



Gas balancing situation and key issues

ERGEG Stakeholder Workshop – Draft Framework Guidelines on Gas Balancing

Maroeska Boots

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KEMA – 80 years experience

- Consulting & certification for the energy industry
- Founded in 1927 by the Dutch utilities
- Headquartered in Arnhem, the Netherlands
- Offices and subsidiaries world-wide
- More than 1,600 employees, turnover 2009 €256 million

Policy &
Strategy



Production



Trading



Transport &
Distribution



Use



One company serving the diverse needs of the energy marketplace

Consultant to the energy sector

Policy & Strategy



Production



Trading



Transport & Distribution



Use



Process & IT Consulting

- Portfolio/risk management, trading and energy balance processes
- Allocation & reconciliation (grid co's, suppliers, shippers, PV's)
- Process redesign, implementation, training and initial execution
- Project management, system procurement support
- IT functional design, implementation and integration
- IT quality testing

Business Consulting

- Market design and regulation
- Commercial due diligence
- Energy markets / renewable energy / emission management
- Demand side management / energy efficiency
- Change program management
- Macro economic demand and supply planning & advisory

Technical Consulting

- Technical analysis and design (engineering)
- Technical due diligence
- Asset / portfolio optimization modeling (technologic vs financing)
- Risk assessments and Quality Control and surveillance
- Data communication interface testing
- Requirements specification

Agenda

- Background
 - Based on a KEMA study for DG TREN – status beginning of 2009
- Residual balancing by the TSOs
 - Sources and methods of procuring balancing gas / flexibility, cost recovery
- Imbalance settlement
 - Balancing period, tolerances, pricing models
- Differences and potential barriers

Scope of the study

Focus areas

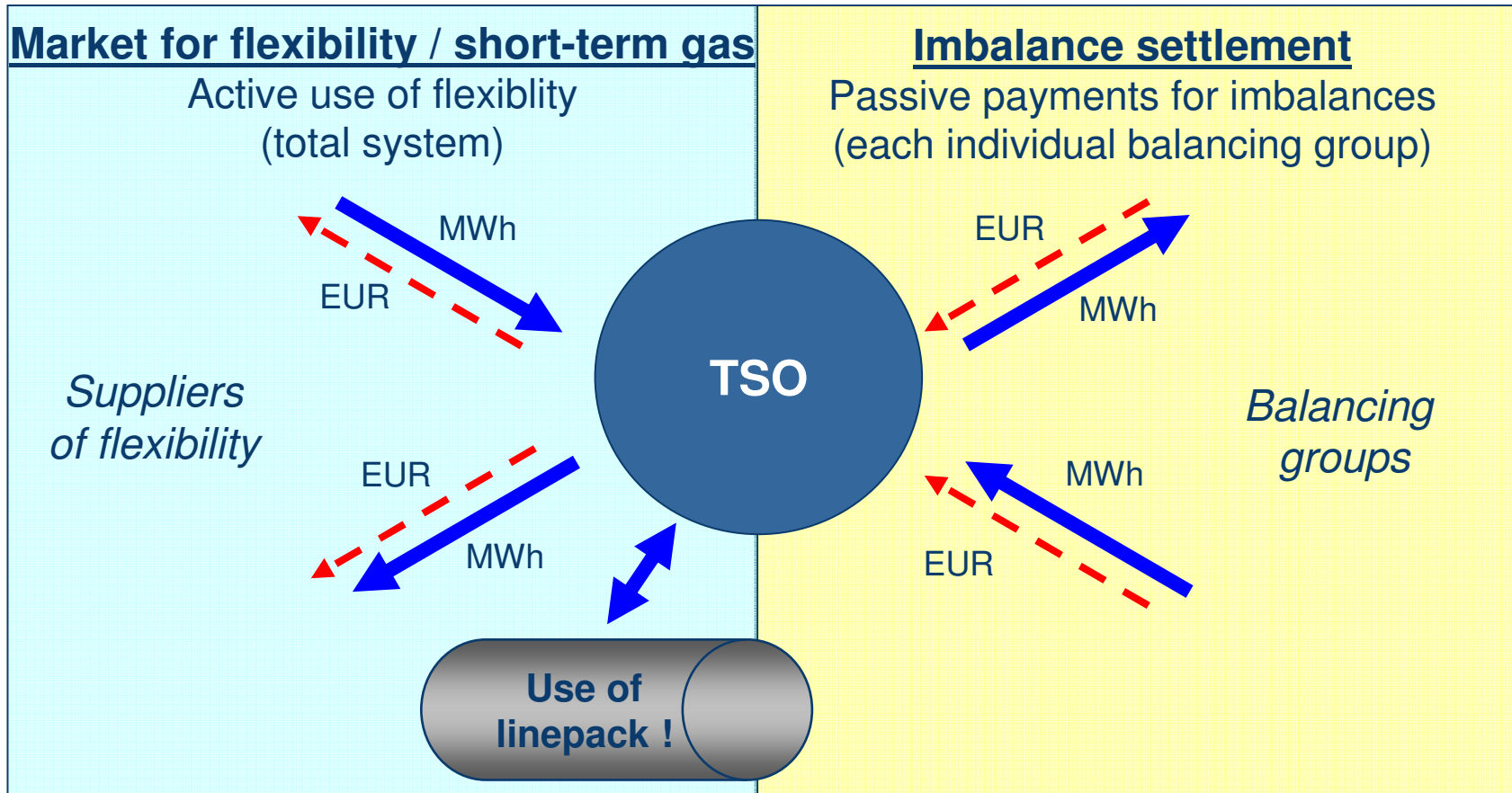
- Focus on 2 major determinants for network access that are particularly relevant for
 - Network users (shippers, customers)
 - Network operators (TSOs)

