Design and governance of regional energy markets

Walter Boltz

4th EU/US energy regulators` roundtable

Lisbon, May 13. 2003

Agenda

- Central European market overview
- Regulatory framework
- One network - many markets
- Wholesale market structures
- Price developments
- European market: quo vadis?

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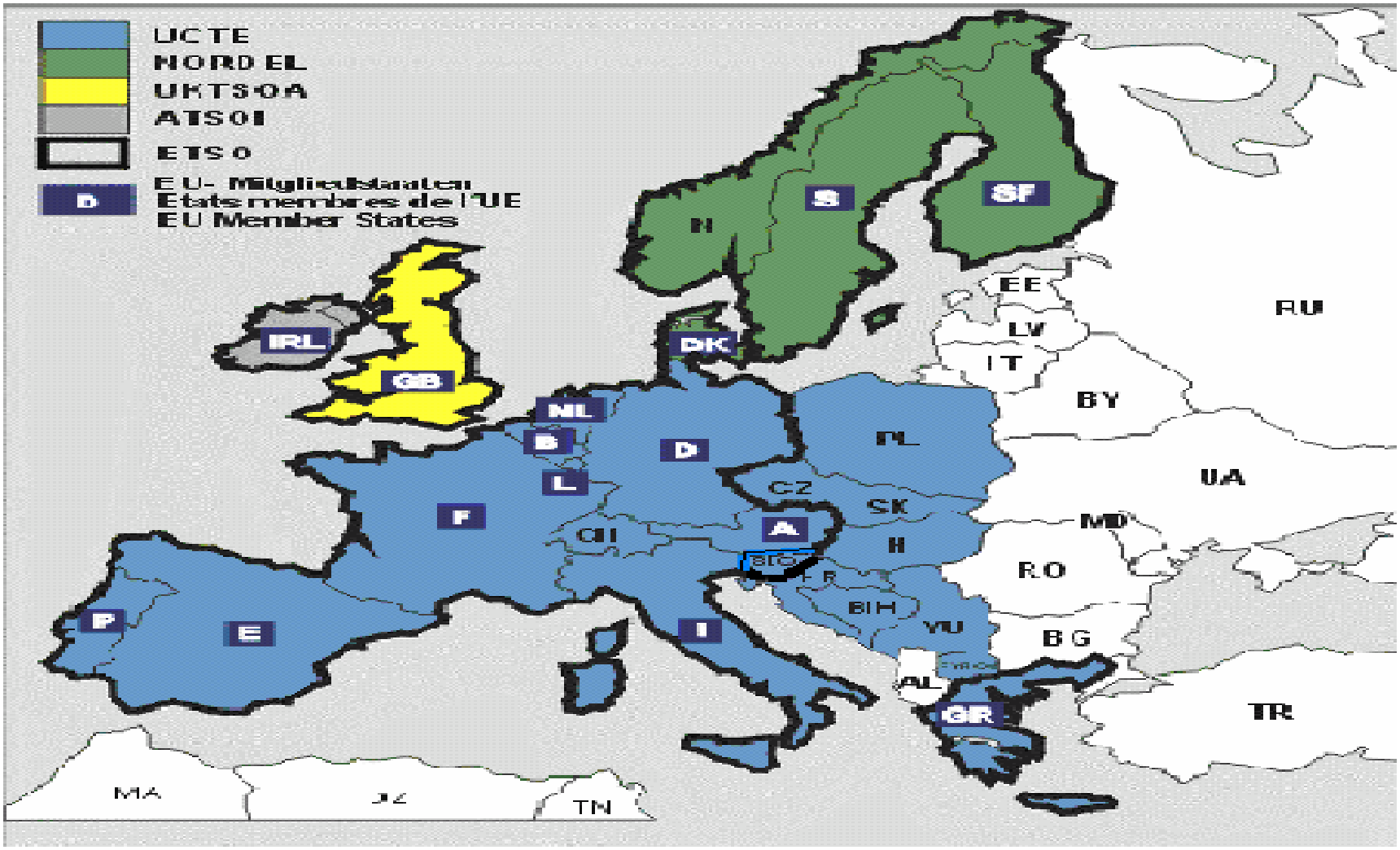
UCTE AREA


UCTE
NORDEL
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ATSOI
ETSO
EU- Mitgliedstaaten
Etats membres de l'UE
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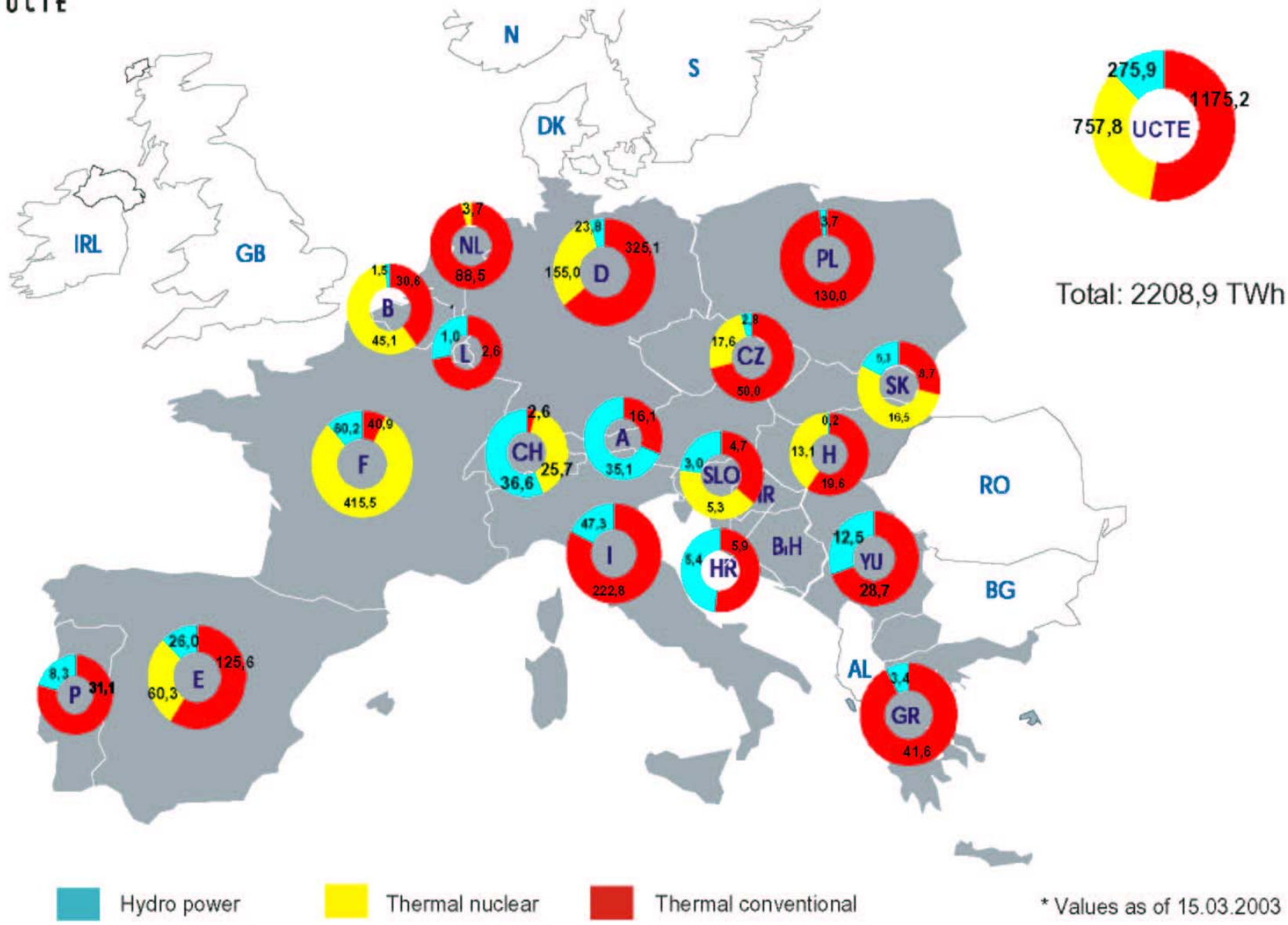
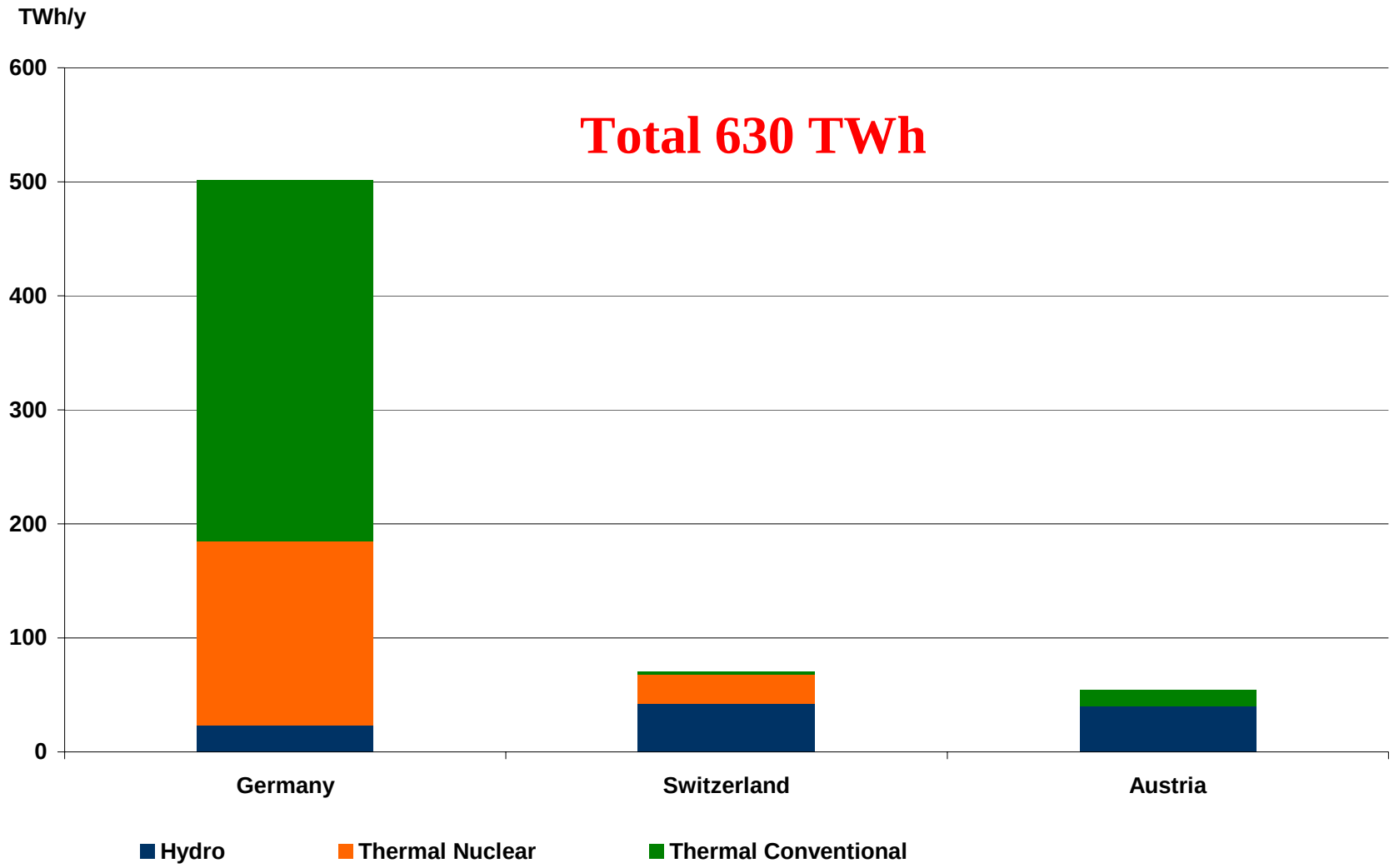
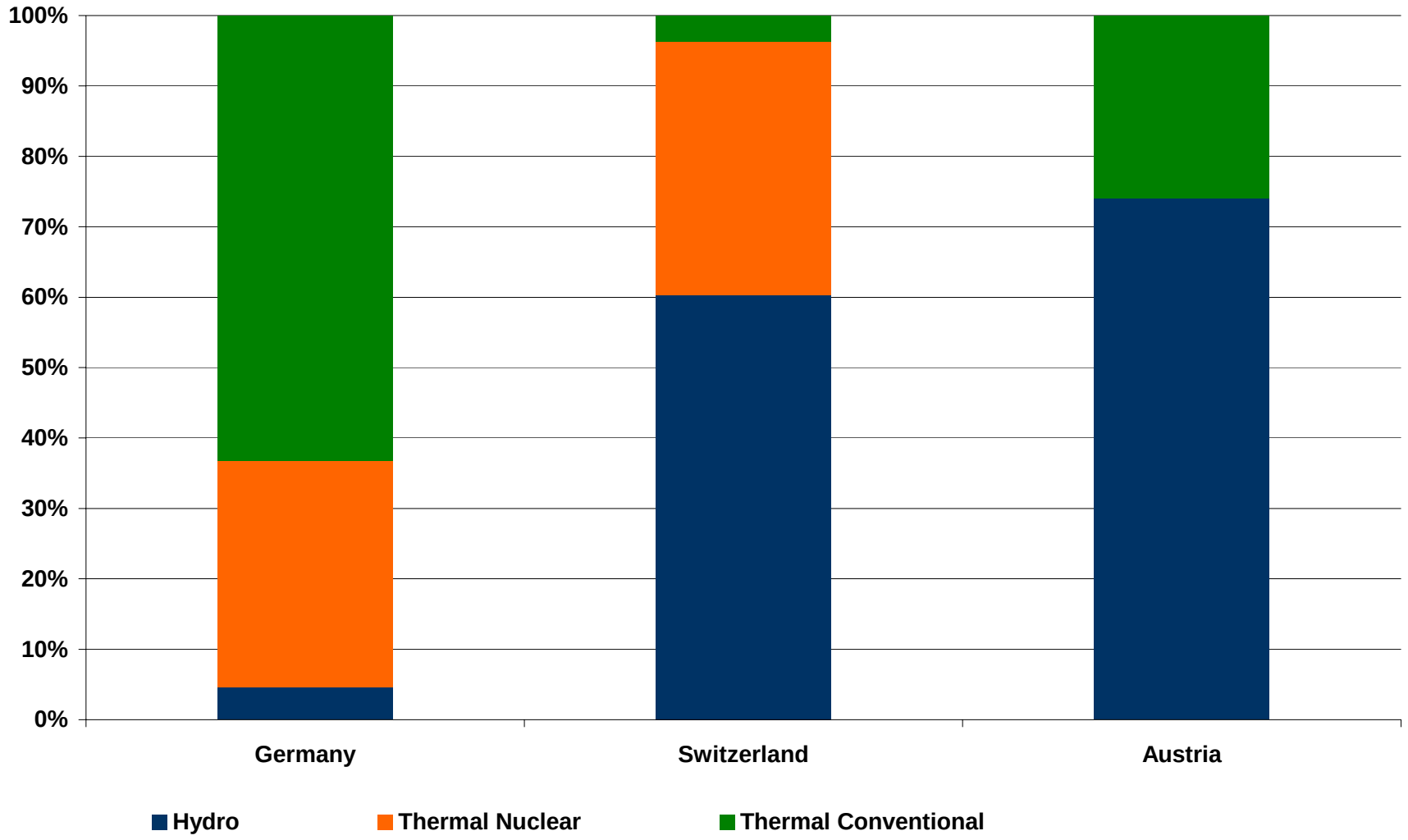
Net production 2002 in TWh *



