

European gas market: new post-2009 realities, new risks & challenges, new necessities for adaptation for all stakeholders to achieve new win-win situation

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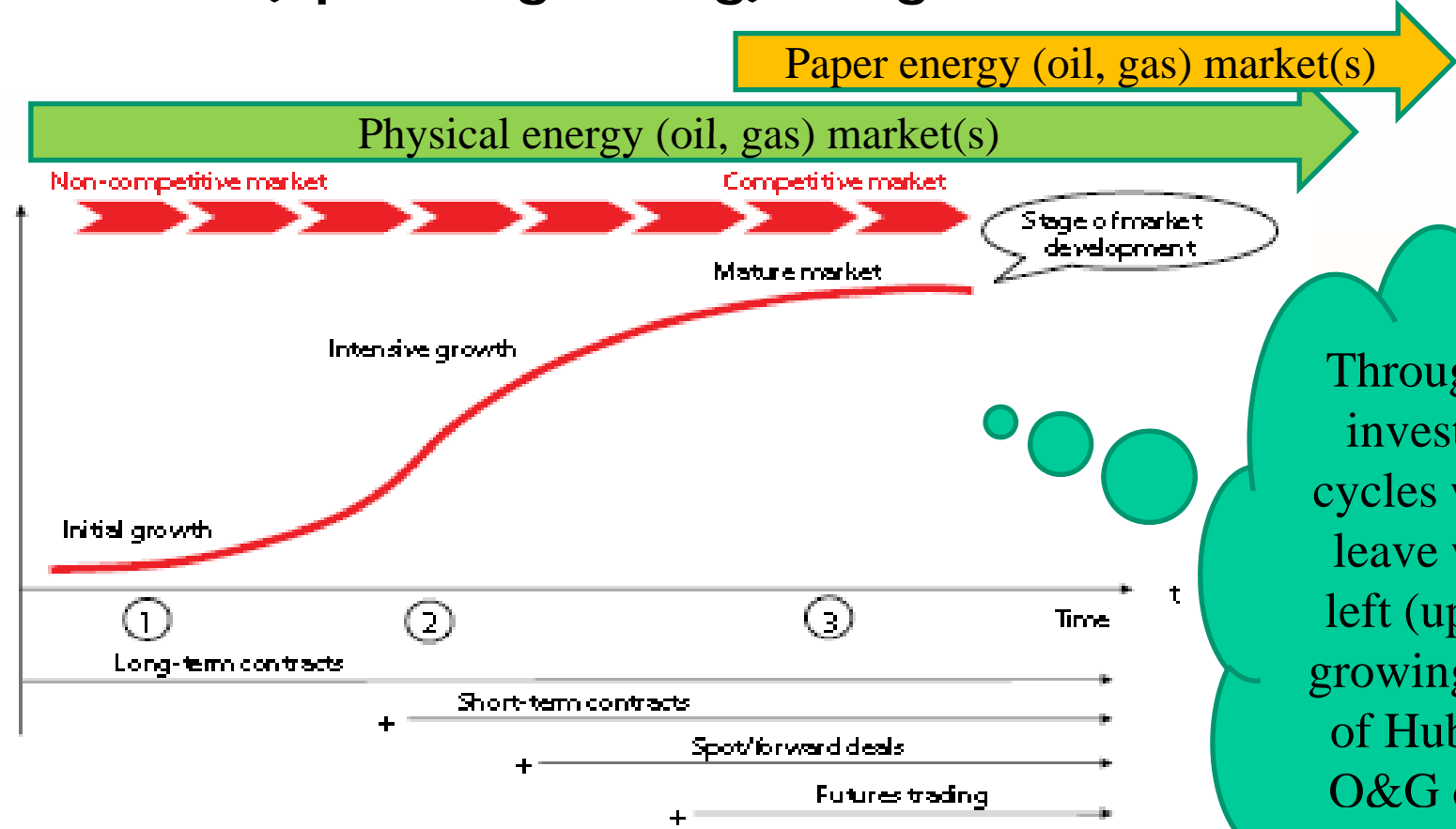
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- 2) European gas market: new post-2009 realities, risks & challenges for Russian gas
- 3) What is optimal gas market structure (contracts & pricing) in Continental Europe under 3rd package?

