

Russia-Ukraine Gas Trade: From Political to Market-Based Pricing & Prices

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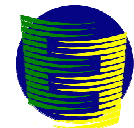
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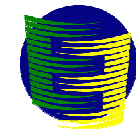
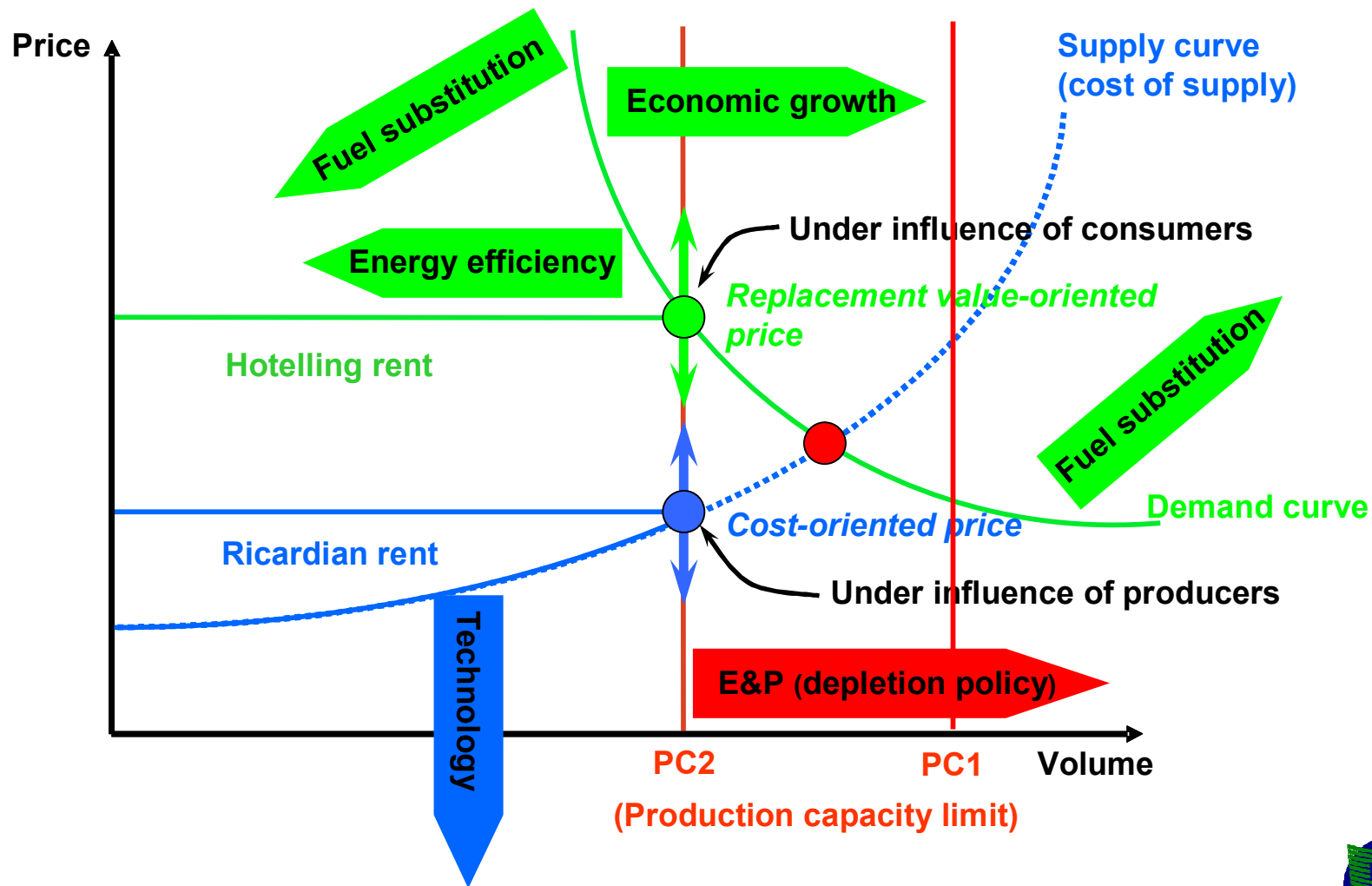
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Pricing of Non-Renewable Energy Resources: RICARDIAN VS. HOTELLING RENT

Ricardian rent + Hotelling rent = Resource rent



Gas Export Pricing & Prices

- Resource price and resource rent for non-renewable energy:
 - **Ricardian rent**: internal demand is *below* domestic production capacity limitations
 - **Hotelling rent**: internal demand is *above* domestic production capacity limitations
- Pricing principles:
 - **Cost-plus (net forward)** => pricing at internal domestic market of producer *or* subsidized export pricing (Hotelling rent is shared with your own nation *or* with foreign nation)
 - **Replacement value** (costs of alternative energies) => in case when domestic production capacities are below internal demand for gas => to receive maximum marketable price/resource rent
 - **Net-back replacement value** = Replacement value netted back to an upstream delivery point in delivery chain => Dutch (Groningen) model of long-term export contract (since 1962)



A Typical Net Back Gas Price Formula & its Review

$$P_m = \left\{ \begin{array}{ll} [P_o] & \\ + [0.60] \times [0.80] \times 0.0078 \times (LFO_m - LFO_o) & \{\mathbf{up/down}\} \\ + [0.40] \times [0.90] \times 0.0076 \times (HFO_m - HFO_o) & \{\mathbf{up/down}\} \\ + [...] \quad (\text{coal}) & \{\mathbf{up/down}\} \\ + [...] \quad (\text{electricity}) & \{\mathbf{up/down}\} \\ + [...] \quad (\text{gas-to-gas competition}) & \{\mathbf{up/down}\} \end{array} \right.$$

NB: [...] – parameters in brackets usually subject of renegotiation

Long-term evolution of price review mechanism:

- reflect its adaptation to the new state of development of energy markets,
- changing shares of existing competing fuels (LFO/HFO ratio in favour of LFO) *and* incorporation of new competing fuels *and* gas to gas competition,

