The EU, Russia & Central Asia: new pricing mechanisms within FSU & prospects for alternative gas supplies to the EU

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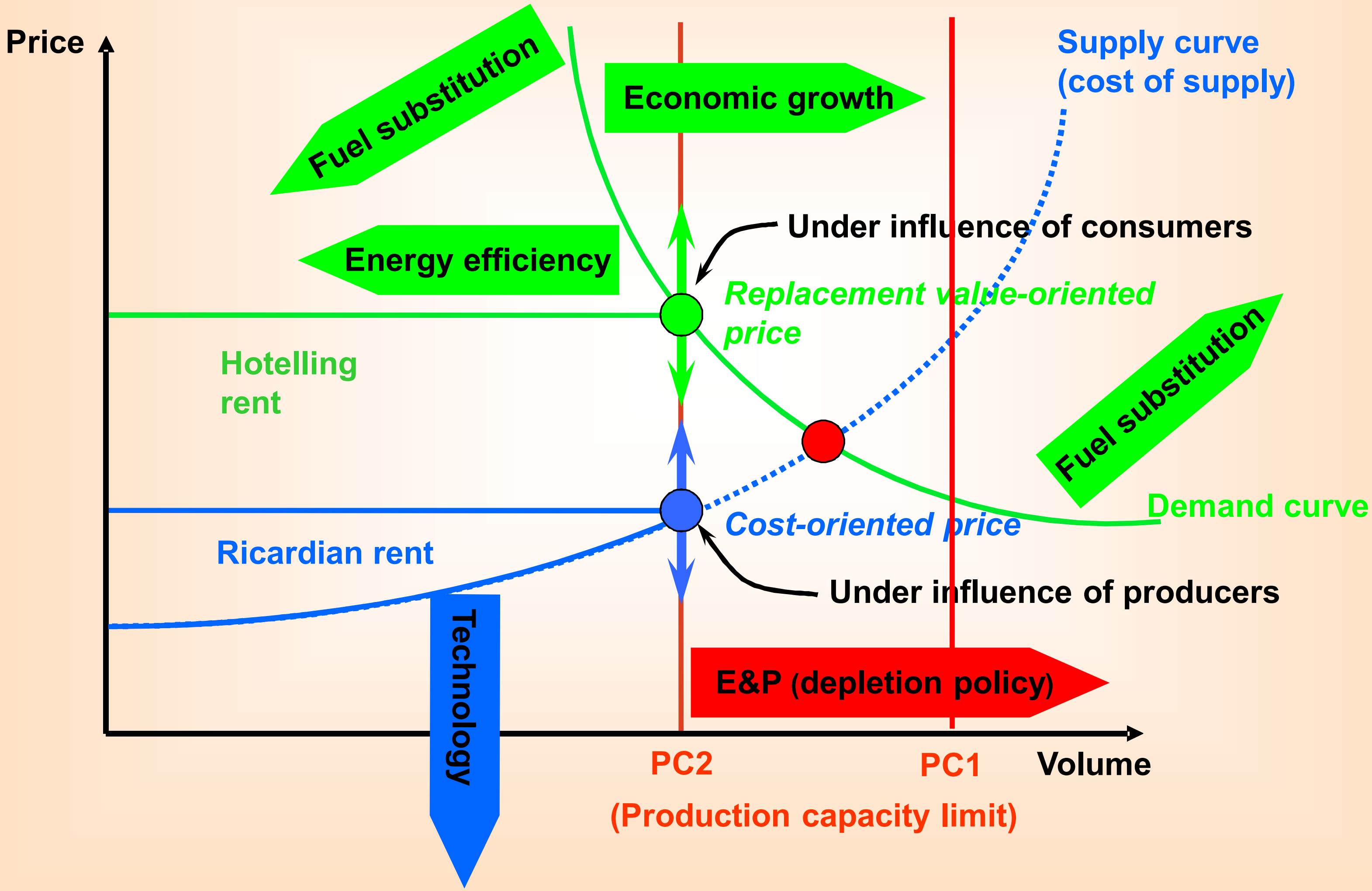
Pricing of Non-Renewable Energy Resources: RICARDIAN VS. HOTELLING RENT

Ricardian rent + Hotelling rent = Resource rent



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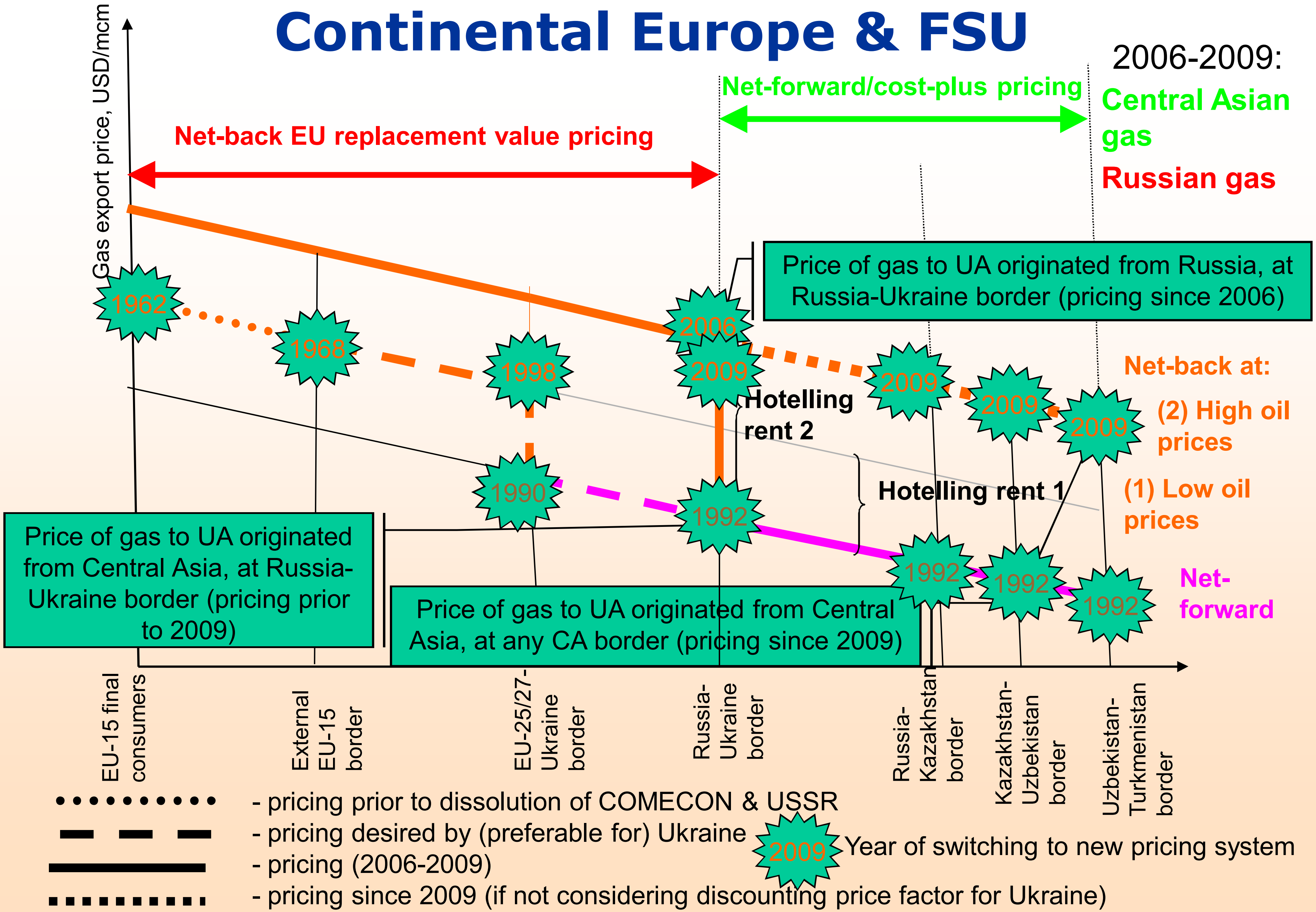
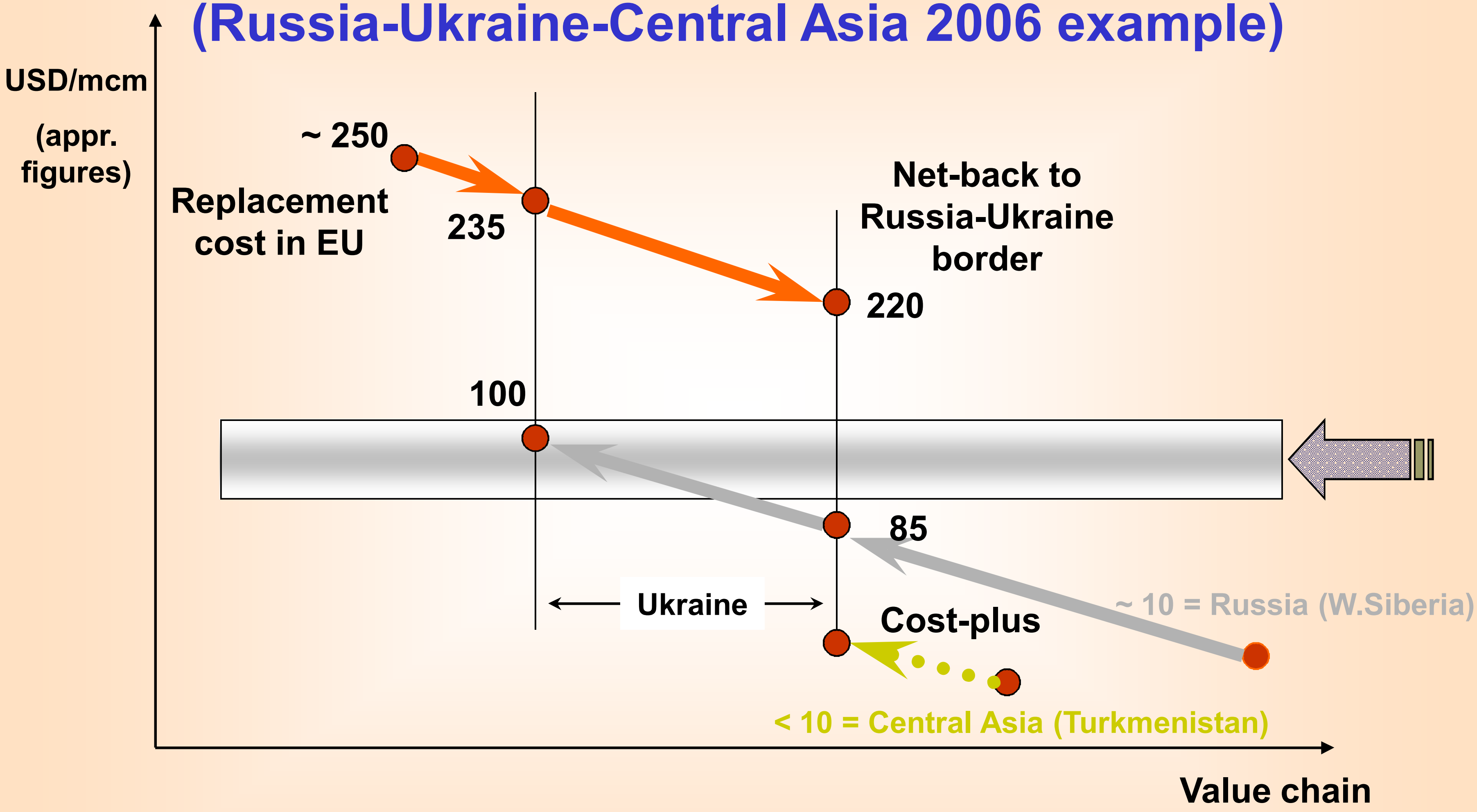
Evolution of gas export pricing in Continental Europe & FSU



