

UK-Continent Market Integration

EPRG Winter Research Seminar
University of Cambridge, 12th December 2008

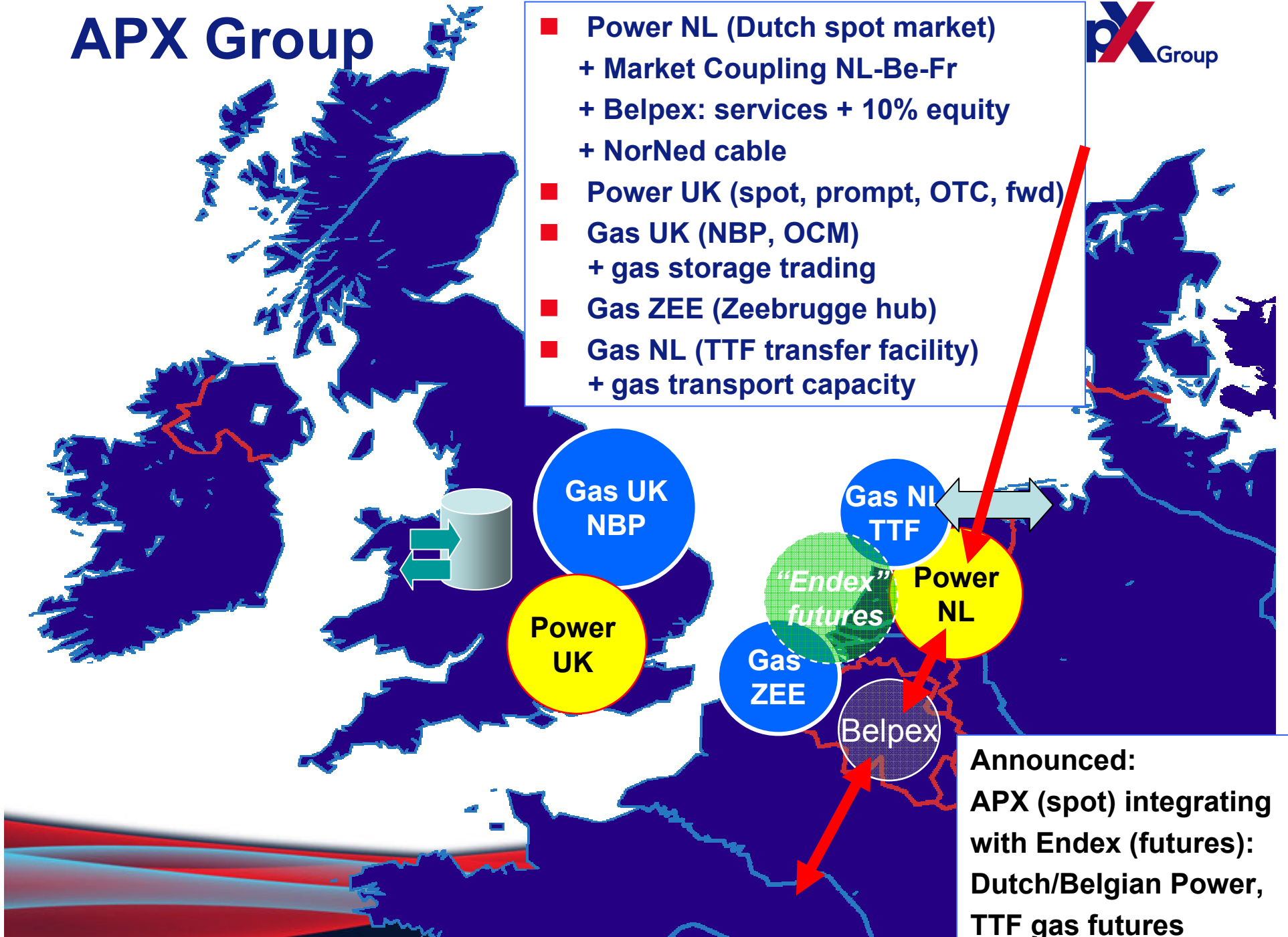
Martin Thomas, Operations Director, APX



APX Group

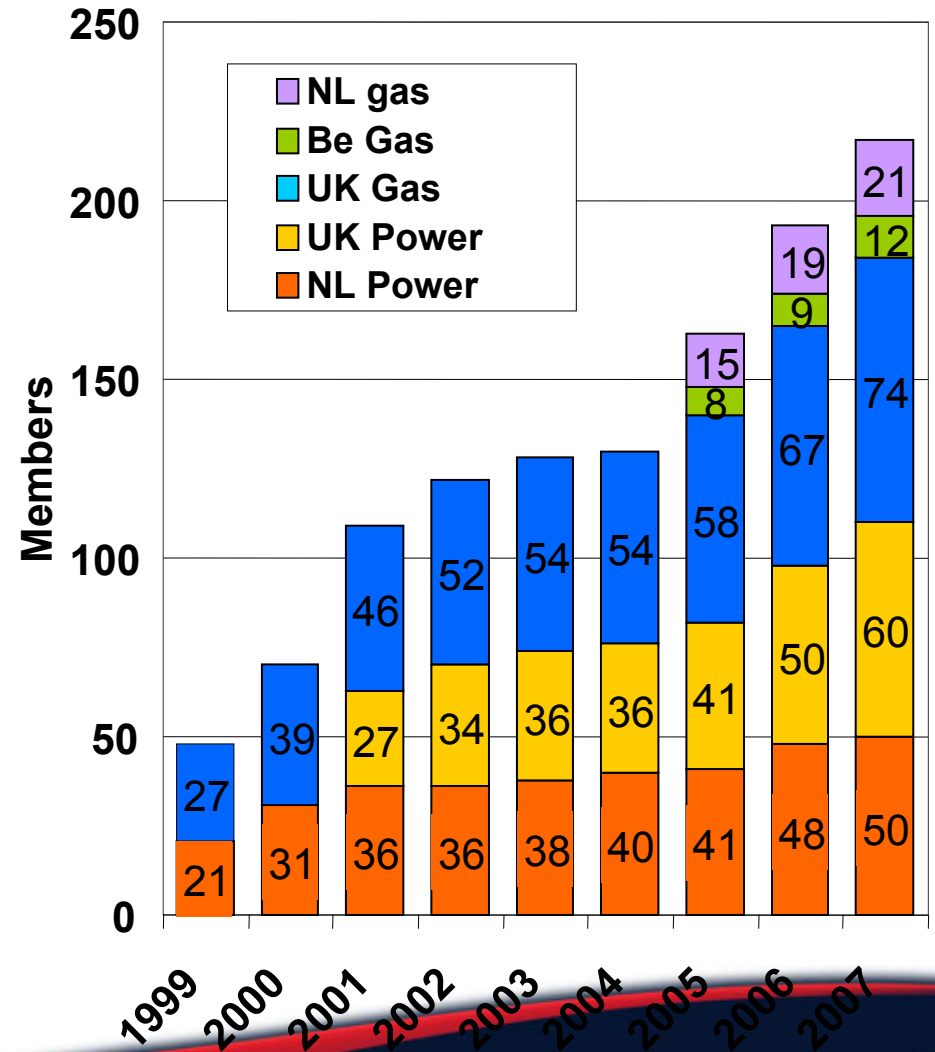
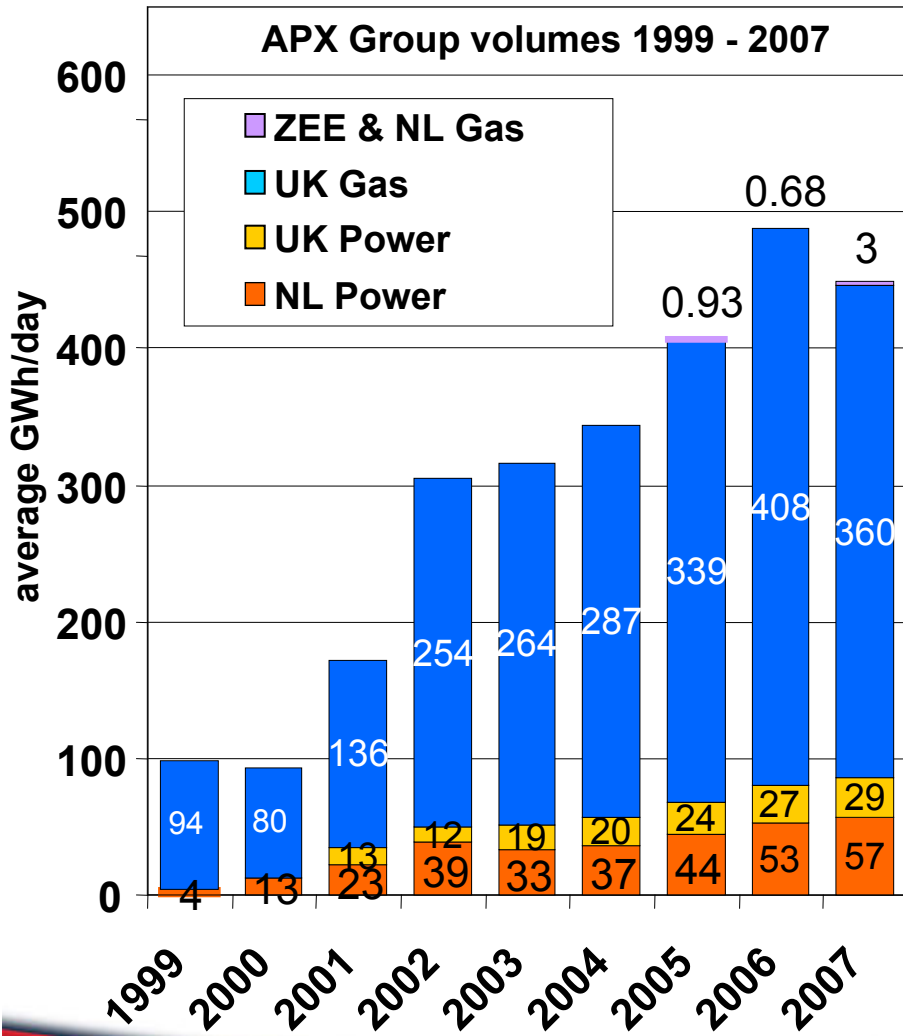


- Power NL (Dutch spot market)
+ Market Coupling NL-Be-Fr
+ Belpex: services + 10% equity
+ NorNed cable
- Power UK (spot, prompt, OTC, fwd)
- Gas UK (NBP, OCM)
+ gas storage trading