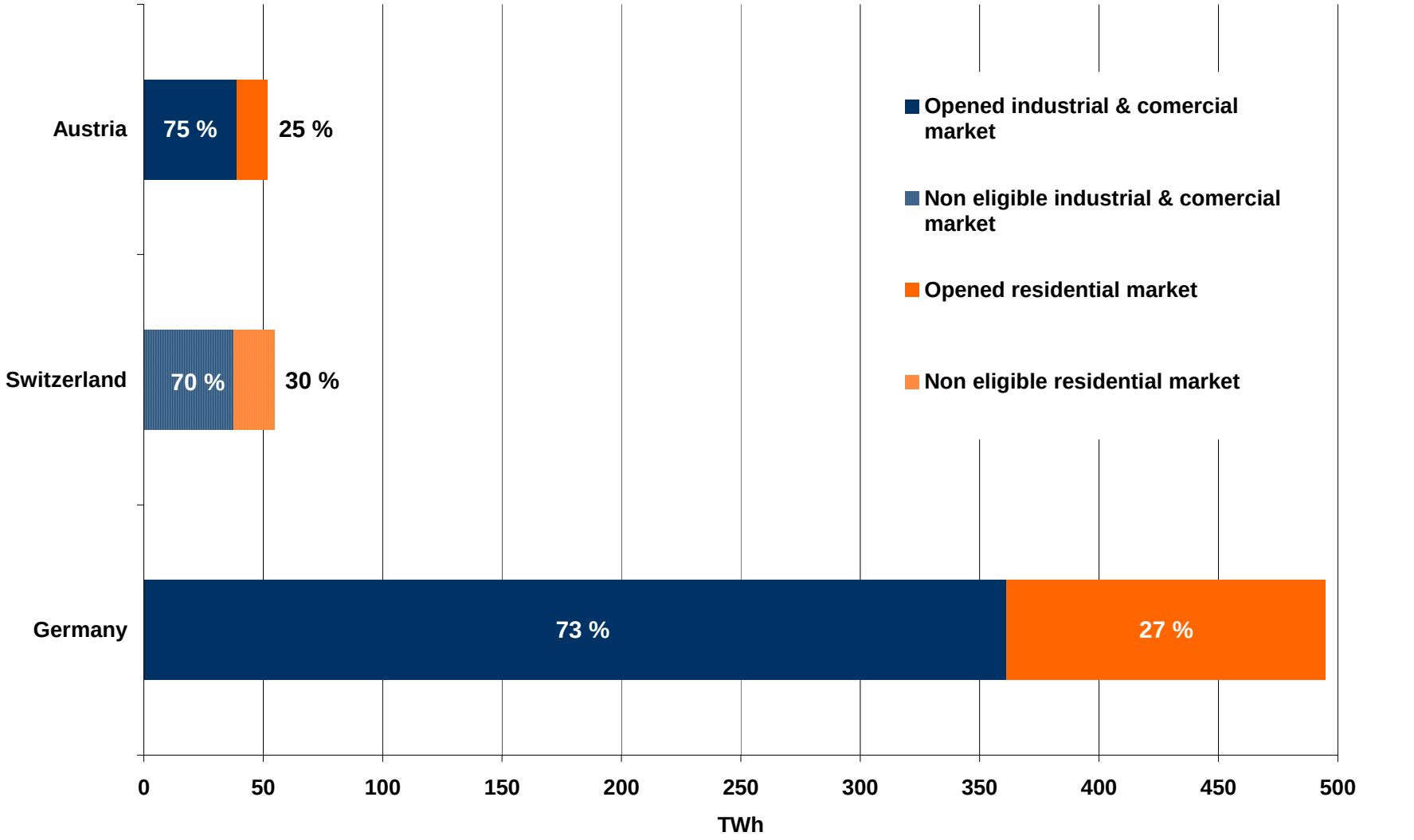
Net electricity production 2001



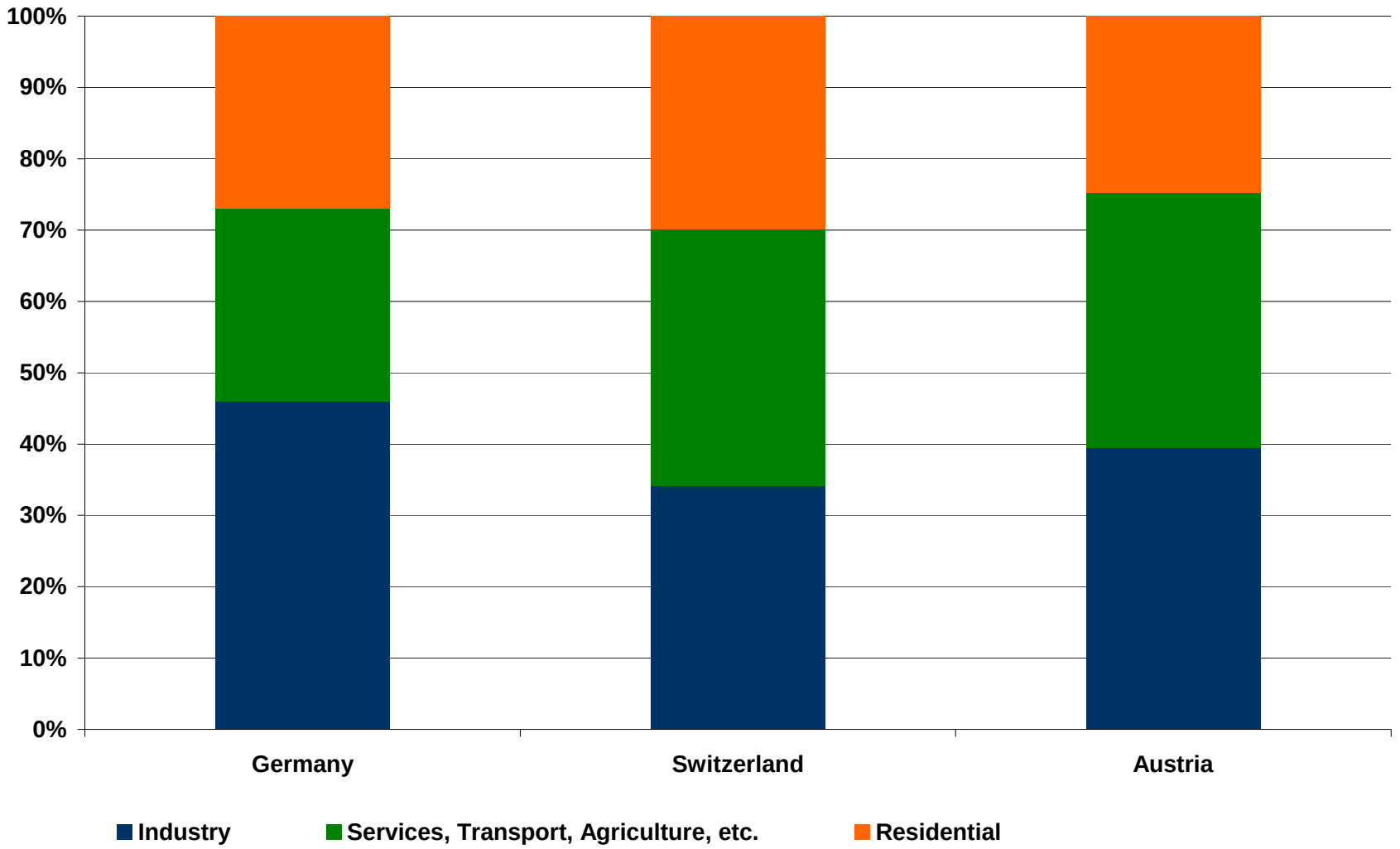
Structure of electricity production



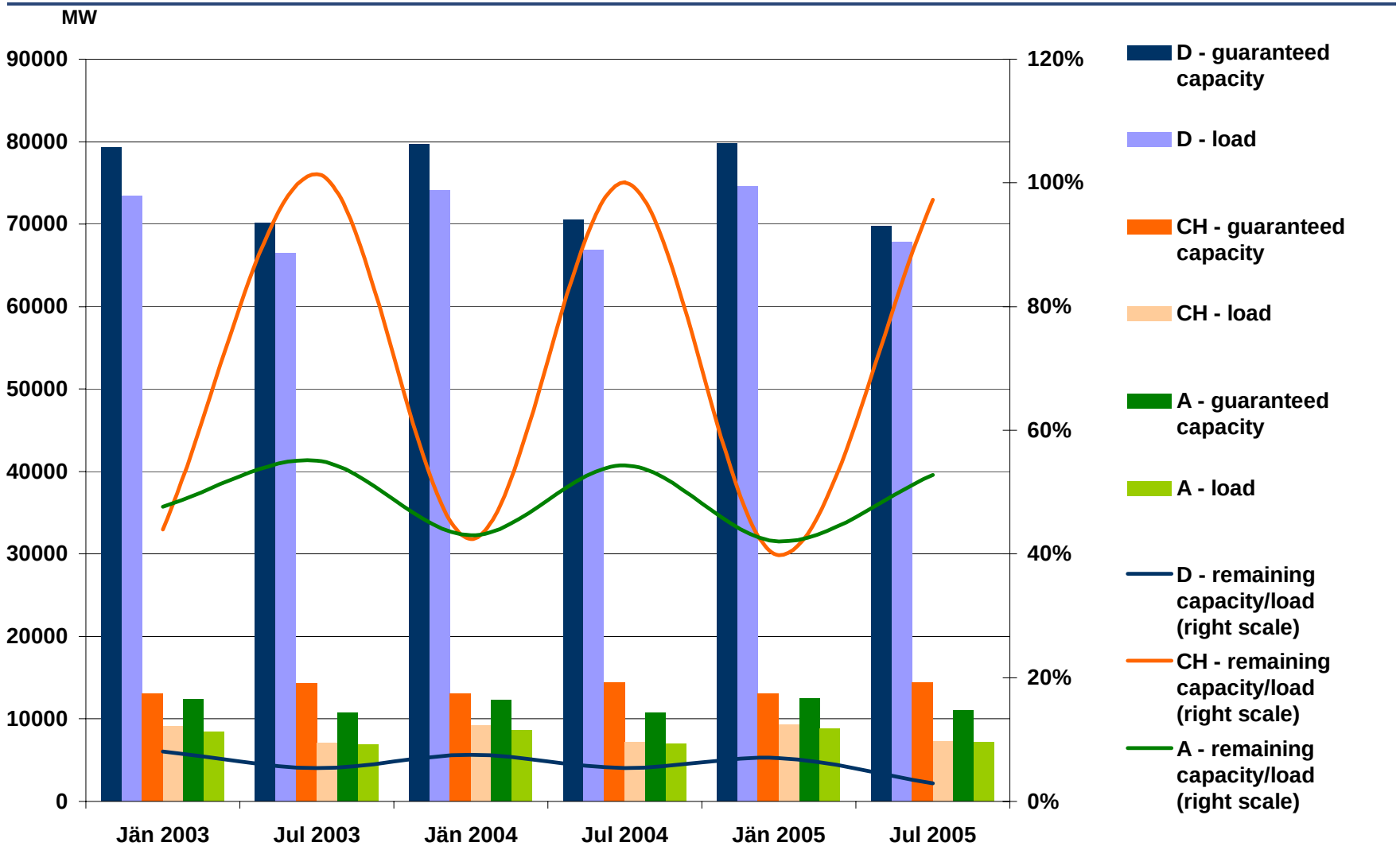
Electricity consumption and eligibility



Structure of electricity consumption



Generation capacity vs. load



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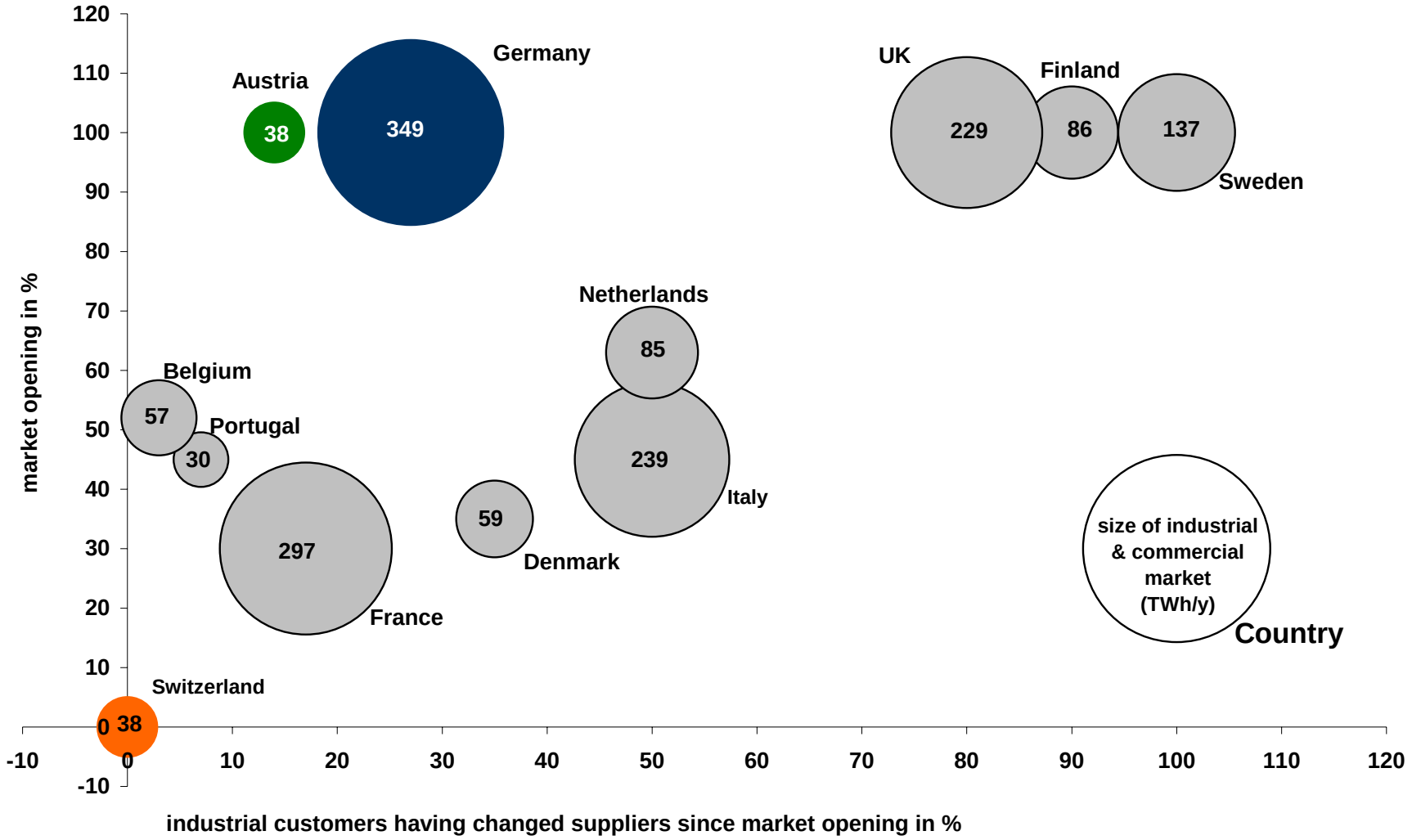
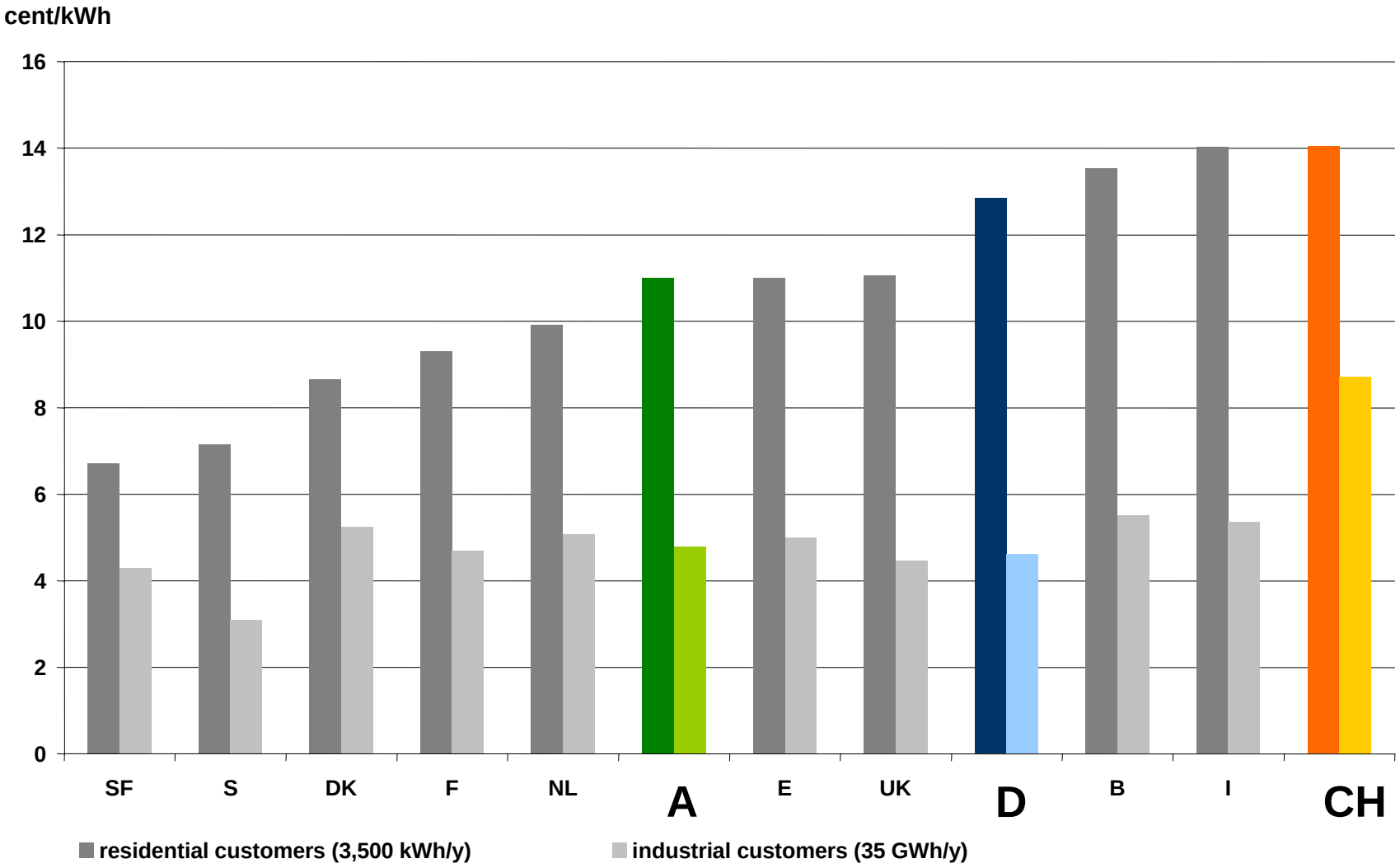
Supply market dymamic vs. opening



Large retail price variation across Europe



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- **Regulatory framework**
- One network - many markets
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Regulatory framework – a brief overview

	Germany	Switzerland	Austria
member of the EU	yes	no	yes
independent national regulator	soon	no	yes
market opening	100 %, since 1998	no market opening	100%, since 2001
synchronized electricity network	yes, UCTE	yes, UCTE	yes, UCTE
dominant generation type	conventional calodc	hydro	hydro
ownership structure of the large generators	mainly privately owned	mainly publicly owned	mainly publicly owned
number of distributors	Some 1,000	Some 1,100	145
organised electricity exchange	yes	no	yes
type of network access	negotiated TPA	no access for final consumers	regulated TPA
member of the ETSO CBT scheme	yes	yes	yes
regulation on physical wholesale trading	no specific	no specific	no specific
regulation on financial trading	yes, if on behalf of third parties	yes	no

EU & wholesale market design

- **EU has no plans to set a Europe-wide framework for wholesale market design (unlike SMD in the US)**
- **No preference for e.g.**
  - OTC vs. exchanges
