

Using implicit auctions by power exchanges to manage cross-border congestions:

Decentralized Market Coupling

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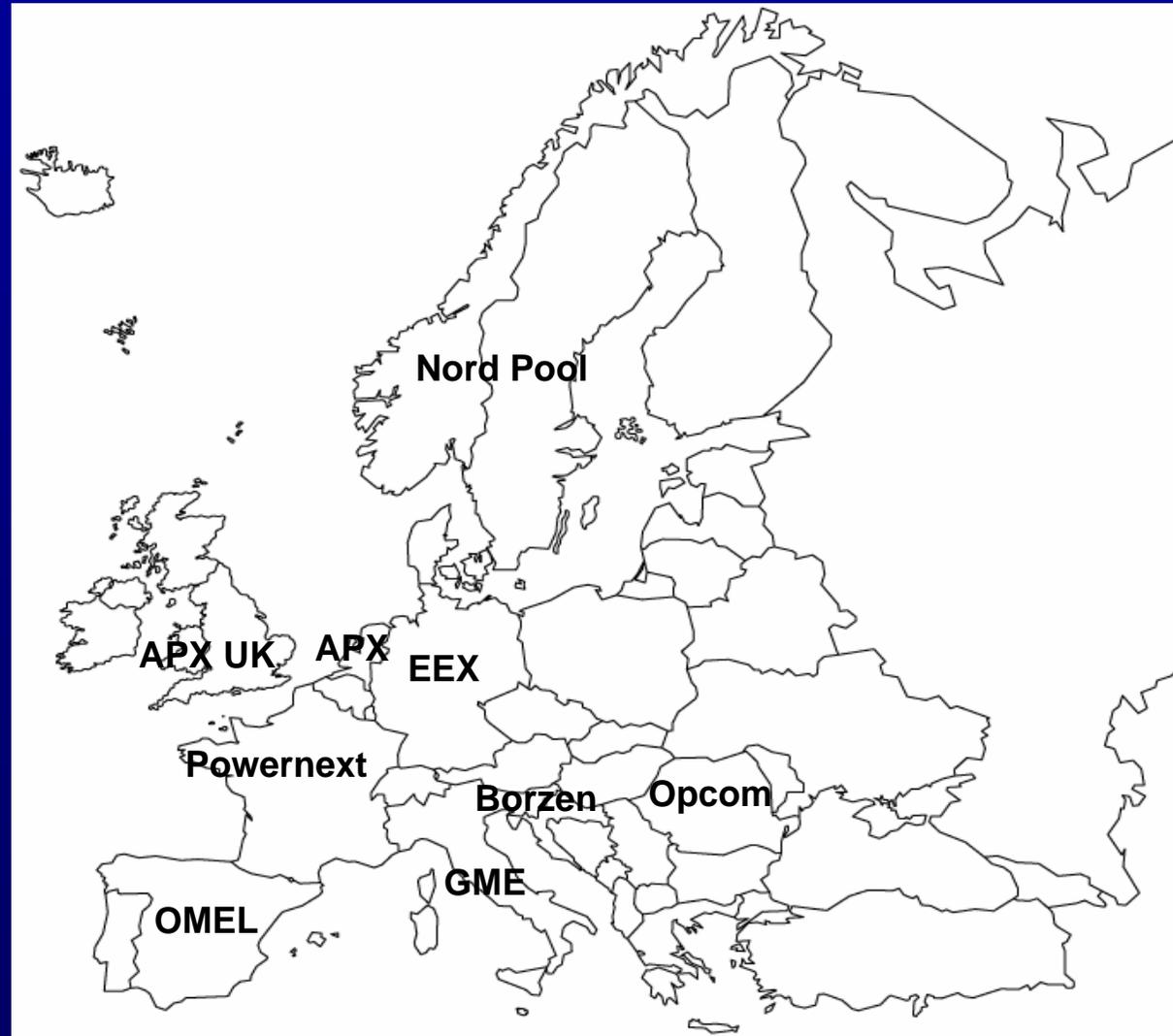
## CONTENT

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- Europex members
- Implicit auctions
- The benefit for trading
- The benefit for Europe
- The decentralized market coupling model
- Step by step approach

