

*Competitiveness issues in
specific countries*

**Relocation and leakage
issues for the power sector
in Poland**

Wojciech Suwala

Mineral and Energy Economy Research
Institute

Kraków, Poland



MEERI

Unilateral climate policies and carbon leakage 4-5 09 2008, Berlin

The problem: relocation and leakage

Power sector prone to relocation and leakage:

- high emission factors
- relation: price of electricity (from coal) /price of emissions allowance $\approx 1/1$
- barriers:
 - security of supply
 - transmission lines



The problem: relocation and leakage

- Possibility of generation relocation to other EU countries or east neighbours, reasons:
 - DE, CZ, SK, LT different structure of electricity generation
 - UA, BY, RU lower costs of generation
- Transmissions constraints
- Carbon leakage? fuel for „external” generation



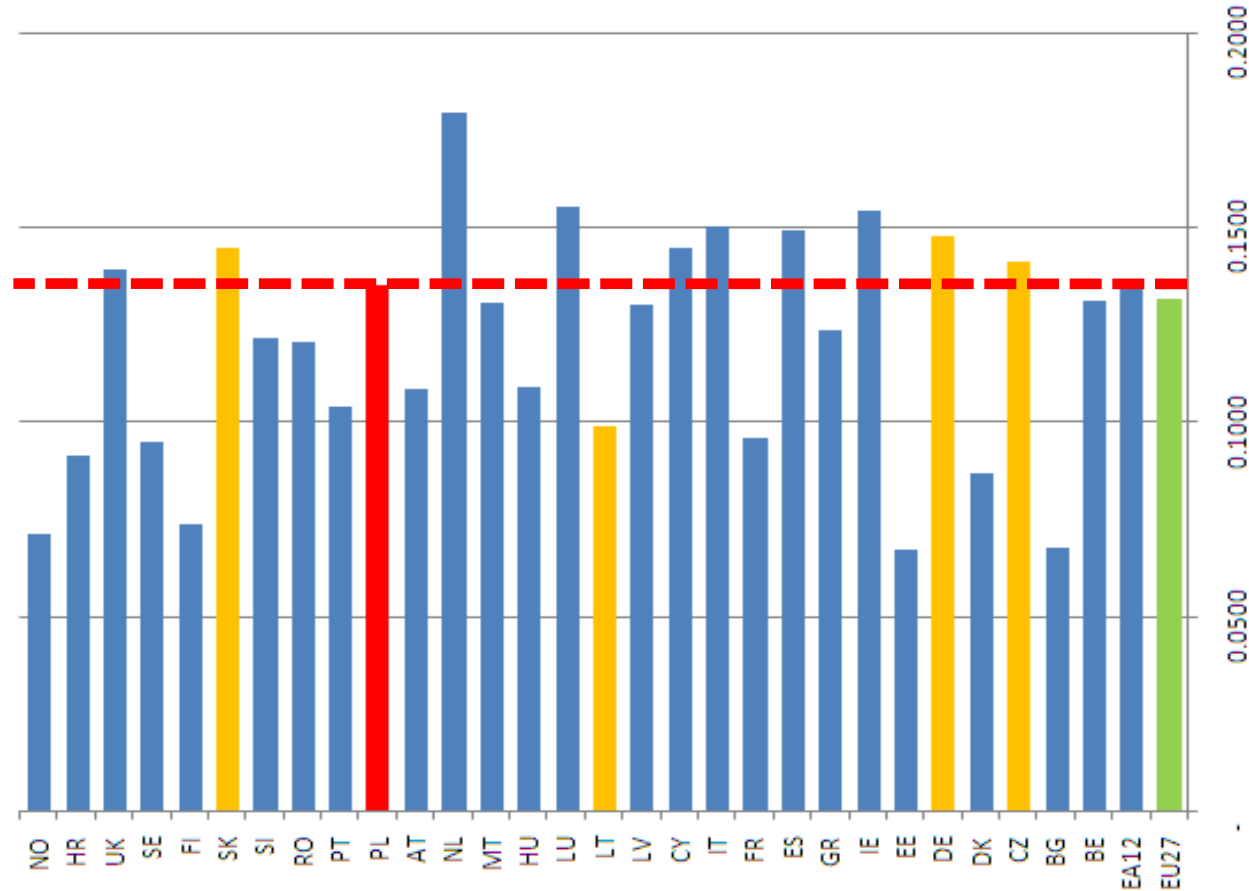
Relocation to neighbour EU countries

- Prices of electricity
- Fuel structure of generation
- Costs + emissions allowances
- Capacities

