

European Power, Gas, Renewables & Coal

## Capacity mechanisms in Europe

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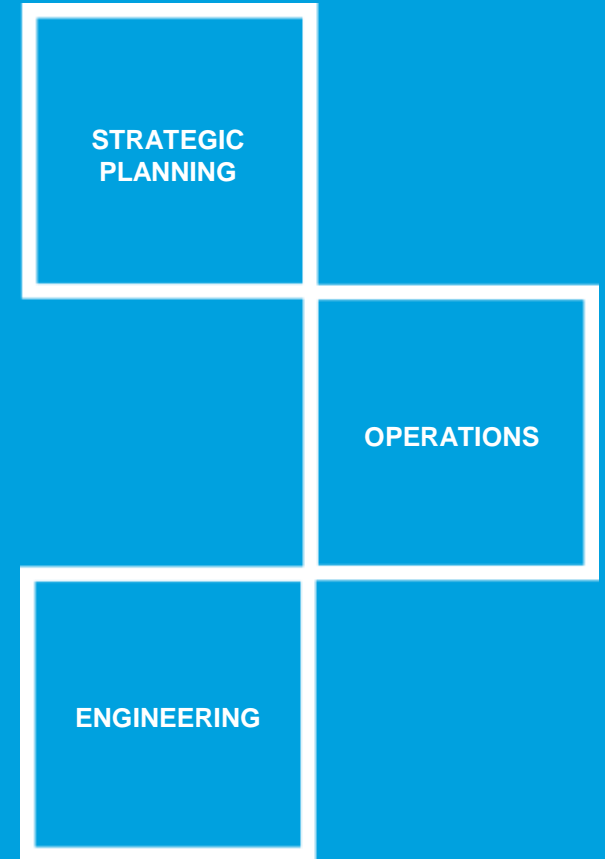
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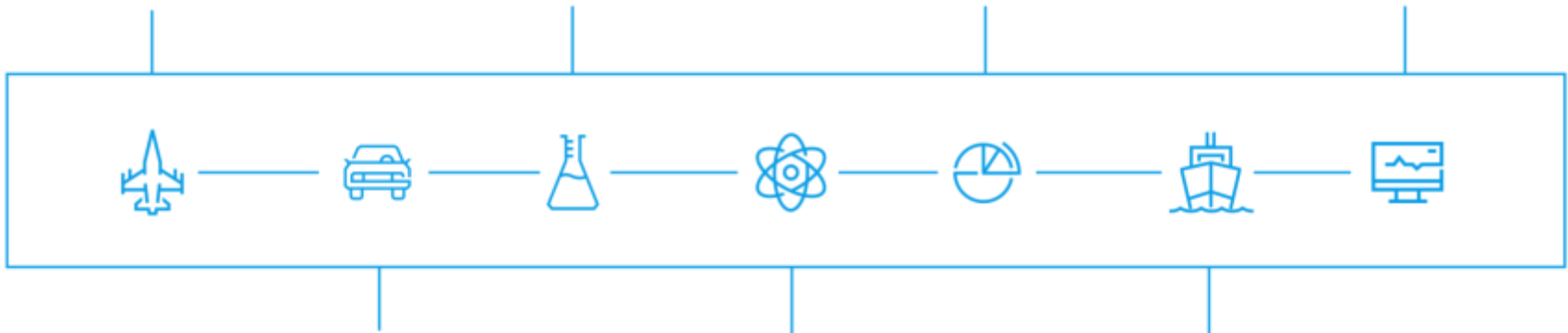
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# Key Messages

- *Europe is heading towards a patchwork of un-coordinated national capacity mechanisms*
- *Design choices are driven by national needs, as well as different theoretical assumptions*
- *To reduce inefficiency, mechanisms need to be harmonized by mitigating spill-over or by moving towards a harmonized design.*

# Patchwork of Capacity Mechanisms

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# Overview of capacity mechanisms in Europe

## Overview of recent developments in EU



Country	Recent and current reforms
Belgium	Introduced strategic reserve, tender for new plants, plan for rolling black-outs and consultation on market design.
Denmark	Introduction of strategic reserve in East Denmark until 2020
Estonia	Construction of new strategic reserve plant by Elering.
France	Decentral capacity market adopted. Drafting rules for interconnection. Trading expected in November.
Germany	Temporary strategic reserves until 2017 (cold reserve and re-dispatch reserve). Likely to reject capacity markets.
Great-Britain	Capacity market and temporary strategic reserve. Participation of interconnectors from 2015.
Greece	Plans to reduce capacity payments.
Ireland	Working on new market design (i-SEM), including capacity market for reliability options
Italy	Introduction of reliability market and modification of temporary capacity payments to incentivize flexibility
Nordics	Phase out of strategic reserve by 2017 but revised share of Demand Response.
Poland	Strategic reserve contracted from existing plants. Debating capacity markets.
Portugal	Re-instating availability payment after suspension during the EU-financial bailout program
Spain	Discussion over modification of capacity payments scheme or move to capacity market

Note: CRM = Capacity Remuneration Mechanisms  
Source: IHS Energy

# Upcoming developments

European countries are re-designing their electricity markets.