## EuroPEX

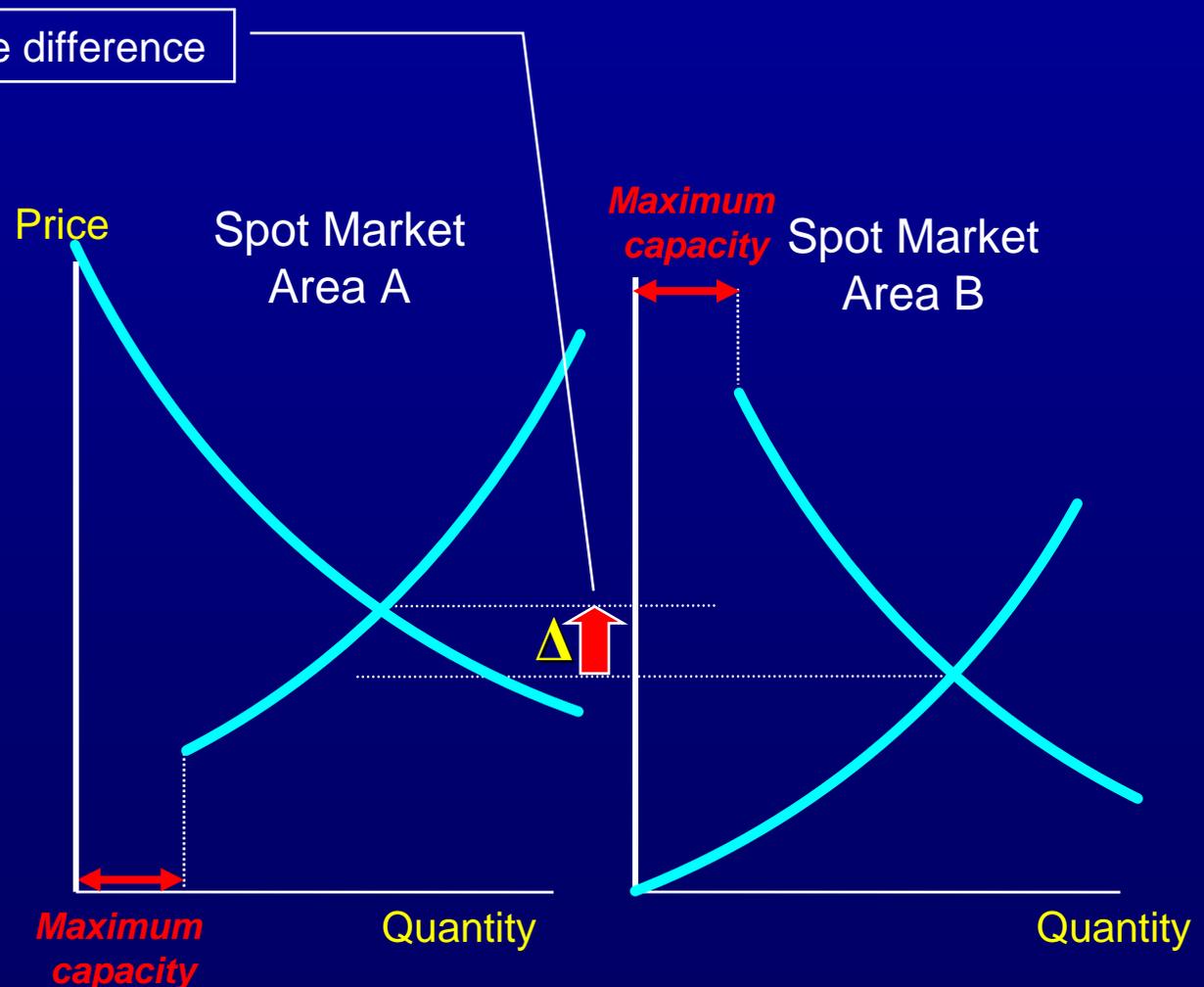
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# Implicit auctioning (market coupling)