- Gas ZEE (Zeebrugge hub)
- Gas NL (TTF transfer facility)
+ gas transport capacity



Announced:
APX (spot) integrating
with Endex (futures):
Dutch/Belgian Power,
TTF gas futures

Growth of APX volumes and members



What does the UK need from integration with continental Europe?

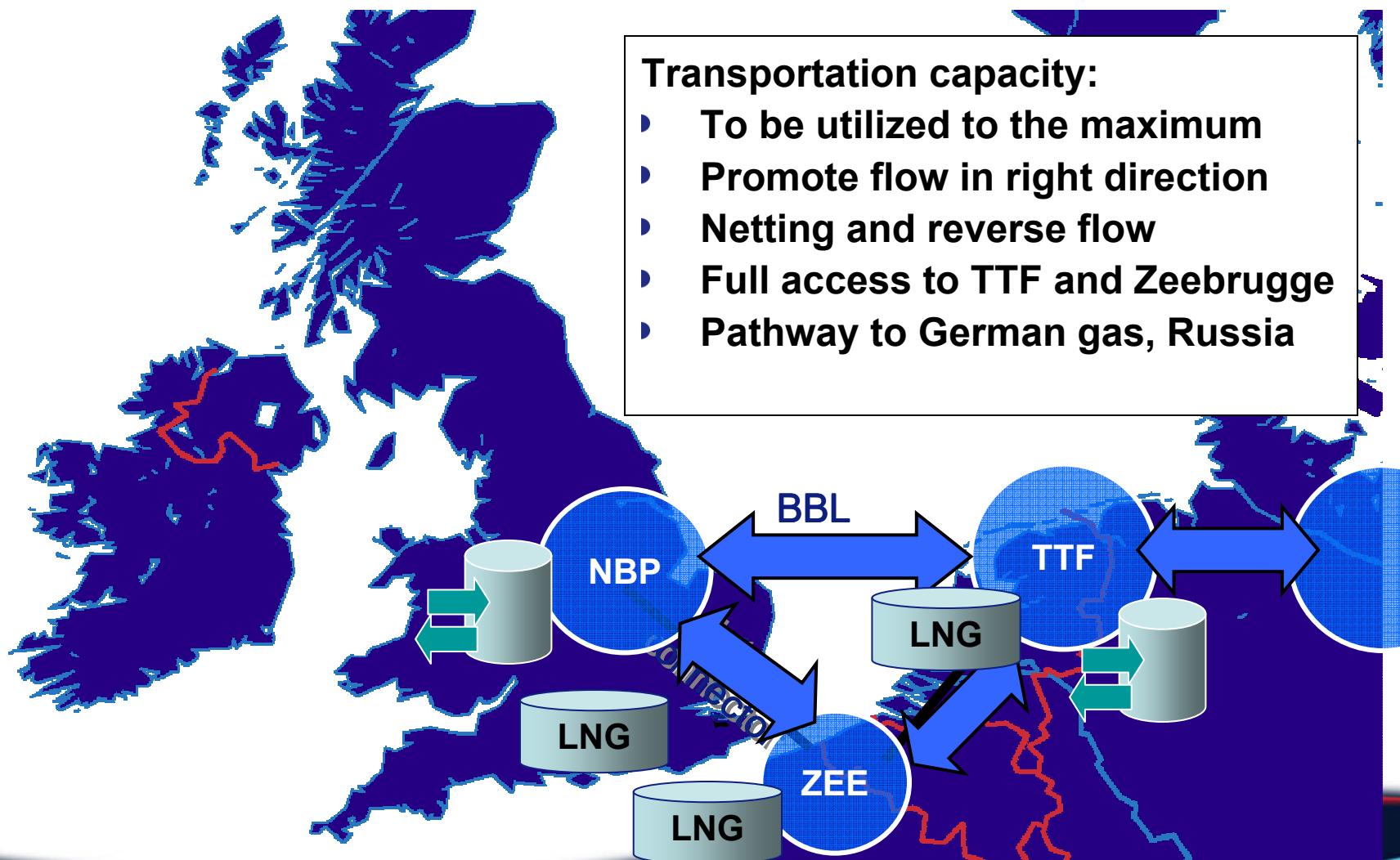
- 1. Better access to (continental) gas**
- 2. A more liquid wholesale electricity market**
- 3. A speedy and secure implementation of improvements**

