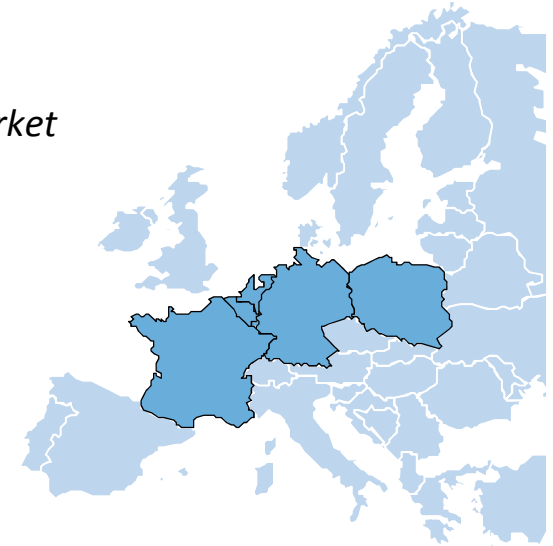


# The Electricity Market Model EMMA

*Numerical partial-equilibrium model of the European interconnected power market*



## Objective: minimize total system costs

- capital cost
- fuel and CO<sub>2</sub> costs
- fixed and and variable O&M
- ... of power plants, storage, interconnectors

## Decision variables

- hourly plant dispatch and trade of electricity
- investment in plants, storage, interconnectors

## Constraints

- energy balance
- capacity constraints
- volume constraints of storage
- balancing reserve requirement
- CHP generation
- no unit commitment

## Resolution

- temporal: hours
- spatial: bidding areas (countries) – no load flow
- technologies: eleven plant types

## Input data

- wind, solar and load data from the same year
- existing plant stack

## Economic assumptions

- price-inelastic demand
- no market power

## Equilibrium

- short-/mid-/long-term equilibrium (“one year”)
- no transition path (“up to 2030”)

## Implementation

- linear program
- GAMS / cplex

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