Challenges and Opportunities
The emerging EU market for electricity

Eforis conference 24.11.2014 Stockholm

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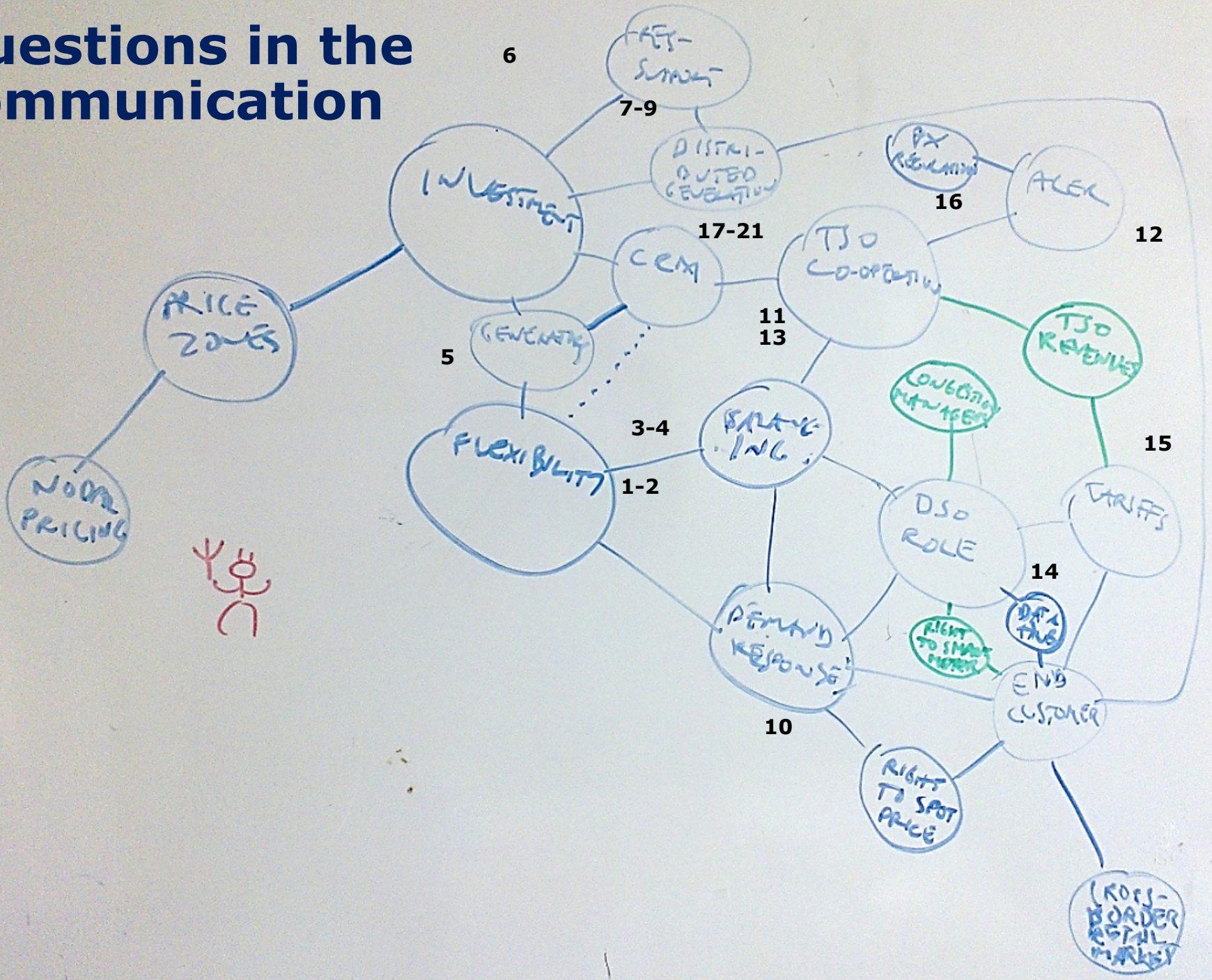
Unit B2: Wholesale markets; electricity & gas

Energy

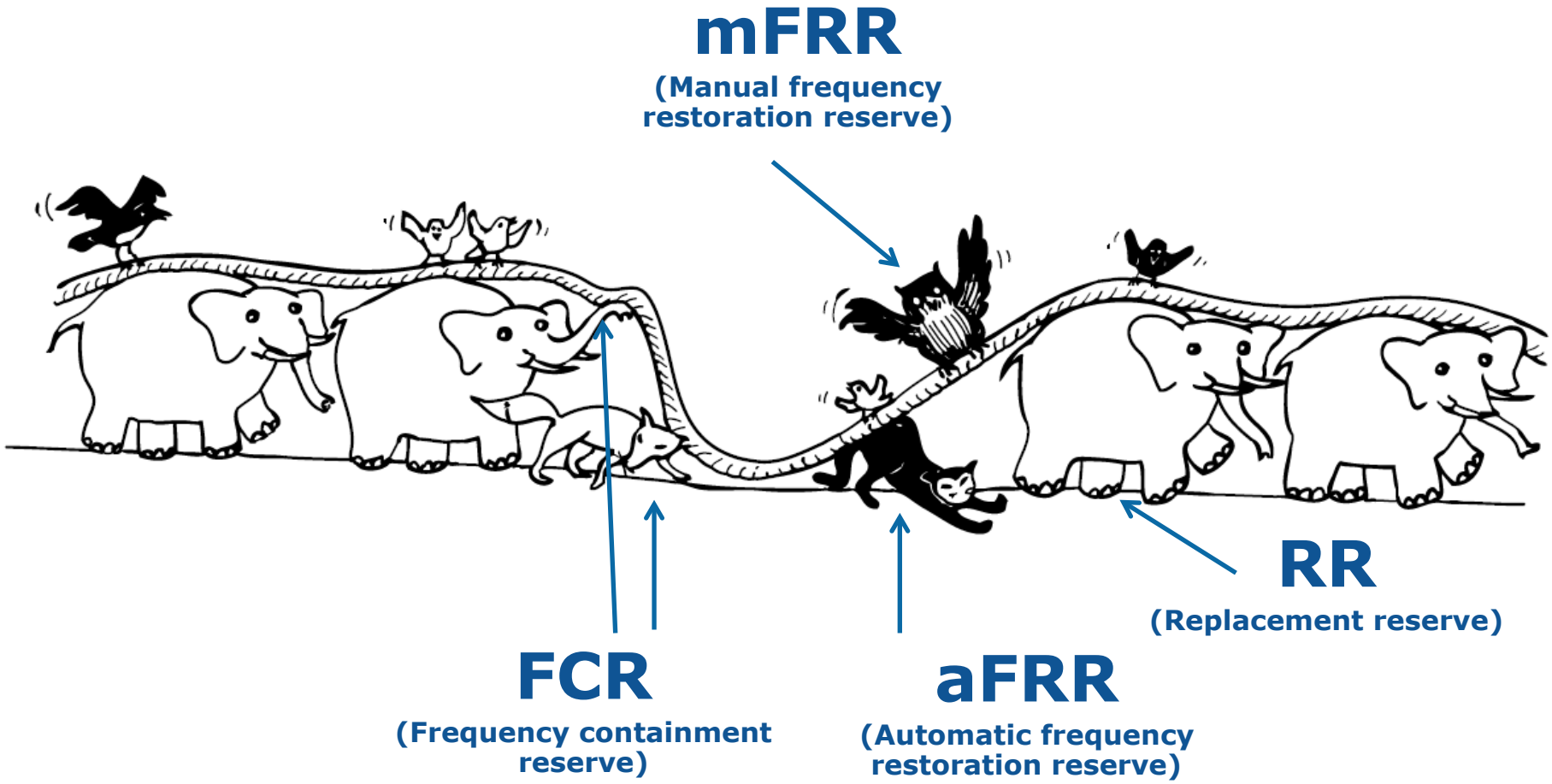
Questions in the summer package

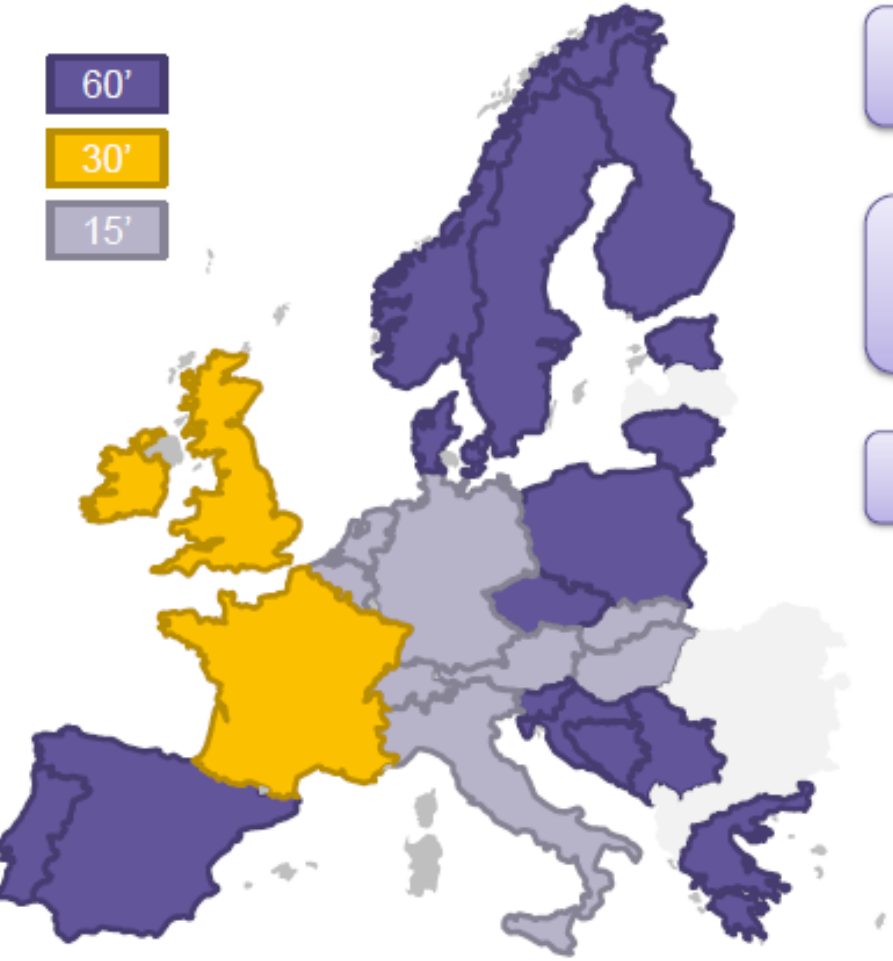
1-2) Scarcity pricing
3-4) Integrating intraday and balancing markets
5) Long-term contracts for new generation investments
6) Distortion through taxes and charges
7) Investment in renewables driven by market signals
8) Integrating renewables into the markets
9) Coordinated renewables support schemes
10) Kick-starting demand-response
11) Regional Security Coordination Initiatives ("RSCIs") of TSOs
12) Strengthening ACER
13) Strengthening the role of the ENTSOs
14) Role and governance for DSOs, data handling
15) European approach to distribution tariffs
16) Governance rules for power exchanges
17-19) Harmonised methodology for system adequacy
20-21) European framework for capacity mechanisms

