

A viable gas pricing model for Europe (continuation of the debate)

Dr. Andrey A. Konoplyanik,

Adviser to the Director General, Gazprom export LLC,
Professor, Chair “International Oil & Gas Business”,
Russian State Gubkin Oil & Gas University

www.konoplyanik.ru

andrey@konoplyanik.ru

a.konoplyanik@gazpromexport.com

Presentation at the WORKSHOP ON CONTRACTUAL ISSUES RELATED TO
ENERGY TRADE, organized jointly by the Energy Charter Secretariat &
Hungarian Ministry of National Development,
20 March 2013, Budapest, Hungary

Table of contents:

- 1) **What is "Europe" in energy, what is "viable" in energy Europe (terminology)**
- 2) US/UK vs Continental Europe: different models of gas markets = different pricing models?
- 3) Implementation of pricing mechanisms in contractual structures: the trends
- 4) Expansion to the East of the Groningen LTGEC model within "broader energy Europe", 1962-2010 - a long & winding road (1)
- 5) Spot/futures vs contract pricing: preferences of the market players
- 6) Indexation vs spot/futures pricing: pros & contras
- 7) Increasing liquidity of European gas hubs: a long & winding road? (2)
- 8) How to adapt LTGEC pricing model: industry view
- 9) Five pricing options for Continental Europe within two-segment contractual structure of gas market

What is “Europe” in energy (gas)?

- “Europe” in energy = **“Broader energy Europe”** = area covered by EU-oriented immobile (fixed) energy infrastructure (e.g. from well-heads in non-EU to end-user fire-tips in EU) = all geographical Europe, incl. the EU, plus Northern Africa, plus part of Asia (Western Siberia, Central Asia, Caucasus), as of today, plus, in the future, Near & Middle East =>
- “Viable” pricing for SUCH Europe means viable pricing for ALL segments of the cross-border gas value chain (within its producer, consumer, transit segments)

Table of contents:

- 1) What is “Europe” in energy, what is “viable” in energy Europe (terminology)
- 2) US/UK vs Continental Europe: different models of gas markets = different pricing models?**
- 3) Implementation of pricing mechanisms in contractual structures: the trends
- 4) Expansion to the East of the Groningen LTGEC model within “broader energy Europe”, 1962-2010 - a long & winding road (1)
- 5) Spot/futures vs contract pricing: preferences of the market players
- 6) Indexation vs spot/futures pricing: pros & contras
- 7) Increasing liquidity of European gas hubs: a long & winding road? (2)
- 8) How to adapt LTGEC pricing model: industry view
- 9) Five pricing options for Continental Europe within two-segment contractual structure of gas market

US/UK vs Continental Europe: different models of gas markets - different pricing models?

Will Gas Follow Oil to Become a (Global) Commodity?					
North America and United Kingdom			Continental Europe and Japan / Korea		
<ul style="list-style-type: none"> development based on own resources, no initial dependence on imports 			<ul style="list-style-type: none"> high import dependence from the start 		
<ul style="list-style-type: none"> supply based on small to medium sized gas fields 			<ul style="list-style-type: none"> supply based on imports from giant / super giant fields 		
<ul style="list-style-type: none"> standardised rent taking development decision by private players 			<ul style="list-style-type: none"> rent maximisation of exporting countries development decision by exporting country 		
<ul style="list-style-type: none"> demand elasticity from gas to power generation 			<ul style="list-style-type: none"> limited demand elasticity 		
<p>“Single gas pricing” gas market model - YES</p>			<p>“Single gas pricing” gas market model - NO</p>		
market reforming as of 1980s			Linkages	market reforming as of late 1990s	
⇒ model for reform					
North America		UK	LNG trade	Continental EU	Japan/Korea
Hubs created by industry, churn 100, many players, high LNG absorption potential.	⇔	NBP created by regulation, churn 15 to 10, many players, limited absorption of LNG.	no LNG Hub but LNG as price transmitter	⇔	no hub so far, few strong players, dominance LTCs.

Source: “Putting a Price on Energy: International Pricing Mechanisms for Oil & Gas”, Energy Charter Secretariat, 2007

Table of contents:

- 1) What is “Europe” in energy, what is “viable” in energy Europe (terminology)
- 2) US/UK vs Continental Europe: different models of gas markets = different pricing models?
- 3) Implementation of pricing mechanisms in contractual structures: the trends**
- 4) Expansion to the East of the Groningen LTGEC model within “broader energy Europe”, 1962-2010 - a long & winding road (1)
- 5) Spot/futures vs contract pricing: preferences of the market players
- 6) Indexation vs spot/futures pricing: pros & contras
- 7) Increasing liquidity of European gas hubs: a long & winding road? (2)
- 8) How to adapt LTGEC pricing model: industry view
- 9) Five pricing options for Continental Europe within two-segment contractual structure of gas market

Evolution of gas pricing mechanisms

- **Cost plus (net forward) (physical market):**
 - Consumer takes the price – if no alternative supplies (gas & other energies) => price to cover the cost => price risk at the consumer end
- **(Net-back) replacement value (NBRV) based (physical market):**
 - Competitive energy market (gas to compete with other energies) => to link gas price to price of replacement fuels
 - $NBRV(\text{gas}) > \text{cost-plus}(\text{gas})$ => gas to be producible (project bankable)
 - $NBRV(\text{gas}) < \text{cost-plus}(\text{gas alternatives})$ => gas to be competitive (tradable)
 - Price risk shifting from the consumer end to the producer end
 - If NBRV price linked to commodities as replacement fuels – to increase frequency of NBRV adaptations /price reviews => to be adaptable & flexible = to be competitive
- **Spot/futures (exchange based /commodities) (physical &/or paper market):**
 - Price risk has moved totally to the producer end of the gas value chain (from project investor's angle) and is unpredictable (from trade's angle)
- **General conclusion: evolution of (gas) pricing mechanisms has been shifting price risk to the producer end – BUT capital intensity (& unit capital value) of the upstream projects has been increasing due to worsening natural conditions of the fields (global general trend since edge 1960-ies-1970-ies/J.-M.Chevalier) => disbalance between costs & price risks**

