Long-term investments in the gas industry: the role of oil indexation (background to the debate)

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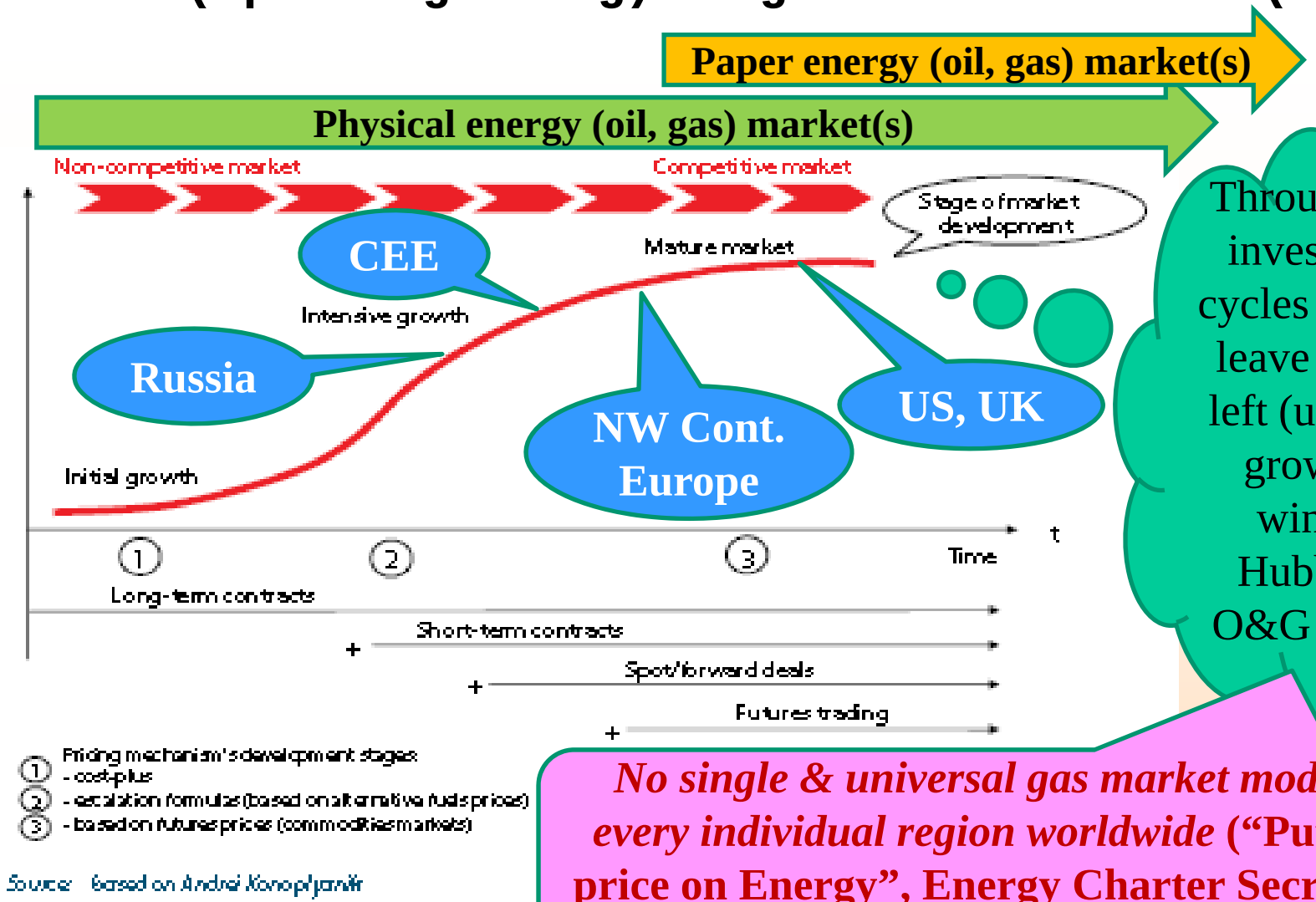