Questions in the communication



Balancing


mFRR
(Manual frequency restoration reserve)
RR
(Replacement reserve)
FCR
(Frequency containment reserve)
aFRR
(Automatic frequency restoration reserve)



Observation (from ENTSOE survey 2013) : various ISP in Europe : 15', 30', 60'

Concern : depending on ISP duration but also on the way TSO operates its system, approach is not the same for products duration and activation

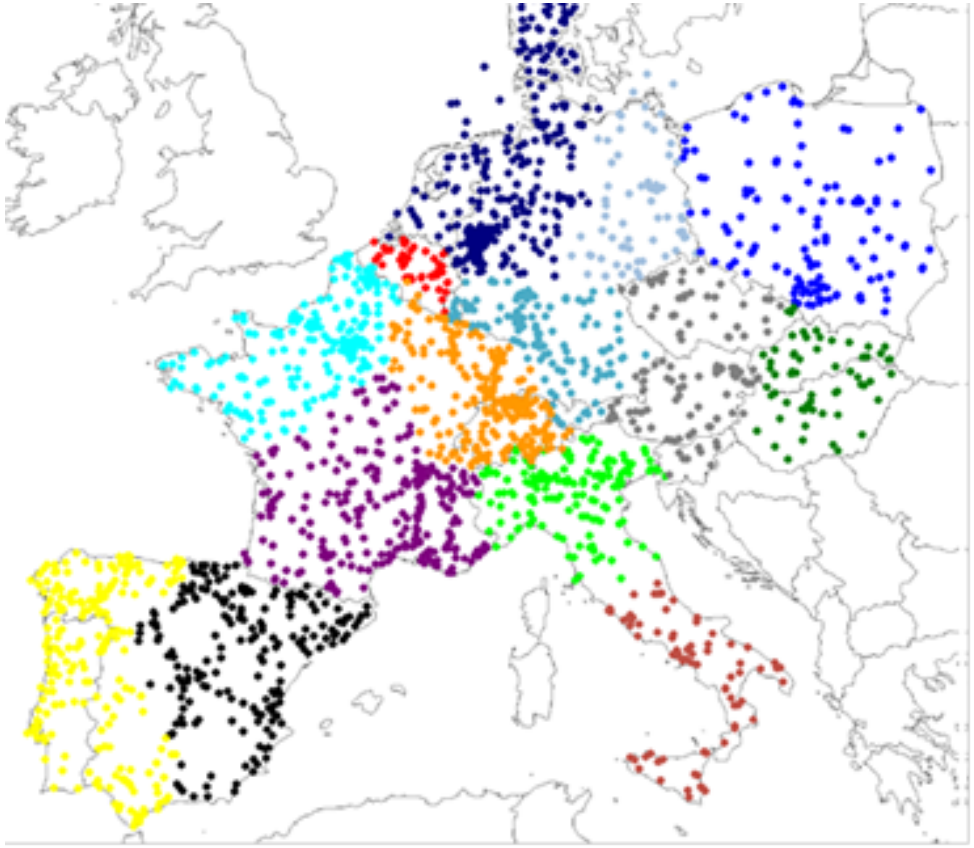
Short ISP (15')

- Activation of manual product **could be** based on ISP duration
- Activation of manual product **could be** based on ISP schedule
- Usually « **short** » balancing gate closure time and often might be **no need for RR**

Long ISP (30', 1h)

- Activation of manual product **could not** be based on ISP duration
- Activation of manual product **should be** possible within ISP
- Usually « **long** » balancing gate closure time and might be **need for RR**, depending on market responsibility

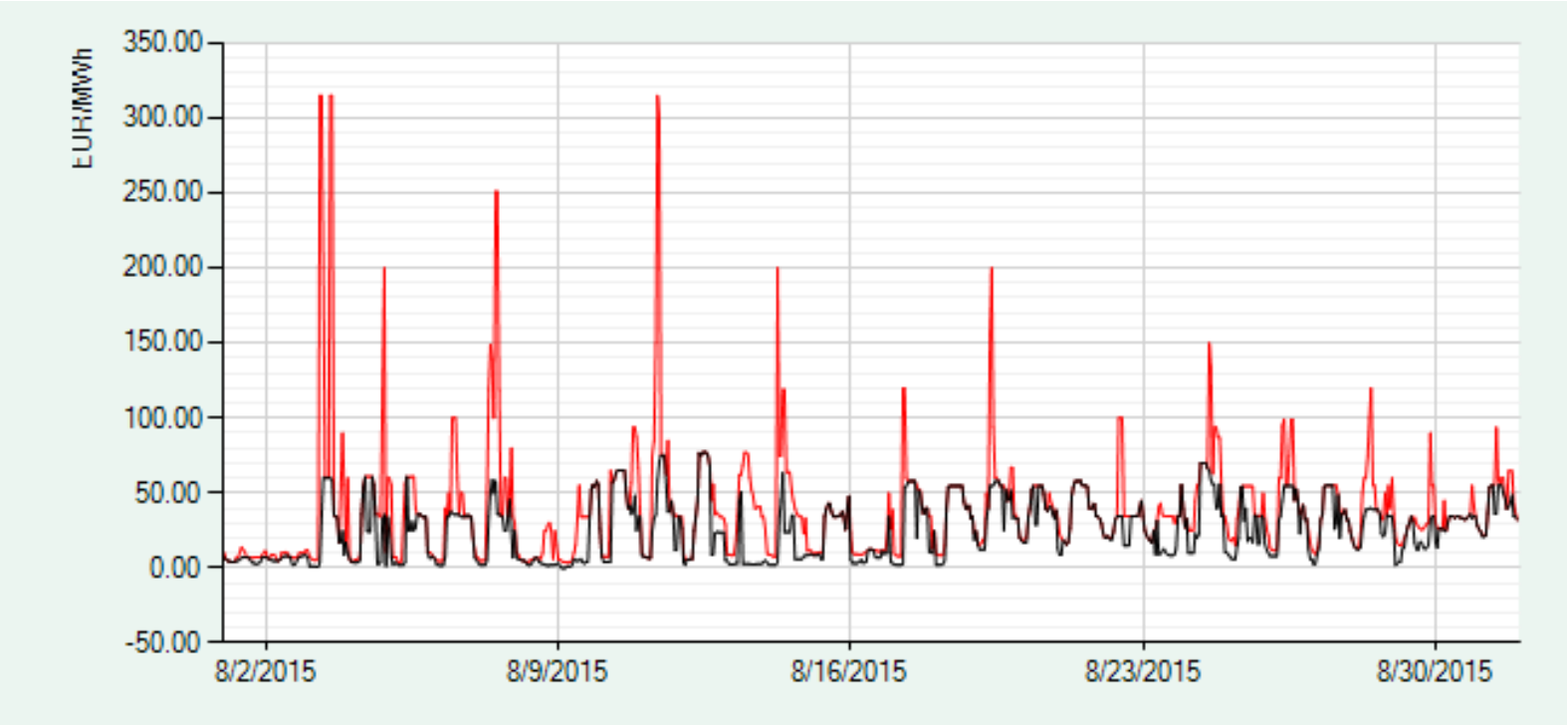
Or is nodal pricing better?



Short term price signals
(Example: Finnish balancing power prices in August 2015)

