

WP 4

Regulatory and Market Framework of Energy Markets

Ronnie Belmans

- 4.1 Analysis of the current legislation and regulation of the liberalised market, the directives on renewables and CHP, and on emission trading
- 4.2 Specification of “boundary conditions” and “guidelines” for proper functioning of future energy markets

- Current regulation and legislation
 - Current state of affairs
- Boundary conditions and guidelines

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Current regulation and legislation

Directives 96/92/EC and 2003/54/EC

- Initially too much freedom and long term deadlines
 - 1st Directive 96/92/EC
- Recently less freedom and shorter term deadlines
 - 2nd Directive 2003/54/EC
- Interacting/conflicting with other policies
- Enough or too much?

Current regulation and legislation

Florence Forum and ERGEG

- Florence meeting
 - 2/year in Rome, started in 1998 in Florence
 - Member states, Eurelectric, CEER, ETSO &co
 - Discussing creation of internal electricity market
- ERGEG (2003) (www.ergereg.org)
 - Co-operation national regulatory authorities and Commission
 - **Ensure consistent application of legislation**
 - **Coordinate national progress reports**

- Trans-European Energy Networks program (TEN-E)
 - EU co-finances infrastructure projects of European interest
 - Annual budget of about 25 M€
 - **Mainly supporting feasibility studies**
- Regulation 1228/2003 on conditions for access to the network for cross-border exchanges in electricity
 - Compensation mechanism for cross border flows
 - Harmonised principles on
 - **Cross-border transmission charges**
 - **Allocation of available interconnection capacity**

Current regulation and legislation

Adequacy of supply

- 2000 Green paper on security of supply
- 2003 Proposal for Directive on electricity infrastructure and security of supply
 - Priority for demand side management
 - If TSO makes insufficient progress in important infrastructure projects, regulator can:
 - **Impose financial penalties on TSO**
 - **Issue instruction to TSO to undertake work by certain date**
 - **Arrange for work to be undertaken by contractor through tender process**

Current regulation and legislation

Sustainable energy

- 2001 Directive on RES
 - EU-25 targets by 2010
 - **12% total energy consumption**
 - **21% total electricity consumption**
 - National indicative targets
 - Support mechanisms
 - Guarantees of origin
 - **Mutually recognized by Member States**
 - Exclusively as proof of electrical energy's origin

Current regulation and legislation

Sustainable energy

- **Grid connection**
 - **Guaranteed transmission and distribution**
 - Possibly priority access
 - Priority in dispatching
 - **Costs of necessary technical adaptations**
 - Network operators may be required to bear (part of) costs
- **2004 Directive on cogeneration**
 - Similar principles
 - No national indicative targets
 - Harmonized method for energy savings calculation

Current regulation and legislation

Climate change

- Kyoto
 - EU-15: 8% reduction of 6 key GHG during 2008-2012 compared to 1990-level
 - **Target distributed among Member States**
 - New Member States: individual targets
 - Flexible mechanisms
 - **Joint Implementation (JI)**
 - **Emission Trading (ET)**
 - **Clean Development Mechanism (CDM)**

Current regulation and legislation

Climate change

- 2003 Directive
 - EU emission trading scheme (ETS) starting 2005
 - Initially limited to CO₂ and specific sectors (a.o. energy)
 - Initial 3-year commitment period, subsequent 5-year periods
 - National Allocation Plans (NAP)
 - 95% of allowances for first period allocated free of charge
 - Allowances mutually recognised for obligations
 - Penalty in case of insufficient allowances
 - No release of obligation

Current regulation and legislation

Climate change

- 2004 Linking Directive
 - Reinforces link EU ETS and Kyoto Protocol
 - **Flexible mechanisms (JI, CDM) included in EU ETS**
 - First period: only credits from CDM projects
 - **CDM & JI credits as of five-year period starting 2008**
 - limits for the use of CDM/JI credits

- Current regulation and legislation
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Current state of affairs

Market Integration

- Lack of integration between national markets
 - Absence of price convergence across EU
 - Price paid in most expensive Member States > 2 x level of lowest price group
 - Low level of cross-border trade
 - Only modest increase since market opening