TWO MARKET-BASED OPTIONS OF GAS EXPORT PRICE CALCULATION: WHO WILL RECEIVE HOTELLING RENT? (Russia-Ukraine-Central Asia 2006 example)



Major driving force: struggle for Hotelling rent !!!

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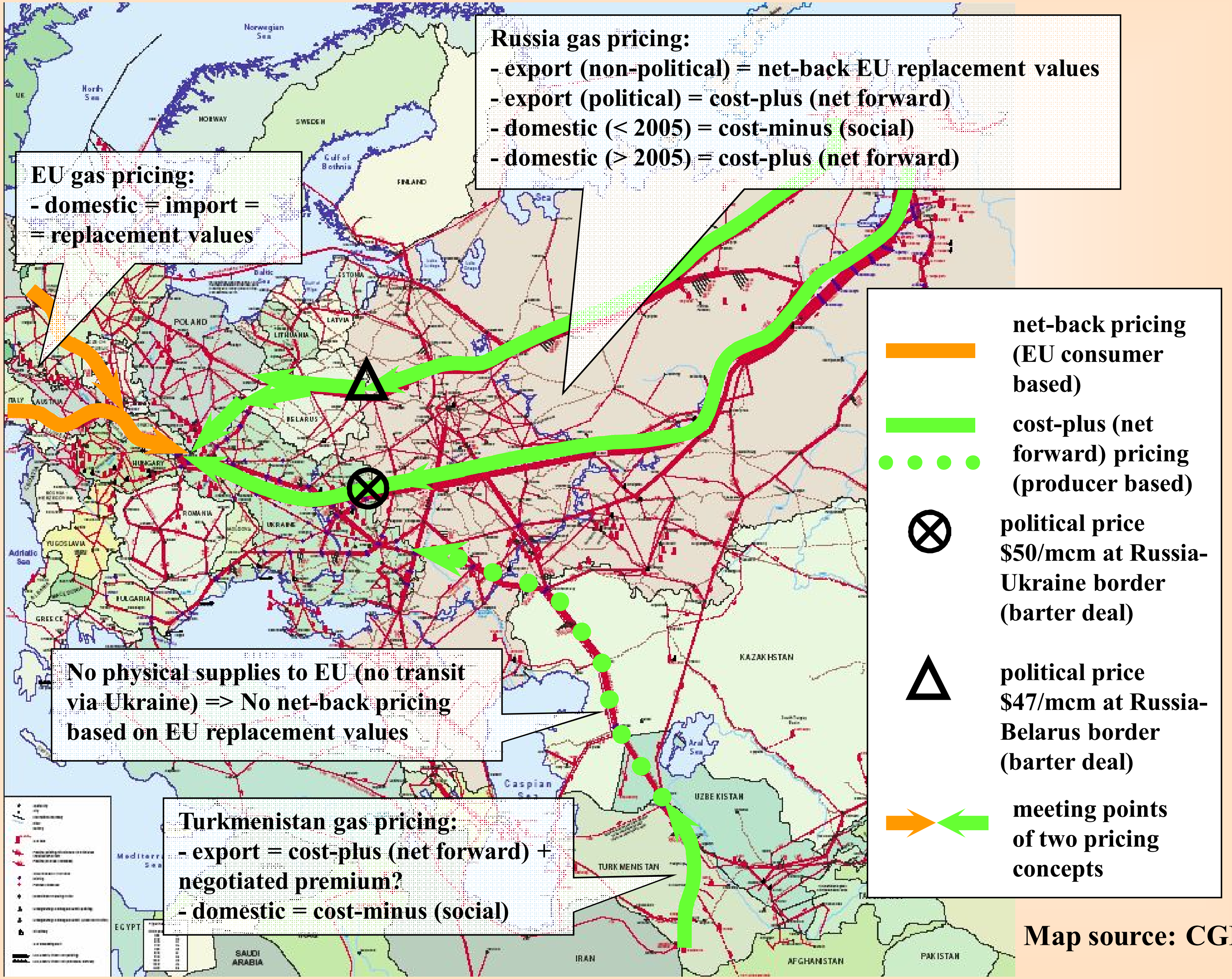
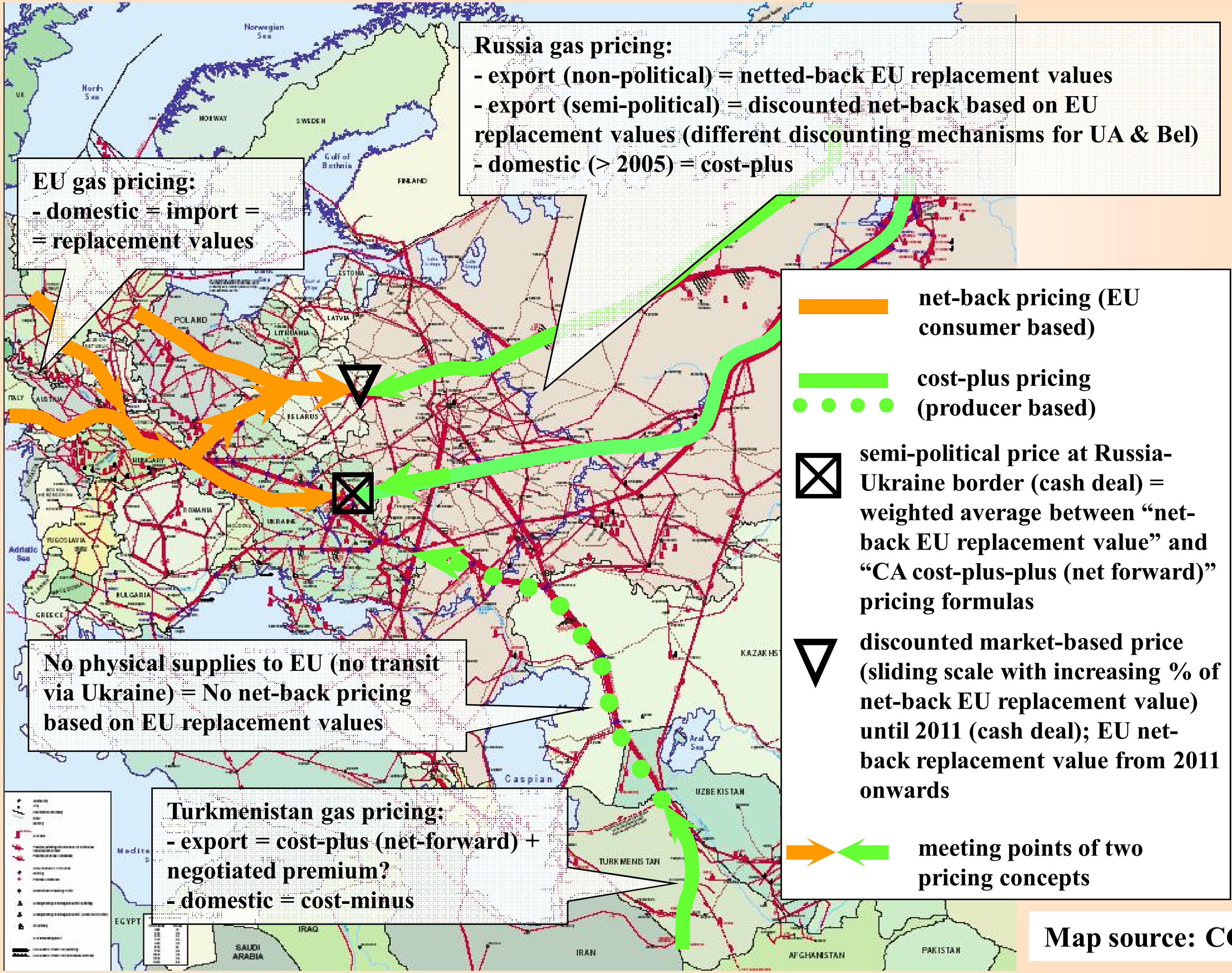
Russian Gas to Europe prior to January 4, 2006: "Political" and "Non-Political" Pricing Zones



