Allokationen in der Energiewirtschaft

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Background

Liberalisation of European Electricity Markets with the aim to create one integrated (internal) electricity market (IEM)

- Purely market (price) based unit commitment
- Shutdown of uneconomical power plants
- Further (and still) increasing demand of electricity
- Increasing commissioning of volatile production units (e.g. Wind Power)

➔ **Lead to an increased system usage,**

➔ **and also to more volatile system usage!**

Background

- Transmission systems were originally planned and developed for emergency situation (and of course to avoid over investment for local peak capacity).
- Transmission system was originally not planned and developed as a market platform for interregional electricity trading activities.

  - Market reaction is much faster than the provision of relevant infrastructure (difficult and long authorization processes for building infrastructure)!
  - More often congestion occurs which could endanger the security of supply (blackouts)!

➔ The need for managing congestion (especially on Tie-Lines) become more and more important.

How to manage congestions?

Basically:

- An auction mechanism is used to find out the price of a product which exact value (totally or partly) isn't known.

Why Auctions in the Energy Business?

- European Regulations (Guidelines, Regulations) obliges TSOs to implement **market based solution** for the allocation of cross border capacities (e.g. 1228/2003).
  - Auctions are seen as market based solutions!
  - → Cross border capacities have to be auctioned (e.g. explicit)!
  - → The nowadays purely commercial allocation have to amended with physical belongings (i.e. load flows have to be taken into consideration)!

Basic Auction Mechanism

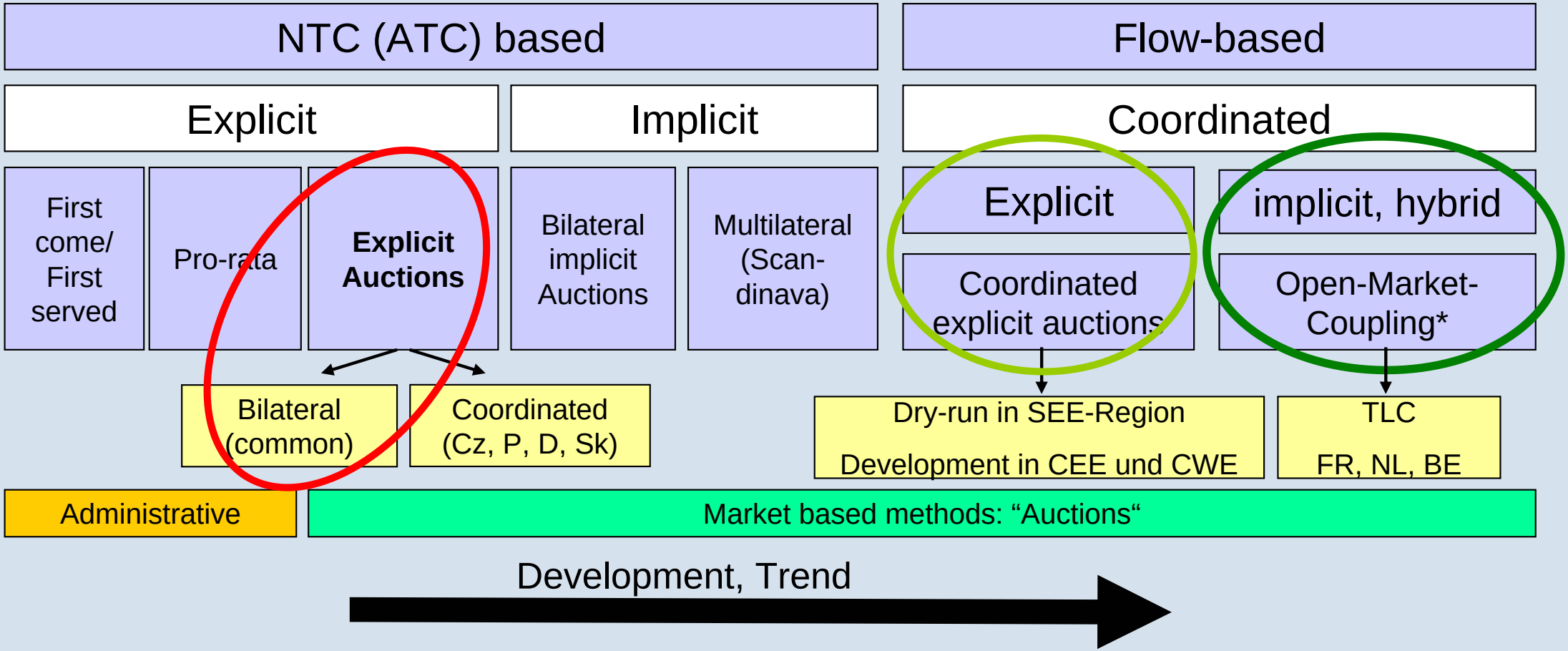
- **English Auction**
  → increasing bids, open bids
  → Auction price is equal to the highest bid (e.g. picture at Sotheby‘s)

- **Dutch Auction**
  → decreasing bids, open bids („Preisuhr“)
  → Auction price is equal to the highest bid (at the time the clock stops)

- **First-price sealed-bid auction**
  → increasing bids, sealed bids
  → Auction price is equal to the highest bid

- **Second-price sealed-bid auction** (Vickrey auction)
  → increasing bids, sealed bids
  → highest bid successful, auction price equal to the **second** highest bid

Methods for capacity allocation and developments



CEE - Central Eastern Europe
CWE - Central Western Europe
SEE - South Eastern Europe
TLC - Trilateral Market Coupling