	Cross border flows (actual as % of consumption)
1995	7%
2000	8%
2005	10,7%

Source:
UCTE

Current state of affairs

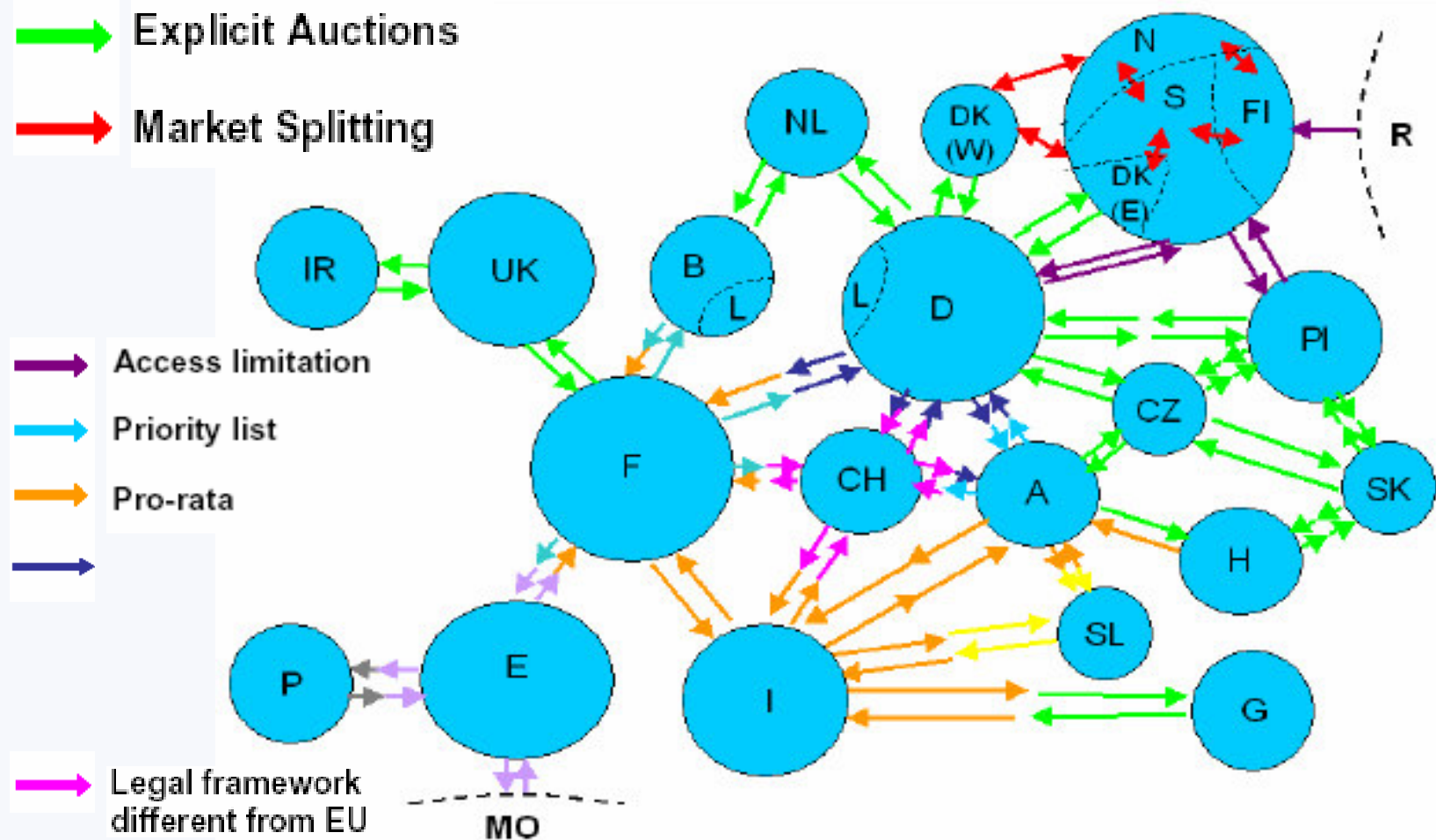
Interconnection capacity

- Insufficient interconnection capacity
 - Congestion
- Target: interconnection level 10% of installed generation capacity
 - Barcelona summit March 2002

	Import capacity as % of installed capacity
Italy	8%
Portugal	8%
Spain	4%
UK	3%
Ireland	6%
Poland	10%
Baltic States (collectively)	0%

Source: ETSO

- Market based mechanisms required July 2004



Cross-border Capacity Allocation 2005*

1. Explicit auction

- Allocation of capacity on yearly, monthly, daily basis (+seasonly and quarterly on F<->UK)
- Auction price set at bid price of last allocated marginal bid: pay-as-cleared (except FR->IT and FR<->UK: pay-as-bid)