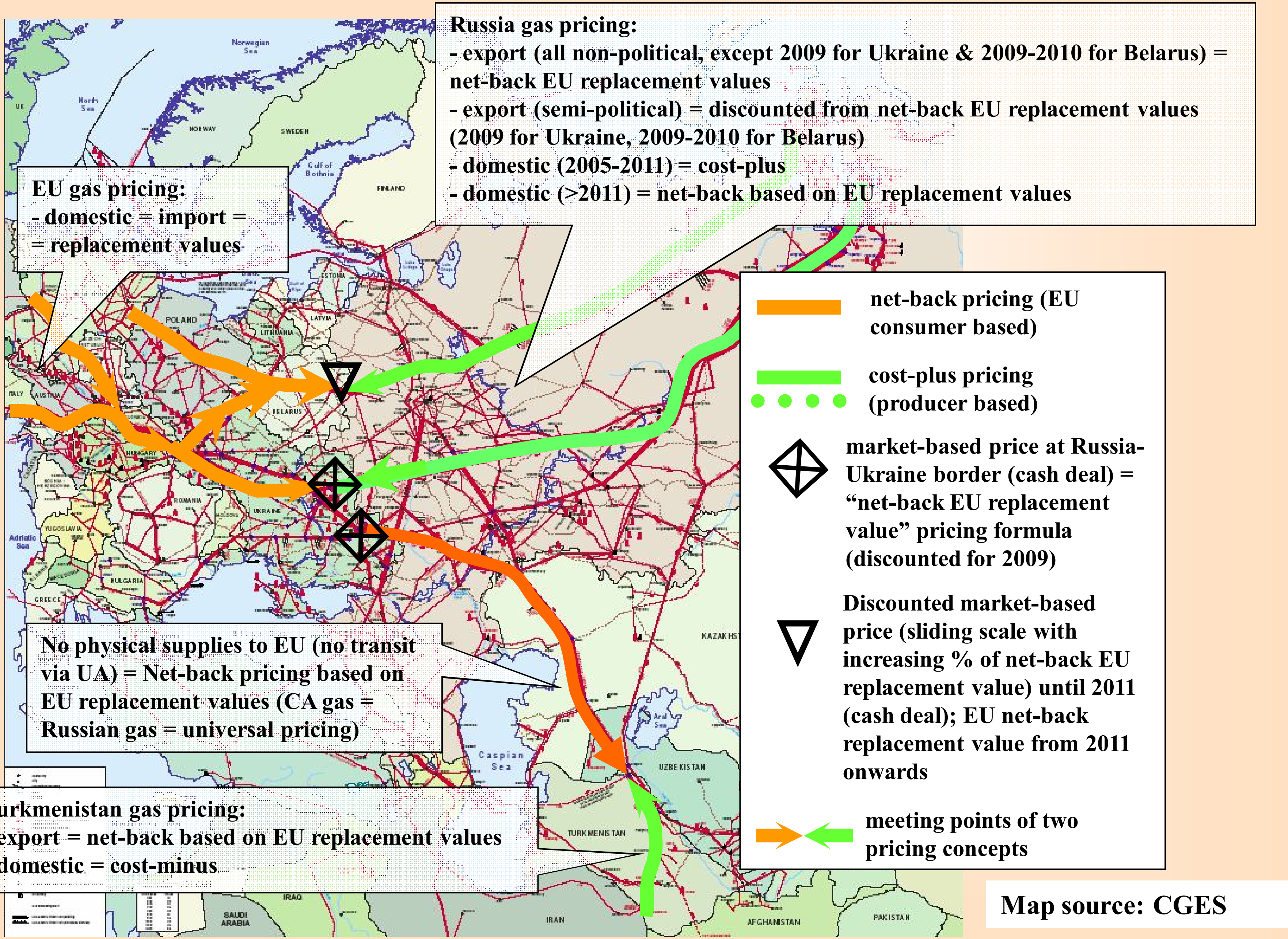
Map source: CGES

Russian Gas to Europe: "Political" and "Non-Political" Pricing Zones 2006-2009
(Ukraine, post-Jan.4, 2006, & Belarus, post–Dec.30, 2006)



Map source: CGES

Russian Gas Export to Europe: Pricing Zones since Jan 1, 2009



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Ukraine: Export and Transit of Gas from Russia *After* 1 January 2009 *(as settled in Gasprom - Naftogas supply & transit contracts for 2009-2019 as of 19 Jan 2009)* (1)

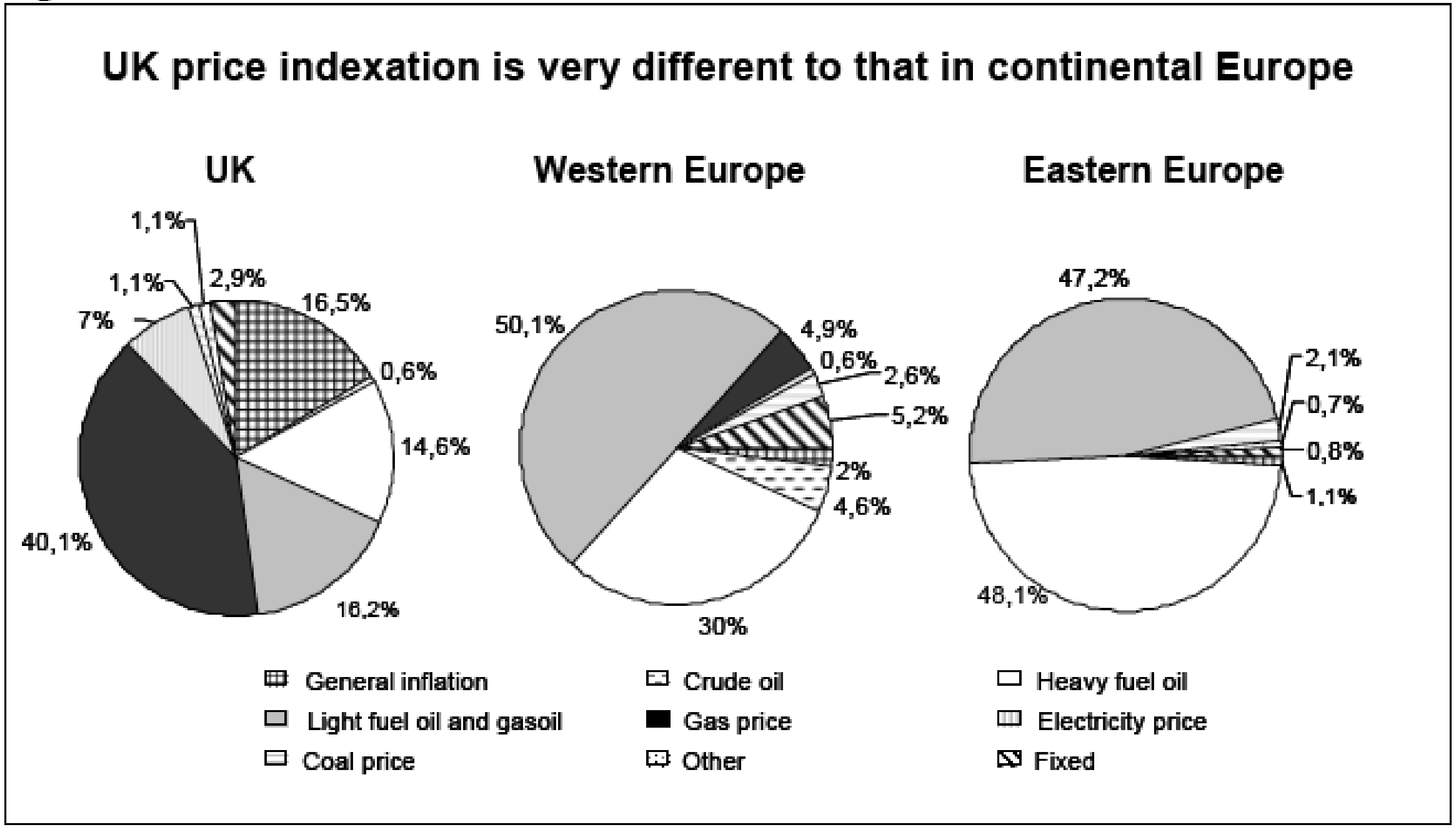
- Transit & export contractually separated & both long-term (10 y)
- Export to UA: gas of Russian, Turkmen, Uzbek, Kazakh origin
- Supply volumes (BCM):
  - 2009: 5.0+10.5+12.0+12.5=40 => agreed: UA pays for factual deliveries
  - 2010-2019: 16.2+10.8+10.0+15.0=52 => 41.6 (80% TOP) => UA asked to diminish to 33=>27 BCM
  - Advanced changes of future supply volumes possible:
    - To notify nor less than 6 months in advance
    - Nor more than +/-20% of annual volume
- No re-export (gas only for UA domestic market)
- TOP = nor less 80% annual volume
- Monthly fluctuations (takings/supplies) from contracted volumes: no more +/-6%

Ukraine: Export and Transit of Gas from Russia *After* 1 January 2009 *(as settled in Gasprom - Naftogas supply & transit contracts for 2009-2019 as of 19 Jan 2009)* (2)

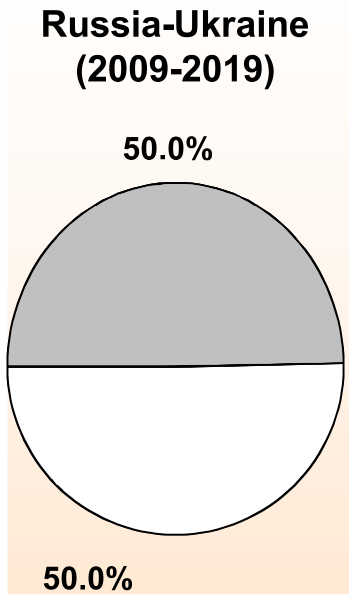
- Cash payments; for gas export:
  - Monthly basis (nor later 7th next month) => Monthly "Date 7th" *problem*
  - At first non-payment:
    - transfer to pre-payments till end-contract
    - Supplier can limit/stop supplies
- Formula pricing:
  - Based on 50/50 HFO (1%S) / LFO
  - HFO/LFO prices: FOB Med. Basis Italy, Platt's Oilgram Price Report - "European Monthly Averages"
  - Quaterly price calculations: 1 Jan, 1 Apr, 1 July, 1 Oct
  - Reference period 9 months
  - 2009 = 80% from formula price, since 2010 – 100% formula price
  - Price 1Q-2009 = 80% from basic price (450 USD/mcm) = 360 USD/mcm

