



Clean Energy for All Europeans: Building Blocks for Electricity Markets Enabling New Business Models

**Conference on the future of utilities, from
bankruptcy risk to new business models**

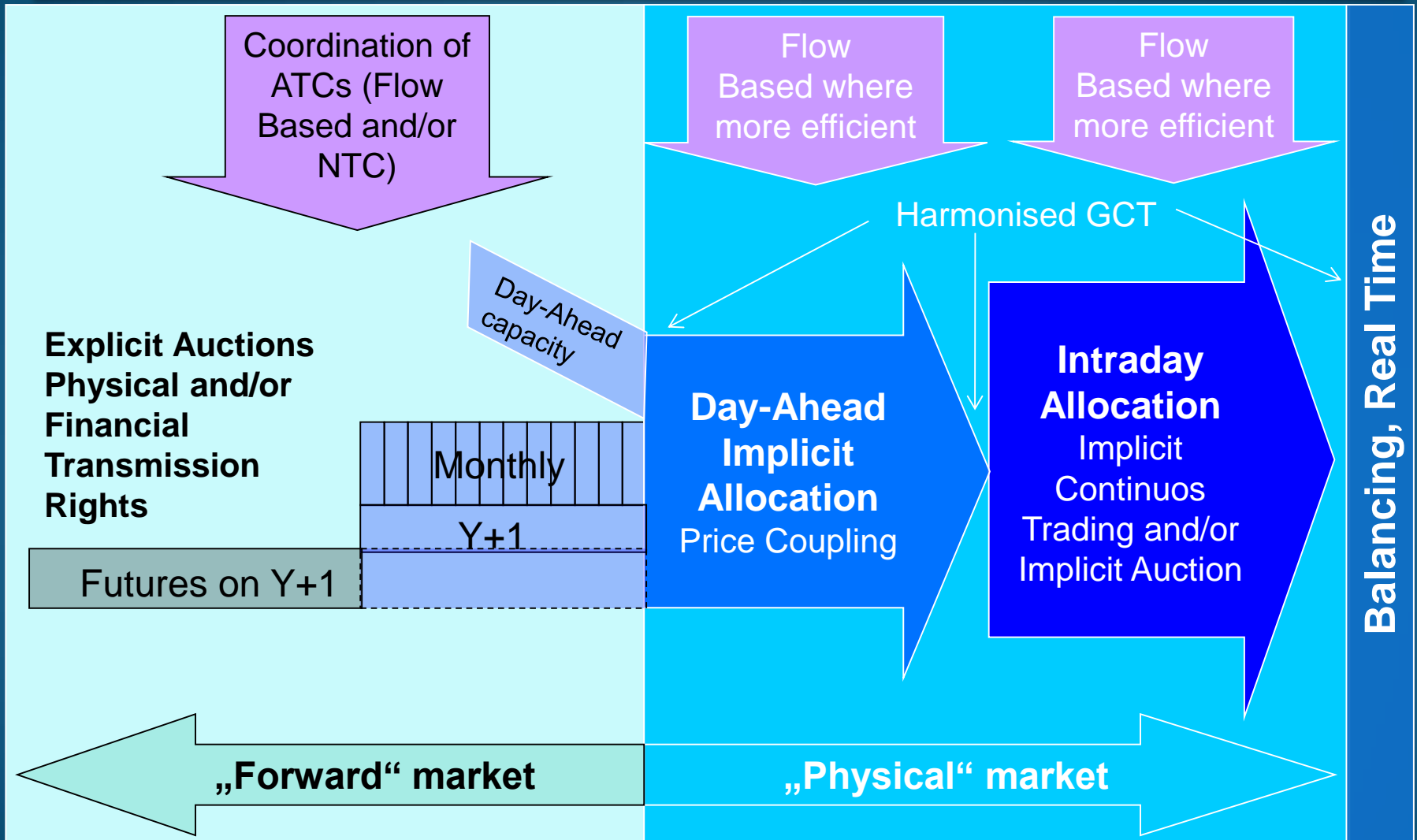
**Chaire European Electricity Markets (CEEM)
at the Université Paris-Dauphine**

