TRANSEUROPEAN TRADE OF WIND POWER IN THE INTERNAL ELECTRICITY MARKET

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OUTLINE

RATIONALE

- spatial decorrelation
- Previsibility

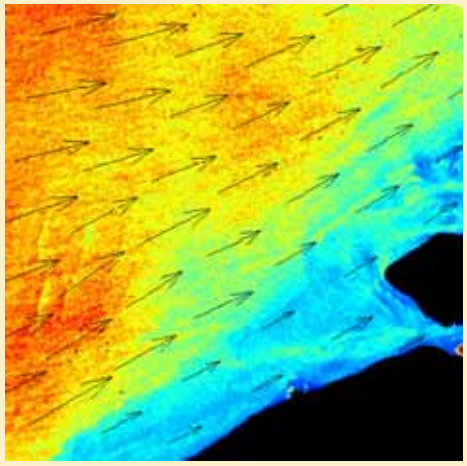
  ⇒ IEE project TradeWind

EUROPEAN INTEGRATION PROCESS

- status
- trends

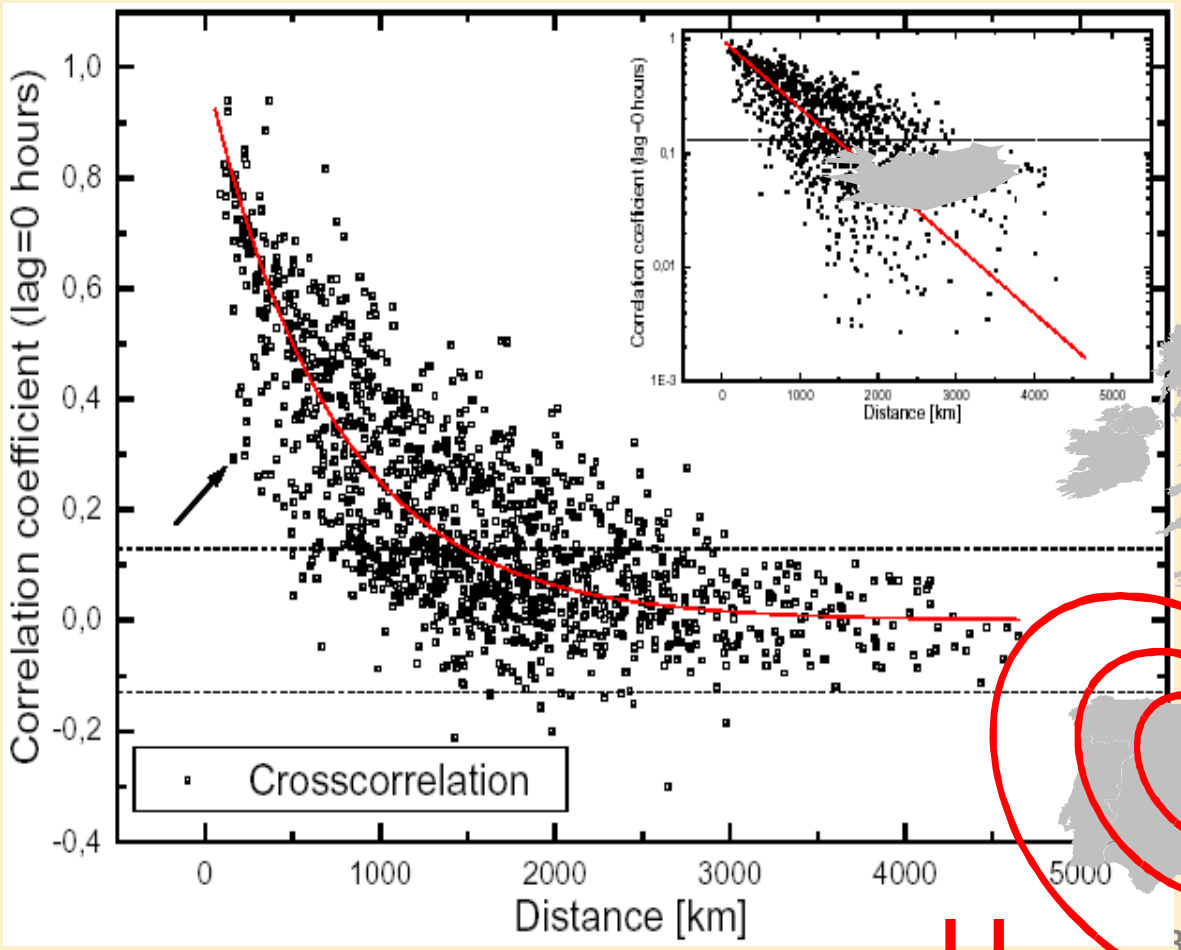