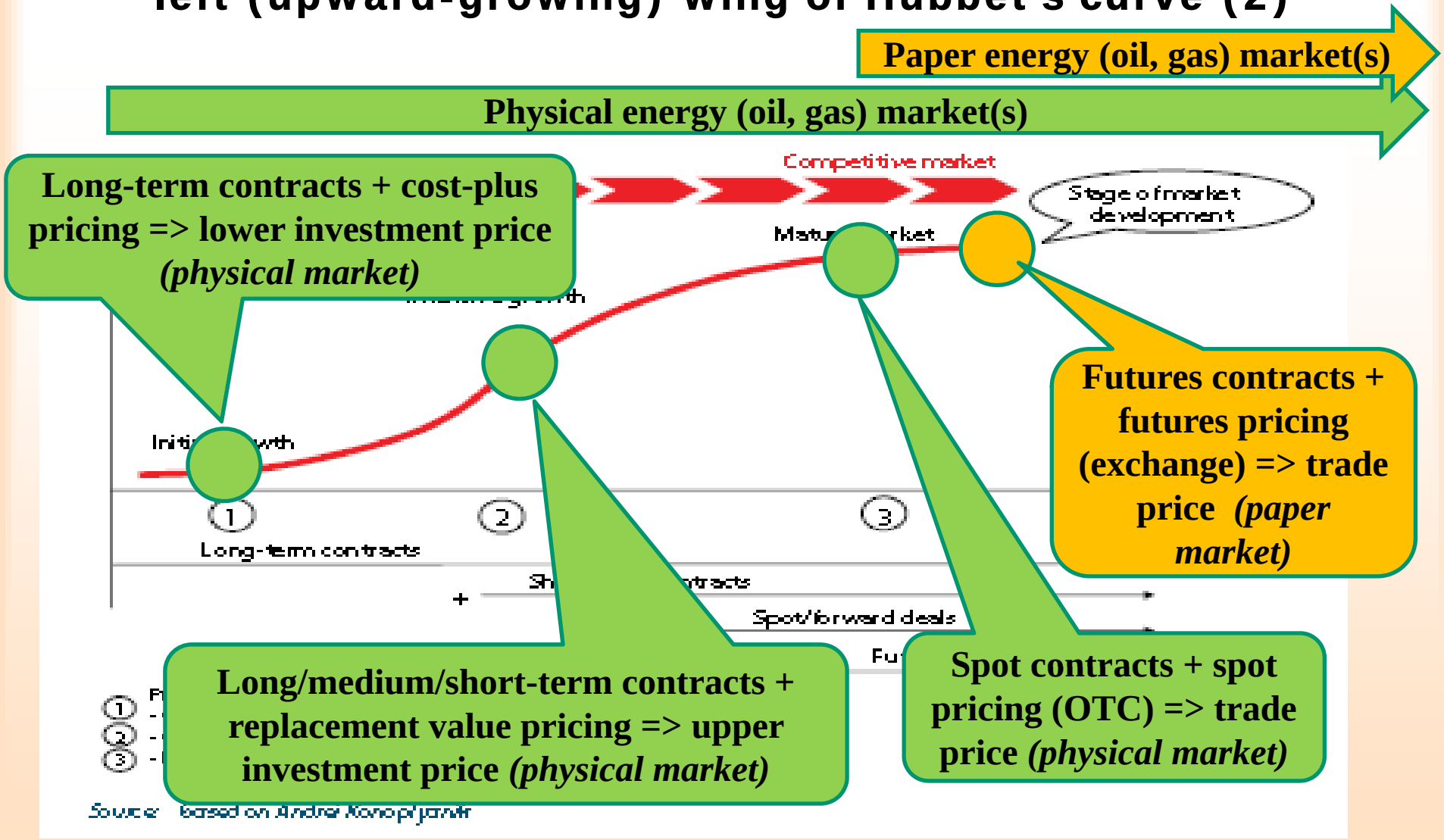
Evolution of oil & gas markets: correlation of development stages, contractual structures, pricing mechanisms on the left (upward-growing) wing of Hubbet's curve (1)