Full transparency in constraint management

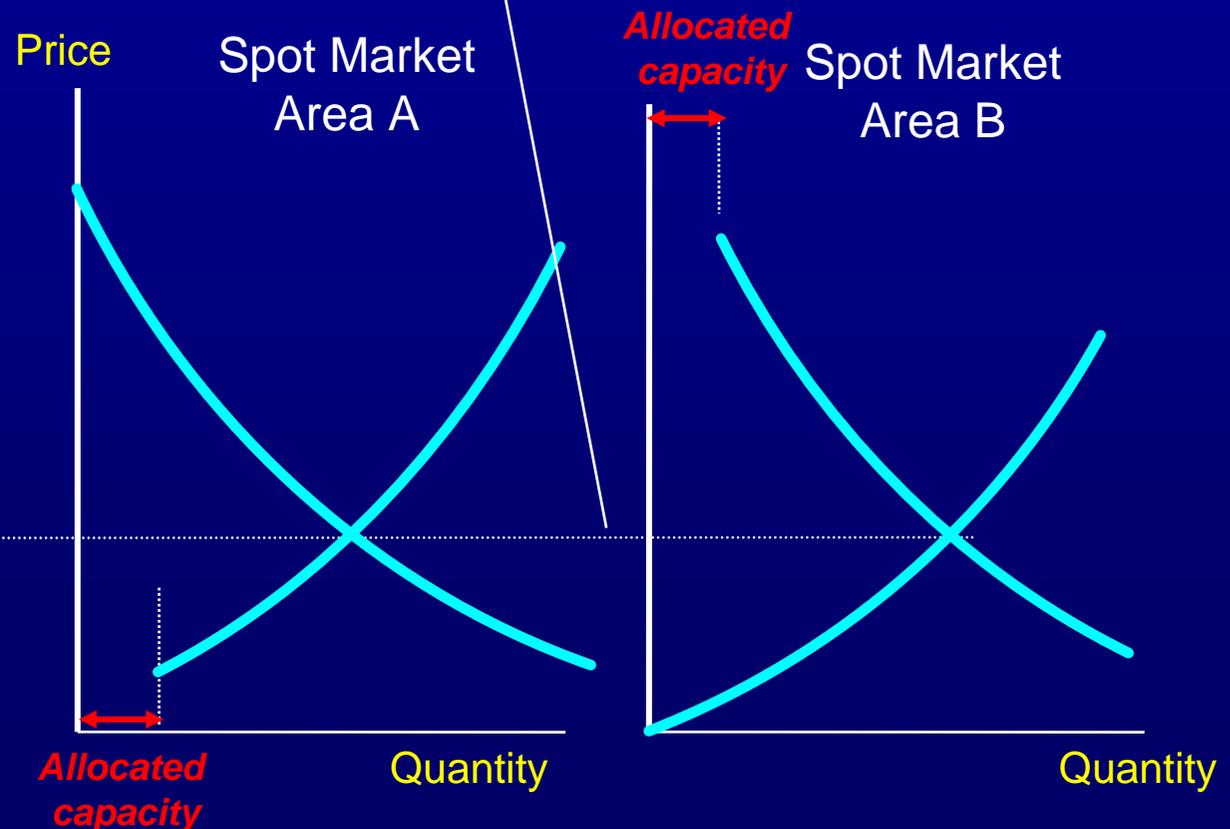
- One-step process
- No difference between auction price and area price difference
- Stimulates liquidity in each area



# Implicit auctioning (market coupling): Full area integration when no constraint

One price for both areas

- Areas merge at that moment
- Trade barriers completely gone
- Liquidity shared



## The benefit for trading

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- One-step process, ease of access
- Priority on interconnectors based on price
- Interconnector schedules based on area price difference
- Hedging instruments
- All local players also play internationally
- Encourages liquidity
- Encourages transparency

## The benefit for Europe

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- European market fragmented by constraints
- Market coupling *directly* unifies markets whenever there is no constraint
- So, for x % of the time, markets *will* be unified.
- Then, by other methods (e.g. additional transmission capacity) this x% percentage can be raised gradually.
- Contributes to the establishment of the internal European electricity market

## The decentralized model : objectives

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Economic efficiency	<ul style="list-style-type: none"><li>- price-based priority</li><li>- no possible trades left on the table</li><li>- reflect actual generation and load realities (e.g., block bids)</li></ul>
Promoting of effective competition	<ul style="list-style-type: none"><li>- low entry barriers</li><li>- level playing field (e.g., bilaterals)</li></ul>
Transparency	<ul style="list-style-type: none"><li>- information: sufficient and reliable</li><li>- rule based: stable and auditable</li></ul>
Maximising available capacity and capacity use	<ul style="list-style-type: none"><li>- efficient allowance for loop flows</li><li>- netting of counterflows</li><li>- reselling of forward rights</li></ul>
Use of congestion revenues	<ul style="list-style-type: none"><li>- for others to determine</li></ul>