1. Better access to (continental) gas

Solution: international Gas Market integration

Transportation capacity:

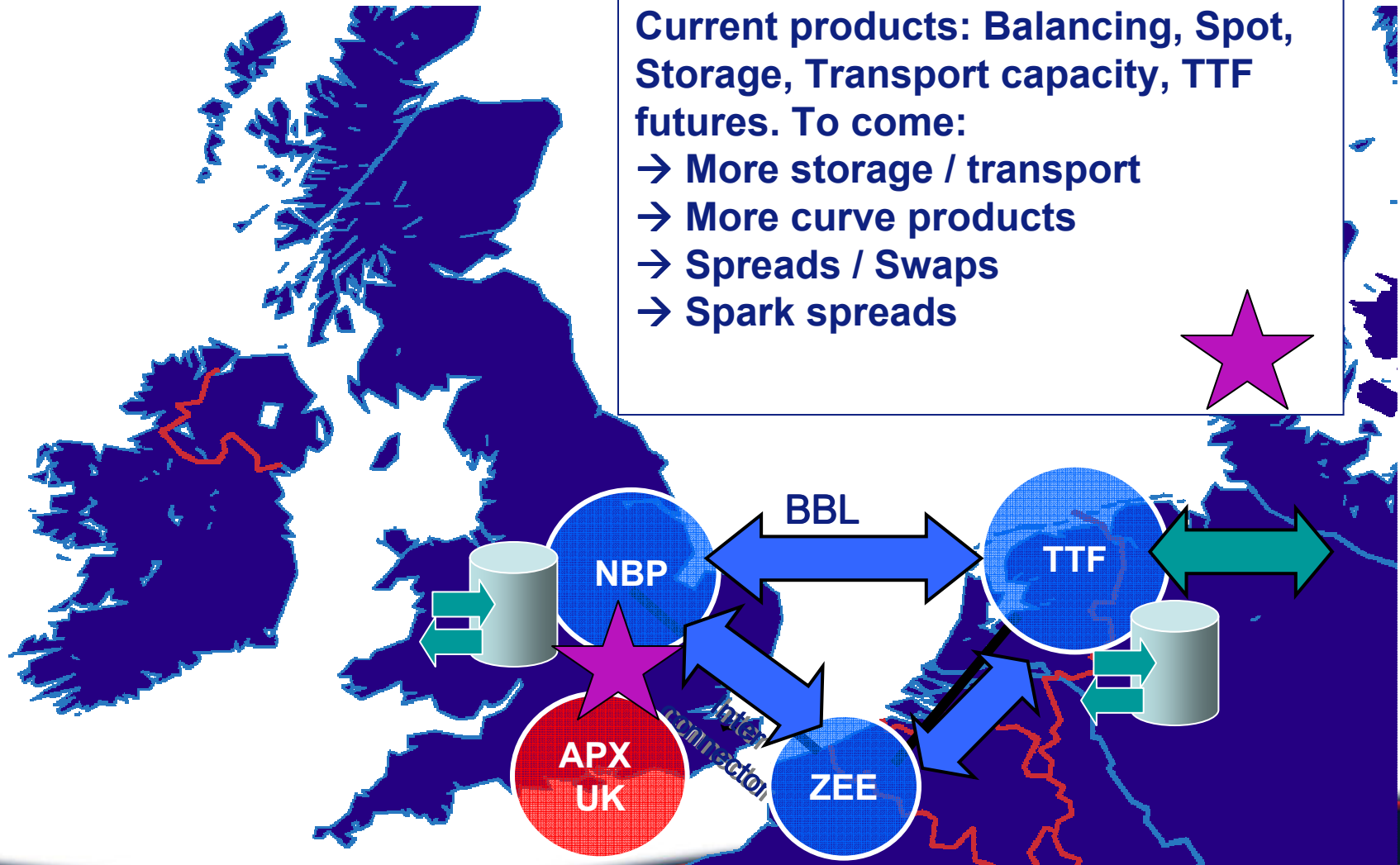
- ▶ To be utilized to the maximum
- ▶ Promote flow in right direction
- ▶ Netting and reverse flow
- ▶ Full access to TTF and Zeebrugge
- ▶ Pathway to German gas, Russia



Trading products

Current products: Balancing, Spot, Storage, Transport capacity, TTF futures. To come:

- More storage / transport
- More curve products
- Spreads / Swaps
- Spark spreads



What characteristics make gas hubs successful?

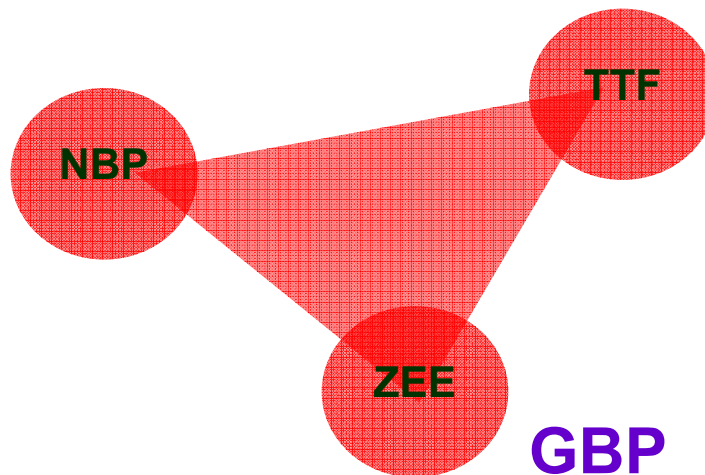
- **Features that support trading at the hub**
 - **clarity of arrangements**
 - **firmness of trades**
 - **low delivery risk (cash out volume and price)**
 - **standardised trading opportunities**
 - **low cost**
 - **simplicity of delivery mechanism**
 - **existing trading!**

What characteristics make gas hubs successful?