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)**

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



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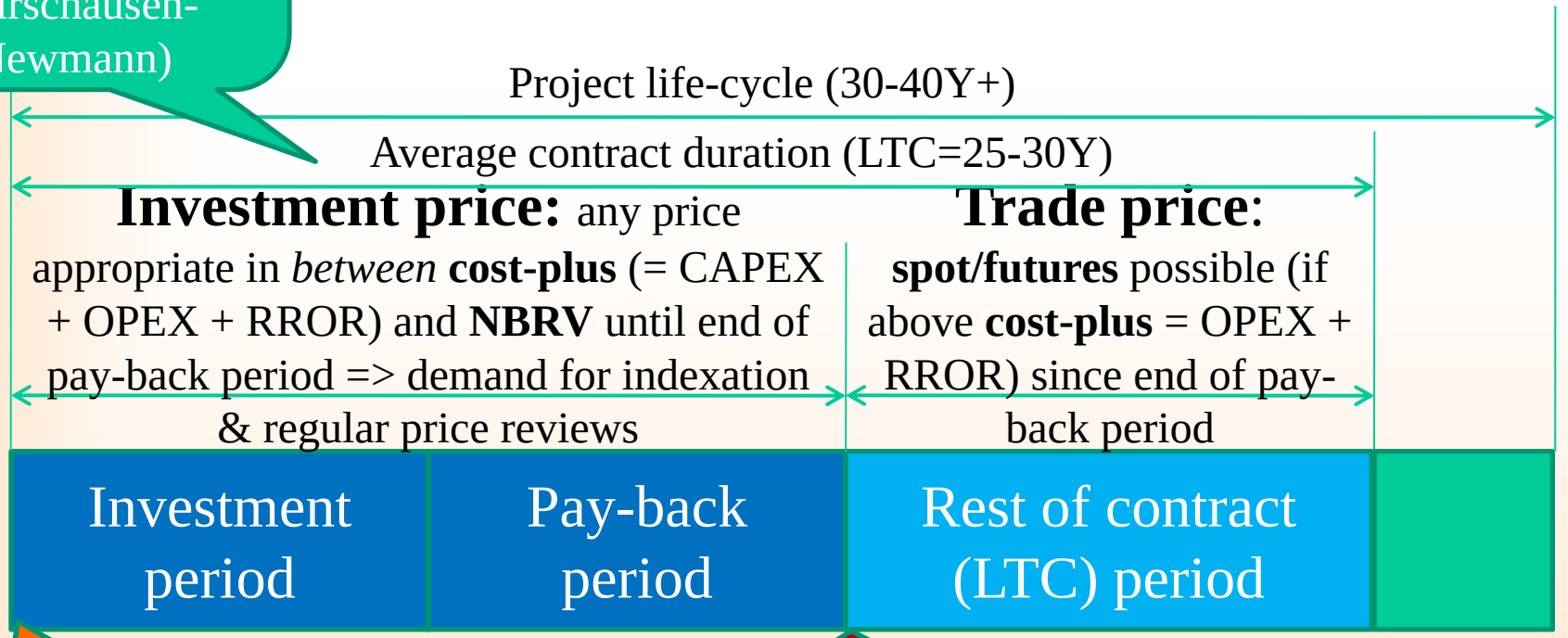
Three major pricing mechanisms in international energy

- **Cost-plus (net-forward):** price linked to cost of energy production & delivery/transportation (incl. RROR) to the consumer/delivery point => utilized initially at non-competitive markets of physical energy ("political" price if utilized at competitive markets instead of NBRV) => low benchmark price level acceptable for producer & achievable by consumer => **lower investment price** *(project financing)*
- **(Net-back) replacement value:** price linked (with discount) to price of competing energies in the end-use => utilized at competitive markets of physical energy => upper benchmark price level achievable by producer & lowest possible price available for (acceptable by) consumer => **upper investment price** *('Note de Pous'/Groningen LTGEC model, 1962 + Res.1803 UNGA, 1962 + Art.18 ECT, 1994-1998)*
- **Spot/exchange:** equilibrium supply/demand price at competitive markets of physical (spot/forward) and/or paper (financial derivatives linked to futures contracts) energy acceptable for trader/speculator => **trade price**

