International gas markets nowadays - and what does it mean for Russian gas in Europe

Prof. Dr. A.Konoplyanik,
Adviser to Director General, Gazprom export LLC;
Professor, Chair "International Oil & Gas Business",
Russian State Gubkin Oil & Gas University

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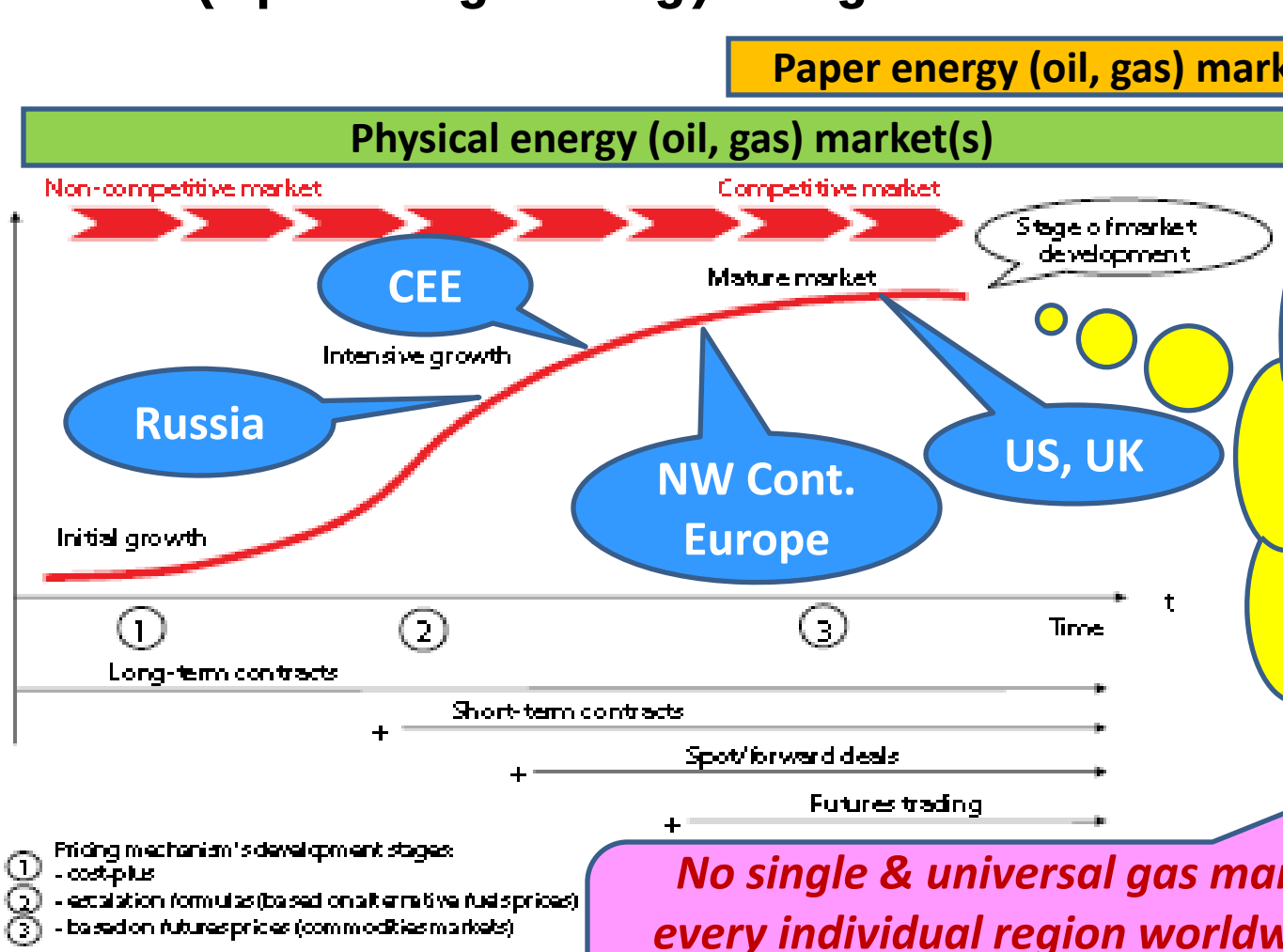
Evolution of oil & gas markets: correlation of development stages, contractual structures, pricing mechanisms on the left (upward-growing) wing of Hubbet's curve (1)