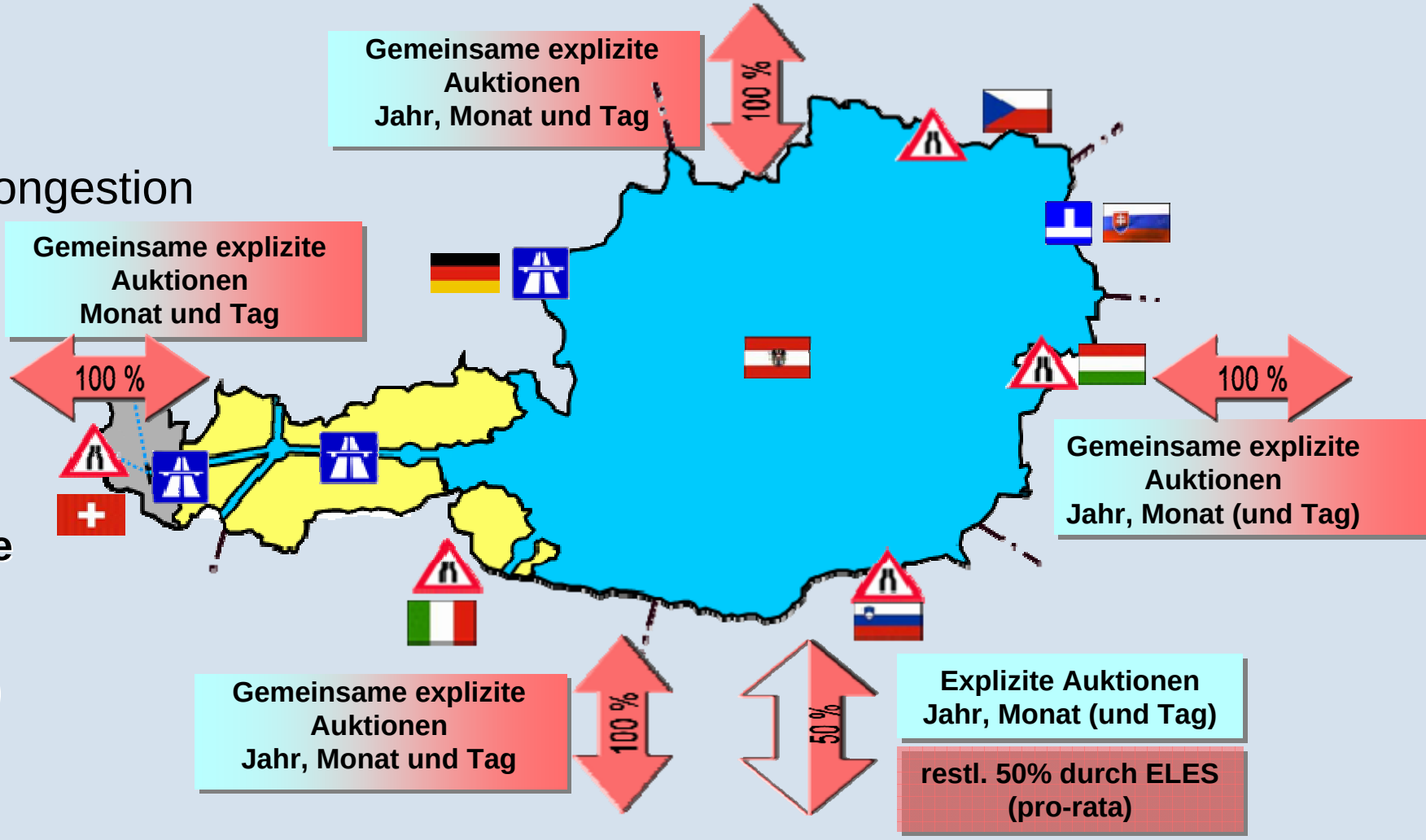
* Also non flow-based methods are imaginable. Source: according to SETSO.

Currently applied explicit auctions of APG

Congestion

No Tie-Line

Currently no congestion



Pros:

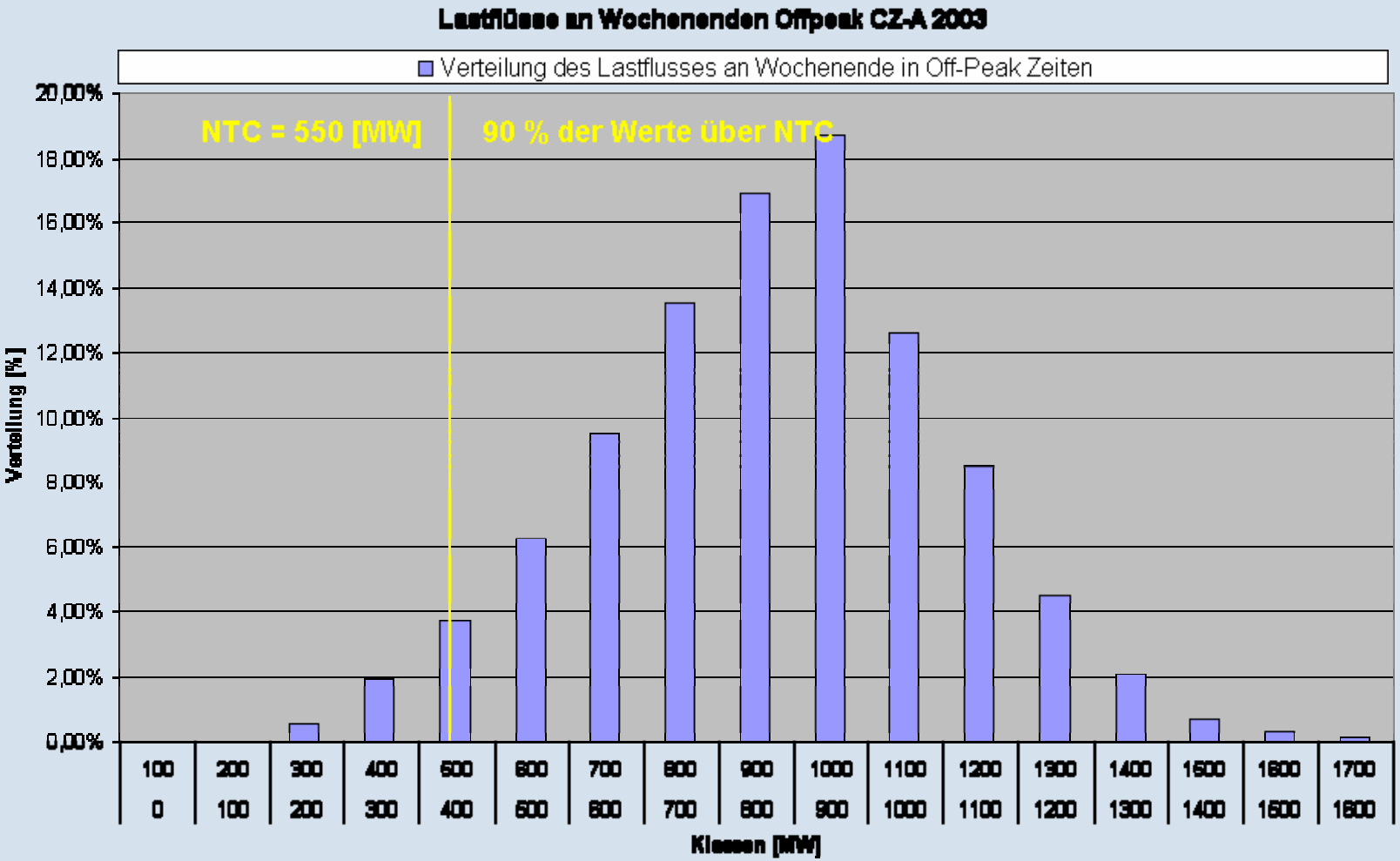
Simple to manage

Cons:

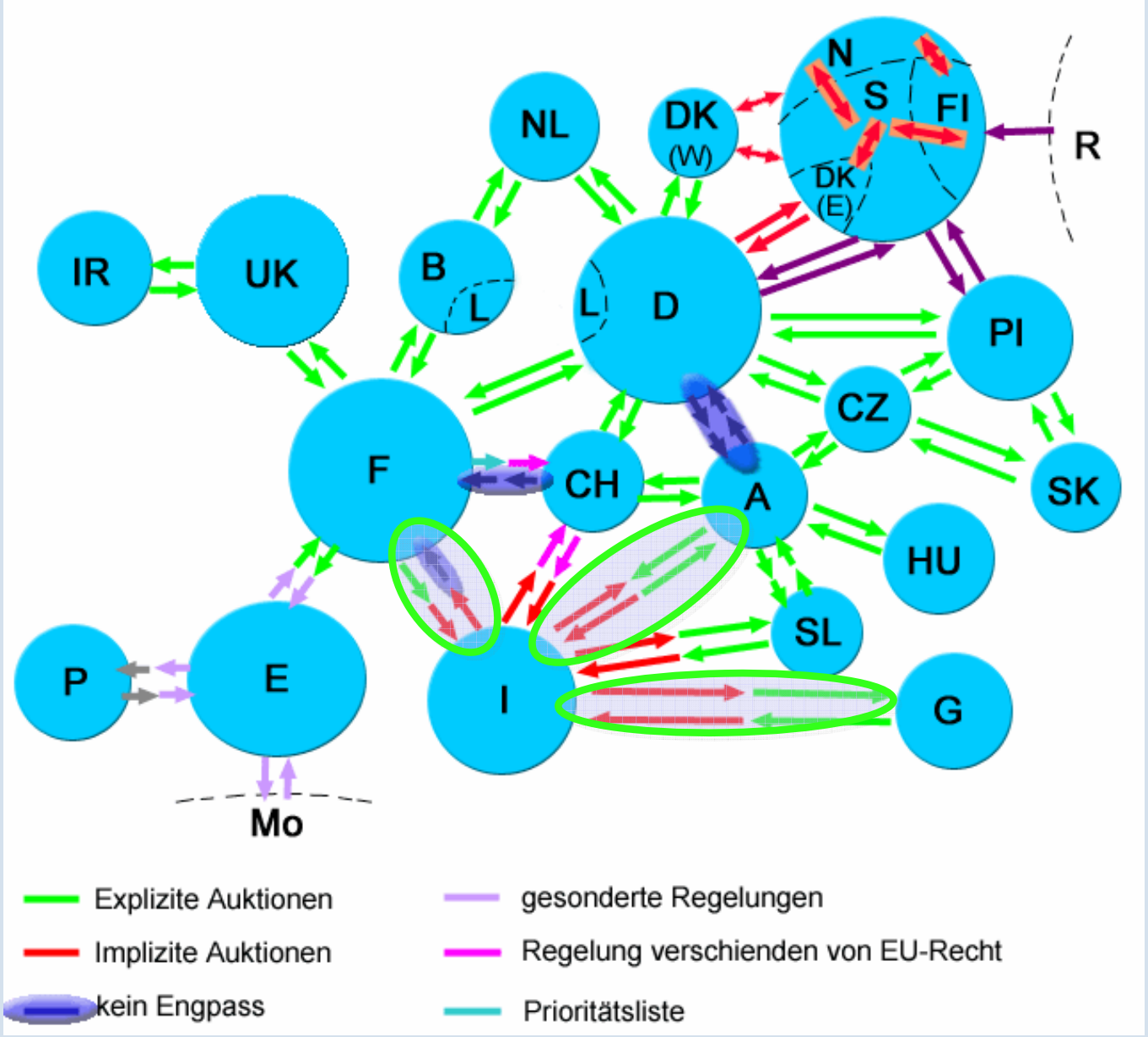
Less (or even no) contribution for relieving congestions

Impact of currently used allocation systems (NTC-based)

- Year 2003
- CZ → APG
- Off Peak
- Weekends



Current Congestion Management Situation



➔ Nearly every border within Europe is congested.