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

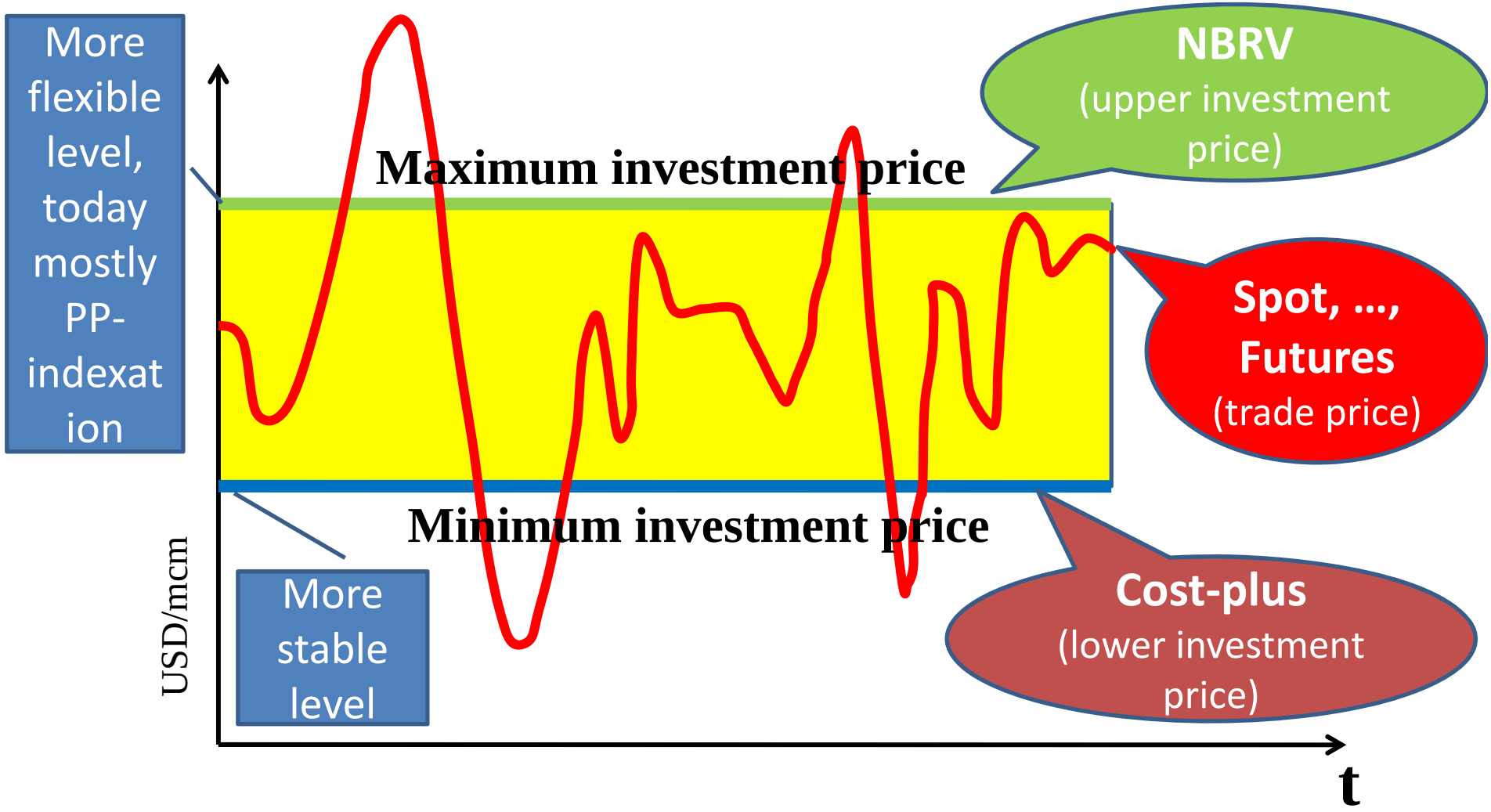
EU import LTC signed (pipeline + LNG): 1980 (30Y) => 2004 (15Y), (Hirschausen-Newmann)



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

What is the area for reaching compromise on price between producer & consumer in the competitive market? (S-curve approach for indexation in Continental Europe within contractual pricing - author's vision / proposal for discussion)



