DEVELOPMENTS IN ELECTRIFICATION AND IMPLICATIONS FOR THE EUROPEAN ELECTRIC INDUSTRY – EU PERSPECTIVE

Challenges in Electricity Decarbonisation

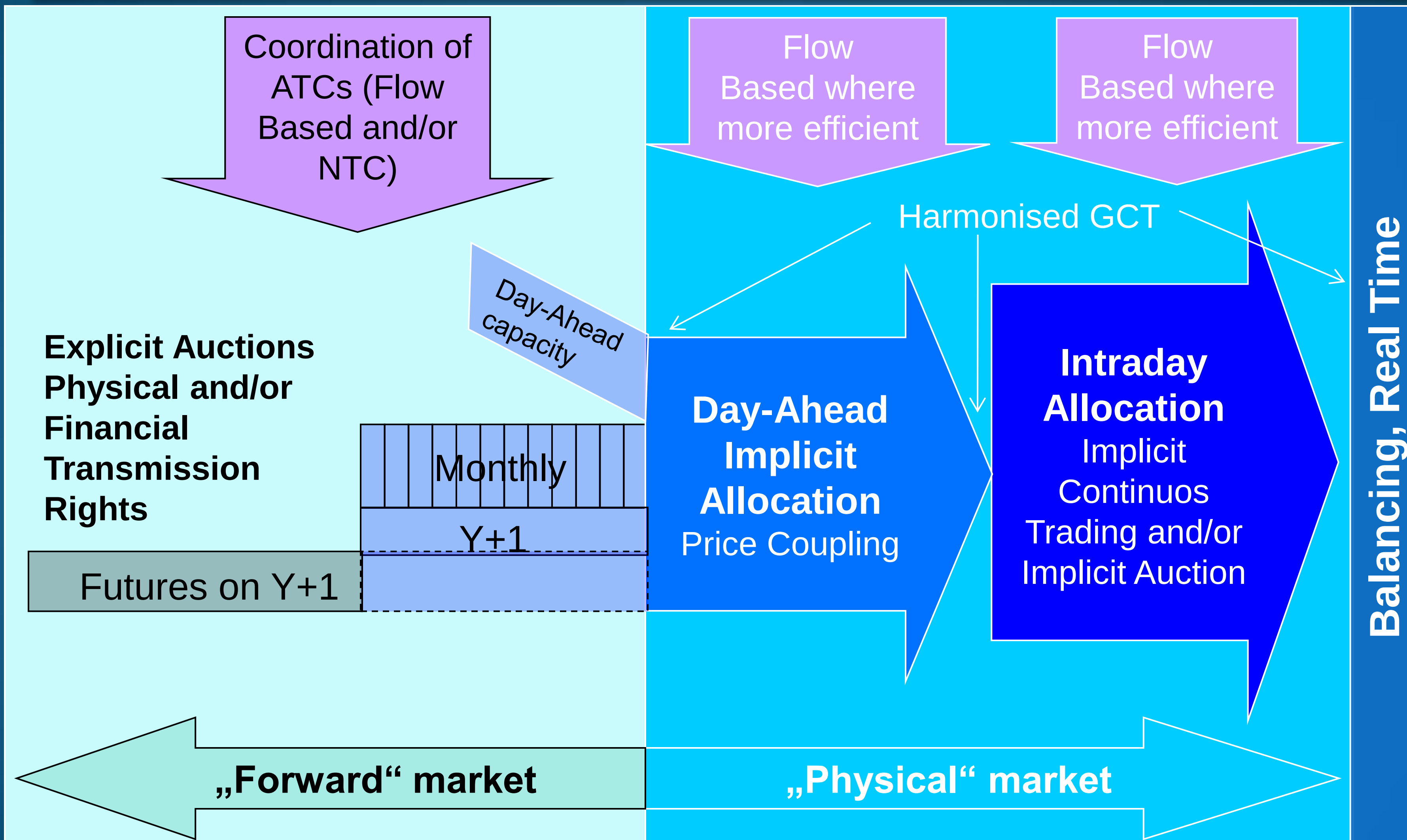
EPRI – IEA workshop

Paris 10.10.2017

Matti Supponen

DG ENER unit B2: Wholesale markets

Target Model



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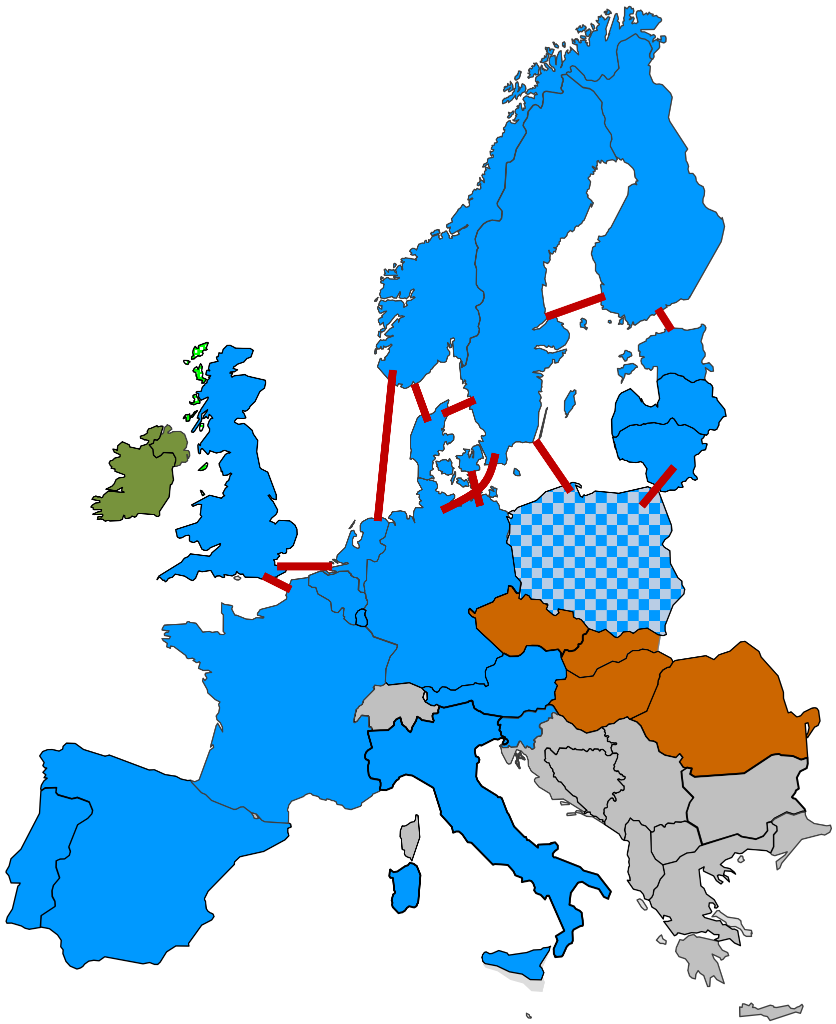
Day-ahead market coupling status in October 2017



REGIONAL DAY AHEAD IMPLICIT AUCTIONS		
	North West Europe (NWE)	Price coupling
	Poland	PL coupled with NWE through SwePol (and LitPol Dec. 2017)
	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)

Energy Union Governance

Energy Efficiency