➔ Power trading companies need to participate in several (different) auctions to gain the relevant transmission rights.

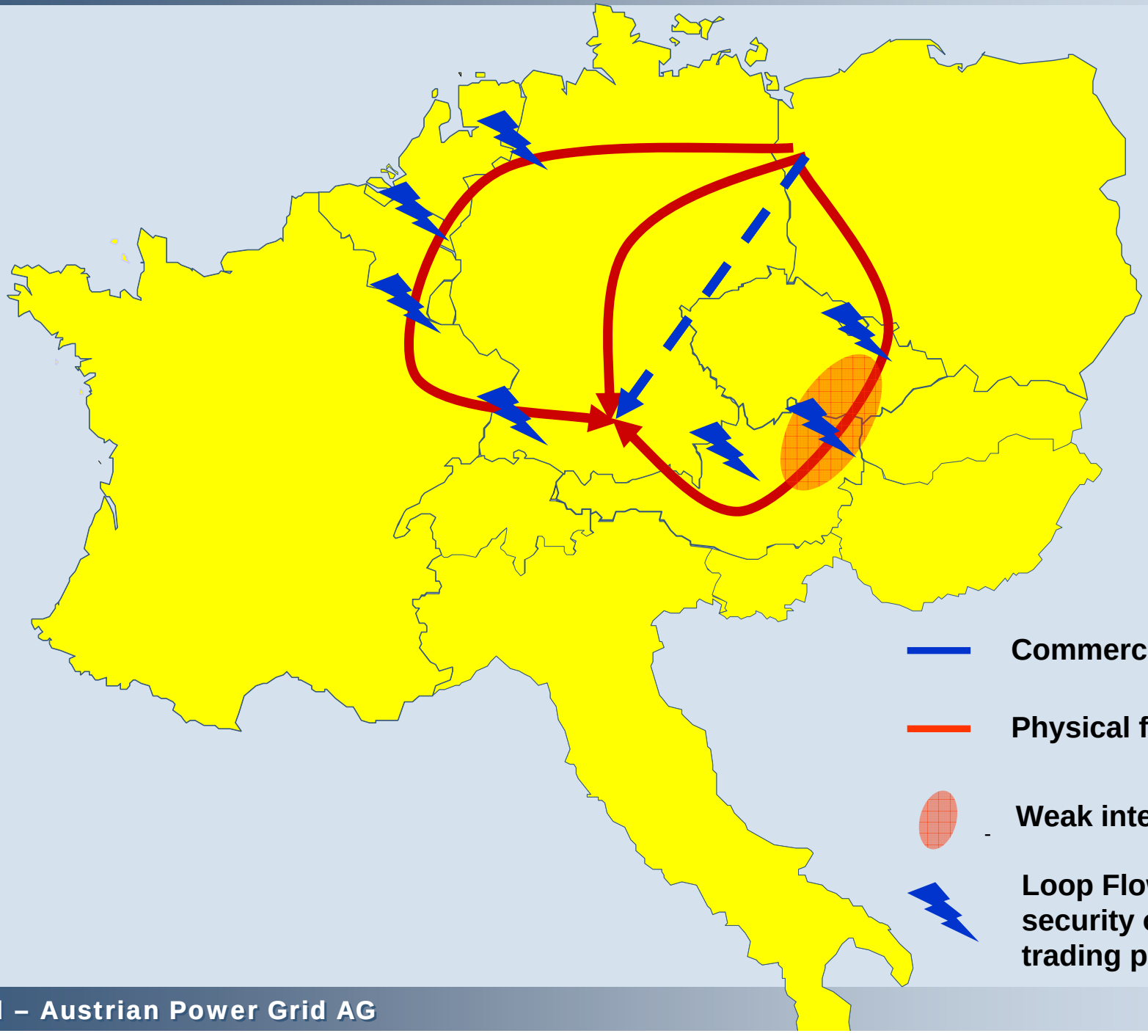
➔ Inconsistent regulations and systems in use.

➔ Physical „realities“ are not taken into consideration!

