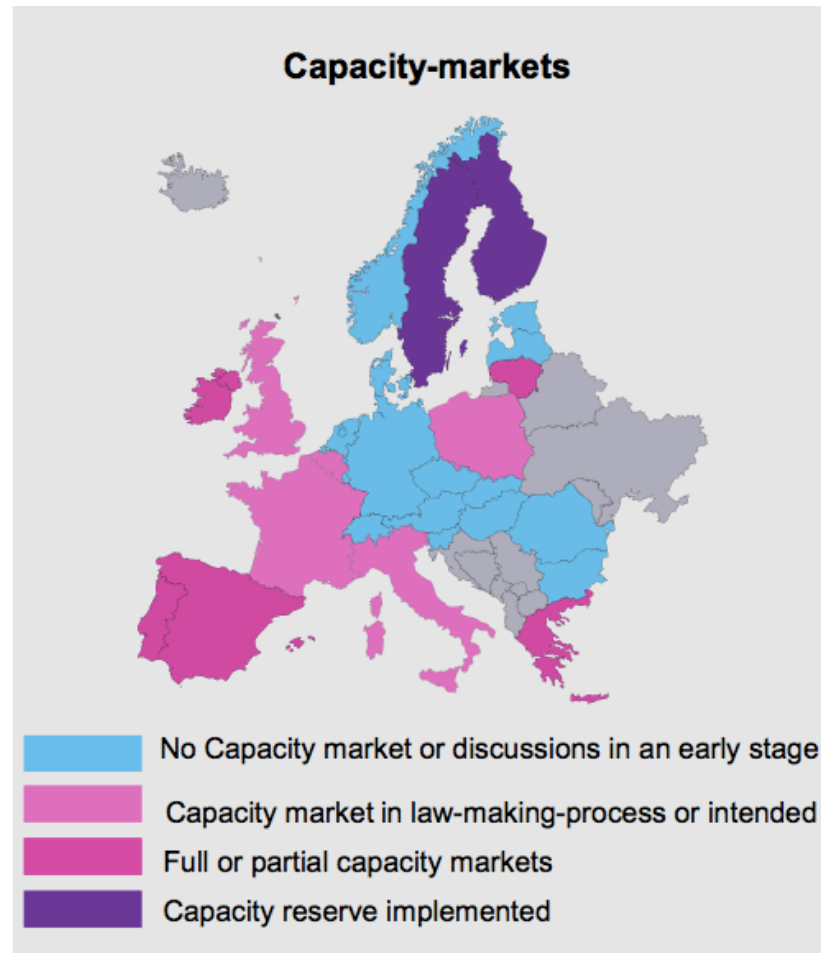


The impact of capacity markets on surrounding markets

Stockholm 3 March 2015
Johan Linnarsson, Sweco

Europe is expected to be a patchwork of capacity market designs



Source: Giles Parkinson 2013, <http://reneweconomy.com.au/>

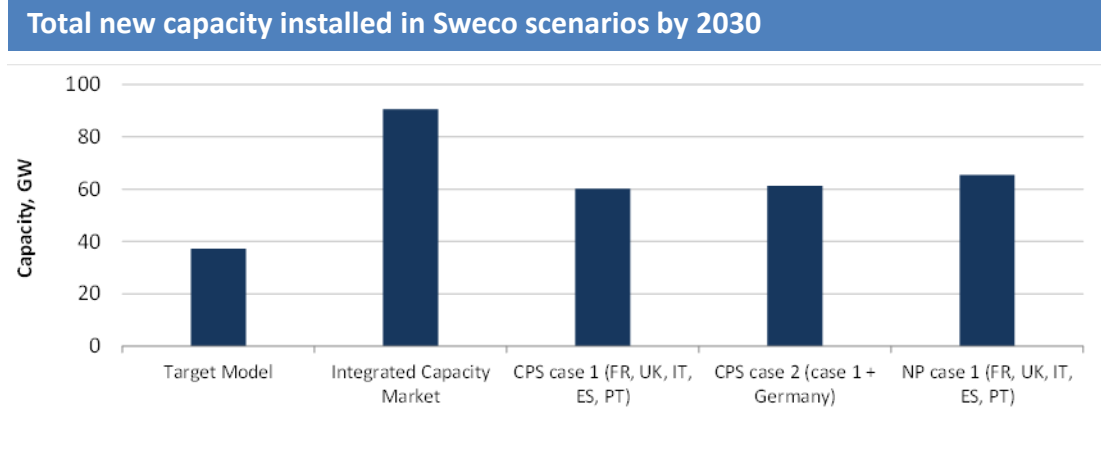
Four different market designs are considered:

- **Target Model** – a stylised energy-only market, with no CRMs.
- **Integrated Capacity Market** – a European-wide capacity market. Target capacity can be met via domestic or external generation, and external generation is limited by the available transmission capacity.
- **Coordinated Policy Scenario (CPS)** – Similar in market design to the above Integrated Capacity Market, but limited to France, Italy, UK, Spain and Portugal. External generation can still participate in each of these national capacity markets.
- **Coordinated Policy Scenario (CPS) Case 2**, in which Germany also has a capacity market.
- **National Policy (NP)** – This scenario is also a “patchwork” design, with the same countries with national capacity markets (France, Italy, UK, Spain and Portugal) as in the CPS, but in these markets external generation cannot participate.

Capacity markets will (as intended) lead to more installed capacity

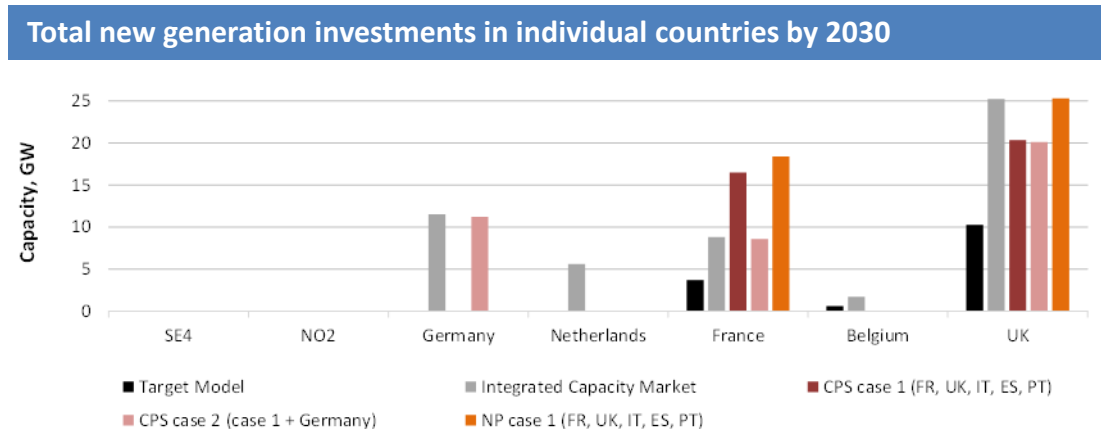
Capacity income reduces risk

- Should reduce cost of capital
- Introduces regulatory risk
- Over-investments likely in capacity markets
- Under-investments likely in energy-only