  [NB: 2Q-09 =270.95, 3Q-09 = 198, 4Q-09 = 155 (UA, Summer'09) / 205-210 (Gazprom, early Sept.) / 208-209 (Naftogaz, early Oct.) USD/mcm]
- Price review procedure
- Penalties for unauthorized takings/undersupplies (exceeding +/-6% over-takings/under-supplies):
  - April-Sept: 150% of Basic price
  - Oct-March: 300% of Basic Price

LTGEC: Indexation by EU Region and Russia-UA case



Source: Energy Sector Inquiry 2005/2006



Ukraine: Export and Transit of Gas from Russia *After* 1 January 2009 *(as settled in Gasprom - Naftogas supply & transit contracts for 2009-2019 as of 19 Jan 2009)* (3)

- Annual transit volumes – nor less 110 BCM
- Naftogas UA fully responsible for UA GTS operation & guarantee stable & non-interrupted transit through UA of transit volumes
- 2009: volumes fixed by quarters & destinations; for next years – in annual amendments to contract; procedure for deviations, daily/monthly up to +/-6.5%; compensation of over-takings from transit flows
- Technological (fuel/lean-pack) gas – UA responsibility

Ukraine: Export and Transit of Gas from Russia *After* 1 January 2009 *(as settled in Gasprom - Naftogas supply & transit contracts for 2009-2019 as of 19 Jan 2009)* (4)

- Payments (monthly, factual, cash only) for gas transit:
  - 2009: 1.7 USD/100km/mcm
  - 2010-2019: formula-based dual-rate tariff => (f.i.: 2010 =
    - 0.5 x 2.04USD +
    - 0.5 x 1.7USD [2011/19:+infl.EU] +
    - 0.03 x PriceUSD / L(1240) x 100
- Compensation of advance payment for transit as of 2004:
  - 2009 transit services for 250 mln USD at 1.09375
- Transit tariff review procedure:
  - if: any party consider major changes in EU gas tariff formation conditions + deviation from EU tariffs =>
  - then: written substantiated request => within 20 days to start negotiations => if not agreed within 3 months => arbitration
- Penalties for unauthorized taking (see export contract)
- Dispute settlement:
  - Arbitration: ICC Stokholm (3 arbiters, Russian language)
  - Naftogas must not, in case of dispute, interrupt or diminish transit flows

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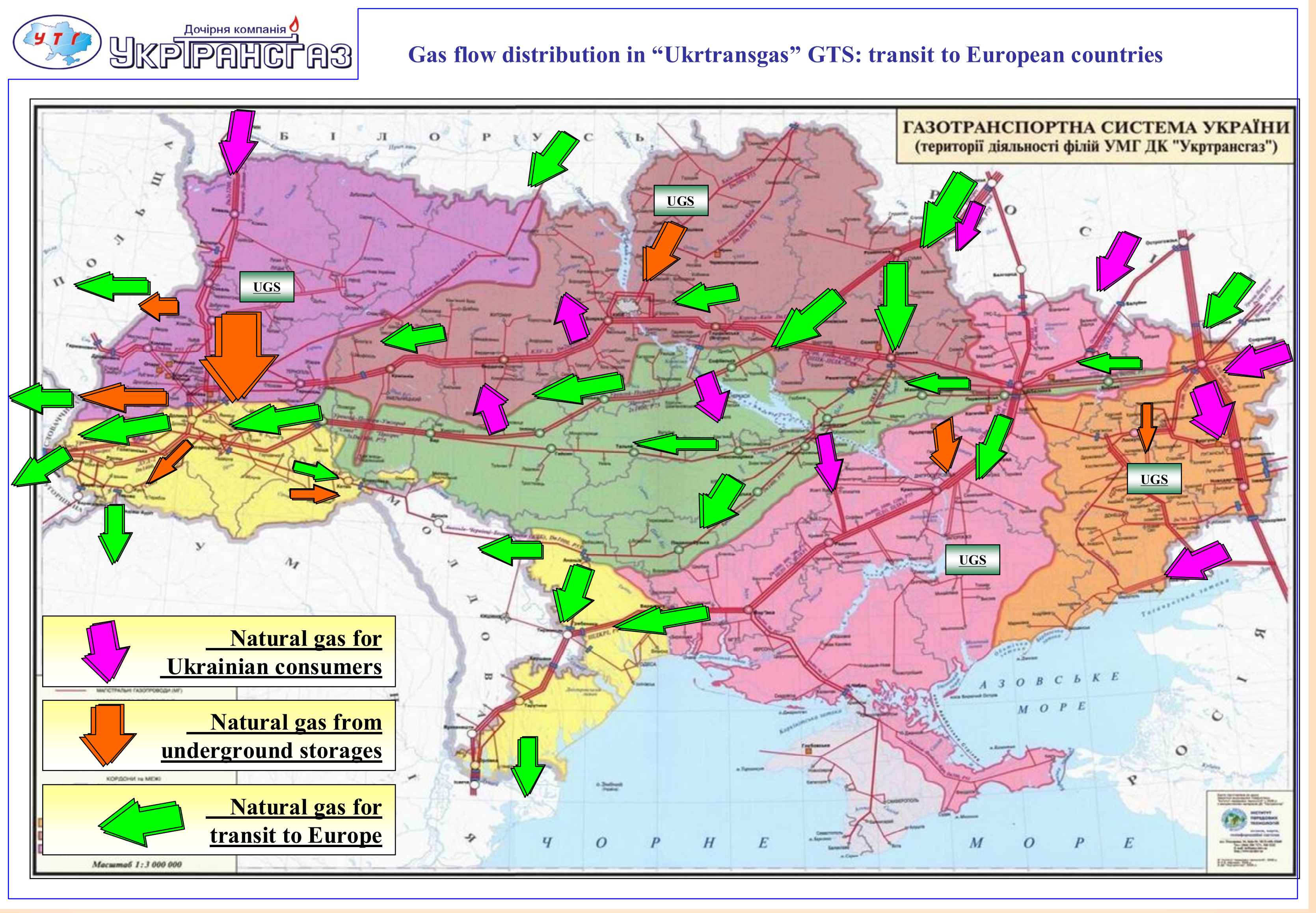
UA/RF/EU: no more gas crises ? (1)

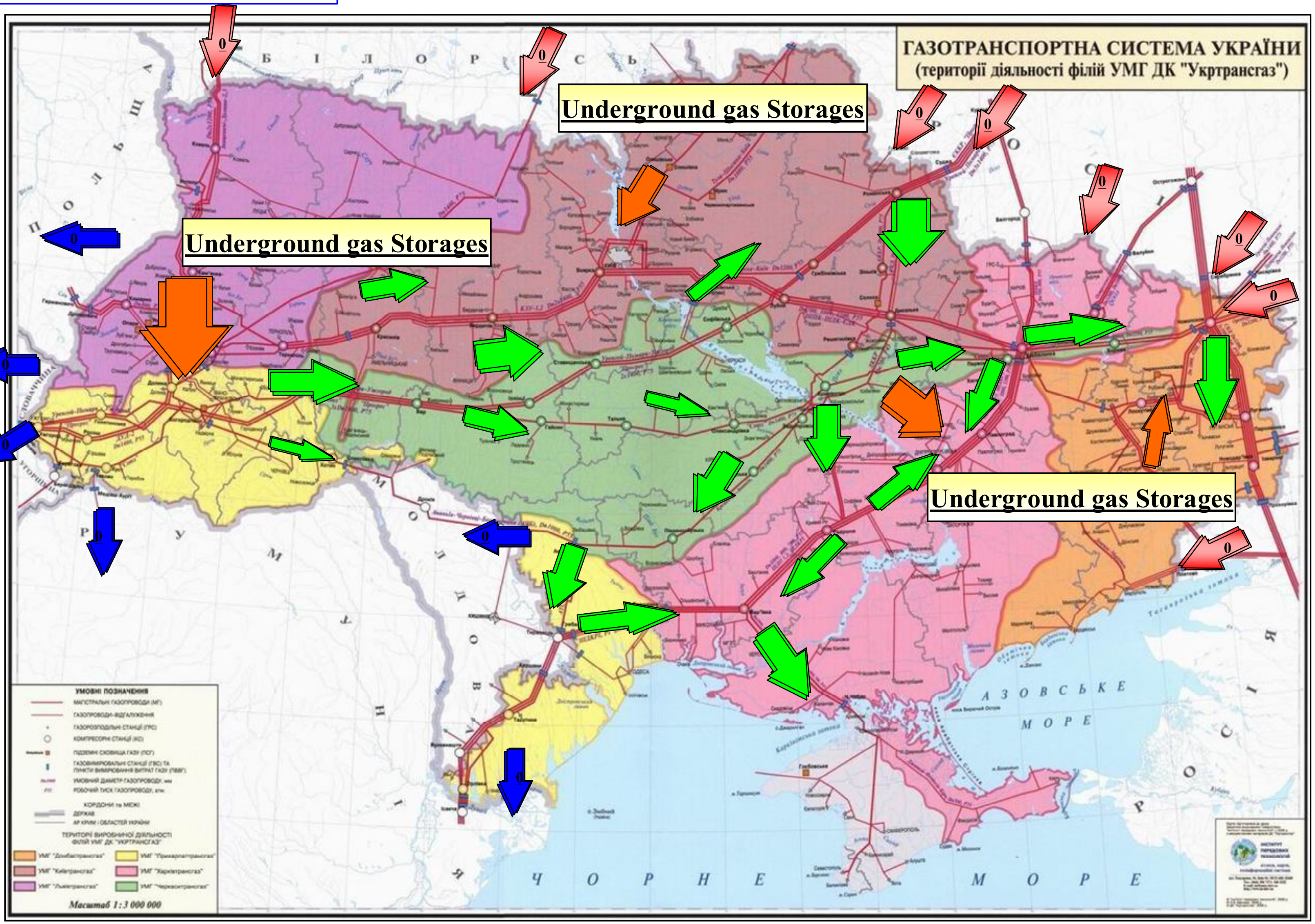
- Y.Timoshenko, UA Prime-Minister (05.10.2009) : model of gas accumulation created by UA Gov't will help the country to escape gas crises in the future:
  - "Today we have for many future decades pledged such model which will never more clap Ukraine into gas crisis",
  - UA "have finished formation of strategic gas reserve in Ukraine which belongs to Naftogaz & to Ukrainian state. This is UA property, paid for by UA, without any foreign loans",
  - ***Note: UA UGS: 26.34 BCM (05.10.09, end-filling) vs. 31 BCM (capacity)*,**
  - "UA need not expect any winter crises since UA has strategic agreement with Gazprom, for direct gas supplies, without intermediaries. The price changes each month".
- ***But:*** No gas crisis at domestic UA market does *NOT* mean no (risk of) (possible) crisis in transit supplies through UA to EU
- Major reasons for gas transit crises => diminishment/break of export gas supplies to UA if there is:
  - no contract (**"legal risk"**), if contract in place, then:
  - payment discipline (**"non-payment risk"**),
  - supply volumes vs TOP provision (**"TOP risk"**)
- ***"Legal risk"*** Jan.2009: no export/import RF-UA contract at 01.01.2009 => no export supplies to UA => supplies from UGS to domestic market began => reverse of dominant flows within UA GTS => break of transit flows to EU