Market stages, pricing mechanisms & contractual structures: coexistence not substitution (increasing multiplicity of choices for market participants)

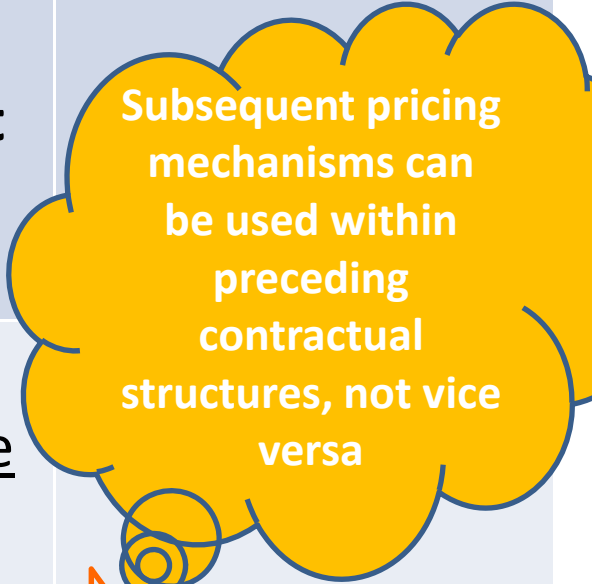
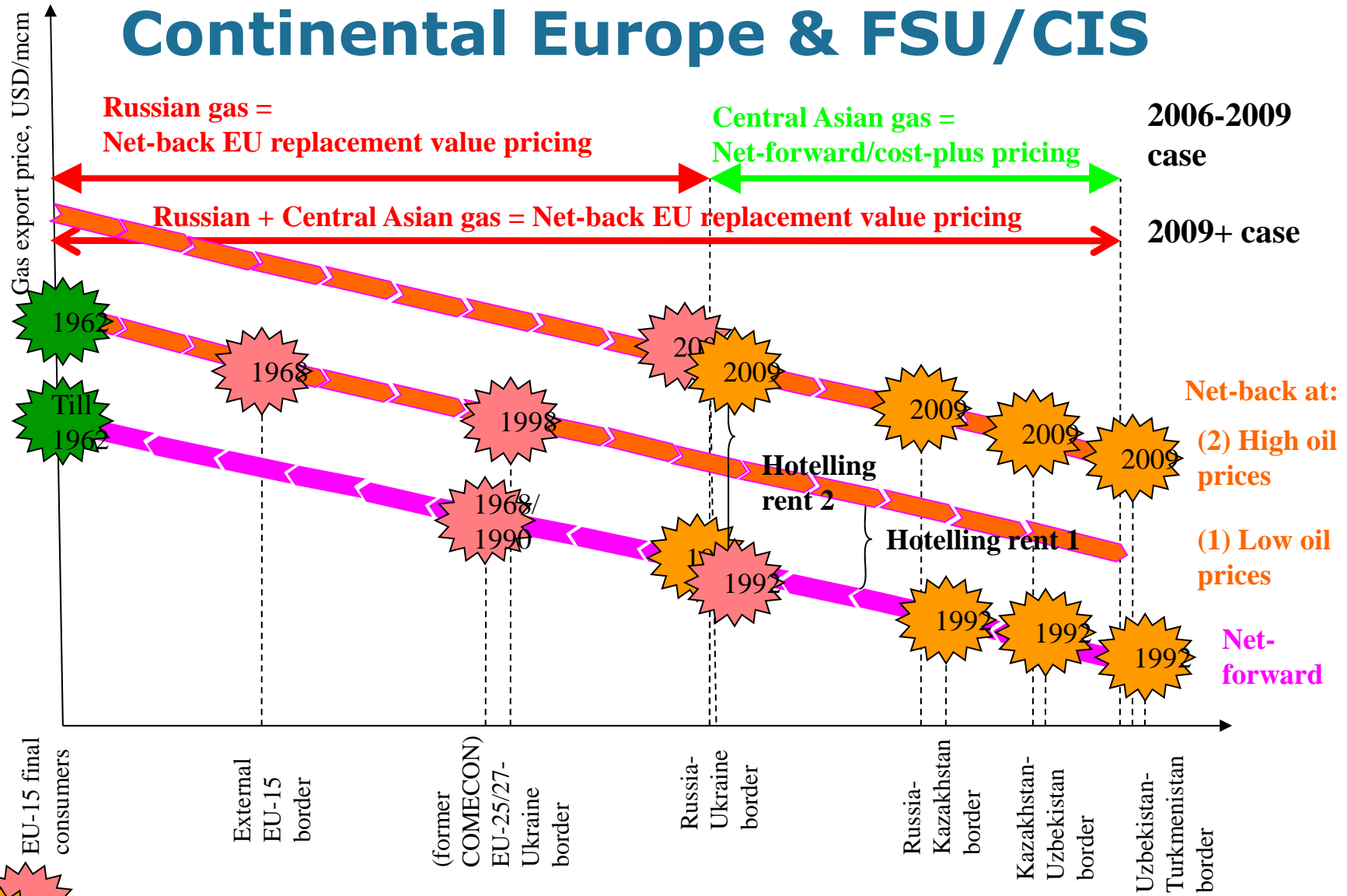
Energy markets development stage	Physical energy markets	Paper energy markets
Initial growth => <i>non-competitive market of physical energy, no paper energy market possible</i>	<u>Cost-plus (LTC)</u> = lower investment price	 <p>Subsequent pricing mechanisms can be used within preceding contractual structures, not vice versa</p>
Intensive growth => <i>competitive market of physical energy, no paper energy market available</i>	+ <u>Net-back replacement value (LTC)</u> = upper investment price	
Mature market => <i>competitive markets of both physical & paper energy</i>	+ <u>Spot-forward (OTC)</u> = trade price	