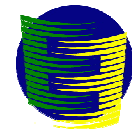
but

LFO & HFO are still dominant replacement fuels in gas pricing within long-term gas export contracts

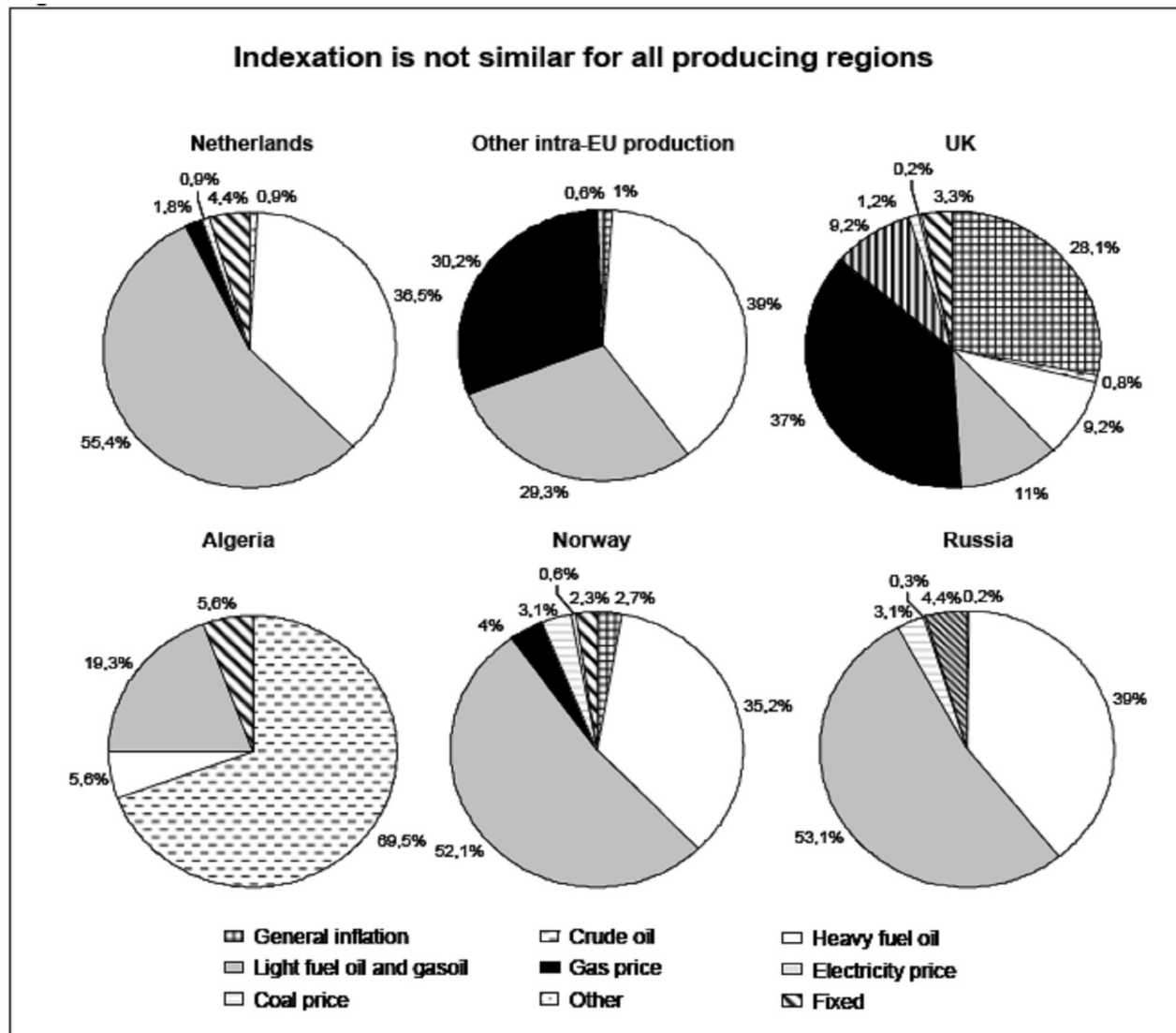


Soviet/Russian Gas to Europe: Contractual Structure Based on Groningen LTGEC Concept

- Soviet / Russian gas export contracts to the EU (historically – since 1968), former COMECON (since USSR dissolution), and FSU (since recently) are based on / modified towards Groningen (Dutch) concept of LTGEC => Russia case:
 - Long-term gas export contracts (LTGEC)
 - On-border EU (-15) sales (delivery points upstream to end-markets)
 - Pricing: netted-back from replacement value at the end-market (e.g. less cost of transportation from end-market to delivery point)
 - Protection against arbitrage (destination clauses)
 - Multiple transit (increasingly important: compared to other exporters & after USSR/COMECON dissolutions)



LTGEC: Indexation by Producer



Source: Energy Sector Inquiry 2005/2006

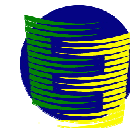


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Soviet/Russian Gas Supplies to COMECON/CIS: ***Prior to* Dissolution of the USSR**

- **Political (friendship) pricing => :**
 - subsidized (notional) export prices
 - transfer of Hotelling rent from producer-state to consumer-state through cost-plus (net forward) pricing
 - 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
 - Legal background: state sovereignty on natural resources (UNGA 1962 Res.1803; ECT Art.18)
- **Barter & quasi-barter deals**
- **Transportation system - but not designed as transit system within USSR/COMECON**
- **No transit within USSR**
- **Export & transit supplies are not contractually separated within COMECON**



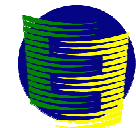
Soviet/Russian Gas Supplies to COMECON/CIS: *After* Dissolution of the USSR