2. Implicit auction

- Allocation by spot exchange: capacity used to level out price differences between regions trading on the same exchange
- No explicit payment of capacity

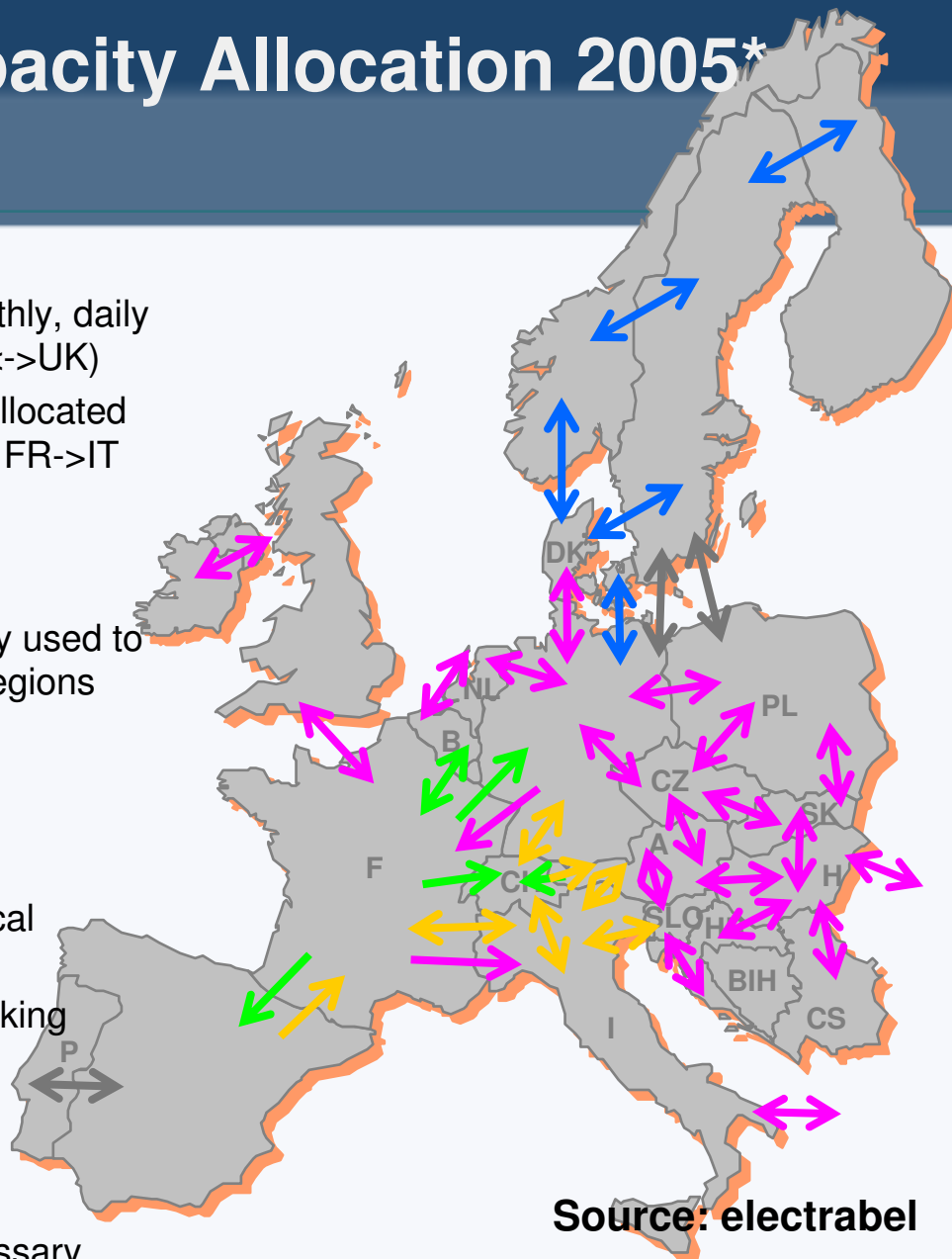
3. First come, first served

- Allocation of capacity through historical ranking of contracts
- Usage rate of contract influences ranking

4. Pro-Rata Allocation

- Participants request capacity up to maximum available capacity
- Allocation on a pro-rata basis if necessary