Evolution of oil & gas markets: correlation of development stages, contractual structures, pricing mechanisms on the left (upward-growing) wing of Hubbert's curve



- ① Pricing mechanism's development stages:
- ① - cost-plus
 - ② - escalation formulas (based on alternative fuels prices)
 - ③ - based on futures prices (commodities markets)

Source: based on Andrei Konoplyanik

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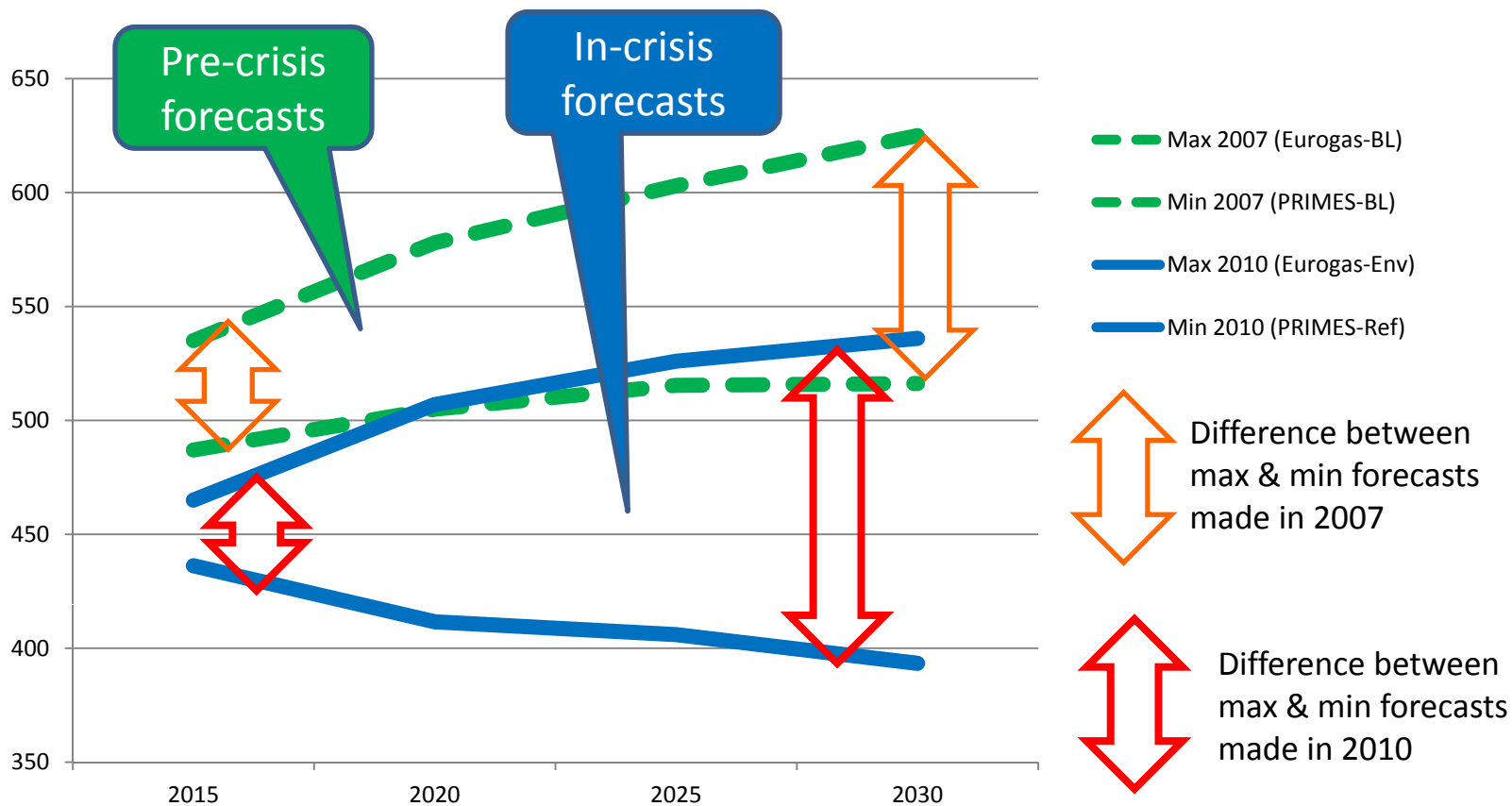
European gas market: new post-2009 realities, risks & challenges for Russian gas (1)

- **Demand-side** (shrinking competitive niche for gas)
- **Supply-side** (increasing supply competition within shrinking niche for gas)
- **Institutional** (increasing investment risks within shrinking niche for gas)
- **Political** (away from dominant Russian gas supplies where possible)

European gas market: new post-2009 realities, risks & challenges for Russian gas (2)

- **Demand-side** (shrinking competitive niche for gas):
 - Global economic recession, incl. in Europe => slowdown demand in mature market
 - Decarbonisation of EU energy prospects/scenarios => RES vs fossil fuels, but why gas is first victim among fossil fuels?
 - Gas vs non-gas competition :
 - RES: subsidized RES vs expensive PP-indexed LTGEC gas
 - coal: “domino effect-2” of US shale gas revolution => cheap imported US coal vs. expensive PP-indexed LTGEC gas
- **Supply-side** (increasing supply competition within shrinking niche for gas):
 - Demand slowdown, but EU-oriented supply projects put on stream must generate revenues to pay-back CAPEX (dumping)
 - “domino effect-1” of US shale gas revolution => redirection of LNG flows from US to EU => gas oversupply in EU => gas-to gas competition in EU => cheap spot gas vs expensive PP-indexed gas LTGEC in oversupplied EU gas market

Tunnels of EU gas demand forecasts: corridor of uncertainties increases, mean line lowers, bottom-line becomes negative...