- **Common features with other local hubs to enable trading between them**
 - **currency**
 - **gas units**
 - **delivery day**
 - **balancing periods**

APX gas markets

GBP
Therms
0600 day
GMT/BST
Daily
balance



Euro
MWh
0600 day CET
Hourly balance

GBP
Therms
0600 day CET
Hourly balance

2. A more liquid wholesale electricity market Solution: Market coupling

**2006 Market Coupling
NL-BE-FR**

**2008: NorNed cable 700
MW**

Nordic imports to NL

2009: CWE (NL-B-F-D-Lux)

■ TLC+Germany

2010 BritNed cable:

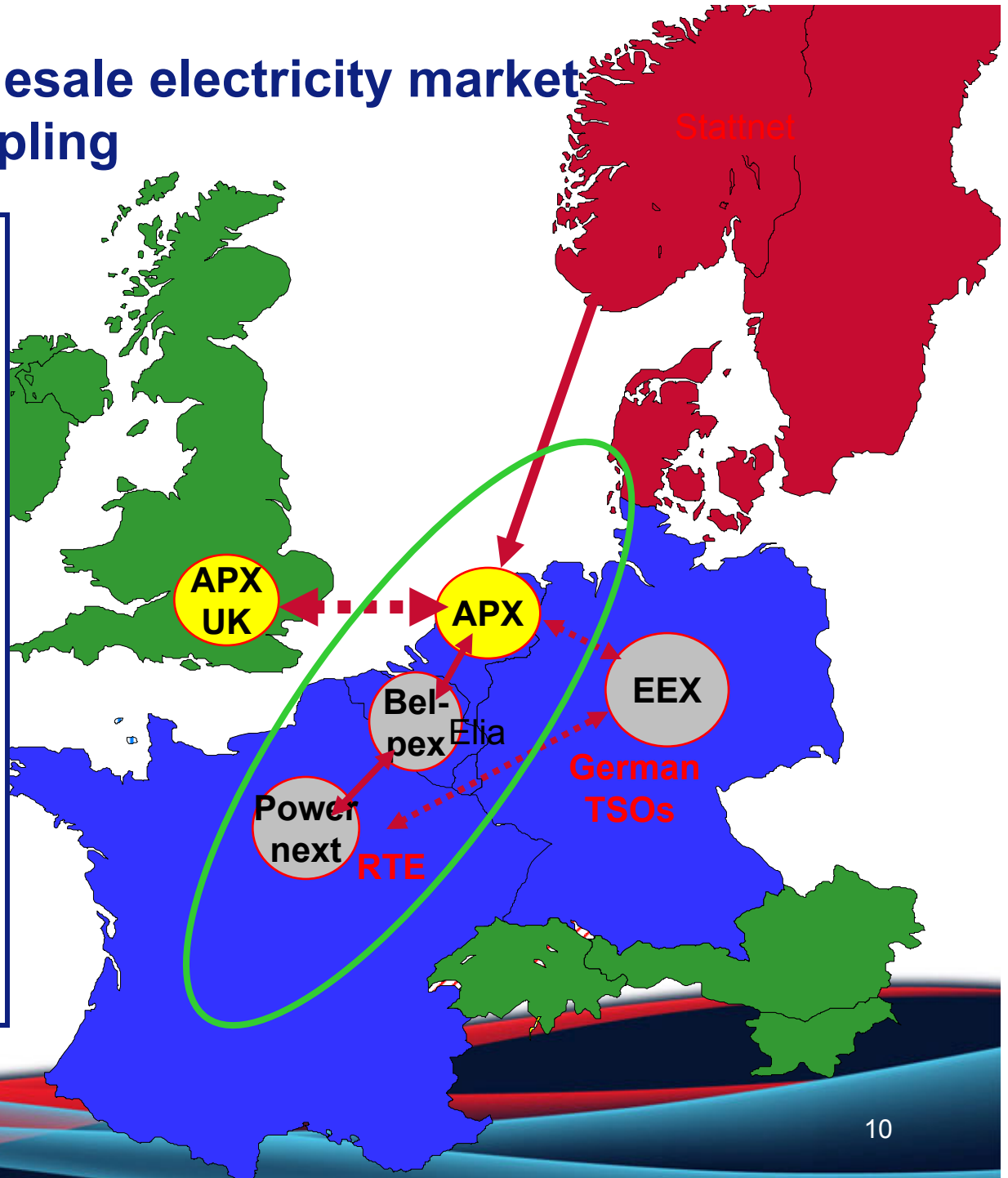
■ Capacity 1000MW

■ Development agreement
APX-NG-TenneT