Table of contents:

- 1) What is “Europe” in energy, what is “viable” in energy Europe (terminology)
- 2) US/UK vs Continental Europe: different models of gas markets = different pricing models?
- 3) Implementation of pricing mechanisms in contractual structures: the trends
- 4) Expansion to the East of the Groningen LTGEC model within “broader energy Europe”, 1962-2010 - a long & winding road (1)**
- 5) Spot/futures vs contract pricing: preferences of the market players
- 6) Indexation vs spot/futures pricing: pros & contras
- 7) Increasing liquidity of European gas hubs: a long & winding road? (2)
- 8) How to adapt LTGEC pricing model: industry view
- 9) Five pricing options for Continental Europe within two-segment contractual structure of gas market

Evolution of gas export pricing in Continental Europe & FSU/CIS



Year of establishing of/switching to new pricing system (pink – gas originated from RF, yellow – from CA, green – from EU)



Table of contents:

- 1) What is “Europe” in energy, what is “viable” in energy Europe (terminology)
- 2) US/UK vs Continental Europe: different models of gas markets = different pricing models?
- 3) Implementation of pricing mechanisms in contractual structures: the trends
- 4) Expansion to the East of the Groningen LTGEC model within “broader energy Europe”, 1962-2010 - a long & winding road (1)
- 5) Spot/futures vs contract pricing: preferences of the market players**
- 6) Indexation vs spot/futures pricing: pros & contras
- 7) Increasing liquidity of European gas hubs: a long & winding road? (2)
- 8) How to adapt LTGEC pricing model: industry view
- 9) Five pricing options for Continental Europe within two-segment contractual structure of gas market

Producers, Consumers & Speculators Price/Pricing Preferences

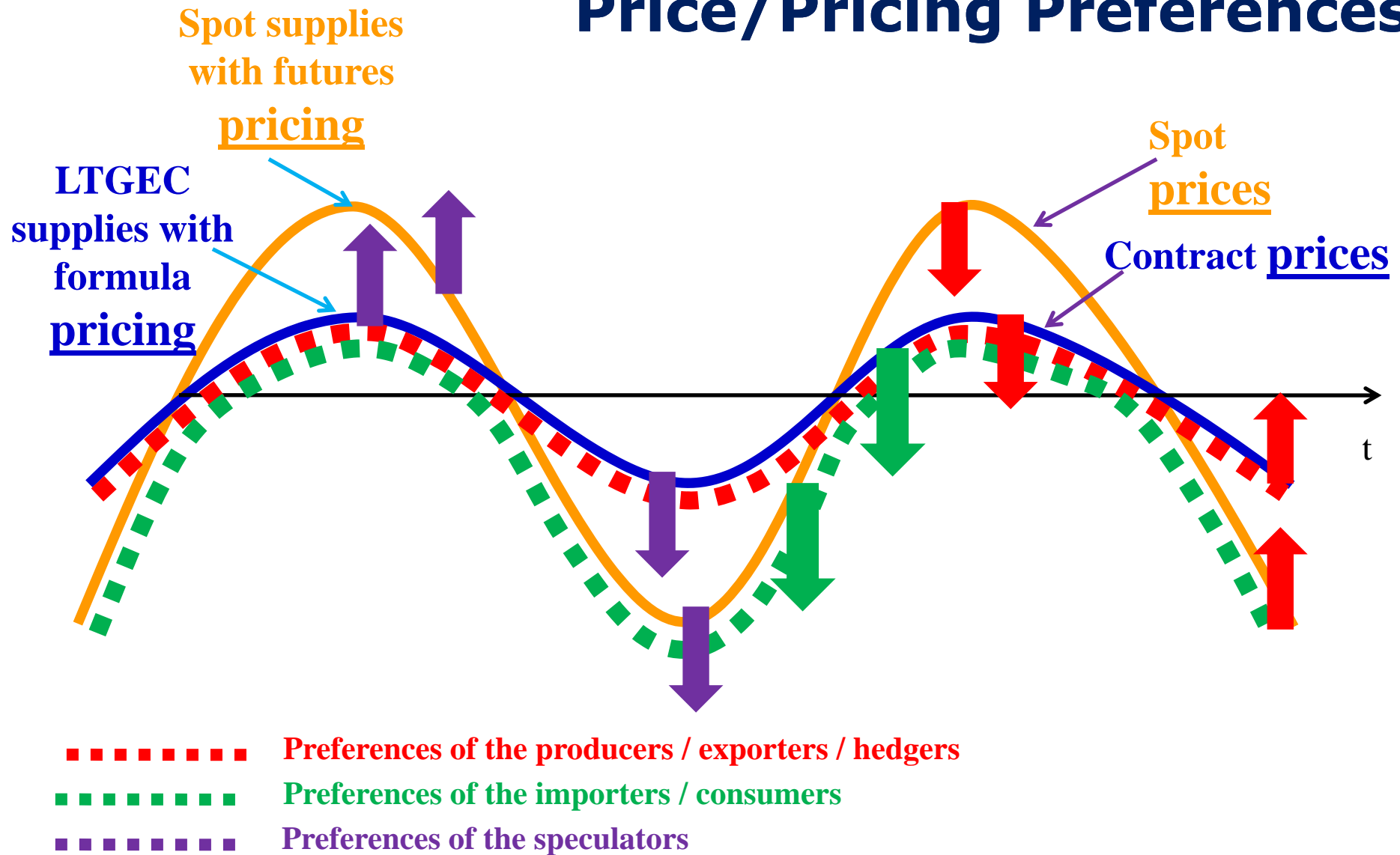


Table of contents:

- 1) What is “Europe” in energy, what is “viable” in energy Europe (terminology)
- 2) US/UK vs Continental Europe: different models of gas markets = different pricing models?
- 3) Implementation of pricing mechanisms in contractual structures: the trends
- 4) Expansion to the East of the Groningen LTGEC model within “broader energy Europe”, 1962-2010 - a long & winding road (1)
- 5) Spot/futures vs contract pricing: preferences of the market players
- 6) Indexation vs spot/futures pricing: pros & contras**
- 7) Increasing liquidity of European gas hubs: a long & winding road? (2)
- 8) How to adapt LTGEC pricing model: industry view
- 9) Five pricing options for Continental Europe within two-segment contractual structure of gas market

Gas pricing: price indexation vs. spot/futures pricing – pros & contras (1)

Price indexation	Spot/futures pricing
Long-term stable non-interruptible gas supply with minimum costs & risks for both LTGEC parties => maximum marketable resource rent	Maximization of profit short-term => to earn on price fluctuations => maximum price fluctuations
Physical gas market => non-liquid, but more stable	Paper gas market => liquid, but less stable
Hedgers => mostly producers / traders of physical gas => limited & stable spectrum of participants	Speculators => mostly traders of gas contracts => inflow / outflow of financial players -> open & unstable spectrum of participants

Gas pricing: price indexation vs. spot/futures pricing – pros & contras (2)

Price indexation	Spot/futures pricing
Predictable contract prices => based on stable contractual formulas	Unpredictable spot prices & forward curves since based on frequently changing perceptions of global financial market players
Transparent formula & price review mechanisms <i>though</i> actual price not available to public immediately: (i) price calculated as function of formula ingredients, (ii) LTGEC confidentiality clauses	Transparent & immediate result (price quotations) <i>but</i> non-transparent & unclear decision-making mechanism on price levels (based on perceptions of big & unstable amount of players)

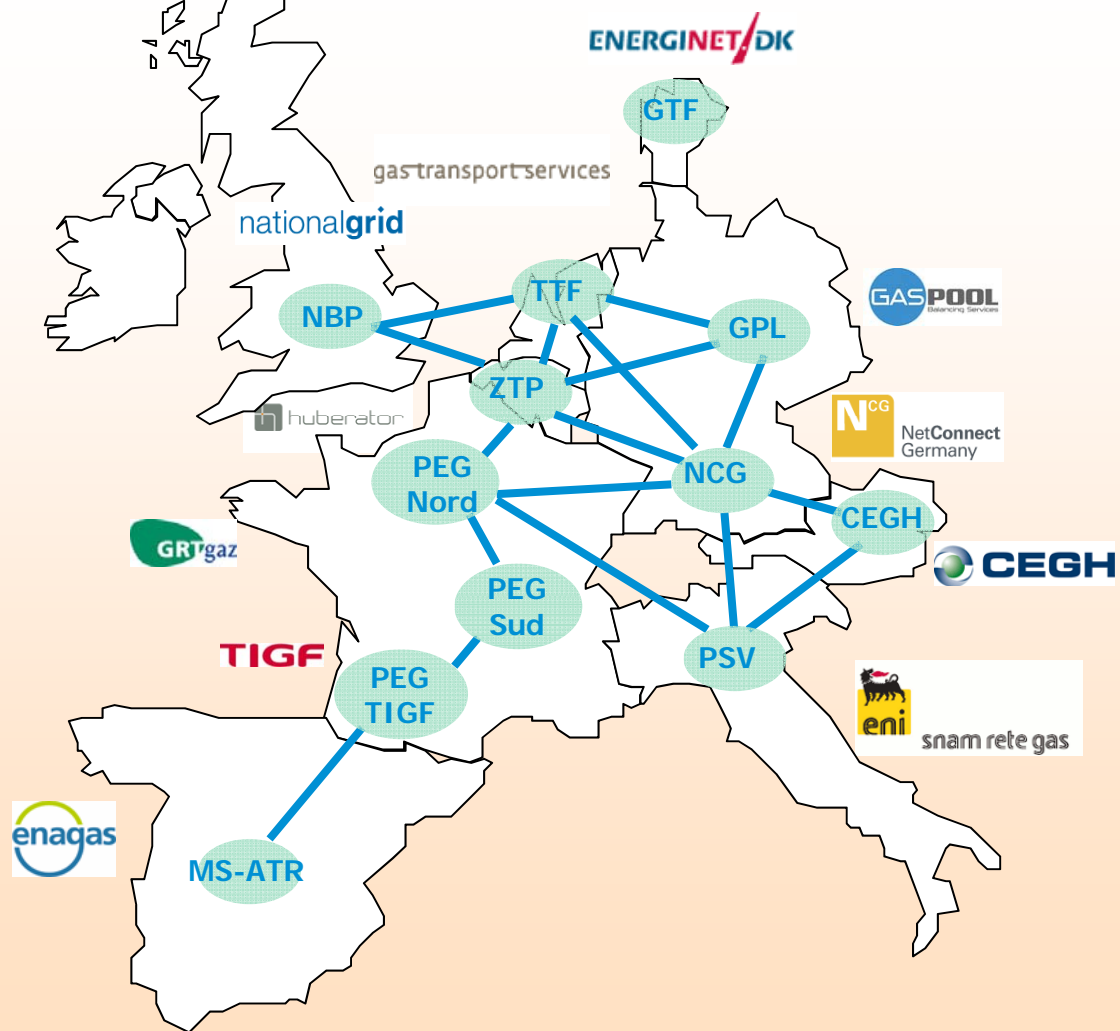
Gas pricing: price indexation vs. spot/futures pricing – pros & contras (3)