Paris 27.9.2017

Matti Supponen

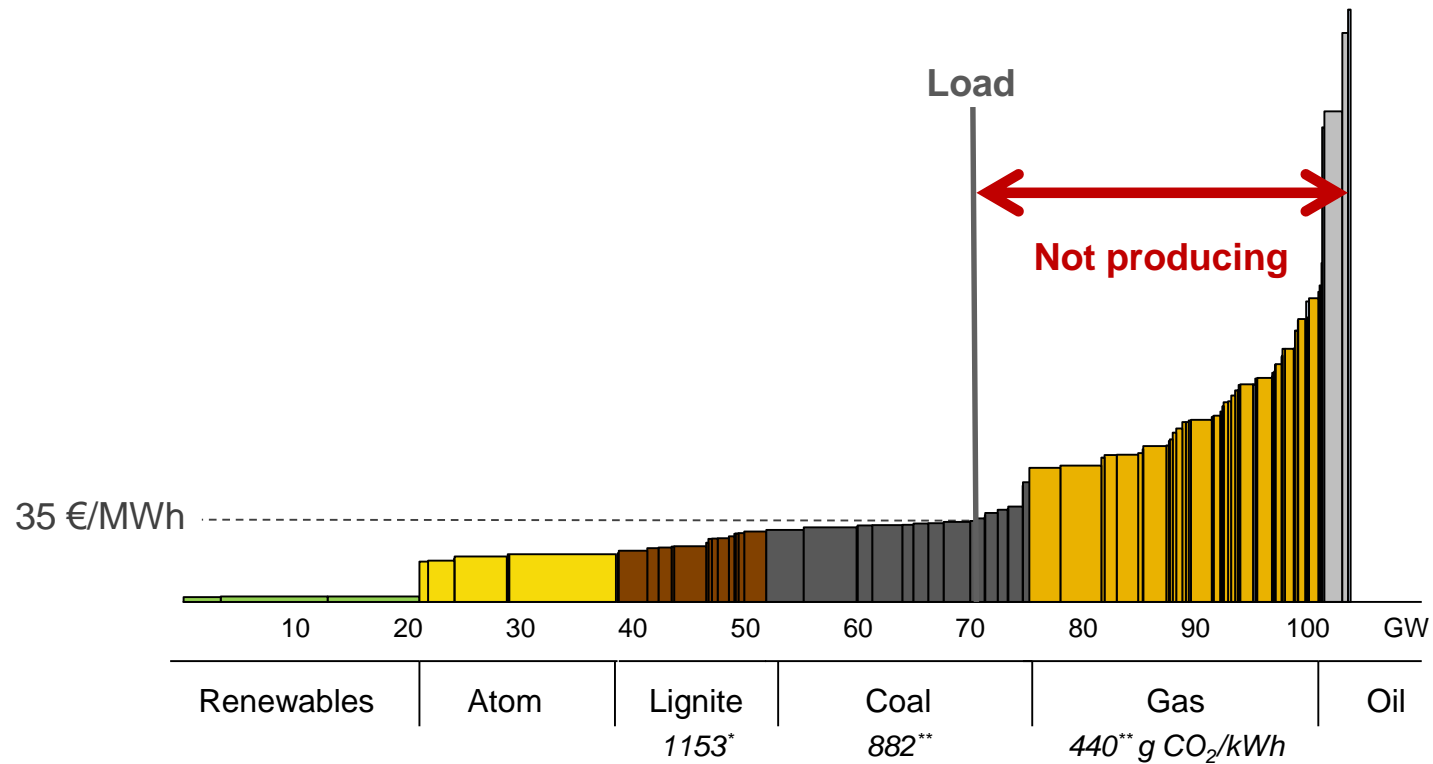
DG ENER unit B2: Wholesale markets

Target Model



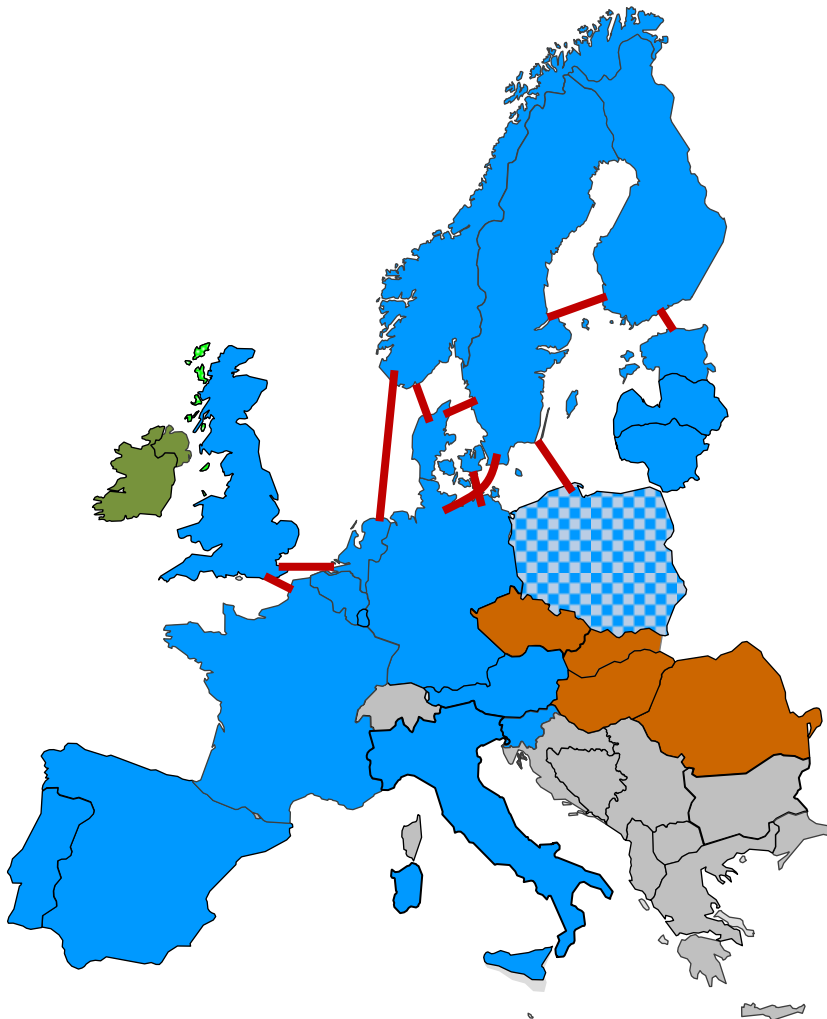
Merit order





Merit Order Austria/Germany 2014



Source: Verbund

Day-ahead market coupling status in September 2017



| REGIONAL DAY AHEAD IMPLICIT AUCTIONS | | |
|---|---|---|
|  | North West Europe (NWE) | Price coupling |
|  | Poland | Poland price coupled within NWE through SwePol-link |
|  | Ireland and Northern Ireland | All Island market, single price zone |
|  | Czech – Slovak – Hungary-Romania | Price coupling |

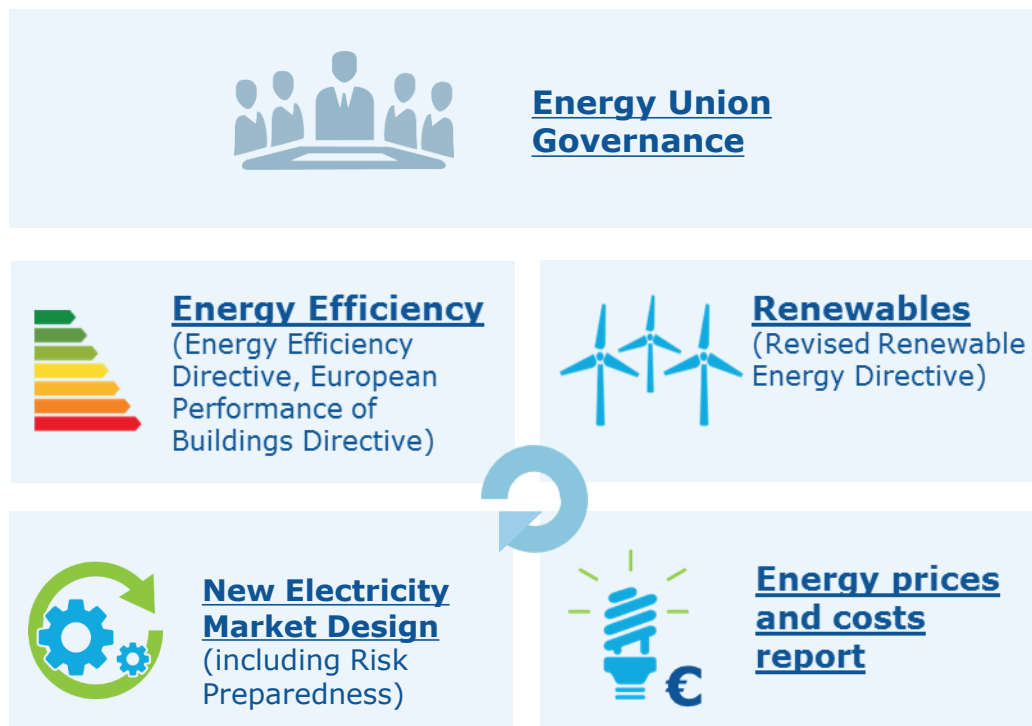
Source: APX, updated by Matti Supponen

ELEMENTS OF THE PACKAGE

A SET OF COHERENT MEASURES

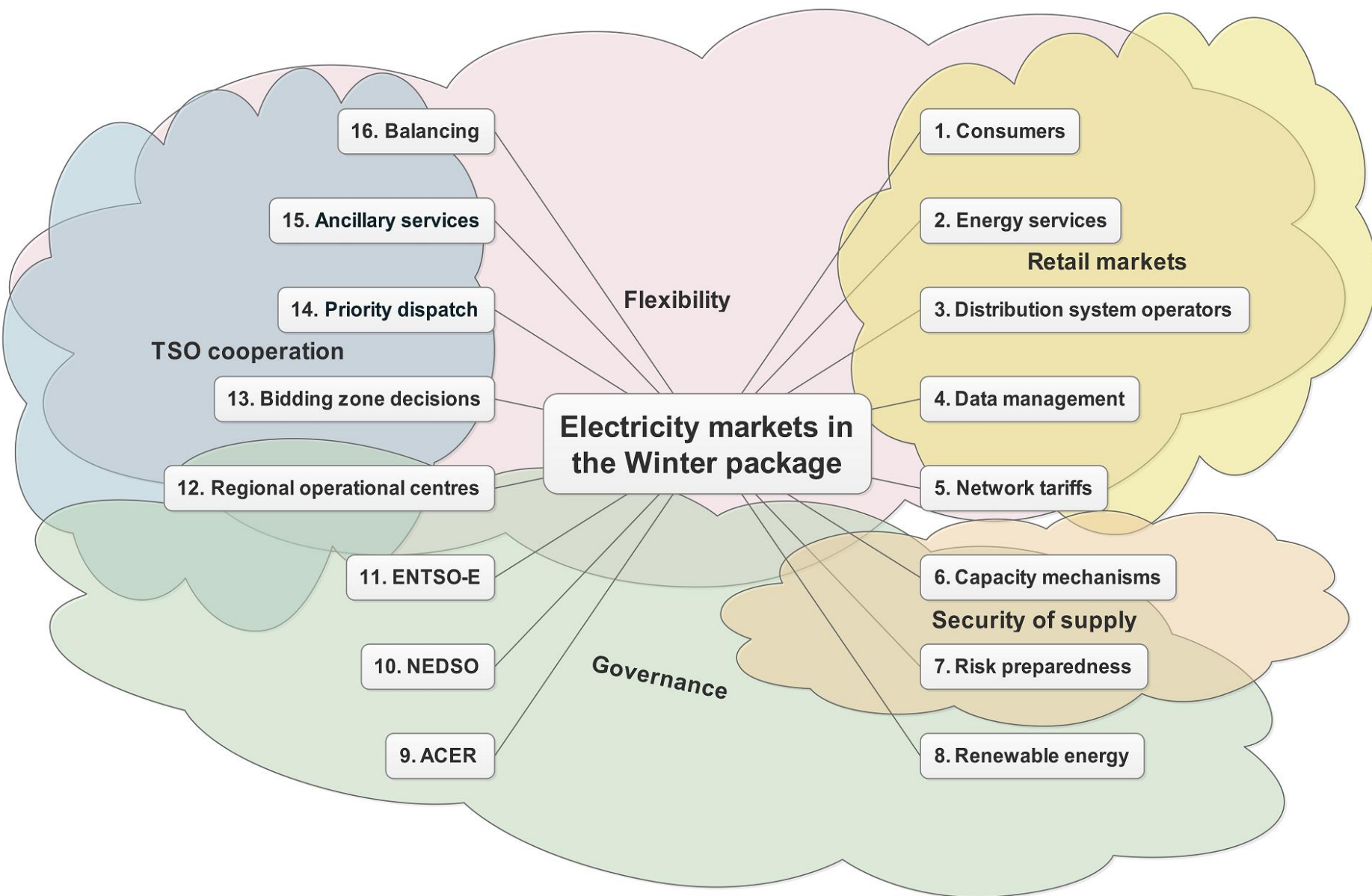
"In essence the new package is about tapping our green growth potential across the board"