5. Other



Source: electrabel

*: not taking into account historical cross-border contracts

1. Explicit auction

- Allocation of capacity on yearly, monthly, daily basis (+seasonly and quarterly on F<->UK)
- Auction price set at bid price of last allocated marginal bid: pay-as-cleared (except FR->IT and FR<->UK: pay-as-bid)
- Italian import: auction revenues flow back pro rata according to Italian consumption
- F-CH: auctions start probably in Feb 2006

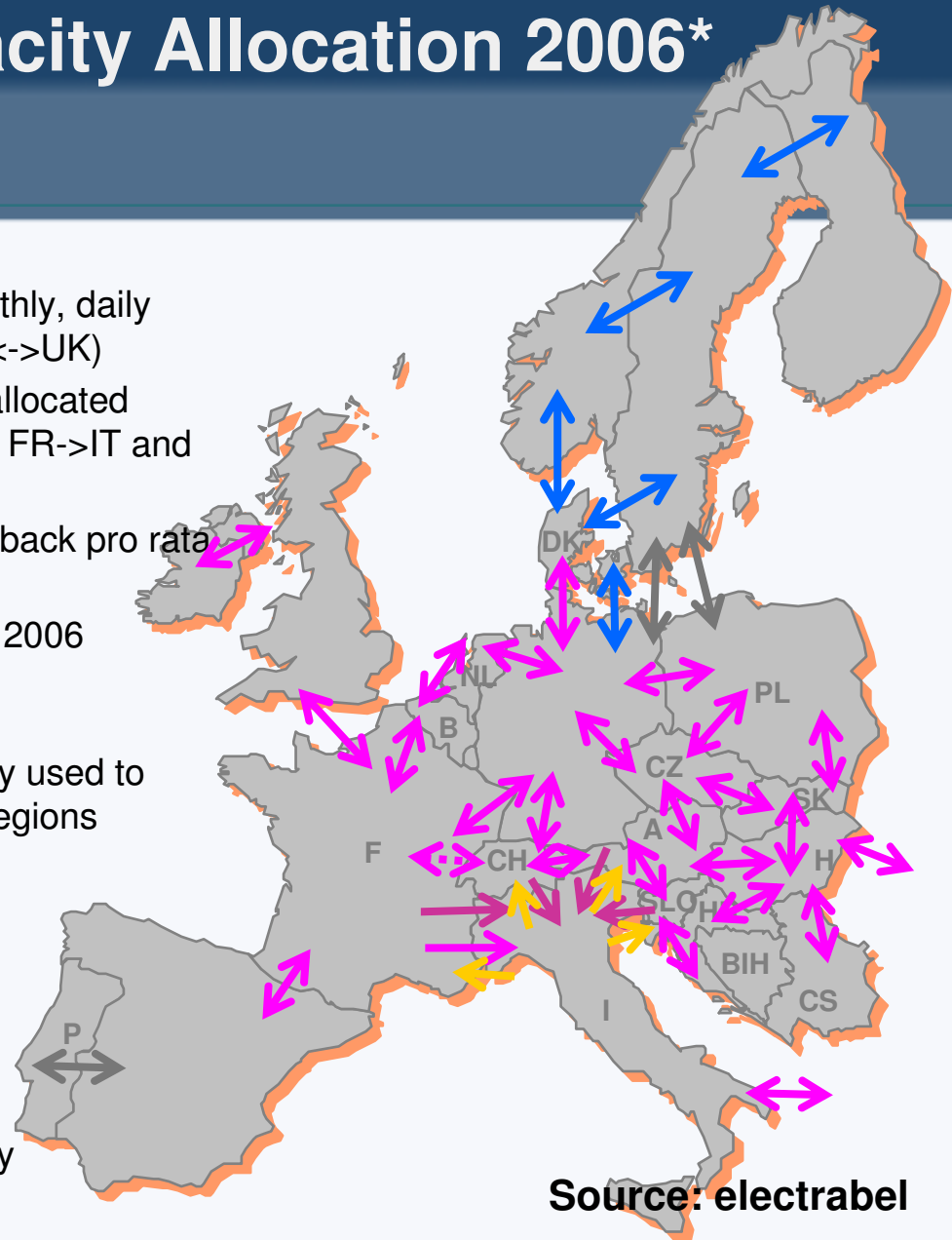
2. Implicit auction

- Allocation by spot exchange: capacity used to level out price differences between regions trading on the same exchange
- No explicit payment of capacity

3. Pro-Rata Allocation

- Still used in the non-congested direction of borders in case nominations exceed available capacity

4. Other



Source: electrabel

*: not taking into account historical cross-border contracts, of which most are abolished except on Swiss borders and on part of the Italian borders

Cross-border Capacity Allocation end of 2006* (Belpex?)