Other areas (e.g. capacity mgmt., transparency) outside scope

| Relevant for... \ Area | Gas transmission tariffs | Gas balancing |
|------------------------|------------------------------------|------------------------------|
| Network operators | Regulation of transmission tariffs | Procurement of balancing gas |
| Network users | Transmission tariff structure | Settlement of imbalances |

Background

Market for flexibility vs. imbalance settlement



System vs individual balancing

Residual balancing

- Sources of balancing services
- Methods for procurement of balancing services
- Time horizon of balancing services contracted by the TSOs
- Remuneration of balancing services
- Cost recovery
- Use of specific incentives on the TSO

Imbalance settlement

- Balancing period
- Imbalance charges (cash-out and penalties)
- Provision of tolerance levels
- Instruments available to network users to minimise imbalances
- Additional charges (e.g. scheduling and financial neutrality charges)

Sources of balancing services

| | Linepack | Production | Storage | LNG | Import |
|-----------------------|----------|------------|---------|-----|--------|
| Austria | ✓ | | ✓ | | (✓) |
| Belgium | ✓ | | ✓ | ✓ | (✓) |
| Czech Republic | ✓ | | ✓ | | (✓) |
| Denmark | ✓ | (✓) | ✓ | | |
| France | (✓) | | ✓ | (✓) | |
| Germany | ✓ | ✓ | ✓ | | ✓ |
| Greece | (✓) | | | ✓ | |
| Great Britain | ✓ | ✓ | ✓ | ✓ | |
| Hungary | ✓ | | ✓ | | (✓) |
| Ireland | (✓) | | ✓ | | |
| Italy | ✓ | | ✓ | | |
| Latvia | ✓ | | ✓ | | |
| Luxembourg | (✓) | | | | ✓ |
| Netherlands | (✓) | ✓ | (✓) | (✓) | |
| Poland | ✓ | | ✓ | | |
| Portugal | ✓ | | ✓ | ✓ | |
| Slovakia | ✓ | | ✓ | | (✓) |
| Slovenia | (✓) | | | | ✓ |
| Spain | ✓ | | ✓ | ✓ | |
| Sweden | ✓ | | (✓) | | (✓) |

Procurement

| | Ownership | Non market-based | | Tender | Market-based | |
|---------------|-----------|--------------------|-----------------|---------|---------------------------|-----------------------------------|
| | | Regulated contract | Direct contract | | Separate balancing market | Participation in wholesale market |
| Austria | | | | | D/A | |
| Belgium | | | | Annual | | |
| Bulgaria | | Storage | | | | |
| Czech Rep | | | | Annual | | |
| Denmark | Storage | | Storage, Other | | | |
| France | | | Storage | Annual | | D/A + I/D |
| Germany | | (DSO) | Storage | Various | (D/A) | D/A + I/D |
| Great Britain | | (DSO) | | | | I/D |
| Greece | | LNG | | | | |
| Hungary | | | | | D/A | |
| Ireland | | | | Annual | | |
| Italy | | Storage | | | | |
| Lithuania | (Import) | | | | | |
| Luxembourg | (Import) | | | | | |
| Netherlands | | | Storage | Annual | | |
| Poland | | | Storage | | | |
| Portugal | | Storage, LNG | | | | |
| Romania | | Storage | | | | |
| Slovakia | | Storage | | | | D/A + I/D |
| Slovenia | | Import | | | | |
| Spain | | Storage, LNG | | Daily | | |
| Sweden | | | | | | D/A + I/D |