Commissioner Miguel Arias Cañete (2016)



Electricity markets in the Winter package

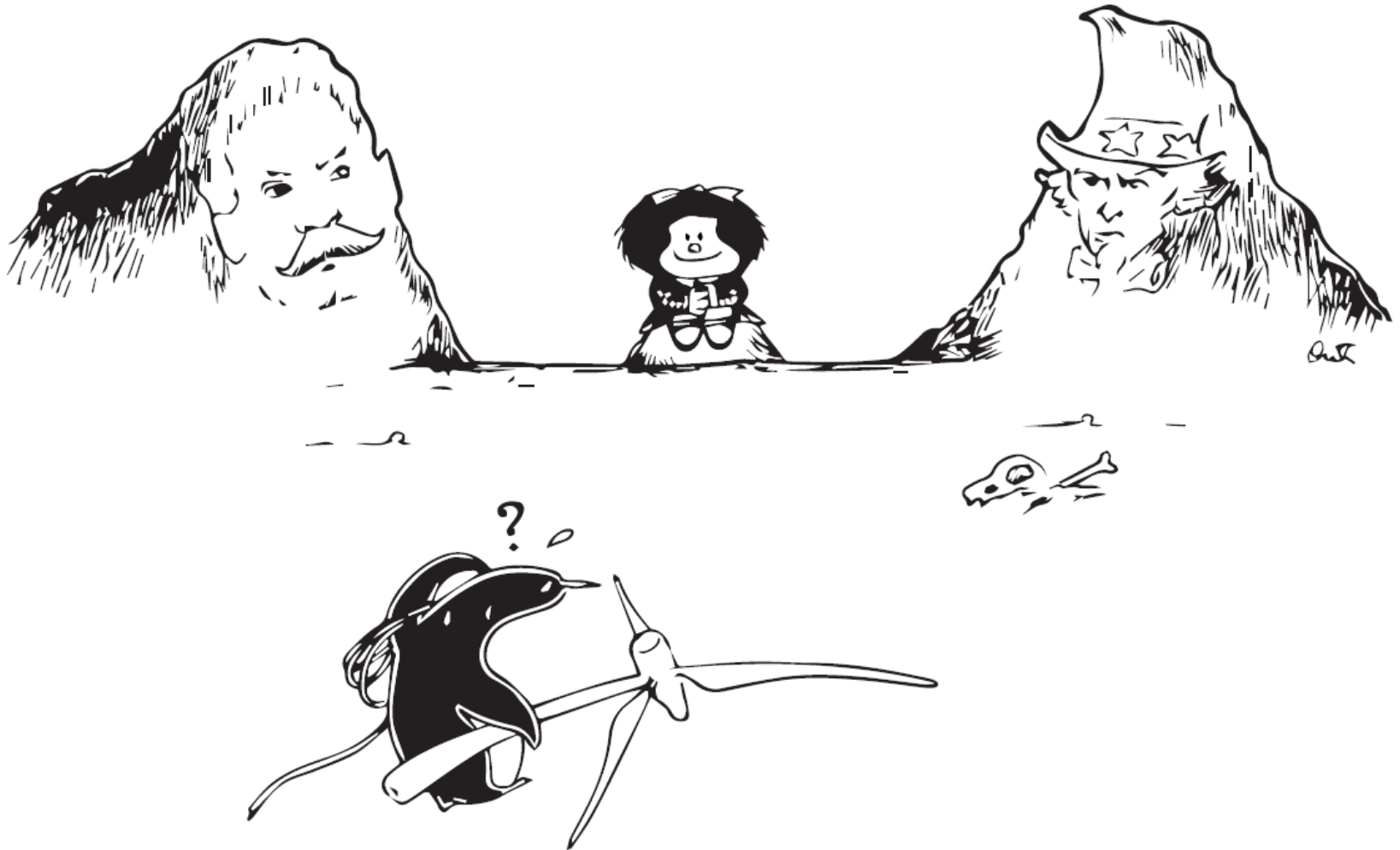
MS/DG ENER/B2/28.2.2017





European
Commission

Customer in the middle



Energy

Market versus regulation

Regulation

- **RES targets**
- **Subsidies**
- **Capacity payments**
- **Regulated prices**
- **Energy efficiency targets**
- **Redispatching**
- **Mandatory ancillary services**
- **Tariff structures**
- **Priority dispatch**
- **ROCs**