(Energy Efficiency Directive, European Performance of Buildings Directive)

Renewables
(Revised Renewable Energy Directive)

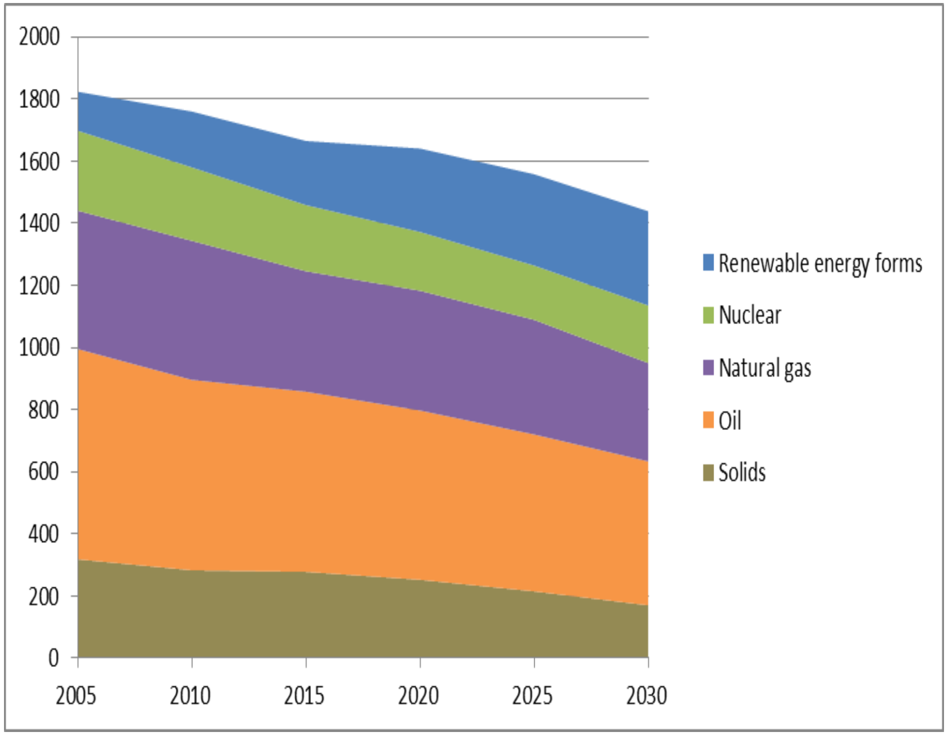
New Electricity Market Design
(including Risk Preparedness)

Energy prices and costs report

General decrease in energy consumption and penetration of renewable energy forms

- General decrease in gross inland consumption, in line with energy efficiency objectives
- Renewable energy forms increase in absolute and relative terms
- Natural gas consumption only sightly decreases
- Oil remains the main energy carrier, notably due to demand in transport sector

Gross inland energy consumption (Mtoe)