Source: compiled by V.Protasov on the basis of the database of the study “Energy Forecasts and Scenarios, 2009-2010 Research, Final Report”, Russia-EU Energy Dialogue, Thematic Group on Energy Strategies, Forecasts and Scenarios, Energy Economics Subgroup, 2011 I (available at: www.fief.ru).

What messages energy forecasts sponsored by the Commission send to gas business (is it practical to forecast future demand volumes below already contracted volumes?)

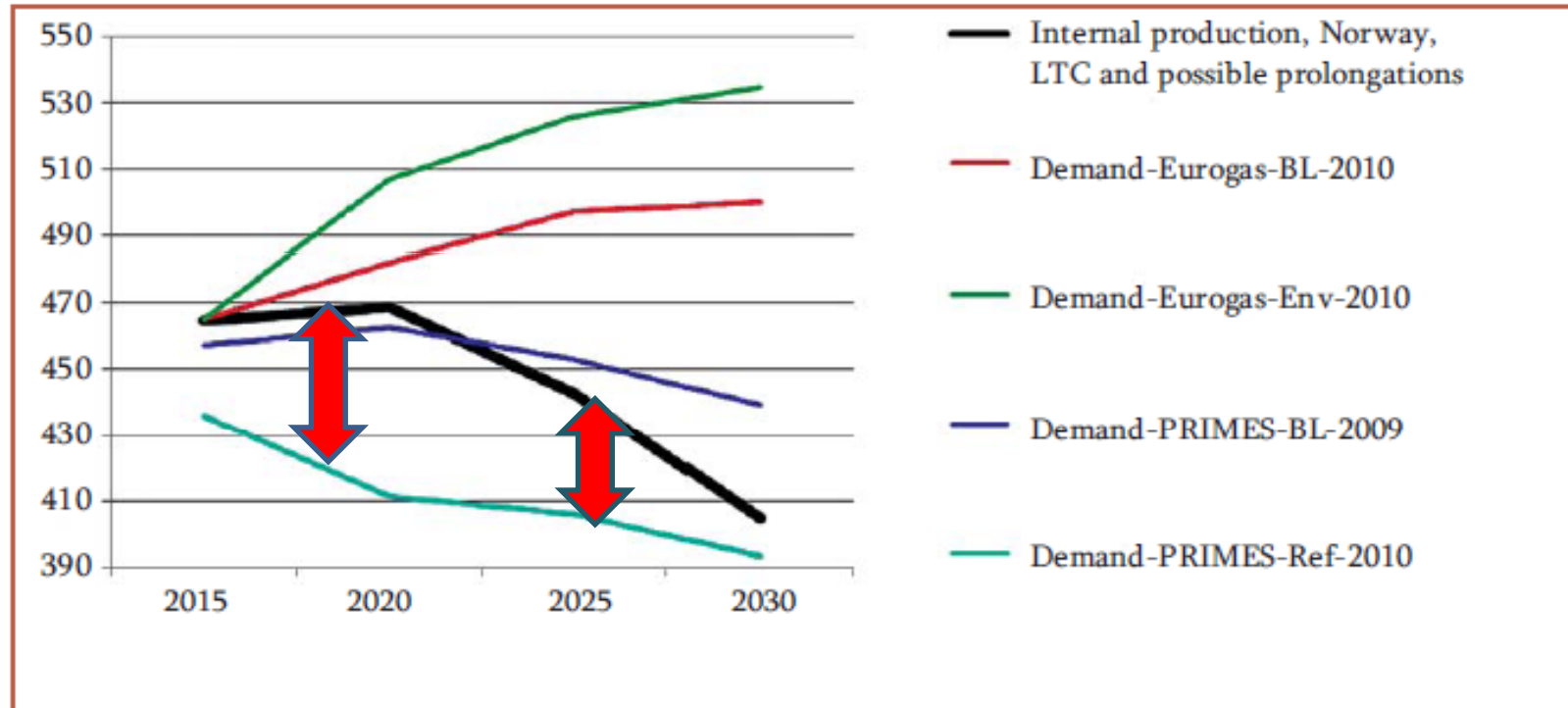


Figure 2. Potential of a new gas supply in EU-27 in 2015-2030 according to forecasts