- 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

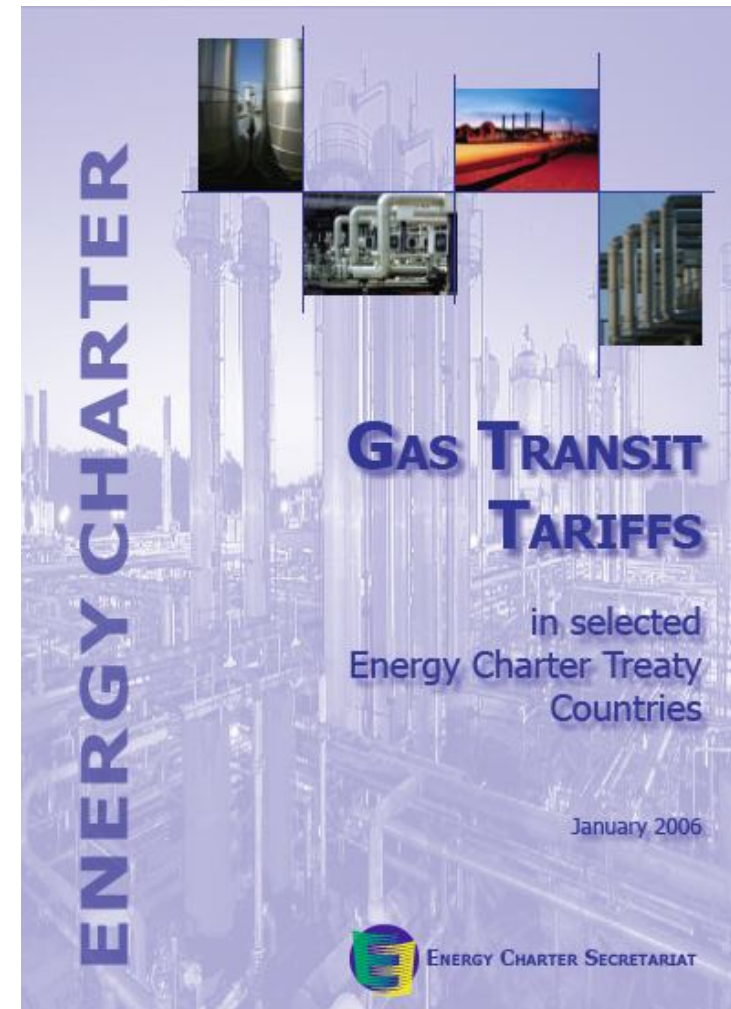
Energy Charter role:

draft Transit Protocol
+ gas/transit-related
activities: e.g.
Transit tariffs study
(Jan'06), Pricing
study (March'07),
etc.

Gas problems in post-Soviet area = result & long-term economic consequences of dissolution of USSR/COMECON political system = objective long-term economic problems of transition period

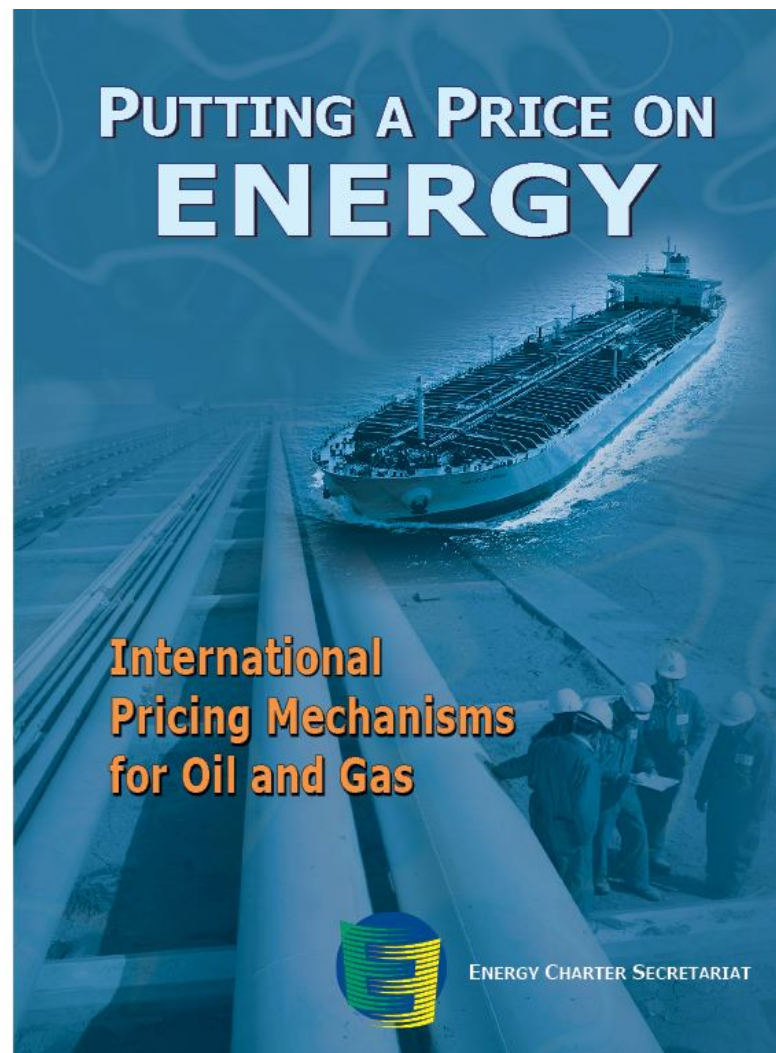


Report on Tariffs by the Energy Charter



The Report can be downloaded free of charge at: www.encharter.org

Report on Pricing by the Energy Charter



The Report can be downloaded free of charge at: www.encharter.org

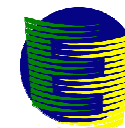
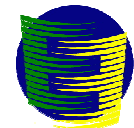


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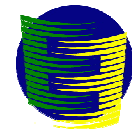
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Ukraine: Export and Transit of Russian Gas