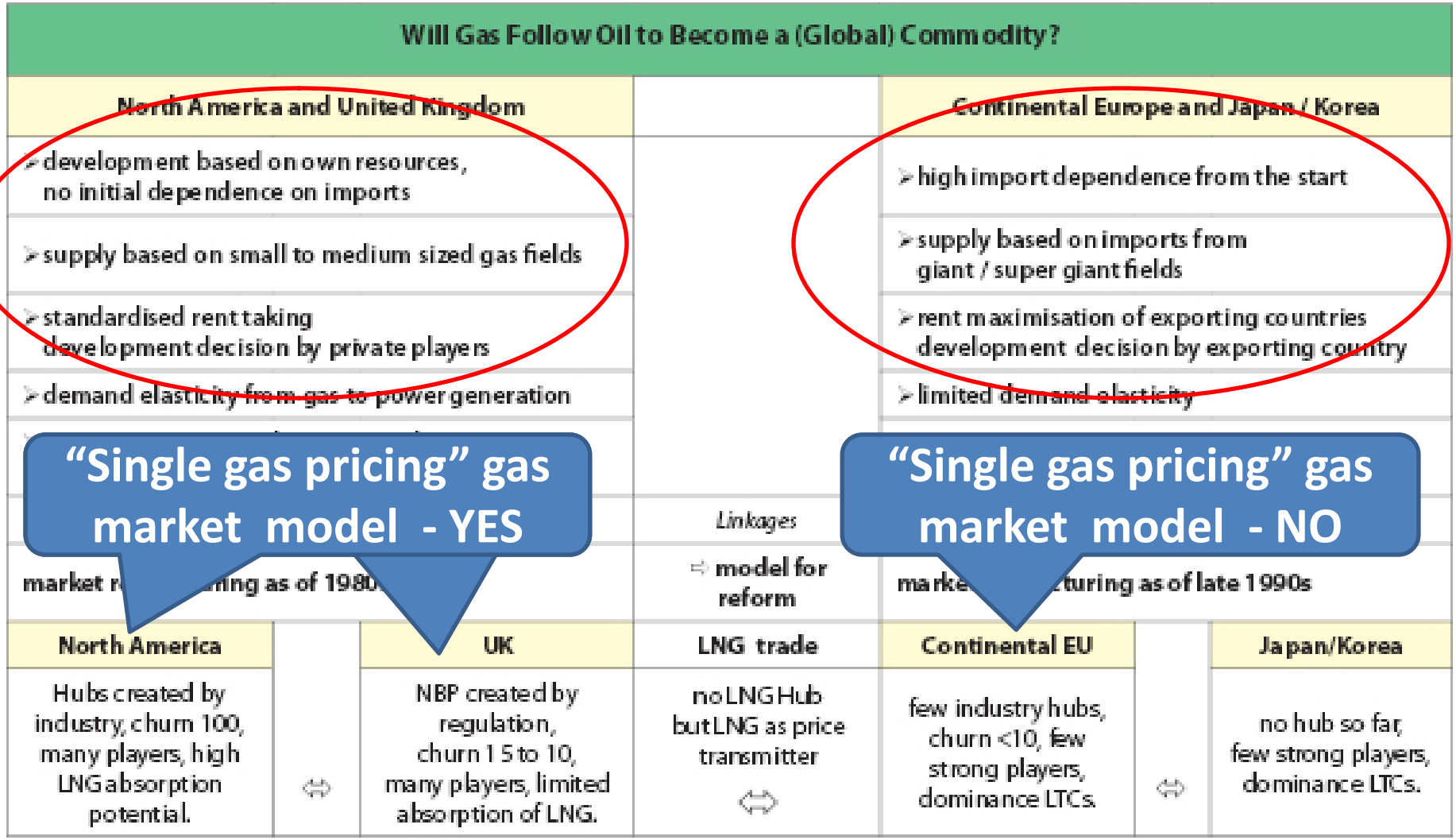


Source: based on Andrei Konoplyanik

Through two investment cycles we will leave within left (upward-growing) wing of Hubbert's O&G curves

***No single & universal gas market model for every individual region worldwide* ("Putting a price on Energy", Energy Charter Secretariat, Brussels, 2007)**