  - Mandatory pool vs. voluntary trading
- **Let different market concepts compete with each other**
- **Coexistence of different concepts can contribute to better understanding**
- **Wait and see which one proves to be the best**

EU & wholesale trading regulation

- **Currently no EU-level regulation**
  - National regulations → very different approaches
  - Most European countries tend not to regulate physical trading
  - Financial trading is often subject to national financial reglation
- **EU‘s proposed revision of the Investment Services Directive (ISD) and the new Market Abuse Directive (MAD) will effect energy traders**

What could ISD bring for traders

Investment Service Directive regulates investment firms

- **Requires sufficient capital**
- **Formulates contents of traders‘ licences**
- **Calls for certain informations to be disclosed**
- **Extension of the „EU-passport“ to power derivatives traders**
- **Physical trading is outside of the directive‘s scope**
- **Only financialy settled deals should be included**
- **Only third party operations are covered**

Pros & Cons of the proposed EU-wide regulation

Pros

- **Sufficient reassurance for market participants about the reliability of their counterparts is definitely needed**

- **Extension of the „European Passport“ (possibility of Europe-wide business with national financial licence) would enhance power derivatives trading and add legal certainty**

Pros & Cons of the proposed EU-wide regulation

Cons

- **Fully applied bank-style regulation could hurt traders‘ business and market liquidity**

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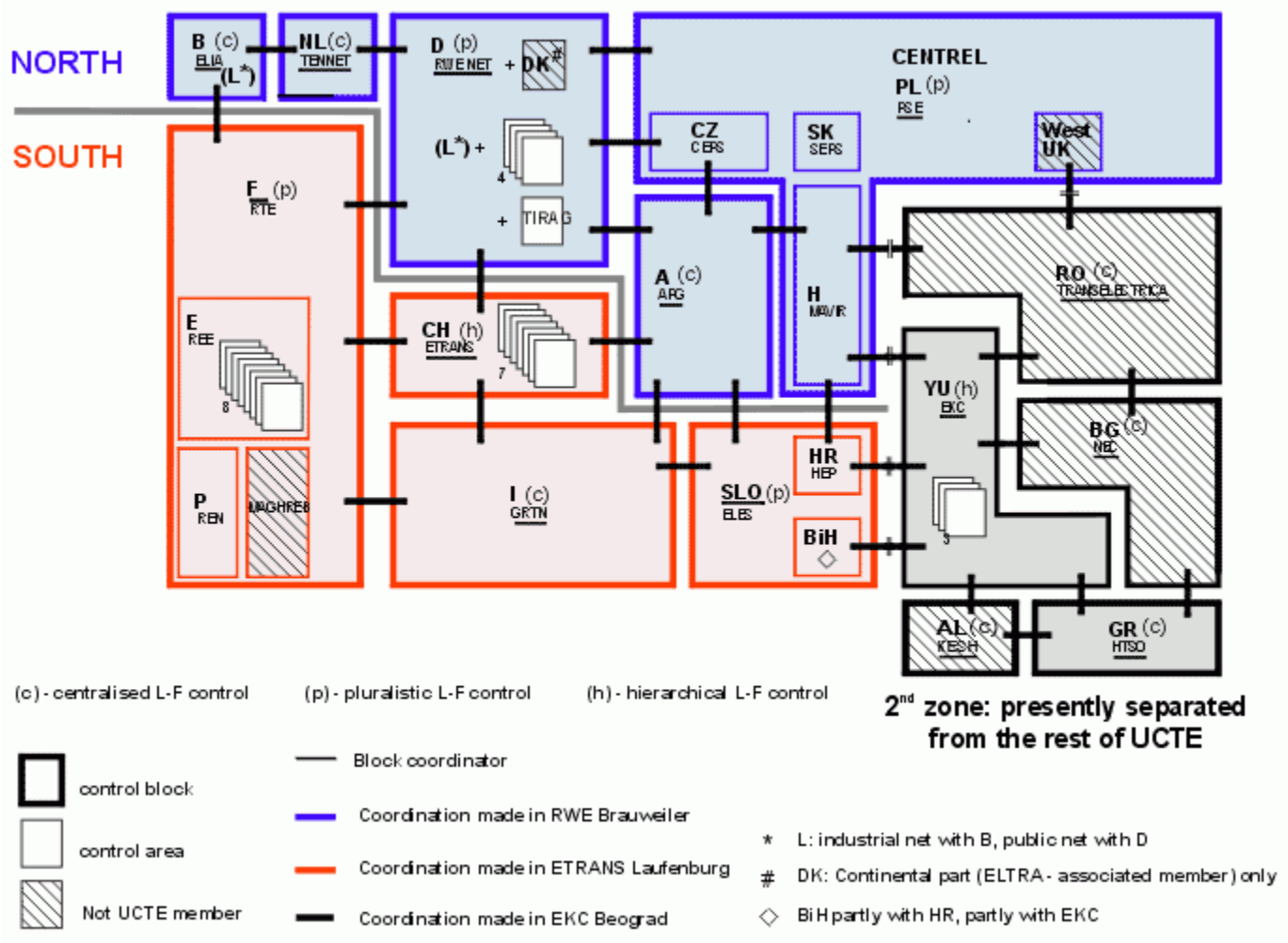
UCTE synchronous interconnection