## Decentralized model: overview

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- Each exchange to receive its area-based bids
- Exchanges exchanging bid – based information
- Adapting exchange price in each area:
  - Unconstrained: prices equal
  - Constrained: prices are set with maximum im/export
- Iteration process for blocks
- Local scheduling and balancing

# Decentralised Market Coupling (DMC) EuroPEX

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- TSOs to publish available capacity and power transfer distribution factors (PTDFs)
- Power exchanges (PXs) gather bids & offers in their area
- Then calculate 'net export curve' showing impact of export (and import) volumes on hourly area price
- PXs calculate optimal use of network across DMC region
- Includes bilateral bids who pay (or counter-flows receive) price difference between areas

# Decentralised Market Coupling (DMC) EuroPEX

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- PXs repeat process to accommodate block bids (several iterations, or a sequential process in some regions)
- PXs notify and settle all area commitments (including cross-border bilaterals)
- Deviations handled by local area imbalance arrangements

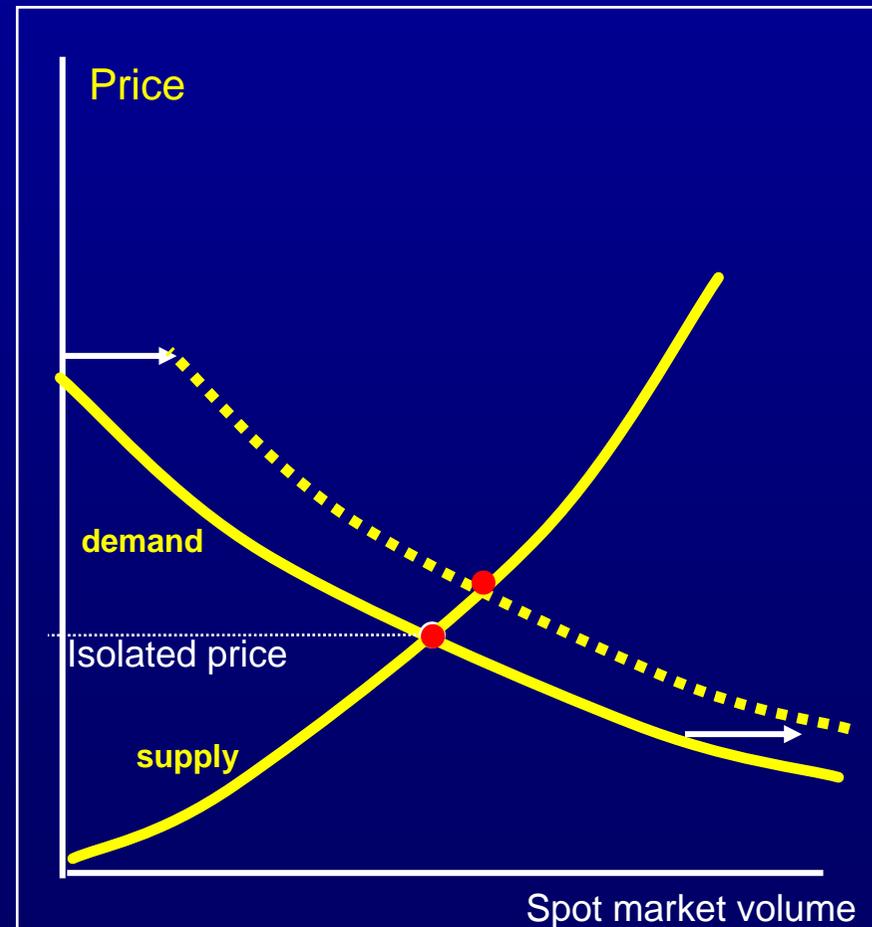
More details: see Europex paper as submitted