Gas flow distribution in “Ukrtransgas” GTS: transit to European countries



Source: UkrTransGas presentation at the Energy Charter meeting of the Trade & Transit Group, Brussels, 12 February 2009

Natural gas flow distribution in "Ukrtransgas" GTS 07-20.01.2009



Source: UkrTransGas presentation at the Energy Charter meeting of the Trade & Transit Group, Brussels, 12 February 2009

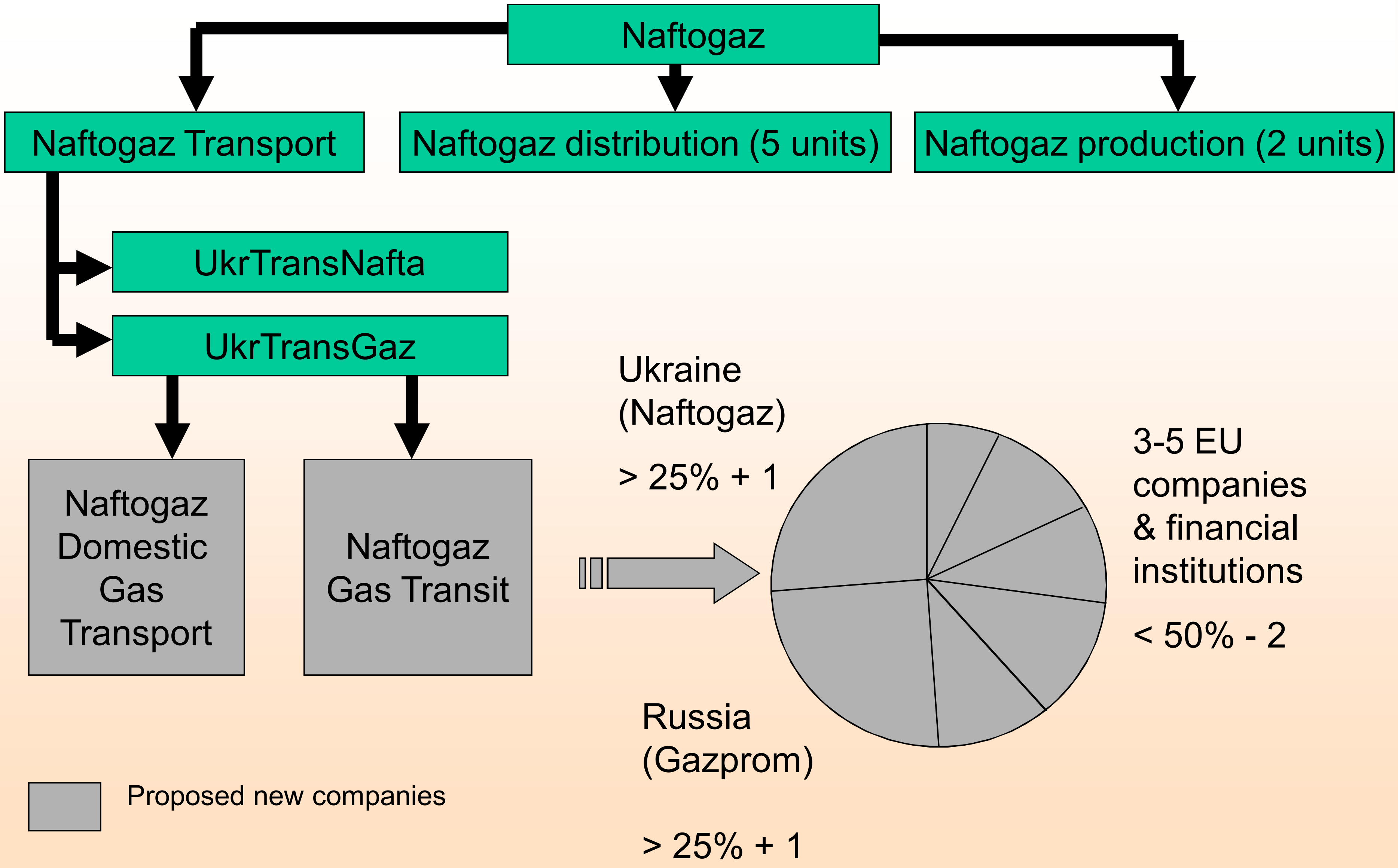
UA/RF/EU: no more gas crises? (2)

- ***"Legal risk"*** now minimal**:** long-term solution found => 10-year LTGEC (Groningen model) as of 19.01.2009 (though repeatedly disputed by some UA politicians), *but*
- New crisis possible in case of violation of contract provisions
  - ***"TOP risk" (still exists)*:** Diminishment of import requests below contracted volumes (less than 80% TOP obligation) to the detriment of supplier => acceptance of Naftogaz payments for factual deliveries is Russia's "goodwill" towards UA & EU => TOP obligation can be implemented in full => contractual discipline can further worsen Naftogaz financial problems (currently in technical default) => increased "non-payment risk"
  - ***"Non-payment risk" (still exists)*:** Payment discipline: non-payment in time for at least one month for imported gas => contractual sanctions:
    - prepayment for ordered monthly volumes since next month till end-contract in 2019 => further worsening Naftogaz financial problems => (diminishing ?) supplies only for prepaid volumes = see below
    - diminishment/break of monthly supplies to UA possible => lack of imported gas for domestic market => supplies from UGS to domestic market begins => reverse of dominant flows within UA GTS (?) => break of transit (repetition of Jan.2009 case ?), *but*

UA/RF/EU: no more gas crises? (3)

- A.Miller, CEO Gazprom (10.10.2009): “Ukraine can and must pay for gas in line with signed contract… As monthly payments shows – UA has money”:
  - Naftogaz UA = 100% owned state company,
  - UA gold & hard currency state reserves,
  - IMF loans to UA consider necessity to pay for Russian gas supplies
- “Another matter that each month our Ukrainian friends-colleagues try to tell us what big problems they face with payments. On the other hand, we see that UA accurately and in time pays”
- “We see that our partners execute their contracts, pay for Russian gas deliveries, and our understanding is that at New Year eve we will not face anything radically sharp – as with September 2009 supplies, the money will come at our accounts from Naftogaz UA in full, and we will continue to work on the basis of signed contract”

Naftogaz & Naftogaz Gas Transit



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Russia-Turkmen gas prices & pricing

- **2004-05**: 44 USD/mcm (Cost-plus-plus)
- **2006**: 74 USD/mcm (Cost-plus-plus)
- **2007**: 100 USD/mcm (Cost-plus-plus)
  - July: contract with CNPC for 30 BCM/y for 30 years since 2009;
  - Nov: statement on market sales principles since 2009
- **2008**: 140 USD/mcm (Cost-plus-plus)
  - June: construction of Turkm.-Uzb.-Kazakh.-China gas pipeline started;
  - July: agreement with Russia to expand pre-Caspian (CAC-3) to 30 BCM/y
- **2009**: 340 USD/mcm (annual? 1Q only?) (Net-back EU replacement value)
  - 25 March: Rus.-Turkm. agreement on East-West pipeline not signed (since Turkm. refused to merge it with expanded pre-Caspian pipeline);
  - 27 March: Turkm. announced international bidding for construction of East-West pipeline;
  - 08 April: explosion at Turkm. segment CAC-4 (drop of pressure by 90% due to (?) short advanced info from RF)
  - 21 April: Russian initiative on new international agreement (incl. on transit) – instead of / amending Energy Charter
  - 23-24 April: Turkm.-UN international conference in Ashgabad on reliable transit => Turkm. prefers UN avenue (?)
  - 12-13 September: Visit RF President D.Medvedev to Turkm.; Presidents reached political agreement on restarting gas supplies
  - 7 October: “Gazprom executes political agreement of two Presidents on contractual level” (N.Timakova, Press-secretary of RF President)

Central Asian inter-CIS alternative: looking Westward (1)