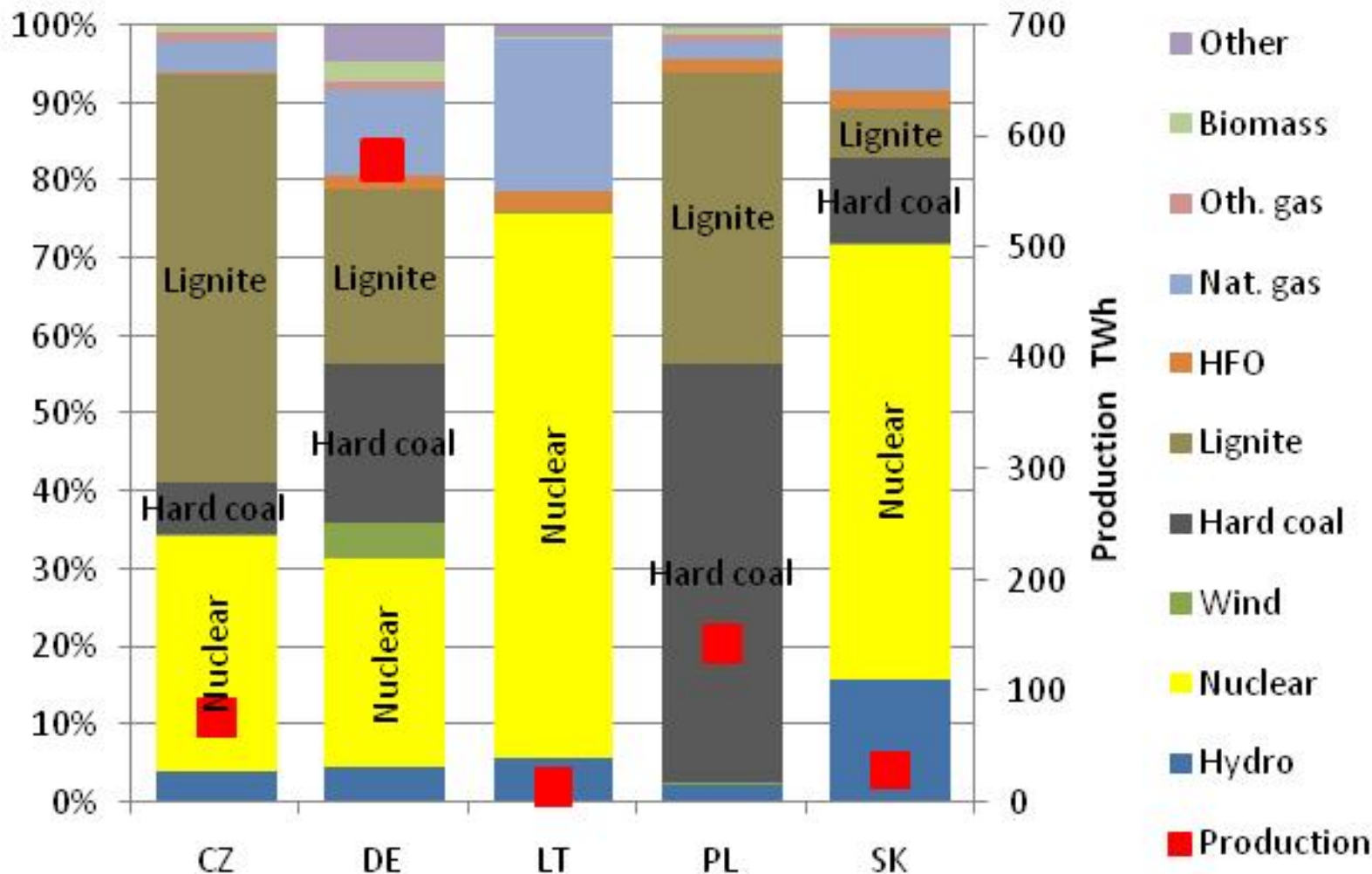


Possibility of generation relocation

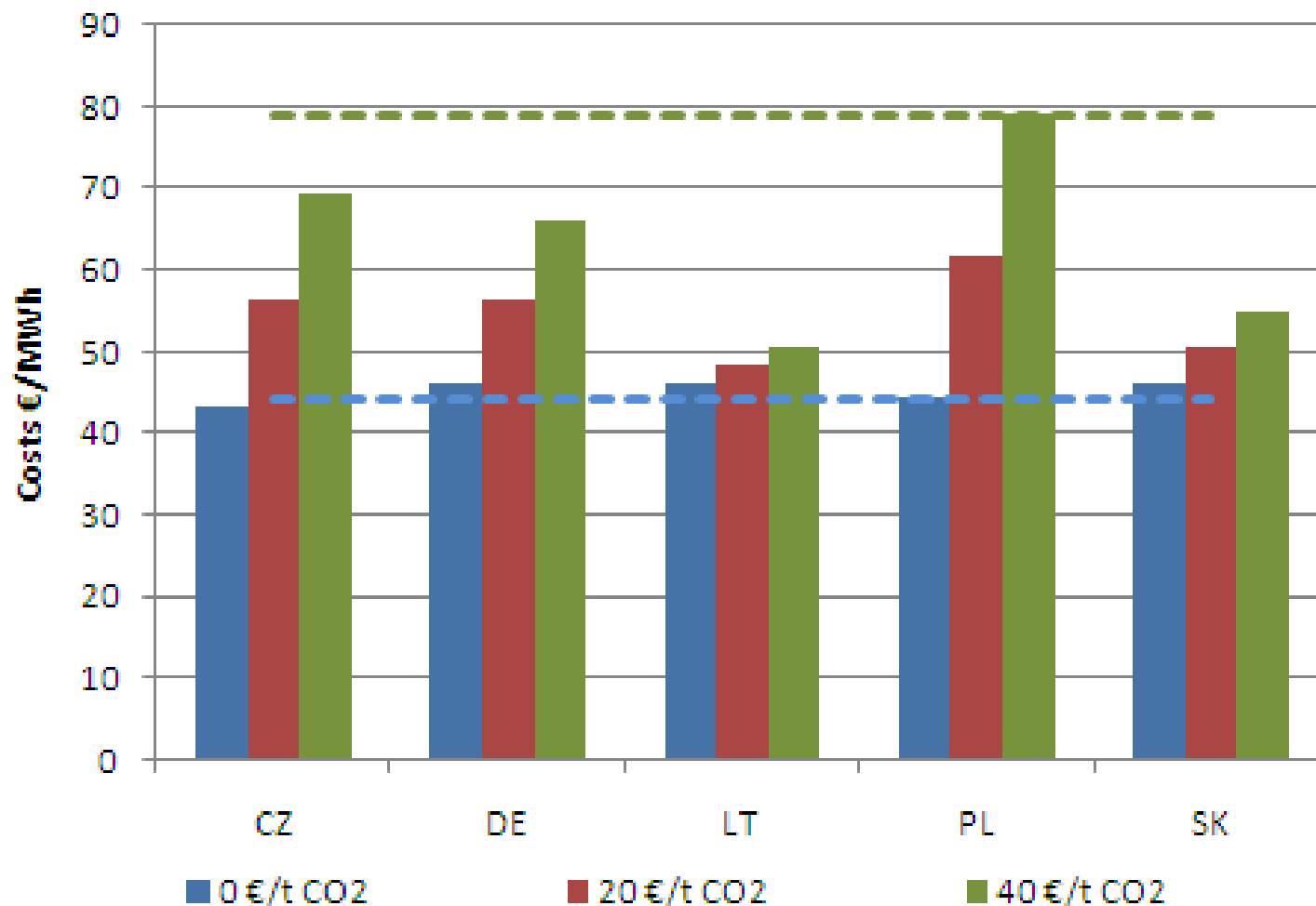
Prices of electricity for industry €/kWh



