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1. Soviet / Russian gas supplies to Europe: contractual structure & its evolution
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   2. The issues of gas price pegging within the LTGEC in Europe
   3. EU energy market: liberalization, competition and investment – implications for external suppliers & ECT
Soviet / Russian gas export contracts to:

- the EU (historically),
- former COMECON (since USSR dissolution), and
- FSU (since recently)

are based on / modified towards Groningen (Dutch) concept of long-term gas export contract (LTGEC)
Groningen LTGEC concept = long-term supply contract + replacement value pricing + net back + regular price rebate + minimum pay obligations + destination clauses

More than 250 BCM/y of gas imports to Continental Europe based on this concept
SOVIET/ RUSSIAN GAS TO EUROPE: SUCCESSFUL HISTORY

Groningen LTGEC concept originated in 1962 (+ adaptation period) => USSR gas export to EU started in 1968 (Austria)

Based on Groningen concept, Russian gas export contractual structure proved its validity & reliability through Cold War and post-Soviet transformation periods => 40 years of successful history
Soviet/Russian Gas to Europe: Contractual Structure (1)

- Long-term gas export contracts (LTGEC)
- On-border EU (-15) sales
- Pricing: netted-back from replacement value at the end-market
- Destination clauses
- Multiple transit
Russian Gas Export to/through EU: on-border Sales and Transit Legs (post 2007)

After dissolution of USSR / COMECON new risks have appeared in Russian LTEGC to Europe outside Russia but within geographical area of Russian side responsibility upstream & inclusive to LTEGC delivery points.

Map source: CGES

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Russian Gas Supplies to Europe: Zones of New Risks for Existing Supplies Within RF Area of Responsibility

Direction of Russian gas flow to Europe

Zones of new risks

<table>
<thead>
<tr>
<th>France Switzerl. Italy Turkey</th>
<th>Germany Austria Greece</th>
<th>Poland Slovakia Czech R. Hungary Romania Bulgaria</th>
<th>Belarus Ukraine Moldova</th>
<th>Russia</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Risks 1 zone</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Direction of Russian gas flow to Europe:

- EC – 25/27
- EC – 15

New Risks 2 zone

Italic – non-EU countries; New EU accession states: underlined – since 01.05.2004, underlined + italic – since 1.01.2007; A, B, C – points of change of ownership for Russian gas and/or pipeline on its way to Europe

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RUSSIA’S GAS SUPPLY TO EUROPE: NEW RISKS - WHICH, WHEN & WHERE (in the zone of responsibility of Russian side)

- **Since 1991**: upstream to delivery points, within CIS/NIS
  - USSR dissolution + diversified supply routes => new transit risks
- **Since 2002/03**: + at delivery points (consequences for Russian gas at end-use EU markets?)
  - solution on destination clauses = package deal, but whether it balanced? (e.g. TAG Dec’05 auction - capacity allocation procedure)
- **Since 2004/07**: + upstream to delivery points, within enlarged EU-25/27
  - combined result of EU expansion + EU gas market liberalization => new prospective transit / transportation risks
- **Role of 3rd EU liberalization package?** (announced 19 September 2007)
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NEW RISKS 2: COMECON / CIS RELATED (SINCE 1991)

• New CIS-related risks for Russian gas supplies to Europe:
  • result & long-term economic consequences of dissolution of USSR / COMECON political system
  • reflect objective long-term economic problems of (soft !) transition from political pricing / supply obligations within unified political system of USSR / COMECON to market-based pricing and supply obligations between sovereign states and their commercial entities
Soviet/Russian Gas Supplies to COMECON/CIS: *Prior to* Dissolution of the USSR

- Political (friendship) pricing =>
  - subsidized (notional) export prices
  - portion of resource rent is left to importer in exchange on his political concessions to exporter
  - sharing USSR resources (which today are mostly Russian resources) within USSR and with COMECON countries
- Barter & quasi-barter deals
- Transportation system – but not transit system
- No transit within USSR
- Export & transit supplies are not contractually separated within COMECON
Soviet/Russian Gas Supplies to COMECON/CIS: After Dissolution of the USSR

- Long & painful transition to:
  - Contractual separation of transit & export supplies
  - Formation of domestic transport vs. transit legislation
  - From barter to cash payments
  - From politically-subsidized - to market-based pricing & prices:
    - Transit tariffs methodologies
    - Market-oriented export pricing & prices