MEANING FOR WIND POWER

- TradeWind approach to market analysis with large wind power capacity

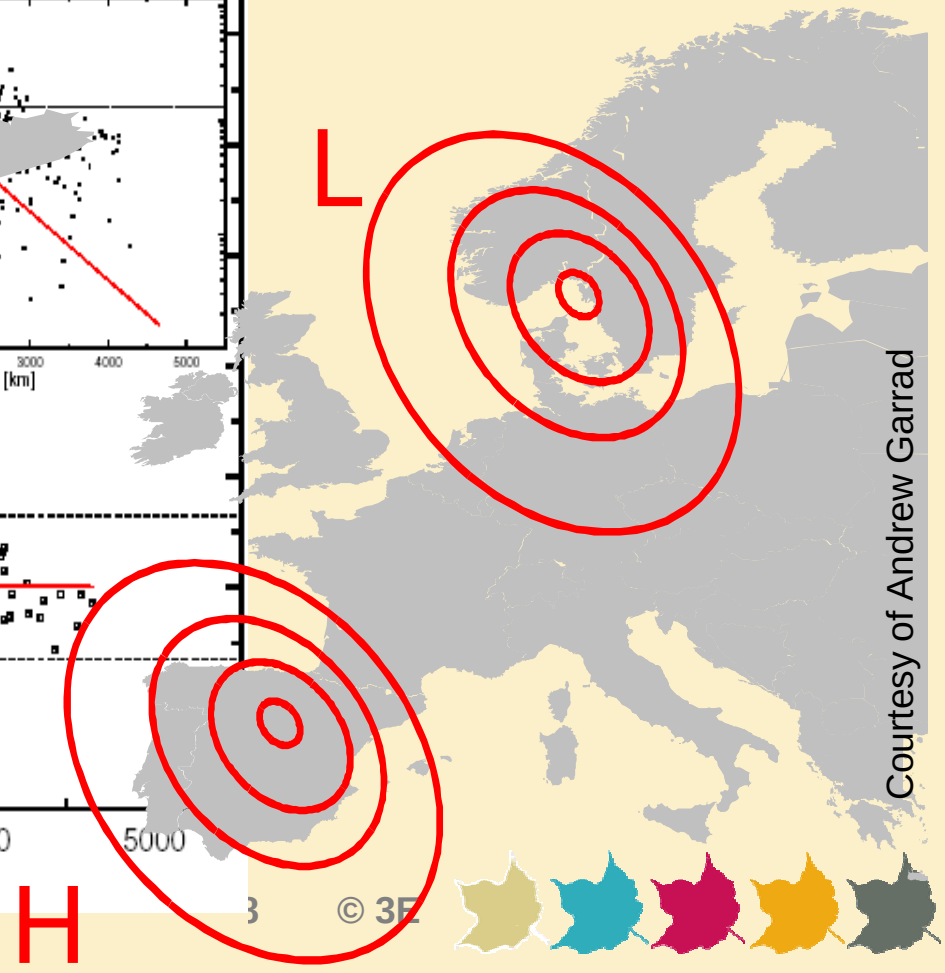


SPATIAL DECORRELATION

… most interesting over large distances



Courtesy of Gregor Giebel



Courtesy of Andrew Garrad

PREVISIBILITY

... the shorter ahead the better.