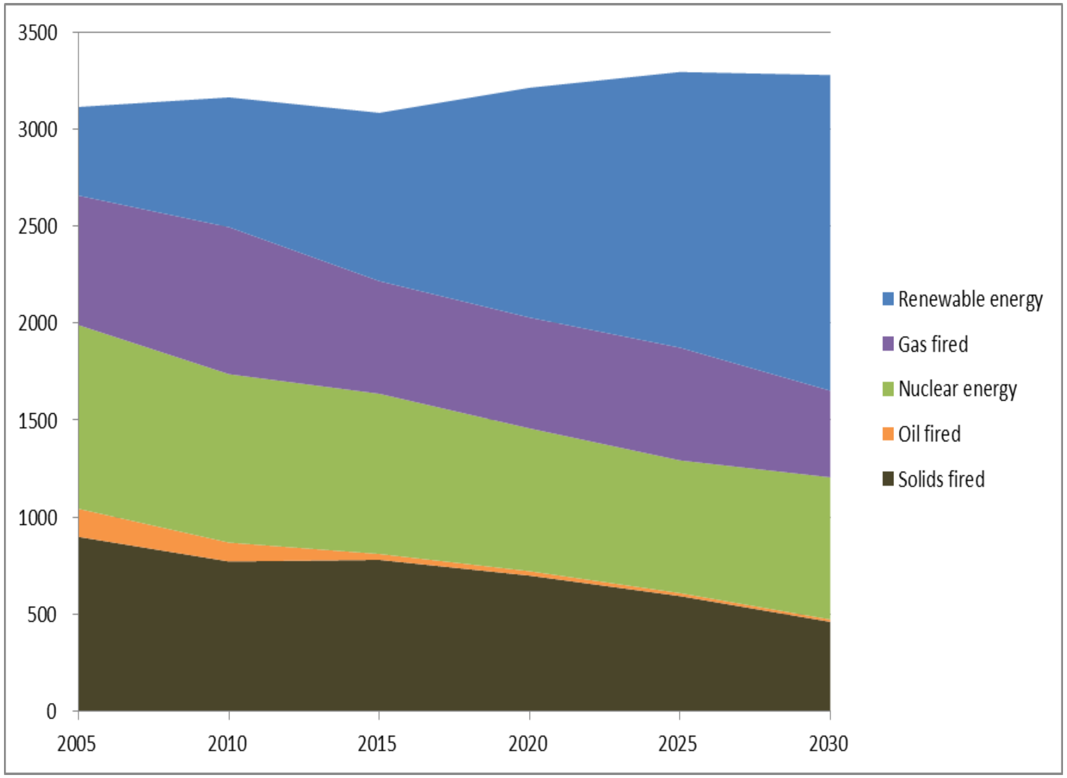


Source: PRIMES modelling, NTUA, E3M-Lab

The EU power generation mix changes, in favour of renewables

- Significant development of renewable energy (mostly solar and wind)
- Decline of electricity generation from solid fuels (mostly coal)
- Gas-fired generation decreases until 2020, but increases thereafter
- Nuclear energy decreases slightly

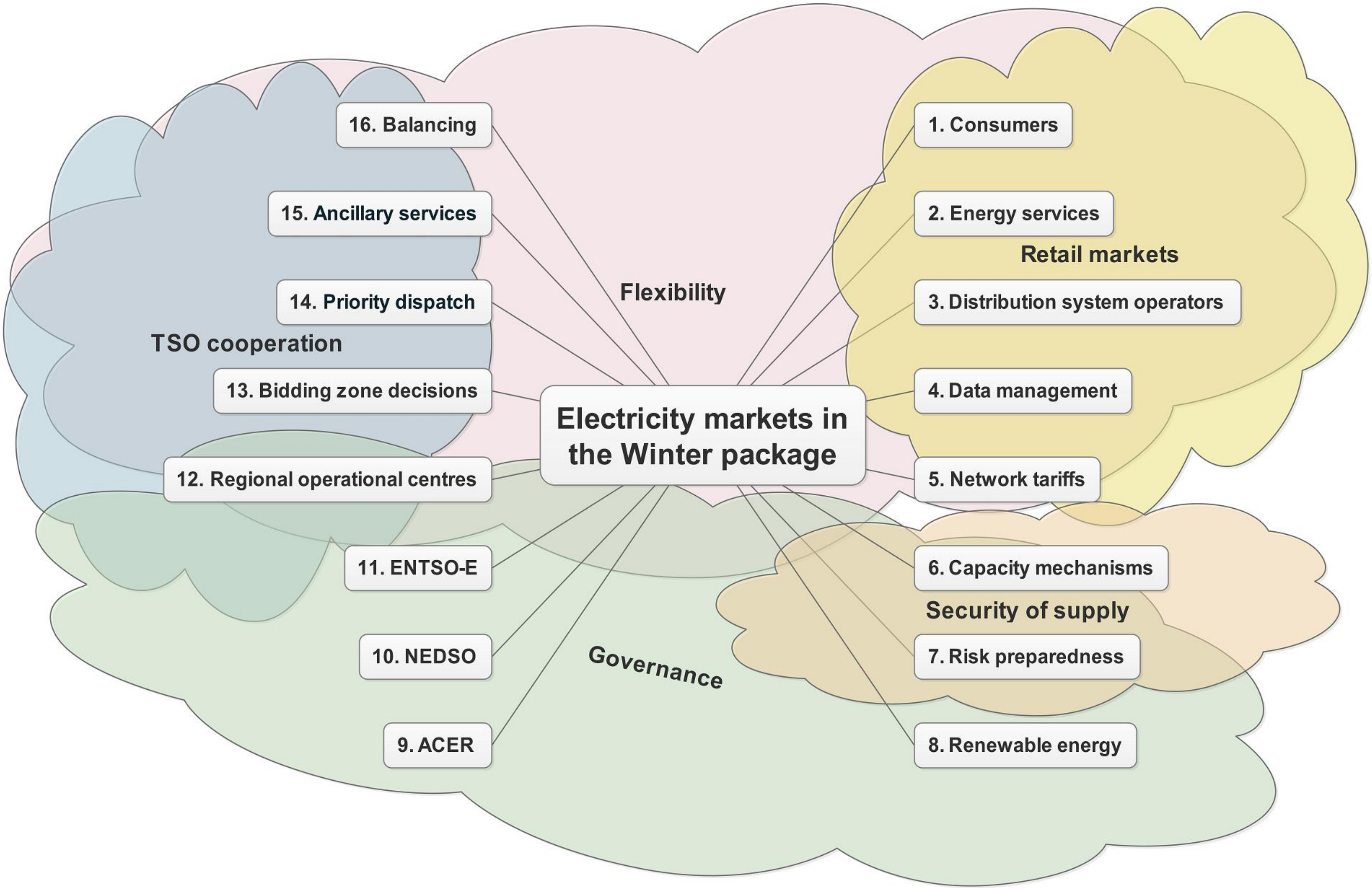
EU power generation (net) by fuel (TWh)