Energy Charter role: ECT Art.7 + draft Transit Protocol + gas/transit-related activities: e.g. Transit tariffs study (Jan’06), Pricing study (March’07), etc.
The Report can be downloaded free of charge at: www.encharter.org
Report on Pricing by the Energy Charter

ЦЕНА ЭНЕРГИИ

PUTTING A PRICE ON ENERGY

Международные механизмы формирования цен на нефть и газ

International Pricing Mechanisms for Oil and Gas

The Report can be downloaded free of charge at: www.encharter.org
Russian Gas Prices to the EU and Countries along the Pipe

Remarks:
1. The figures are entirely for illustration purposes and, therefore, may not fully reflect the actual price levels and movements.
2. The illustration for "Netted back EU market prices" are based on the IEA's World Energy Outlook, 2006.
3. Estimates for future gas price movements beyond 2007 are entirely illustrative.
4. Recent actual price figures for Ukraine and Belarus, based on information from public sources, are as follows:
   - For Belarus: Russian gas price: 100 $/mcm (2007); It will reach market price level by 2011 in agreed upon steps (67, 80, 90 and 100% from 2008 to 2011).
5. Notional prices for Russian gas were used to determine volumes of gas as compensation for transit services.
   - For Belarus: 47 $/mcm most recently until 2007.

## Russia & Former COMECON/USSR: Different Sensitivity of Transition to Market-based Gas Prices

<table>
<thead>
<tr>
<th>Internal motivation vs. external political obligations to move to market pricing / prices</th>
<th>Czech &amp; Slovak Republics</th>
<th>Ukraine</th>
<th>Belarus</th>
</tr>
</thead>
<tbody>
<tr>
<td>(No?) / Yes (accession to EU)</td>
<td>No / No</td>
<td>No / No</td>
<td>No / No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Price gap (market vs. political price): value (USD/mcm) &amp; trend prior to transition</th>
<th>Czech &amp; Slovak Republics</th>
<th>Ukraine</th>
<th>Belarus</th>
</tr>
</thead>
<tbody>
<tr>
<td>10- (1998); diminishing</td>
<td>15 (1998), 160 (2005); growing</td>
<td>25 (1998), 170+ (2006); growing</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Relative economic value / political sensitivity</th>
<th>Czech &amp; Slovak Republics</th>
<th>Ukraine</th>
<th>Belarus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>High</td>
<td>Highest (Union state)</td>
<td></td>
</tr>
</tbody>
</table>
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   3. EU energy market: liberalization, competition and investment – implications for external suppliers & ECT
NEW RISKS 1:
EU-RELATED (SINCE 2004/2007)

- No transit of Russian gas inside/through EU up to May’2004 (EU-15) (except to Switzerland)
- Transit of Russian gas inside/through EU since May’2004 (EU-25) and even more since Jan’2007 (EU-27)
- Transit / transportation risks for imported Russian & other non-EU gas inside EU (issue for multilateral debate => Energy Charter as the best forum):
  - No clear transit rules for internal EU gas market (domestic transportation = free flow of goods inside EU)
    - but: ECT signed/ratified by both the EU and by individual EU member-states =>
    - EU acquis vs. international treaties of EU as REIO => ?
    - disputes between/with EU member-states (ECT CPs & REIO members) vs international arbitration (ECT: ICSID, UNCITRAL, SCC) and/or European Court of Justice => ?
    - Internal EU issue (REIO clause), BUT international (external EU) effect
  - Problem of contractual mismatch (long-term access to infrastructure for transit flows to match existing LTGEC supply obligations)
  - Major elements of EU liberalization (unbundling + mandatory TPA) + contractual mismatch => creates new transit / transportation / investment risks
CONTRACTUAL MISMATCH PROBLEM

Mismatch: between duration/volumes (D/V) of long term supply (delivery) contract and transit/transportation contract as integral part to fulfill the delivery contract => risk of non-renewal of transit/transportation contract => risk for supply contract.

Core issue: guarantee of access to/creation of adequate transportation capacity for the duration of long term contracts.
Definition of Available Capacity

(Draft TP Article 1.2 -- CC 251)

- Total Physical Capacity
- Operating margin
- Available Capacity
- Other binding obligations pursuant to laws and regulations
- Fulfillment of obligations under any valid and legally binding agreements
- Infrastructure owners own transportation needs*

* "Subject to requirements for access to ETFs applicable within a CP" -- EU

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**Capacity Allocation**

**Capacity Requests**
- (Volume and Duration)

**Open subscription period**
- minimum waiting period
- reasonable relation between length of subscription period (and period from capacity allocation to start of use) and duration of transit period requested.