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

- Legal basis: UNGA Res.1803 (1962) + ECT Art.18 (1994/98) = (permanent) State sovereignty on natural/energy resources = Governments should use their natural resources to the benefit of their population =>
- Resource-owning state: to maximize its long-term resource rent (rent income) for depletion of non-renewable natural resource => price as high as possible (commodity is just marketable) => replacement value principle=> Sovereign right of exporter/resource-owning state to sell gas to export market with highest replacement value (USSR/Russia=>EU)
- 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

Groningen (Dutch) & Russian / Soviet LTGEC Models: Differences & Similarities

	Groningen LTGEC model (since 1962)	Russian / Soviet LTGEC model (since 1968)	Russian / Soviet specifics (why Russian /Soviet LTGEC model differs from Groningen LTGEC model)
Contract duration	Long-term	Longer-term	Larger West Siberian fields & unit CAPEX, longer transportation distances & pay-back periods
Delivery point	Upstream to end-user	Upstream to end-user - on EU-15 border; one delivery point served for few final consumers	Historically: on political border between East & West
Pricing	Replacement value (RFO + LFO) + net-back to delivery point + regular price review + minimum pay obligation (take-and/or-pay)		West: both for export & domestic sales; East: only for export sales
Protection from price arbitrage	Destination clauses		More important since in one delivery point - few contracts with much more differing export prices destined for different markets
Role of transit	None (minimal)	Significant – especially after dissolution of COMECON & USSR & after EU expansion	New sovereign states appeared upstream to historical delivery points + new rules discriminating transit

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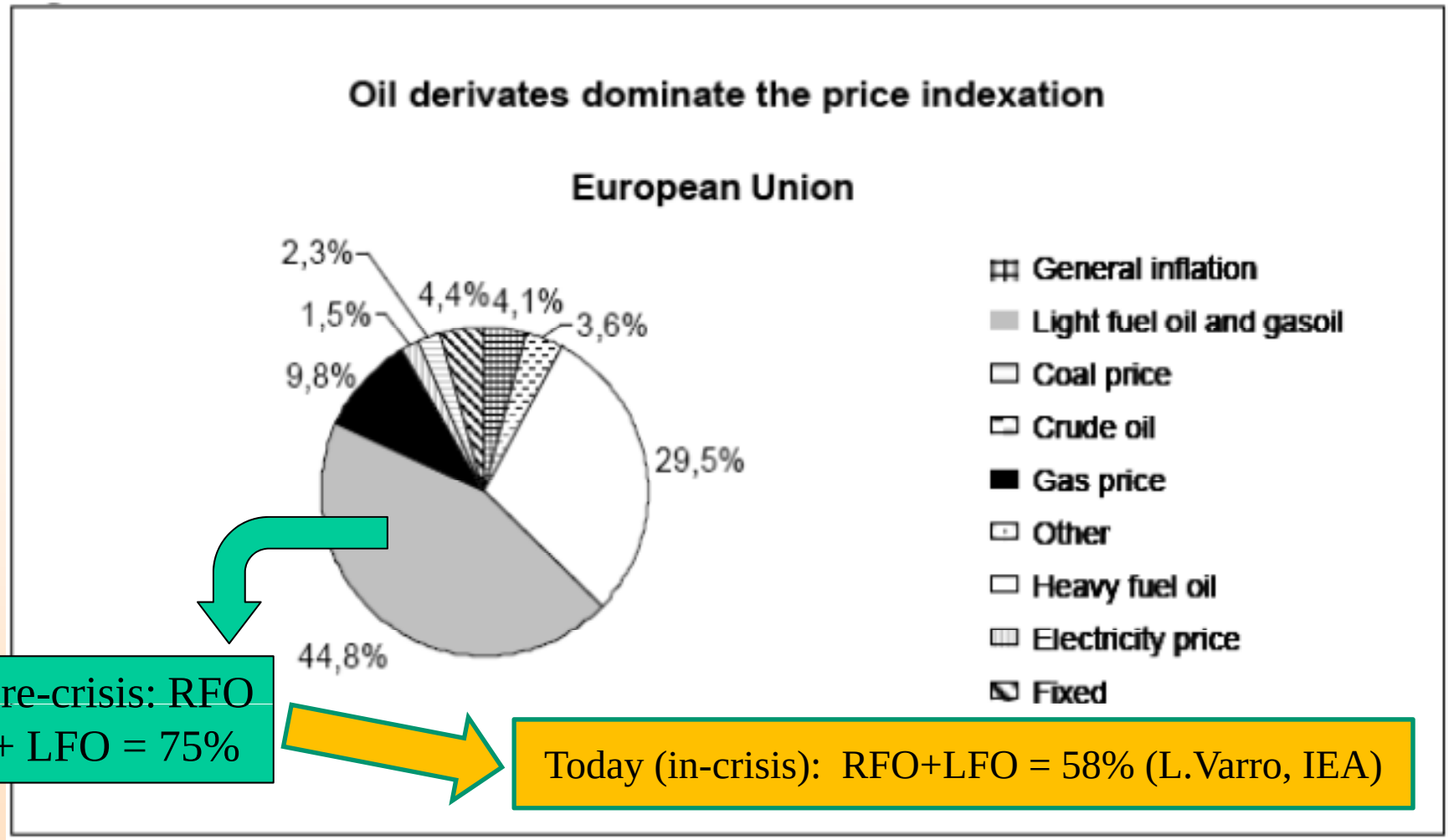
Replacement value concept: possible ingredients in gas price indexation formulaes