Sources: Eurogas, 2010; EET-2030 update 2009

Note: LTC – long-term contracts

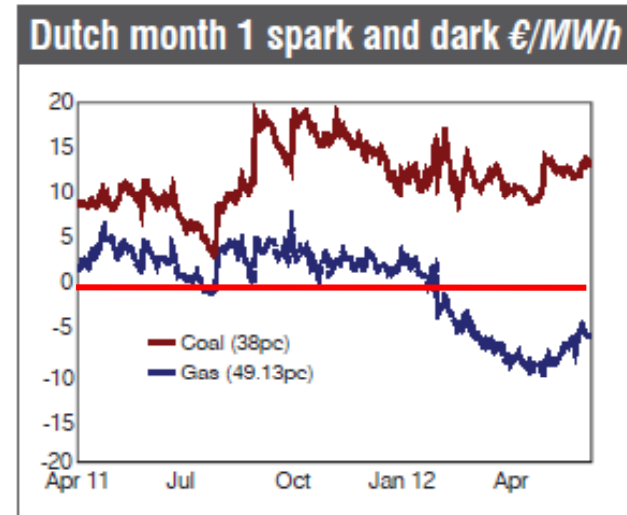
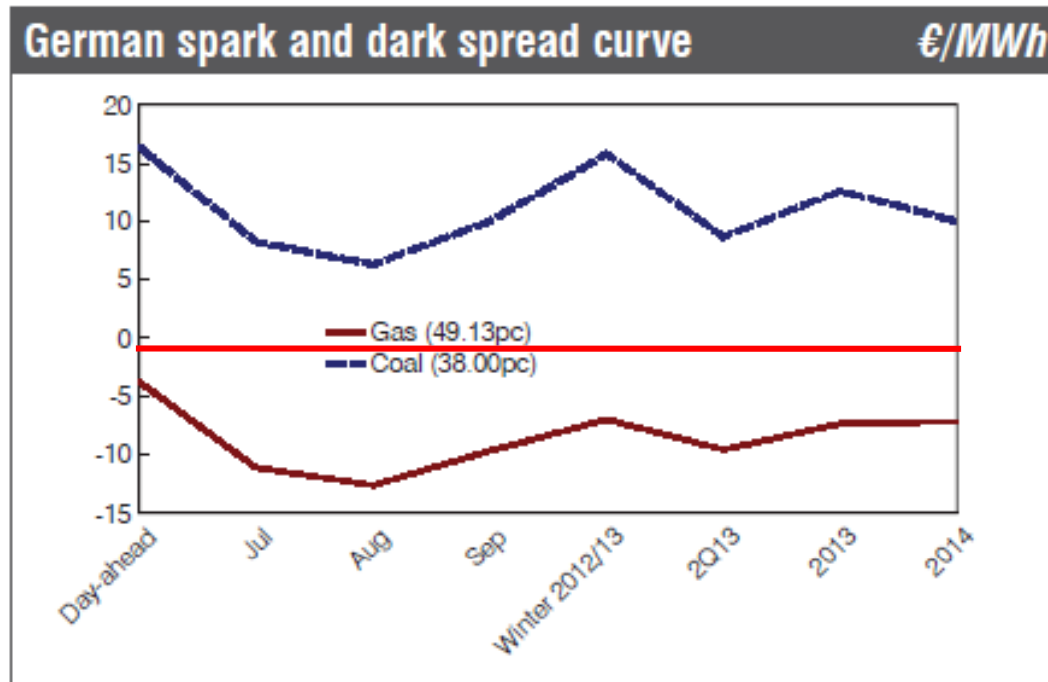


PRIMES: Gap between production & contracts and demand volumes

Source: Russia-EU Energy Dialogue. Thematic Group on Energy Strategies, Forecasts and Scenarios. Energy Economics Subgroup. "Energy Forecasts and Scenarios, 2009-2010 Research, Final Report", 2011, p.28

Gas to Power in Europe

Oil indexed gas pricing strongly supports the renaissance of coal in Europe



Source: Walter Boltz. Presentation on "Gas Pricing" at the 11th round of informal Russia-EU expert consultations on the Third EU Energy package issues/4th meeting Work Stream on Internal Markets, Russia-EU Gas Advisory Council, Moscow, Gazprom / Gazprom export, 26-27.06.2012

Source of the two figures: Argus Media, Power in Europe, 13 June 2012

Gas price indexation: new prospects in EU electricity generation

- **Competing/replacement fuels** (basis for gas indexation):
 - **Contractually:** through whole period since 1960's – RFO/LFO (Continental Europe)
 - **In practice:** historically – RFO (1960/70-ies), today – coal & RES
- **Gas vs RES: *new CCGT vs new RES* (wind & solar):**
 - **New RES:** “must-run” generation => subsidized CAPEX + zero fuel costs (even after RES subsidies are banned after CAPEX are made)
 - **New CCGT:** as “back-up” capacities for RES only (high PP-indexed LTGEC gas prices prevent to use gas as base-fuel) => low load factor decrease efficiency + non-subsidized CAPEX + high fuel costs => long pay-back periods diminish ROR below acceptable levels