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



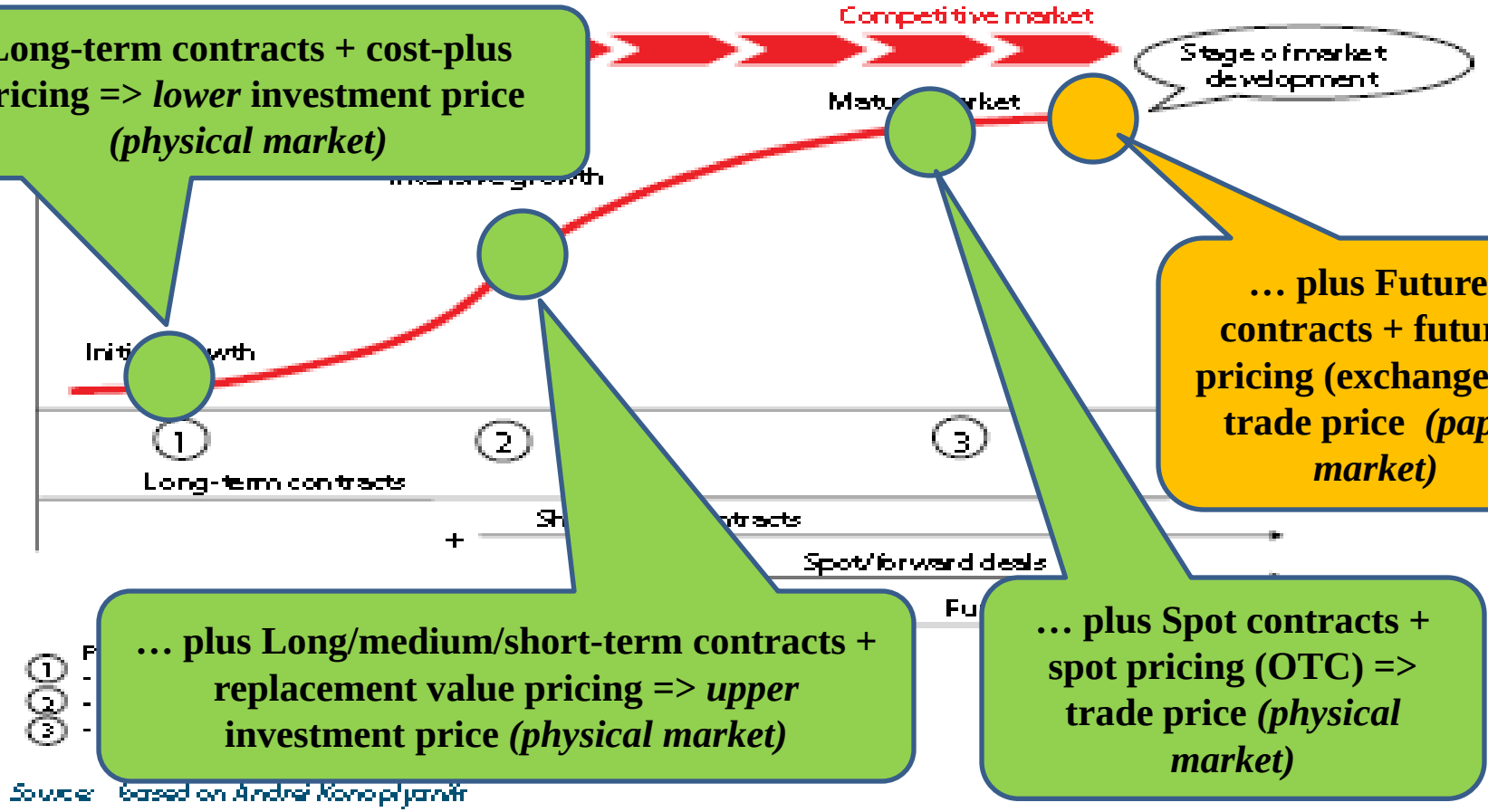
Source: "Putting a Price on Energy: International Pricing Mechanisms for Oil & Gas", Energy Charter Secretariat, 2007

Evolution of oil & gas markets: correlation of development stages, contractual structures, pricing mechanisms on the left (upward-growing) wing of Hubbert's curve (2)

Paper energy (oil, gas) market(s)

Physical energy (oil, gas) market(s)

Long-term contracts + cost-plus pricing => *lower* investment price *(physical market)*



… plus Futures contracts + futures pricing (exchange) => trade price *(paper market)*

… plus Long/medium/short-term contracts + replacement value pricing => *upper* investment price *(physical market)*