- To sell its gas directly to Ukraine:
  - During 2005-2006 Russia-Ukraine gas dispute Ukraine was arguing for gas import price calculation on the basis of gas replacement value within Ukrainian domestic market, which is much lower that within EU market =>
  - If Ukraine to follow consistent policy regarding import gas pricing, it is to present the same pricing principles to Central Asian gas exporting states as well,
  - Export gas price at external border of Central Asian exporter, if calculated as net-back replacement value at the domestic Ukrainian market, will be relatively low

Central Asian inter-CIS alternative: looking Westward (2)

- To sell its gas to Ukraine via Russia:
  - Russia agreed to buy Central Asian gas at their external borders at the price calculated as net-back replacement value at the EU market =>
  - Export price at external border of Central Asian exporter would be relatively high – higher then according to Ukrainian scenario (previous slide)

  +

  - Russia contracted (booked) all export volumes of Central Asian gas and took all costs and risks of its transportation to the end-use markets

Central Asian inter-CIS alternative: looking Westward (3)

- Central Asian gas exporting states are willing to receive maximum Hotelling rent & to minimize export costs & risks =>
- It is more profitable for them to sell their gas to Russia at their external borders at the price, linked to gas replacement value at the EU market (maximization of Hotelling rent), with further Westward transportation of their gas by Gasprom (exclusion of risks & costs of transit), - compared to other options

Central Asian inter-CIS alternative: looking Westward (4)

(New debate on direct sales of Turkmen gas to Ukraine since 2010)

- Turkmenistan seeks for highest possible export border price, Russia proposes & contracted such ECONOMIC price on Turkmen border since 2009,
- If Ukraine would like to over-bid Russian price of Turkmen gas, this would be POLITICAL Ukrainian price (economic Russian price plus political premium) = deviation from market-oriented Russia-Ukraine post-2006 developments in gas,
- In this case Russia is in no case obliged to present its transit capacities for Turkmen (Ukrainian) gas (even if Russia would not have withdrawn from provisional application of the ECT)?
- No possibilities for direct Turkmen sales to Ukraine

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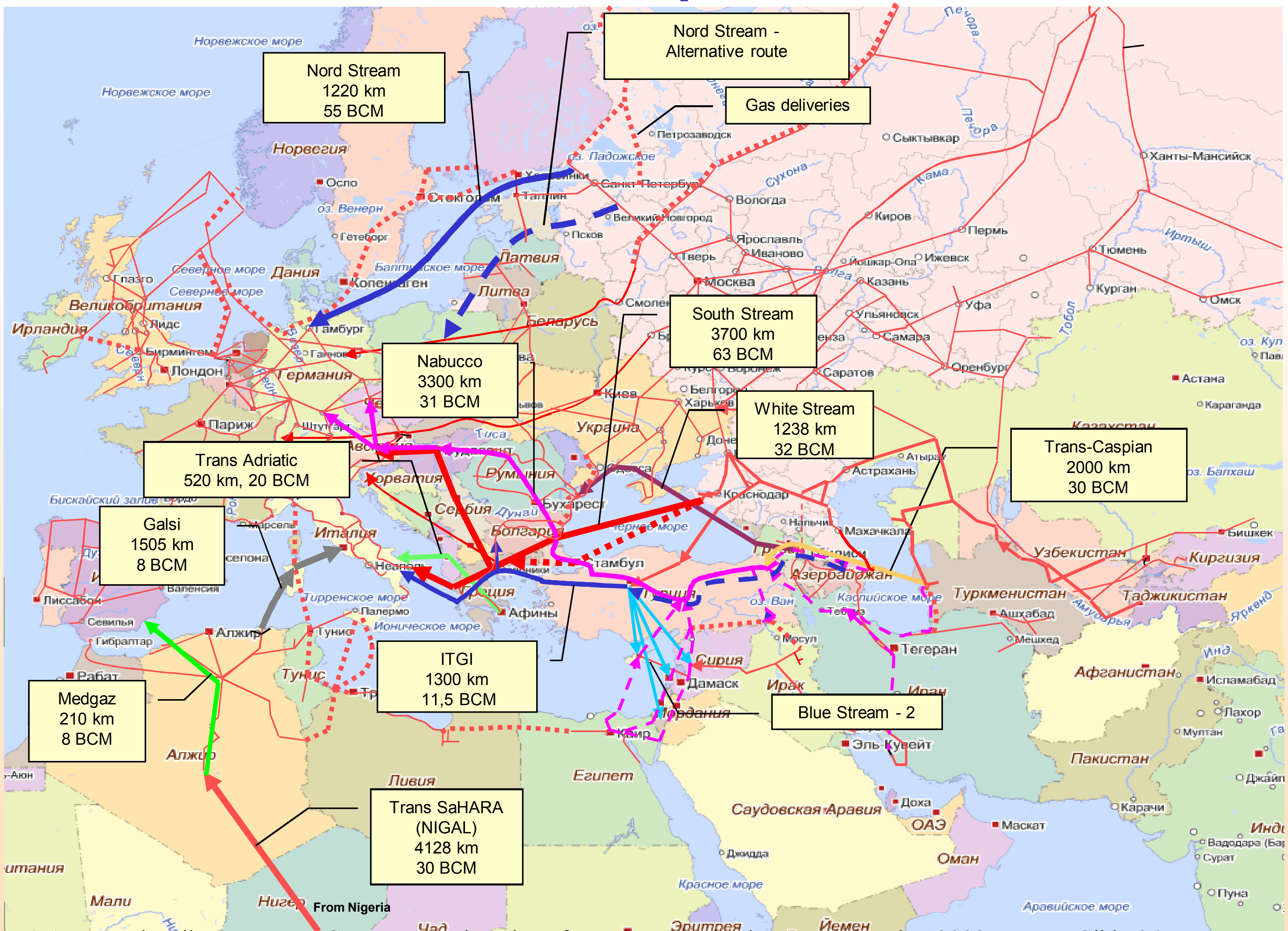
Basic planned (under construction, projected and assumed) gas pipelines focused on gas deliveries to Europe



Basic planned (under construction, projected and assumed) gas pipelines focused on gas deliveries to Europe

Pipeline	Length, km	Route	Capacity, BCM	Cost, bln. Euro	Start of construction	Start of deliveries
Nord Stream	1220	Russia - Germany	55	7,4	2010	2011
South Stream	3700	Russia - Bulgaria - Greece - Italy - Serbia - Hungary - Austria	24/63	8/25	2010	2015
Blue Stream - 2	n/a	Russia - Turkey - Israel - Lebanon - Syria - Cyprus	8	5	2010	2012
Nabucco	3300	Turkmenistan, Azerbaijan - Georgia (Armenia) - Turkey - Bulgaria - Romania - Hungary - Austria - Czechia, Germany	31	7,9	2012	2016
Trans-Caspian	2000	Turkmenistan - Azerbaijan - Georgia - Turkey	30	5	n/a	n/a
Pre-Caspian	1700	Turkmenistan - Russia - Ukraine - Europe	30	8	2010	n/a
White Stream	1238	Georgia - Ukraine - Romania	32	5	2012	2015
ITGI	1300	Turkey - Greece - Italy	11,5	1,3	2009	2012
TAP	520	Greece - Albania - Italy	20	1,5	2010	2011
Trans Sahara	4128	Nigeria - Niger - Algeria	30	9	2011	2015
Galsi	1505	Algeria - Italy	8	2,5	2010	2012
Medgaz	210	Algeria - Spain	8	0,9	2007	2009