Price indexation	Spot/futures pricing
Impossible to manipulate – fixed formula & contractual clauses; adaptation on bilateral basis within legally-binding procedure	Possibility to manipulate: (i) by direct price-manipulations, (ii) by influencing on expectations (perceptions) of market players
To soften price-peaks (narrow corridor of price fluctuations) => to stabilize gas market	To amplify price-peaks (expand corridor of price fluctuations) => to destabilize gas market

Table of contents:

- 1) What is “Europe” in energy, what is “viable” in energy Europe (terminology)
- 2) US/UK vs Continental Europe: different models of gas markets = different pricing models?
- 3) Implementation of pricing mechanisms in contractual structures: the trends
- 4) Expansion to the East of the Groningen LTGEC model within “broader energy Europe”, 1962-2010 - a long & winding road (1)
- 5) Spot/futures vs contract pricing: preferences of the market players
- 6) Indexation vs spot/futures pricing: pros & contras
- 7) Increasing liquidity of European gas hubs: a long & winding road? (2)**
- 8) How to adapt LTGEC pricing model: industry view
- 9) Five pricing options for Continental Europe within two-segment contractual structure of gas market

Gas hubs in EU



European Hubs :

NBP : National Balancing Point
 TTF : Title Transfer Facility
 ZTP : Zeebrugge Trading Point
 PEG : Point d'Echange de Gaz
 NCG : NetConnect Germany
 GPL : GASPOOL
 CEGH : Central European Gas Hub
 GTF : Gas Transfer Facility
 PSV : Punto di Scambio Virtuale
 MS-ATR : Mercado Secundario - Acceso de Terceros a la Red

Source: Warner ten Kate,
 GasTerra B.V. "A changing NW-
 European natural gas market",
 5th International conference
 'ENERGETIKA-XXI', Saint-
 Petersburg, 17-18 October 2012

Comparative liquidity of European gas hubs

European gas hubs:

NBP (UK) & TTF (Netherlands)	10-15
Zee (Belgium)	5
Other hubs, continental Europe	3 & less

For comparison:

USA (crude): NYMEX (WTI) (Feb.2010)	1680-2240
UK (crude): ICE (Brent) (Feb.2010)	2014
USA (gas): NYMEX Henry Hub (av.2009)	377
Benchmark churn rate for “liquid” marketplaces	15

«*Churn*» - usually parameter used to evaluate level of liquidity of marketplaces; correlation between volumes traded & physically delivered from given marketplace

Source: “Gas Matters”, IHS-CERA, IEA, M.Kanai (ECS) , GasTerra

Table of contents:

- 1) What is “Europe” in energy, what is “viable” in energy Europe (terminology)
- 2) US/UK vs Continental Europe: different models of gas markets = different pricing models?
- 3) Implementation of pricing mechanisms in contractual structures: the trends
- 4) Expansion to the East of the Groningen LTGEC model within “broader energy Europe”, 1962-2010 - a long & winding road (1)
- 5) Spot/futures vs contract pricing: preferences of the market players
- 6) Indexation vs spot/futures pricing: pros & contras
- 7) Increasing liquidity of European gas hubs: a long & winding road? (2)
- 8) How to adapt LTGEC pricing model: industry view**
- 9) Five pricing options for Continental Europe within two-segment contractual structure of gas market

Results of J.Stern's FLAME polls on expected time of gas price decoupling from oil prices, 2004-2012 гг.

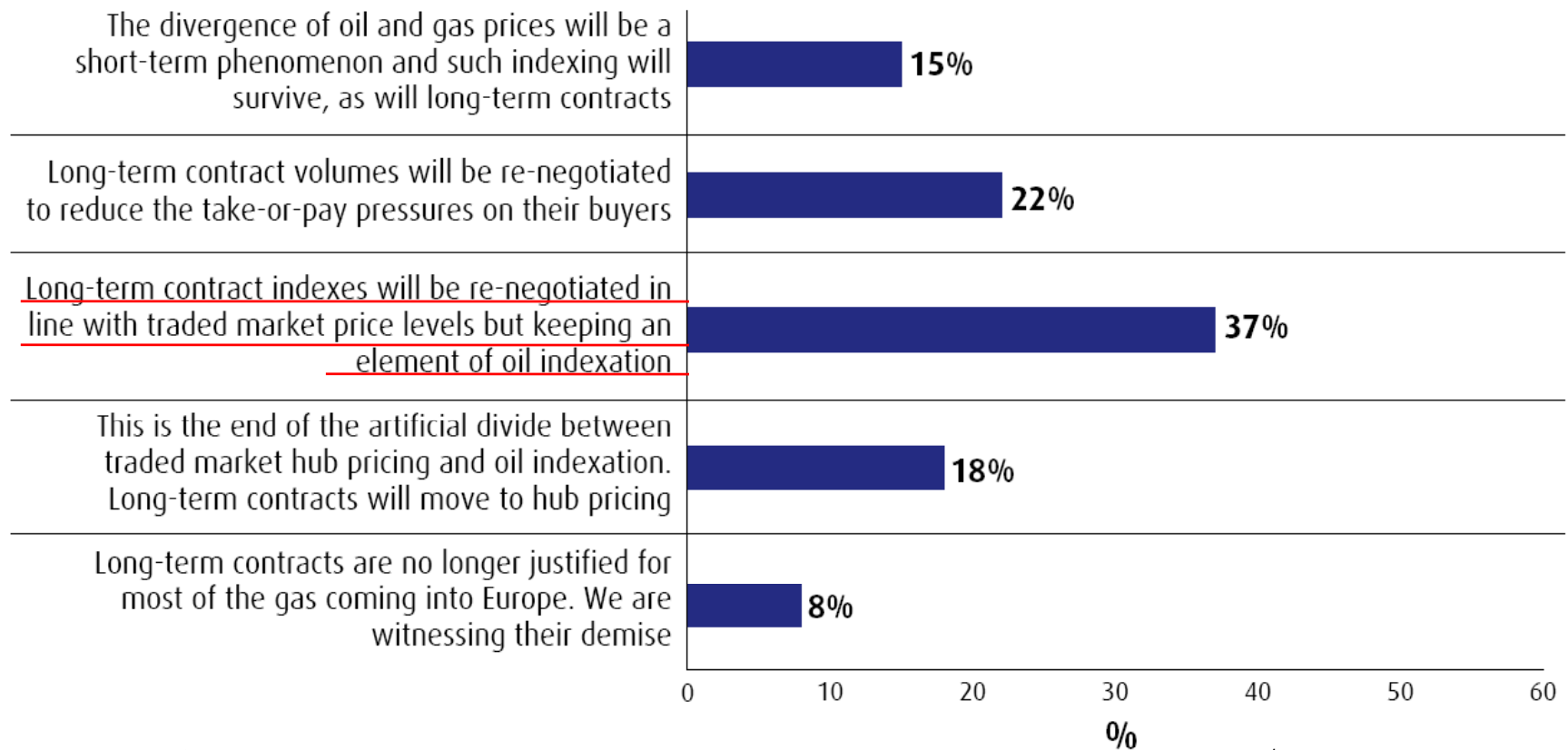
Table 1: When do you expect European long term contract gas prices will become decoupled from oil and determined by spot and futures prices? (% of total)

