"Gas pricing: further commoditization vs. soft adaptation of indexation"

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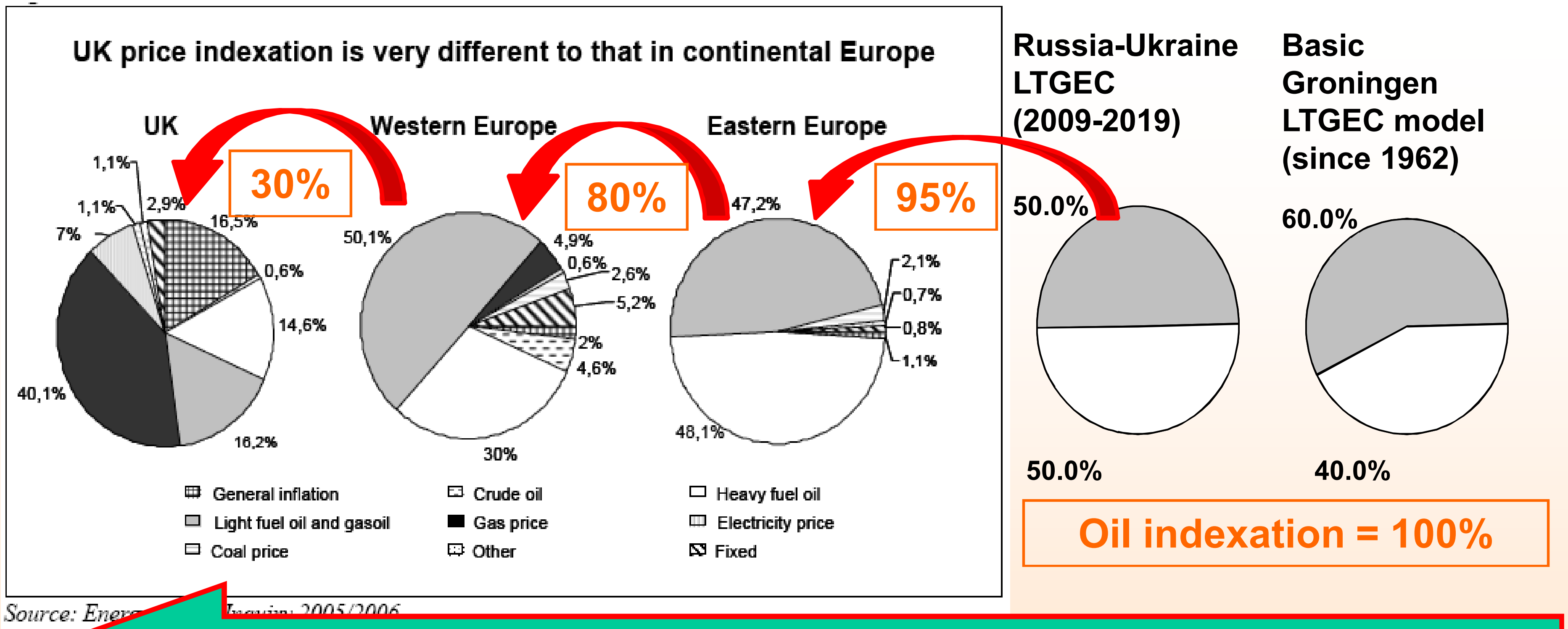
Presentation at the Second Meeting of the Global Commodities Forum,
Palais des Nations, UNCTAD, Geneva, 31 January - 01 February 2011

Gas pricing (Europe)

- Prior to 1960-ies: cost-plus
- 1962: net-back replacement value (to maximize long-term resource rent – Netherlands)
- 1962-2009/10: spread-over of Groningen-type LTGEC with mostly oil-indexation through broader energy Europe
- Why "Oil-Indexation"?: "Indexation" = mechanism of softening price fluctuations; "oil" = key replacement fuel
- Oil-indexation in the1960-ies:
  - RFO (electricity generation) & LFO (households) are really key replacement fuels to gas (RFO from Middle-East oil has earlier squeezed out domestic European/German coal from electricity generation due to competitive replacement value RFO pricing),
  - Oil price is low and stable, so RFO & LFO,
  - Oil-indexation is a mechanism of softening potential price volatility of key replacement fuels => fully corresponds to replacement value philosophy at that time => easy to implement
- Oil-indexation nowadays:
  - RFO & LFO are not the key replacement fuels anymore,
  - Oil price is high & volatile,
  - Oil-indexation is softening fluctuations of oil prices, but the nature of volatile oil prices (commoditization of oil market) still in place => the gap between "oil-indexation" and "replacement value" philosophy is widening, BUT oil-indexation easy to implement
- Two counter processes:
  - Commoditization (Anglo-Saxon model) – risks & volatility increases, => this stipulates
  - Development of financial instruments to mitigate these growing risks => (illogical vicious circle)

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



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

Further development (most likely): towards EE-type => WE-type => UK-type price indexation => away from oil parity?