Source: PRIMES modelling, NTUA, E3M-Lab

Electricity markets in the Winter package

MS/DG ENER/B2/28.2.2017



Customer in the middle

Market versus regulation

Regulation

- Unbundling
- Regulated prices
- Energy efficiency targets
- RES targets
- Subsidies
- Capacity payments
- Priority dispatch
- Redispatching
- Mandatory ancillary services
- Tariff structures
- Regional Operational Centers (ROCs)

Regulation/Market

- Emissions trading
- Trading of green certificates
- RES auctions

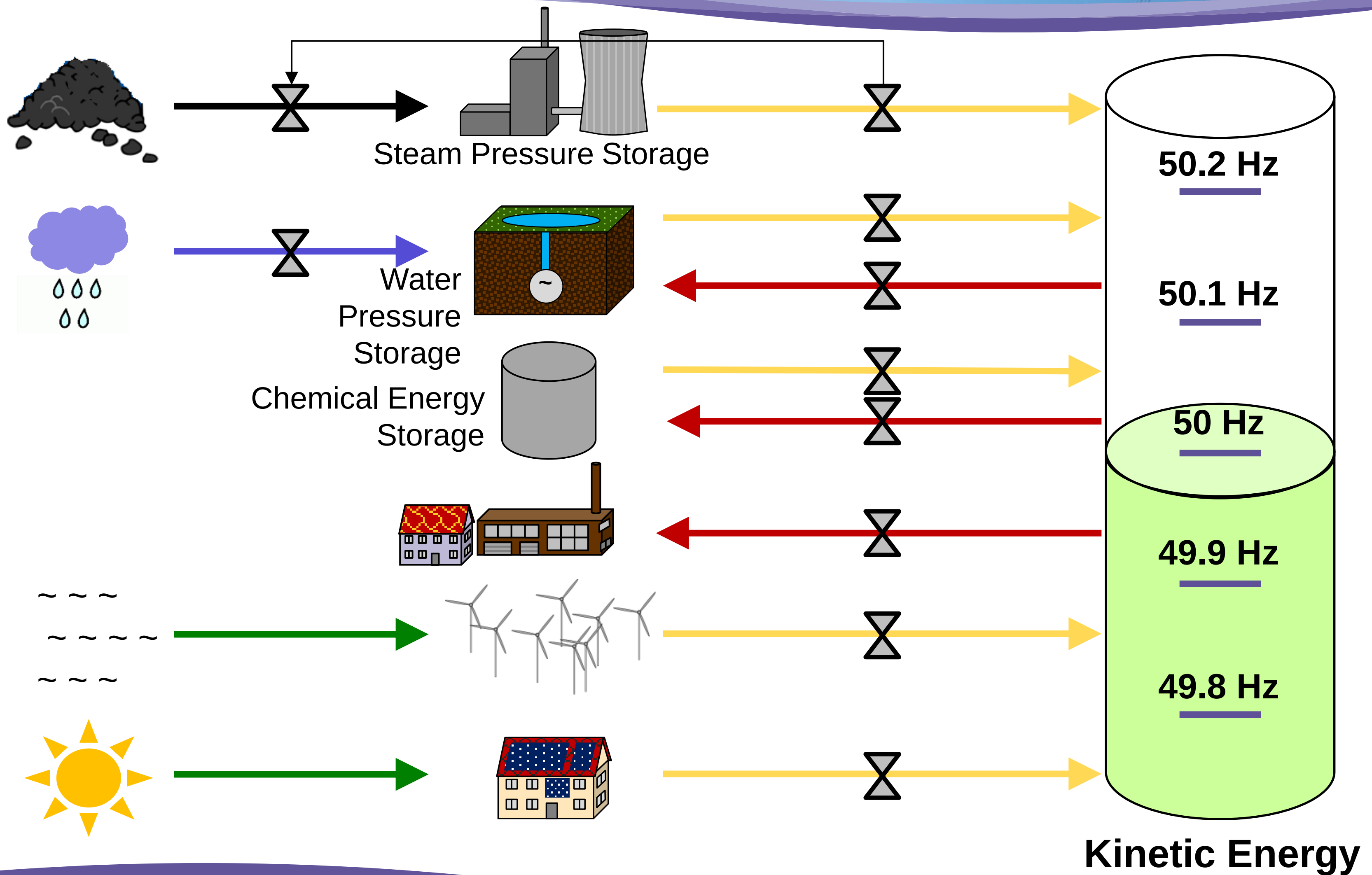