… plus Spot contracts + spot pricing (OTC) => trade price *(physical market)*

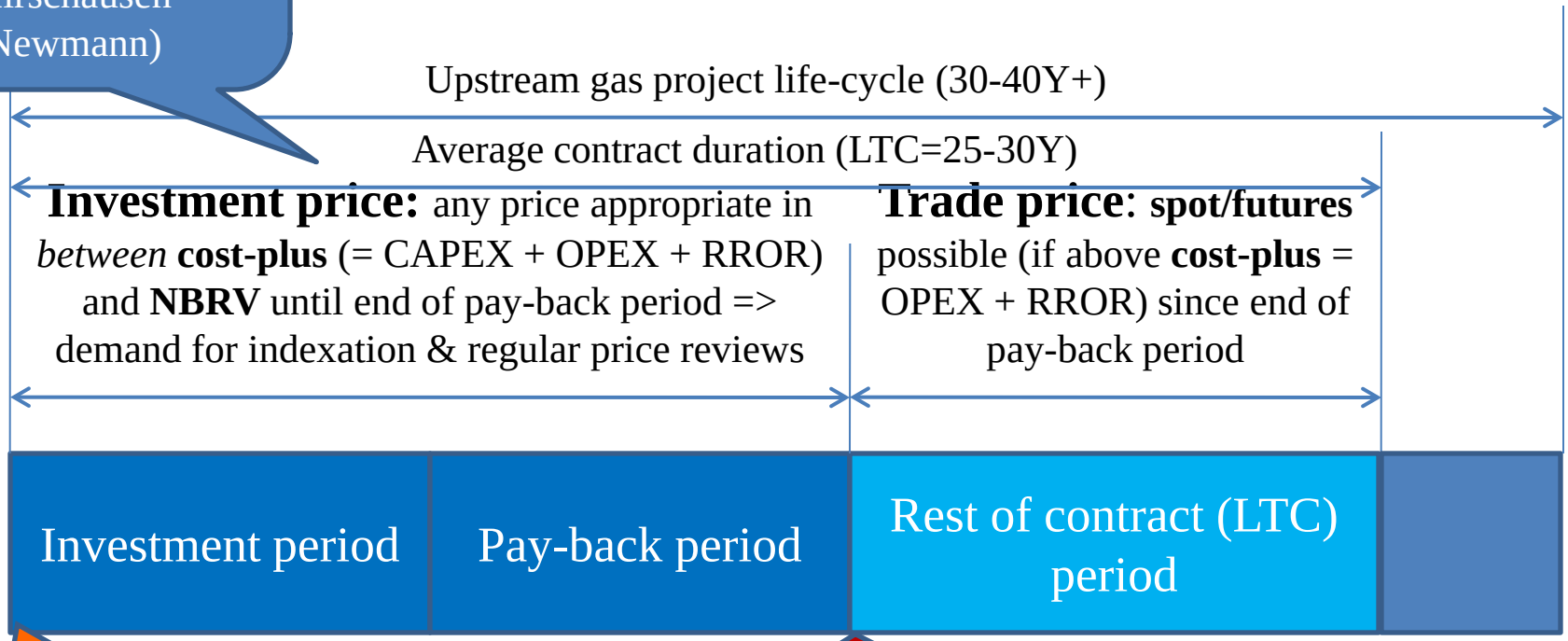
The principle: in addition to – not instead of!!!

Non-renewable energy pricing: legal & economic facets of LTGEC

- Resource-owning state: to maximize its long-term resource rent (rent income) for depletion of non-renewable natural resource => price as high as possible => *competitive* => commodity is just *marketable* => replacement value principle (lowest price among competing fuels & suppliers) =>
- Sovereign right of exporter/resource-owning state to sell gas to export market with highest replacement value (utilize both Ricardian & Hotelling rents) => EU market for USSR/Russia
- Legal basis: UNGA Res.1803 (1962) + ECT Art.18 (1994/98) = (permanent) State sovereignty on natural/energy resources = Governments should use their natural (non-renewable !) resources to the benefit of their population =>
- Economic mechanism: Groningen concept of LTGEC (1962, Nota de Pous) = long-term TOP contract (to pay-back upstream CAPEX) + pricing formula (price indexation) linked to gas replacement values (prices of replacing fuels within competitive energy market) + net-back to delivery point + regular price review + destination clauses => to market gas within evolving market structure & competitive pricing environment to the mutual benefit of both producer & consumer => at maximum (upper) investment price