Gas price indexation: new prospects in EU electricity generation (2)

- **Gas vs Coal: *new CCGT vs old coal power stations:***
 - **New CCGT:** to recoup new CAPEX + high fuel costs (if gas linked to RFO/LFO) => spark spread (E-G) ***negative*** in EU
 - **Old coal stations:** CAPEX already recouped + low fuel costs (imported US coal price lower than PP-indexed LTGEC gas price) => dark spread (E-C) ***positive*** in EU
 - **+ ecology: net spreads** (incl. current low spot CO2 price: from 30 to less 10 USD/tCO2 in 2008-2012) changed in favour of coal: until mid-2010 NDS minus NSS was negative and diminishing, since mid-2010 it became positive and is growing => low CO2 price discriminates gas vs coal

European gas market: new post-2009 realities, risks & challenges for Russian gas (3)

- **Institutional** (increasing investment risks within shrinking niche for gas):
 - 3rd EU Energy Package => separates regulation commodities vs capacities gas markets (risk of contractual mismatch for LTGEC)
 - transition to new architecture of EU gas market: from chain of 3 consecutive LTC to regional zones with entry–exit tariffs & virtual hubs (transition risks “learning by doing”)
- **Political** (away from dominant Russian gas supplies where possible):
 - Negative effects of Russia vs Ukraine/Belarus/CA gas crises on supply security (3/2006+19/2009=22 days vs 40 years)
 - EU perceptions of unstable supplies converted into policy actions => legislative acts on diversification of supplies (N-1 rule, 3 suppliers, reverse flows, interconnectors, etc.) => investment decisions & start of their implementation => “no return” point is passed through