Regulation/Market

- **Emissions trading**
- **Trading of green certificates**
- **Auctions**

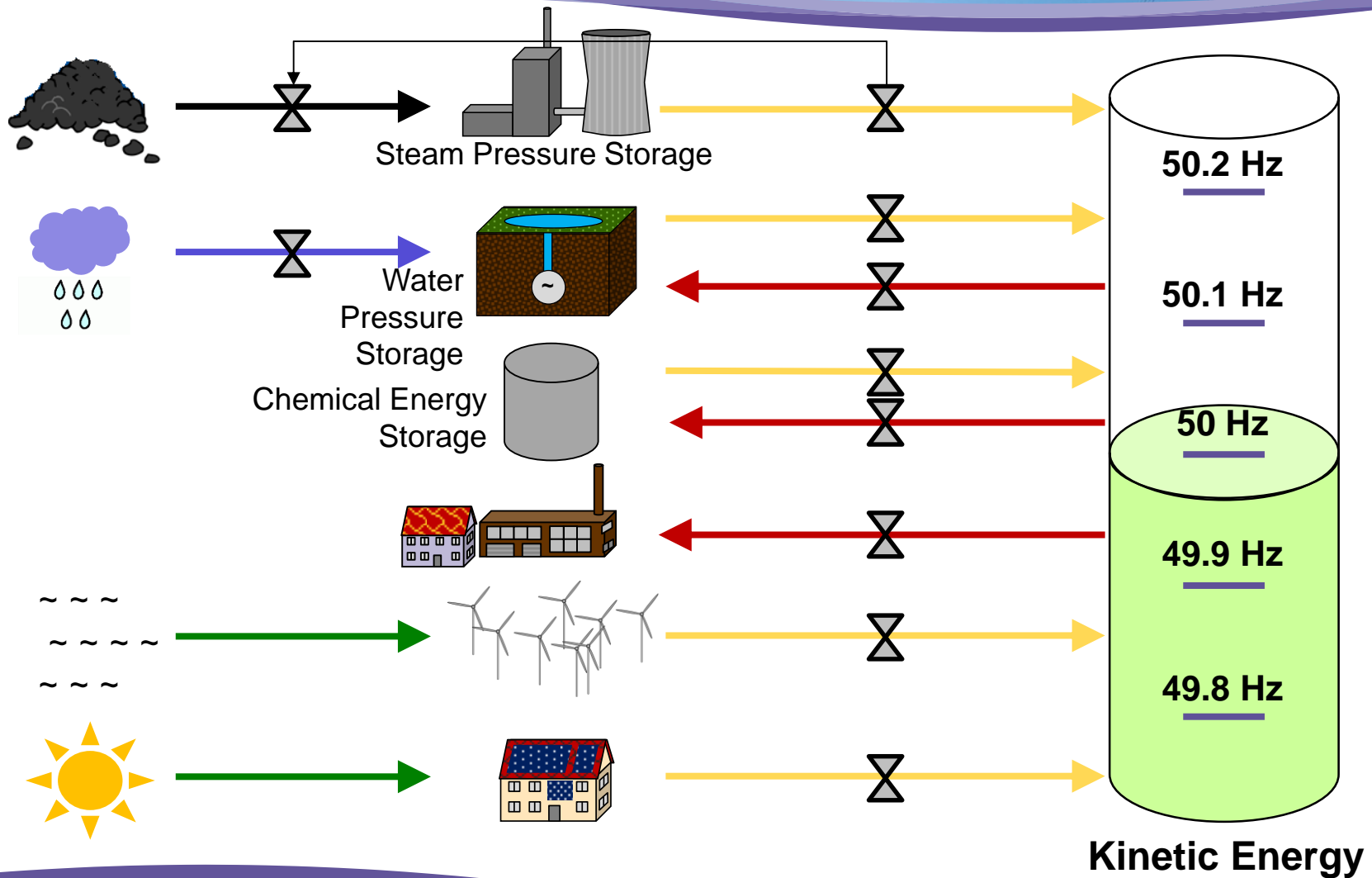
Legend:

- **No major change**
- **Abolish**
- **Improve**
- **For the market**

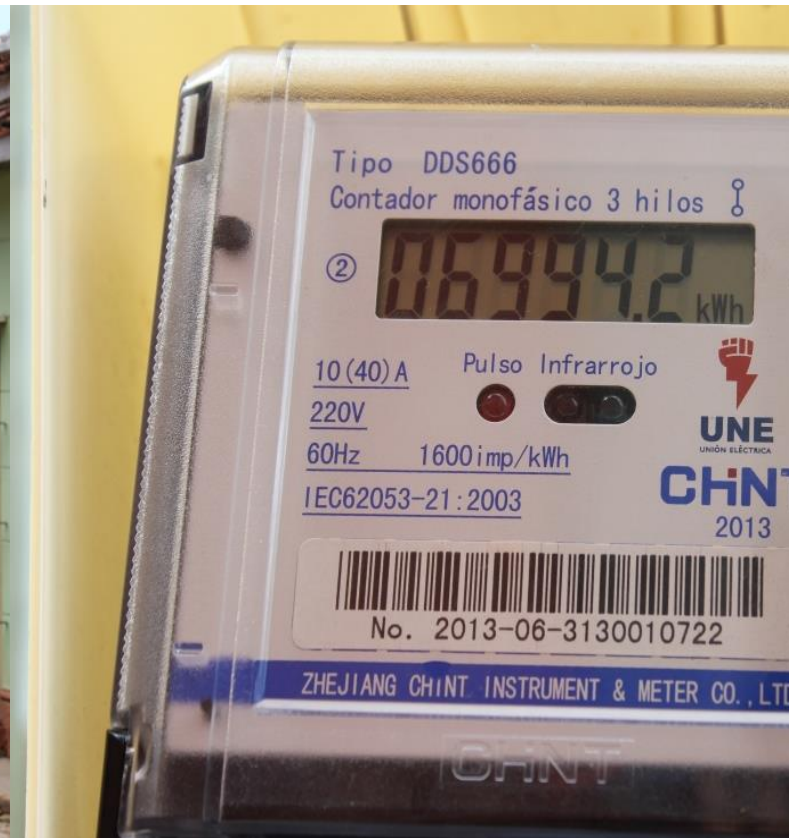
Market

- **Competition**
- **Free price formation**
- **Liquidity**
- **Markets for ancillary services**
- **Right to self-produce/-consume and store electricity**
- **Right to be aggregated**