1. Explicit auction

- Allocation of capacity on yearly, monthly, daily basis (+seasonly and quarterly on F<->UK)
- Auction price set at bid price of last allocated marginal bid: pay-as-cleared (except FR->IT and FR<->UK: pay-as-bid)
- Italian import: auction revenues flow back pro rata according to Italian consumption

2. Implicit auction

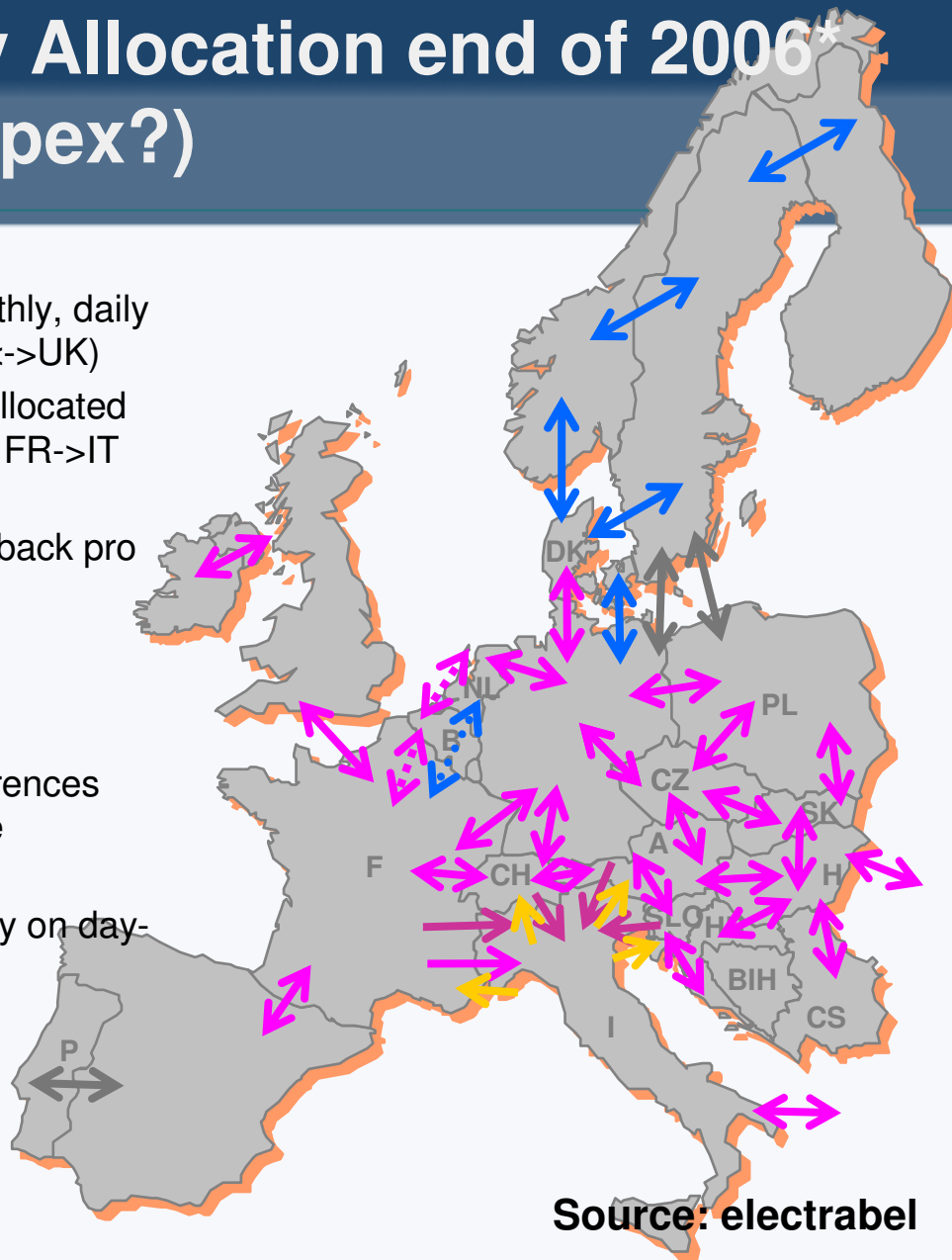
- Allocation by spot exchange
- Capacity used to level out price differences between regions trading on the same exchange or on coupled exchanges
- Coupling Powernext-Belpex-APX only on day-ahead cross-border capacity
- No explicit payment of capacity