= upward regulation

= downward regulation

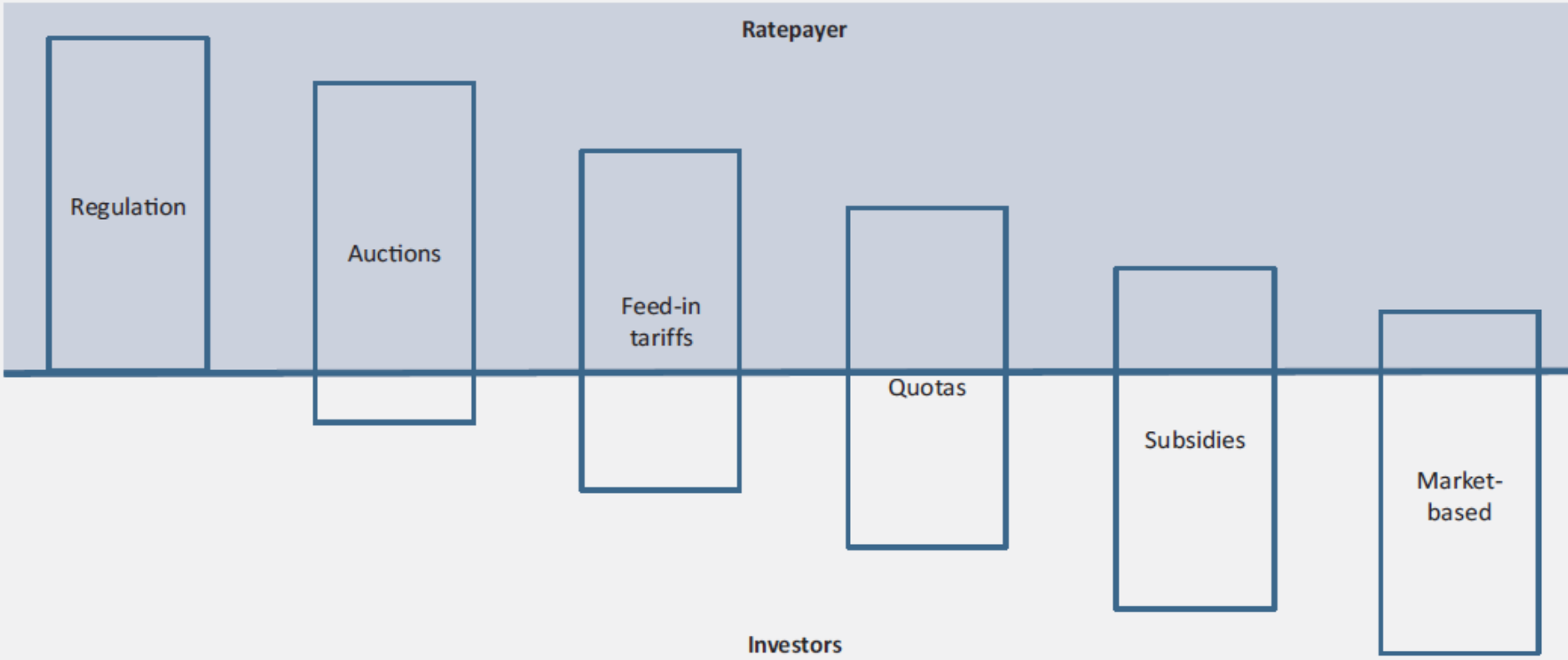


Source: Fingrid

European Commission

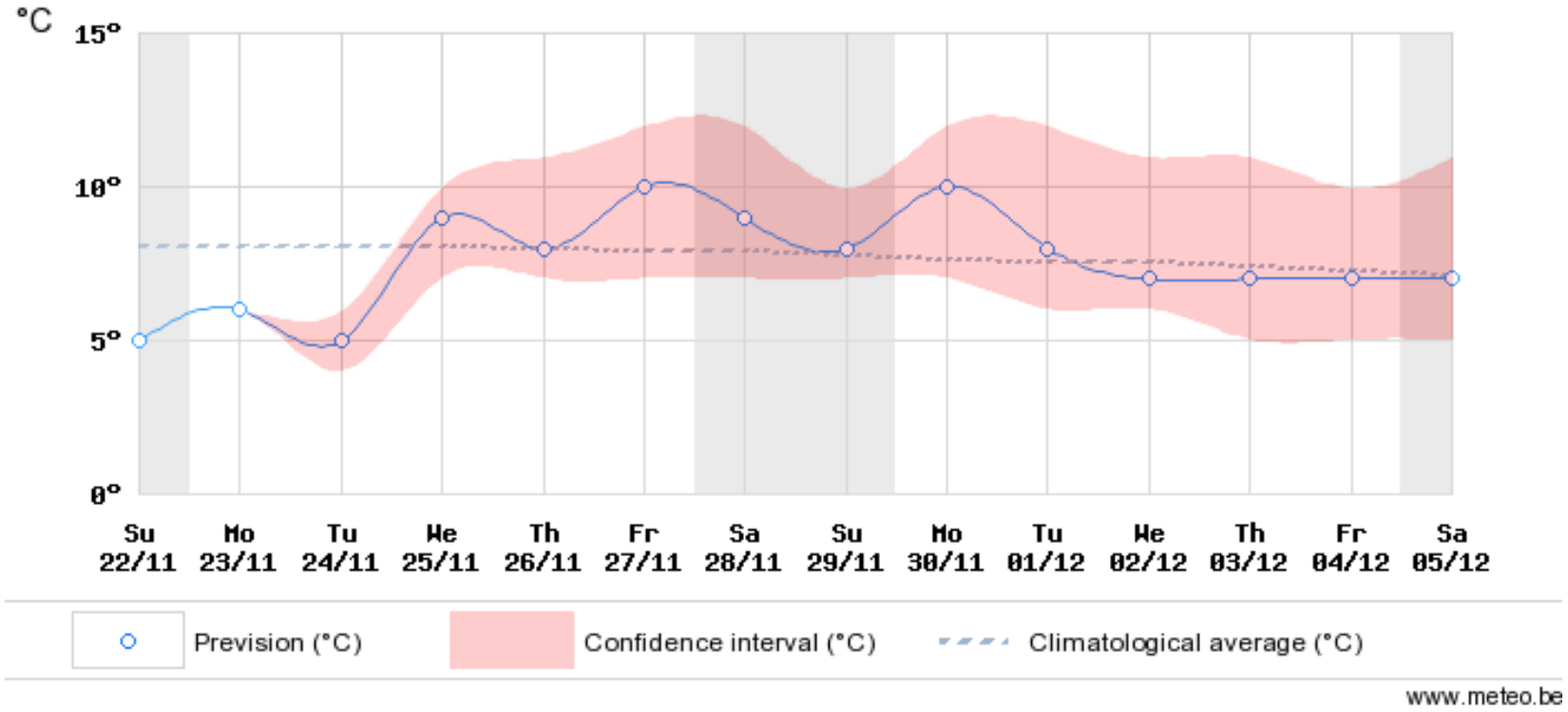
Investments

Who takes the risk?



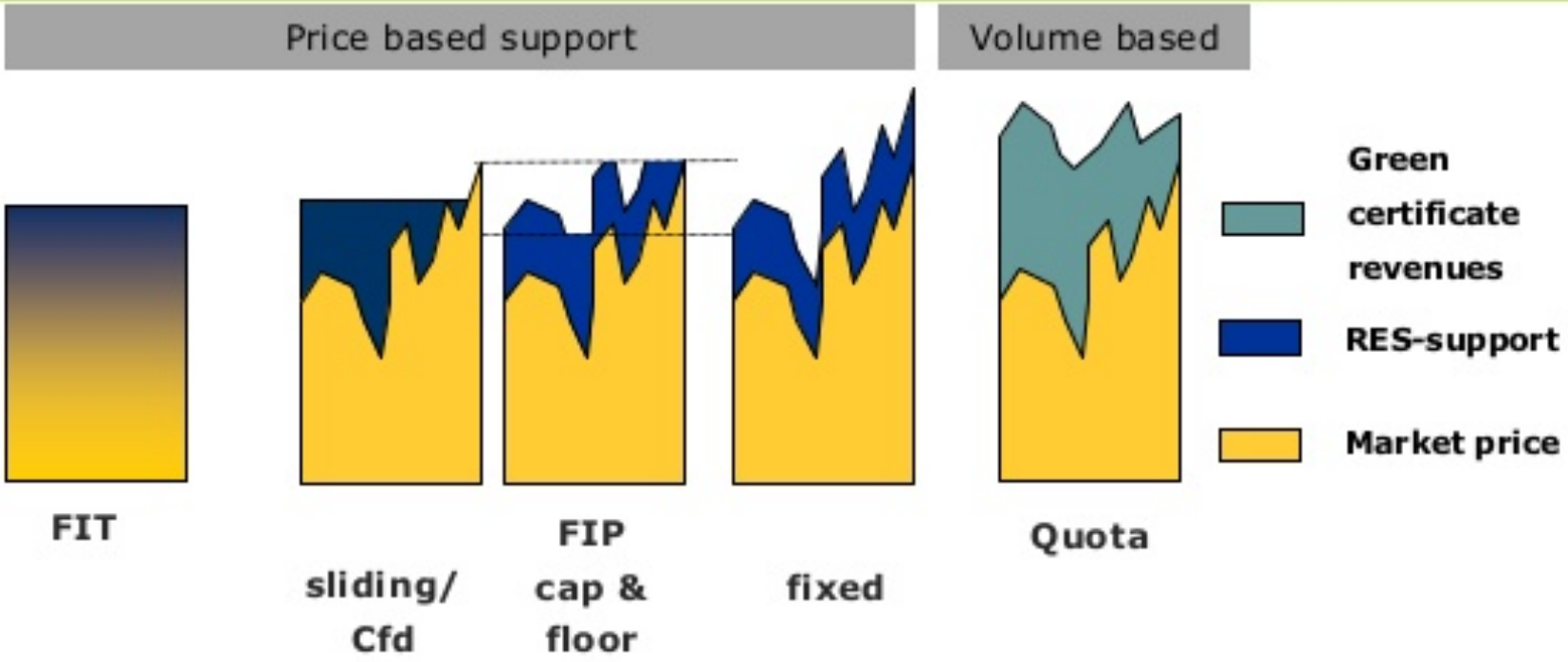
Source: IEA Energy Technology Perspectives 2014