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

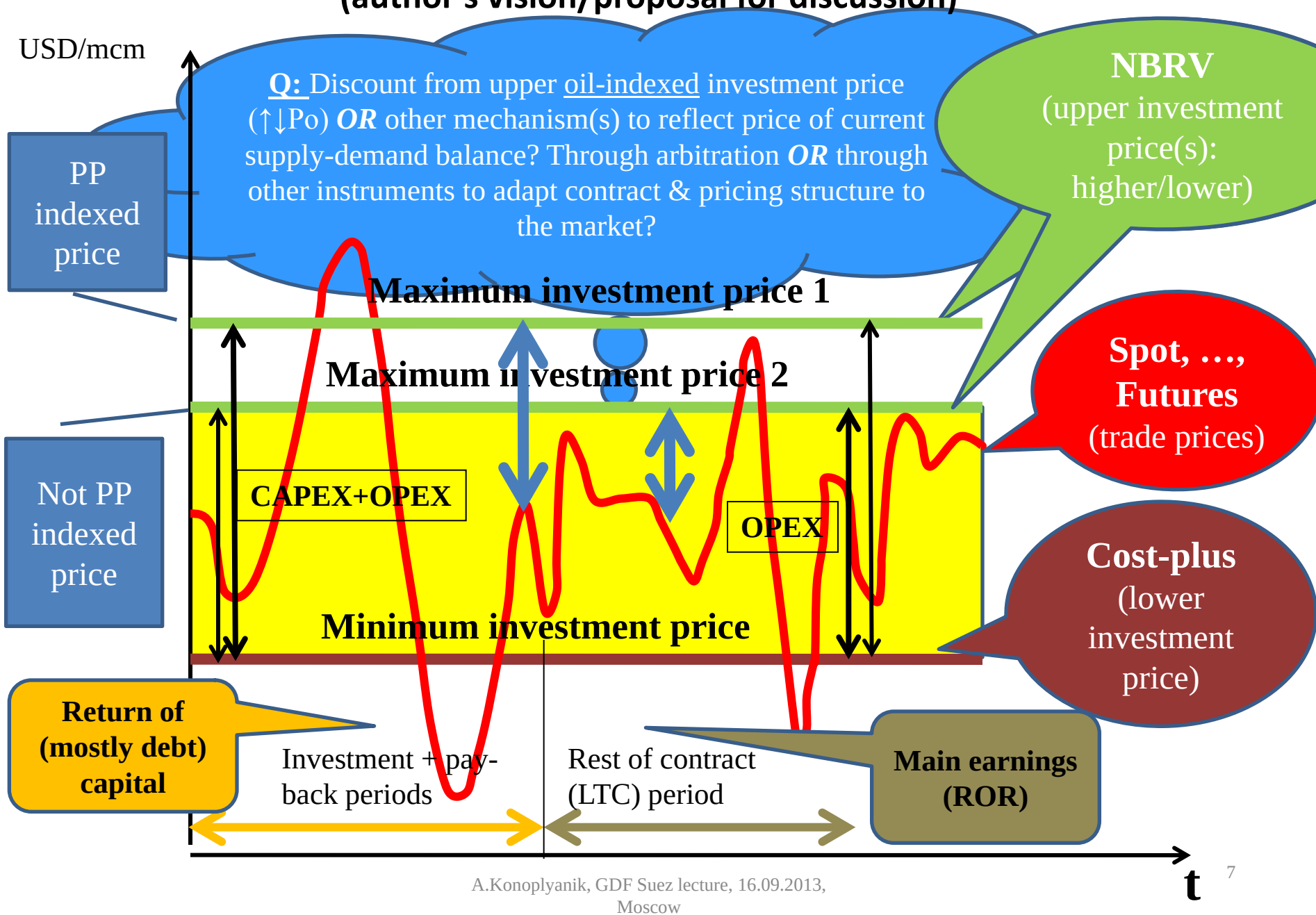
EU import LTC signed (pipeline + LNG): 1980 (30Y) => 2004 (15Y), (Hirschausen-Newmann)