Liquidity of European gas hubs (churn ratio)

	2007	2008	2009
United Kingdom: National Balancing Point (**NBP**)	13.5	14.4	14.5
Belgium: Zeebrugge (**ZEE**)	5.1	5.0	5.0
Austria: Central European Gas Hub (**CEGH**)	2.6	2.9	3.0
Netherlands: Title Transfer Facility (**TTF**)	3.7	3.2	3.0
Italy: Punto di Scambio Virtuale (**PSV**)	1.7	2.0	2.1
Germany: NetConnect Germany (**NCG**, EGT prior 2009)	1.6	1.8	2.1
Germany: GASPOOL (**BEB**)	-	-	2.2
France: Point d'Echange de Gaz (**PEG**)	-	-	1.2

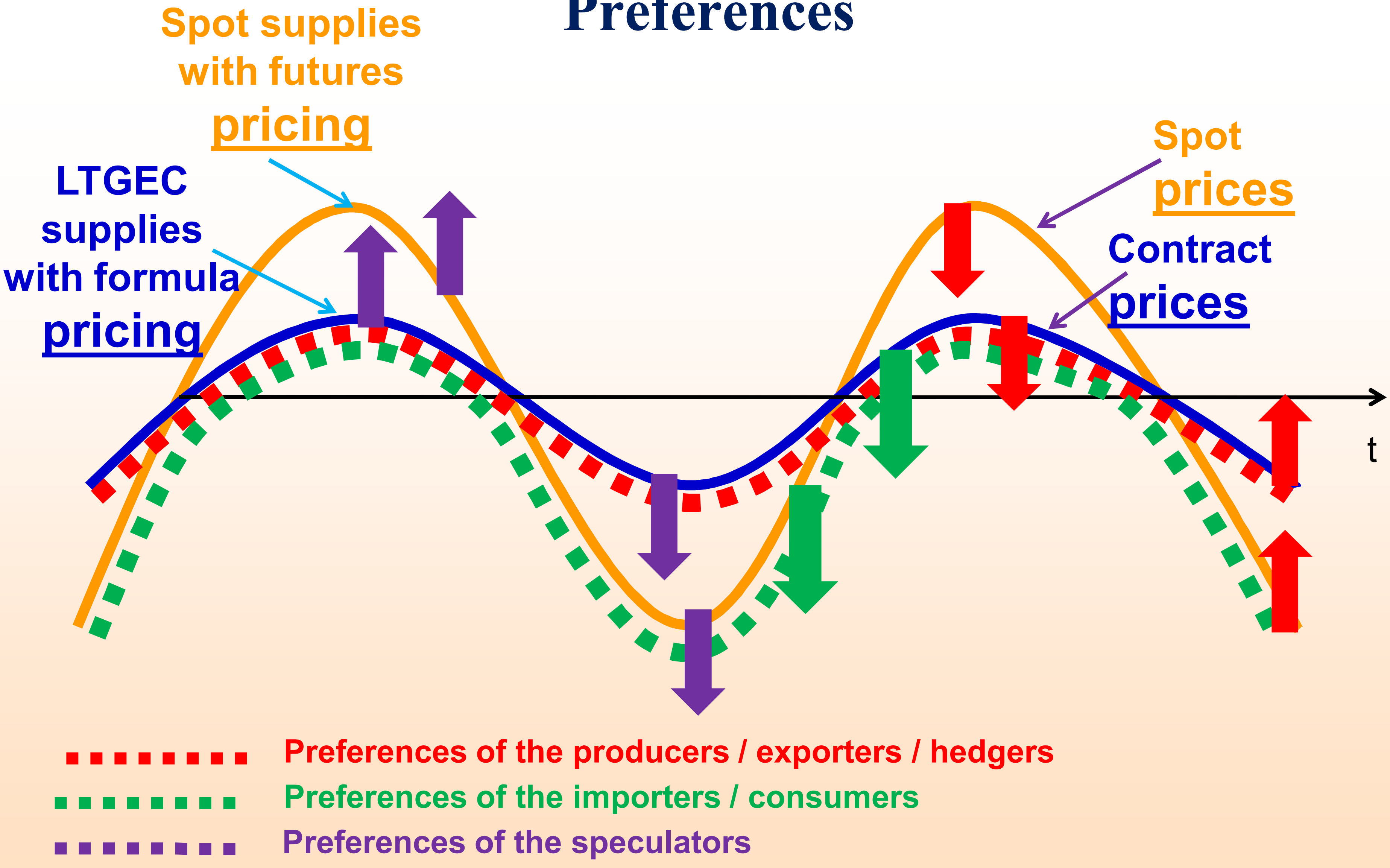
For comparison:

USA (oil): NYMEX (WTI) (Feb.2010)	**1680-2240**
UK (oil): ICE (Brent) (Feb.2010)	**2014**
USA (gas): NYMEX Henry Hub (av.2009)	**377**
Break-even churn level for liquid marketplace	**15**

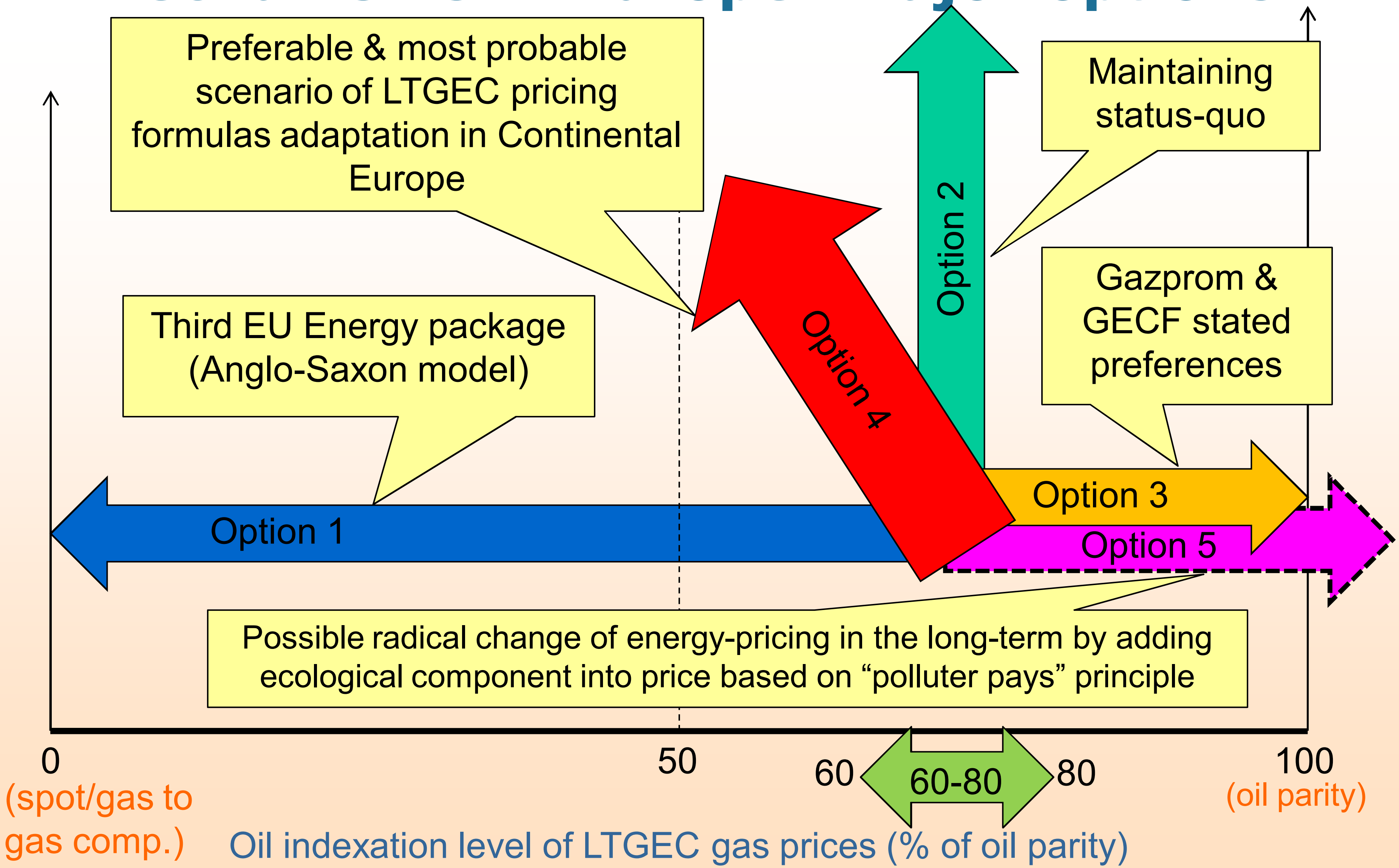
Churn is the commonly used parameter for measuring liquidity level of marketplaces; defined as the ratio of traded volumes to physical gas deliveries from the marketplace after trades

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

Producers, Consumers & Speculators Price/Pricing Preferences



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



Thank you for your attention

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