Influence of uncertainty



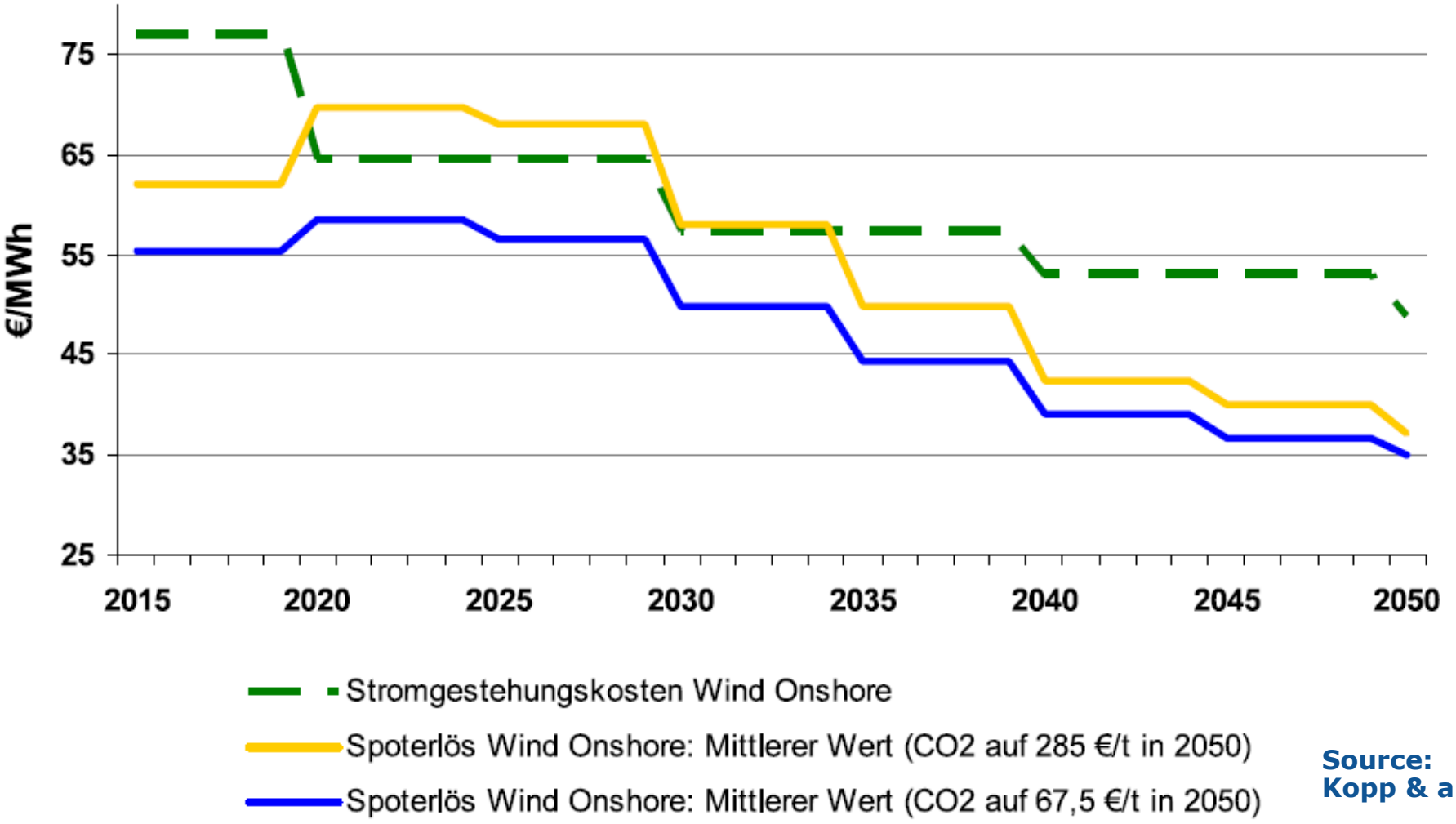
Source: KMI

The main support schemes expose RES-E producers to different levels of risk



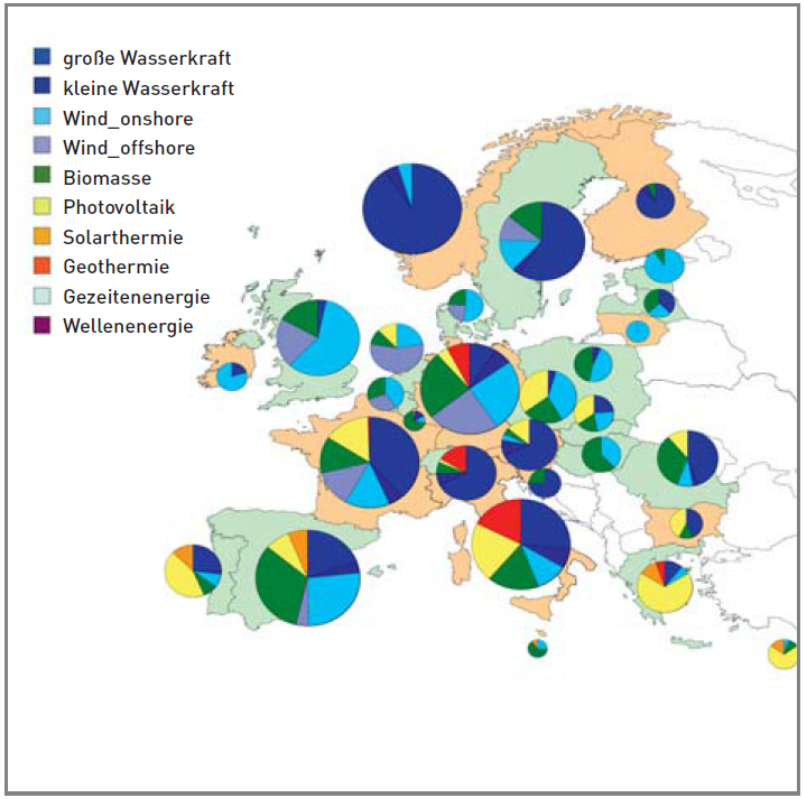
Source: Ecofys

Revenues versus costs for wind power in Germany



Source: Kopp & al

Coordinated renewables support schemes



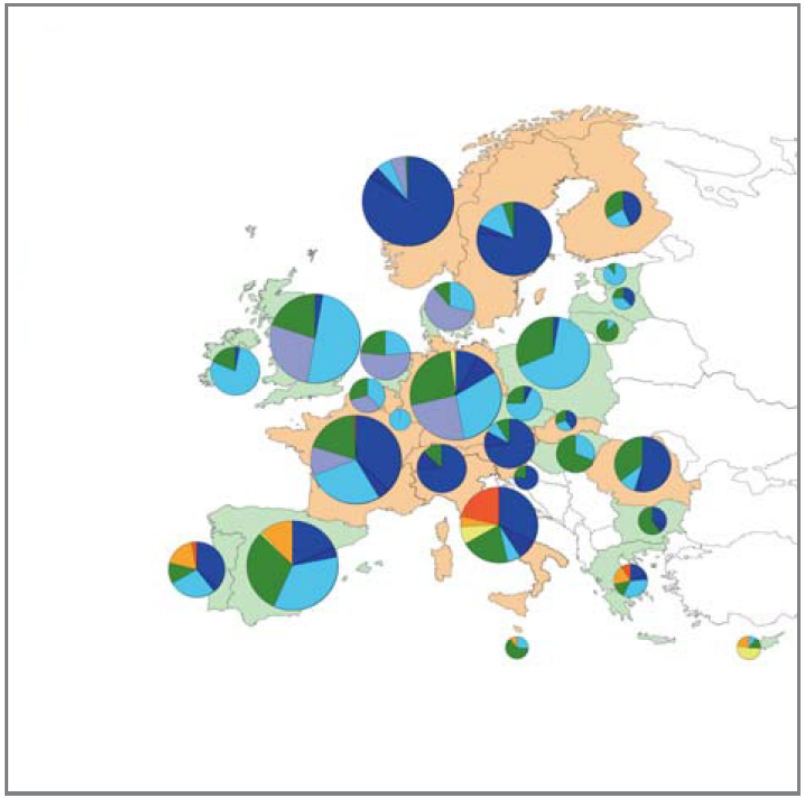


ABBILDUNG 4:

Verteilung des Zubaus erneuerbarer Energien im Business-as-usual Szenario (links) und des harmonisierten Quotensystems (rechts)

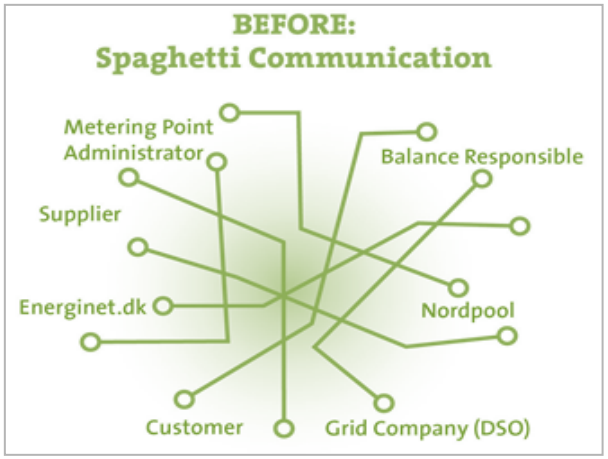
Source: EWI (2010)

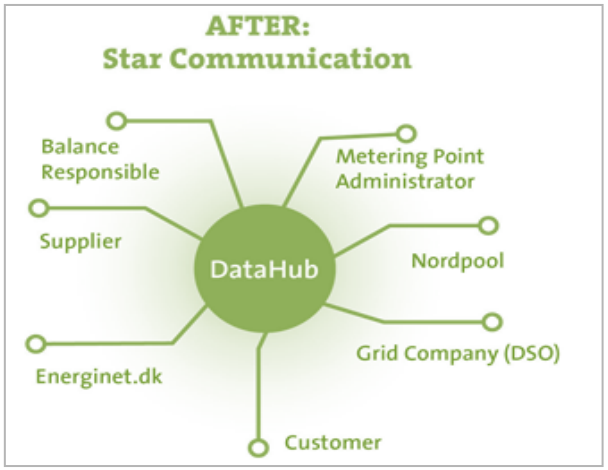
Smart meters and grids

The Danish DataHub-solution

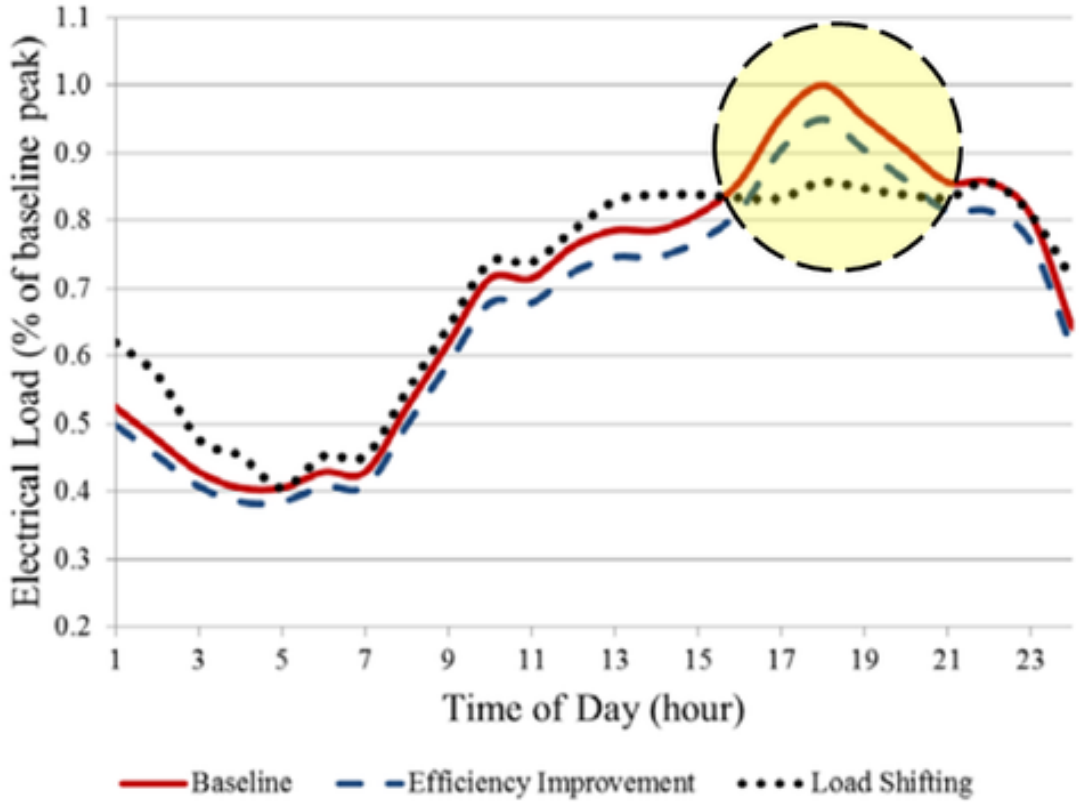
Datahub: The central register of all metering points in Denmark

- Lowers entry barriers for new suppliers: One point of entry at changes of supplier etc.
- Creates a level playing field for all suppliers: Functional unbundling of suppliers and DSO's
- Standardized and role based processes for registering and distributing market data per metering point
- Standardized aggregation processes on metered data to balance responsible etc.