Prior to 4 January 2006

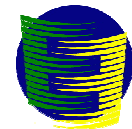
- Export & transit are not contractually separated
- Quasi-barter deals
- Notional export prices & transit tariffs – to balance gas supplies to Ukraine
- Export pricing:
 - “cost-plus (net forward)” – on the basis of the marginal costs (supply curve) for Russia
- Who receive the resource rent (Ricardian & Hotelling rents):
 - Ricardian rent – producer/exporting state (Russia),
 - (at least part of) Hotelling rent – consumer/importing state (Ukraine) => ECT Art.18



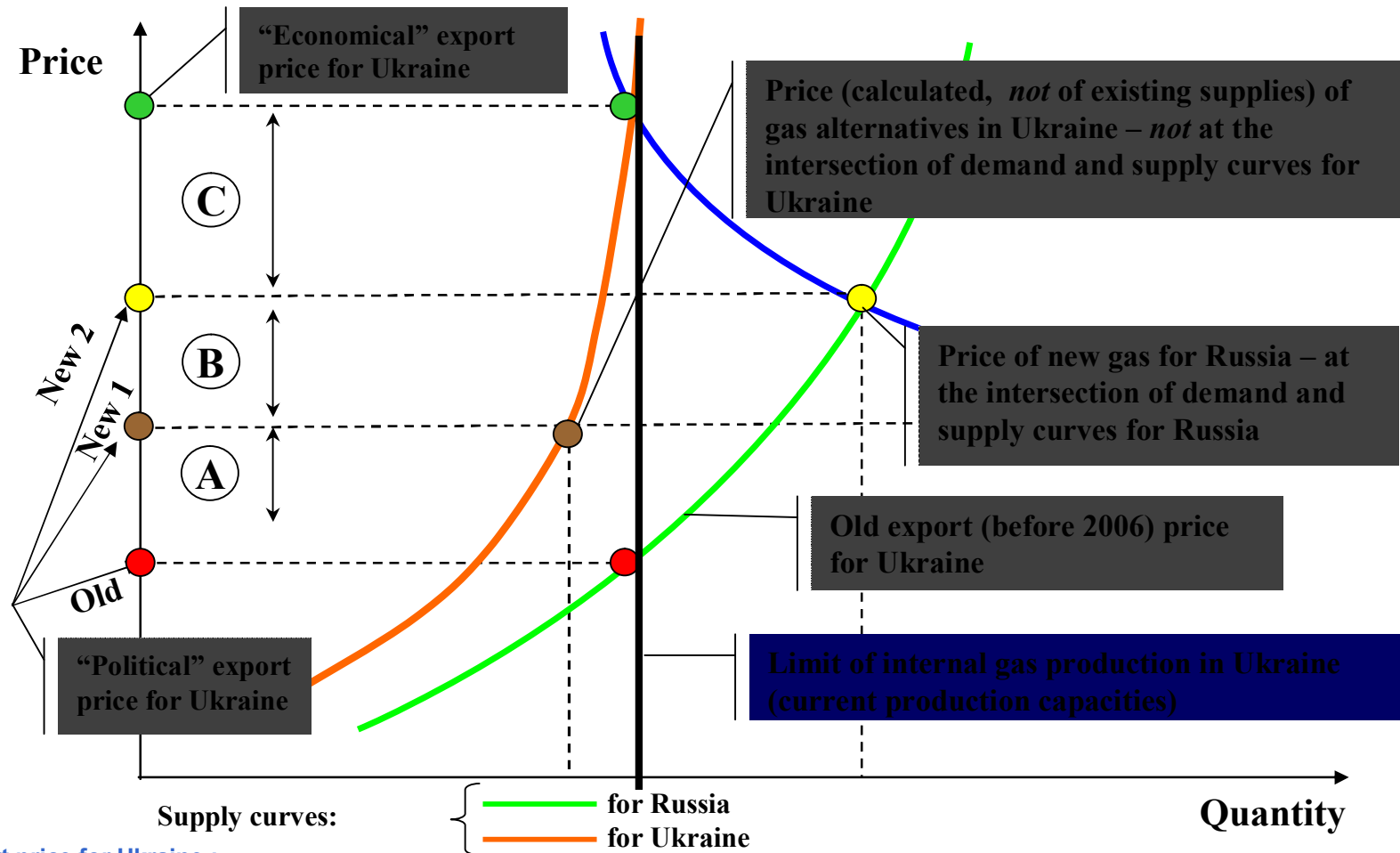
Ukraine: Export and Transit of Gas from Russia

After 4 January 2006

- Transit and export are contractually separated
- Cash payments
- Export price => average based on cocktail from two sources: Russia and Central Asia (CA)
- Export pricing:
 - for Russian gas - by net-back calculation => based on *demand-curve* => replacement value within EU netted-back (less transportation costs) to Russia-Ukraine border
 - for Central Asian gas - by cost-plus (net forward) calculation => based on *supply curve* => negotiated price at external border of exporting CA country (above its cost-plus level ?) plus transportation costs to Russia-Ukraine border
- Who receive the resource rent (Ricardian & Hotelling rents):
 - on Russian gas – both rents go to producing/exporting-state (Russia)
 - on Central Asian gas – *Ricardian* rent goes to CA producing / exporting states; *Hotelling* rent shared between Ukraine & CA producers/exporters => ECT Art.18