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

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



Maximum investment price: historical & new levels for EU

- Historical = Max investment price 1 (higher) = PP-indexed:
  - High oil prices, but:
    - dependent on oil derivatives market,
    - can be manipulated upward & downward by global financial speculators
- New = Max investment price 2 (lower) = not PP-indexed:
  - Spot gas => EU oversupply (whether short-term or long-term?)
  - Coal => US shale gas effect + low CO2 market (for how long?)
  - RES => must-run + subsidies (long-run policy, but corr. w WTO?)
  - Electricity => influence of gas prices (spark spread)
- If market behaviour unclear (what level of upper investment price?), flexible contractual structure is needed to diminish risks & uncertainties to the tolerable level?
- Competitive niche for LTC (incl. with PP-indexation) within two-segment EU gas market structure depends on their adaptability & flexibility… => ???
- What arguments if favour & against oil-indexed LTC (that will influence on their market niche within term segment)?

Oil-indexation : arguments “in favour” and “against”

“In favour”	“Against”
1. Contract parties can not manipulate 2. Worked out in practice for 50 years => convenient for users (they got used to it) 3. Narrows corridor of price fluctuations, increases price predictability, minimizes investment risks 4. Convenient (well developed) tool for financial institutions => hedging => softens debt financing risks 5. High oil prices good for project financiers => shorter pay-back periods 6. Professional, homogenous, stable and narrow circle of wholesale market participants => transparent and understandable pricing mechanism (for professionals) 7. Proposed alternative (spot/futures) is not better today: gas hubs - low liquidity (EU) => high possibility for manipulations	1. Liquid fuel ceased to be a replacement fuel for gas in industry, electricity generation, but just a reserve (back-up) fuel 2. Conservation without changes does not correspond to evolution of “replacement value-based” mechanism within LTGEC (based on inter-fuel competition) => increasing gap between contractual practice & real life 3. Withhold gas price below oil parity (price of oil in energy equivalent) 4. Links gas price to highly liquid, but manipulated and unpredictable futures oil/derivatives market => multiple risks for RF budget earnings 5. RF Gov’t aim to diminish oil dependency => oil-indexation increases/holds oil-dependency 6. Confidentiality, thus closed and non-transparent for the public 7. Post-2009: higher contractual prices compared to spot transactions

Area of continued debate => How to find a compromise (volume flexibility X price flexibility)? Whether it can be found? What can it possibly be alike? No marginal view to win!!!

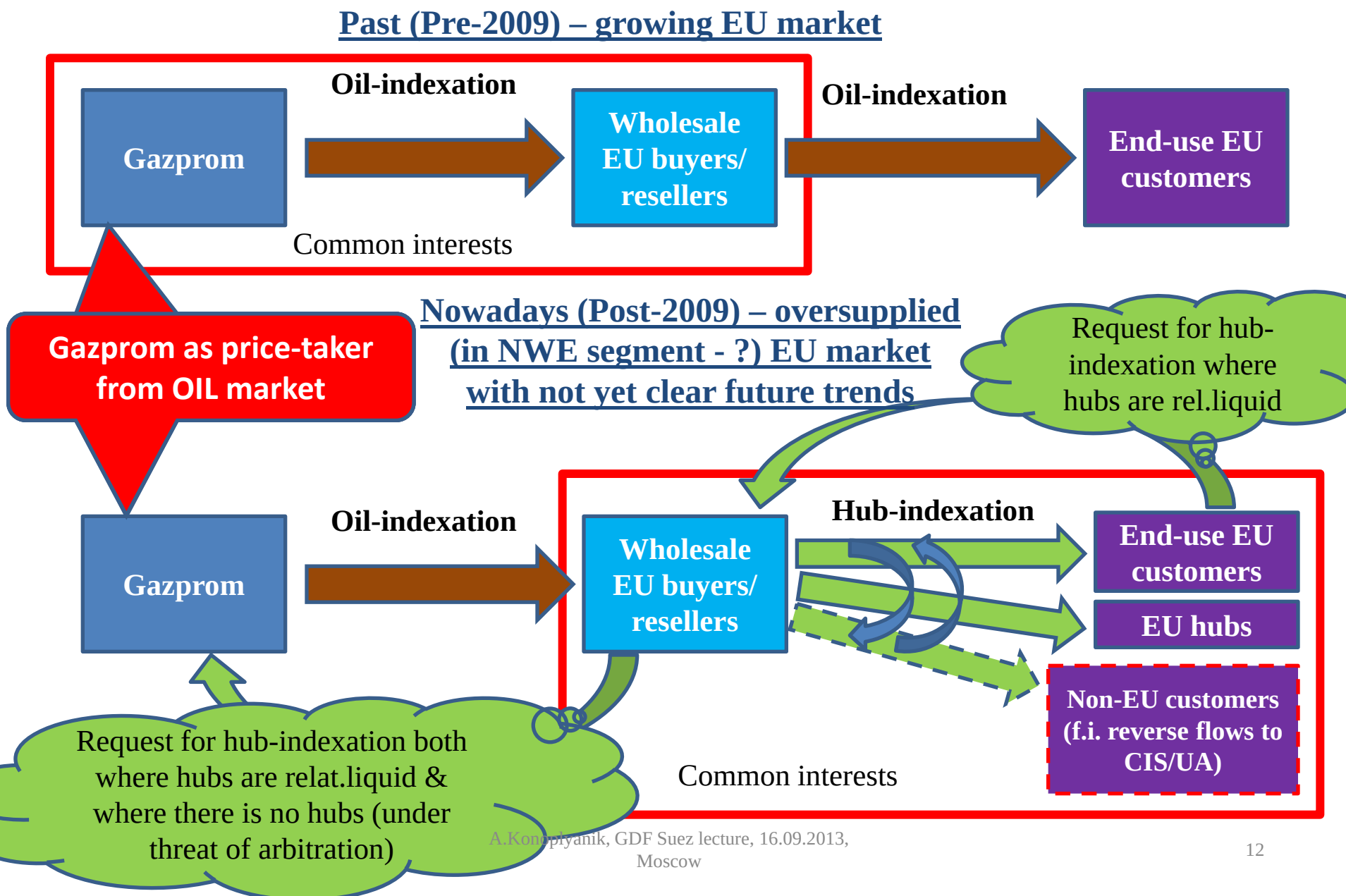
From single to multiple contractual structure (1)