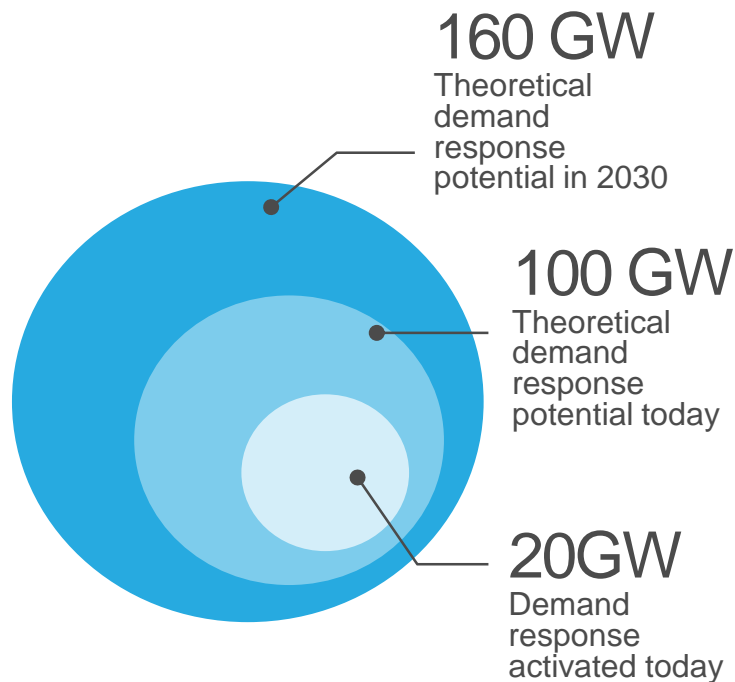
Storage in cartoons



Smart meters and grids



BACKGROUND – UNLOCKING THE UNTAPPED DEMAND-RESPONSE POTENTIAL



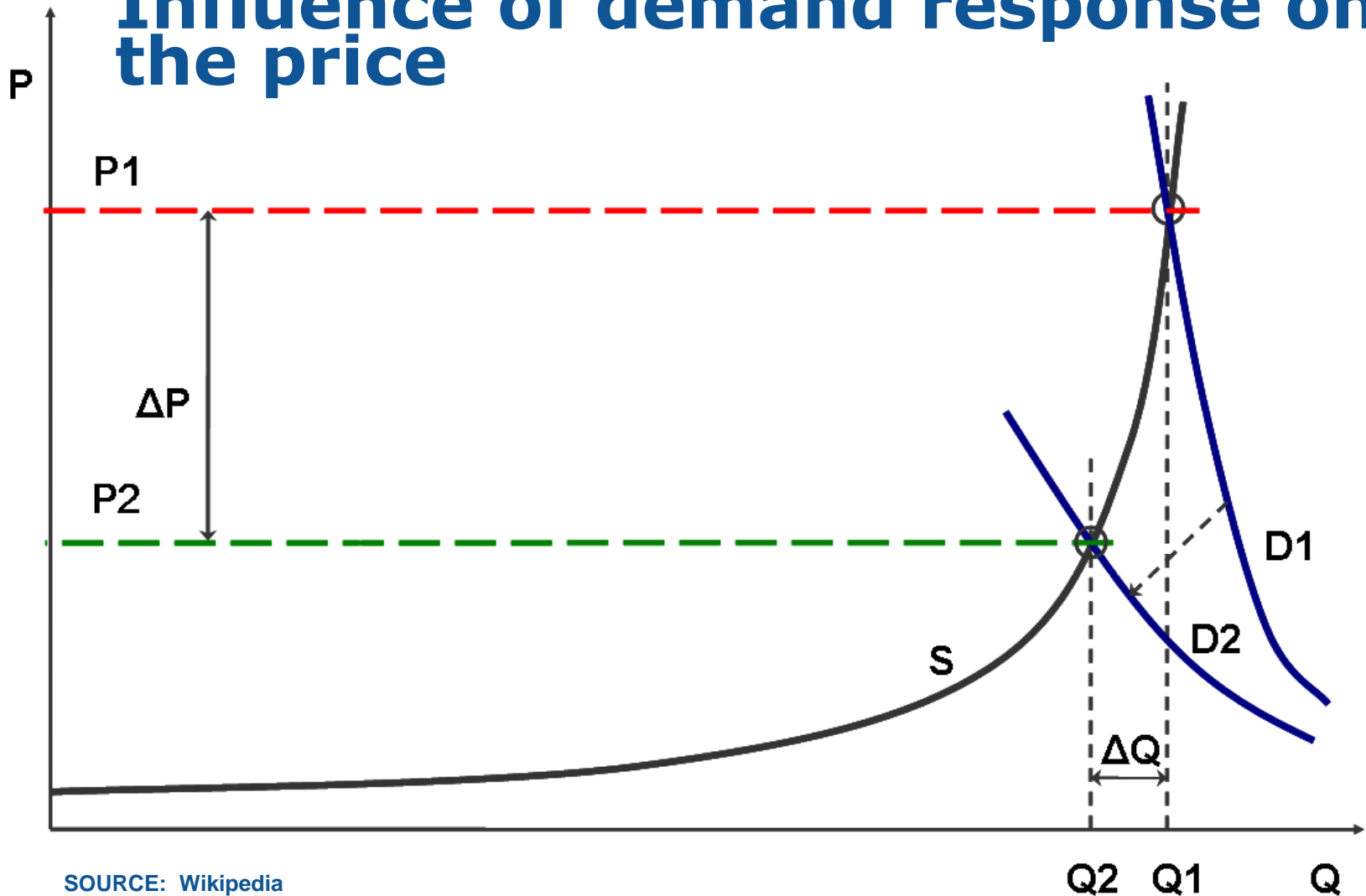
- 16 Member States maintain some form of energy price regulation for households.
- In most Member States demand response is limited due to market entry barriers towards new service providers, such as independent aggregators (which aggregate individual flexibility).
- Unlike transmission system operators, distribution system operators cannot manage their network in a flexible manner to reduce costs for the consumer.

- **Phase-out regulated prices**, only duly justified exemptions allowed.
- Ensure **fair market access for independent aggregators** and other new service providers.
- Allow **flexible management of distribution networks** through curtailment of renewables and demand response solutions.
- Set clear principles for DSOs to ensure neutrality.

WAY
FORWARD

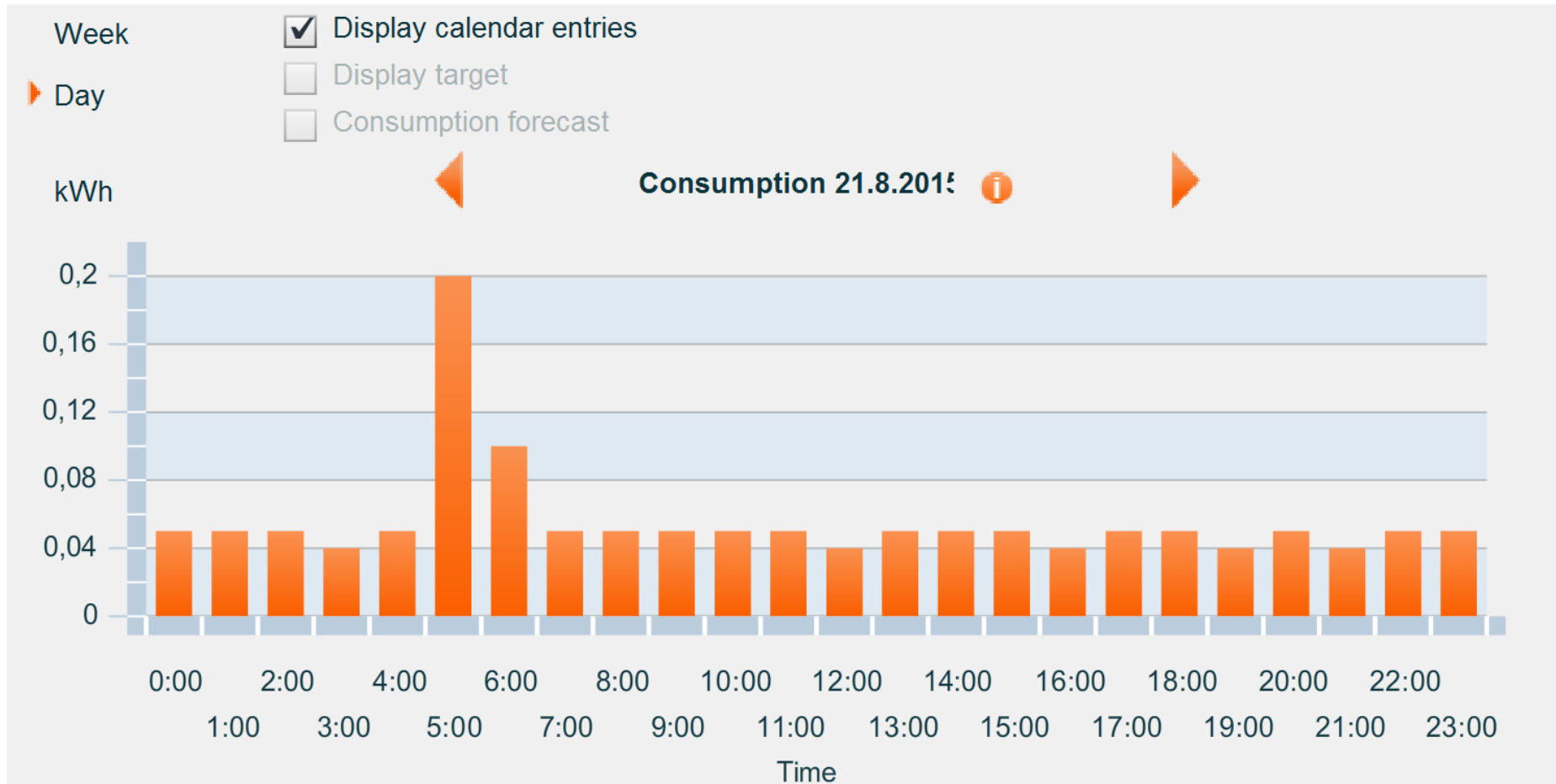
Competition within the retail energy market is key for unlocking efficient consumer behaviour and keeping the cost of the energy transition at check.