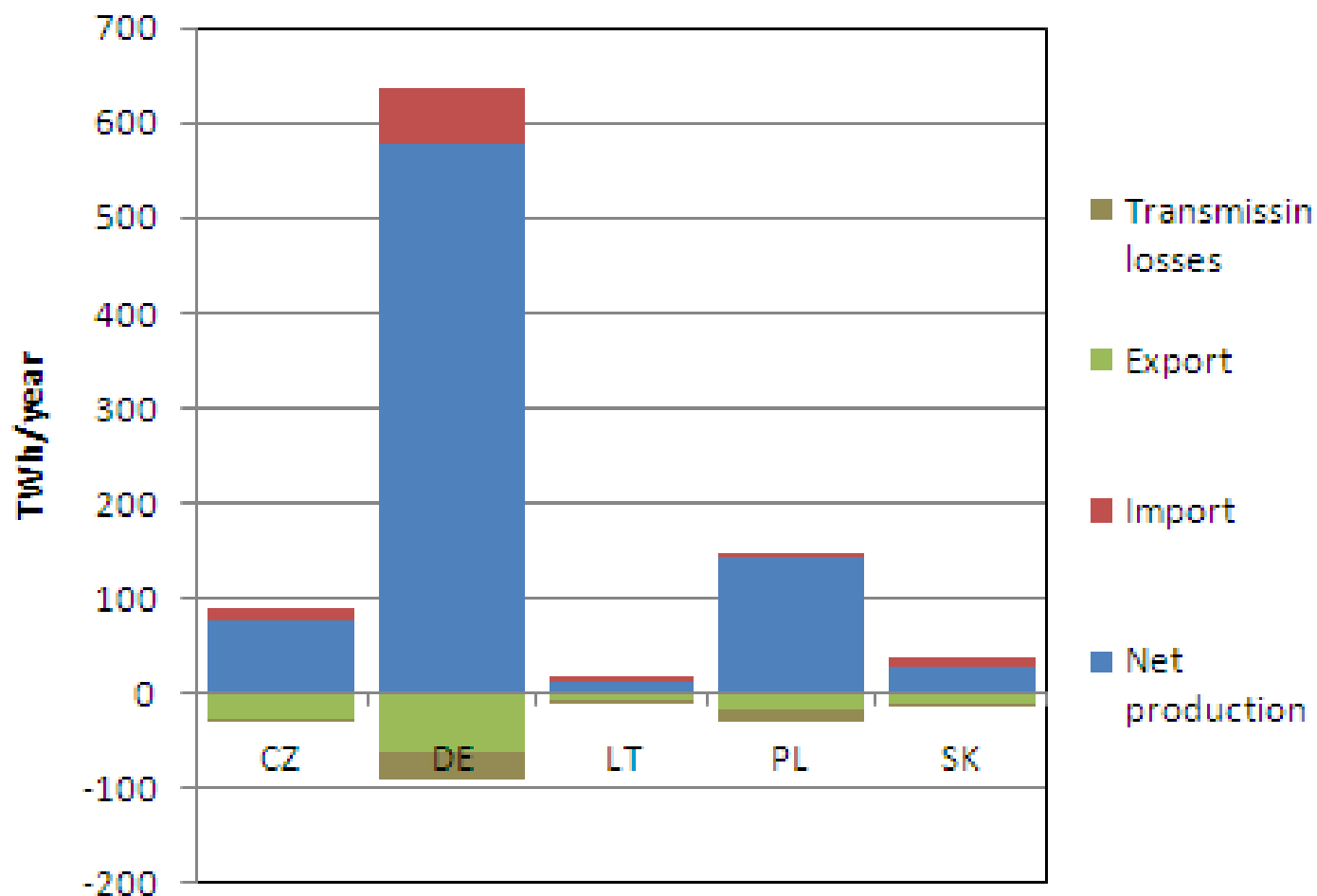
Fuel structure of electricity generation



Indicative average costs of electricity and emissions allowances prices



Electricity production



OTHER ISSUES

- No spare capacity in generation: CZ, SK, DE
- Necessity of capacity reconstruction after 2015
- New capacity in CZ, SK, DE = new capacity in PL
- Lithuania – Ignalina II nuclear power station
 - PL contract ~ 1200 MW out of 3000 MW