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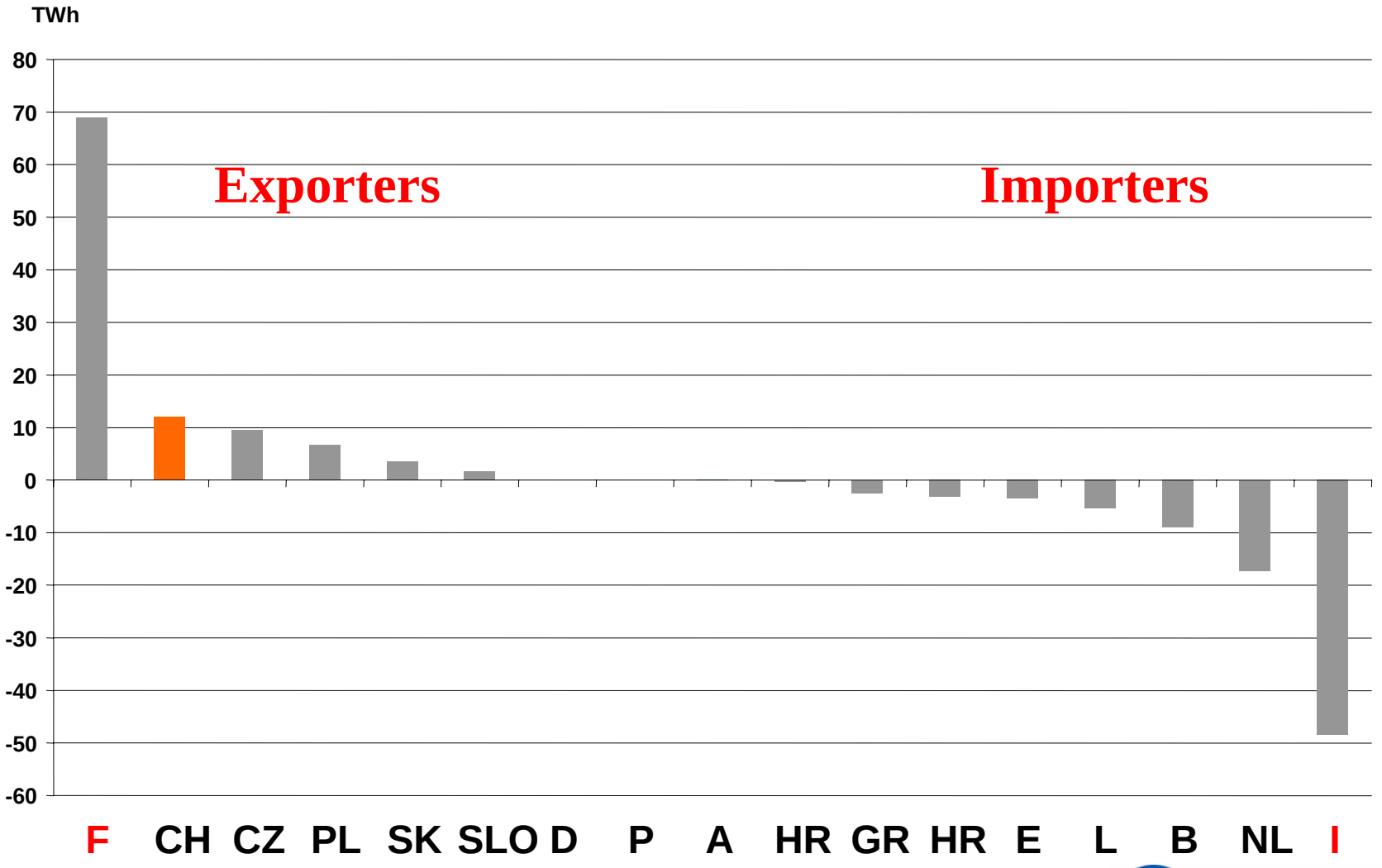
Balance of physical exchanges (UCTE 2001)



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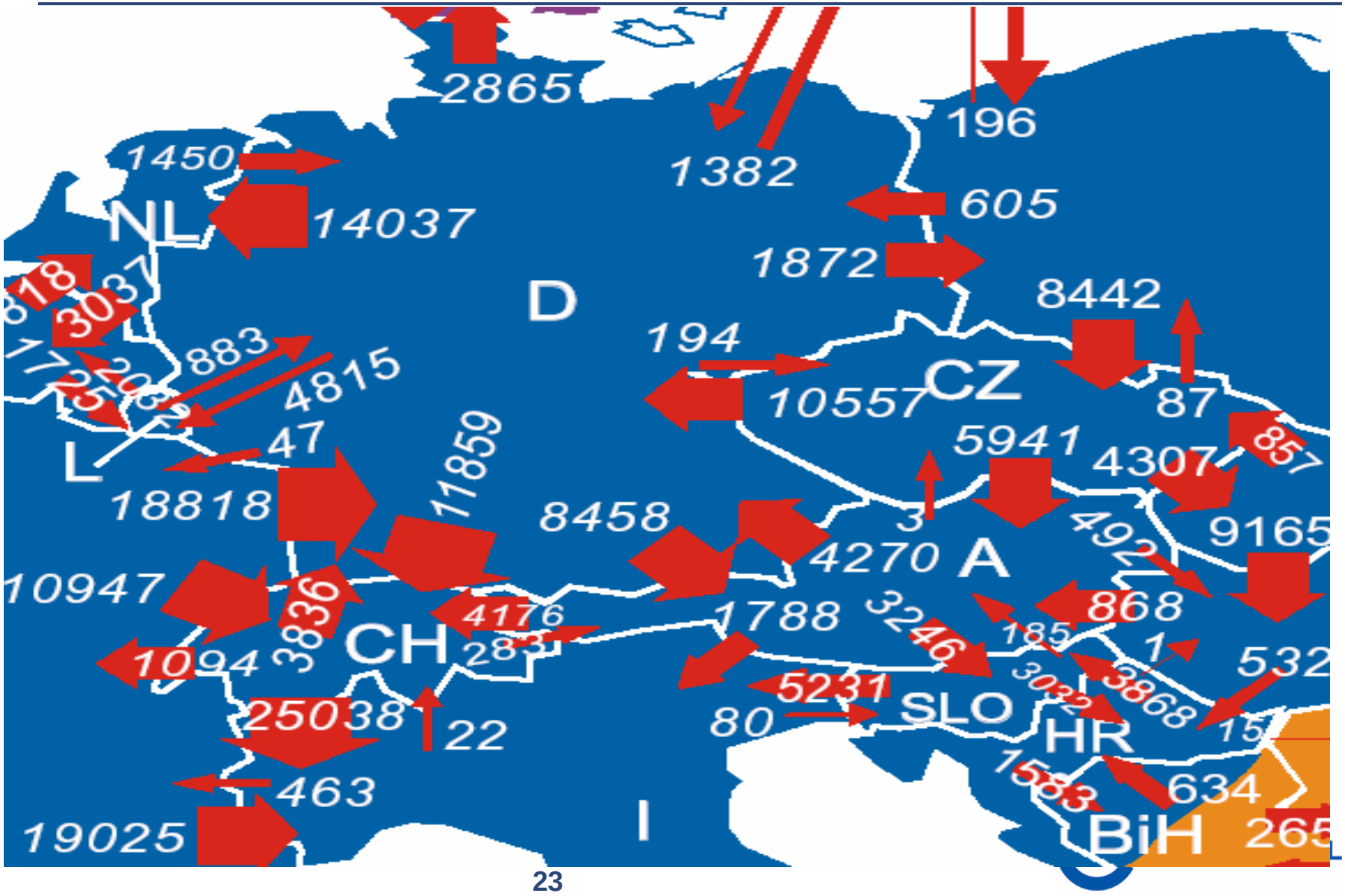
Physical electricity exchanges 2002 (GWh)



Regional wholesale markets

- **Marketplaces emerge, wherever trade between market participants can be concluded without major hindrance**
- **This is not true for the whole of Europe:**
  - Physical flow of power is limited by bottlenecks in transport capacities
  - No unified (more importantly transparent) method of transport capacity allocations
  - Differing rules concerning network access

Europe is not jet a single electricity market, but rather divided into regional marketplaces

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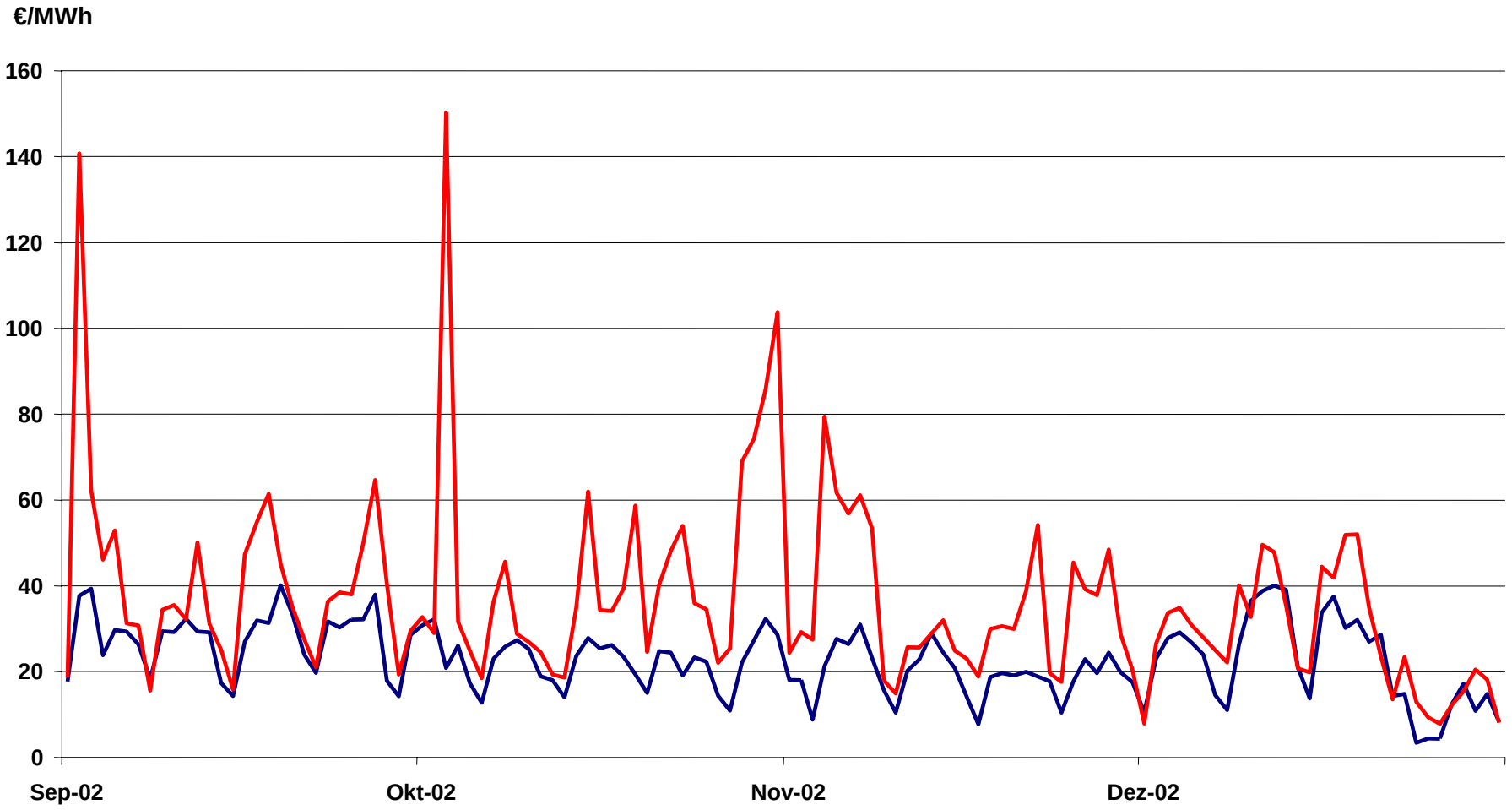
Different markets – different prices