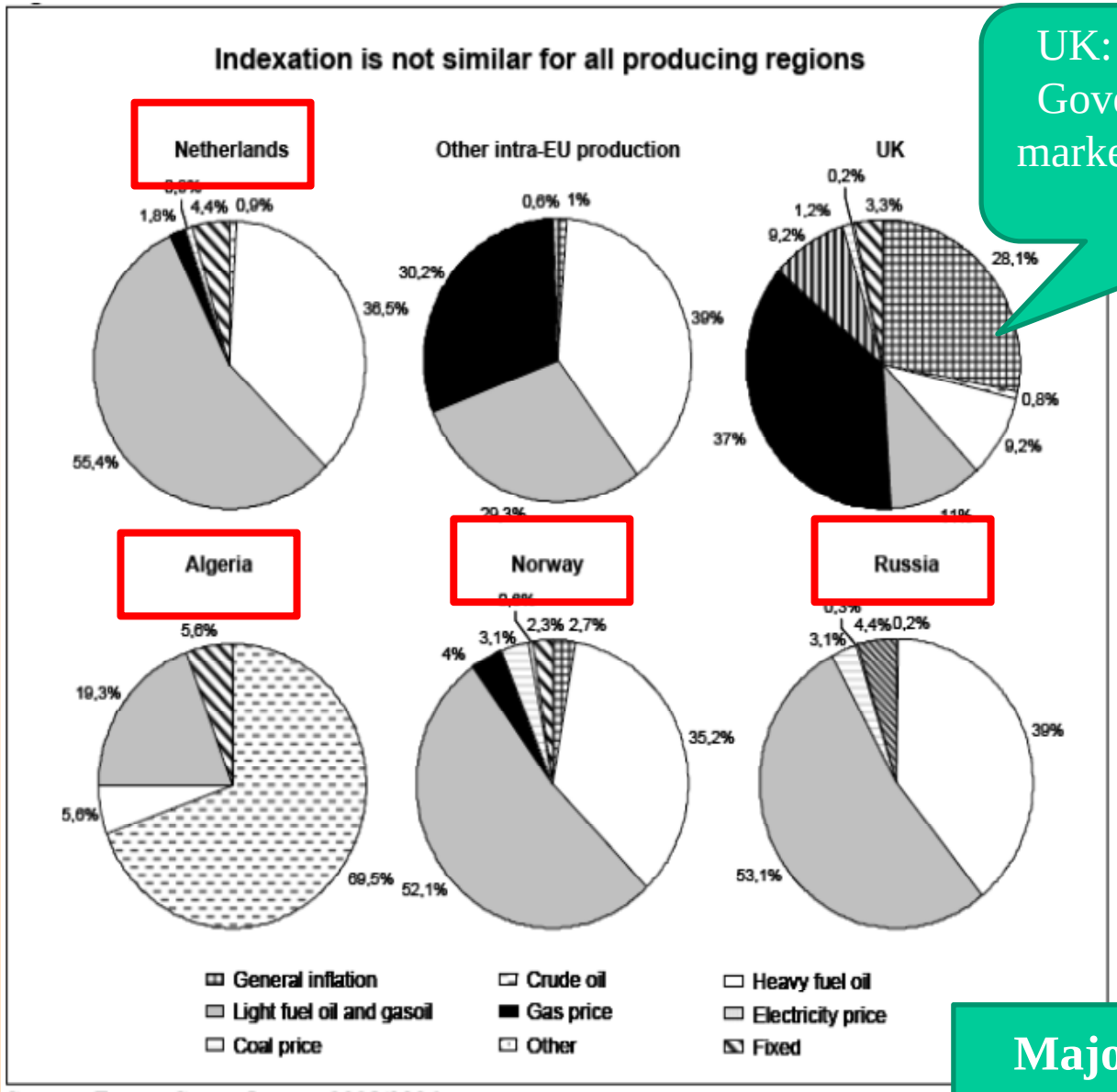
Energy & non-energy	Electricity generation	Industry	Households
Crude oil prices	Yes / history (Japan, few other importers)	Yes / history (Japan, few other importers)	No
PP prices	Yes (RFO)	Yes (RFO)	Yes (LFO)
Electricity prices	Yes (primary / NRES)	Yes	Yes
Coal prices	Yes	Yes	Yes (minor – ecology)
Gas prices	Yes (spot / futures)	Yes (spot / futures)	Yes (spot / futures)
Inflation	Yes	Yes	Yes

