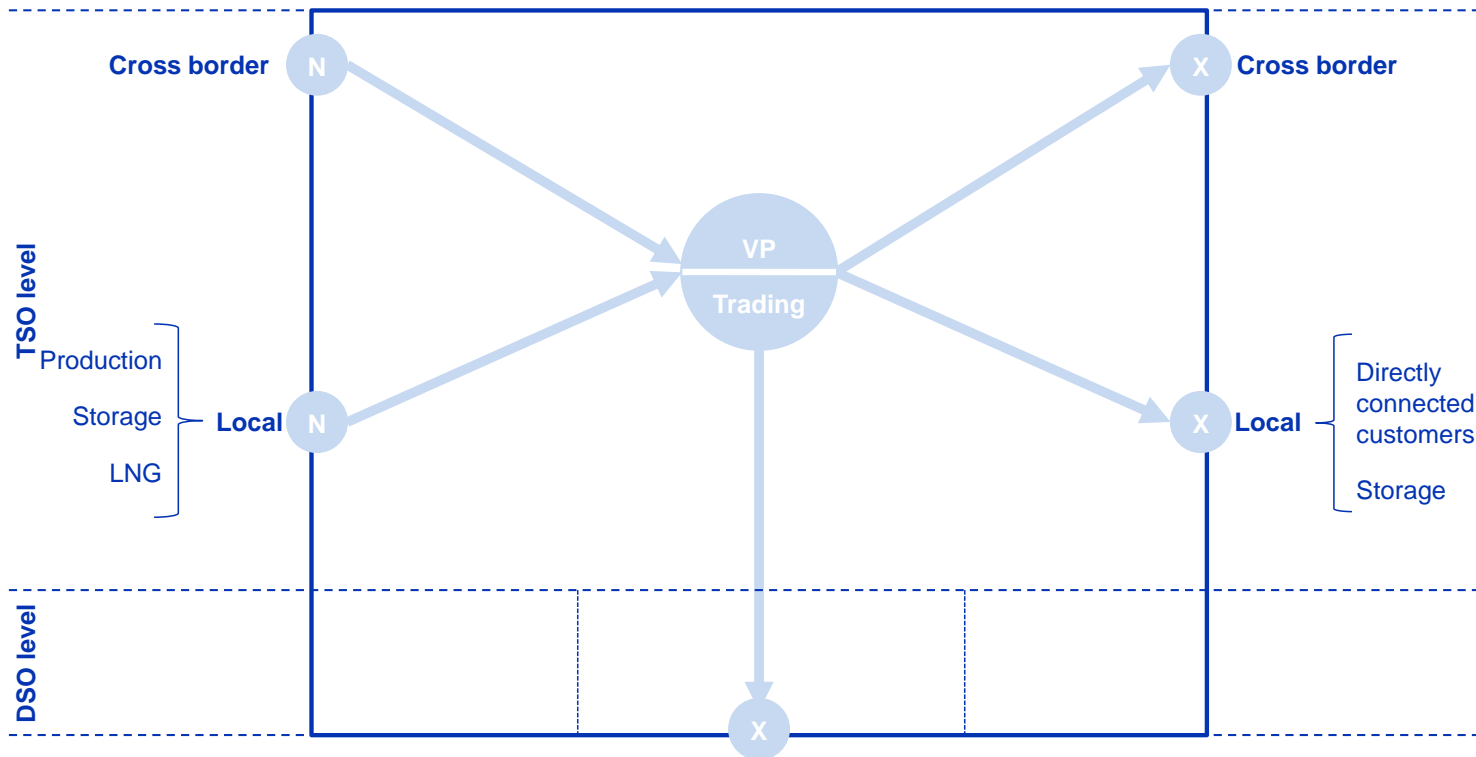
# Introduction / Scope of the DNV KEMA Study

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
- Full report and appendices available online:  
[http://ec.europa.eu/energy/gas\\_electricity/studies/gas\\_en.htm](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.



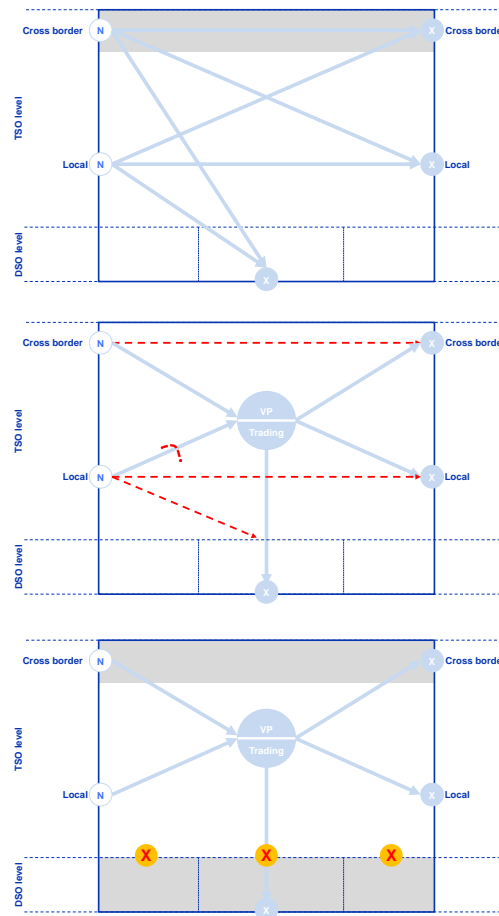
# The Entry-Exit System / Typical Deviations