Market

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

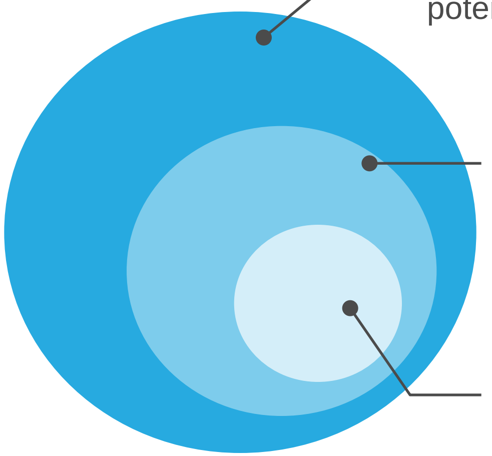
Legend:

- No major change
- Abolish
- Improve
- To the market

Storage in cartoons



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.

WAY FORWARD

- **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.

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

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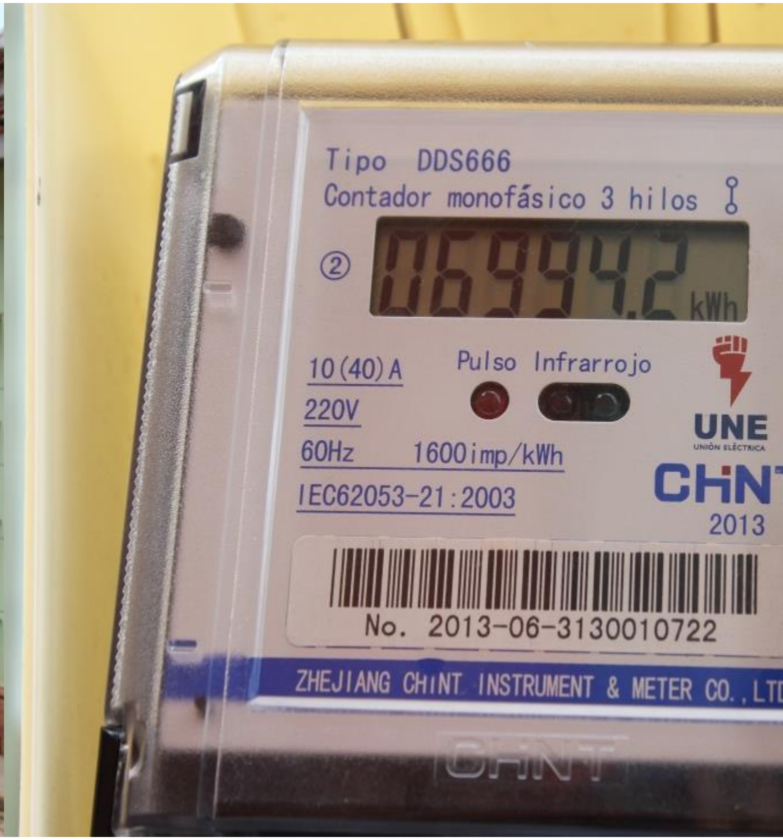
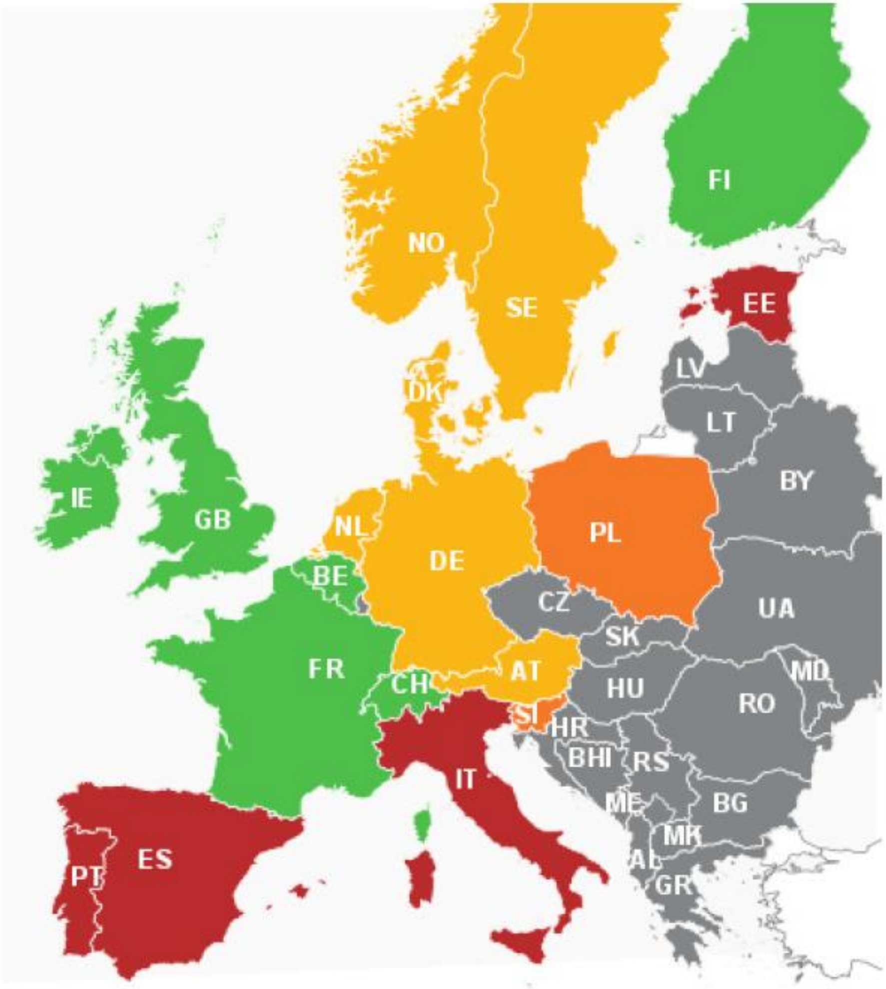
Smart meters and grids