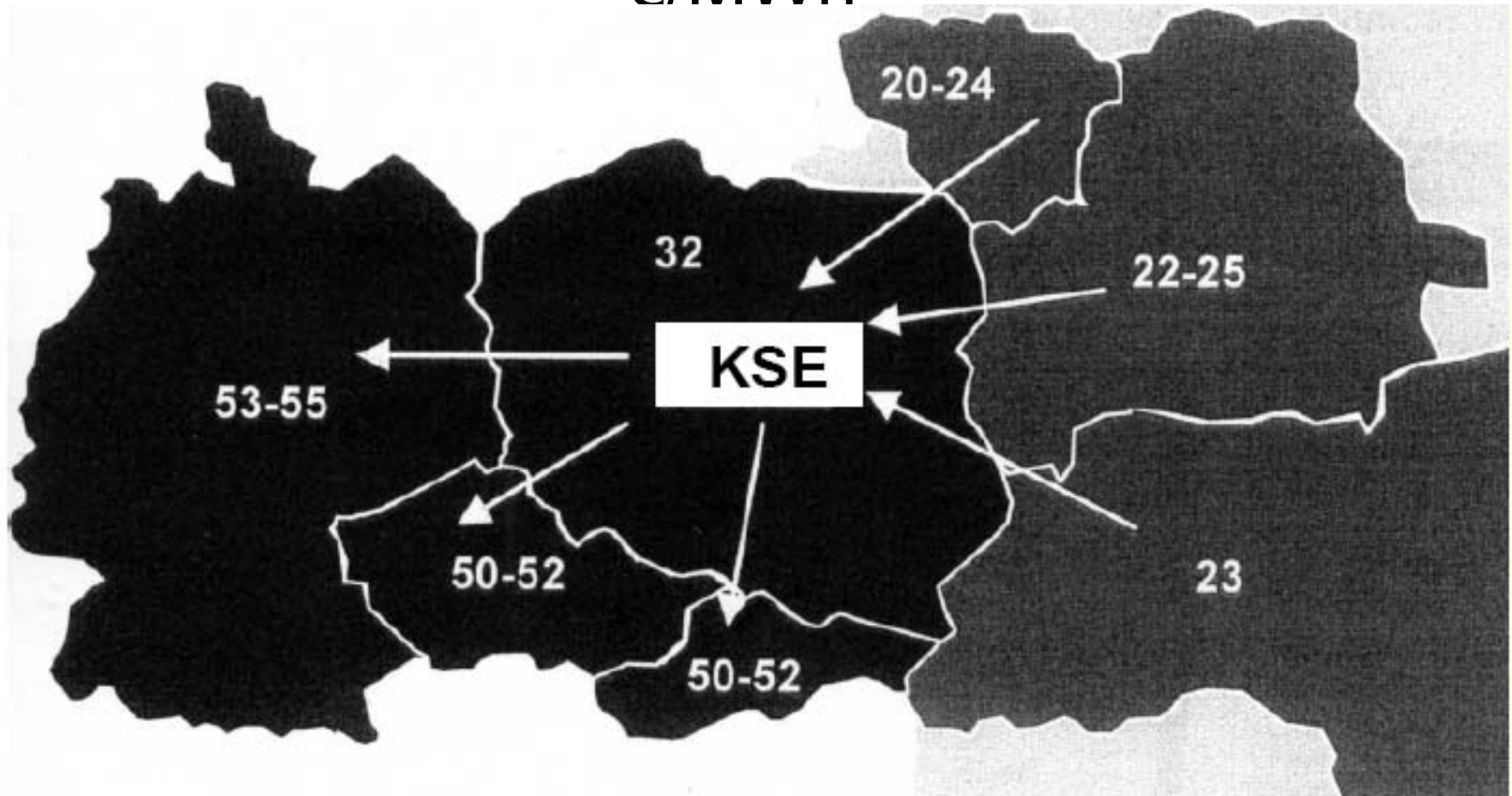
Import from Ukraine, Byelorussia

- Low price electricity
- BY - net importer - 8%
- UA:
 - presently spare capacity
 - planned capacity expansion



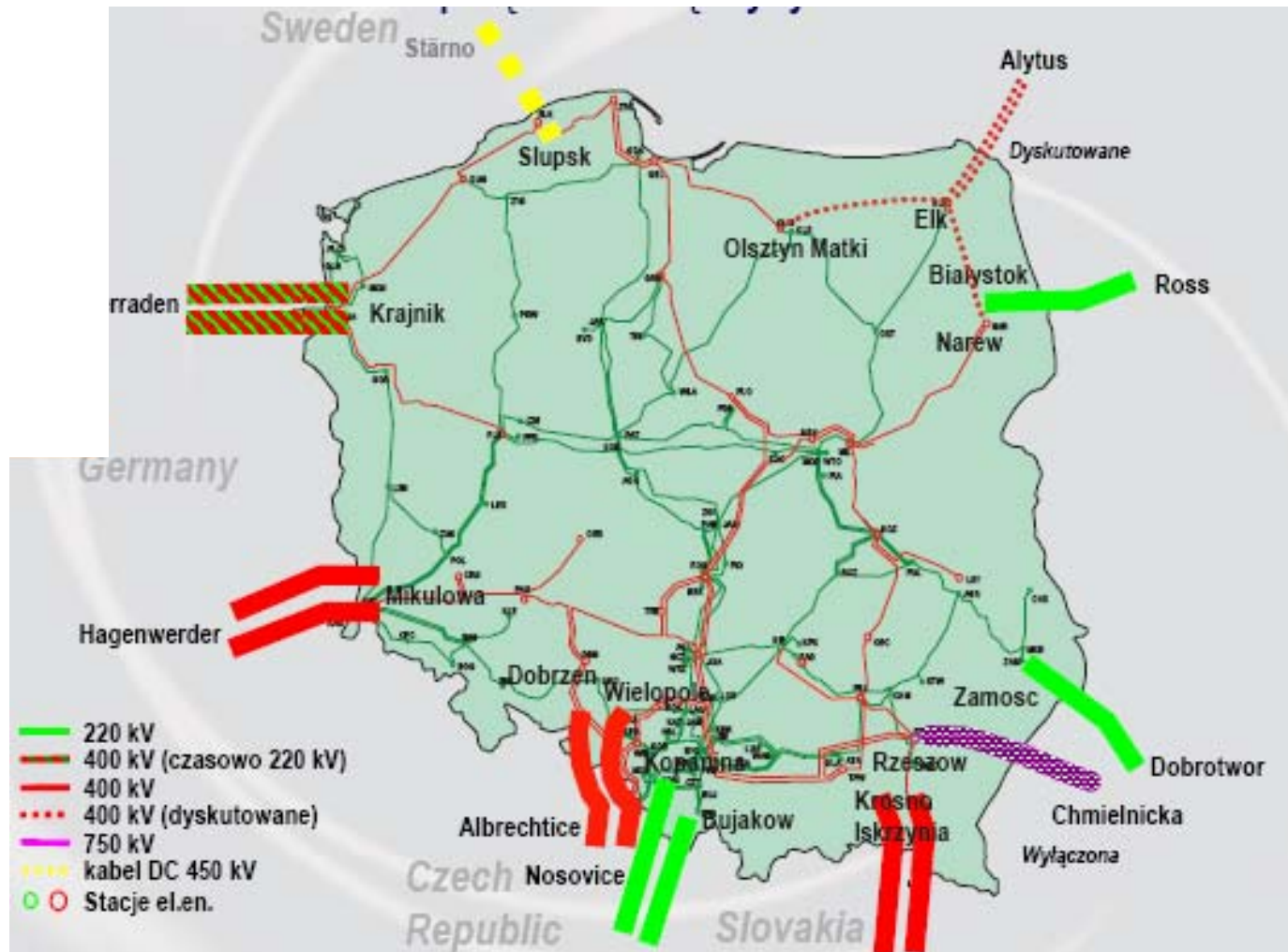
Possibility of generation relocation to UA, BY