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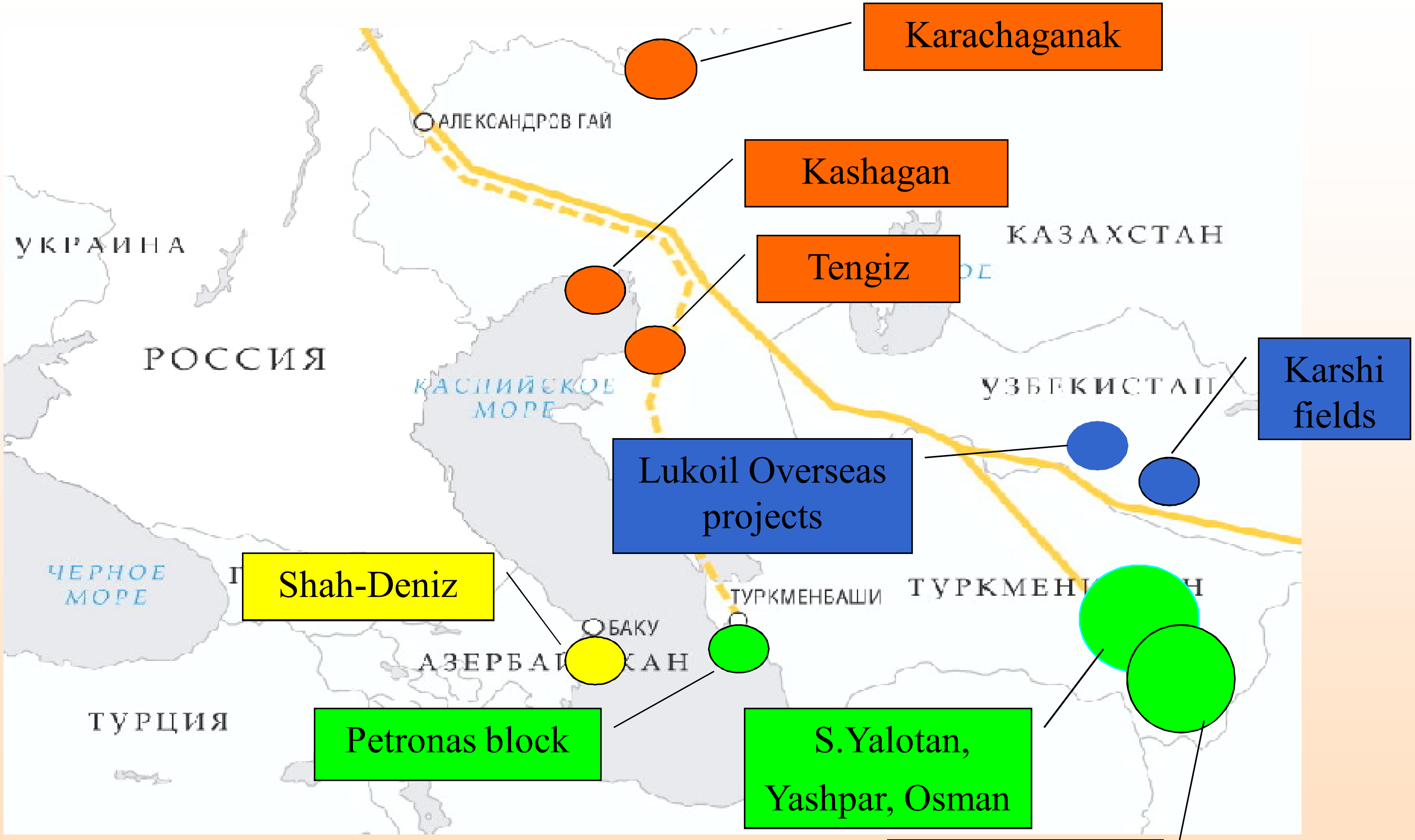
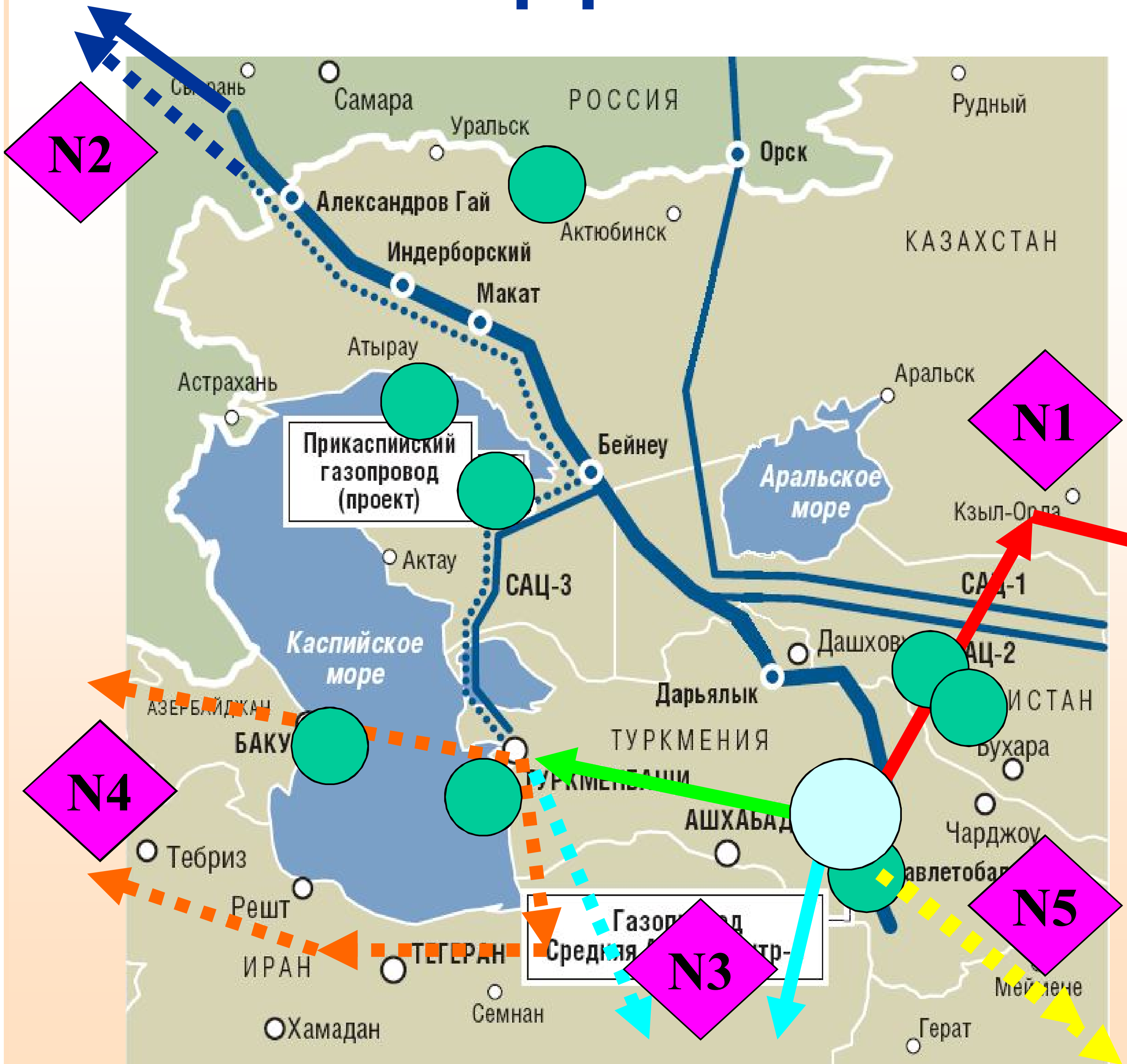
Major Central Asian gas areas



Central Asia gas export potential

State	2009 export, BCM	Max export potential, BCM	
Turkmenistan	<50 (?)	110-115	S.Yalotan up to 75 BCM; 15-20 BCM offshore
Uzbekistan	15	40-45	Up to 15 BCM Lukoil Overseas & to 10-15 Karshi
Kazakhstan	11	32	Mostly due to Kashagan, Tengiz & Karachaganak
Azerbaijan	8	15-20	Mostly due to production increase at Shah-Deniz

Alternative pipelines from Turkmenistan



Pipelines:

Acting via Russia (CAC 1-4) to Europe

Pre-Caspian to Russia (CAC-3) to be expanded

To be constructed (East-West Turkmen)

Being constructed to China (via Uzbekistan and Kazakhstan)

Discussed to Europe (Trans-Caspian and via Iran)

To Iran

Discussed to India-Pakistan via Afghanistan

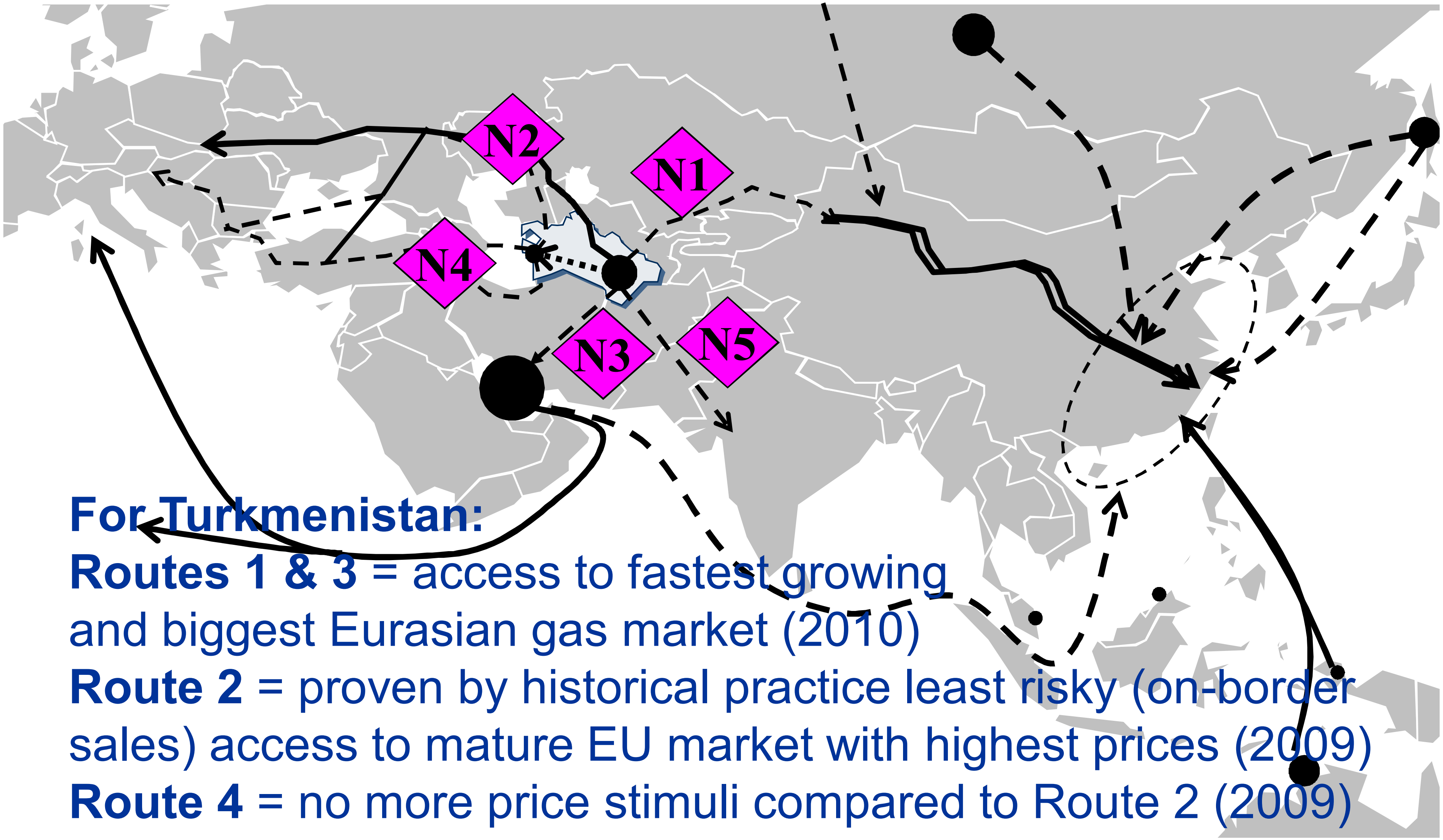
Turkmenistan: 5 export options

N	Pipeline	Capacity	
1	To China	Up to 30 BCM/y	Start operation 2010; 100% financing by China
2	Via Russia Westward	42.5+30 BCM/y	Current volume + pre-Caspian (expansion CAC-3)
3	By-passing Russia to EU	Up to 31 BCM/y	Nabucco; connection either via trans-Caspian or via Iran;
4	To Iran	Up to 14 BCM/y	Currently 8
5	To India-Pakistan via Afghanistan	Up to 20 BCM/y	Highly speculative due to high transit risks & political instability