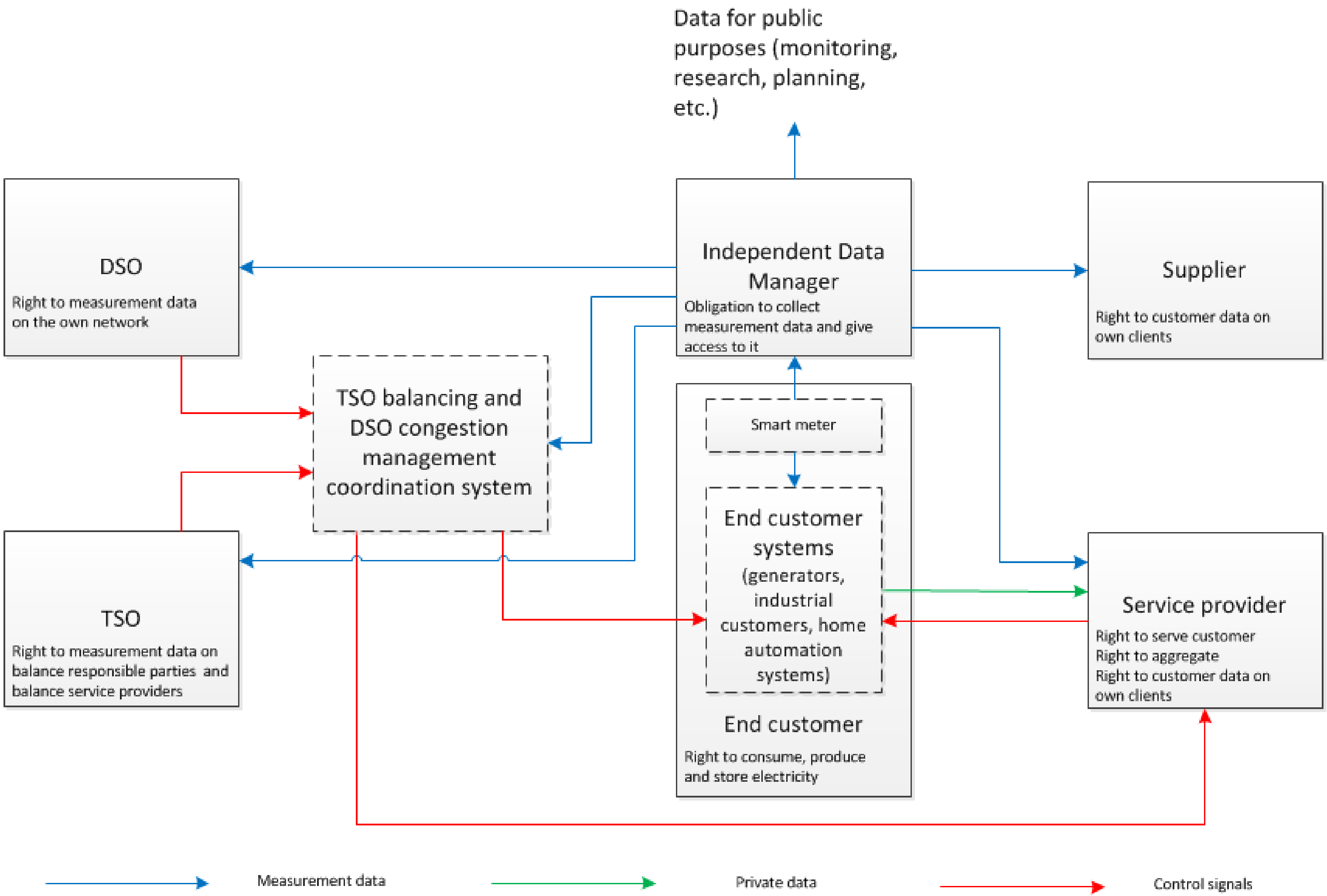
Aggregators

Commercially active
Partial opening
Preliminary development
Closed
Not assessed



Source: SEDC 2017