Economics - Wholesale prices of electricity
€/MWh



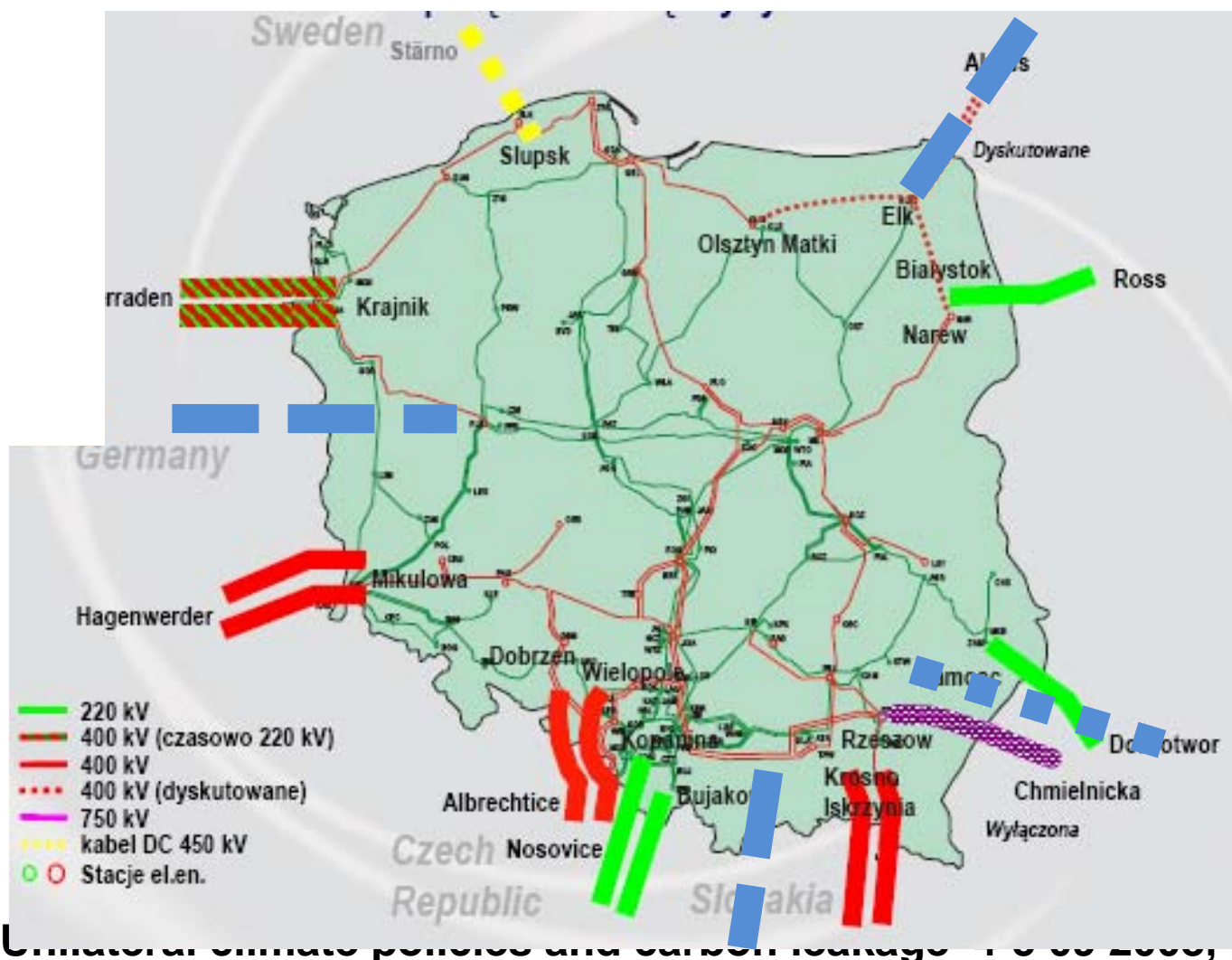
Possibility of generation relocation

Transmission lines- existing



Possibility of generation relocation

Transmission lines- projected

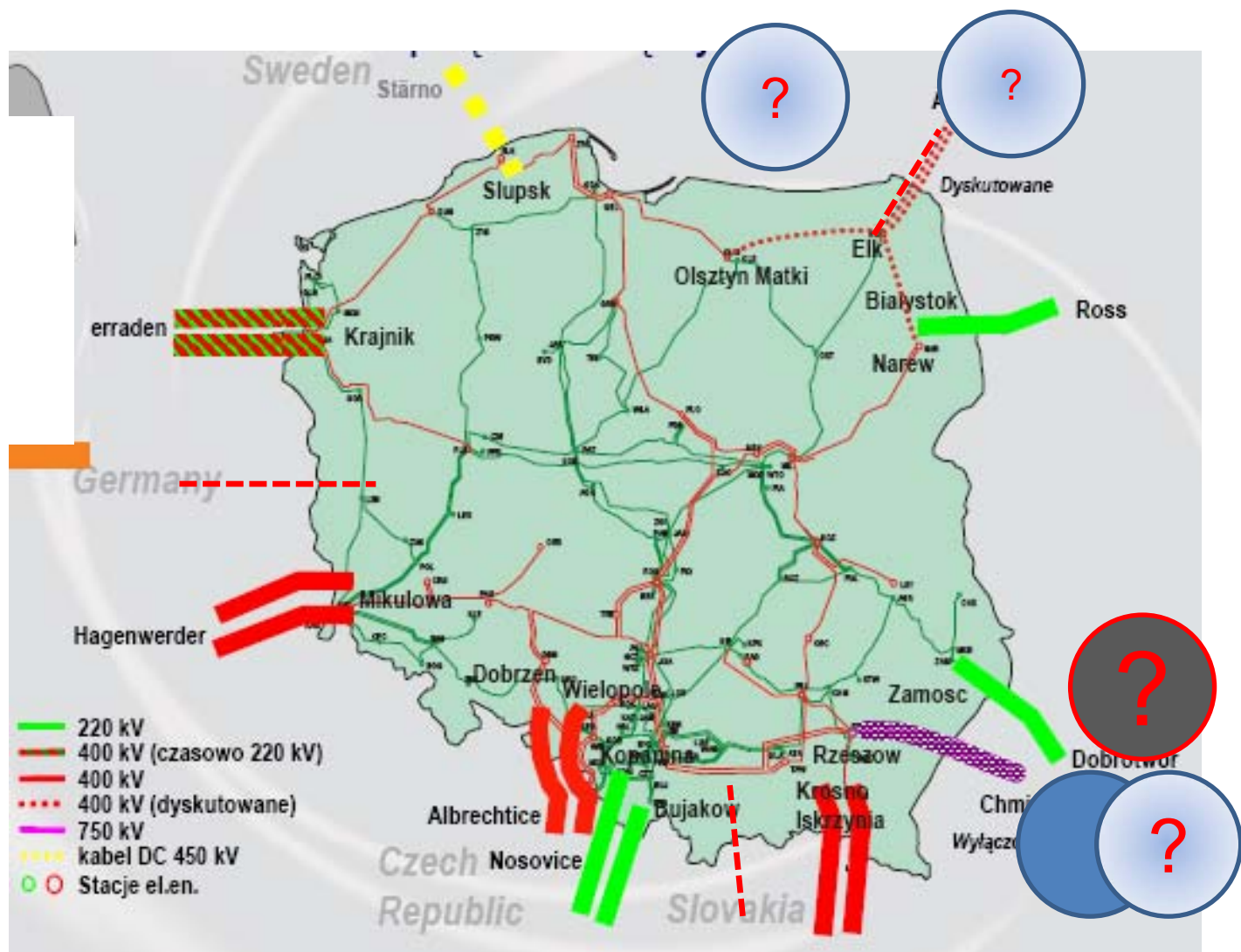


Unilateral climate policies and carbon leakage 1990-2000, Berlin

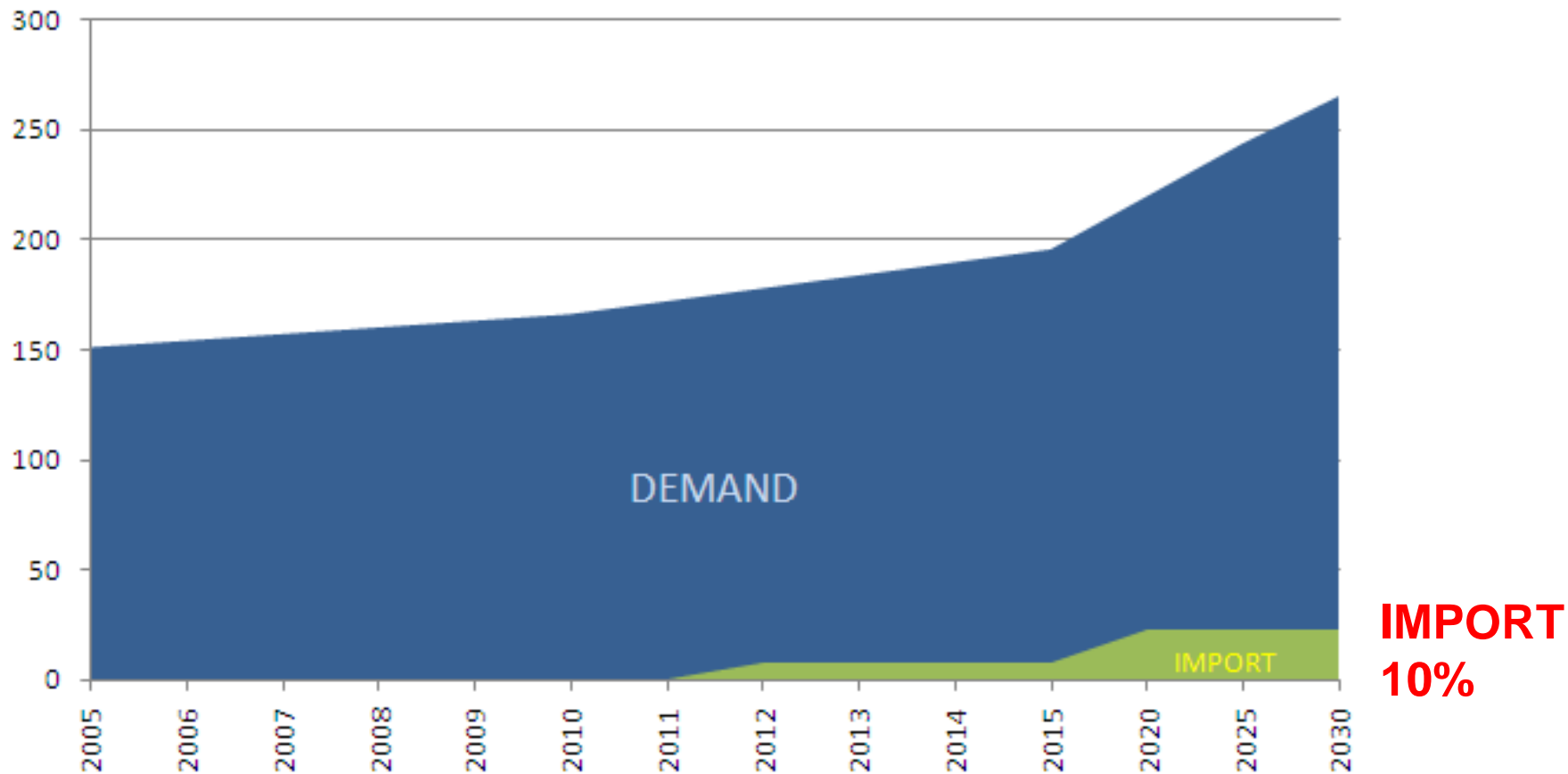
Carbon leakage?

Sources of imported electricity:

- nuclear
- hydro
- coal



DEMAND and IMPORT TWh/y (model results)



Conclusions

- Power generation is prone to relocation of activities
- PL case - possible relocation to LT,UA, RU
- Total import practically max 10% of consumption
- Sources of imported – relocated electricity: nuclear , hydro



Survey on emissions and leakage

Univ. of Lodz. Prof. M. Burchard

- ~ 20 questionnaires: cement, glass, iron, aluminium
- 2000 – 2007: CO2 emissions reduction 15-35%
- new installations
 - to 2012: - 10% +30% of emissions on the average
 - after 2012: vague plans



Survey on emissions and leakage

Univ. of Lodz. Prof. M. Burchard

ETS effects after 2012:

- reduction of production
- lower share of the market
- relocation of activity
- closing of most polluting units



Survey on emissions and leakage

Univ. of Lodz. Prof. M. Burchard

Preferred measures against the leakage

- free allocation of allowances for benchmark plants
- investment subsidies
- lower income taxes



Survey on emissions and leakage

Univ. of Lodz. Prof. M. Burchard

What could hamper the leakage:

- transport costs,
- high investment costs,
- restricted import .