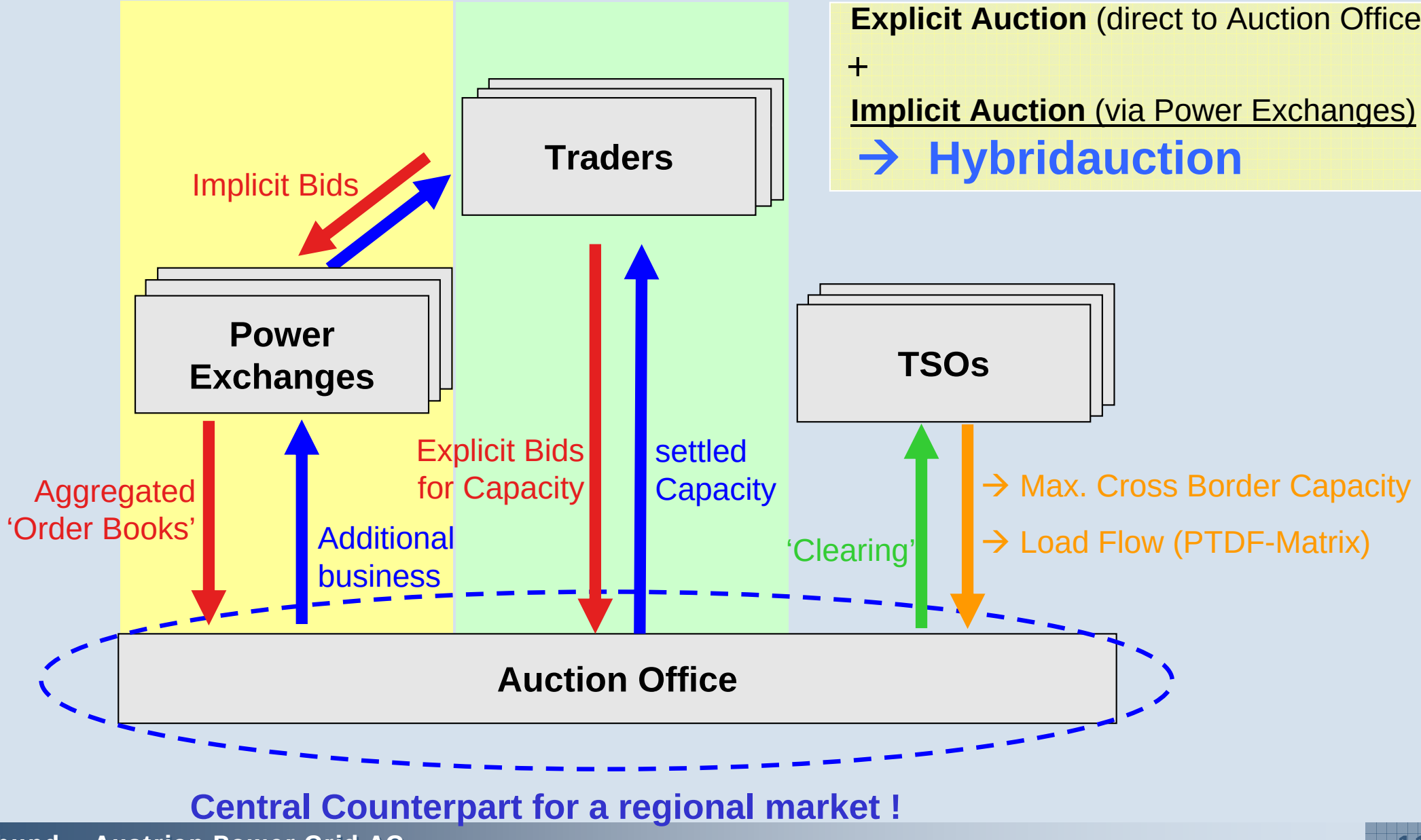
➔ Insufficient contribution for guaranteeing the security of supply!

Source: according to ETSO (2006)

Load Flow Based Auctions



Concept of Hybrid Auctioning: OMC (Open Market Coupling)