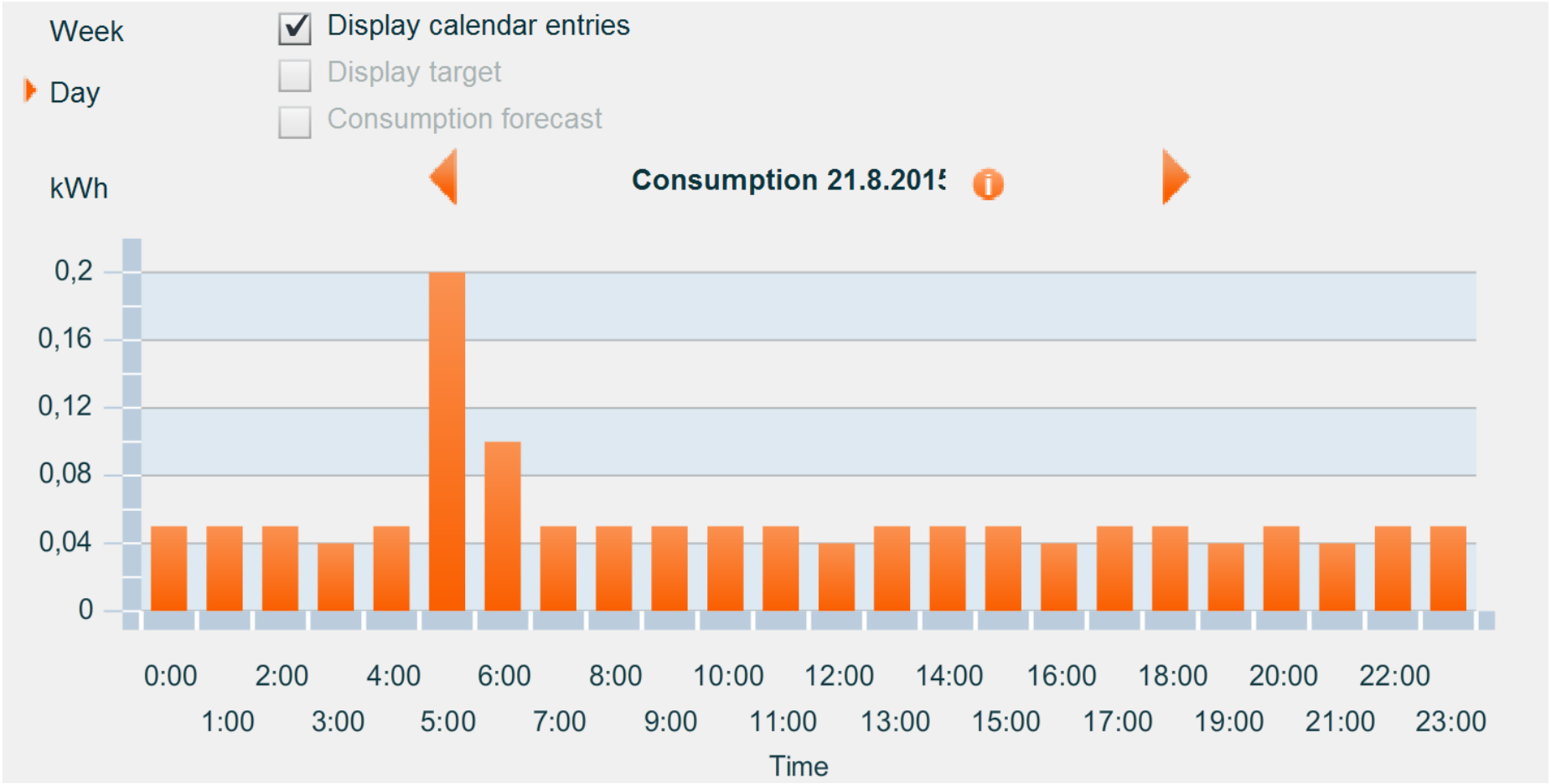


Load control = incentive based demand response



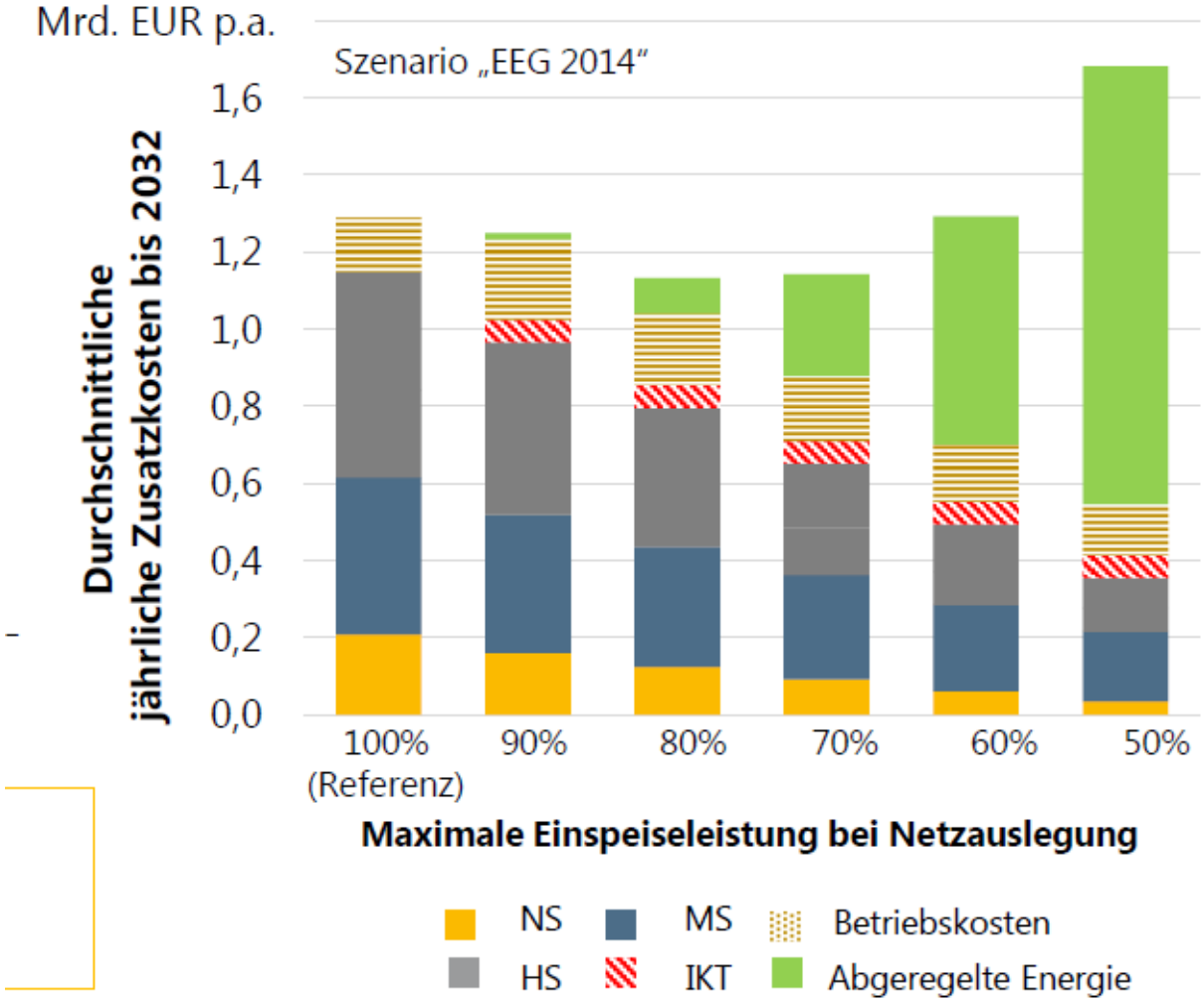
SOURCE: Quora

Price based demand response



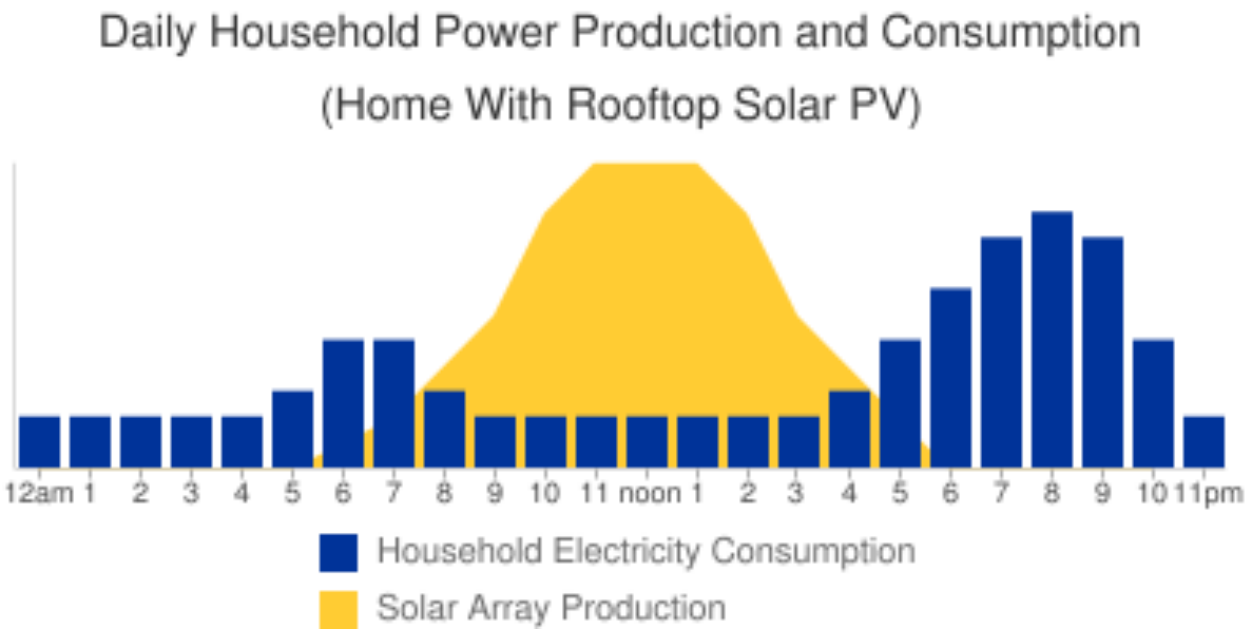
Source: Helen Sävel system

Curtailment of electricity infeed



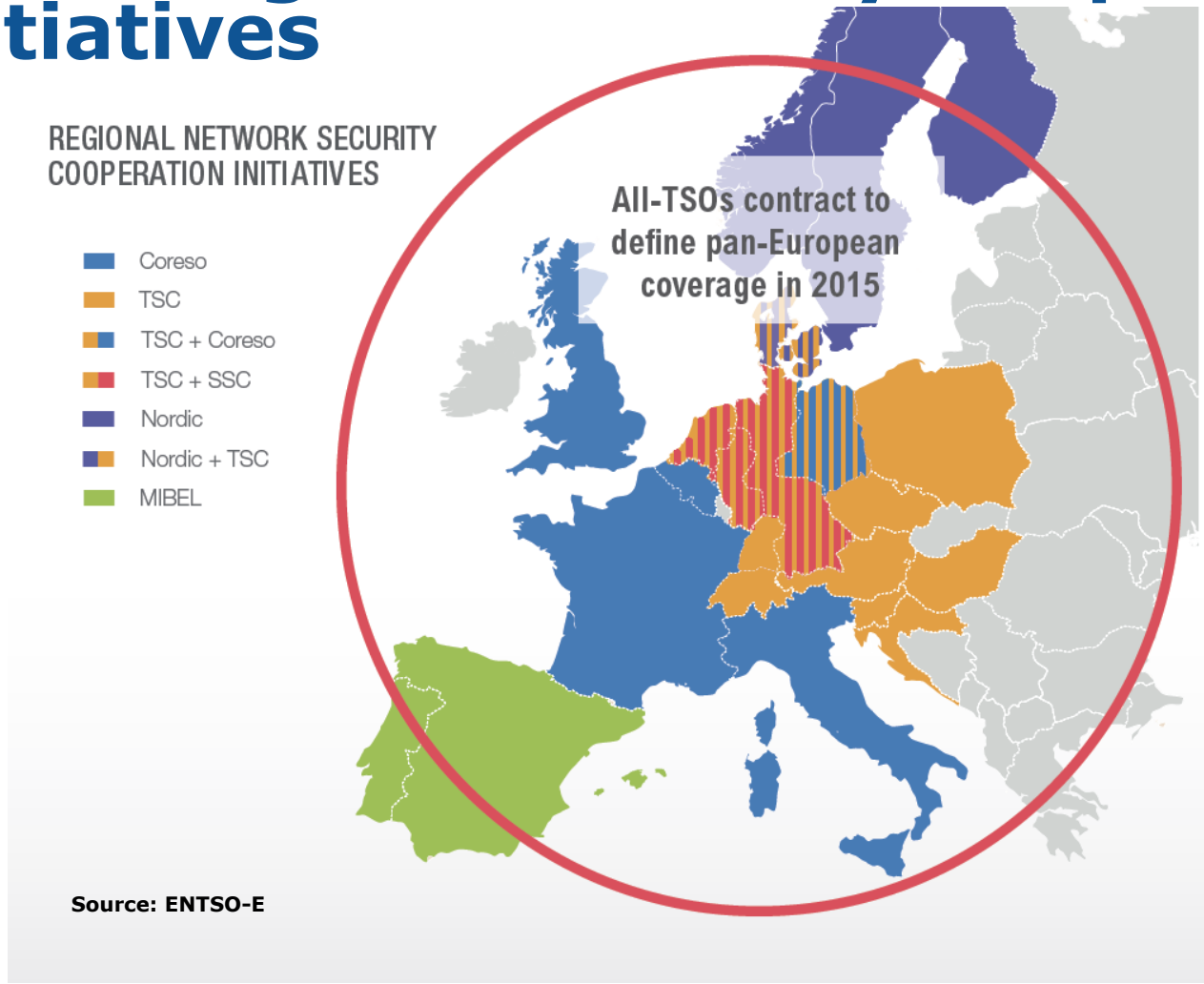
Source: BMWi

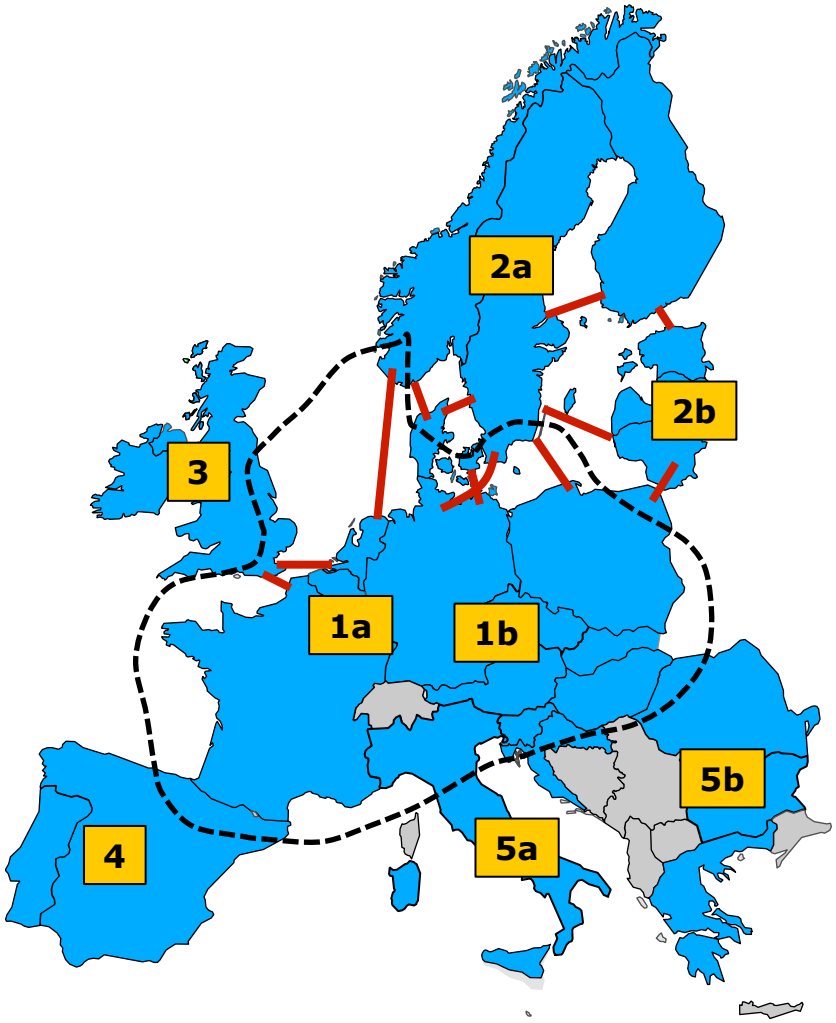
DSO tariff reform



Source: ILSR

TSOs' Regional Security Cooperation Initiatives





Regional TSO coordinators