Influence of demand response on the price



SOURCE: Wikipedia

Price based demand response

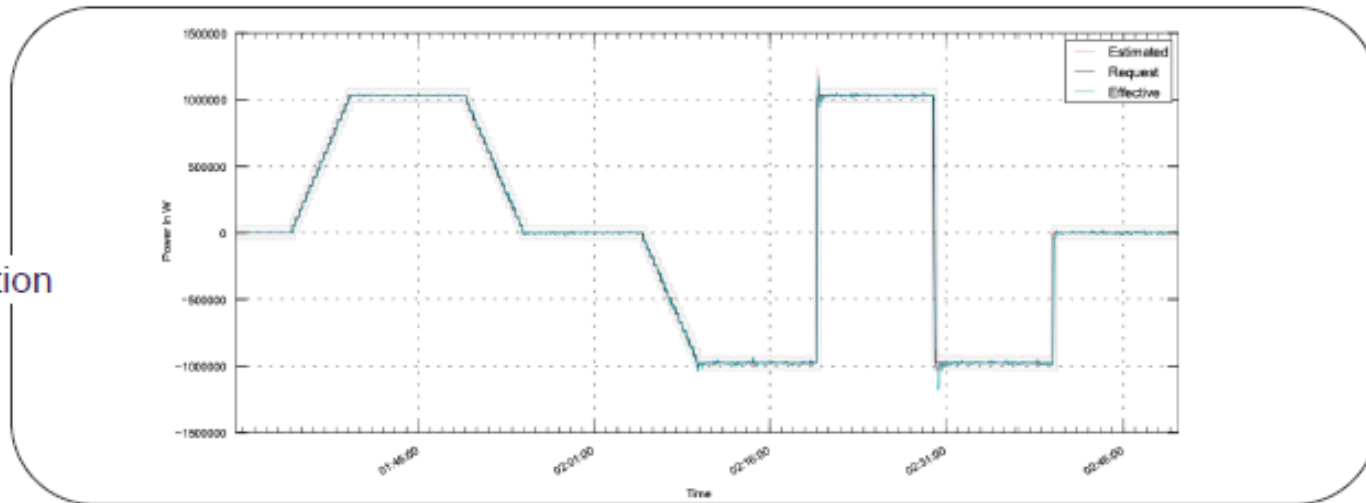


The hardware and software are developed in Switzerland:
our own development enables further functionalities to be flexible

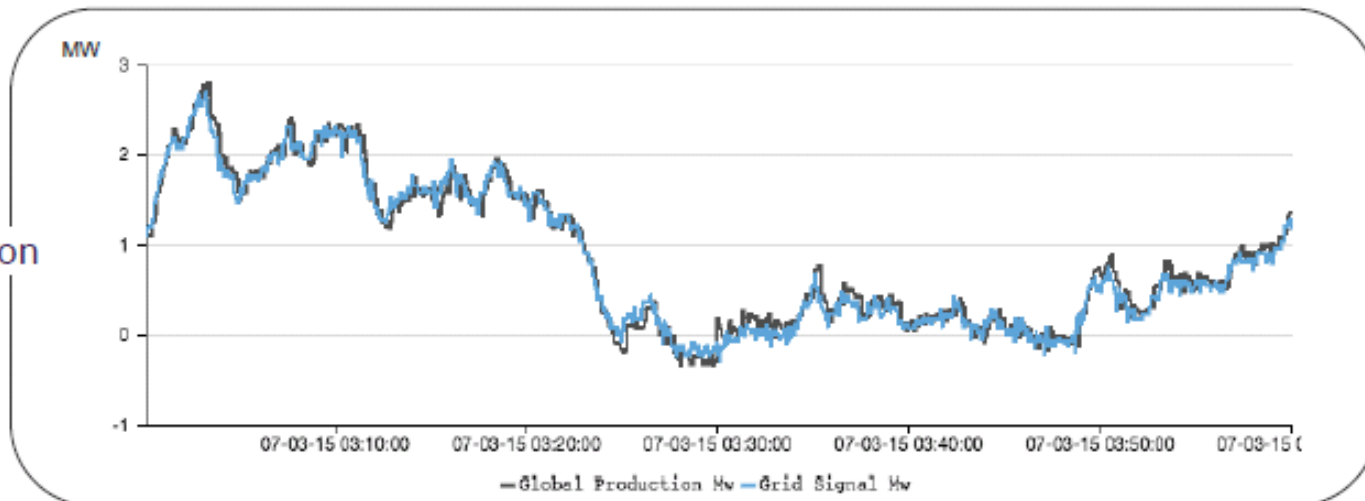


tiko was pre-qualified in the winter of 2013. The storage network has been productive since December 2014 and it supplies control energy