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

## Deviation

- No virtual point (VP)
- Non-freely allocable capacities
- Explicit city gate bookings by shippers and separate balancing zones

## Schematic representation



## Background

Gas cannot easily change ownership and be rerouted to other entry-exit points.

(Physical) limitations of the infrastructure prevent TSOs from offering all capacities as freely allocable (mandatory P2P relations).

Additional capacity contracts between TSO and DSO level. Distribution network may not be part of the balancing zone.

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

# 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 in the Member States:

- 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 → the ability of the market party to perform its duties
- Additional requirements → aim to protect end consumers and guaranteeing security of supply

# Licensing and Contractual Framework / Barriers

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

## Barrier

## Issues

- | Barrier  | Issues  |
|--|---|
| <ul style="list-style-type: none"><li>• Transparency and availability of information</li></ul>                                   | <ul style="list-style-type: none"><li>• Definitions differ significantly</li><li>• Transparency and availability of information</li><li>• Information sometimes only available in the local language</li></ul>  |
| <ul style="list-style-type: none"><li>• Additional requirements can form a barrier for spot market trade and liquidity</li></ul> | <ul style="list-style-type: none"><li>• Additional requirements sometimes imposed:<ul style="list-style-type: none"><li>• Ability to secure supplies</li><li>• Mandatory diversification of supplies</li><li>• Proof of signed import contracts</li></ul></li><li>• Difficult to fulfill by (smaller) market entrants</li><li>• Might encourage purchasing under long term contracts → negative effects on spot market trade.</li></ul> |

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

# 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:

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

# 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

## Selected Major Barriers

- **Critical barriers**
  - 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 common balancing arrangements
  
- **Potential barriers**
  - 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

# 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 common 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



# LT-ST Markets in Gas

David Balmert

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# Introduction

## Project objective

- To assess the impact of an increase in short-term contracts on competition and security of supply in the EU gas market, based on a holistic view of the EU gas sector

## Three elements concerned

- Overall contract duration
- Flexibility: ToP, levels, Re-openers, re-negotiations
- Pricing formulas

## General trend towards more short-term oriented contracts

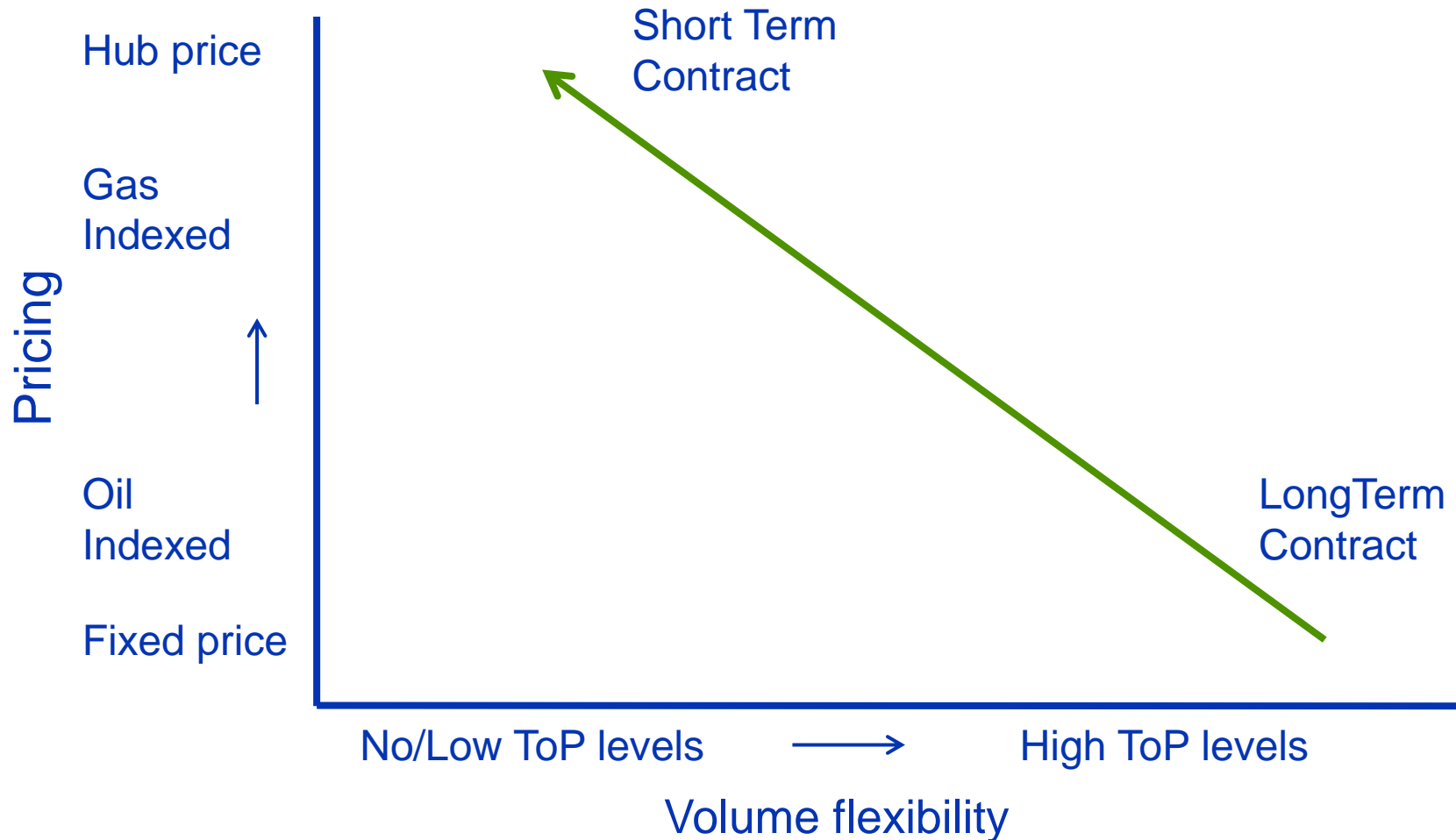
- Shorter durations the more downstream the value chain
- Driven by EU and global market dynamics
- Is expected to gain momentum
- Exceptions for Member States with limited supply option