= Border between regional coordinators

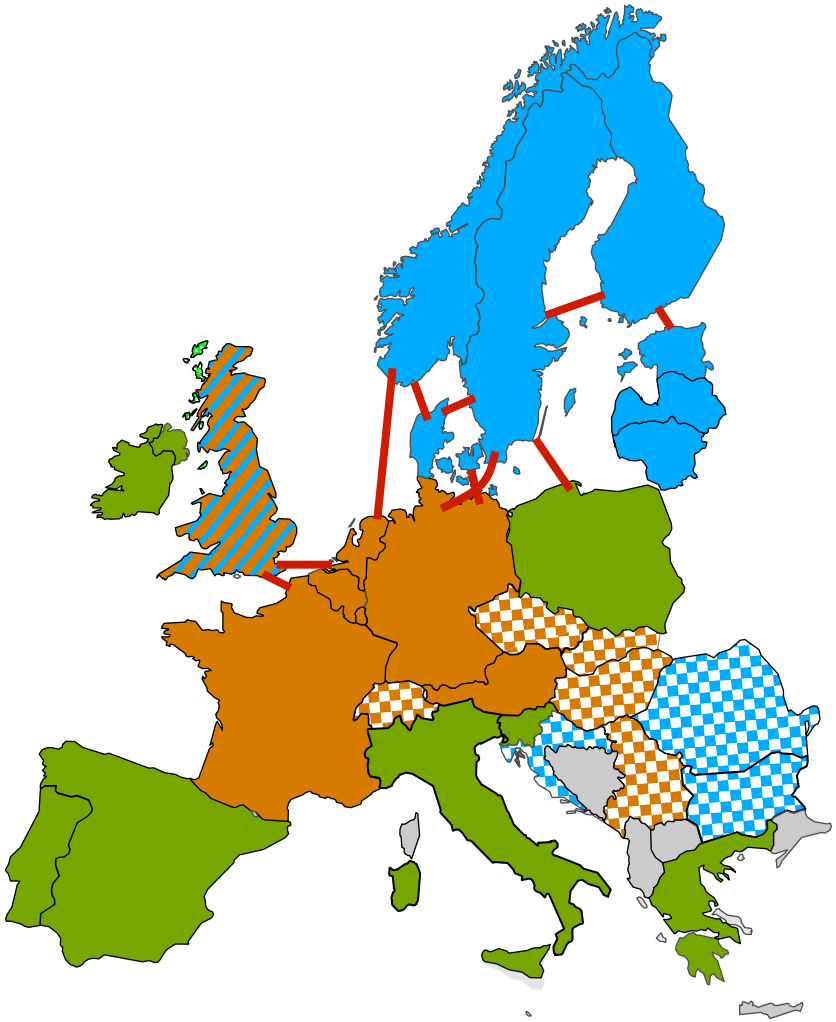
1 = Regional Centre (RC)

2a = Sub Centre of a Regional Centre

Functions	
RCC	Regional capacity calculator
RSC	Regional security coordinator
RAC	Regional adequacy coordinator

+ RBC: Regional balancing coordinator (responsible for common dimensioning, procurement of automatic and manual reserves, and development of secondary markets)

European power exchange landscape in November 2015 (day-ahead spot markets)