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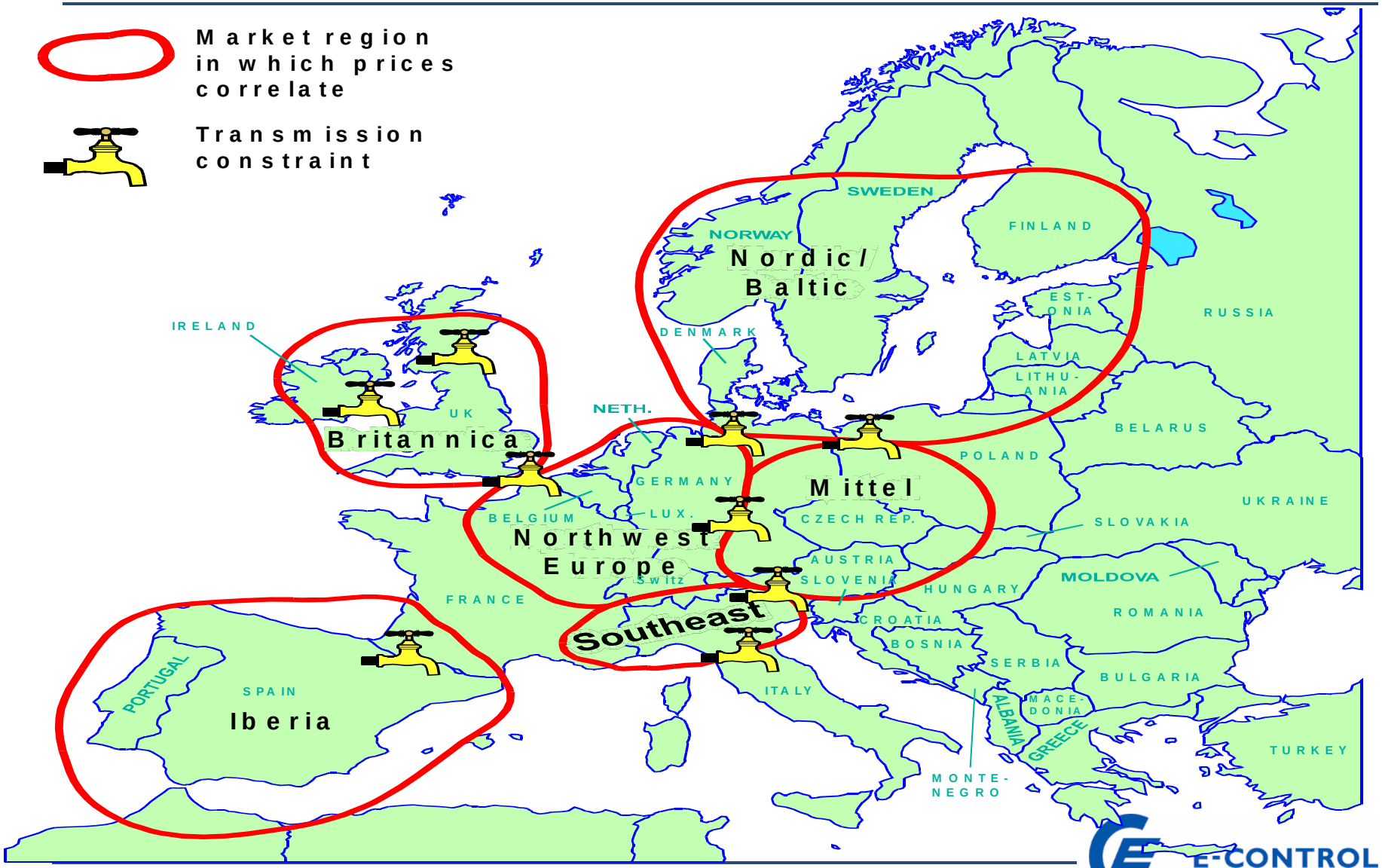
European power market convergence



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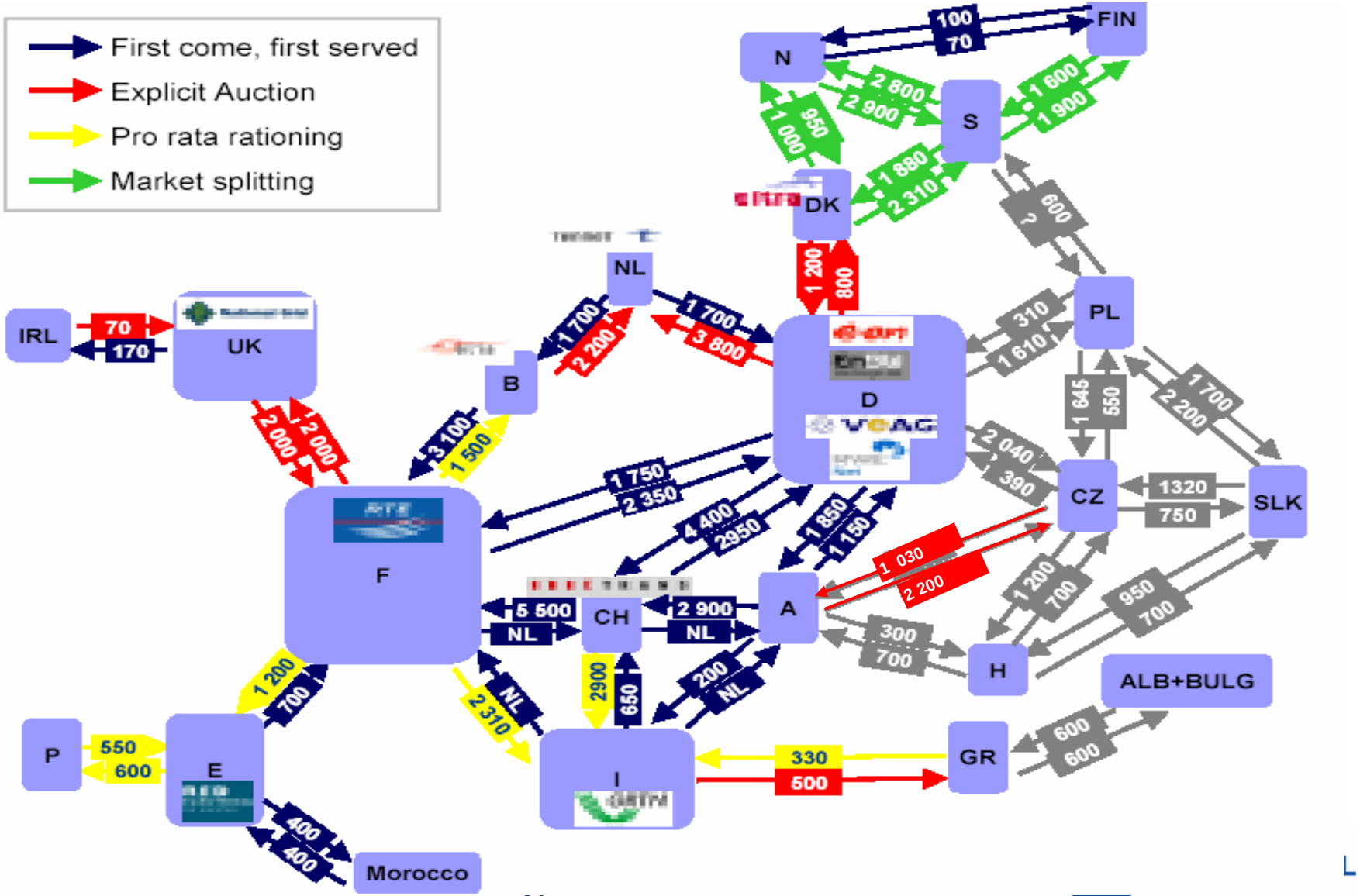
Methods of cross border capacity allocations



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Key requirements for an efficient wholesale market ...

- **Sufficient number of sellers and buyers for each electricity product**
  - no (obvious) abuse of market power possible
- **No major transmission constraints**
  - If any: unified and transparent method of allocation
- **Non-discriminatory access to the grid**
  - equal treatment of all market participants
  - independent network operation
- **Market transparency**
  - sufficient and accessible information for all market participants

... do we have them in Central Europe? (D,CH,A)

	☺	☹
Market concentration	• Large number of participants	• Few big players (E.ON, RWE, EdF)
Transmission constraints	• sufficient cross-border capacity	
Non-discriminatory grid access for traders	• traders can freely move power within the region	• Switzerland is somewhat a “black box”. Nevertheless relative active trade at Hub Laufenburg
Independent network operation		• different levels of independence across the region
Market transparency		• no publicly accessible load forcast • opaque information on running generation
Regulation on physical trading	• no specific regulation	

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Central European wholesale market

- **No transmission constraints between**
  - Germany
  - Austria
  - Switzerland
- **Very strong price correlation**
- **Identical standard products**
- **OTC and exchange trading**
- **Relatively high turnover**
- **Somewhat limited liquidity**
- **Over 100 market participants**
- **MTFS – ¼ hour delivery of profiles possible**

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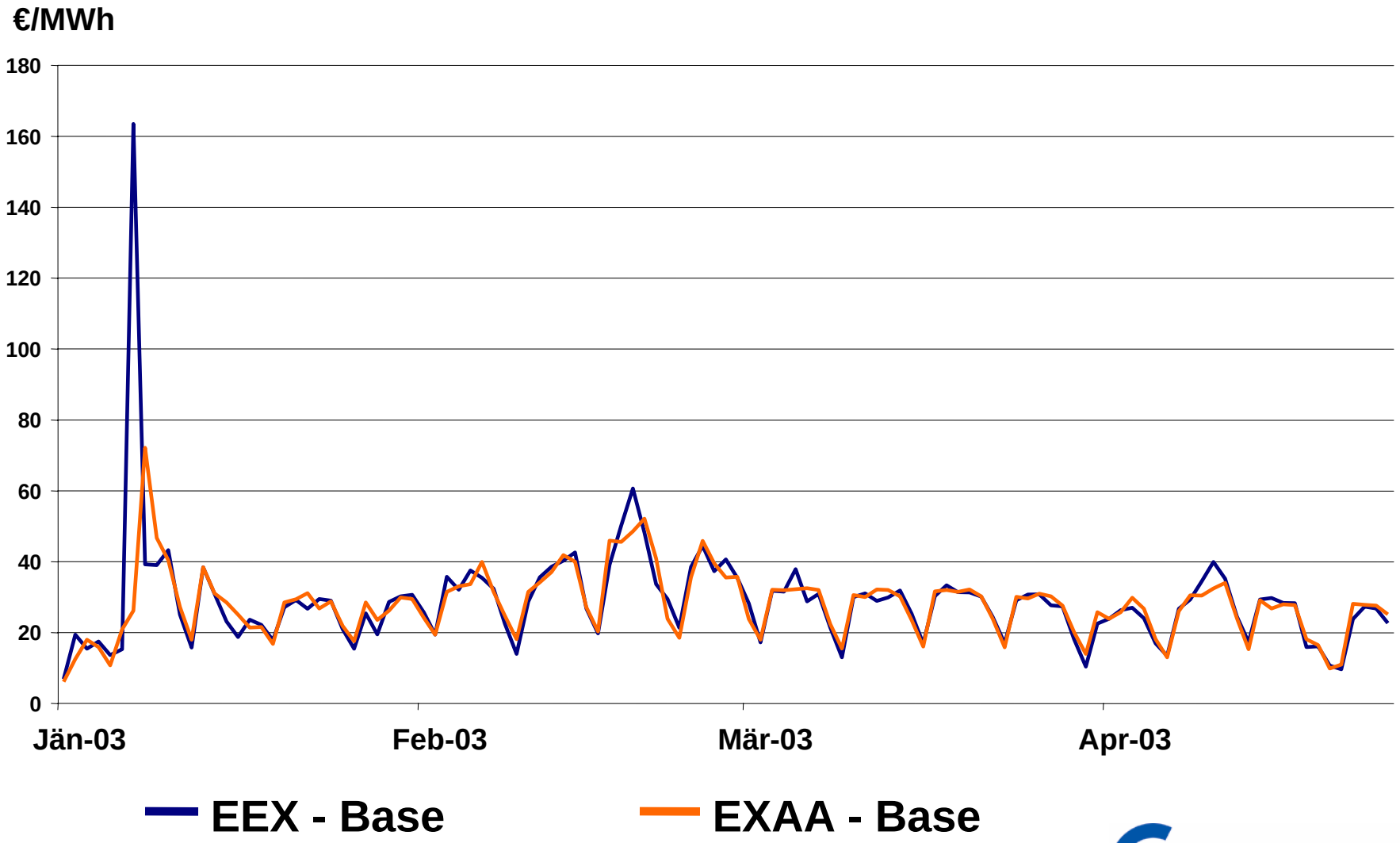
Correlation - German and Austrian Prices