Changing Central Asian gas pricing & export priorities

- Central Asian gas exporters long-term interest:
  - to receive max market-based gas export price at their external borders => to exclude transit costs & risks
- Prior to 2009:
  - CA gas export pricing = 'cost-plus-plus' at CA external border = much lower than netted-back 'EU replacement value '=> large Hotelling rent
  - EU companies interested to utilize Hotelling rent by direct purchases of CA gas at CA external borders & further reselling it at EU market => EU fight for bringing CA gas to EU market by:
    - transit through Russia (fight for access to Gazprom pipelines at domestic Russian tariffs => long debate within Energy Charter),
    - building alternative pipelines by-passing Russia => Hotelling rent will prove huge CAPEX needed => NABUCCO, etc.
- Since January 1, 2009:
  - CA gas export pricing = 'EU replacement value' netted-back to CA external border =>
  - No further economic (price) stimuli for EU companies to fight for direct purchases of CA gas =>
  - EU came down in export priorities of CA gas exporters

Central Asian Gas at Competitive Eurasian markets



For Turkmenistan:

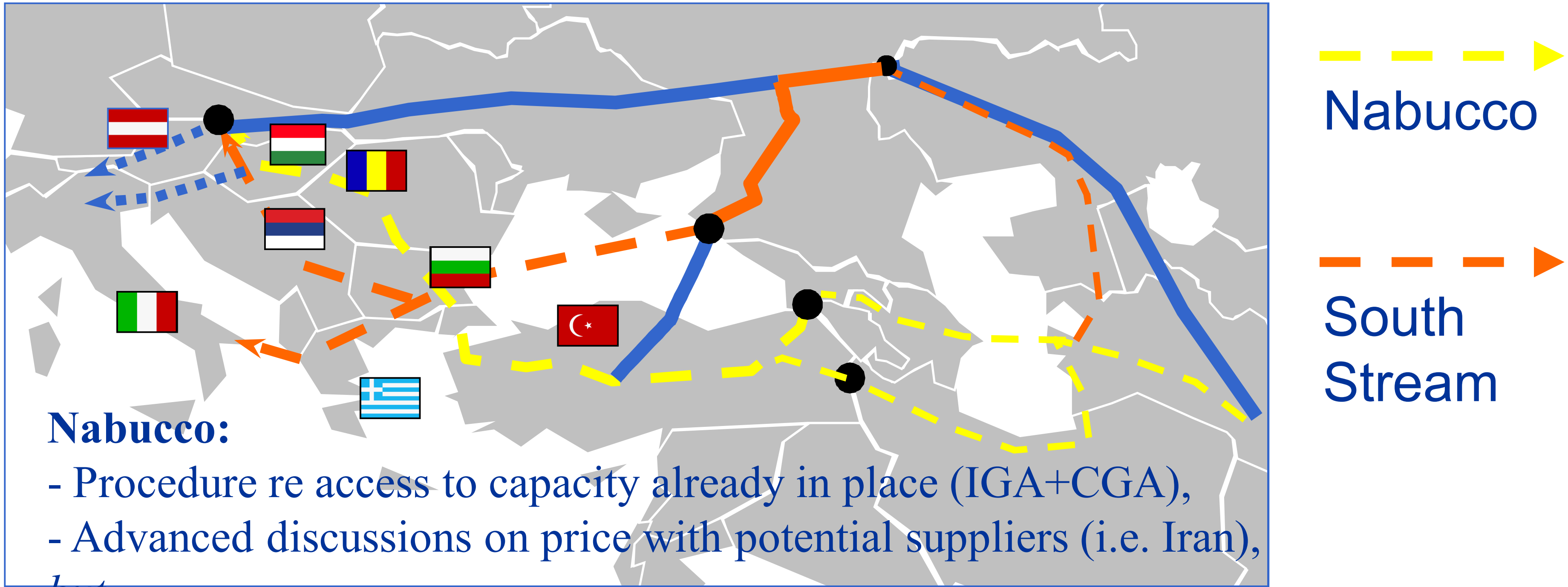
Routes 1 & 3 = access to fastest growing and biggest Eurasian gas market (2010)

Route 2 = proven by historical practice least risky (on-border sales) access to mature EU market with highest prices (2009)

Route 4 = no more price stimuli compared to Route 2 (2009)

Route 5 = most risky & unpredictable

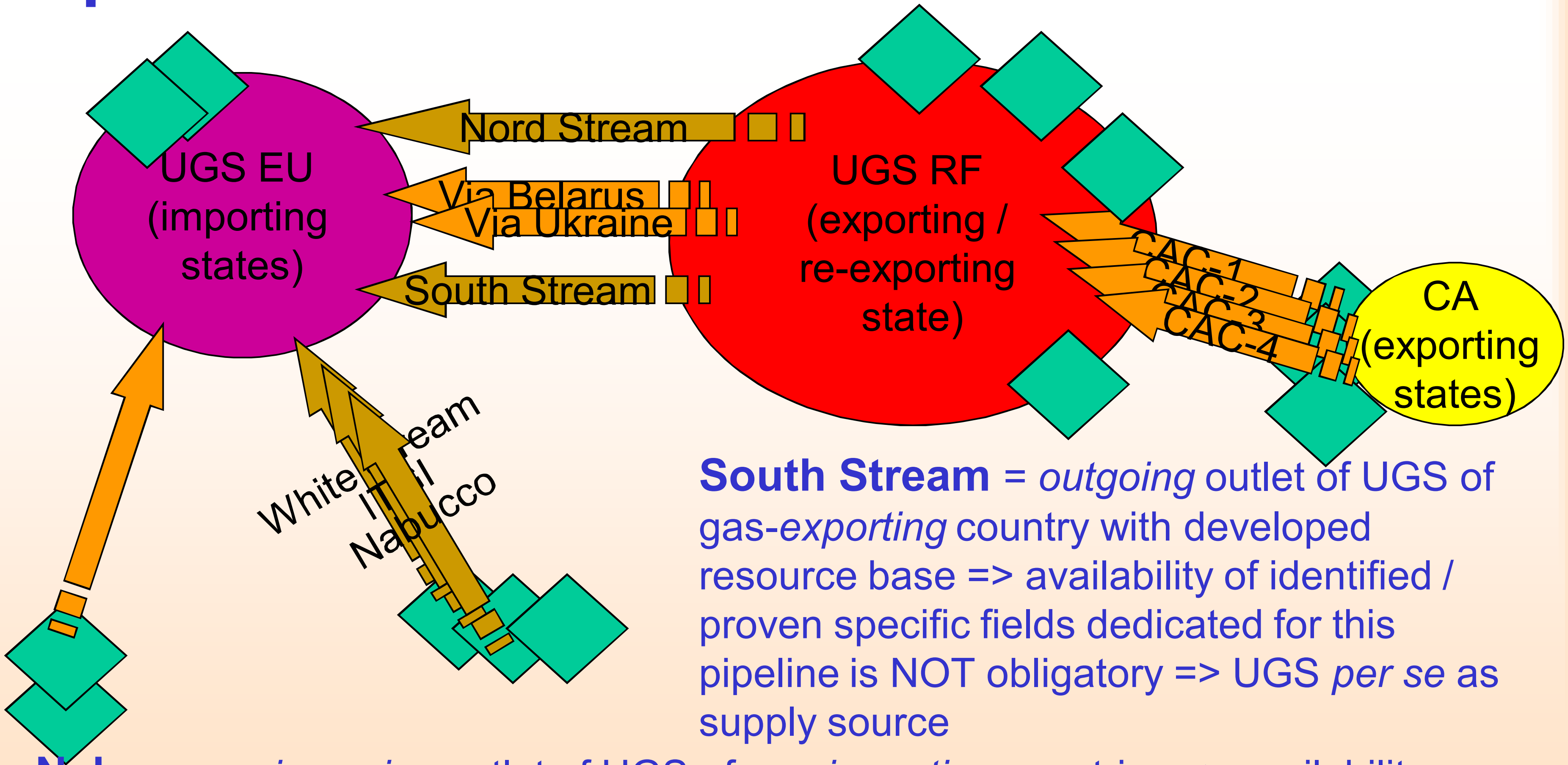
South Stream and Nabucco



Nabucco:

- Procedure re access to capacity already in place (IGA+CGA),
- Advanced discussions on price with potential suppliers (i.e. Iran), *but*
- Still no shipping contracts and/or proved reserves committed to deliveries via Nabucco (by producer-states/companies), plus
- Competition with other pipelines for gas of Shah-Deniz-II, plus
- No go for Trans-Caspian (delimitation) and Caspian by-pass via Iran (US embargo + conflict of interests) pipelines
- EU structures ready to finance at minimum pre-investment stages, but
- No dedication from private investors to invest until supplies are contracted and LTGECs are signed (LTGEC = financial tool of pipeline development)

Nabucco & South Stream: different types of pipelines => different requests on whether specific fields to be identified as resource base



South Stream = *outgoing* outlet of UGS of gas-*exporting* country with developed resource base => availability of identified / proven specific fields dedicated for this pipeline is NOT obligatory => UGS *per se* as supply source

Nabucco = *incoming* outlet of UGS of gas-*importing* countries => availability of identified/proven specific fields dedicated for this pipeline is STRICTLY obligatory; no fields = no specific source of supplies = "no go" for Nabucco

Existing pipelines New pipelines

Thank you for your attention !

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