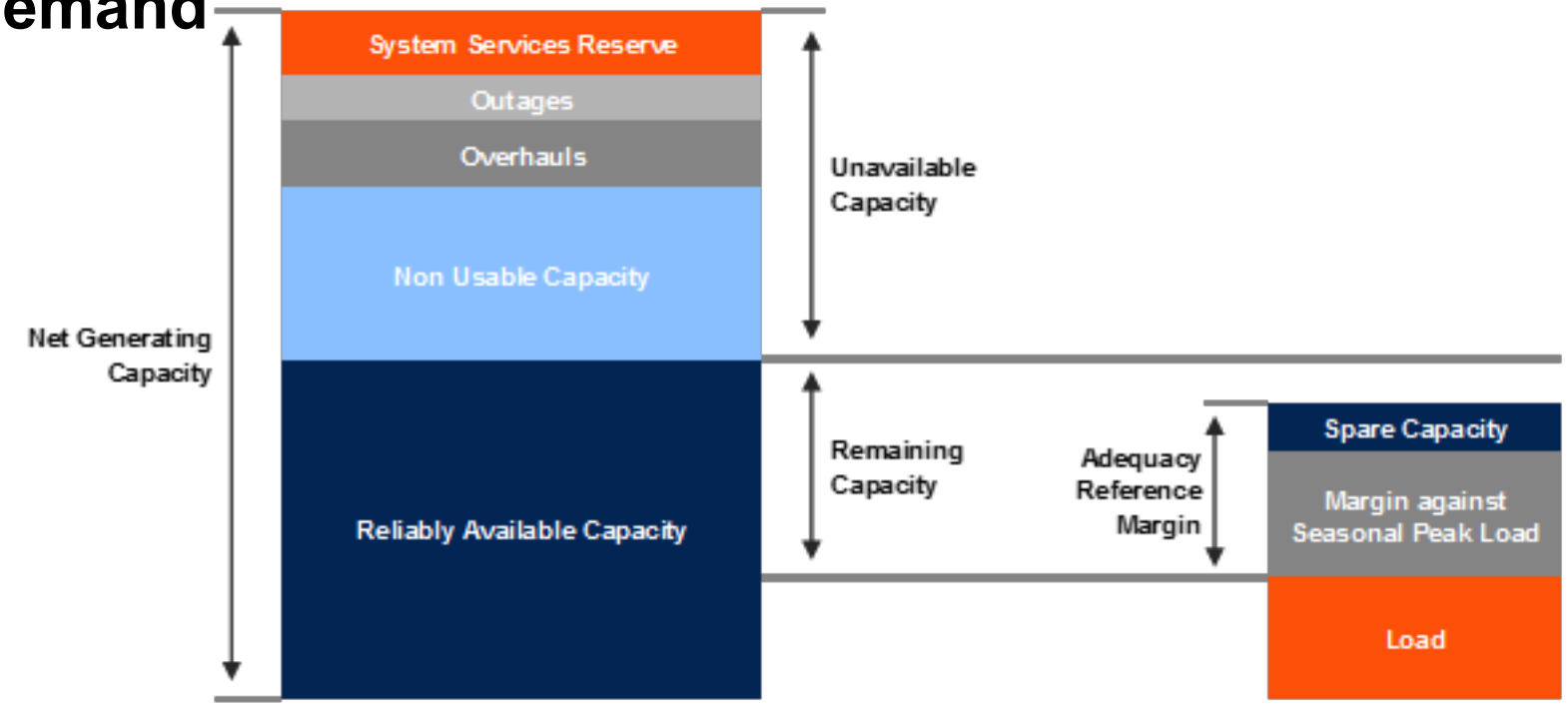
	Nord Pool Spot
	Nord Pool Spot influence
	EPEX Spot
	EPEX Spot Influence
	Own solution
	Competition Nord Pool Spot and EPEX Spot

European Commission

Strengthening ACER

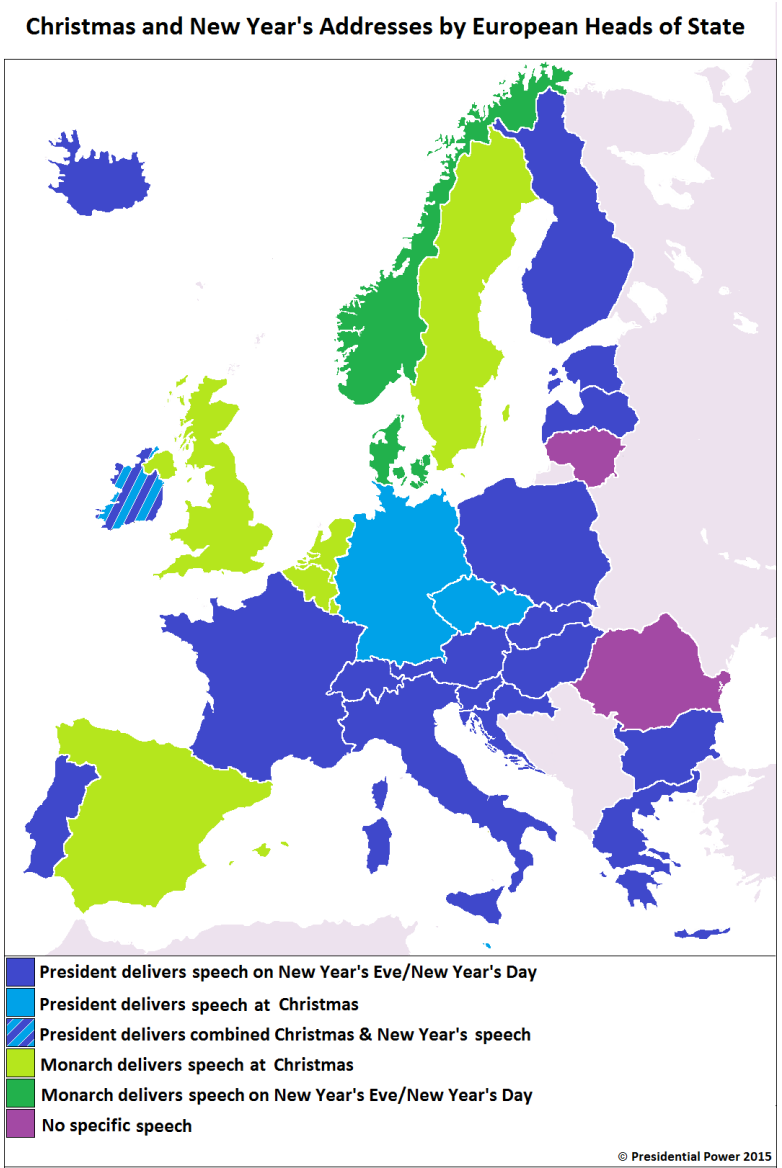
Definition and methodology

- **System adequacy = ability of a power system to supply demand**



- **Power balance = monthly assessment over the timeframe 2016-2020-2025**

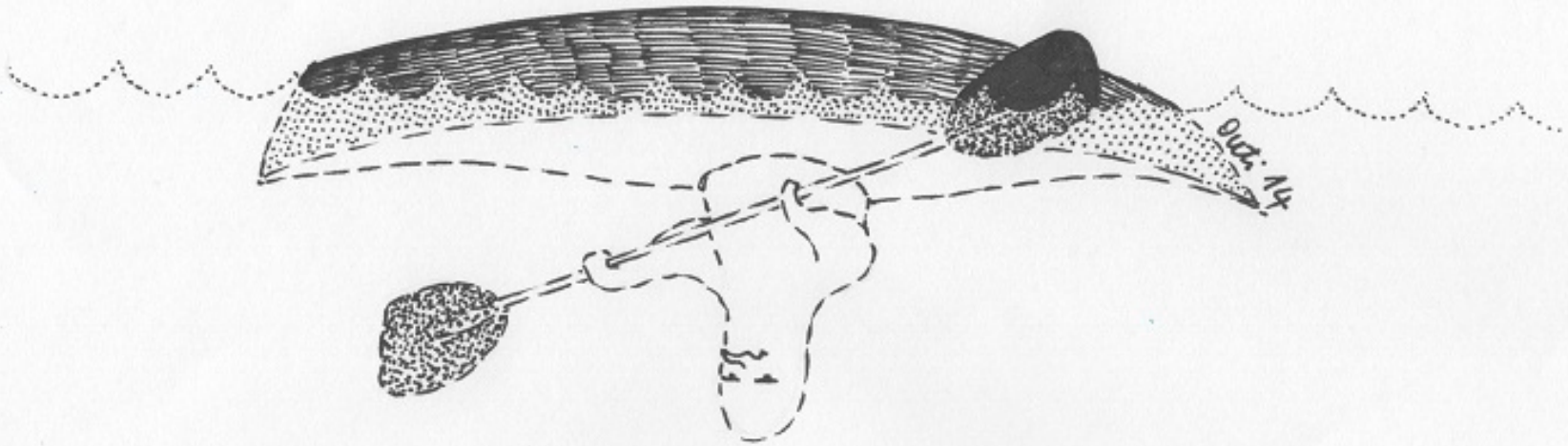
Capacity mechanisms



Market	Market design	Per gross electricity generated €/ MWh	Committed capacity MW
Ireland	Capacity payment	20	7.000
Greece	Capacity payment	9	11.000
PJM	Capacity market	5.5	136.000
UK	Capacity market	5	49.000
UK	Strategic reserve	4	2.000
Spain	Capacity payment	2.7	25.000
Italy	Capacity payment	0.5	-
Finland	Strategic reserve	0.3	600
Norway	Strategic reserve	0.2	300
Sweden	Strategic reserve	0.1	2.000