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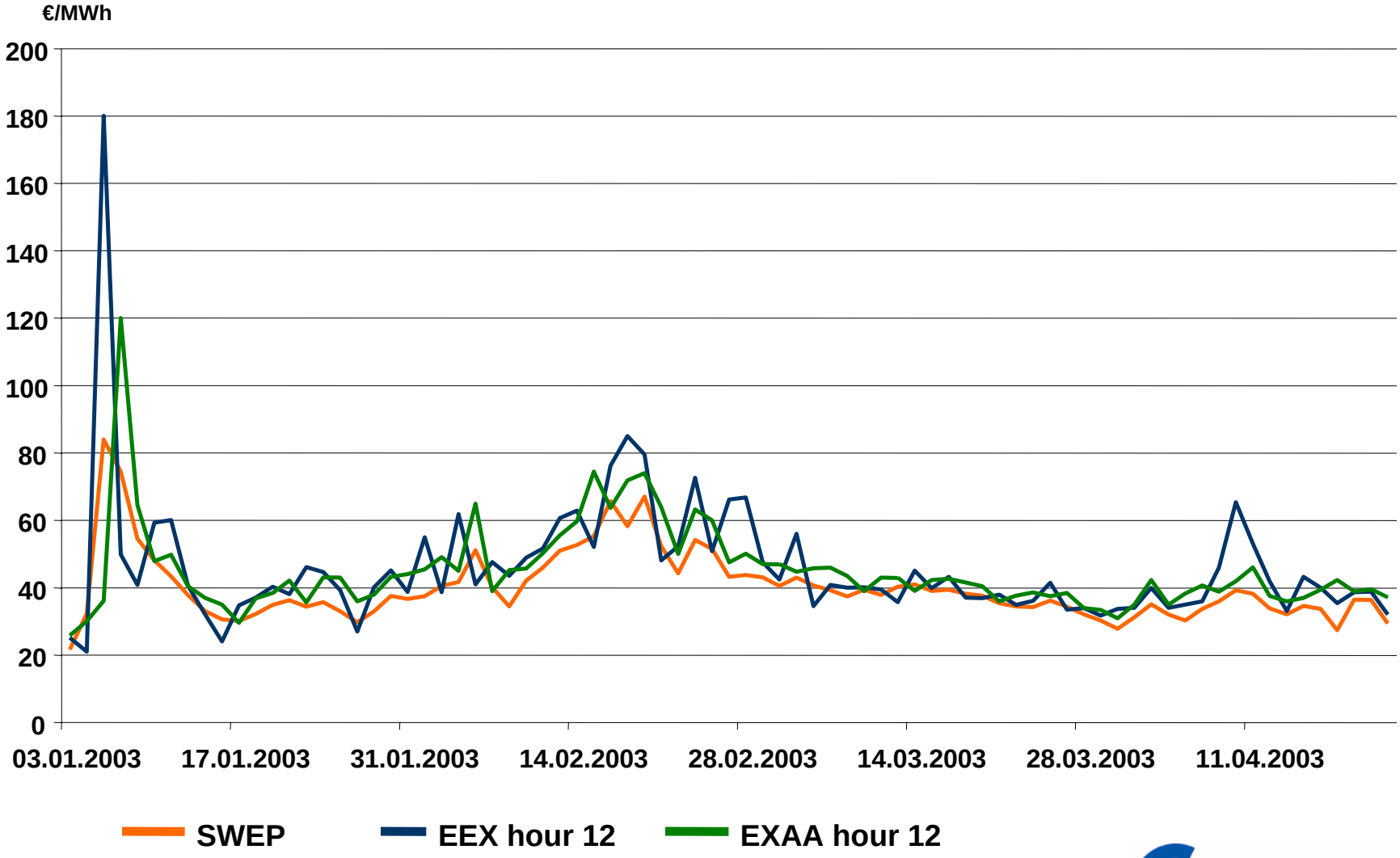
Even single hours show relatively good correlation



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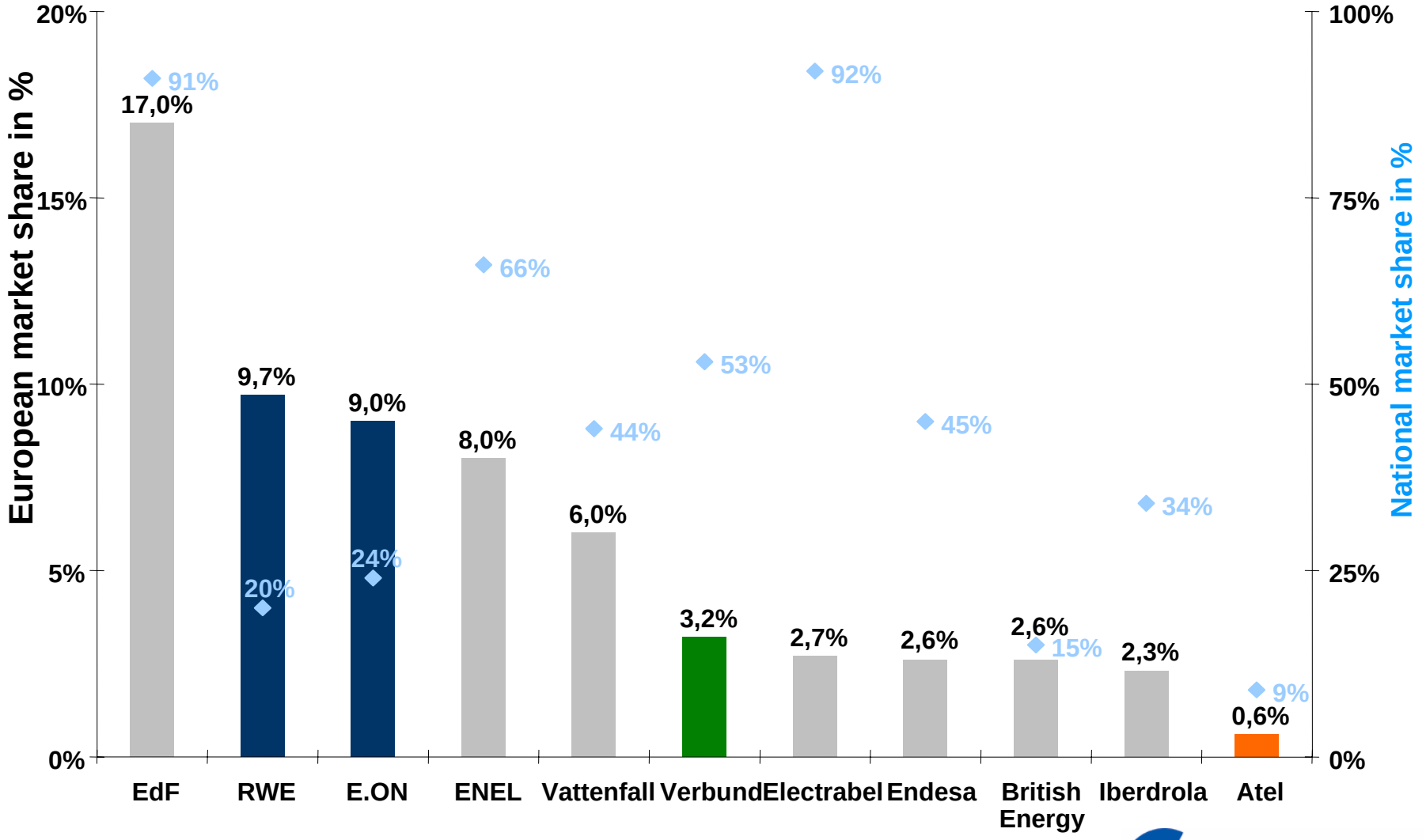
Central European wholesale market participants

- **Large incumbent generators**
  - EdF, E.ON, RWE, ENEL
- **Trading associations of local utilities**
  - MVV (D),Trianel (D), e&t (A)
- **Pure Traders**
  - TXU, Enron, Aquila, Reliant, Sempra, Entrade

Since most of the pure traders are gone, the market is largely dominated by big incumbent players

European vs. national generation market shares



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Power exchanges in Europe

1 UK Power Exchange

2 European Energy Exchange, EEX *
Spot market in co-operation with Nordpool Q1 ‘00

3 Amsterdam Power Exchange, APX, Q1 ‘99
spots- and futures market
planned: gas spot market

4, 5, 6 Nordpool

- Nord Pool, The Nordic Power Exchange (Lysaker)
- Nord Pool, (Swedish Branch)
- Nord Pool/EL-EX (Fl)

Swiss Power Index (SWEP)

7 Spanish Electricity Pool, OMEL

8 Polish Power Exchange, POLPX, Q1 ‘00

9 Romanian Power Exchange, OPCOM, Q1’01

10 Borzen –Slovenian Power Exchange Q1‘01

11 Powernext - Q1‘01

12 Alpen Adria Power Exchange, EXAA, Q1‘02

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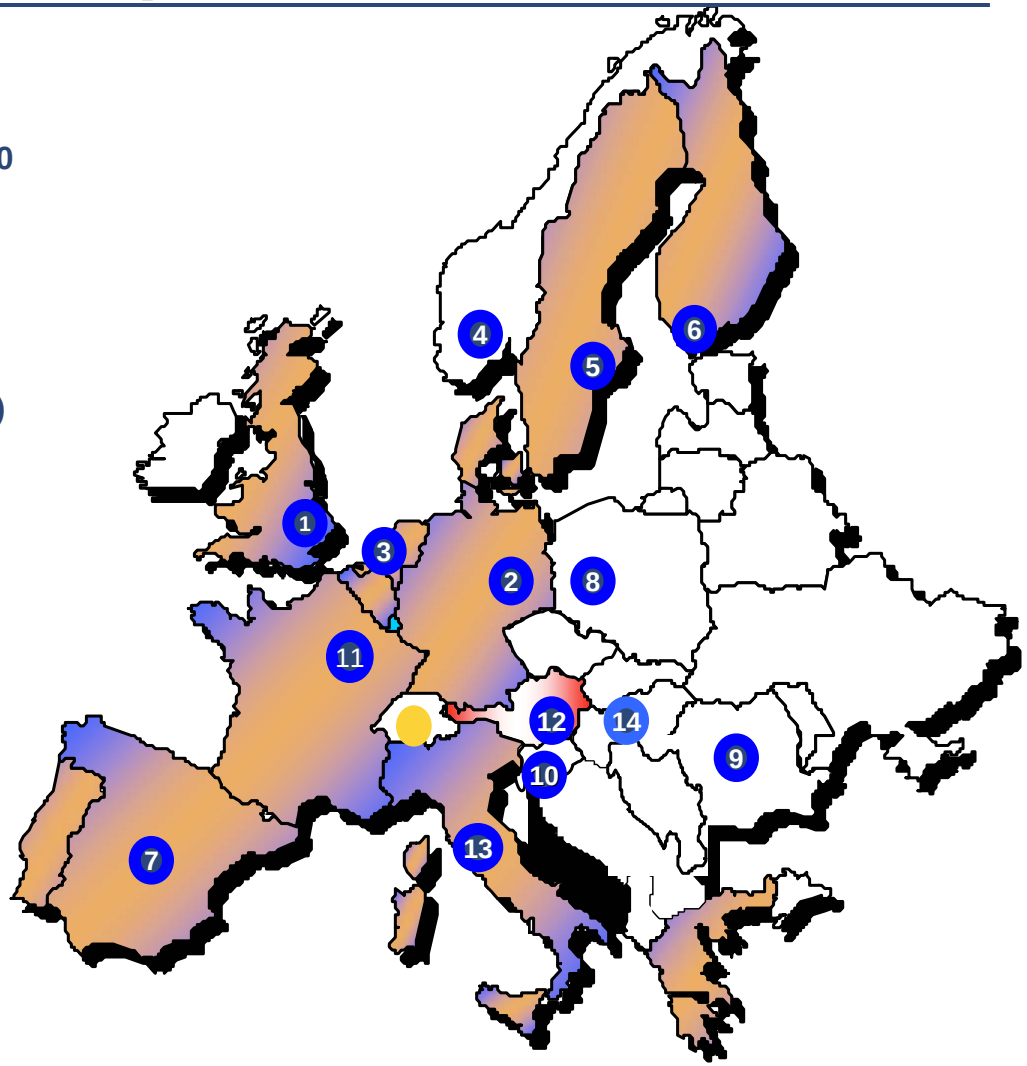
13 Gestore del Mercato Elettrico (GME) -
planned for Q4‘03**

14 „Budapest Power Exchange“
planned for Q1‘03



** = merger out of European Energy Exchange Frankfurt, I*
und Futuresmarket (Q2 ‘00) and LPX

*** orig. plan: Q1 ‘01*

Central European power exchanges

- **Initialy two competing power exchanges in Germany**
  - LPX – Leipzig Power Exchange (Leipzig)
  - EEX – European Energy Exchange (Frankfurt)
  - In 2002 merger of the two exchanges
- **In 2002 launch of EXAA – Energy Exchange Austria**

	EEX	EXAA
based in	Leipzig	Graz
Starting date	June 2000	March 2002
products	spot & futures	spot
spot products	single hours & blocks	single hours & blocks
participants	115	20
delivery	Germany	Austria
Spot volume (TWh)	33	0,9
Futures volume (TWh)	117	-

Wholesale market products

- **OTC and exchange traded products are fairly similar**
  - Peak → 08:00 – 20:00
  - Base → 00:00 – 24:00
- **Spot**
  - 24 single hours
  - Block of hours
- **Forward (futures)**
  - 6 months
  - 4-6 quarters
  - 3 years