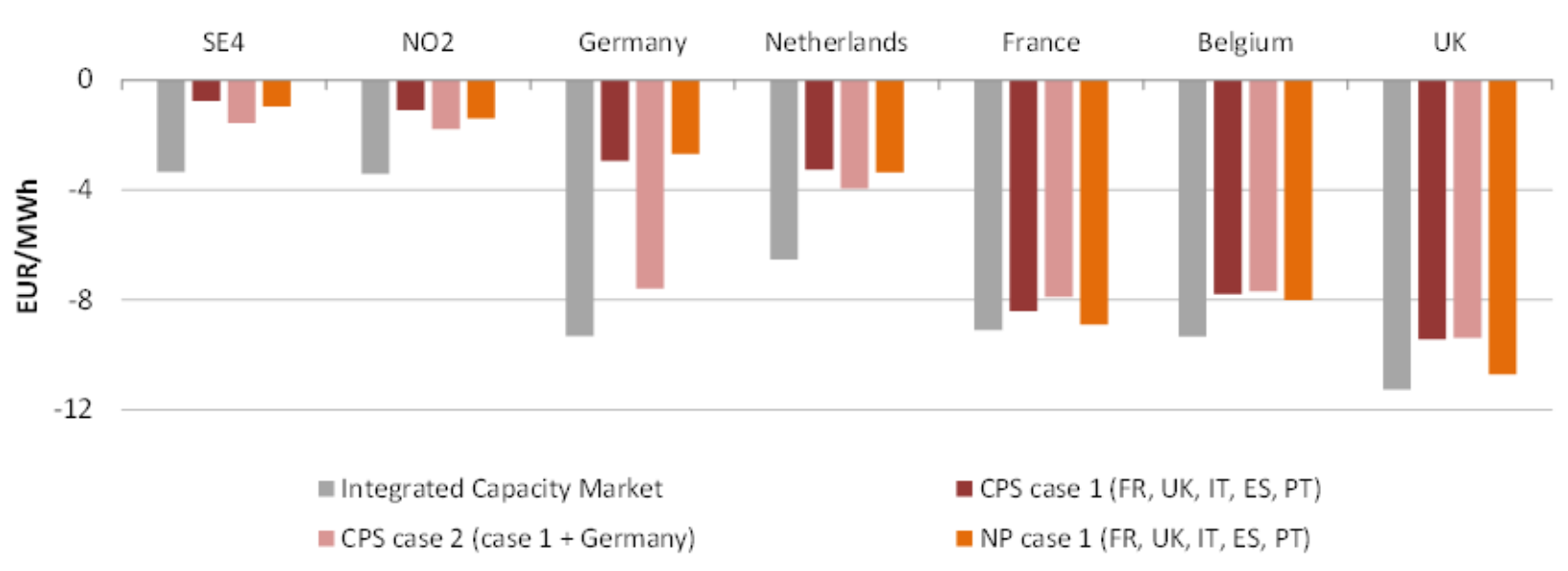
National CRM can distort investment signals

- Investments in CRM regions can crowd out investments in neighboring non-CRM regions



Increased capacity will result in lower wholesale prices

Change in wholesale price relative to the Target Model in 2030



Capacity markets encourage more investments in new capacity

- Results in lower wholesale prices from lower peak prices
- Spillover effects to neighboring countries, sometimes substantial

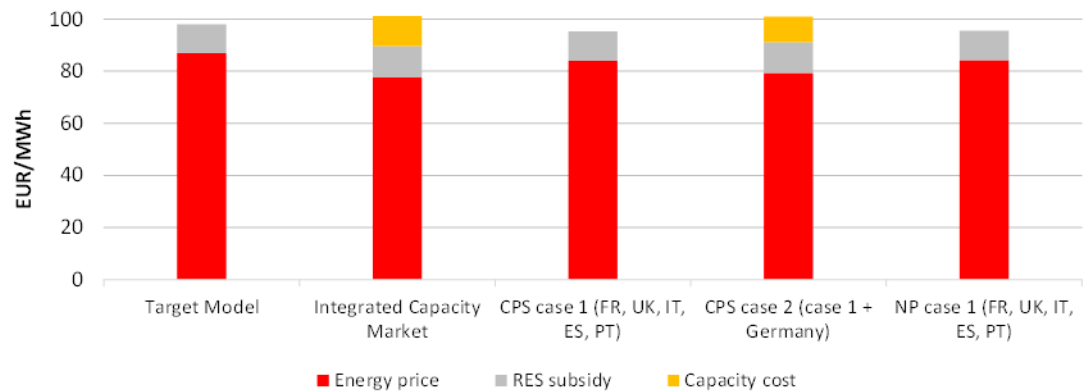
End consumer prices may however increase