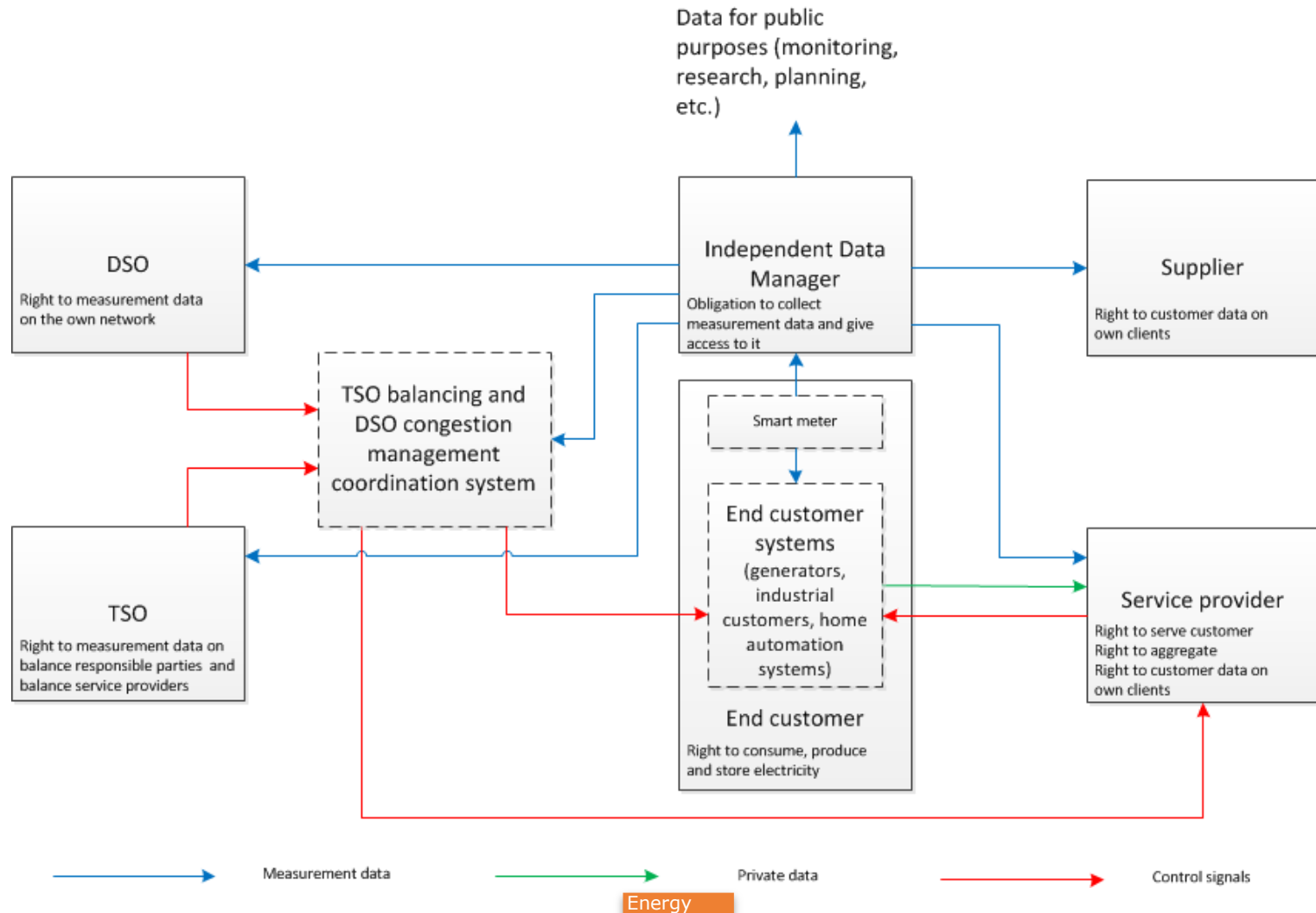
Pre-qualification



Production

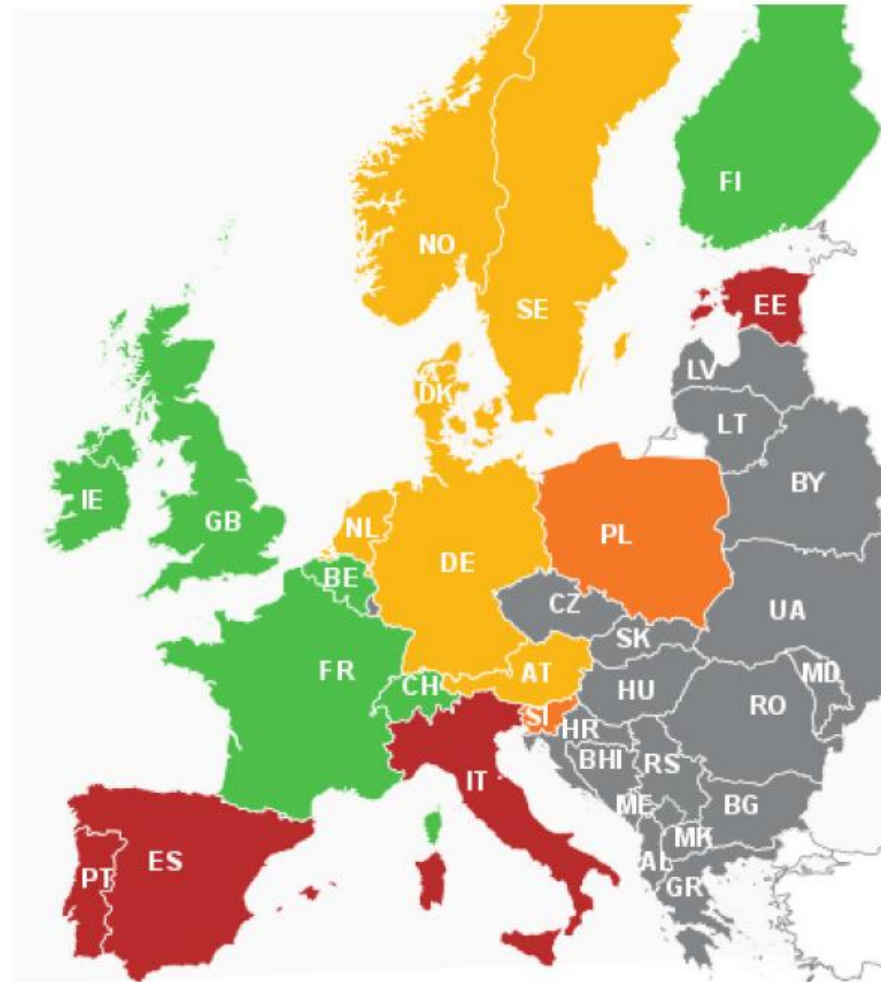


New relations between players



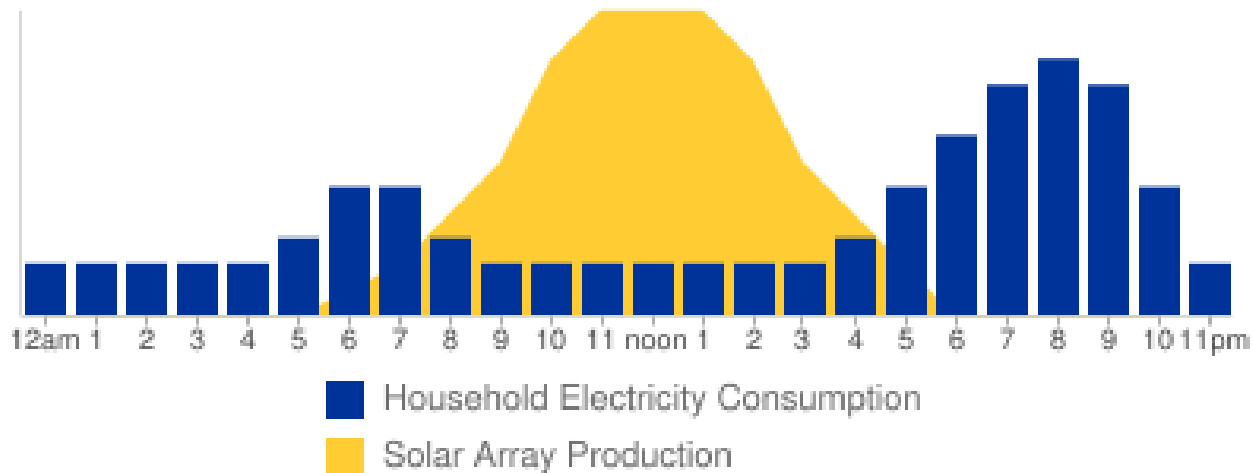
Aggregators

- Commercially active
- Partial opening
- Preliminary development
- Closed
- Not assessed



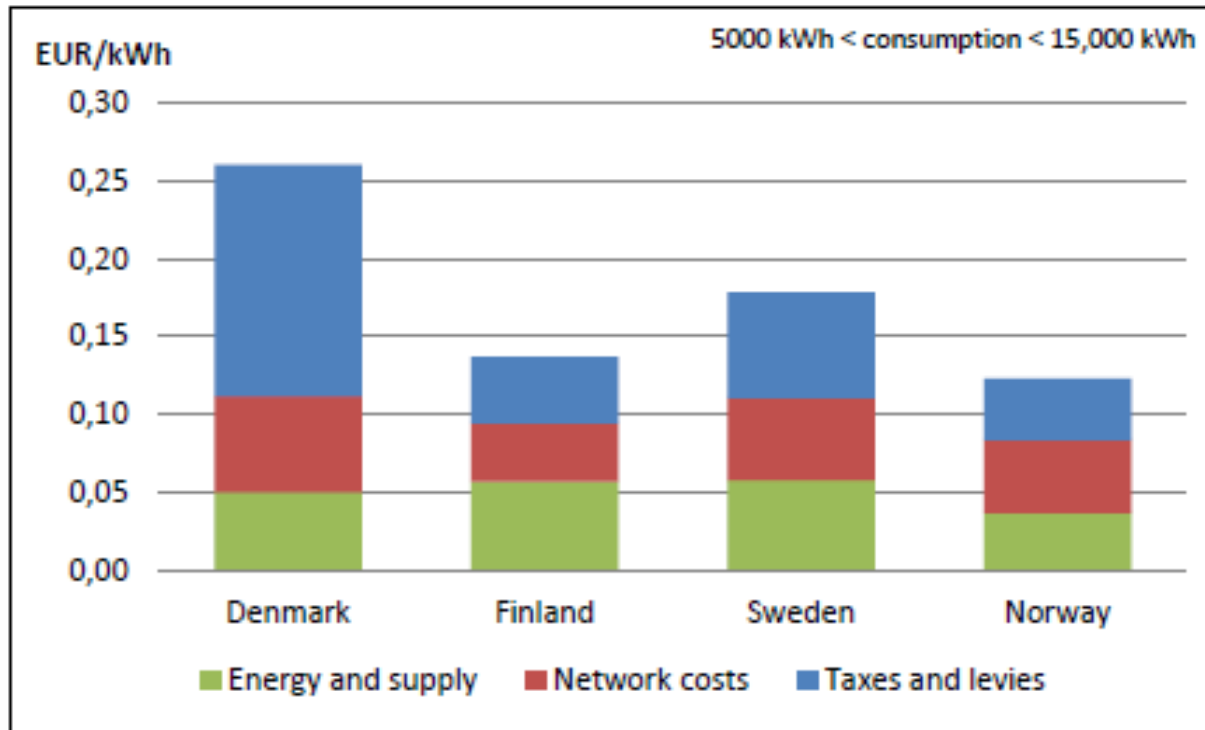
DSO tariff reform

Daily Household Power Production and Consumption
(Home With Rooftop Solar PV)