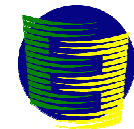


Pricing Options in Russia-Ukraine Gas Trade & Economic Theory

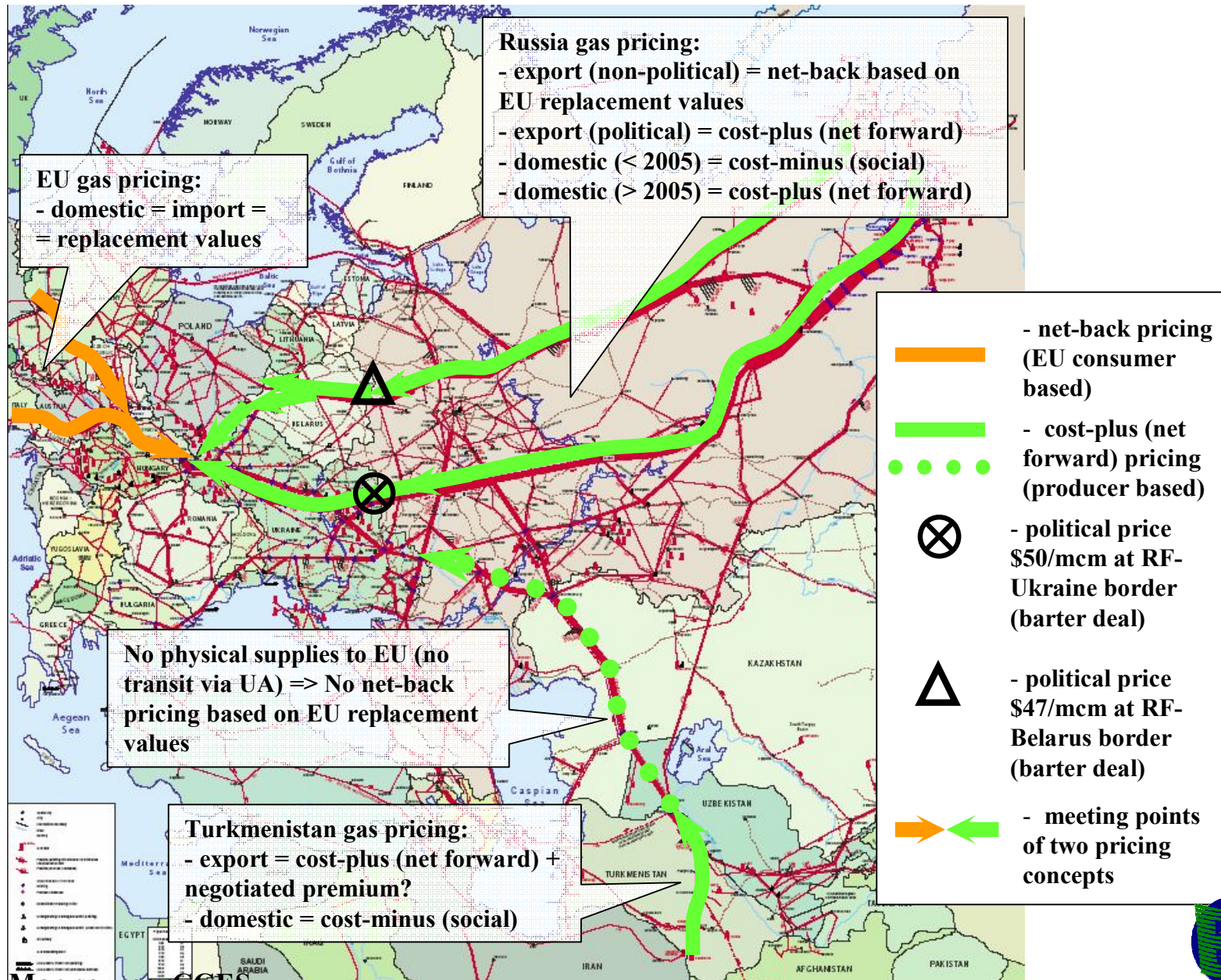


“Political” export price for Ukraine :

- **Old** = current internal Russian price plus cost of transportation to Russia-Ukraine border (*Russian export subsidy to Ukraine = A+B+C*)
- **[New 1]** = if equated to production costs («cost-plus» in Ukraine) of replacing energies, based purely on the possibility of their production within the internal market of Ukraine (e.g. A.Illarionov) (*Russian export subsidy to Ukraine = B+C*)
- **[New 2]** = if equated to internal Russian price (production costs/“cost-plus” in Russia) of new Russian gas (*Russian export subsidy to Ukraine = C*)
- **“Economical” export price for Ukraine** = gas replacement value at the internal EU market (calculated on long-term contracts gas pricing formulas) netted-back to Russia-Ukraine border