SINGLE WIND FARM

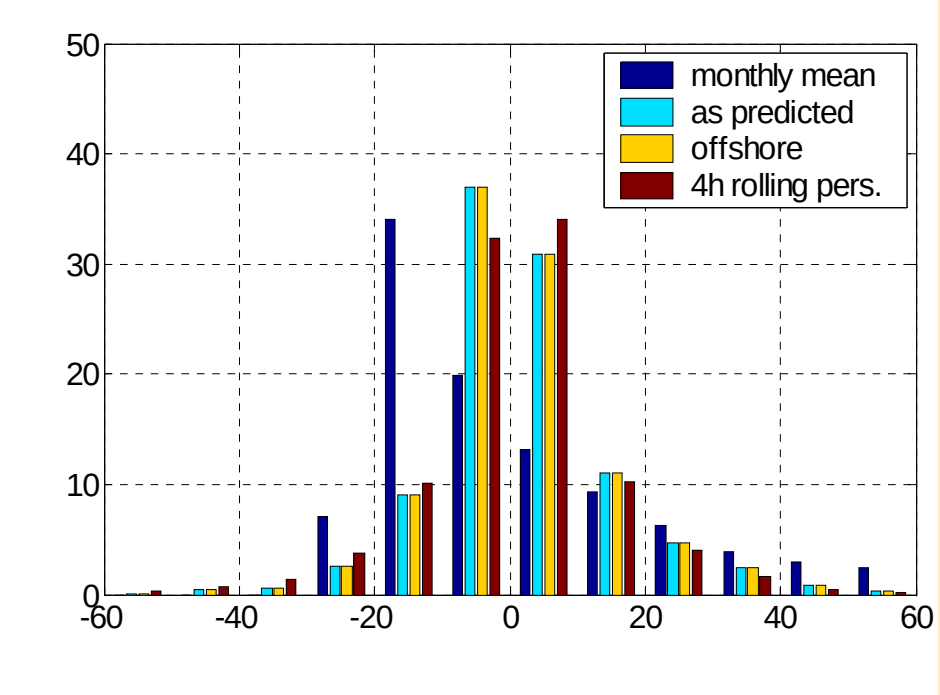
- Day-ahead: RMSE ~10-15%
- 3h ahead: << 10%

PER CONTROL AREA

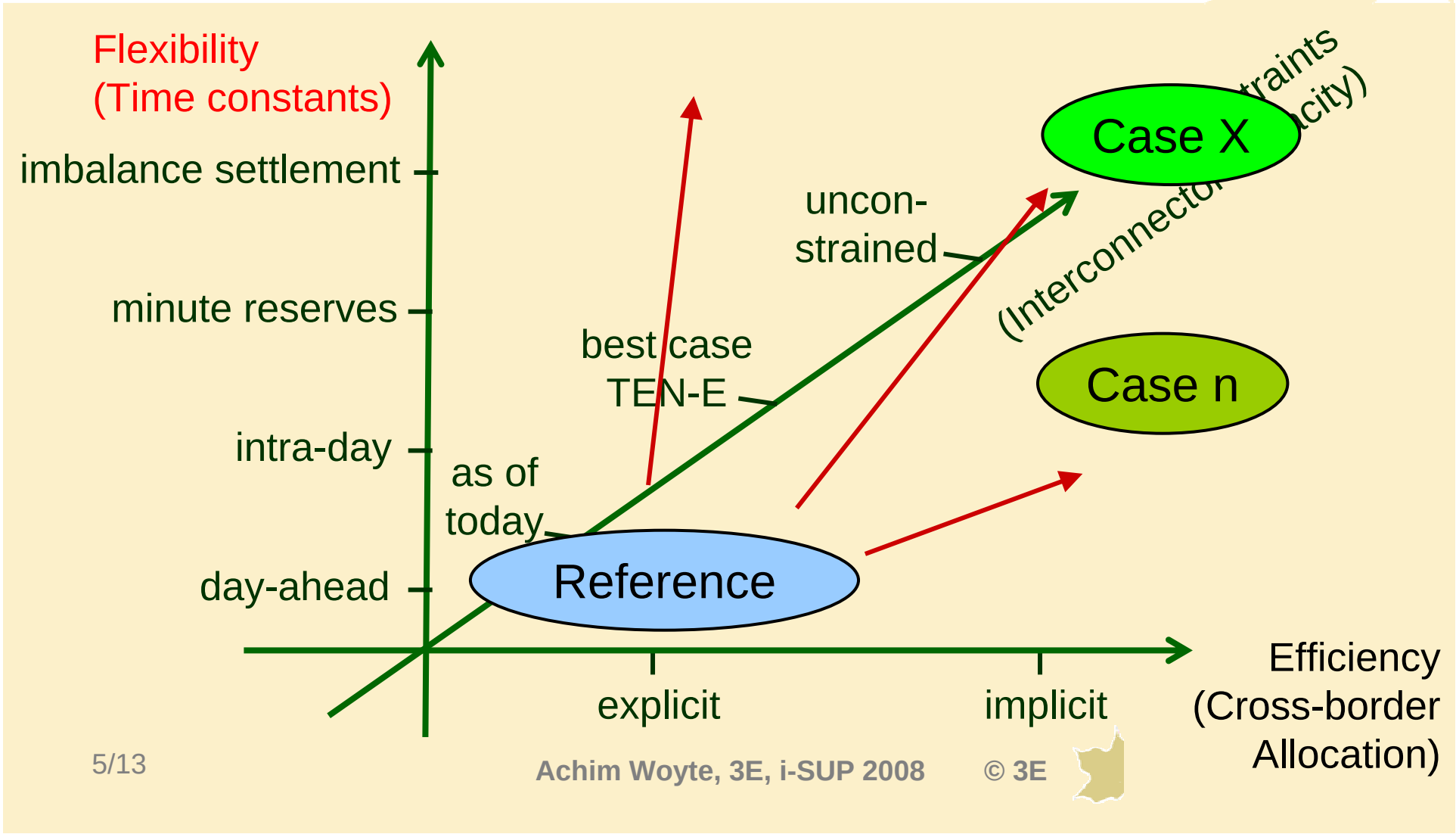
- Day-ahead: 5-6%
- Intra-day: 3% possible