Market price discovery

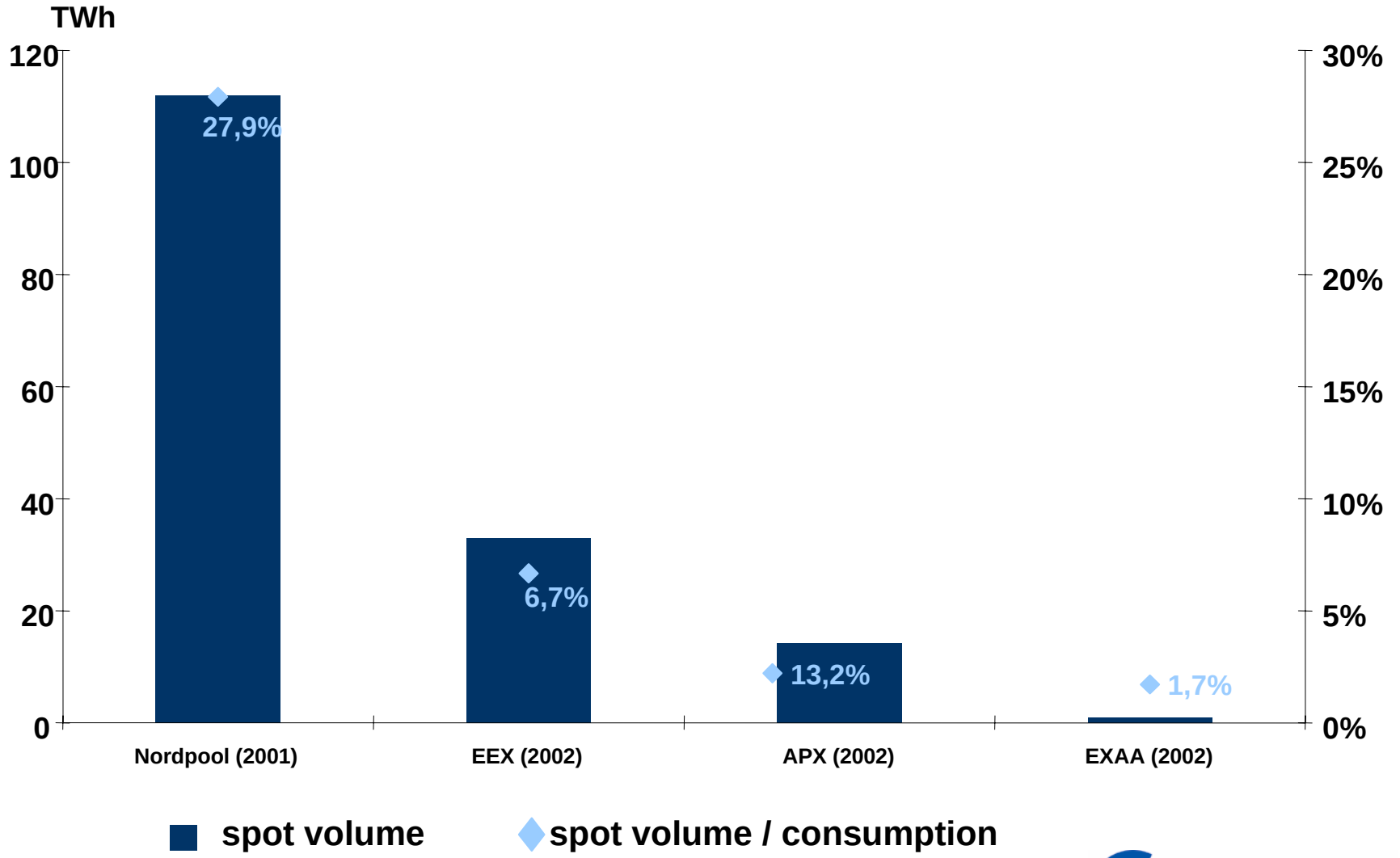
- **Exchanges publish prices and volumes regularly**
- **Price reports assess the OTC market**
  - Heren, platts, Argus
- **platts**
  - Widely accepted price benchmark
  - Almost identical German, Austrian and Swiss spot assessments
  - One single forward assessments for Germany representing the whole Central European region
  - Since credibility crisis in the US reassessment of the reporting methodology

Estimated market liquidity

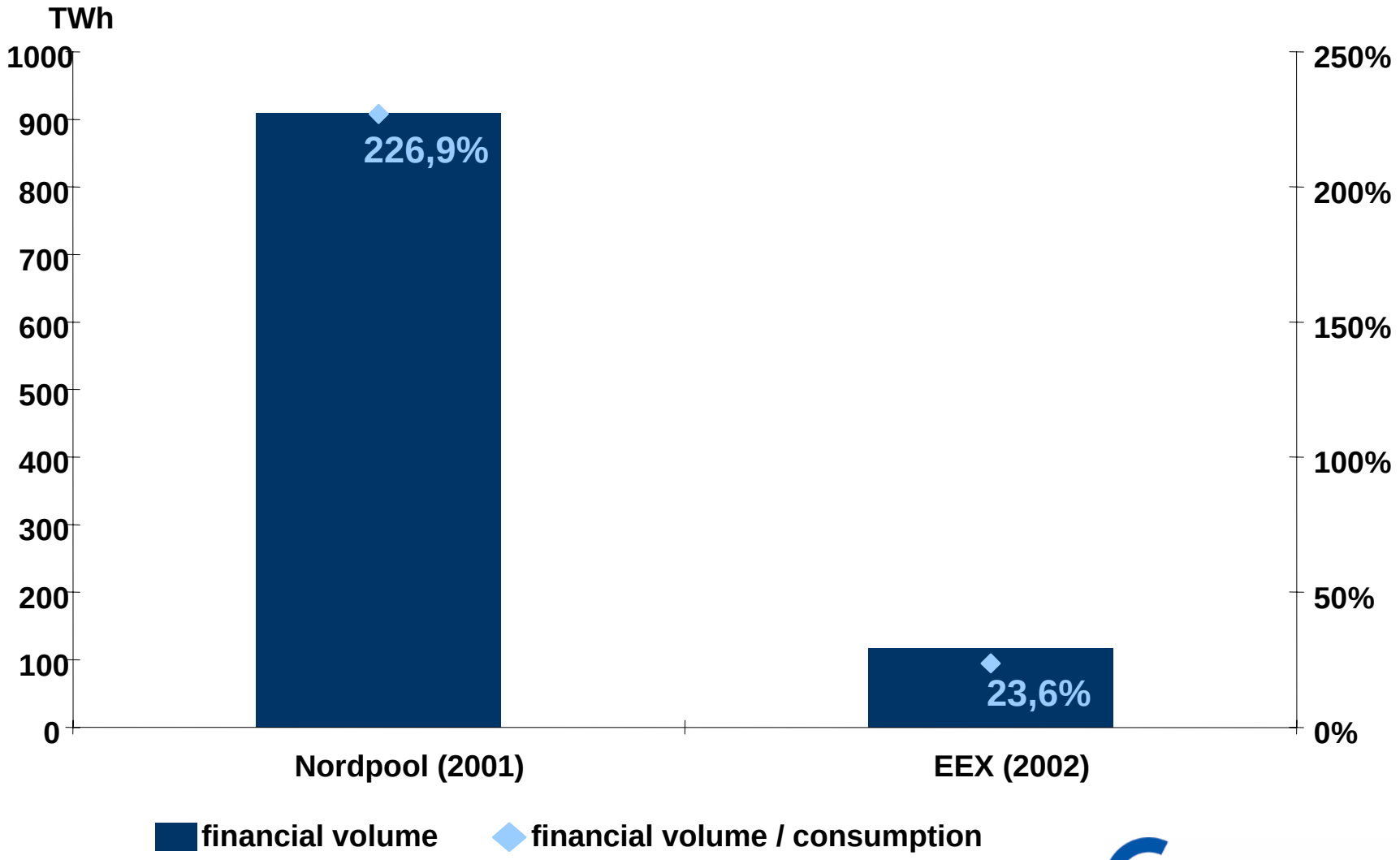
- **Liquidity is difficult to assess, since most of the trades are done on the OTC market**
- **Since Enron is gone, OTC volumes suffer**
  - Banks still shy away from Central European trading
  - Exchange trading gaining momentum
  - Clearing services becoming popular

	physical consumption (TWh)	overall trading volumes (TWh)	overall trading volume as a multiple of physical consumption
Scandinavia	380	2800	**7**
Holland	107	100	**1**
Austria	52	100	**2**
Germany	495	1000	**2**
Switzerland	58	-	-

Exchange traded spot volumes



Exchange traded financial volumes



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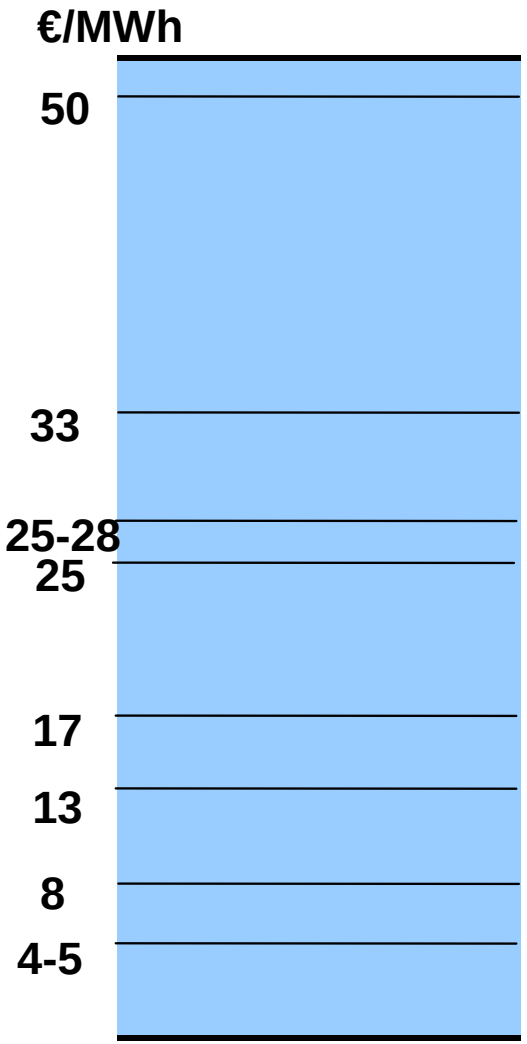
Costs and Prices in Central Europe



wholesale price (Base) Italy

supply price Austria - residential customers 2003

supply price Austria - large industrial customers 2003

EEX Base (wholesale price Central Europe)

short-run marginal cost - coal generation

short-run marginal cost - nuclear generation Germany

short-run marginal cost - nuclear generation France

short-run marginal cost - run-off river

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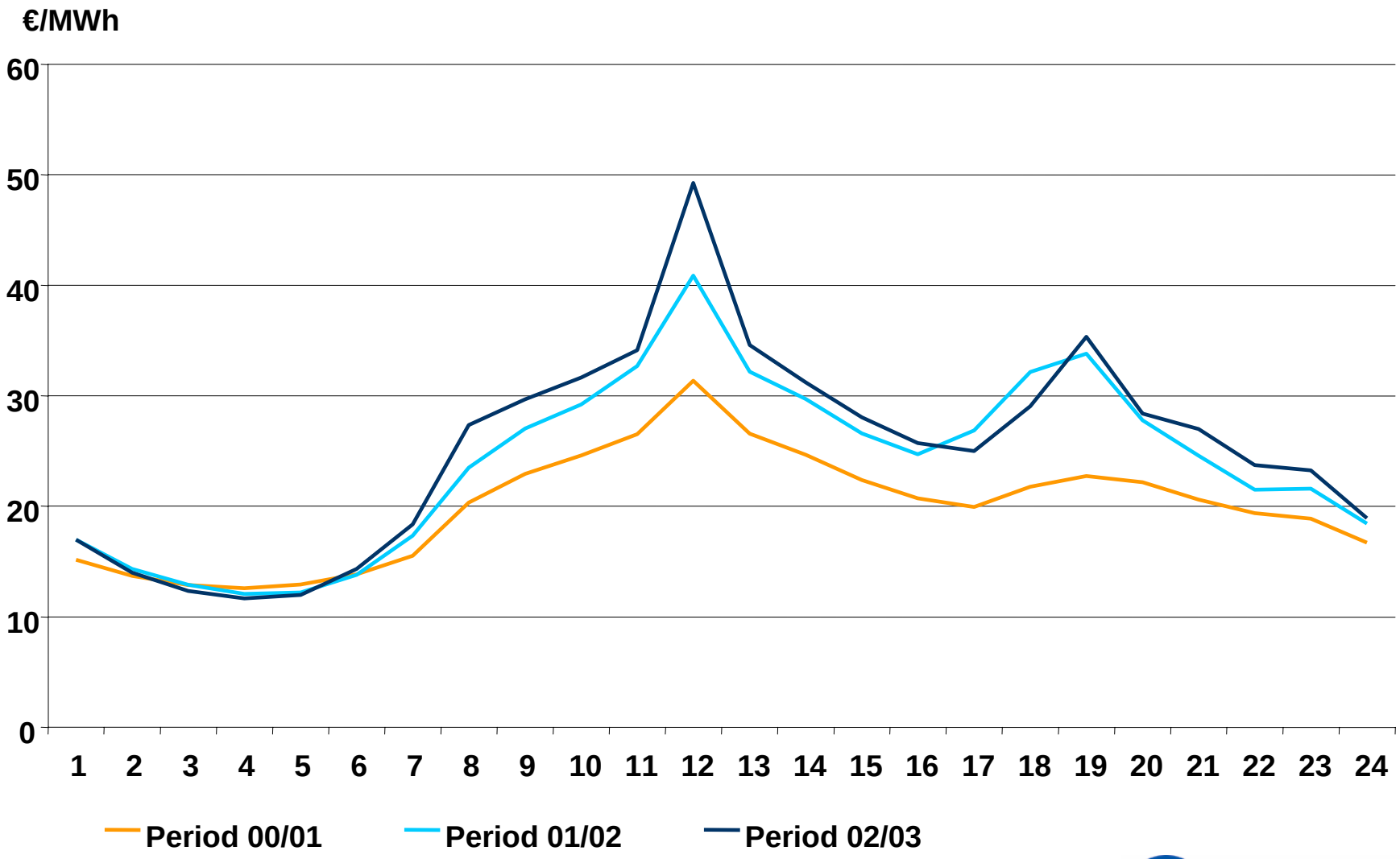
Hourly structure of wholesale prices (EEX)