Post-2009 Gas World: European challenges for Russian gas – and possible responds

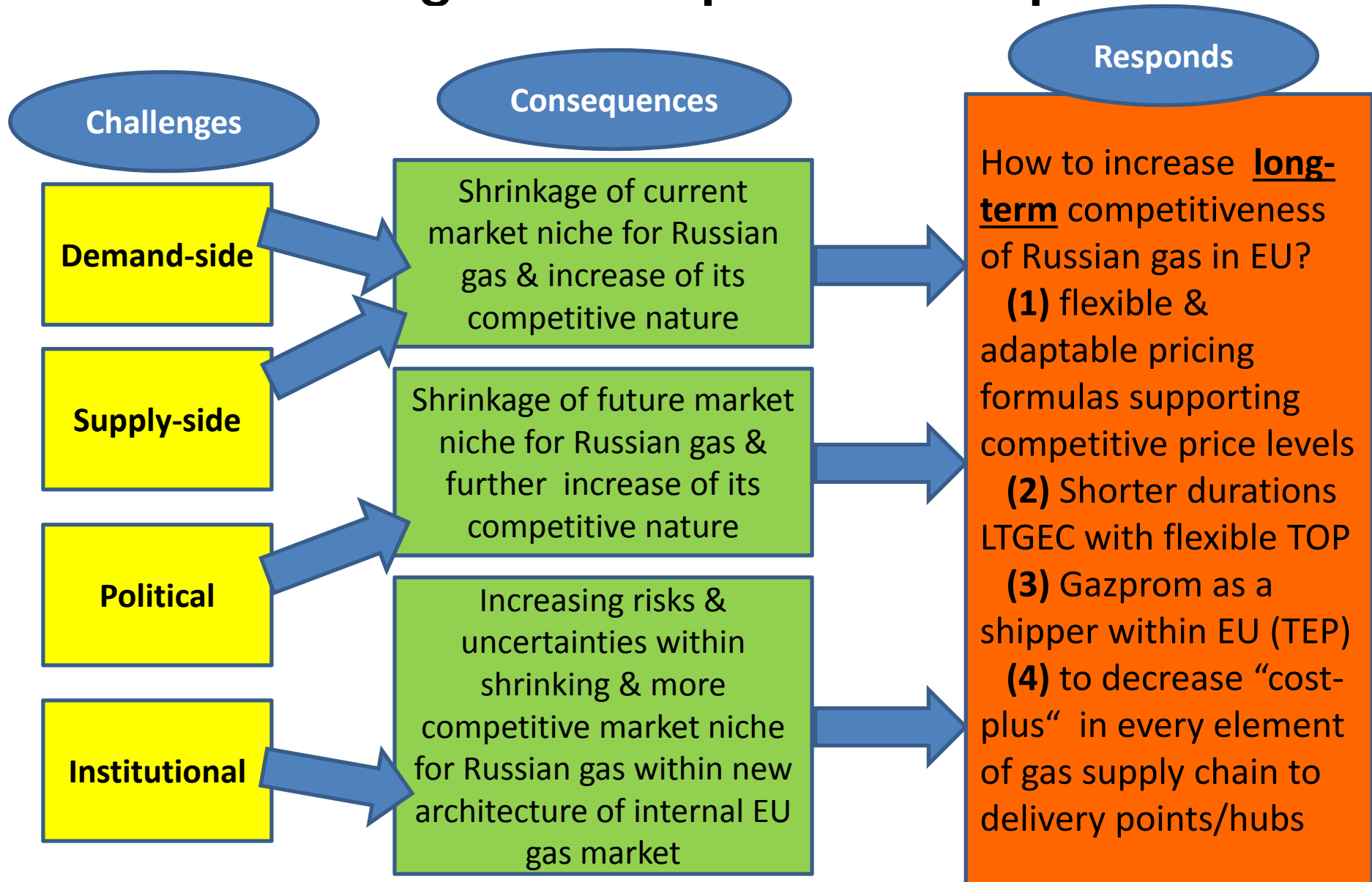


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Proposal on the “hybrid” EU gas market model under GTM (for joint discussion & consideration)

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

More flexible LTGEC (re off-taking of contractual volumes & pricing formulas & price review rules)

+ long-term access to transportation capacity for full duration & volume of LTGEC (open seasons)

+ modified pricing formulas linking gas to its replacement fuels (indexation not only to petroleum products => coal, RES, etc.)

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

Spot contracts (delivery & trading)

+ exchange pricing (futures, gas indexes, forward curves)

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 participants

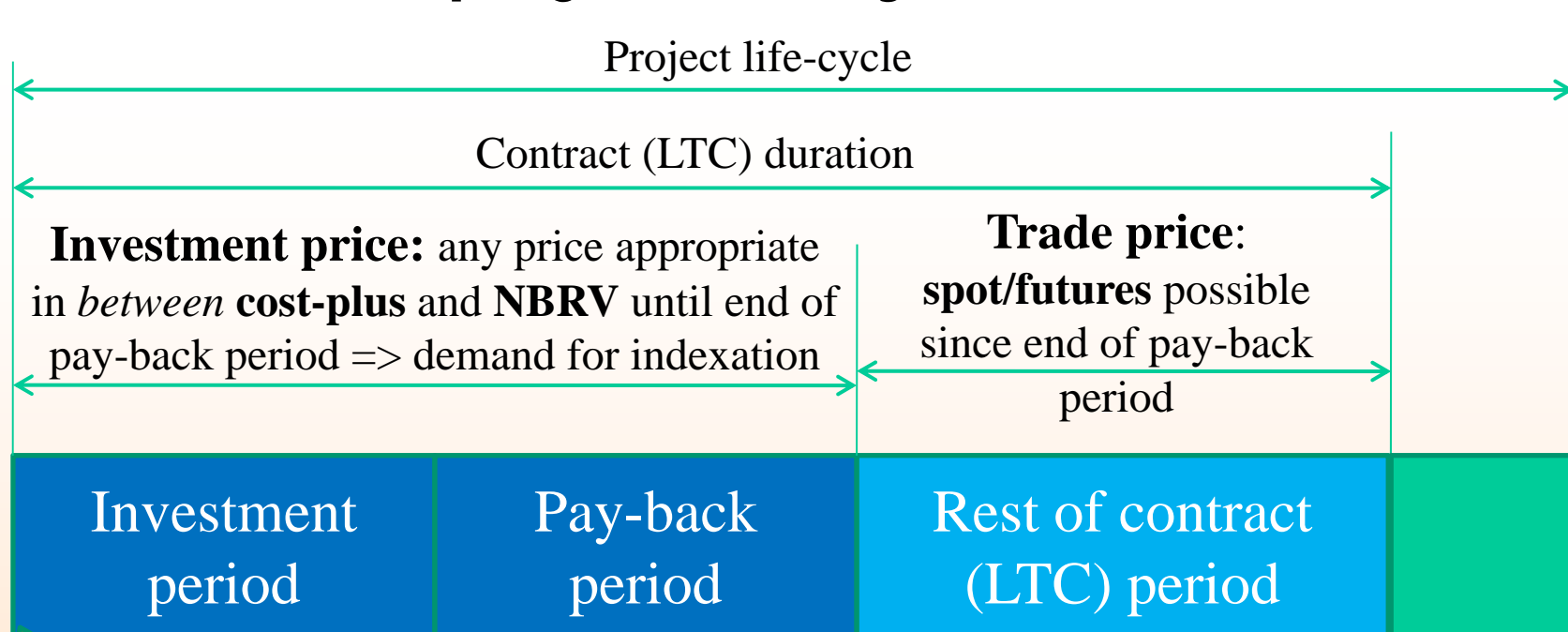
Market stages, pricing mechanisms & contractual structures