Year of Conference poll	2004	2005	2008	2009	2010	2011	2012
Before end 2010	24	15	9	4	4	7	4
Before end 2015	36	15	22	20	20	24	28
After 2015	15	39	43	44	51	45	53
Never	24	31	29	32	25	24	14

Source: J.Stern. "Continental European Long-Term Gas Contracts: is a transition away from oil product-linked pricing inevitable and imminent?", OIES, NG34, September 2009, p.5; Ibid. "Gas Price Formation in Europe: rationale and next steps", GMT, 8 October 2010; and also the data kindly provided personally by J.Stern to the author

Future of LTGEC with indexation: industry view

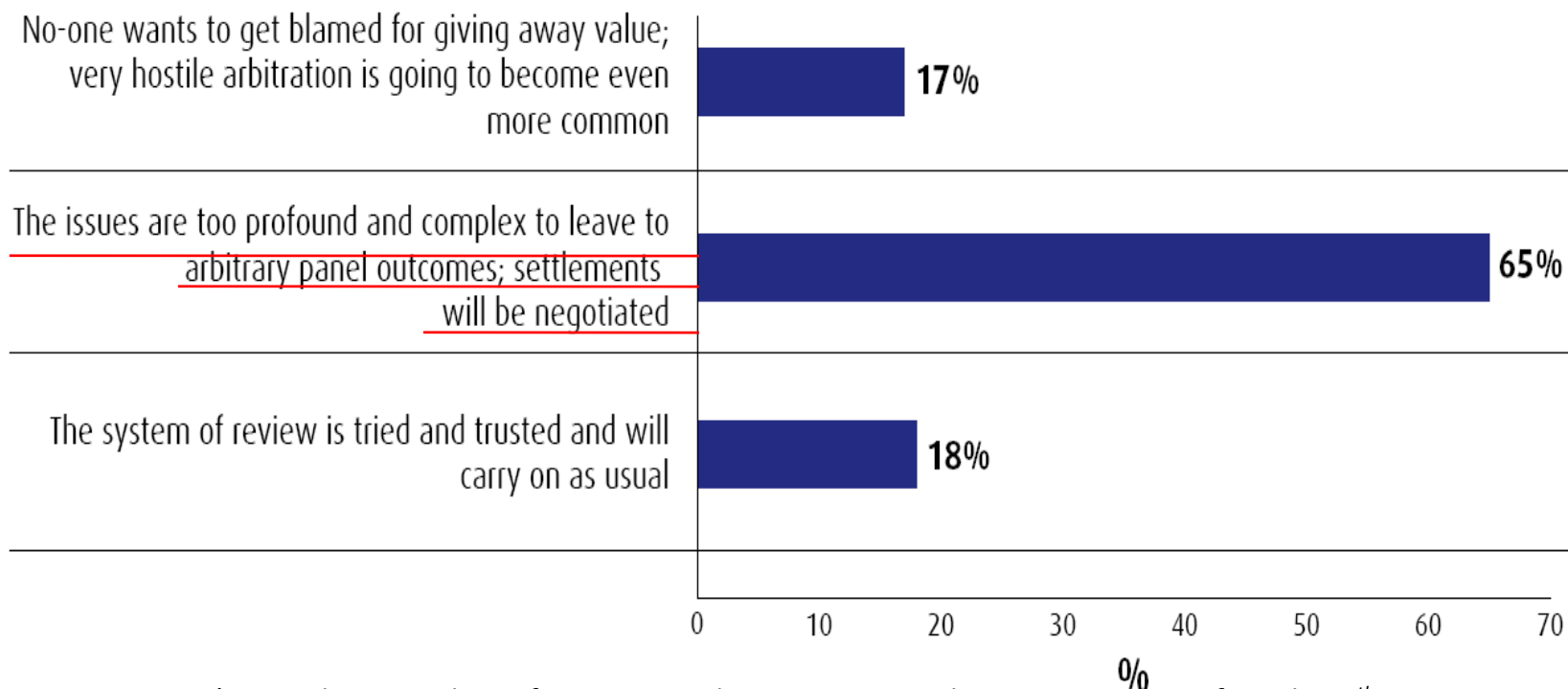
Q9 Oil-indexed long-term gas contracts are increasingly exposed to unprecedented take-or-pay pressures in Europe. Where are we heading?