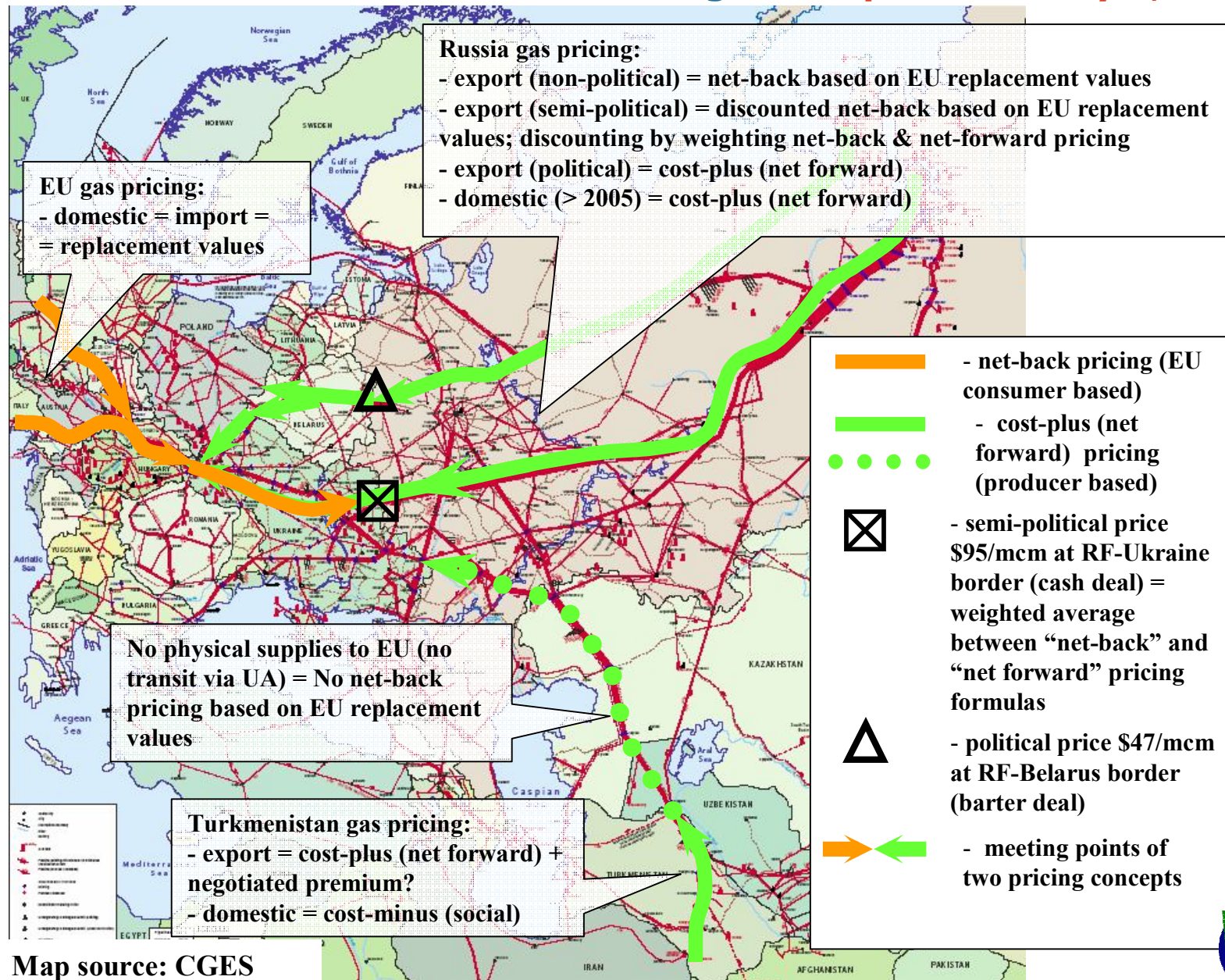


Russian Gas Export to Ukraine: "Political" and "Non-Political" Pricing Zones pre-January 4, 2006

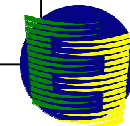


Map source: CGES

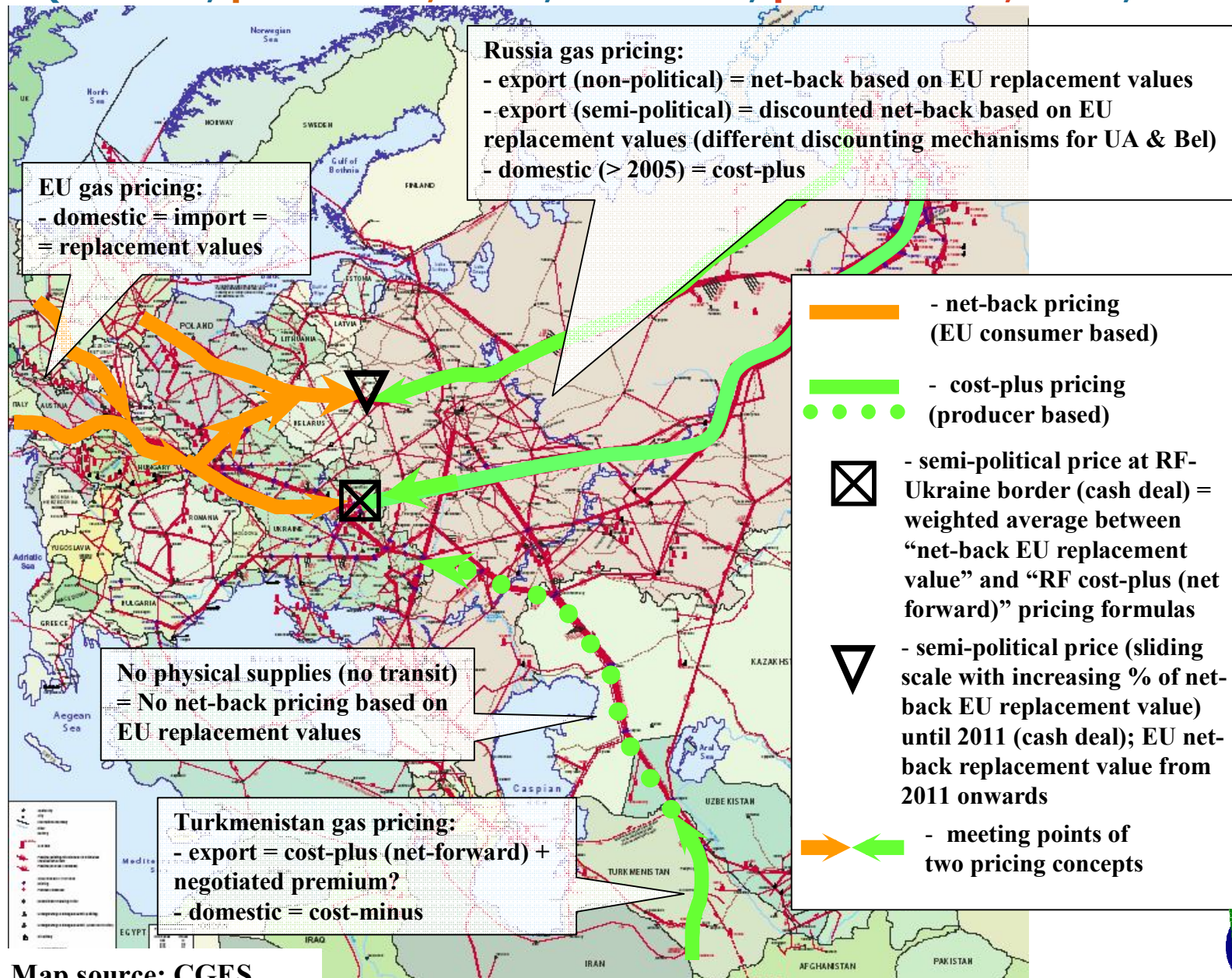
Russian Gas Export to Ukraine: "Political" and "Non-Political" Pricing Zones post-January 4, 2006