# Influence of im/exports on area prices (more details: see Europex paper)

area A



area B



# Features of Decentralized Market Coupling

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- Enables coupling of multiple areas together with efficient allowance for loop flows on meshed networks
- Supports block bids and other local market requirements
- Supports bilateral contracts and netting of counterflows
- Requires only limited harmonization of market rules, and no change to local notification/imbalance arrangements
- Provides open and fair market access with no additional barriers beyond existing local PX requirements
- Transparent, rule based, auditable methodology

## Key Points (1)

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- All physical capacity and PTDFs to be made available in the day-ahead implicit auction
- Physical capacity must be firm and published prior to PX bid submission to ensure orderly and efficient market
  - TSOs to make allowance for unplanned events/outages
  - Regulatory issue: maximize capacity (DMC can contribute to reducing TSOs' exposure to loop flow uncertainty)
- Optimize the use of the physical network and maximize liquidity (+reliable reference prices)
  - hedge forward price risk with financial products
  - phase out explicit auctions of physical transmission rights
  - handle adjustments in intra-day markets

## Key Points (2)

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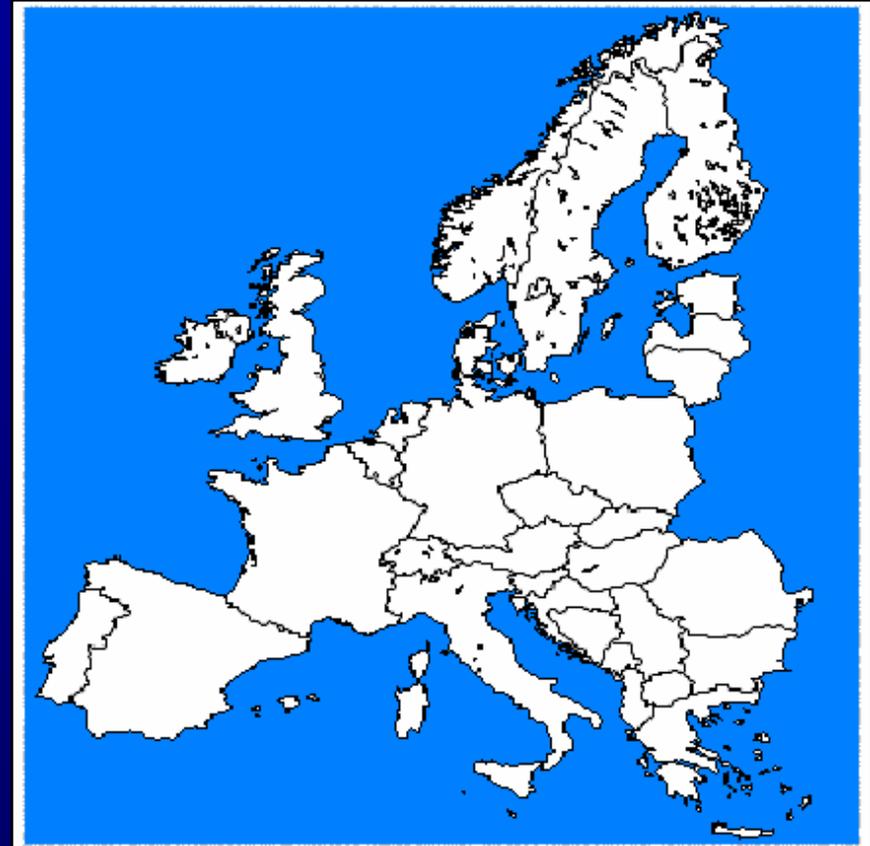
- Owners of long-term capacity rights can, in effect, sell them by offering to schedule a counterflow. Historical long-term contracts could be converted into financial transmission rights
- Rules and procedures will need defining for each 'cluster' of markets, plus some harmonization of market rules will be necessary - possibly could be overseen by a regional group comprising regulators, TSOs, PXs and participants
- PXs will need to meet certain requirements - e.g., membership requirements, information publishing, audit, disputes procedures

## Step by step approach

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Implicit auctioning between exchanges: step by step process

- 1. Bilateral pilots at several places in Europe
- 2. Regional developments
- 3. European integration



 Manageable learning curve

## Summary

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- Directly a partial (x %) integration of markets
- Local Players co-acting on European scale
- Better liquidity and transparency
- Step-by-step process
- Incremental learning curve
- Practical solution