Source: *Europe's gas industry need transformation to adapt to energy revolution. Key messages from the 24th European Autumn Gas Conference, held in Bilbao in northern Spain in November 2009", December 2009, p.14.*

How to adapt LTGEC with indexation: industry view

Q10 With an increasing number of long-term contracts under review pressure, how do you think this is most likely to be resolved, given the large amount of value embedded in them?



Source: Europe's gas industry need transformation to adapt to energy revolution. Key messages from the 24th European Autumn Gas Conference, held in Bilbao in northern Spain in November 2009", December 2009, p.15.

Table of contents:

- 1) What is “Europe” in energy, what is “viable” in energy Europe (terminology)
- 2) US/UK vs Continental Europe: different models of gas markets = different pricing models?
- 3) Implementation of pricing mechanisms in contractual structures: the trends
- 4) Expansion to the East of the Groningen LTGEC model within “broader energy Europe”, 1962-2010 - a long & winding road (1)
- 5) Spot/futures vs contract pricing: preferences of the market players
- 6) Indexation vs spot/futures pricing: pros & contras
- 7) Increasing liquidity of European gas hubs: a long & winding road? (2)
- 8) How to adapt LTGEC pricing model: industry view
- 9) Five pricing options for Continental Europe within two-segment contractual structure of gas market**

Vision of possible “two-segment” EU gas market model under GTM (RF proposal for discussion & consideration within RF-EU Consultations/WS-2 GAC)

➤ Long-term supplies (firm contracts, main/basic demand load):

- More flexible LTGEC (re off-taking of contractual volumes (TOP), pricing formulas & price review rules)
- + long-term access to transportation capacity for full duration & volume of LTGEC (EU-coord.open seasons)
- + modified pricing formulas linking gas to its replacement fuels (indexation not only to petroleum products => +coal, RES, spot, etc.)

➤ Short-term supplies (interruptible contracts, additional/semi-peak & peak demand load):

- Spot contracts & prices (delivery & trading) => (physical market)
- + exchange pricing (futures..., gas indexes, forward curves) => (paper market)

US & UK gas market models are not appropriate in Continental Europe/Eurasia (“Putting a price on Energy”, Energy Charter Secretariat, Brussels, 2007)

Initially GTM did not consider risks & uncertainties for this market segment => these questions have been added on a step-by-step basis in result of RF-EU informal expert Consultations

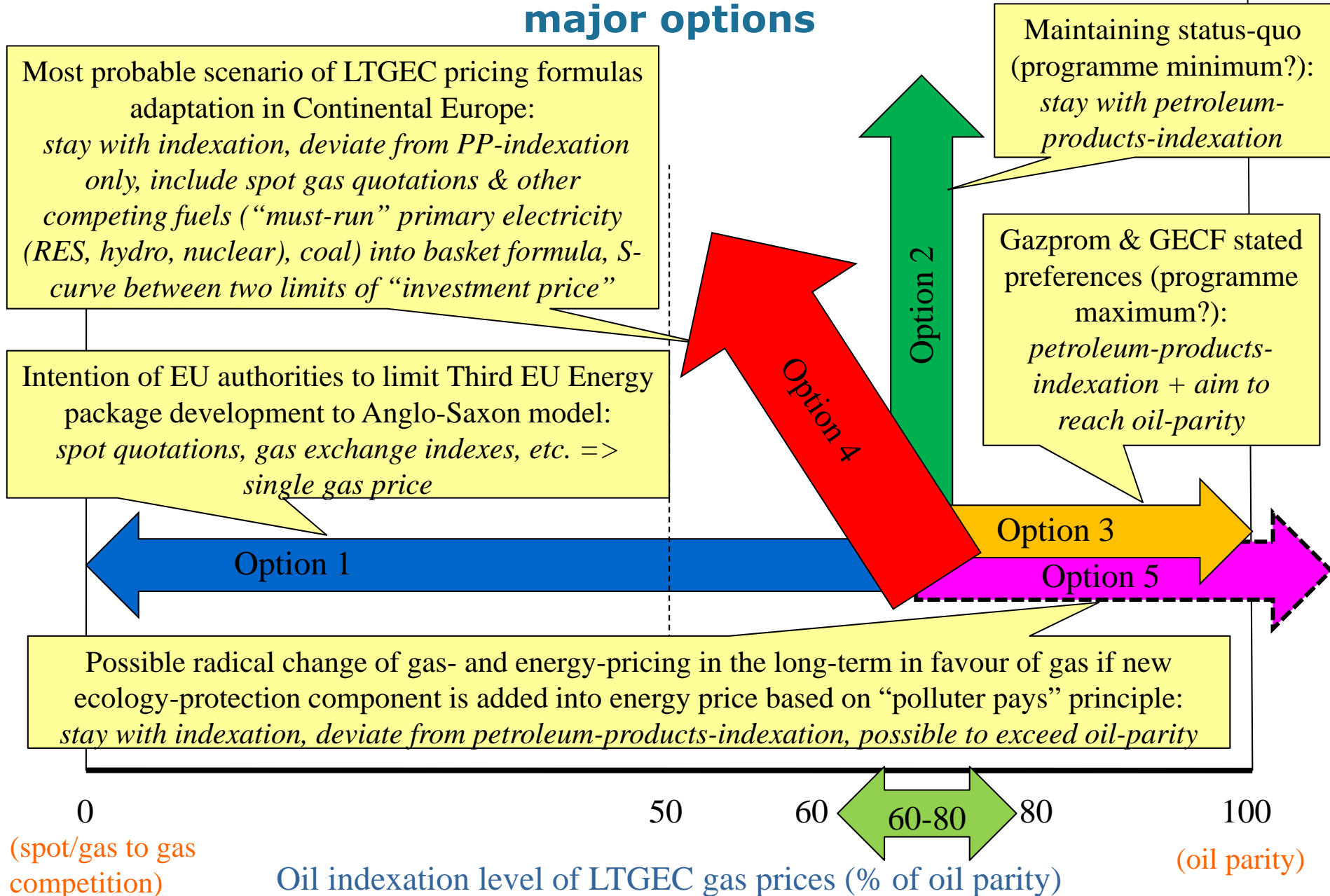
Initial drafts of GTM covered only this segment of gas market, long-term long-distant supplies and related risks & uncertainties stayed beyond consideration of justified concerns of market participants⁵