Map source: CGES



Russian Gas Export: "Political" and "Non-Political" Pricing Zones (Ukraine, post-Jan.4, 2006, & Belarus, post-Dec.30, 2006, cases)



Map source: CGES

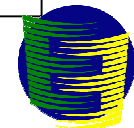
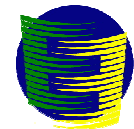
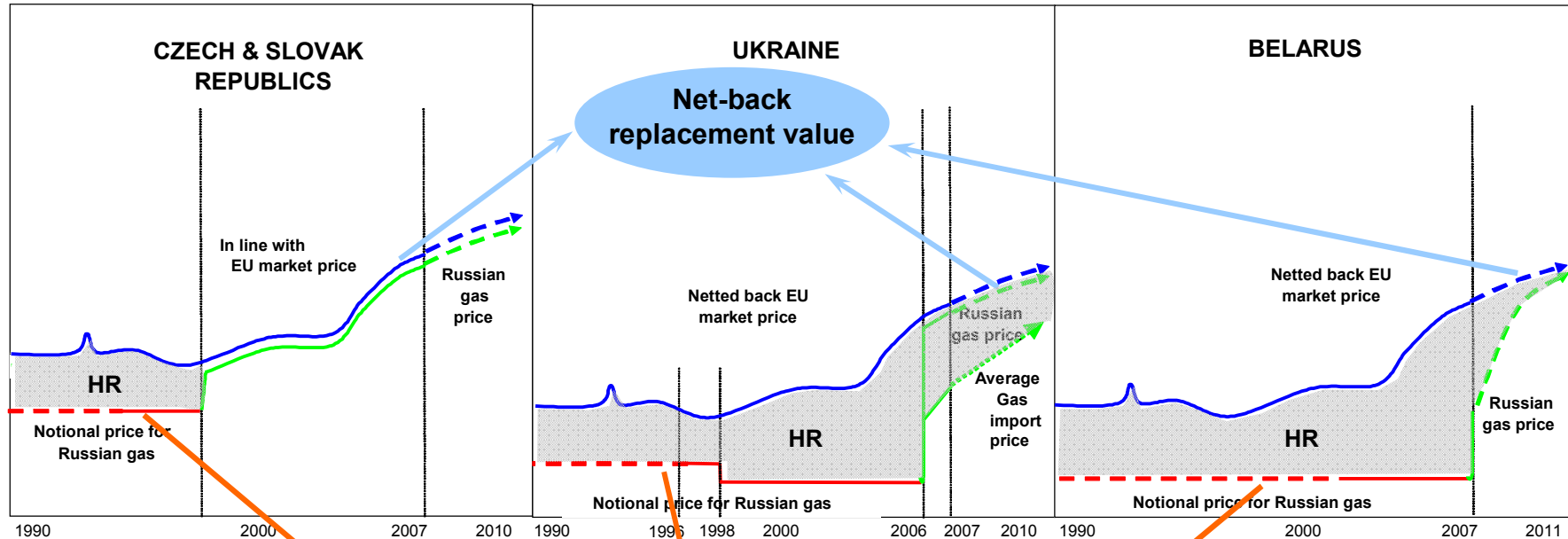


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Russian Gas Prices to the EU and Countries along the Pipe



- 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 Ukraine - Russian gas price: 230 \$/mcm (2006) ; Average gas price (for a mixture of Russian / Central Asian gas): 65 and 135 \$/mcm (2006 and 2007, respectively)
 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- Notinal prices for Russian gas were used to determine volumes of gas as compensation for transit services.
 For Ukraine: 80 \$/mcm until 1998; 50 \$/mcm from 1998 to 2006
 For Belarus: 47 \$/mcm most recently until 2007

■ Hotelling Rent

Cost-plus?
(Net forward)

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

	Czech & Slovak Republics	Ukraine	Belarus
Internal motivation vs. external political obligations to move to market pricing / prices	(No?) / Yes (accession to EU)	No / No	No / No
Price gap (market vs. political price): value (USD/mcm) & trend prior to transition	10- (1998); diminishing	15 (1998), 160 (2005); growing	25 (1998), 170+ (2006); growing
Relative economic value / political sensitivity	Low	High	Highest (Union state)