New relations between players



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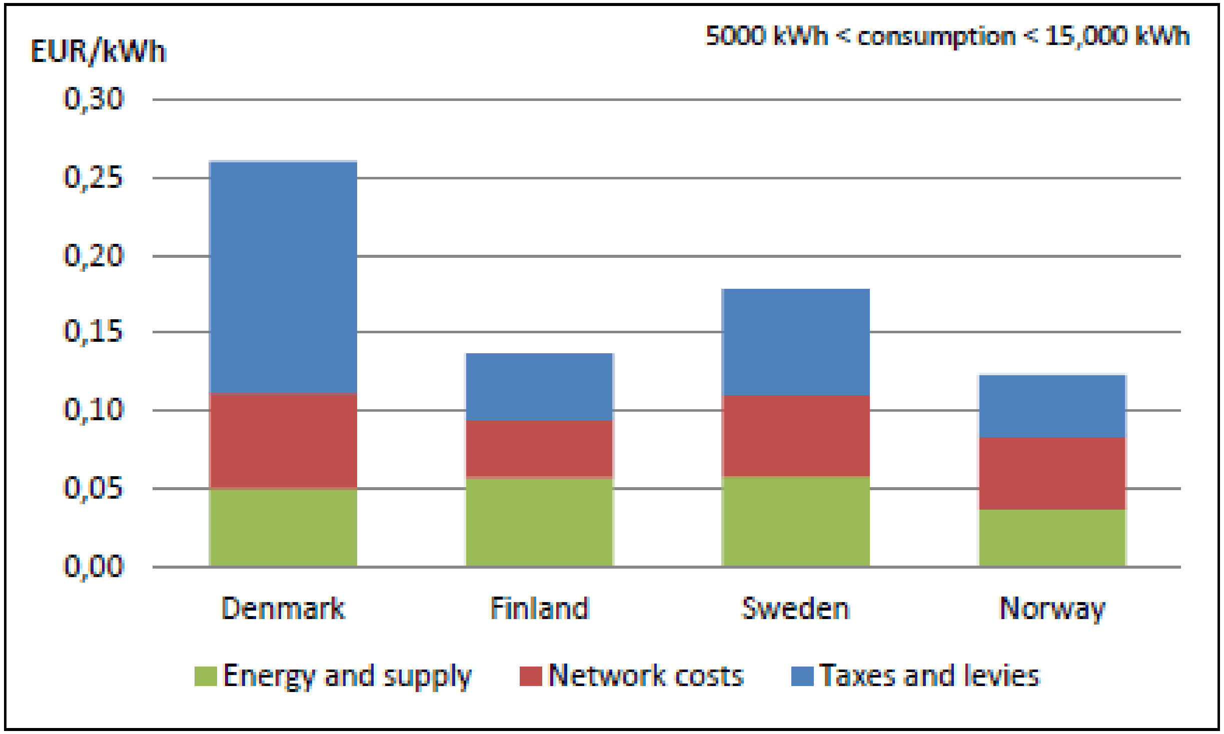
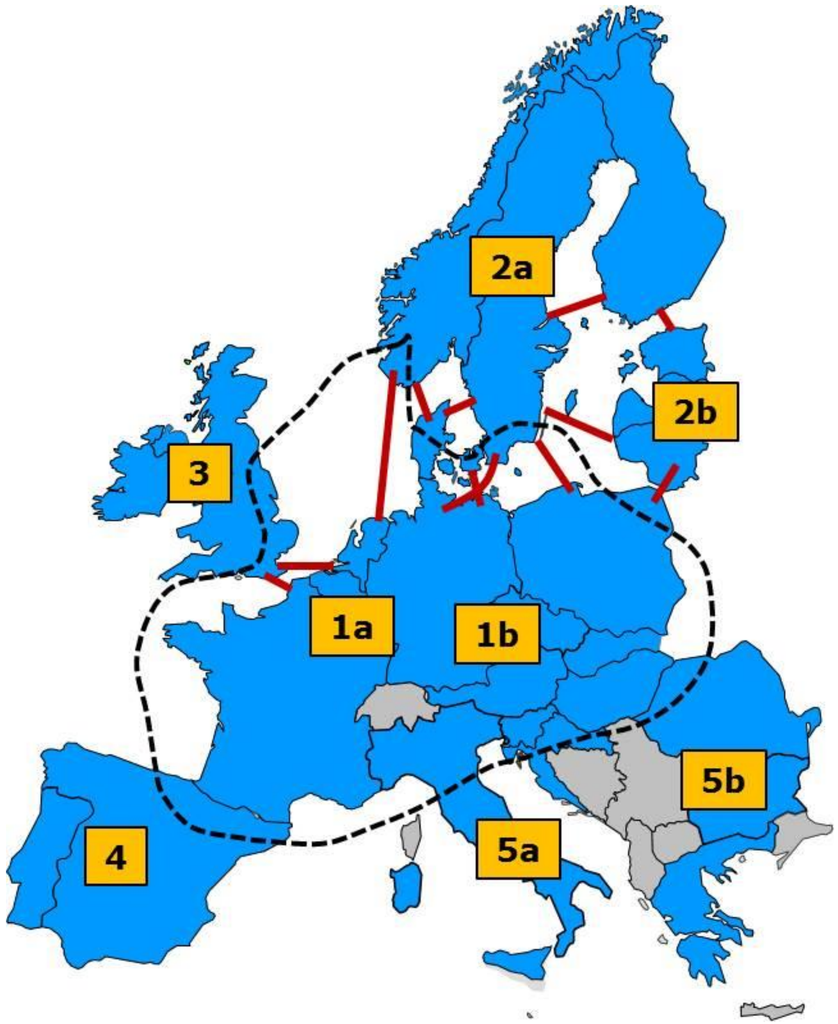
DSO tariff reform