- More diversified contractual mix as a trend:
  - Within two-segment EU **physical** gas market (term & spot) – each with its own mechanisms for providing volume flexibility
  - With multiplicity of pricing mechanisms - to provide competitiveness of supplies within given market area
- One of key issues: how to balance volume flexibility vs pricing flexibility (price attractiveness) within more sophisticated contractual mix =>
  - to stay within corridor of attractiveness for all group of old & new buyers => not necessarily for wholesale buyers only (current customers), but both to wholesale & (new) end-users =>
  - potential benefits of the Third EU Energy Package for all group of sellers (in addition to proclaimed benefits for buyers)

From single to multiple contractual structure (2)

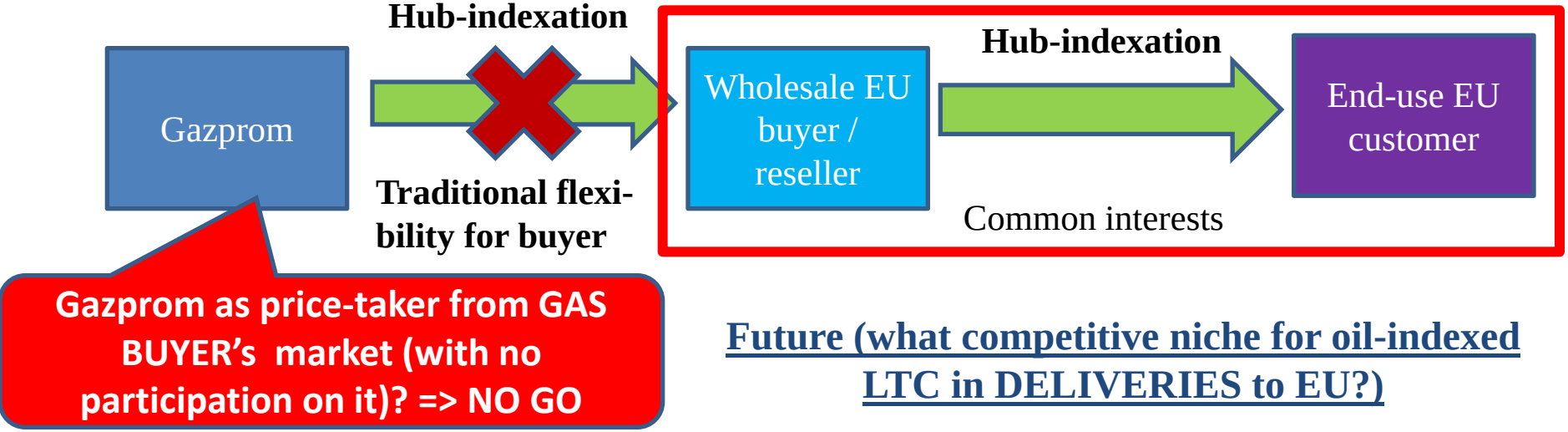
- Competitive niche of LTC depends on its comparative attractiveness:
  - Volumes flexibility: contractual (LTC renominations + make-up gas as virtual storage) vs hub-based (NC CAM restricts renominations + yet limited UGS) => whether higher volumes flexibility deserves higher price?
  - Attractive/competitive price levels: if no competitive supplies – foreign producer/exporter has legal (sovereign) right to utilize maximum resource rent unless it depress demand => balance of short/long-term sovereign (!) interests
  - It's for market players to decide based on their evaluation of comparative volume & price combined effect
- No **forced** (administrative levers) transition away from oil-indexation towards hub-indexation in LTC (***commodities market***) through EU ***capacities market*** instruments (NC CAM, etc.)
- No way of staying with current supply scheme (with wholesale intermediaries) & moving to hub-indexation within existing LTC