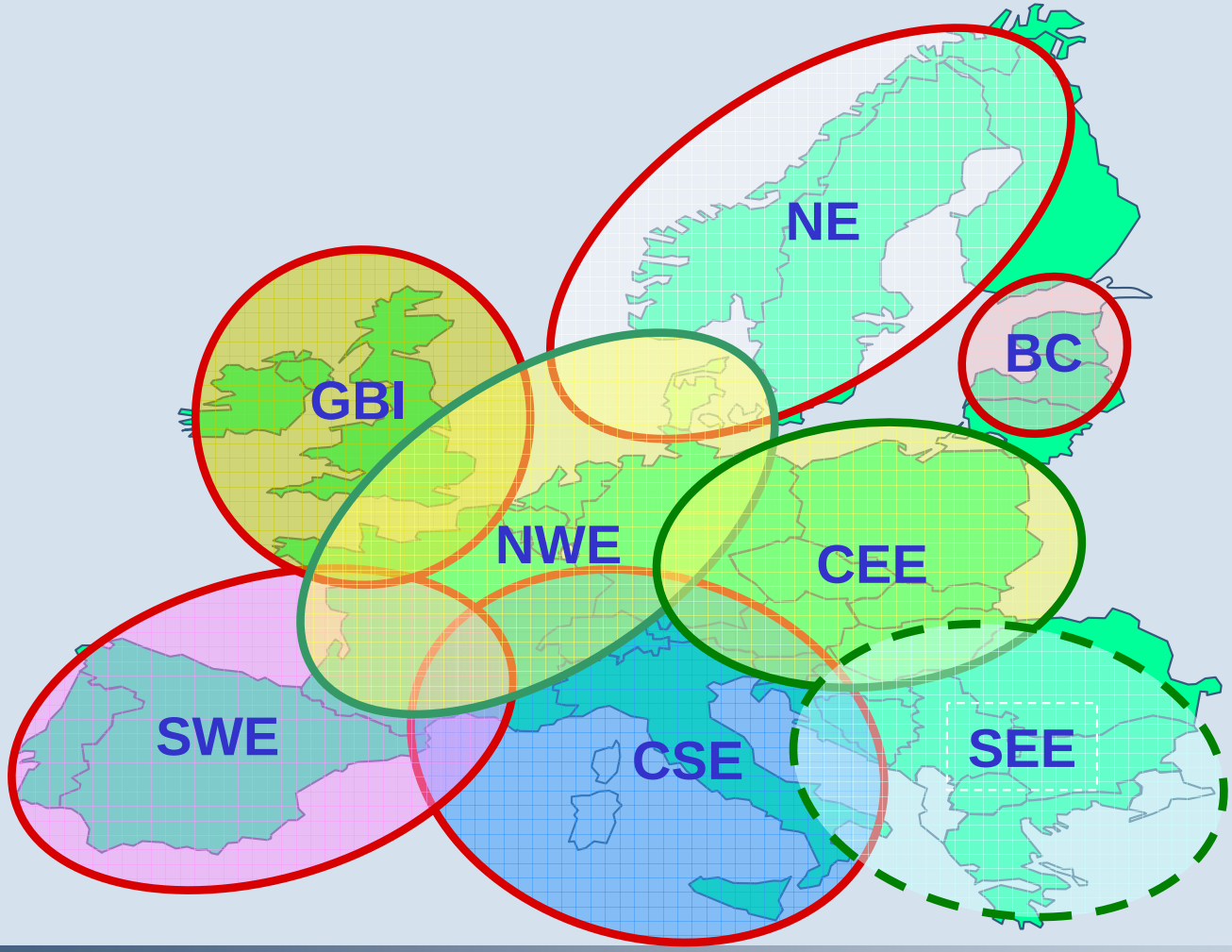


Quelle: in Anlehnung an EEX/ Moser (2005)

Decision of the 11th Florence Forum (Sept. 2004):

Organisation of 7 Mini Fora on a regional basis with on major task:

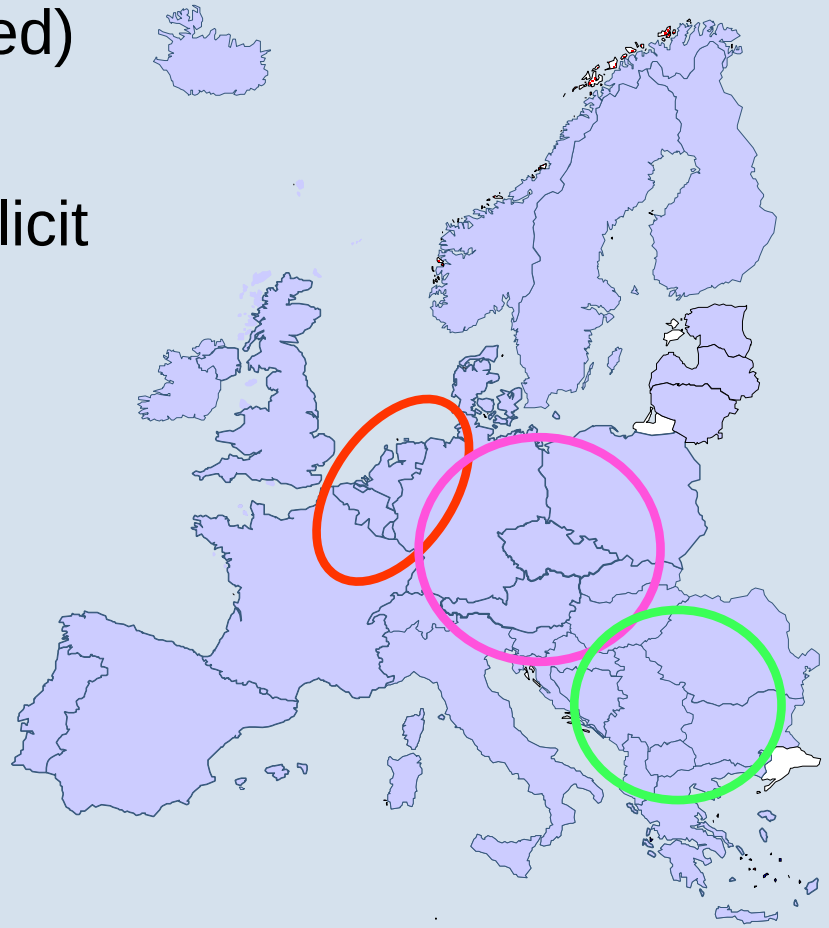
→to develop common congestion management systems at a regional level.



Ongoing development in different Regions

- **CWE-Region:**

- Trilateral Market Coupling (non flow-based) (established between Fr, Be, Nl in 2006)
- investigating coordinated explicit and implicit flow-based auctioning (MC)