**Available Capacity**

**Booking:**
- booked/allocated capacity deducted from Available Capacity

**Capacity allocation mechanism:**
- non-discriminatory
- transparent

**Auction**
**Pro-Rata**
**Other**

**Decision**
- short term*/long term*

**Open Season**

**Investment:**
- objective, transparent and non-discriminatory authorisation procedures (see draft Article 9)

* short term: capacity increase not possible within given timeframe

Prevention of speculative hoarding and capacity blocking e.g. operational use-it-or-lose-it

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Use of Excess Revenues from Auctions
(Draft TP Article 10bis.3 -- CC 315)

Excess Revenues Generated

- reducing or mitigating congestion, including, reasonable measures for maintaining or restoring physical operating capacity
- reducing, within a reasonable timeframe, the Transit Tariffs charged for the use of the relevant ETFs
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Estimated International Gas Trade (2005): Different Pricing Mechanisms for Main Regions

Source: BP (2006)  
(1) LNG to USA, UK and other spot LNG; arbitrage on the UK-Belgium Interconnector  
(2) Pipeline Canada-USA, pipelines to UK (BBL, Langeled) and new Dutch exports  
(3) All imports by Continental Europe (incl. accession countries) less spot LNG under (1)  
(4) Trade with FSU now in transition from quasi-barter deals to LTCs, 2004 figures
LTGEC: Indexation by Producer

Indexation is not similar for all producing regions


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The most intriguing question

- is => the difficulties and risks of transition from a system with strong players to a system with one/few liquid market places & many players

- Representative of a gas-producing company at Energy Charter IAP meeting: “Producers are interested and know how to supply their gas to a market with deep liquidity, or to a market with low liquidity but with strong players; however, markets with low liquidity and weak players are difficult to supply” (Putting a Price on Energy, p. 166)
Comparative liquidity of marketplaces: worldwide oil vs. Continental Europe gas

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(*) BEB hub = Bunde (Germany) at German/Dutch border, CEGH = Central European gas hub (Baumgarten, Austria), NBP = Notional Balancing Point (UK hub), PEGs = French hubs (Gdf), PSV = Punto di Scambio Virtuale (Italian hub), TTF = Title Transfer Facility (Dutch hub);

(**) 2004 – 2006 average;

(***) 8-14 during the 2004 – 2006 period

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### 2004-2006 FLAME Polls on Gas-to-Oil Price Pegging

<table>
<thead>
<tr>
<th>Q 2004-05: When will European LTC gas prices “break loose” from oil prices and be ruled by spot/futures quotations?</th>
<th>Q 2006: To what extent will spot pricing in gas markets replace oil price pegging formulas?</th>
</tr>
</thead>
<tbody>
<tr>
<td>By yearend 2005</td>
<td>1</td>
</tr>
<tr>
<td>By yearend 2008</td>
<td>-</td>
</tr>
<tr>
<td>By yearend 2010</td>
<td>24</td>
</tr>
<tr>
<td>By yearend 2015</td>
<td>36</td>
</tr>
<tr>
<td>After 2015</td>
<td>15</td>
</tr>
<tr>
<td>Never</td>
<td>24</td>
</tr>
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**International Energy: competition & investments**

**Cross-border energy flows (energy value chains)**

- **Consumer states / importers**
- **Transit states / importers**
- **Producer states / exporters**

**Aim of importers** = to increase import supplies of EMP in order to decrease energy prices for end-users =>
  - competition is not the end in itself, but the mean to achieve major aim =>
  - competition between exporters (!) =>
  - diversification of supply routes from few existing exporters (multiple pipelines) + few new exporters & new supply routes (multiple supplies) => **CAPEX + time** =>
  - competition (or cooperation !) between few major producers;

**But:** competition leads to increase of energy prices for end-users - if organised as increase of number of traders (especially of small re-sellers) at the market of consumer/importer state under **limited supply** (restricted, *inter alia*, by liberalization risks for exporters)

Non-renewable energy resources: limited number of producers / exporters + national sovereignty on energy resources;

**Aim of exporters** =
  - maximization of Hotelling rent;
  - Competition (for exporters) =
  - diversification of supply routes to existing markets & access to new markets =>

**Competition = f (CAPEX + time + ...) !!! => investment rules !!!**

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Competition & investment: 
Debate on Third Party Access (TPA)

No → TPA → Yes

TPA

- **Negotiatory TPA**
  - ECT
  - EU 1st Gas Directive
  - Art.22

- **Mandatory TPA**
  - EU 2nd Gas Directive

→ Project Financing

Derogation from MTPA

→ 7+ projects within EU (*)

(* as of May 2007)
Common rules for evolving Eurasian energy market: ECT expansion vs. export of EU Acquis? (map)
Common rules for evolving Eurasian energy market: ECT expansion vs. export of EU Acquis?