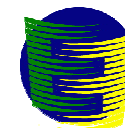
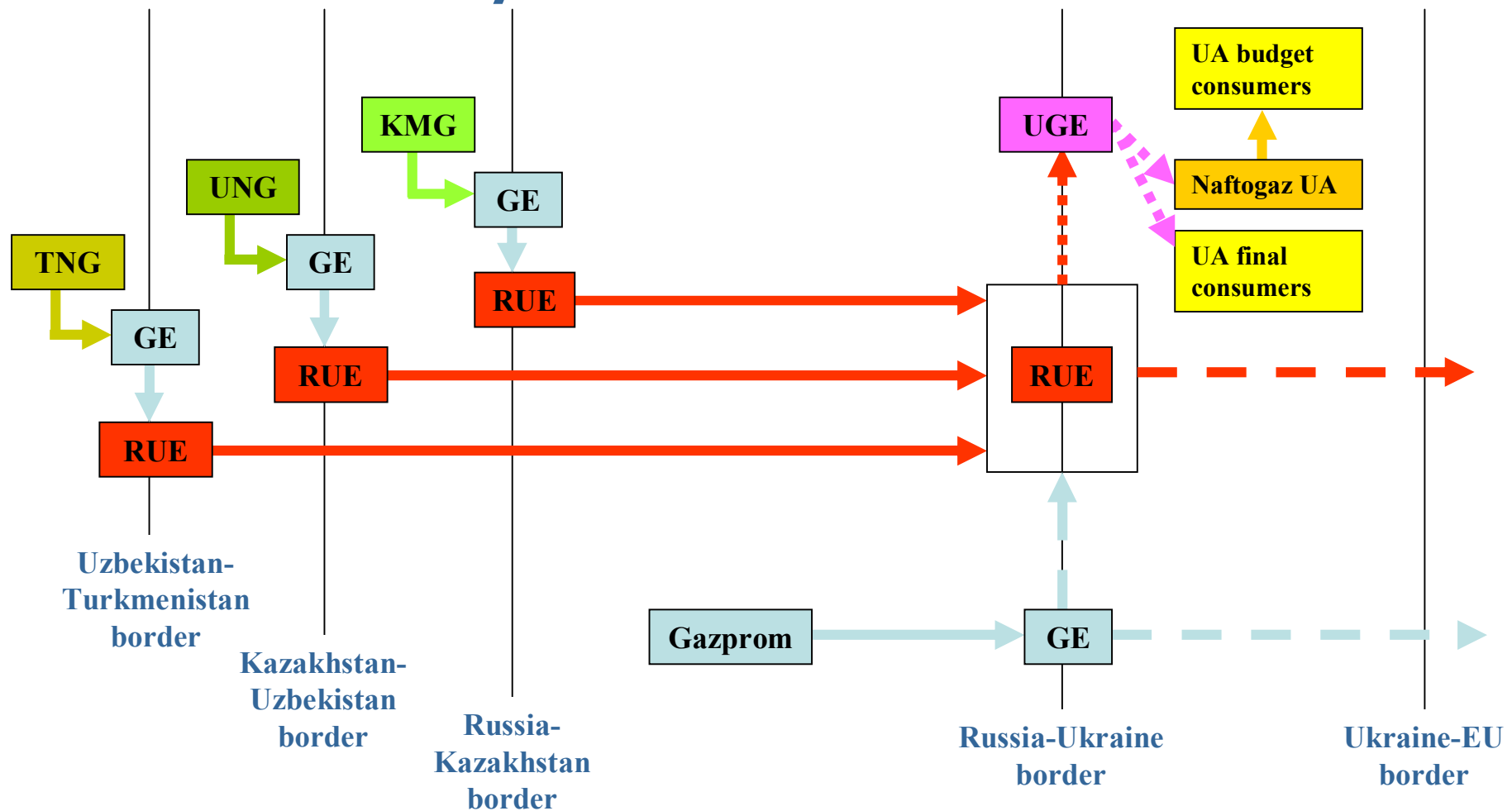





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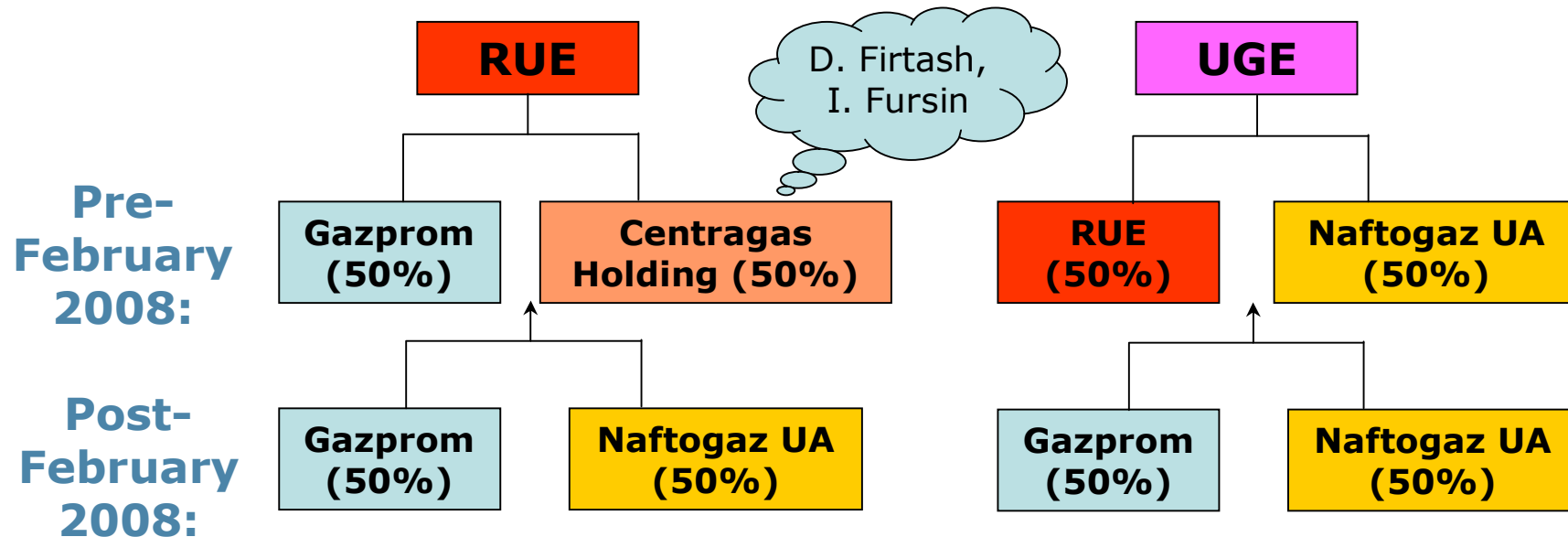


Organisation of Russia-Ukraine Gas Trade After 4 January 2006: the Role of Intermediaries



-  Cost-plus (net forward) pricing
-  Net-back replacement value pricing
-  Weighted average price based on two formulas' calculations

February 2008: How/Which/Whether Intermediaries in Russia-Ukraine Gas Trade Were Abolished

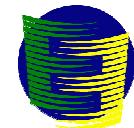


RUE =

(a) gas supply to UA of Russian and Central Asian gas received from GE & Gasprom based on mixing the gas & pricing principles in order to provide soft transition for UA to EU-based pricing (inevitable future result of UA intention to enter the EU)
 [+ (b) limited export]

UGE =

marketing of gas received from RUE within the domestic UA market (UGE = institutional form of "destination clause"; prevents UA from re-export of cheaper imported gas)

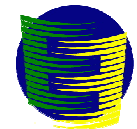


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