## Project Approach





# Contract Structures in the EU – General Development



# Conclusions

## Future of LT Contracts

- **In the long-run, traditional long-term, oil-indexed contracts will very likely not prevail**
- **In particular on the level between importers and re-distributors, smaller wholesalers and large customers, short-term contracts will become increasingly dominant**
- **On the one hand side, contract durations are likely to become shorter, with a strong role of spot trading**
- **On the other hand side, pricing is likely to change towards more short-term, gas market related elements, i.e. hub-based pricing**
- **If pricing becomes more short-term oriented, overall contract duration loses significance**

# Conclusions

## Liquidity and Competition

- **Existence of mature, i.e. liquid and competitive markets, is the key divider for the assessment of an impact of an increase in ST contracts**
- **Where competitive markets already exist or are emerging, and where physical conditions such as diverse supply sources and adequate interconnection capacities will allow, ST contracts will foster market entry, thereby strengthening competition and increasing liquidity**
- **New entrants will typically join the ranks of so-called second-tier players, i.e. at a level below the traditional incumbent importers and large wholesalers**
- **More ST contracts provide additional room for traded volumes, hedging and paper trade, further strengthening competitiveness of markets**

# Conclusions

## Liquidity and Competition

- **In liquid markets, role of transport and storage capacity is expected change to being a hedge against regional or intertemporal price spreads**
- **The expected spreads will increasingly shape the willingness of market parties to pay for transport and storage capacity**
- **Where liquid and competitive markets will provide the fundament, market parties are thus facing rather a price risk than a physical risk of supply interruptions**
- **Liquid and competitive markets will likely attract more market parties and larger traded volumes**
- **Liquid forward markets will likely be strengthened by increased ST transaction volumes, providing effective signals to all market parties**

# Conclusions

## Prices and Market Signals

- **Under ST contracts, prices will better reflect short term supply and demand situation**
- **Price volatility could therefore increase, as recent examples show**
- **More volumes will be traded subject to those prices which likely increases consumer reactions on price signals**
- **To the extent consumption will respond to price signals, consumption will become more efficient**
- **Market ability to absorb price movements as well as changes in supply-demand situation is improved (higher resilience)**
- **Where lack of interconnectivity between Member States is removed, (further) convergence is expected**

# Conclusions

## Prices and Market Signals

- **Where market prices become more volatile, investors tend to adapt their behaviour, investing when the market outlook is rather positive**
- **Due to considerable lead times of gas production and transport investments ahead of the liquid end of the forward markets, the result could be a more cyclical pattern of gas markets**
- **Interim price effects could lead to negative side-effects**
- **Increased efficiency and resilience of gas markets could absorb (part of) the tendency to a more cyclical price market development**

# Contact



**David BALMERT**  
Senior Consultant  
Gas Consulting Services

[David.balmert@dnvkema.com](mailto:David.balmert@dnvkema.com)  
Tel: +49 228 4469074  
Fax: +49 228 4469099

KEMA Consulting GmbH  
Kurt-Schumacher-Str. 8  
53113 Bonn  
Germany  
[www.dnvkema.com](http://www.dnvkema.com)