SOURCE: Thema consulting

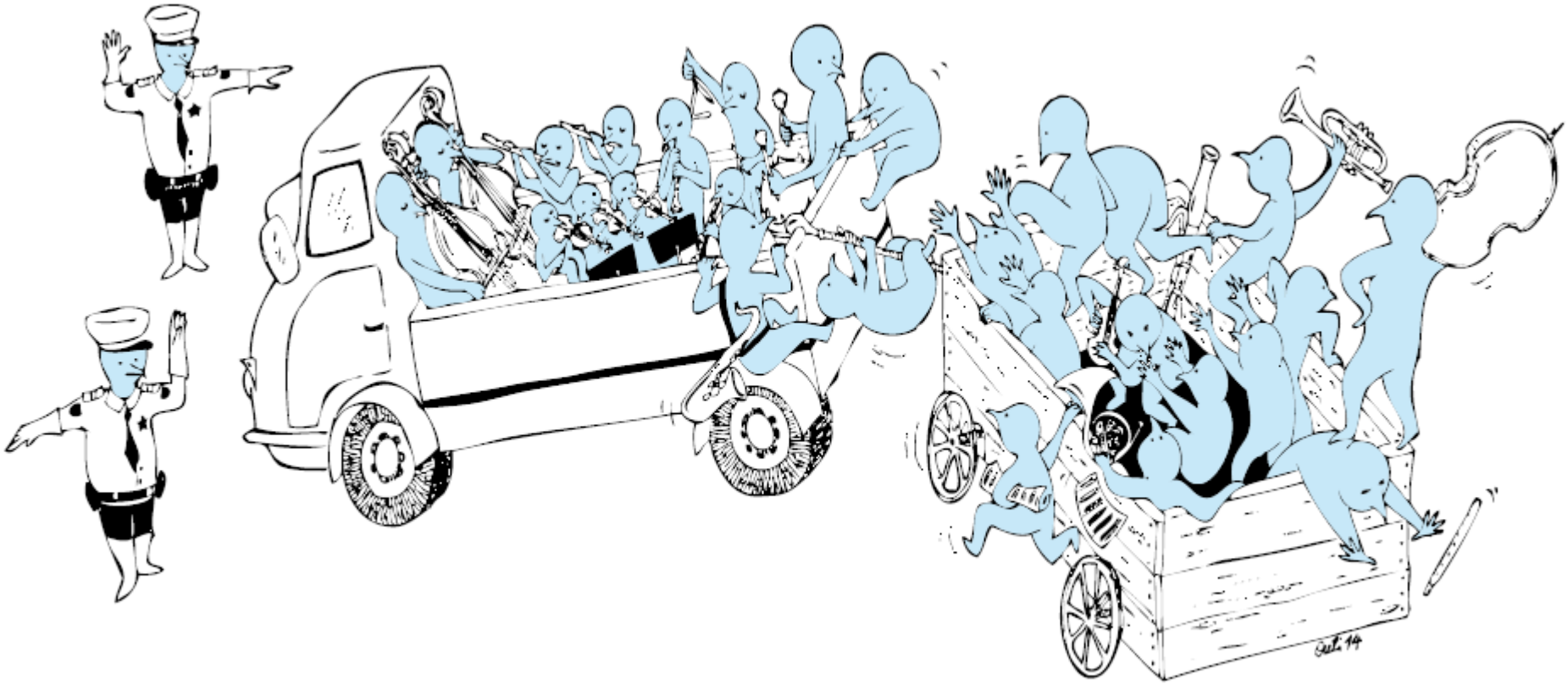
Reversibility of capacity mechanisms



Level of action

Geographic and regulatory dimension				
	Regulated	Semi-regulated	Semi market	Market
European				Day-ahead and intraday market coupling
Regional	?		?	Capacity calculation
National	Tariffs	Capacity mechanisms ?	Retail markets Security of supply analysis	? Wholesale markets
Local	?	Demand response	?	

Legislative process



Future market design legislative proposals?

- Enhanced and more integrated intraday and balancing markets with deployment of short term price signals and demand response.
- Renewable support and operation more market based, with interaction between national schemes.
- Sorting out roles in distribution, supply and services, imposing collection and access to data, discussion on tariffs.
- Capacity remuneration mechanism guidance with regional adequacy analysis, adequacy standard and cross border participation.
- TSOs to cooperate more, oversight by ACER.
- More: power exchanges' governance, retail stuff, interconnectors, price zones,  ,  and  .

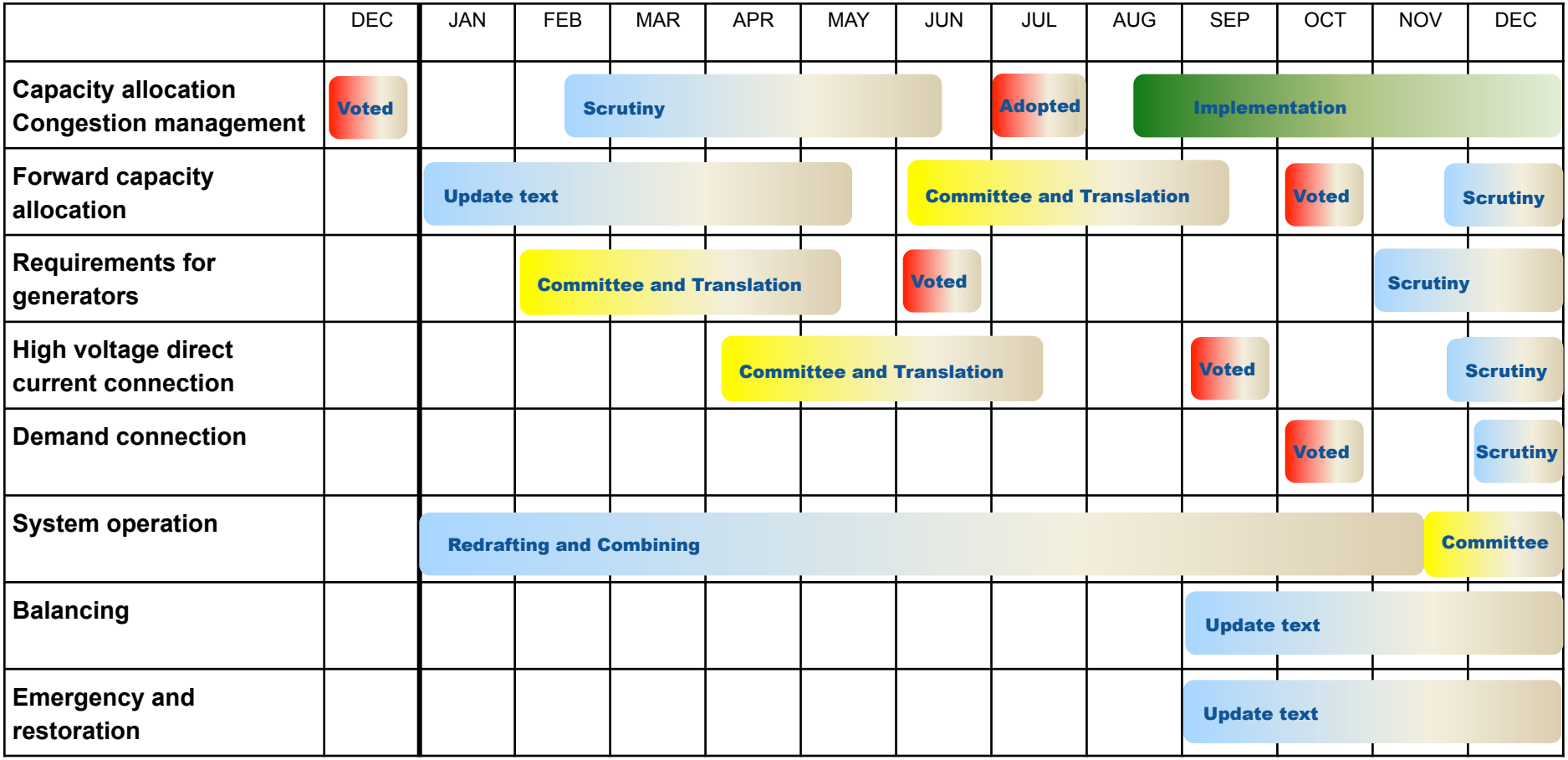
European Commission

Thank you for your

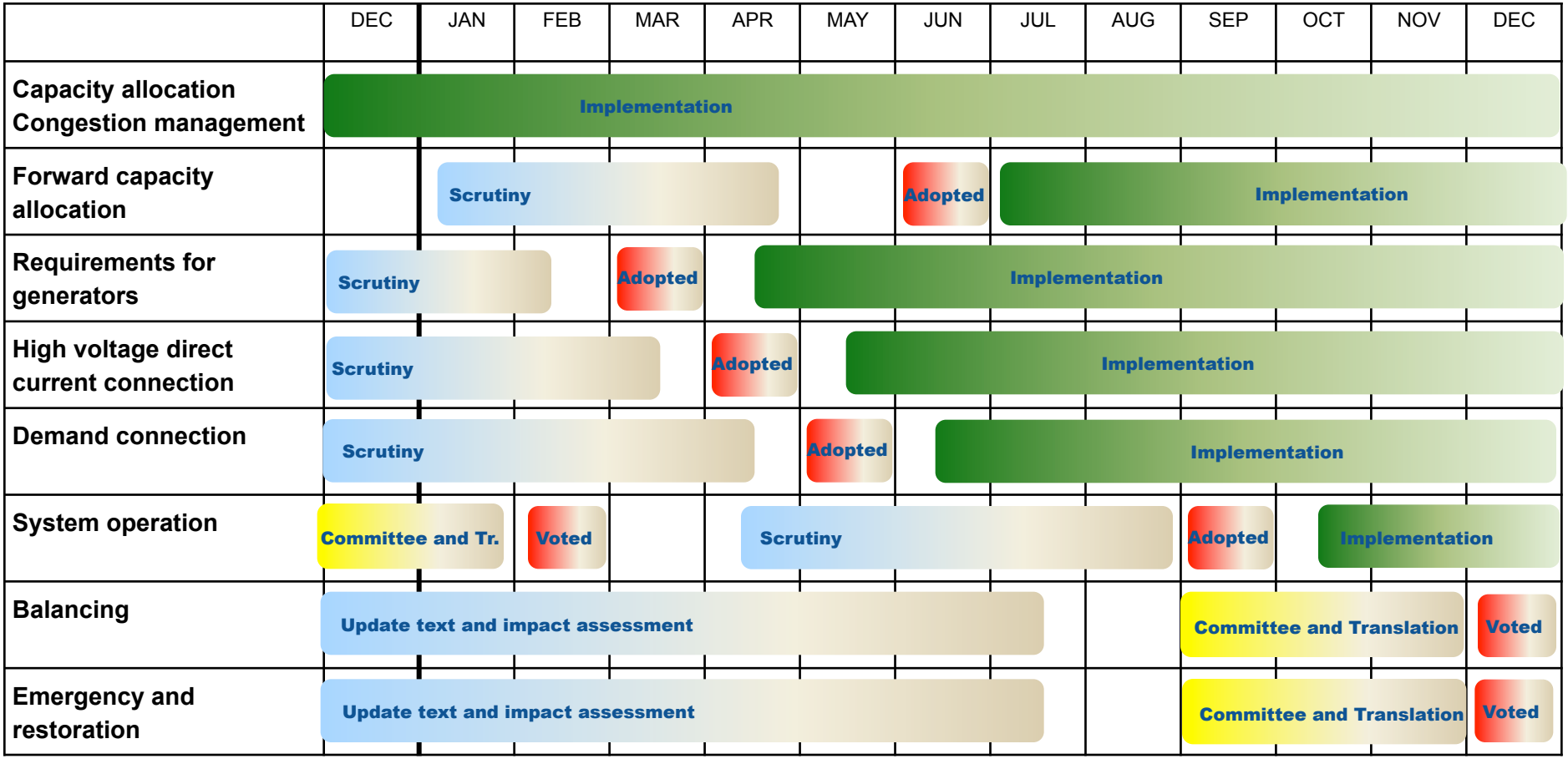
Attention!

Energy

Electricity network codes and guidelines adoption timetable 2015 (indicative)



Electricity network codes and guidelines adoption timetable 2016 (indicative)



European Electricity Rules