Decrease in wholesale price is compensated by capacity cost

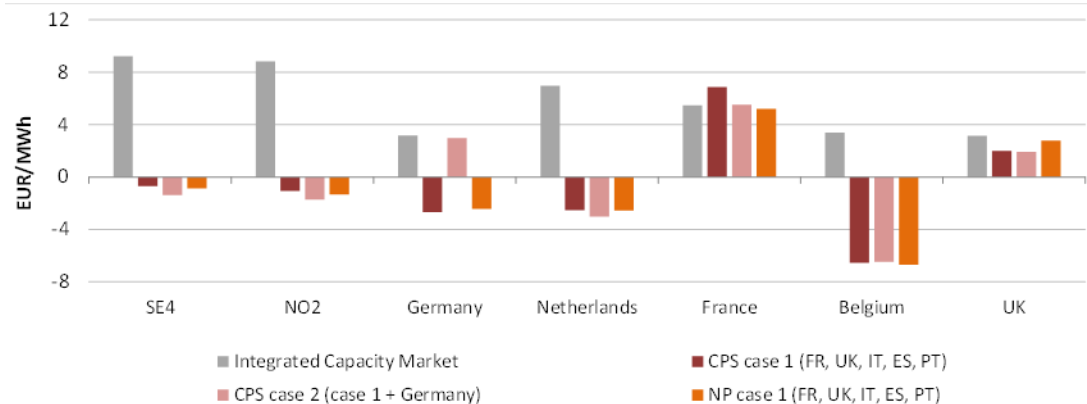
- Also cost for RES subsidies may increase

Spillover effects to consumers in neighboring countries

Components of cost to customers in Germany in 2030 in different scenarios

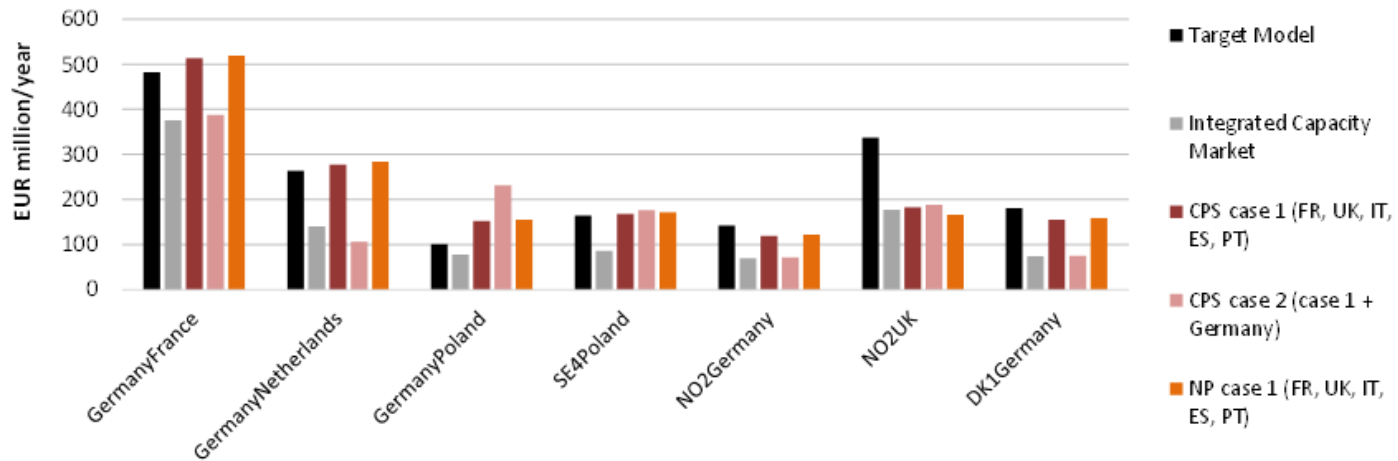


Change in customer cost relative to the Target Model in 2030



Capacity markets will have an impact on the profitability of interconnectors

Congestion revenues for selected interconnectors in 2030



Decreased volatility reduces the congestion rent for interconnectors

- National capacity markets replace the need for interconnectors
- Can be compensated by inclusion of interconnectors in CRM

Distorted investment signals can lead to decreased security of supply

Non-served demand as a percentage of consumption in 2030