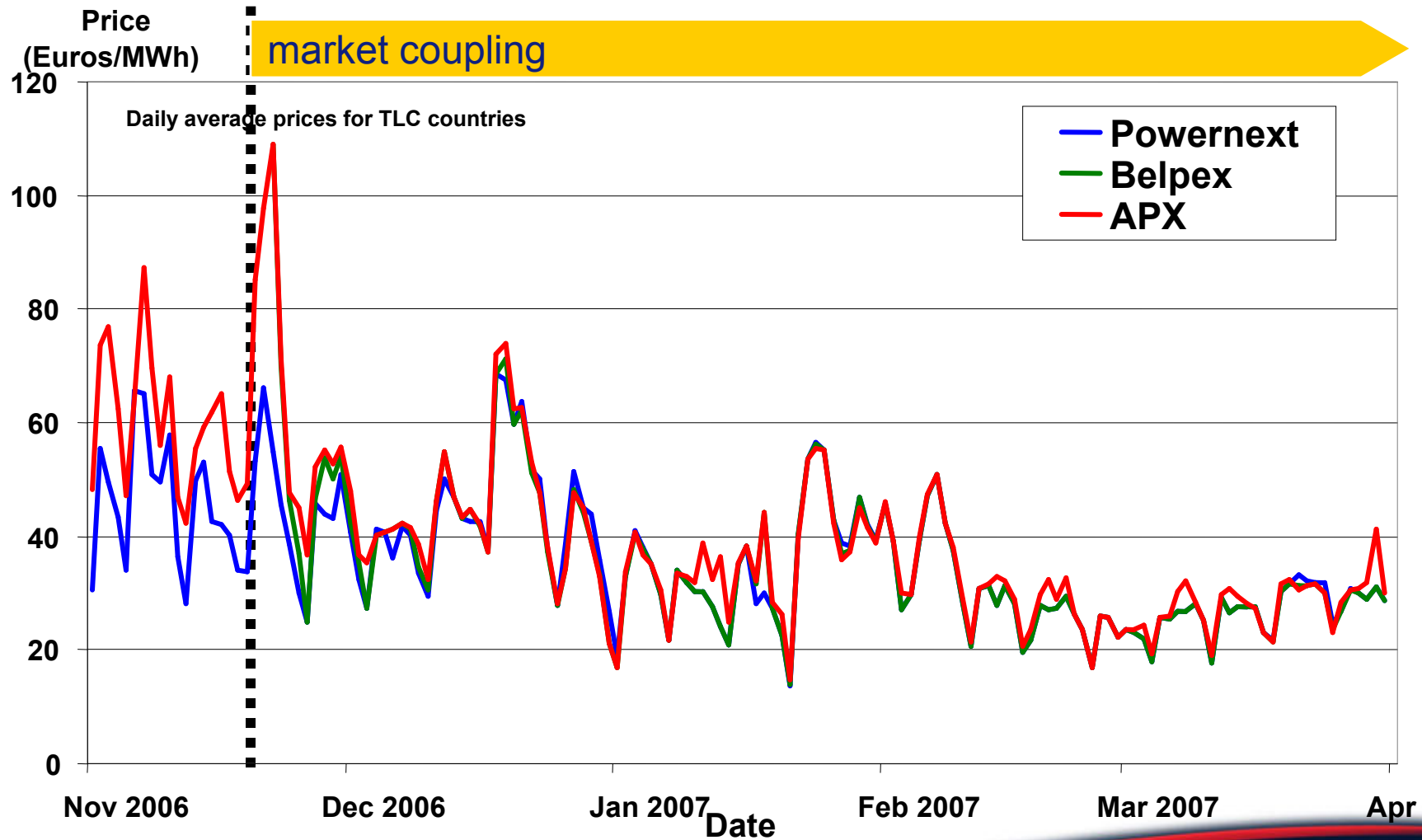
■ Trading design

■ 300 MW market coupling

■ Intention to operate
coupling+markets

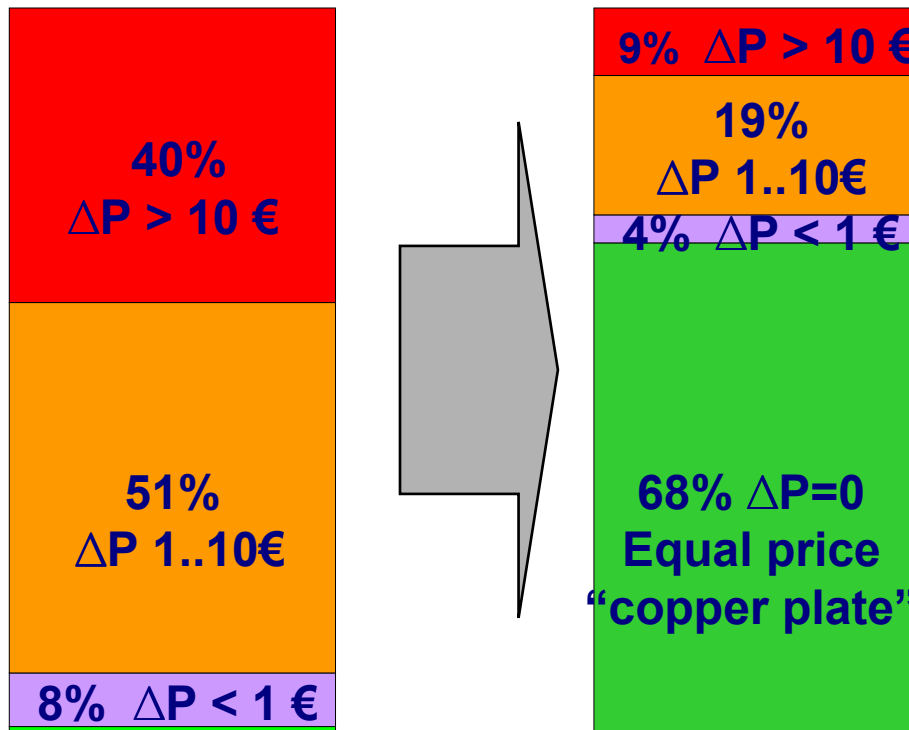


Example: Netherlands/France price convergence after market coupling



Example: Netherlands/France price convergence after market coupling

Hourly price difference, €/MWh



Before Market Coupling
Winter 2006

After Market Coupling
Winter 2007

Transportation capacity:

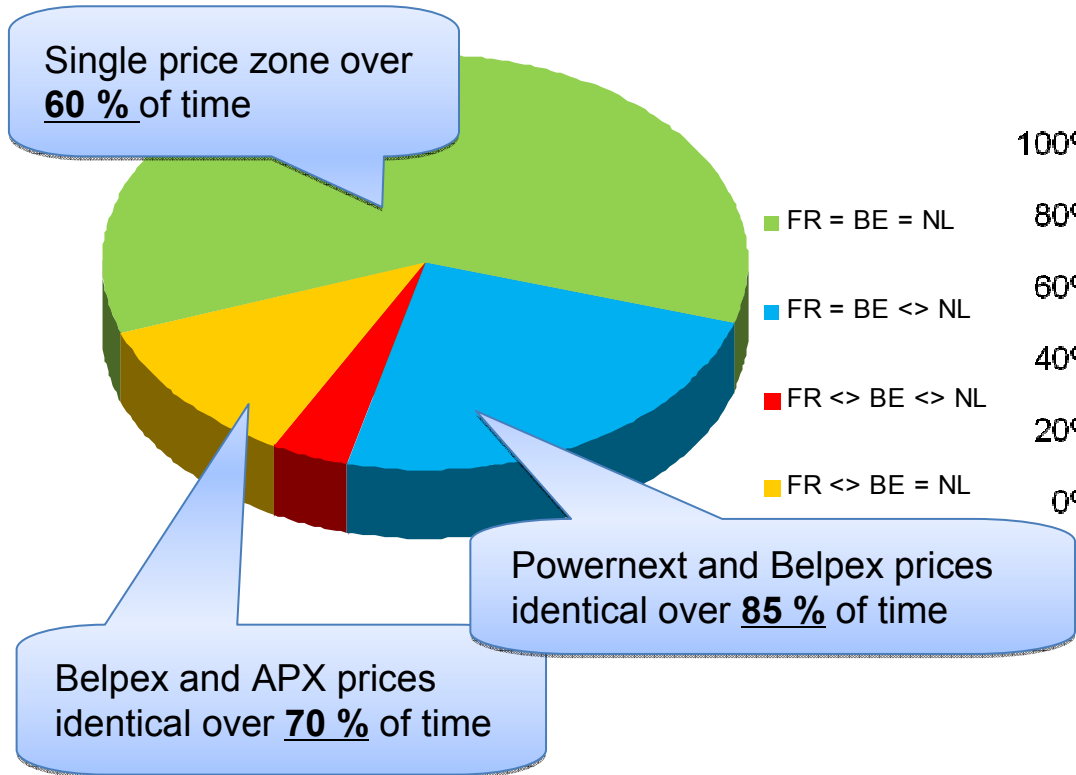
- Allocated together with the day-ahead power
- Utilized to the maximum
- Cannot be hoarded
- 100% utilization
- Flows in right direction

A market with:

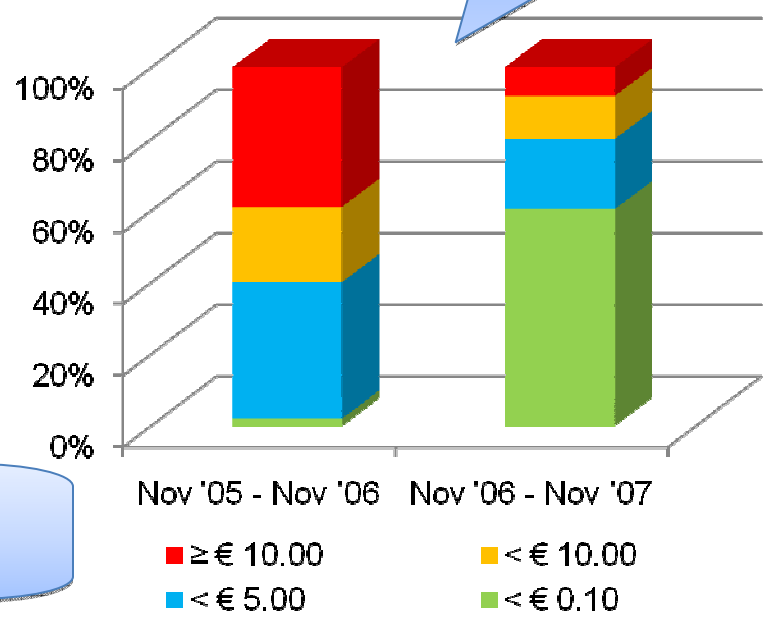
- Lower risks
- Better access smaller parties, end users
- Better liquidity, lower volatility, robust index
- Price convergence

Trilateral market coupling (TLC) results

2007 full price convergence between TLC spot markets



Spot price difference between NL & FR:
 2007: **1.04** Euro/MWh
 2006: **8.81** Euro/MWh



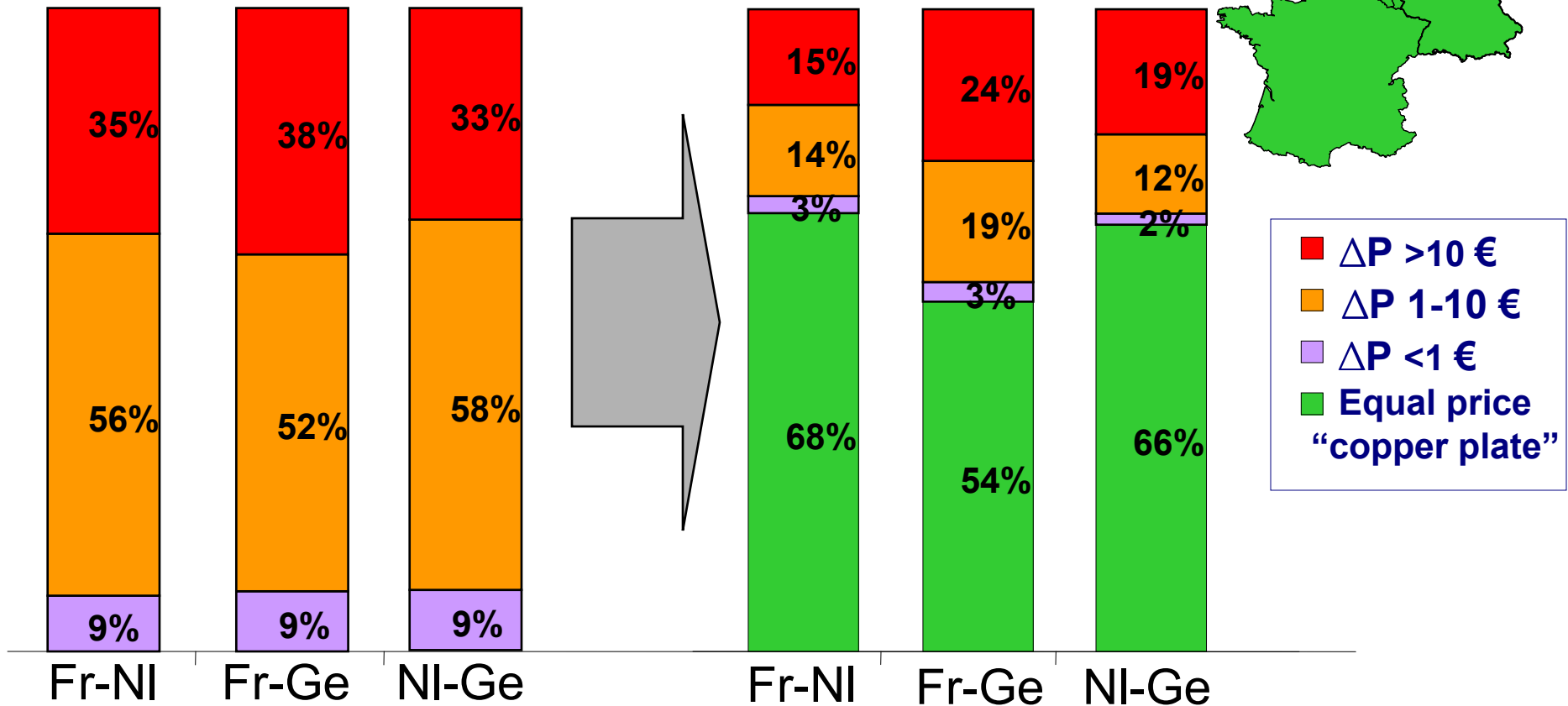
CWE perspective: simulation* of market coupling