INTRA-DAY ADJUSTMENT

- With intra-day market or
- within portfolio management



DESIGN PARAMETERS AND CONSTRAINTS



IEE PROJECT TRADEWIND

… the IEE Project TradeWind

APPROACH

- Wind power scenarios
- Transmission
- Markets (3E)

MARKET DESIGN

- Sensitivity to
  - gate closure
  - capacity allocation
- Capacity as boundary condition

EUROPE'S POWER MARKETS TODAY

MOSTLY NATIONAL SPOT MARKETS

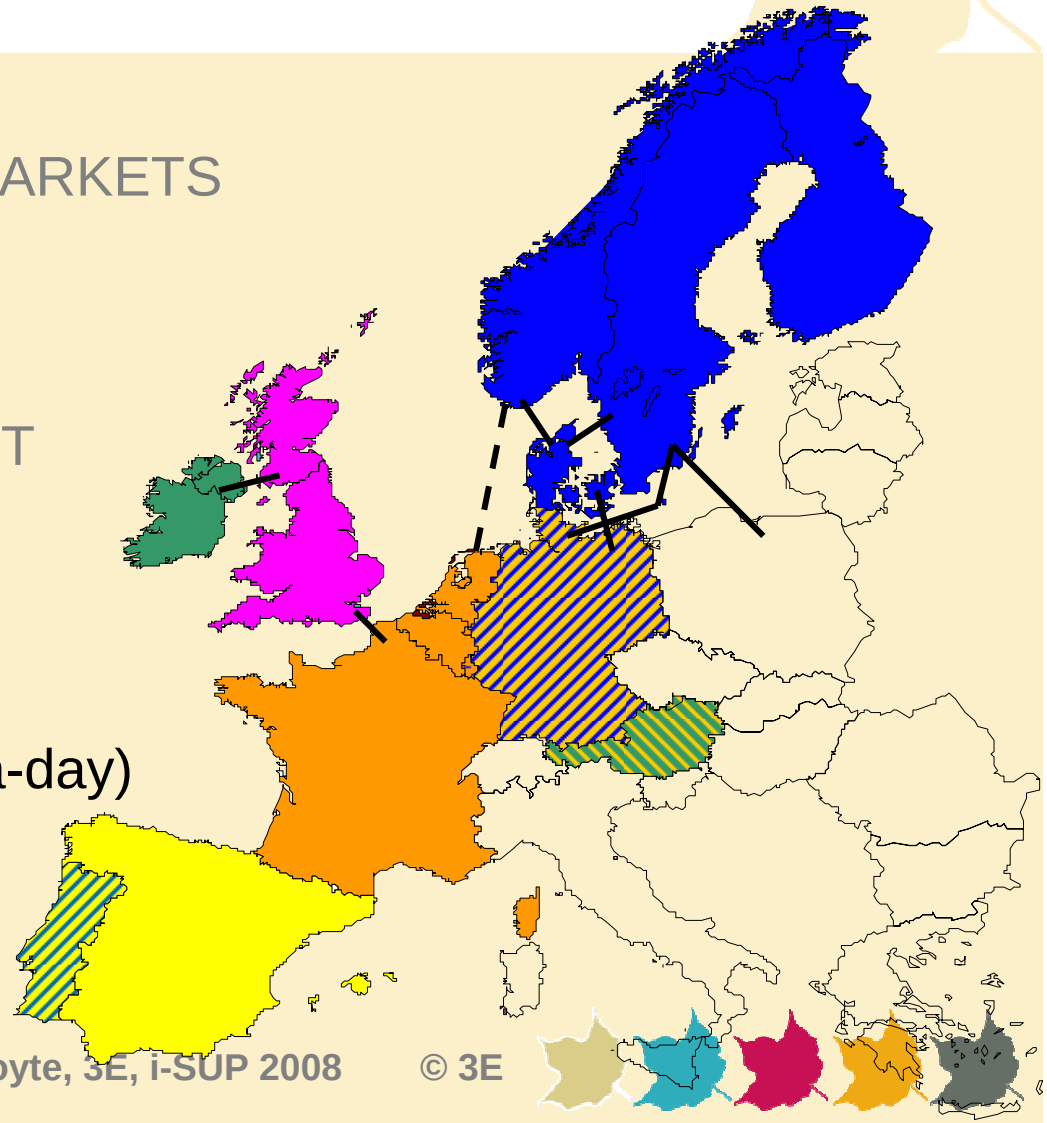
- day-ahead
- increasingly intra-day

CONGESTION MANAGEMENT

- Mainly explicit allocation of interconnectors

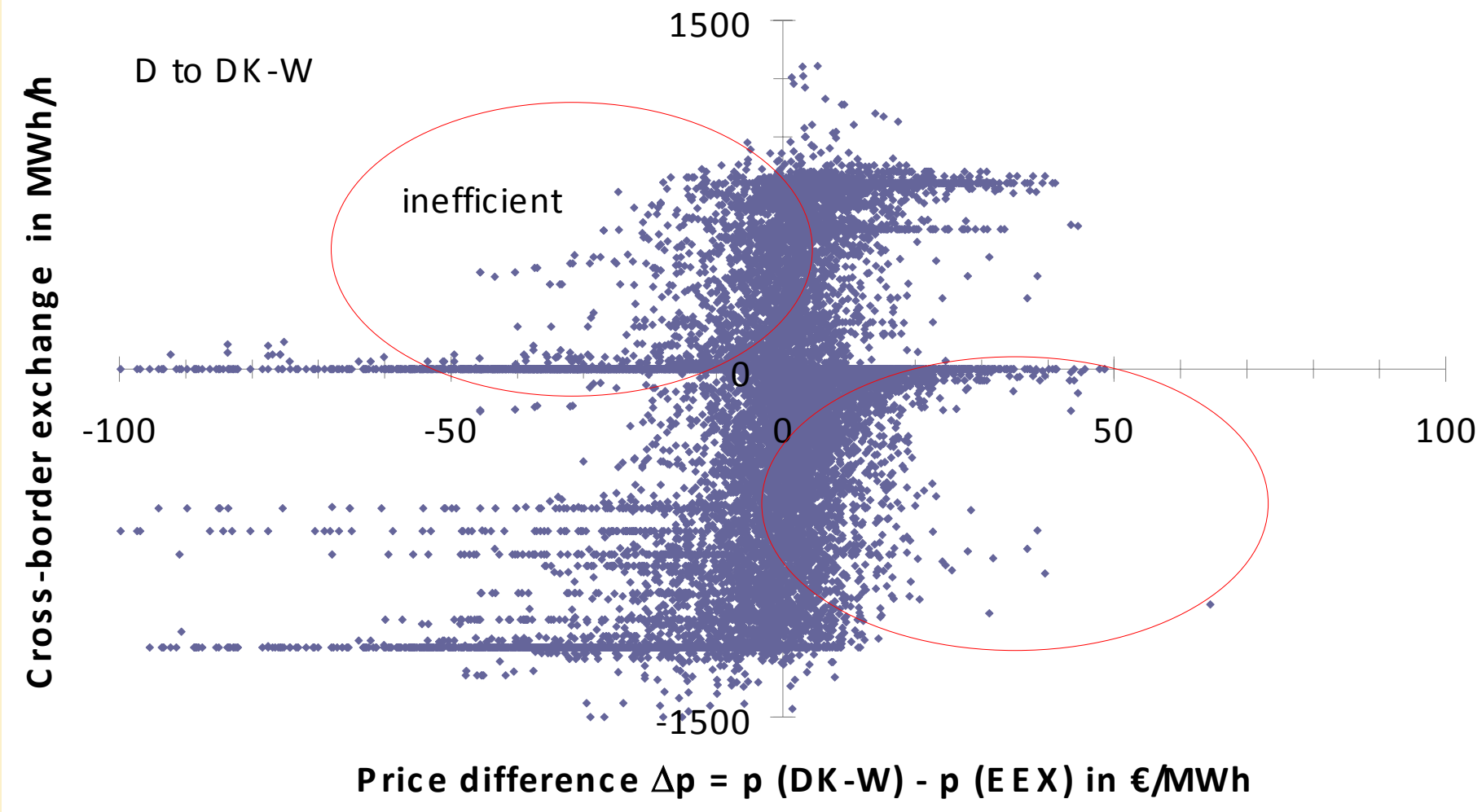
FEW COUPLED MARKETS

- NordPool (day-ahead & intra-day)
- tri-lateral market coupling (NL, BE, FR)