3. Pro-Rata Allocation

- Still used in the non-congested direction of borders in case nominations exceed available capacity

4. Other

*: not taking into account historical cross-border contracts, of which most are abolished except on Swiss borders and on part of the Italian borders



Source: electrabel

Current state of affairs

Concentration and switching

- High degree of concentration
 - Industry further consolidated since market opening
- Increasing number of cross-border acquisitions
 - Tendency towards vertical integration between generation and supply
 - **Negative impact on the liquidity of wholesale markets**
- Limited customer switching
 - Choosing a new supplier from another Member State remains exceptional
 - **Energy markets remain national in economic scope**

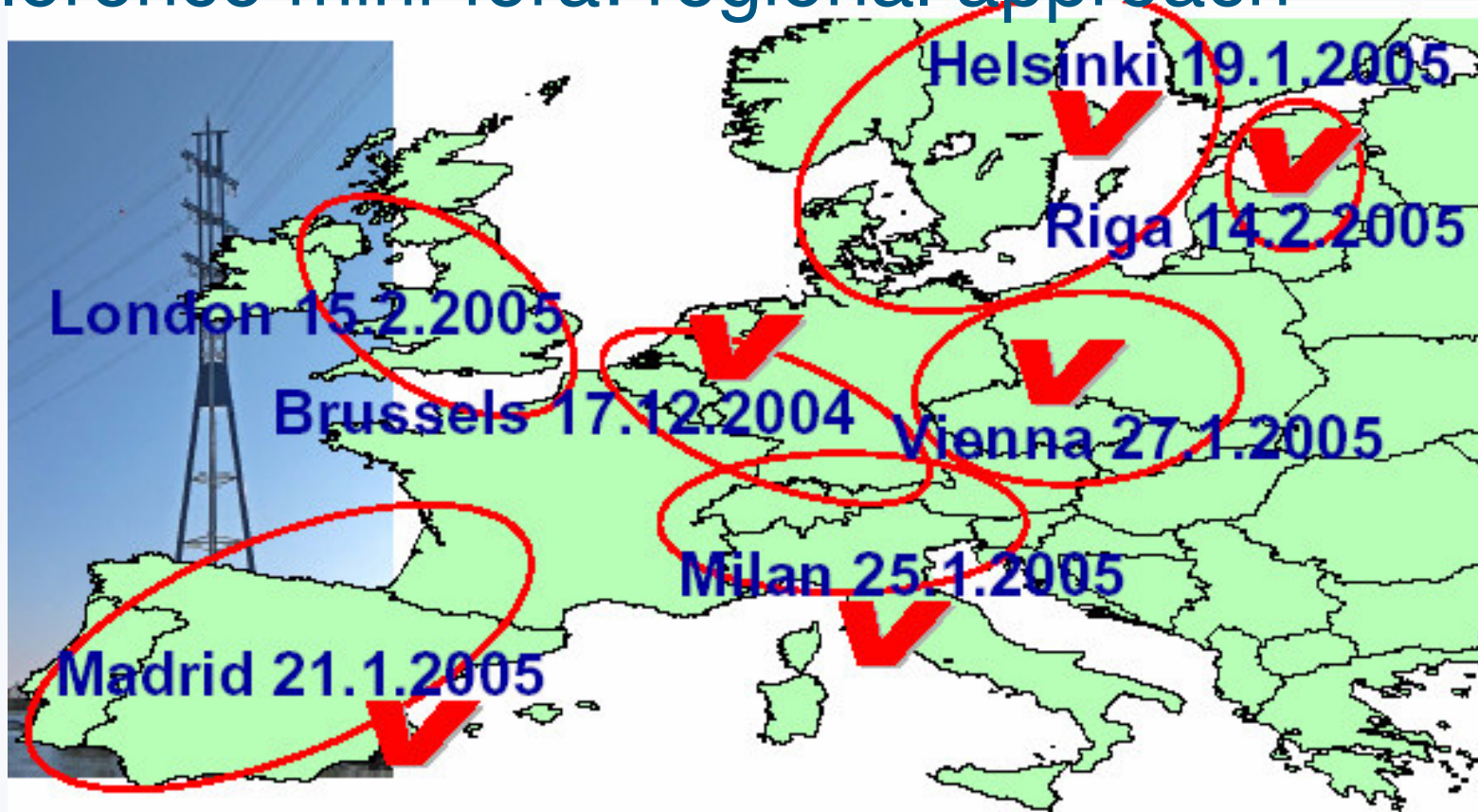
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- DGTREN Strategy Paper March 2004
 - Broad consensus in industry
- Academic point of view: SESSA project