Figure 29. The total price of electricity for Nordic consumers



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

Regional TSO coordination



1 = Regional Operations Centre (ROC)

2a = Sub Centre of a Regional Operations Centre

----- = Border between Regional Operations Centres

Functions for ROCs		
Current functions, based on voluntary action or legislation in force	*Agreed, implementation by 2020*	*Proposed in the Winter package, implementation by 2030*
• Operational Security Analyses	• Short-term Adequacy Analyses	• Role in sizing and procurement of balancing reserves
• Common Grid Model	• Outage Coordination	• Emergency & restoration coordination
• Capacity Calculation	• Support on assessment of emergency and restoration plans	• Training and certification

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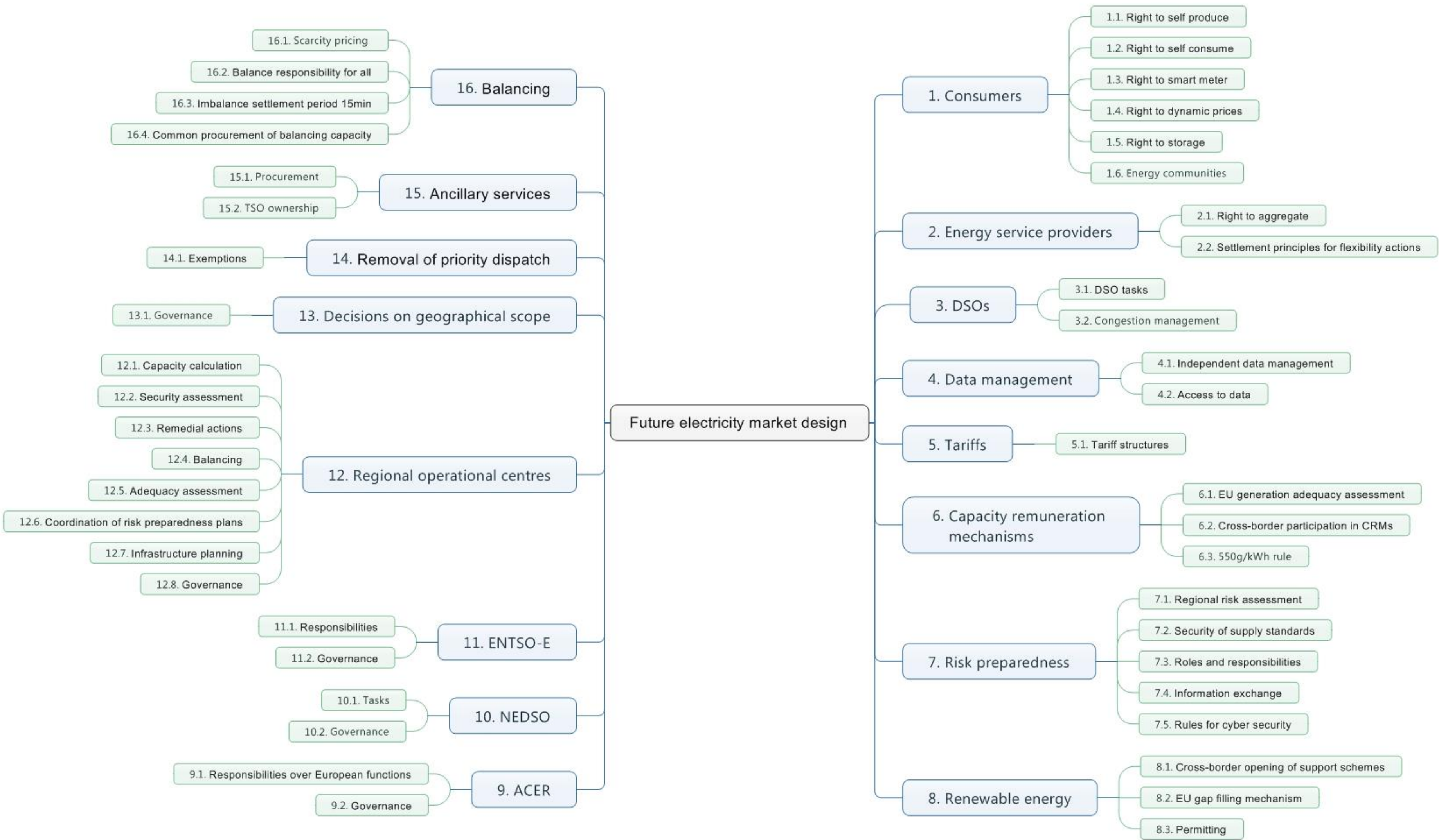

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Thank you for your

Attention!