- **CEE-Region:**

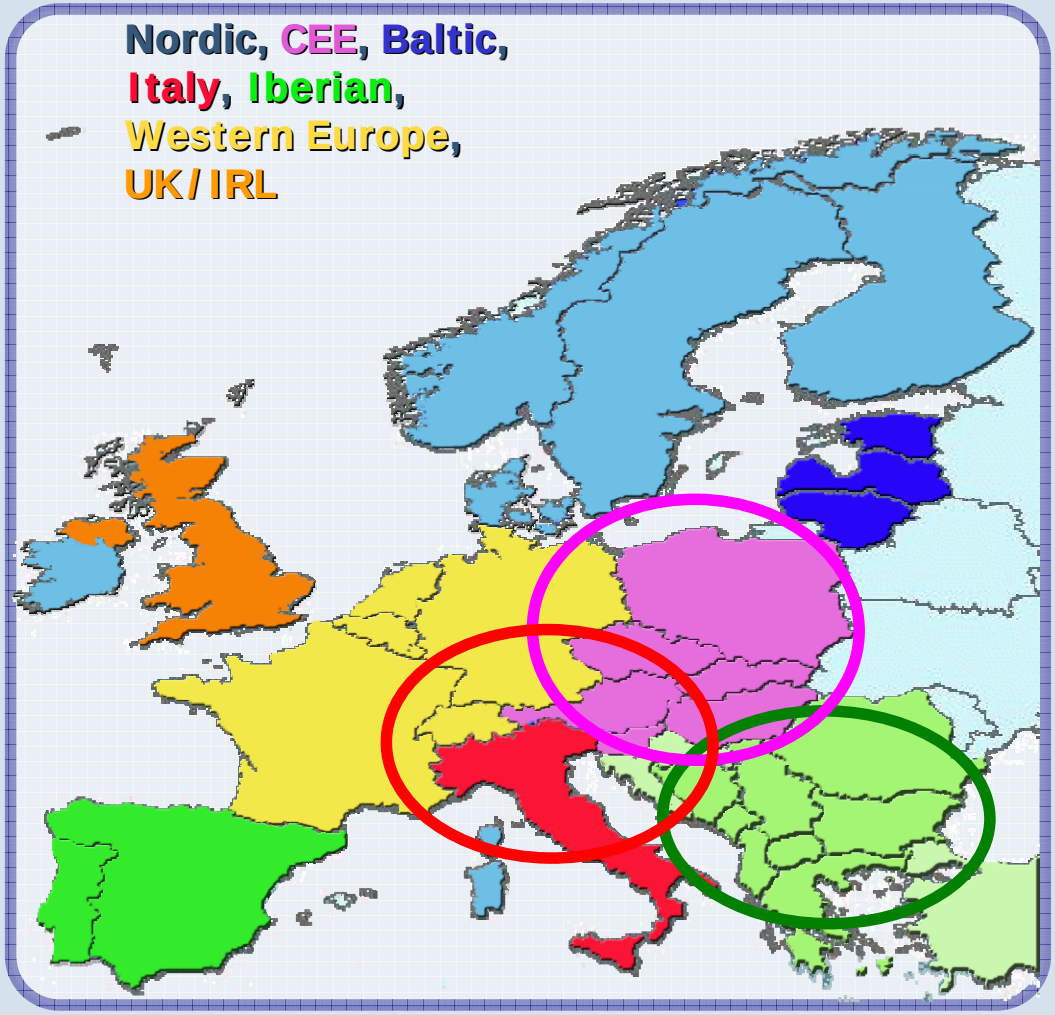
- Coordinated ex. flow-based auctioning

- **SEE-Region:**

- Coordinated ex. flow-based auctioning
- Dry-run with participation of Traders

Involvement of Verbund APG in such developments

7 Regionale Märkte:*



CEE.. Central East Europe (A, D, PL, CZ, HU, SK, Sl)

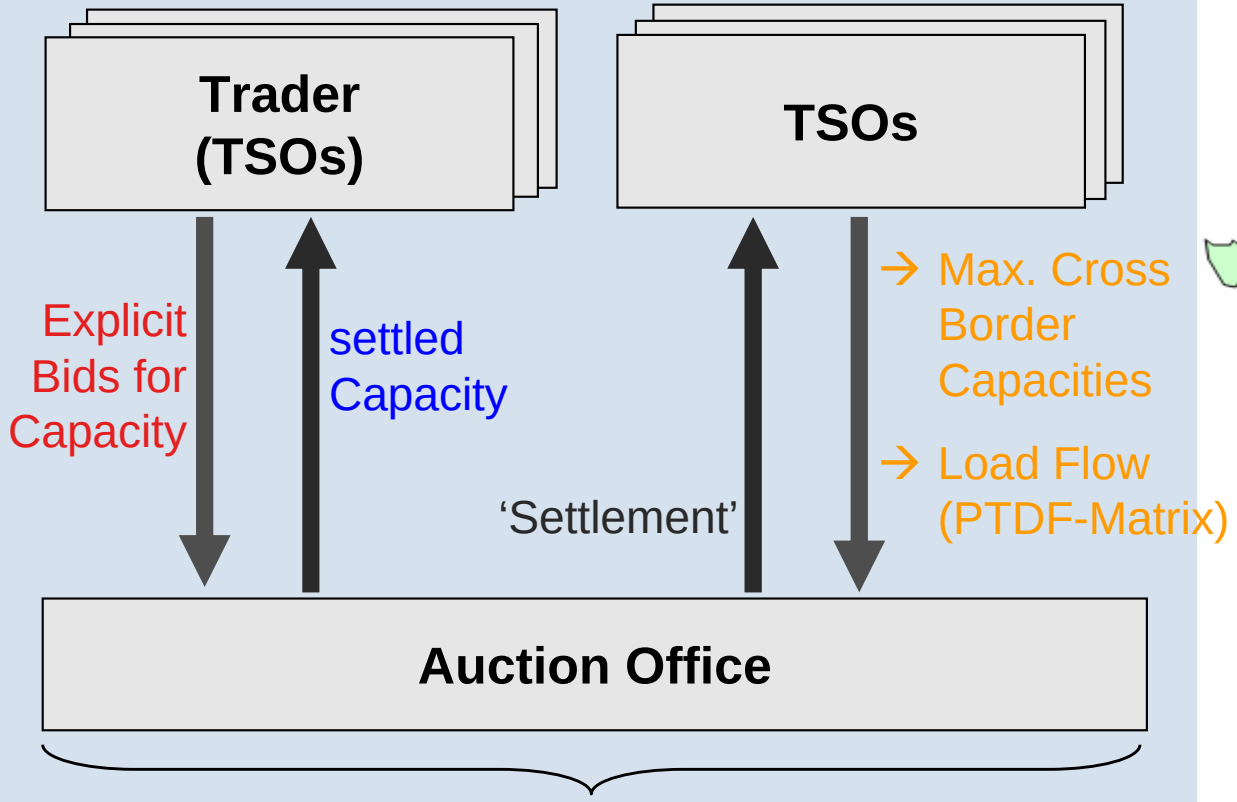
Italy.. Italy Region (A, I, D, SI, Fr)