⇒ 7 key action areas

- Member States with strong interconnections
- Interim stage
 - IEM by linkage of developed regional markets
- More developed harmonisation of regulation
 - Coordinated market based mechanisms for cross-border trade, congestion management, ...
 - Balancing and ancillary services?
- B-F-NI: joint road map on regional market integration in Dec 2005
 - Consultation of all stakeholders

- ERGEG consultation: Dec 2005
- Florence mini-fora: regional approach



- Increasing coupling between MS submarkets
- Strongly interlinked wholesale markets
 - As large price areas as possible
 - One single pan-European price area
- Participation in different markets
 - High level of compatibility in structures, market rules and regulatory framework
 - **Full harmonisation not required**

2. Integrating markets

Criteria for marketplaces

- Sufficient number of market participants in day-ahead and forward markets
 - More large consumers from demand side
- Access to common sets of market information
- Market-based mechanisms for congestion management
- Liquid day-ahead and forward markets and open balancing and intra-day markets

Source: Eurelectric

- Inter TSO compensation for transit and other cross border flows
- Harmonised transmission charges
 - Locational signals at EU level
- Interconnection capacity allocation by non-discriminatory, market based mechanisms
 - Florence mini-fora: all interconnectors market-based by beginning 2006
 - ERGEG: implicit and explicit auctioning
 - **Explicit is minimum requirement**

- TSO rules to deal with internal congestion
 - Not permitted to systematically transform internal constraints into constraints at borders
 - **Nordel**

- Investment and capacity release
- Mix trading & longer term bilateral arrangements
- Monitor behaviour and act using competition law
 - Avoid ad-hoc intervention
- Transparency on generation plant availability
 - Availability forecasts
- Demand side participation
 - Wholesale and balancing markets
 - Increase elasticity of demand within individual settlement periods
 - Reduce scope for abuse of dominant positions

«Big players should not be considered responsible for the fact that their size is already of a European dimension whereas the market dimension is lagging behind» (Eurelectric)

- Expected benefits of competition likely to arise from consolidation
 - Economies of scale and scope
 - **Capital intensive industry, large critical mass**
- Competition law: Criterion is behaviour, not size
 - Abuse of dominant position

- Member States required to publish approach
 - Stable market design to encourage investments
- Regional or national issue?
 - Sharing of reserve capacity is beneficial
 - Strong unilateral approach not appropriate
 - **Implications for treatment of interconnection capacity if one country is relying on another to provide reserve capacity**

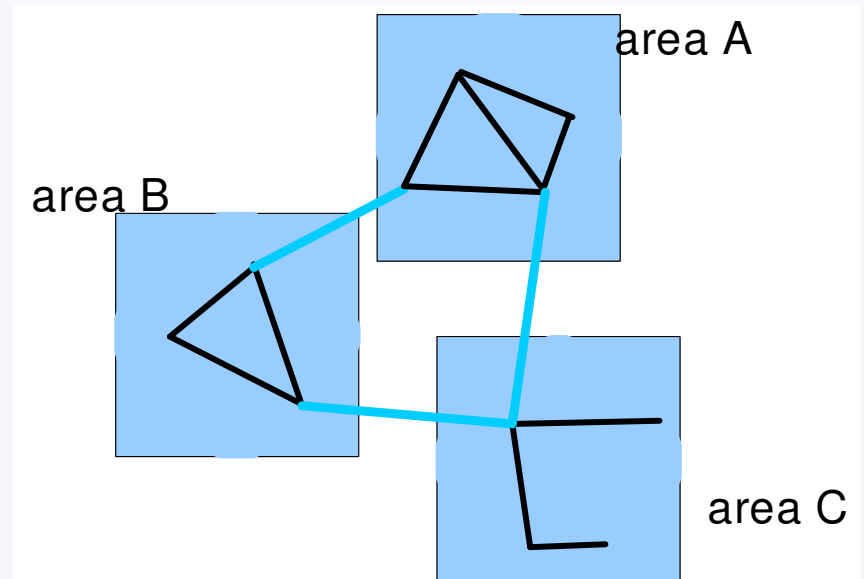
- Procedures for authorisation and planning approval
 - More streamlined and harmonised process to remove obstacles
 - **Spread of best practice approach?**
- Clear responsibilities of TSOs
 - Ensuring balance in real time