Evolution of gas value chain & pricing mechanism of Russian gas to EU (1)

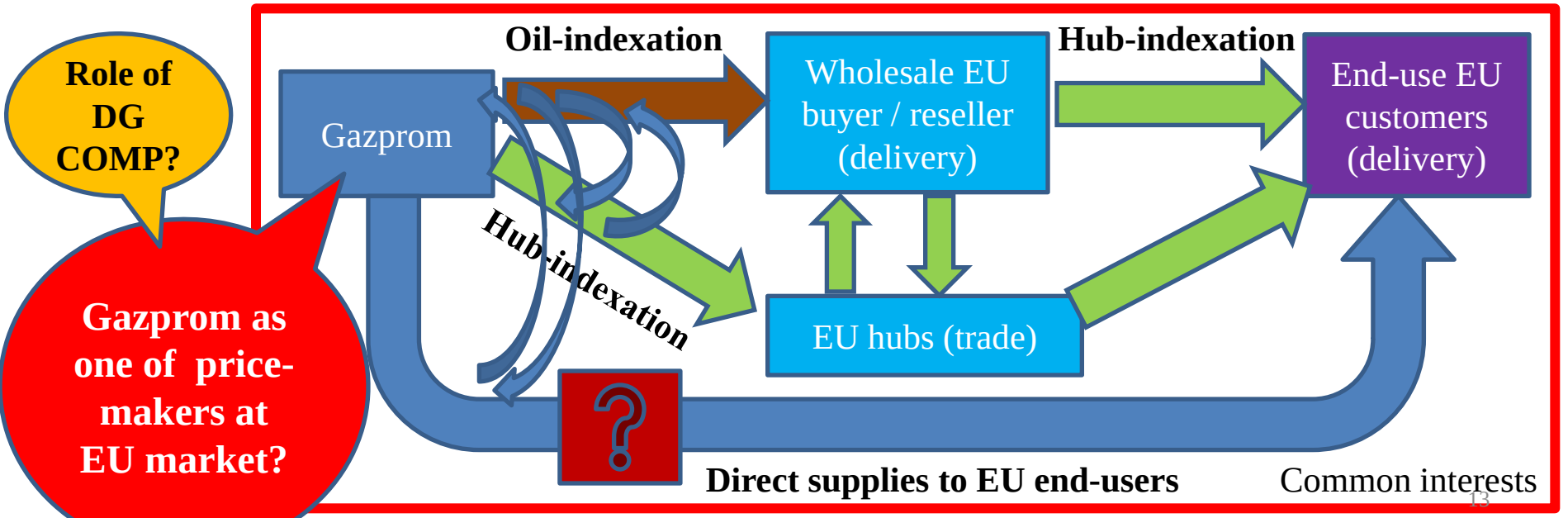


Evolution of gas value chain & pricing mechanism of Russian gas to EU (2)

Future ("NO GO" contractual scheme under any (?) supply-demand scenario)



Future (what competitive niche for oil-indexed LTC in DELIVERIES to EU?)



Thank you for your attention

A.Konoplyanik@gazpromexport.com
andrey@konoplyanik.ru
www.konoplyanik.ru