- ➔ APG has to take part in two regions, **CEE -Region** and **Italy - Region**.
- ➔ Strong movement toward flow based auctions in Europe (due to Guidelines for Congestion Management).
- ➔ APG supports in **SEE - Region** the implementation and testing of such flow based auctions (APG has developed and provided a software tool for the „Dry-Run“ in SEE).
- ➔ APG together with 7 other TSOs from **CEE -Region** intend to implement a (explicit) flow based allocation system. It is also envisaged to establish a common coordinated Auction in Freising/Germany for CEE-Region.

*) schematic picture – some countries take part in more than one region.

Dry-run in SEE in 2006/2007

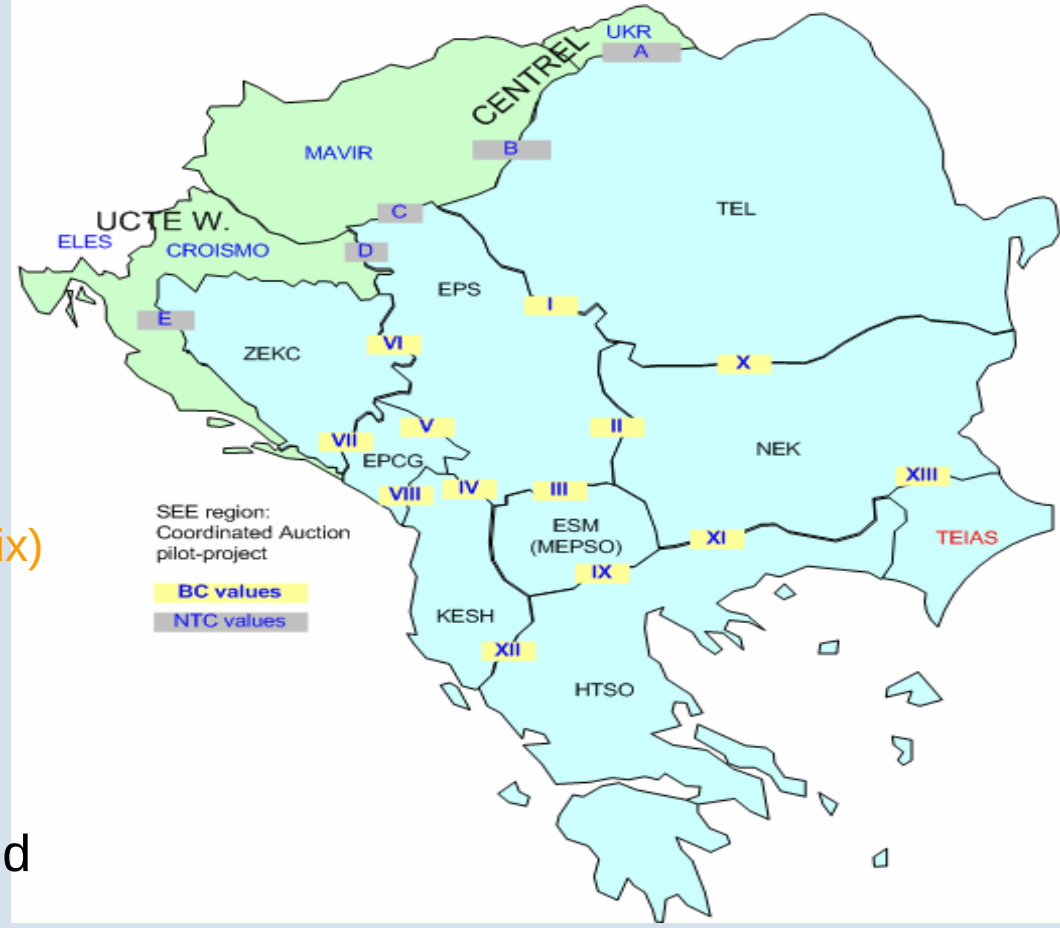
Participating Parties



No legal entity, each month another TSO performed the "role" of the coordinated Auction Office!

(www.DrCAT.at)

Participating TSOs in Dry-Run



8 SEE-TSOs and Turkey have performed that Dry-run in 2006.

- Main income sources for TSOs:
  - National tariffs (grid charges)
  - ITC (Inter-TSO-Compensation) → international loop flows
  - Auction "Income" (dedicated to investment,…)
- All three components vary from year to year (due to external influences).
- Especially ITC and Auction Income are highly volatile (...talking about 20-25% of total net sales).
- E.g. Auction Income for one border for 2007 was estimated mid 2006 around 40 Mio. €; was around 7 Mio.€!

➔ Even regulated TSO business is not risk free!
➔ Stable regulatory regime and adequate WACC (i.e. beta's) are precondition to provide reliable services.

Conclusion

- Complex interdisciplinary problem (technical and economical) with less experience in continental Europe.
- Pressure from EC to install such new (load flow based) auction systems.
- The recent approaches and developments towards regional coordination have shown first promising results.
- Such approaches will optimise the use of the existing infrastructure by taking security of supply issues directly into account.
- Auction income is a very volatile position with huge influence on TSOs results (risk).

Thank you for your attention!