<table>
<thead>
<tr>
<th>Zone</th>
<th>States within the zone</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EU Members</strong>:</td>
<td>27 EU countries</td>
<td>EU legislation, including the energy legislation, is fully applicable</td>
</tr>
<tr>
<td><strong>Energy Community EU-SEE Countries</strong>:</td>
<td>Croatia, Serbia, Montenegro, Croatia, Bosnia, FYROM (Macedonia), Albania, UNMIK (Kosova); other Energy Community members are already EU members</td>
<td>Only EU legislation on internal electricity and gas markets is applicable</td>
</tr>
<tr>
<td><strong>EU Candidate Countries</strong>:</td>
<td>Turkey (Croatia is already an Energy Community member so applying the EU energy market acquis)</td>
<td>Still in the process of alignment to the EU legislation but full compliance not likely before membership</td>
</tr>
<tr>
<td><strong>EU Neighbourhood Policy Countries</strong>:</td>
<td>CIS (Armenia, Azerbaijan, Belarus, Georgia, Moldova, Ukraine) and Northern Africa (Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, the Palestinian Authority, Syria, Tunisia)</td>
<td>Enhanced energy cooperation based on National Action Plans with Ukraine and Moldova (as well as with Israel, Jordan, Morocco, the Palestinian Authority and Tunisia); partial application of EU energy policies and legislation may be possible in the future</td>
</tr>
<tr>
<td><strong>EU-Russia Strategic Partnership</strong>:</td>
<td>EU &amp; Russia</td>
<td>Based on shared principles and objectives; applicability of the EU legislation in Russia is out of question</td>
</tr>
<tr>
<td><strong>ECT member-states</strong>:</td>
<td>51 states of Europe &amp; Asia</td>
<td>ECT is fully applicable within the EU as minimum standard; EU went further in liberalizing its internal energy market, BUT whether EU can demand that other ECT member-states follow same model and speed of developing their domestic markets?</td>
</tr>
<tr>
<td><strong>ECT observer-states</strong>:</td>
<td>20 states of Europe, Asia (e.g. Middle East, South-, SE- &amp; NE-Asia), Africa, North &amp; Latin America</td>
<td>Shared ECT aims &amp; principles; did not take ECT legally binding rules; not ready to take more liberal rules of EU Acquis</td>
</tr>
</tbody>
</table>
Thank you!
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Back-up slides
Pricing of Non-Renewable Energy Resources: RICARDIAN VS. HOTELLING RENT

Ricardian rent + Hotelling rent = Resource rent

- **Price**
  - Fuel substitution
  - Energy efficiency
  - Hotelling rent
  - Ricardian rent

- **Volume**
  - Supply curve (cost of supply)
  - Demand curve
  - Under influence of consumers
  - Replacement value-oriented price
  - Cost-oriented price
  - Under influence of producers
  - E&P (depletion policy)
  - PM 2 (Production capacity limit)
  - PM 1

- Technology

---

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Pricing principles:

- **Cost-plus** => pricing at the internal domestic market of the producer or subsidized export pricing (Hotelling rent is shared with your own nation or with foreign nation)

- **Replacement value** (costs of alternative energies) at the burner tip => can be realized, in case when domestic production capacities are below internal demand for gas

- **Net-back replacement value** = replacement value netted back to a point upstream of the burner tip in the delivery chain (delivery point) => Dutch (Groningen) model of long-term export contract (since 1962)
The Groningen Concept

Developed by Nota de Pous (Note to Parliament in 1962)
For exports:

**Pricing:**
- Replacement value principle at the consumer market (no production cost-related approach at the producer market)
- Net-back value, netted back from replacement value at the end-use market
- Regular price review, if no joint solution => arbitration
- Price risk and reward for seller, marketing risk for buyer
- Protection against arbitrage by buyer (destination clauses)

**Volumes and risks:**
- Long term supply vs. off-take obligation based on minimum pay: dedication of certain volumes of reserves vs. commitment to market defined volumes
- Secure supply at marketable prices against reliable sales volumes at maximum highest marketable price
**Driver for Groningen Concept:**