INEFFICIENT TRADE

... e.g., Denmark-West -- Germany (2006)

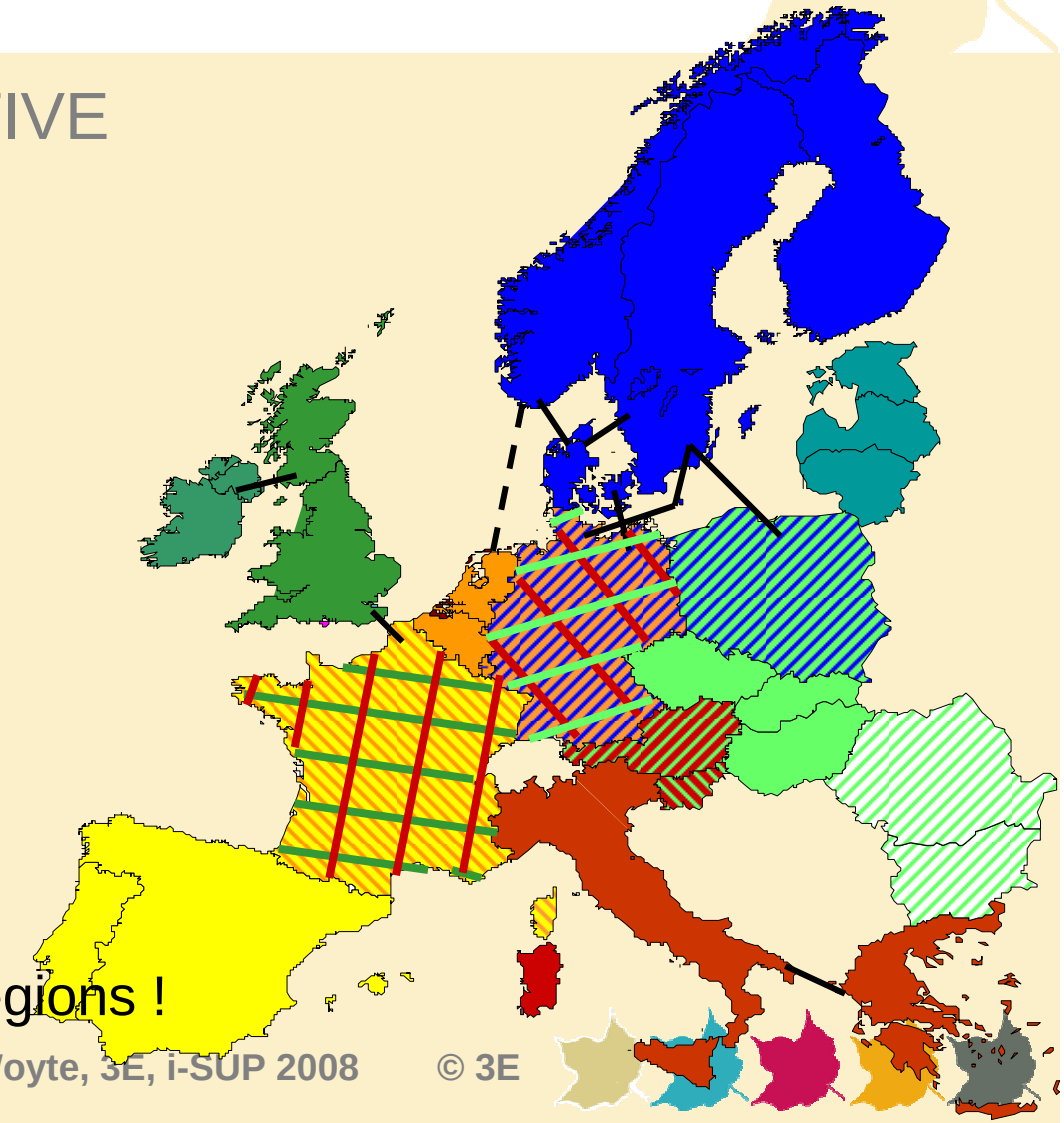


REGIONAL MARKETS

THE REGIONAL INITIATIVE

(ERGEG & ETSO)

- Central-West
- Northern
- UK & Ireland
- Central-South
- Southwest
- Central-East
- Baltic