price convergence**: hourly price difference, €/MWh



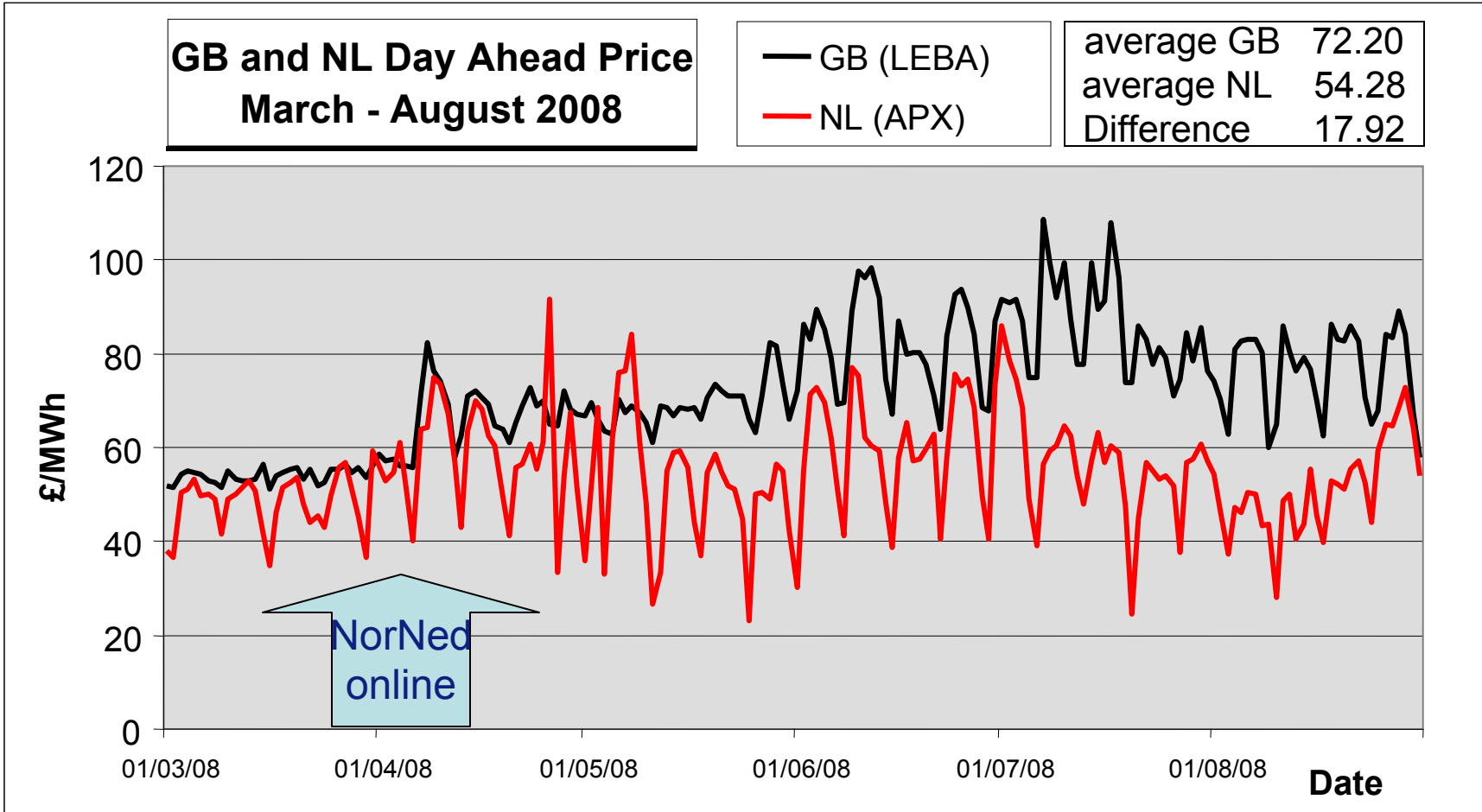
Results Historically

Simulated coupling

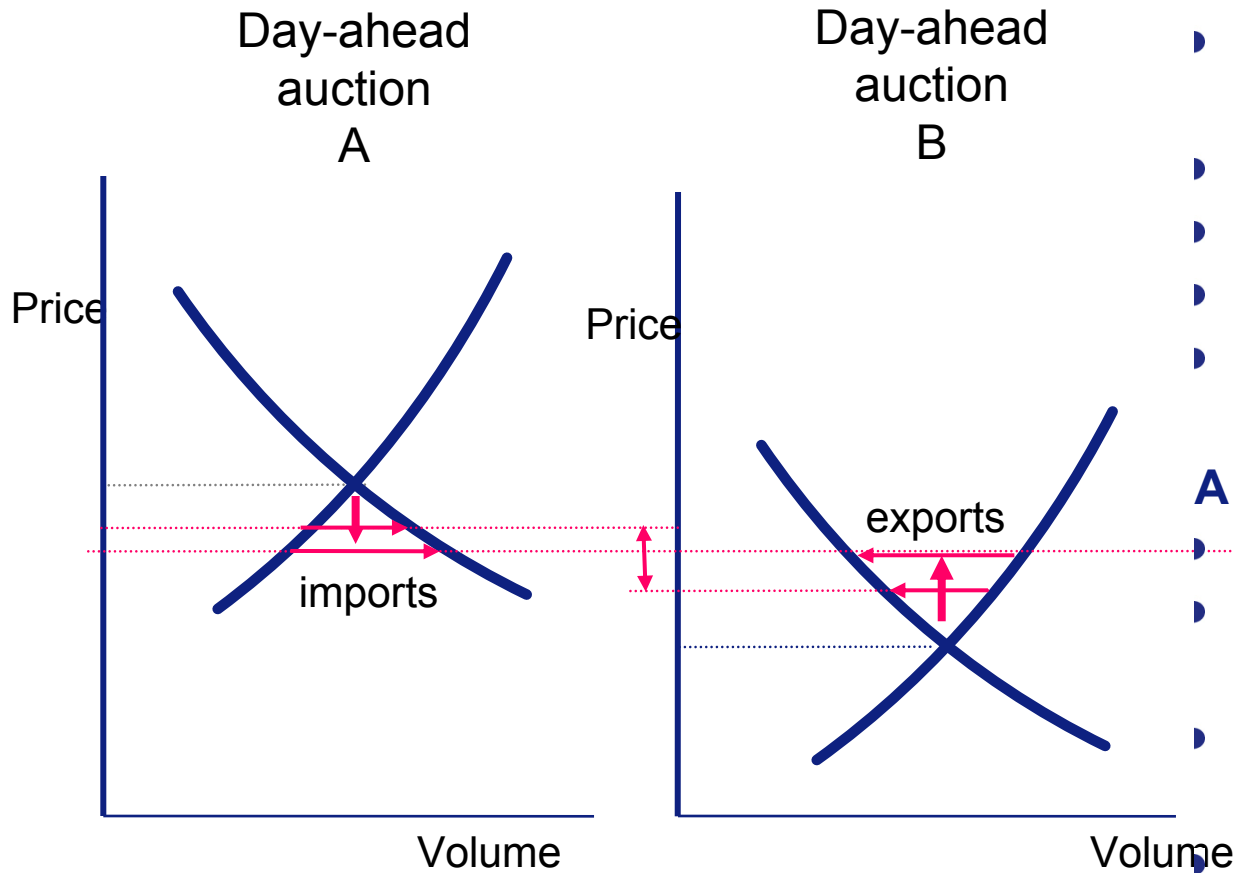


* Early work by APX ** ATC capacities as used in the explicit auctions (not flow-based)

BritNed cable market coupling perspective: UK and NL day-ahead prices



Market coupling needs a day-ahead auction at both sides of interconnector



Transportation capacity:

- ▶ Allocated together with the day-ahead power
- ▶ Utilized to the maximum
- ▶ Cannot be hoarded
- ▶ 100% utilisation
- ▶ Flows in right direction

A market with:

- ▶ Lower risks
- ▶ Better access for smaller parties, end users
- ▶ Better liquidity, lower volatility, robust index
- ▶ Price convergence

European electricity market

Regional market coupling

Functioning:

- ▶ Nord Pool
- ▶ TLC (Fr-B-NL)
→ CWE (Fr-B-NL-G)
- ▶ Mibel (Iberia), GRE

Other regions: EU scheme of regional development

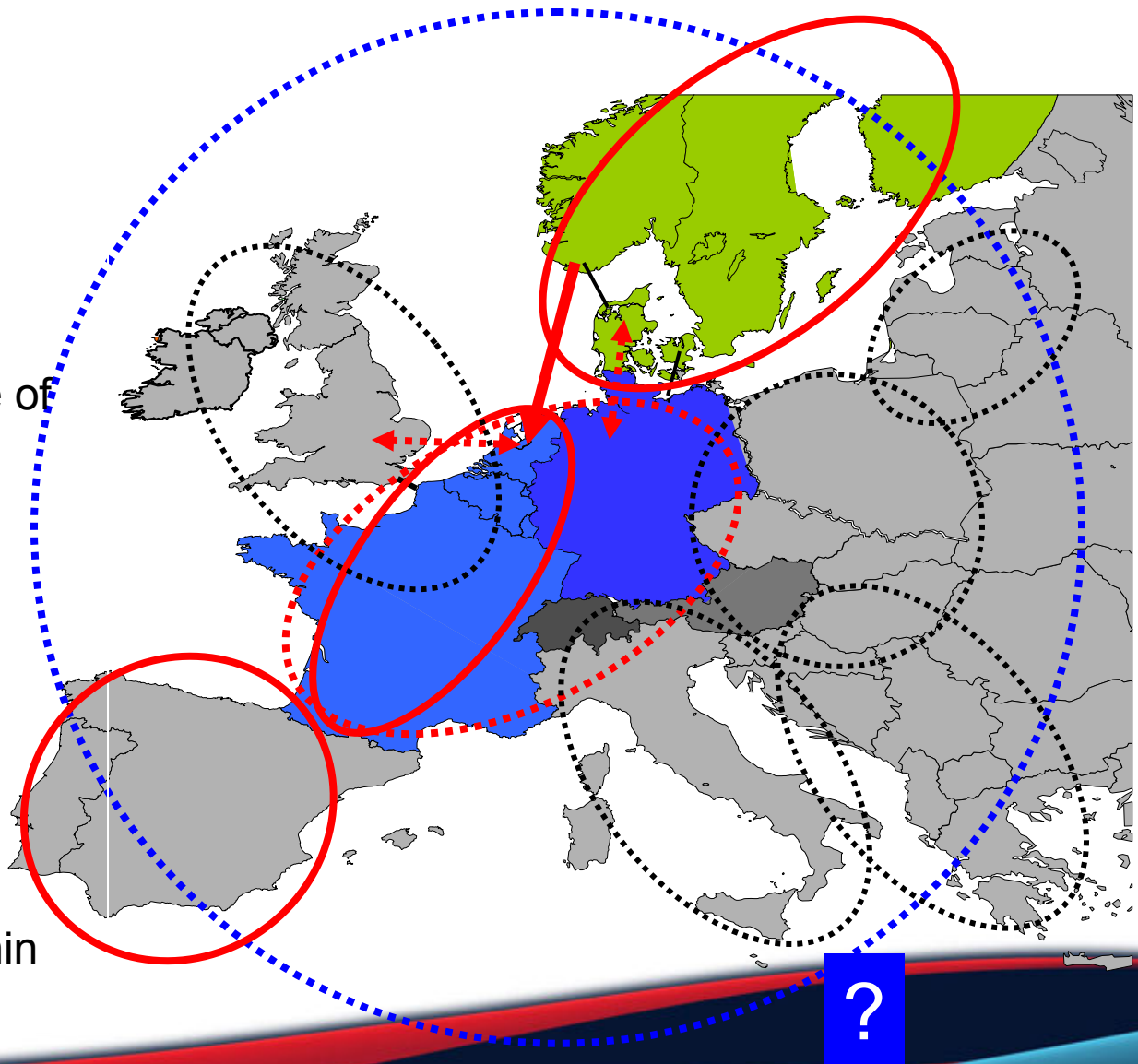
Projects:

- ▶ NorNed (No-NL cable)
- ▶ German-Danish coupling
- ▶ BritNed (NL-UK) cable

Inter-regional possible

“Dome” coupling:

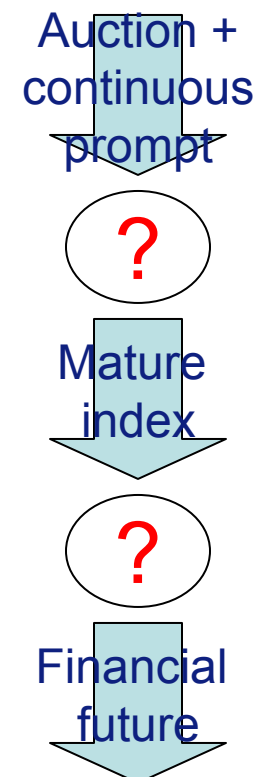
- ▶ “Loose” (volume-based) coupling between regions
- ▶ Price-based coupling within regions



3. A secure and speedy implementation: Sequential or Parallel implementation?

The sequential solution:

- ▶ *“First create an index”*
 - ▶ There are several roads to an index: some want it from continuous trading, some want a daily auction
 - ▶ If you try both, you fragment....and probably fail
- ▶ *“Then build up index trustworthiness”*
 - ▶ This normally takes several years
 - ▶ This normally takes a large(r) number of players
- ▶ *“Launch a derivative on the index”*
 - ▶ This makes the derivative sensitive to index quality
 - ▶ So you need a really good index (see above)

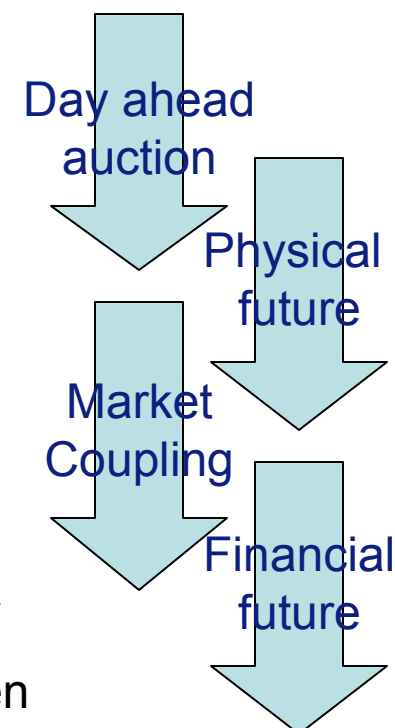


This may be best in ideal circumstances, but it is slow and, in our non-ideal world, it is also risky

3. A secure and speedy implementation: Sequential or Parallel implementation?

The parallel solution:

- ▶ *“First create sufficient daily market, accessible to all”*
 - ▶ Daily auction creates single price, low trading cost
 - ▶ Single market clearing price as market reference
- ▶ *“Right after, start a futures contract, physically delivered”*
 - ▶ Start right away, don’t wait for the index to mature
 - ▶ Hedging instrument is needed for investments now
- ▶ *“Start market integration across North Sea”*
 - ▶ Price convergence, reduced volatility, stabilised index
 - ▶ Import/export through daily market guarantee of liquidity
- ▶ Finally, start an index based wholesale power derivative when all the conditions are satisfied



This hedges the approach, and is more likely to work in the non-ideal world – eventually, it leads to the ideal as well

MAKING MARKETS WORK



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