DSO tariff reform

Figure 29. The total price of electricity for Nordic consumers



Source: Thema report on capacity adequacy
for the Nordic Council of Ministers

Dynamic tariffs



Source: RenewEconomy

Regional TSO coordination

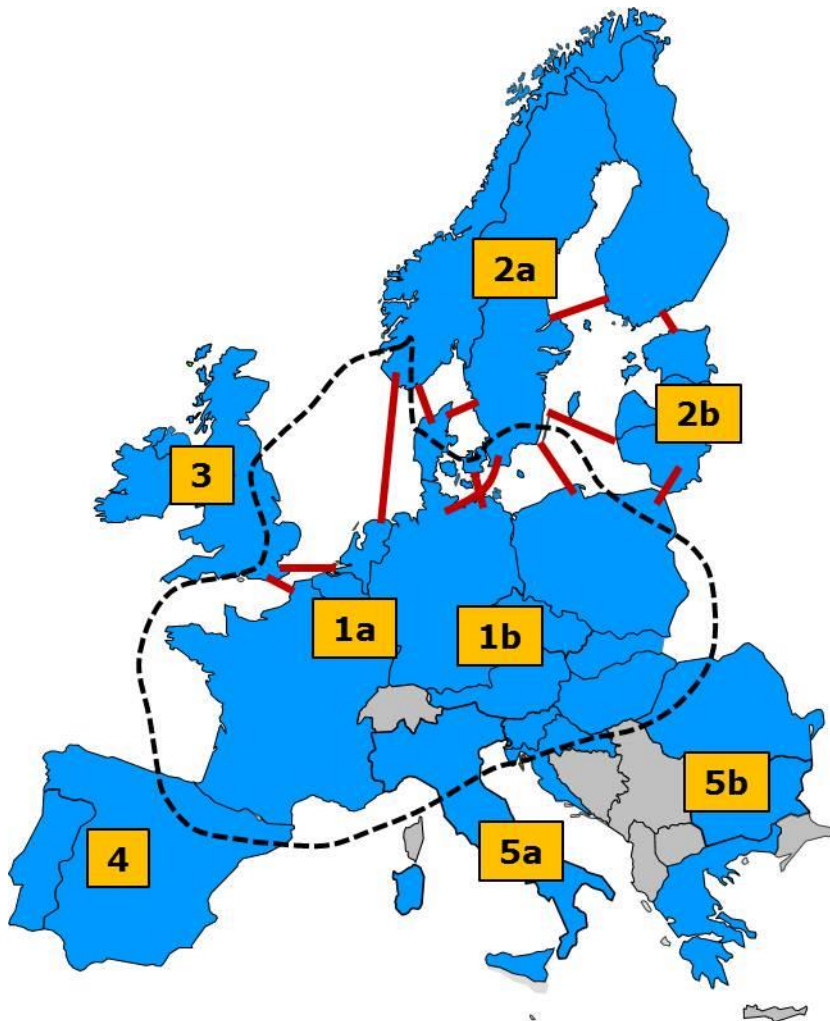
1

= Regional Operations Centre (ROC)

2a

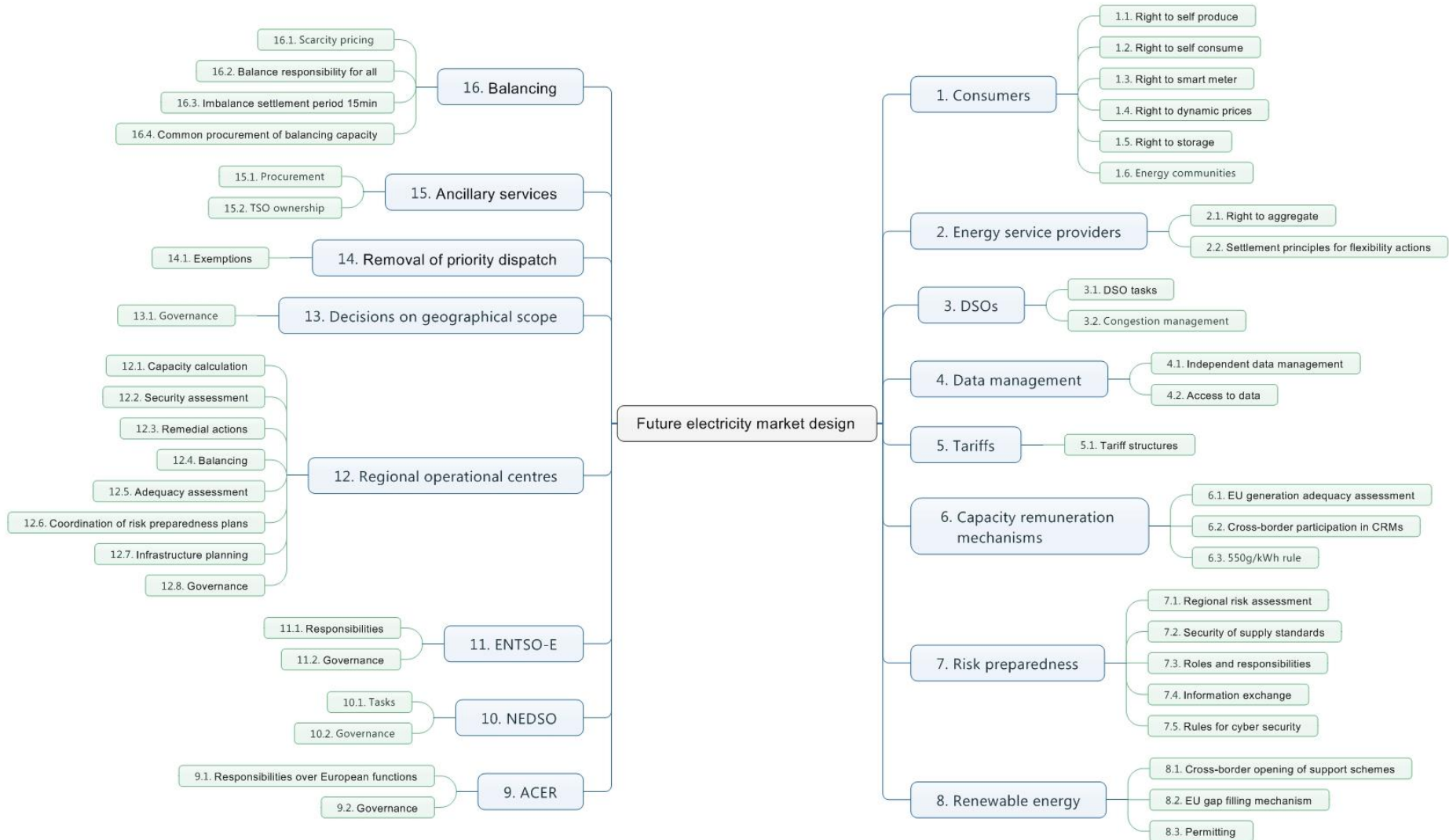
= Sub Centre of a Regional Operations Centre

----- = Border between Regional Operations Centres



Functions for ROCs

| <i>Current functions, based on voluntary action or legislation in force</i> | <i>Agreed, implementation by 2020</i> | <i>Proposed in the Winter package, implementation by 2030</i> |
|---|--|--|
| <ul style="list-style-type: none"> Operational Security Analyses | <ul style="list-style-type: none"> Short-term Adequacy Analyses | <ul style="list-style-type: none"> Role in sizing and procurement of balancing reserves |
| <ul style="list-style-type: none"> Common Grid Model | <ul style="list-style-type: none"> Outage Coordination | <ul style="list-style-type: none"> Emergency & restoration coordination |
| <ul style="list-style-type: none"> Capacity Calculation | <ul style="list-style-type: none"> Support on assessment of emergency and restoration plans | <ul style="list-style-type: none"> Training and certification |





Thank you for your

Attention!