Energy market development stage	Physical energy market	Paper energy market
Initial growth => non-competitive market of physical energy, no paper energy market possible	Cost-plus (LTC)	-
Intensive growth => competitive market of physical energy, no paper energy market available	+ Net-back replacement value (LTC)	-
Mature market => competitive markets of both physical & paper energy	+ Spot (OTC)	+ Futures-options (exchange & OTC)

Three major pricing mechanisms in international energy

- **Cost-plus (net-forward):** price linked to cost of energy production & delivery/transportation (incl. ROR) to the consumer/delivery point => utilized at non-competitive markets of physical energy => low benchmark price level acceptable for producer (producer's "fair price") => **lower investment price**
- **(Net-back) replacement value:** price linked (with discount) to price of competing energies at the end-user => utilized at competitive markets of physical energy => upper benchmark price level acceptable for consumer (consumer's "fair price") => **upper investment price**
- **Spot/exchange:** equilibrium supply/demand price at competitive markets of physical (spot/forward) and/or paper (financial derivatives linked to futures contracts) energy => trader's/speculator's "fair price" => **trade price**

Economic preconditions for different pricing mechanisms at different stages of investment project life-cycle



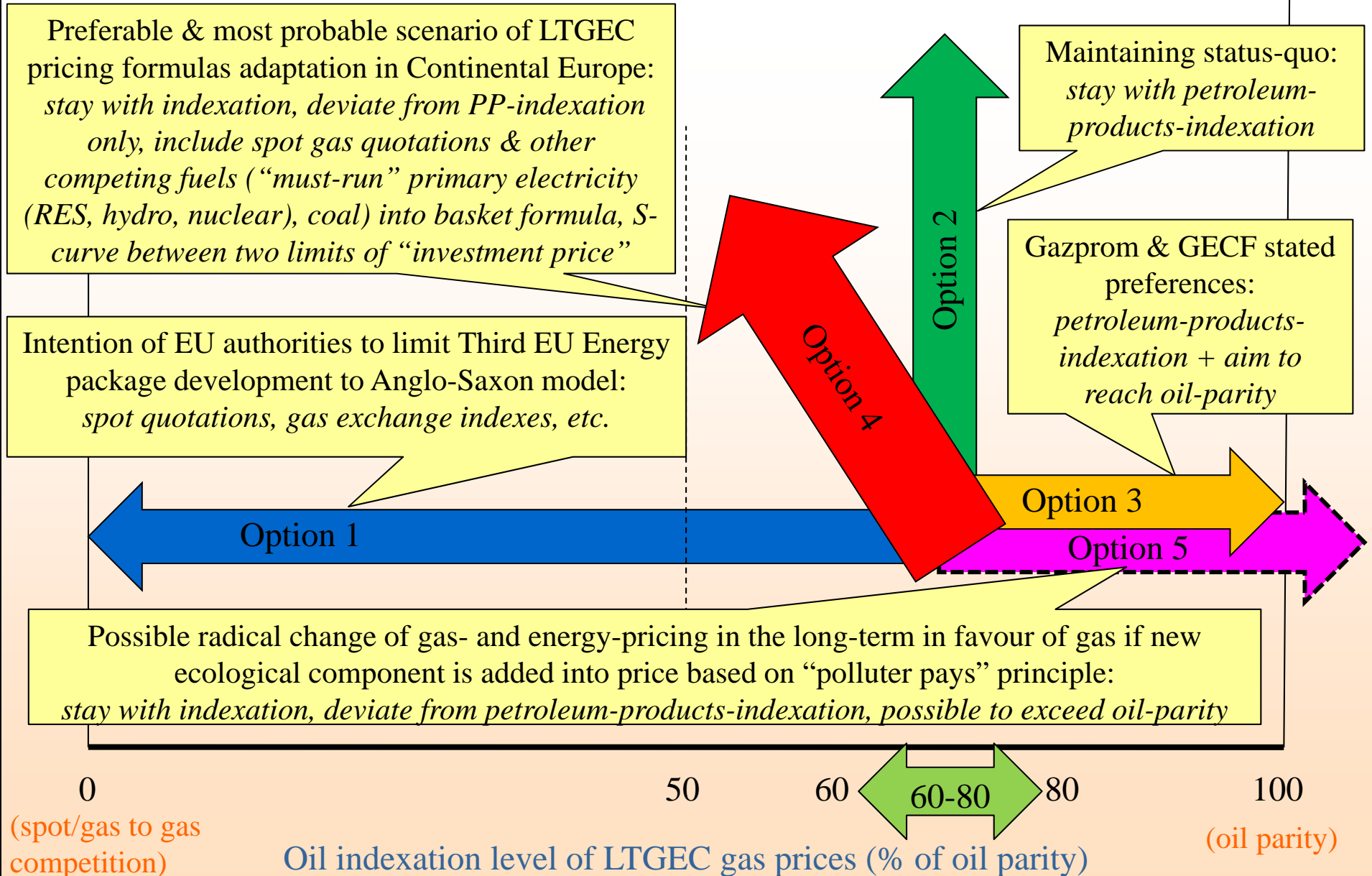
Energy resource enters the market; upfront CAPEX & OPEX assessment incl. risks for acceptable ROR; higher price needed