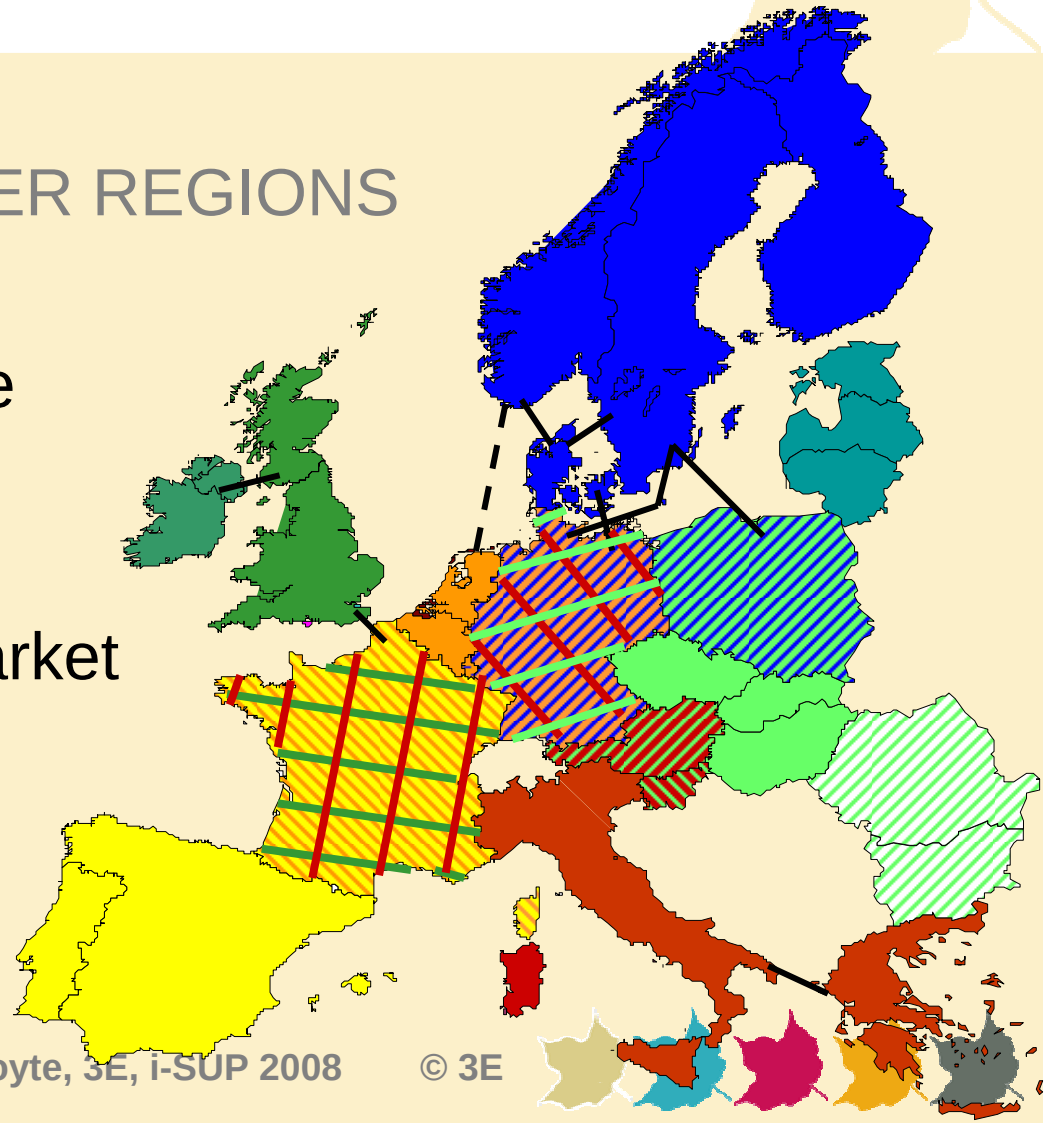


Countries belong to several regions !