Products and mechanisms

- Limited use of market-based mechanisms
- Focus on medium-term time horizon
- Tailor-made products – incompatible with wholesale market / other countries
- Impact
 - Separation from (wholesale) market → Costs do not reflect market prices
 - Barrier to entry
 - Inhibits cross-border exchange

| | | | | | |
|------------|----------------------------|--------------------|-------------------|---------------------|---------------------|
| Within-day | | | | | GB |
| Day ahead | | | DE ES | AT DE HU | FR CZ SE DE |
| ≤ 1 year | | | BE CZ DE IE FR | | |
| Long-term | DK GR IT LT LU LV RO | DK GR NL PL | | | |
| | Regulated / Ownership | Direct contract | Tender | Balancing market | Wholesale market |

Size of balancing zones

- Limited size of many national markets and/or balancing zones creates barriers for all aspects of balancing:
 - Transaction costs / Barriers for offering balancing gas in other areas
 - Limited scope for competition
 - Limited compensation within network
 - Reduced benefits from pooling of imbalances

Other issues

- Remuneration of provision of balancing gas or balancing services is linked to the actual procurement mechanism
 - Market prices
 - Guaranteed capacity on contracted volume and balancing gas on actual volumes
 - Auctions (tenders or I/D) on pay-as-bid
- Cost either covered by imbalance charges and penalties or socialized through normal network tariffs
- Specific incentives and constraints
 - GB: price performance measure and linepack management incentive
 - DE: obligation to use linepack first

Imbalance pricing

- Imbalance settlement mostly based on administrated charges
 - Requires sufficient penalties to avoid gaming (=> punitive)
 - Inefficient price signals (do not reflect cost of balancing)
- Note: Closely related to lack of market-based procurement

| | Pricing basis | | | |
|-----------------|-----------------------|--------------------------------|-------------------|---------------|
| | Administrated | Indexed | Market based | |
| | | | Average cost | Marginal cost |
| 1 price | IT | IE*, NL | AT, BG*, FR*, SE* | - |
| 2 prices | ES, GR, SI | BE, CZ, DE DK, FR*, LU*, SK | - | GB*, (SE*) |
| Penalty | CZ, GR, LT, RO, SI | AT*, BE, NL, PT, SK* | N/A | |

Balancing intervals

- Prevailing use of daily balancing intervals, but
 - Partially significant longer periods / tolerances granted
 - Use of hourly settlement / penalties in other countries
- Use of shorter intervals may create significant risks

| | | | | | | | | | | | | | | | | | | | |
|-------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Evergreen | | | | | | ○ | ◆ | | | | | ○ | | | ○ | | | | ◆ |
| Monthly | | | ■ | | | | | | ■ | | | | | | | ○ | | | |
| Daily | | ■ | ○ | ■ | ■ | | ◆ | ■ | ◆ | ■ | ■ | | ■ | ■ | | ○ | ■ | ◆ | ■ |
| Cumulative (within day) | | ○ | | | | | | | | | | | ○ | ○ | | | | | |
| Hourly | ■ | ○ | | ○ | | | | | | | | | ○ | ○ | | | | | |
| | AT | BE | CZ | DE | DK | ES | FR | GB | GR | HU | IE | IT | LU | NL | PT | RO | SK | SI | SE |

○ Penalty (outside tolerance)
 ◆ Cash-out (outside tolerance)
 ■ Full cash-out

Differences and barriers

| Issue | Impact |
|---|---|
| Lack of market-based & cost-reflective imbalance charges | <ul style="list-style-type: none">• Need to increase (implicit) penalties to avoid arbitrage possibilities• Inefficient price signals• Risk of punitive imbalance charges• Increased risk for network users• High barriers to entry |
| Limited size of market areas / balancing zones | <ul style="list-style-type: none">• Increased risk for network users• High barriers to entry• Reduced scope for avoiding imbalances |
| Non-market-based mechanisms for residual balancing | <ul style="list-style-type: none">• De-couples costs of residual balancing from general (commodity) market• Inhibits exchange of balancing services |
| Incompatible products for residual balancing | <ul style="list-style-type: none">• Inhibits exchange of balancing services• Barrier to participation of external bidders |
| Different balancing periods | <ul style="list-style-type: none">• Increased risk and transaction costs for users• Potentially punitive imbalances• Risk of arbitrage |



Thank you for your attention

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