Energy resource is already at the market; CAPEX recouped; technological possibilities to switch between competing energies in end-use; OPEX determines benchmark price level; lower price needed to stay with acceptable ROR

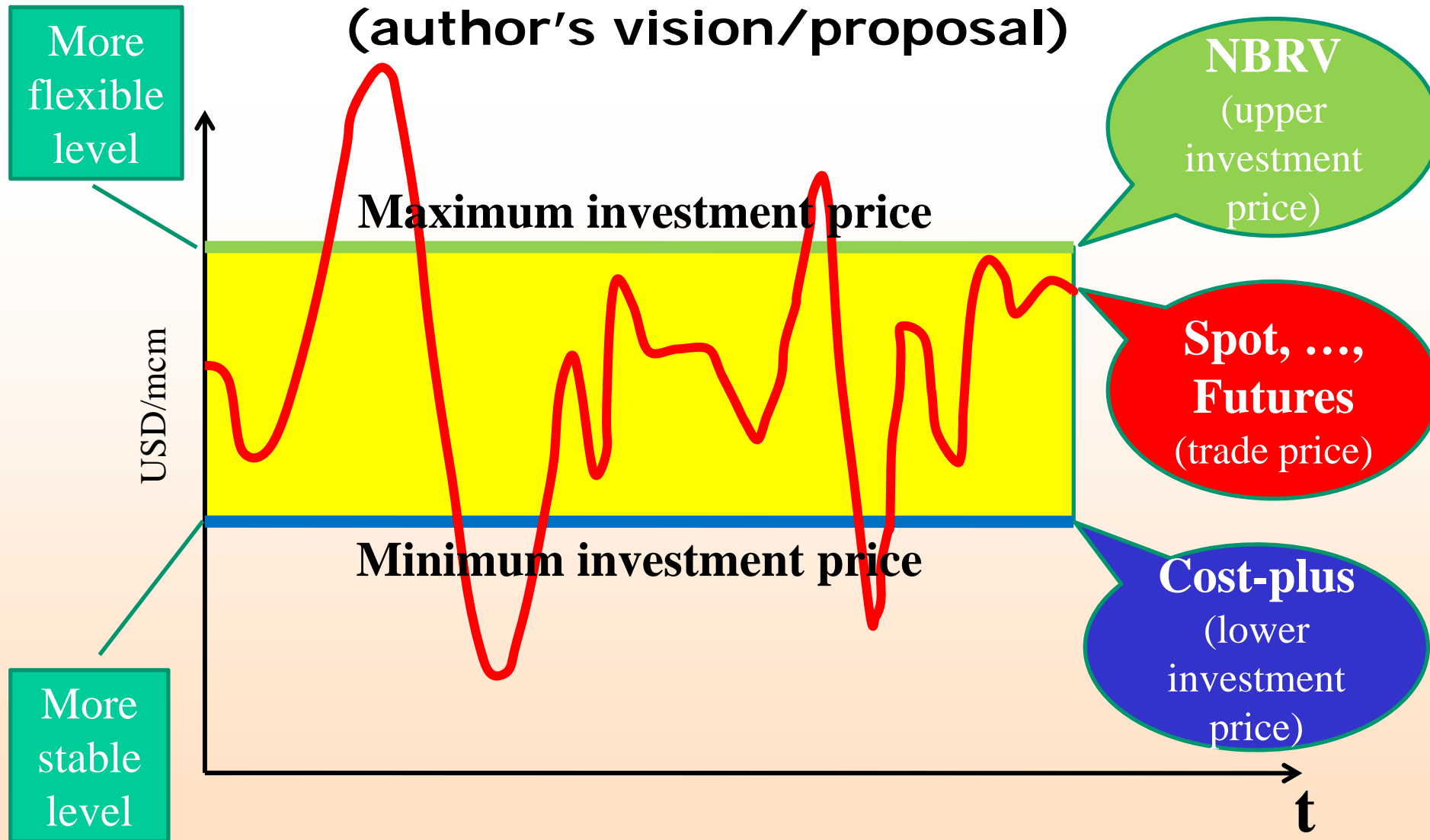
Gas pricing prospects in Europe: between Komlev & Stern?

- **S.Komlev/Gazprom/GECF:** LTGEC to continue dominate + stay with PP-indexation (+ aim to 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”)
- **Any alternative/compromise?**

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)



**Thank you for your
attention!**

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