6. Consistent framework for sustainable energy

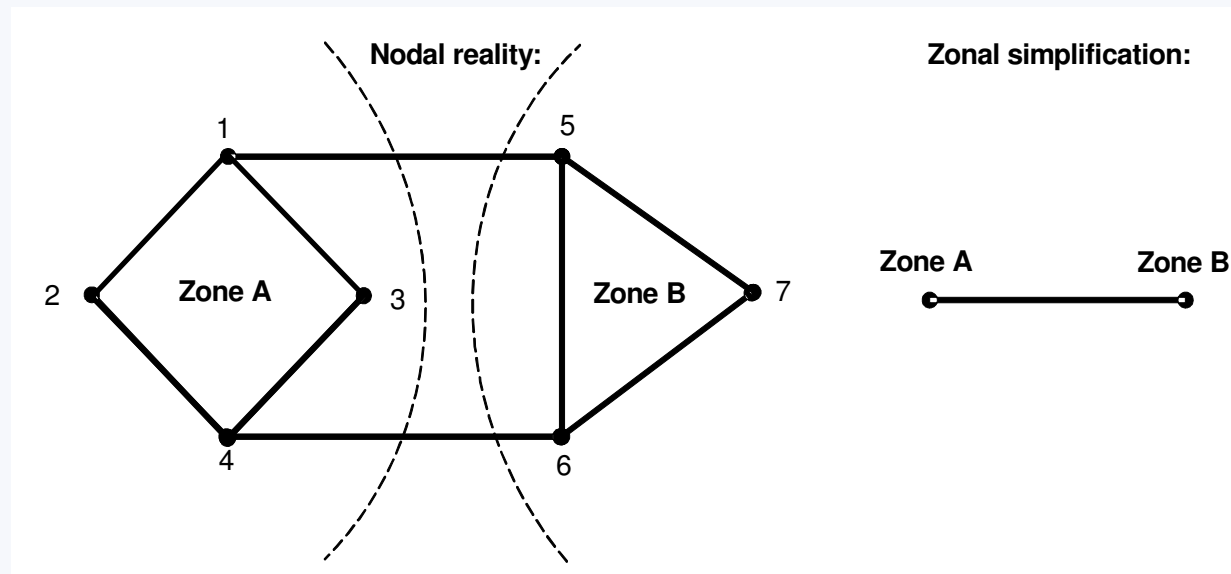
- Increase cost effectiveness of support
 - Avoid disproportionate distortions of the market
 - **Member States adopting different and potentially incompatible policies**
 - Possible EU harmonization of support schemes?
- Monitor interactions between support schemes
 - RES, CHP, energy efficiency and the EU ETS

- Inconsistencies between Directives and Regulations
 - Potential to create confusion and uncertainty
 - **Increase the industry's risks and costs.**
 - RES policies often raise new obstacles to competition on wholesale markets and to availability of interconnections

- European electricity grid quite well interconnected
 - Power flows influence remainder of synchronous area
 - Significant power flows on cross-border lines even in presence of balanced control areas
- Control zones considered to be copper plates
 - Main constraints assumed on international interconnections
- Europe is zonal market



- Zonal models disregard difference between transmission capacity and transfer capacity
 - Restrictions on cross-border flows expressed in terms of cross-border transfer capacities
 - **Not equal to sum of the physical capacities**



- Generation shifts within control zone affect transfer capacities
 - Capacities very sensitive to investments and to changing load and generation pattern
 - **Investment decisions and changing power flow patterns difficult to forecast**
 - **Increased penetration of unpredictable wind decreases predictability of load generation dispatch**
- DC power flow approximation neglects line resistances and reactive power management)
 - Sufficient to model active power flows under certain criteria