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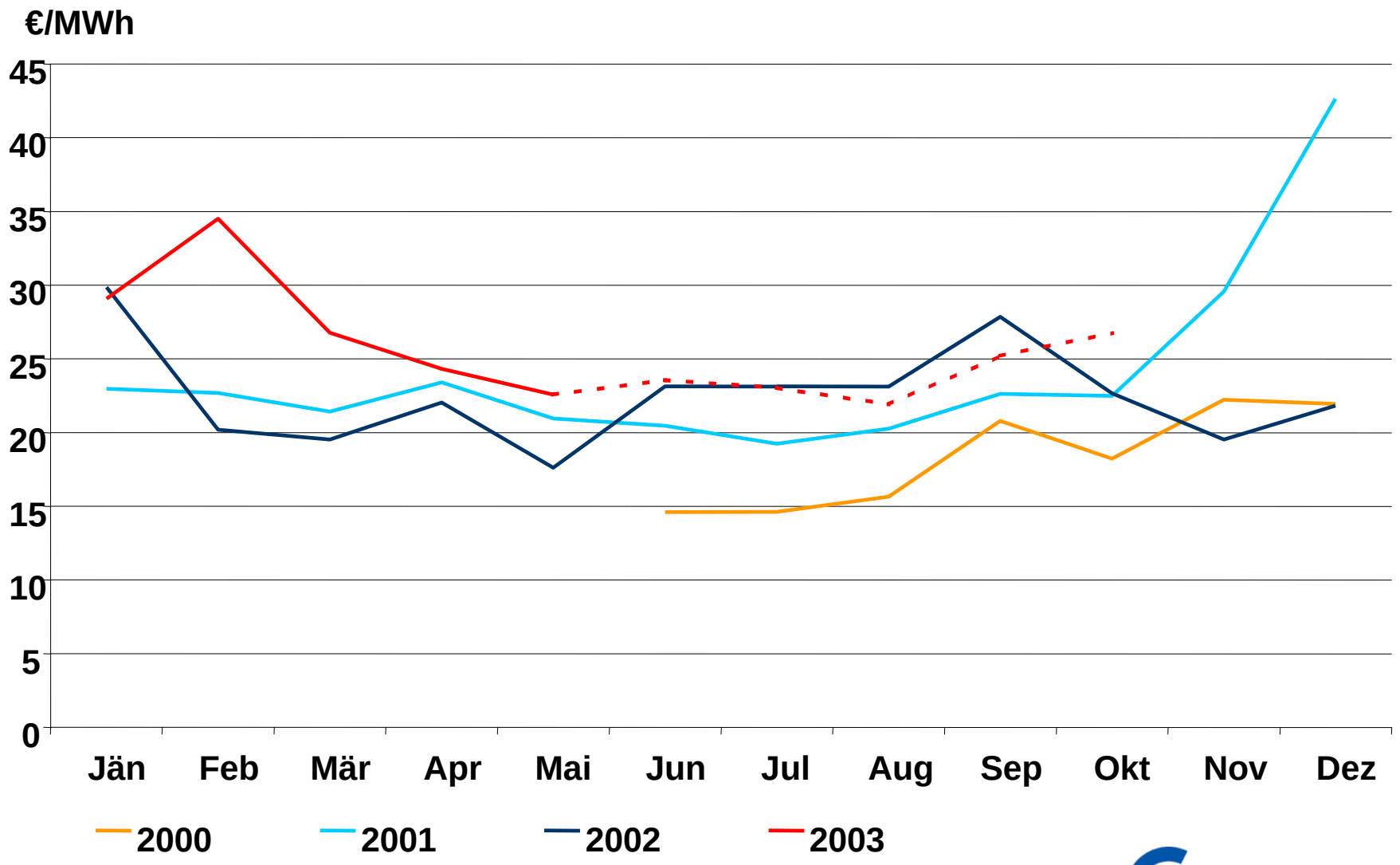
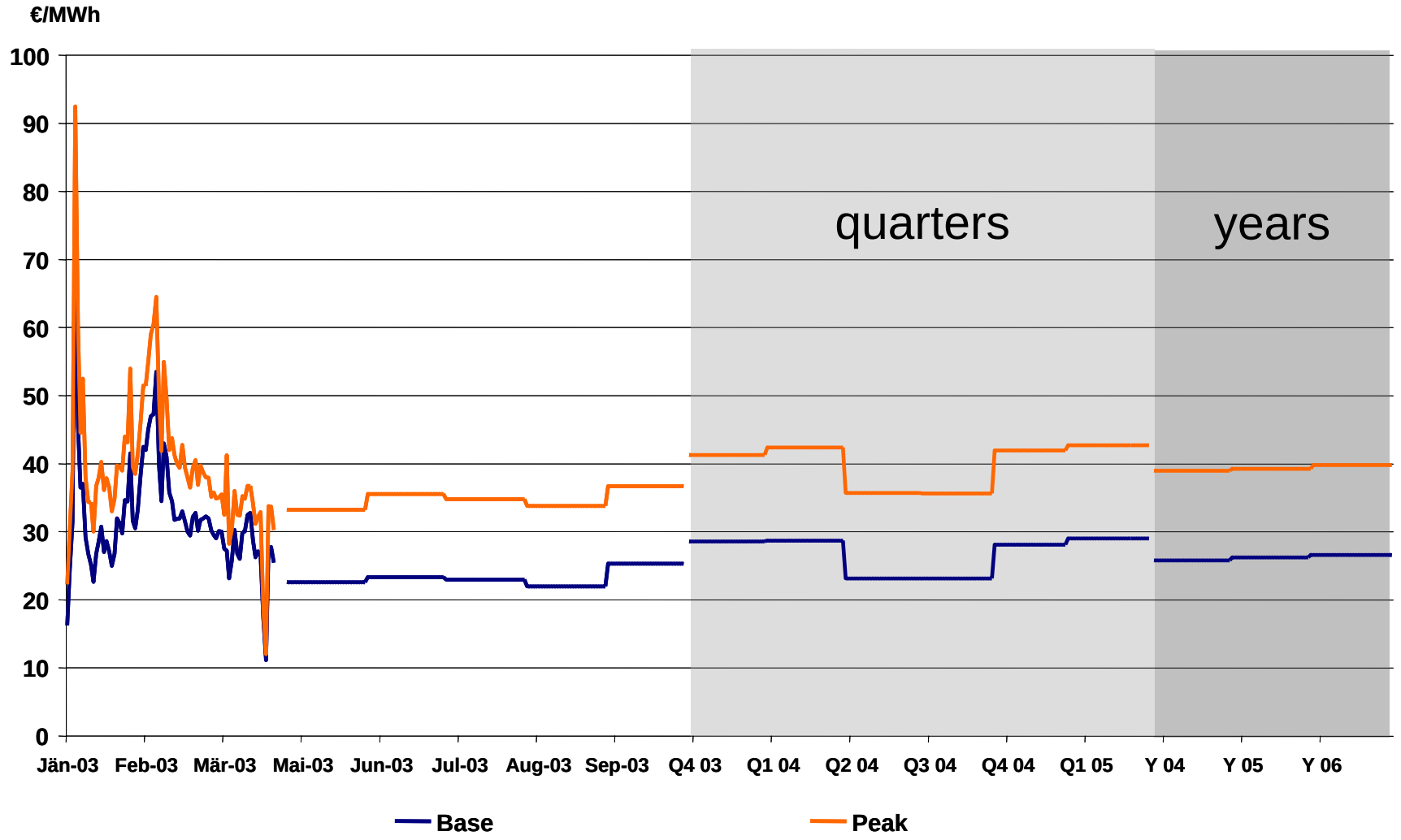
Monthly average prices (EEX)



Term structure of the Central European market



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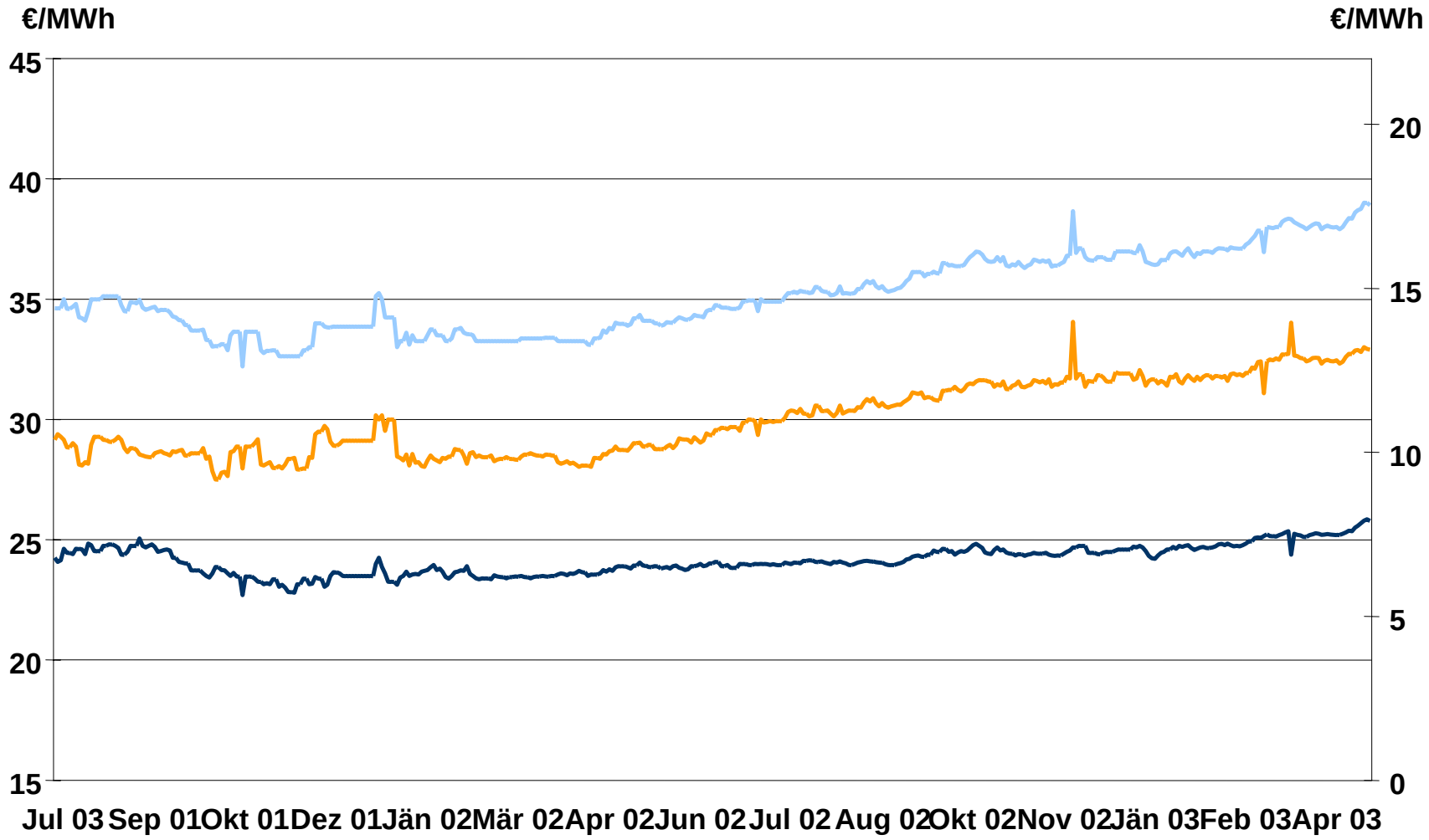
Forward prices on the rise



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Some aspects of increasing prices

Forward prices (year 04, year 05, year 06) have been on the rise for some time

- **Uncertainity about the burdens of EU-wide environmental actions (allocation of emission rights, penalties)**
- **Ongoing debate on „G“- vs. „L“-components of network prices**

Uncertainty and anticipated cost for generators have been factored in

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Conclusions from the market development so far

- In the absence of transmission constraints trading evolves naturally
- Trading can work even in very different general regulatory frameworks in the region
- No mandatory pool needed
- Trading is fostered by the different generation structures and vast spare capacities

Conclusions from the market development so far

- Large number of market participants supported liquidity but mergers are threatening the market
- Liquidity has been hit by the departure of Enron & Co
- Financial and derivatives trading come only with time

What will come next ?

- **Number of market participants will be further reduced**
- **(spot) liquidity will concentrate on a single marketplace**
  - possible merger of exchanges
- **With a reliable spot index financial institutions will increasingly enter the market → active derivatives trading**

What will come next ?

- **Evolution of regional marketplaces**
  - Iberian and BENELUX integration

- **Regional marketplaces will only grow if there is a rTPA including a unified and efficient way of cross border transmissions capacity allocation in place**

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