Optimizing the Resource Rent

Specificity of investment and resource base

Replacement value principle (domestic and export):
  - Max price consumer will pay compared to alternatives
  - If gas-to-gas competition:
    - replacement value => gas market price
  - Otherwise defined by costs of replacement fuels

Export:
  - Long term: Maximise resource rent over time (in cash)
  - Keep supplies reliable but tight
  - Ensure a defined sales volume
  - Replacement value pricing => periodical adjustment
  - Net back to supply point: Consumers pay, but costs of infrastructure deducted from revenue of resource owner
LTGEC = DEPOLITICISED MODEL

Groningen LTGEC concept: No political problems ever - related to regular price rebates within LTC structures - nor with Dutch (*), nor with Soviet/Russian gas exports (pure commercial & depoliticized issues)

Russia-Ukraine (2005/06) & Russia-Belarus (2006/07) gas disputes = results of painful transition from political to market-based export pricing to be finally based on Groningen LTGEC concept => mostly artificially politicized commercial issues (e.g. investigation of reasons for gas undersupplies to Italy in Winter 2005/06)

(*) except one case in 1980/81 – “Spierenburg round”,

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Soviet/Russian Gas to Europe: Contractual Structure (2)

• Long-term gas export contracts (LTGEC)
  ▶ Basis for financing of large-scale & capital-intensive projects on gas production & long-distance transportation (approx. 20%:80% project costs)
  ▶ Demand of financial institutions to provide for long-term & stable financial flows from gas sales to pay-back debt (project) financing
  ▶ Debt (project) financing = up to 80-90% of project CAPEX

• On-border EU (-15) sales
• Pricing: netted-back from replacement value at the end-market
• Destination clauses
• Multiple transit
Soviet/Russian Gas to Europe: Contractual Structure (3)

- Long-term gas export contracts (LTGEC)
- **On-border EU (-15) sales**
  - Delivery points upstream to end-markets
  - Sales on EU border = distribution of zones of responsibility between gas supplies and buyers for secure gas supplies within the cross-border gas value chain
  - Historically predetermined by political split of Europe in end-1960’s
  - One delivery point served for few (more than one) final consumers
- Pricing: netted-back from replacement value at the end-market
- Destination clauses
- Multiple transit
Soviet/Russian Gas to Europe: Contractual Structure (4)

• Long-term gas export contracts (LTGEC)
• On-border EU (-15) sales
• Pricing: netted-back from replacement value at the end-market
  • e.g. less compensation for transportation costs from end-market to delivery point =>
  • Different end-use gas prices at different end-use markets for Soviet/Russian gas +
  • Different distances from different end-use markets to delivery points =
  • Availability of Soviet/Russian gas with different levels of contractual prices (aimed at different final destinations) in the same delivery point

• Destination clauses
• Multiple transit
A Typical Net Back Gas Price Formula & its Review

\[ P_m = P_0 + [0.60] \times [0.80] \times 0.0078 \times (LFO_m - LFO_0) \]
\[ + [0.40] \times [0.90] \times 0.0076 \times (HFO_m - HFO_0) \]
\[ + \ldots \]

The gas price \( P_m \) during the Month \( m \) is a function of
- the starting gas price \( P_0 \)
- and the price development of competing fuels Light Fuel Oil (LFO) and Heavy Fuel Oil (HFO)

Typical subjects of a price review:
- Shares of competing fuels / new competing fuels / gas to gas competition / switching possibilities
- Adjustment of \( P_0 \) to reflect changed shares
- Adjustment of rent sharing / marketing incentive implicit in \( P_0 \)
- Ceilings and bottoms
- More technical elements: Reference fuels, time lags
Soviet/Russian Gas to Europe: Contractual Structure (5)

- Long-term gas export contracts (LTGEC)
- On-border EU (-15) sales
- Pricing: netted-back from replacement value at the end-market
- **Destination clauses**
  - Protection against price arbitrage =>
  - Instrument of price risk mitigation =>
  - increase reliability of repayment of debt financing
- Multiple transit
“Destination clauses” allowed gas supplier to sell gas to different buyers at different prices and other contractual terms at one and the same delivery point to protect its competitiveness at the end-use market (to prevent arbitrage by buyers).

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Slide 48
Soviet/Russian Gas to Europe: Contractual Structure (6)

- Long-term gas export contracts (LTGEC)
- On-border EU (-15) sales
- Pricing: netted-back from replacement value at the end-market
- Destination clauses
- **Multiple transit**
  - Multi-vector transit within the expanded geography & more complicated structure of gas supplies
  - increasingly important: compared to other exporters & esp. after USSR/COMECON dissolutions