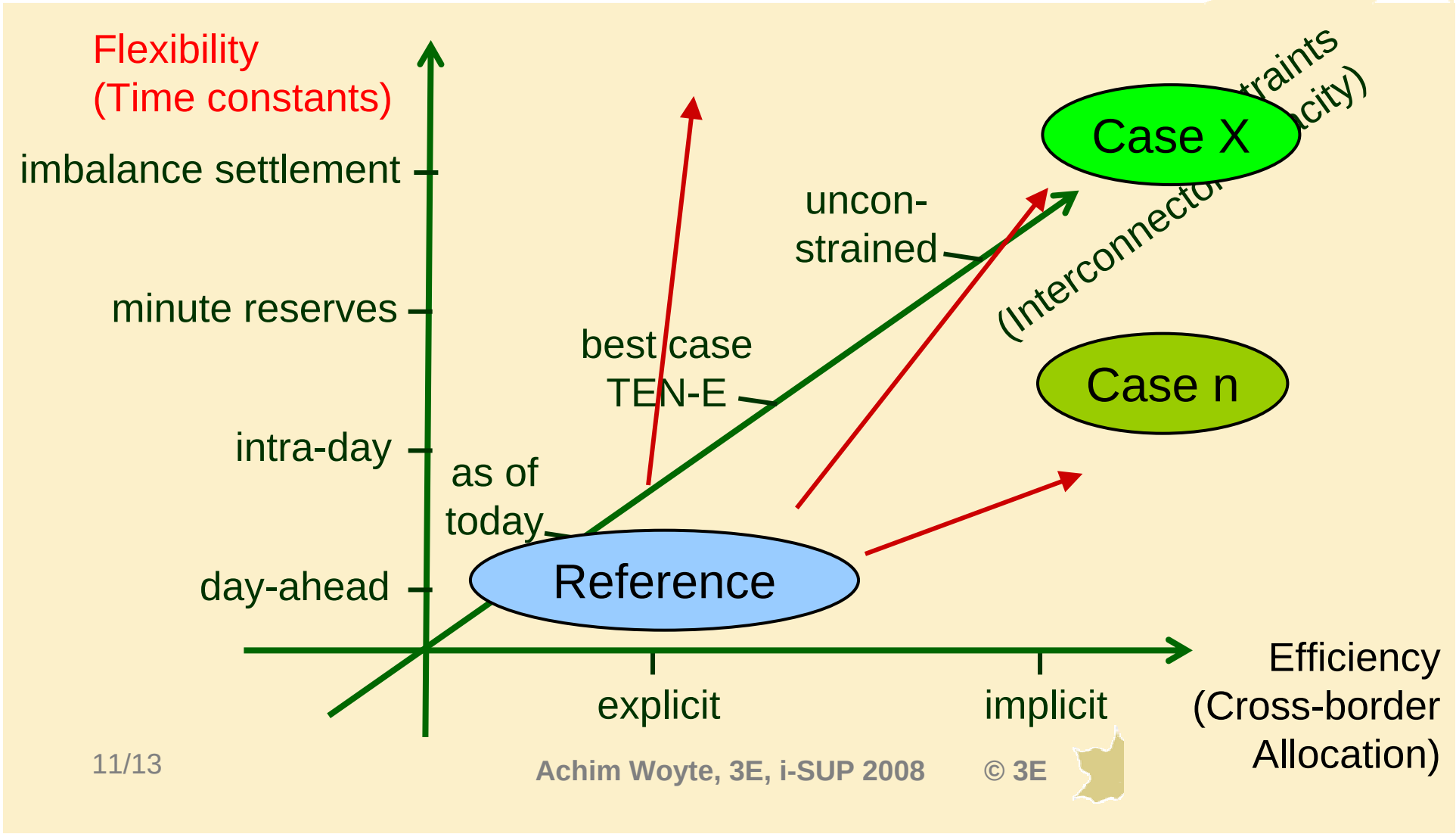
WIND POWER REGIONS

TRADEWIND WIND POWER REGIONS

- larger regions beyond the Regional Initiative
- new interconnectors
- including a North Sea market (offshore grid)



DESIGN PARAMETERS AND CONSTRAINTS



TRADEWIND: SENSITIVITY ANALYSIS

BOUNDARY CONDITIONS

- EC energy scenarios (2030 Baseline from 2007)
- interconnector capacity
- large wind power capacity (280 GW in 2030)

PRINCIPAL MARKET PARAMETERS

- gate closure times (flexibility)
- degree of EU market integration (efficiency of interconnector allocation)

MARKET INDICATORS

- system costs
- market value of wind power
- price volatility,etc

CONCLUSIONS

EFFICIENT WIND POWER INTEGRATION REQUIRES

- flexible market access
- trading facilities all over Europe

PRINCIPAL MARKET PARAMETERS

- gate closure times (flexibility)
- degree of EU market integration (efficiency of interconnector allocation)

TRADEWIND

- propose adapted market parameters
- describe market performance with different designs/stages of integration
- quantify by means of market indicators

THANK YOU FROM 3E