Gas pricing prospects/debate in Europe: “between Komlev & Stern”?(*)

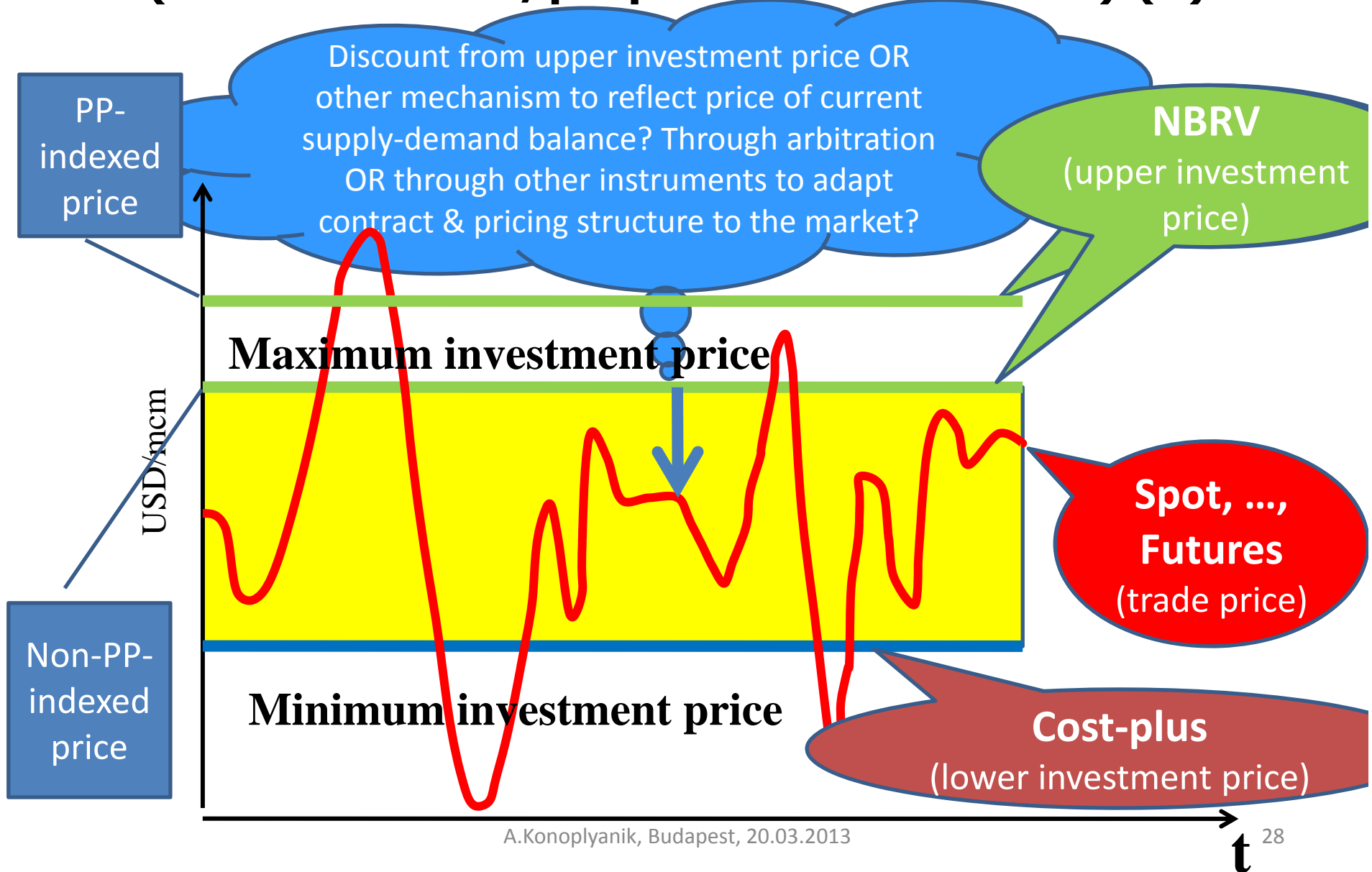
- **S.Komlev/Gazprom/GECF:** LTGEC to continue dominate + stay with PP-indexation (+ aim at oil parity)
- **J.Stern/3rd EU Energy Package (first draft GTM)/EU energy regulators:** market share for LTGEC to stay, but (soft – J.Stern) switch from PP-indexation to spot/futures quotations as LTGEC pricing mechanism (f.i., in 5 years – J.Stern /similar to “RF-Belarus 2007 model”) => **BUT:** 3rd package does NOT prescribe any specific pricing model NOR only single one pricing model (like spot / futures / hubs / etc.) => “market” does NOT mean “single price” market
- **Any alternative/compromise options?** (if aim is to support long-term gas market share of Russian gas at EU market)

(*) acc. to Jan Klepac, Executive Director of Slovak Gas & Oil Association, Sept’2012

Evolution/adaptation of gas pricing mechanisms in Europe: major options



S-curve approach for indexation in Continental Europe within contractual pricing (author's vision/proposal for discussion) (2)



**Thank you for your
attention!**

**www.konoplyanik.ru
andrey@konoplyanik.ru
a.konoplyanik@gazpromexport.com**