Price indexation structure in the EU



Source: Energy Sector Inquiry 2005/2006

LTGEC in / to EU: Mostly oil / PP indexation by Producers



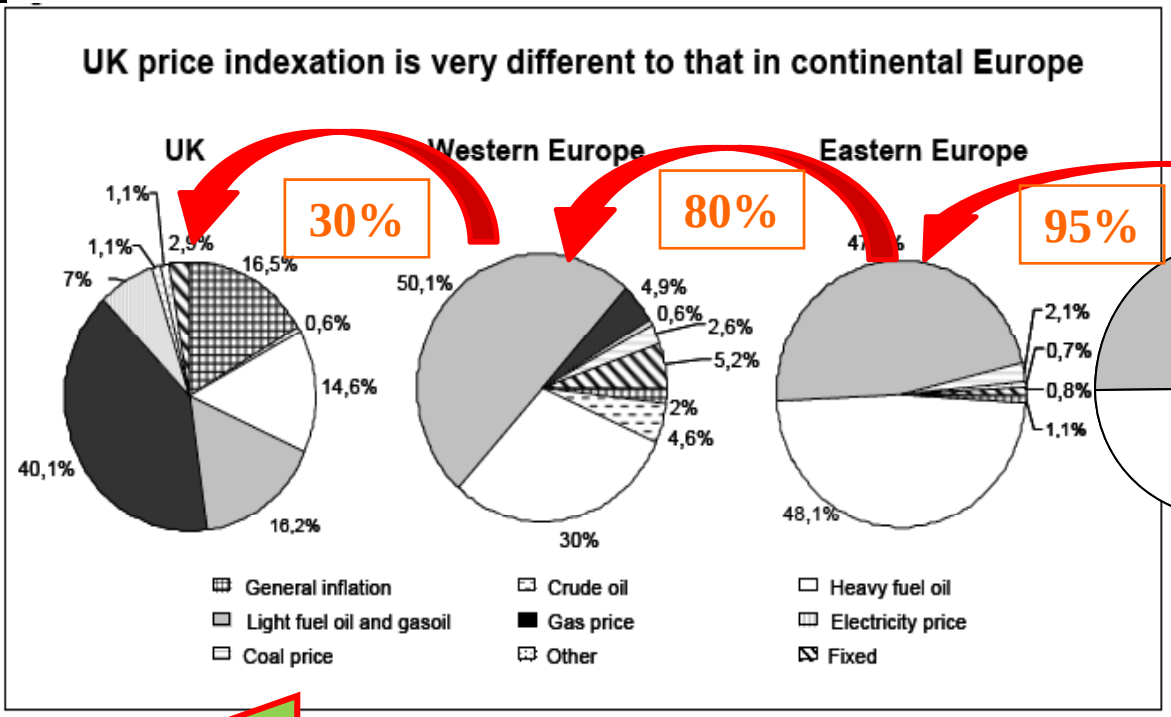
Source: Energy Sector Inquiry 2005/2006

UK: special case => result of Government's prohibition to market liquids if associated gas not fully utilized

Pre-crisis:
Netherlands,
Norway, Russia:
HFO = 35-39%; diesel & gasoil = 52-55%;
Sum-total HFO+ Diesel & Gasoil:
Netherlands = 92%,
Norway = 87%,
Russia = 92%

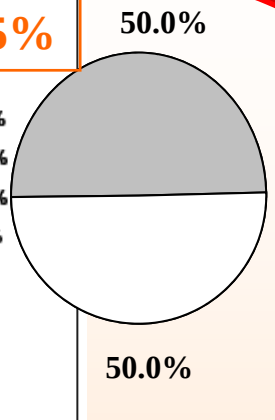
Major gas exporters to the EU: mostly oil/PP indexation

LTGEC in Europe: Indexation by Region - Historical Evolution from Less to More "Liberalized" Markets

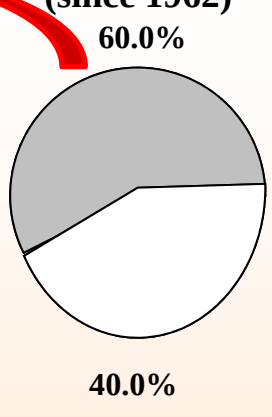


Source: Energy S... ...ine 2005/2006

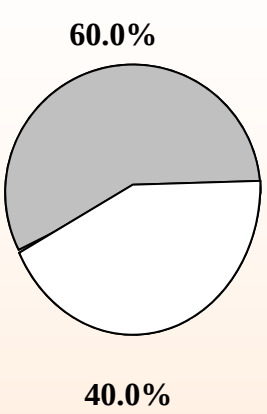
Russia-Ukraine LTGEC (2009-2019)



Basic Groningen LTGEC model (since 1962)



China gas price reform (2 provinces) (2012+)



PP indexation = 100%

Evolution of LTGEC pricing formula structure: **from more simple to more complicated**

NB: Russia-Ukraine 2009 LTGEC structure rationale: more practical (understandable & sustainable) to start with less sophisticated pricing formula => similar to basic Groningen formula
China gas pricing reform – same approach (to basic Groningen formula)?
Further development (most likely): towards EE-type => WE-type => UK-type price indexation => further deviation from oil parity?

A.Konoplyanik, Budapest, 20.03.2013

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

“In favour”	“Against”
1. Worked out in practice for 50 years => convenient for users 2. Narrows corridor of price fluctuations, increases price predictability, minimizes investment risks 3. Convenient tool for financial institutions => hedging => provides debt financing 4. Transparent and understandable pricing mechanism (at least for professionals) 5. Professional, homogenous, stable and narrow circle of market participants 6. Proposed alternative (spot/futures) is not better: 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 (oil derivatives) market 5. Confidentiality, thus closed and non-transparent for the public 6. Currently: higher contractual prices compared to spot transactions

What market niche for PP/oil-indexation?

- PP/oil-indexation = just a case (though dominant) of indexation as a general pricing principle
- Indexation = pricing mechanism within (long)term contracts, the latter considered as investment tool rather than just trade instrument
- “LTC + indexation” support competitiveness of upfront capital-intensive investment (highest in gas) decisions & prove their project (debt) financing creditability for financial community
- Market niche for PP/oil-indexation – to be determined by market players within increasing competitive choices within term segment of two-segment contractual structure of physical gas market in EU

Thank you for your attention!

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