We will see capacity auctions in *existing markets* opening up to foreign generators, as well as consultations and decisions on a series of potential *new capacity markets*.

	Country	Mechanism	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15
Existing markets	Great-Britain	Capacity Market	SBR Round 2			SBR Round 3?			Auction for 2019/20			
	France	Capacity Obligation	Capacity Register			Interconnection Participation Rules			Auction for 2016/17			
	Italy	Capacity Market	Auction for 2019/20?									
Consult. on new markets	Germany	Capacity Markets	White Book									
	Ireland	Capacity Market	Consultation 1					Consultation 2				
	Belgium	Capacity Market?	Consultation Response									
	Poland	Capacity Market	Legislation in 2015/16?									
European Commission		Energy Union action plan: policy papers 2015, legislation 2016?										

Source: IHS Energy

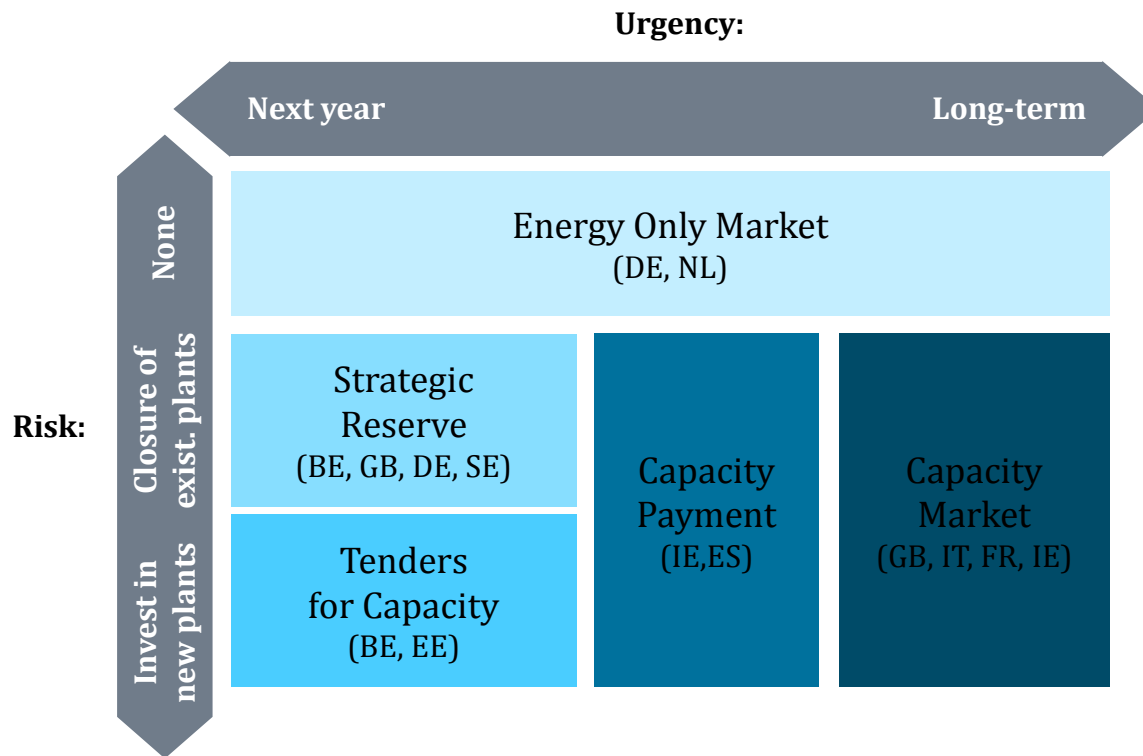
# Reasons driving mechanism choice

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# CRM choice is based on different national needs

CRM choices are driven by different national needs, in terms of the *risks* which need to be addressed and the *urgency* of the action.



Note: CRM = Capacity Remuneration Mechanisms  
Source: IHS Energy

# CRM choice is based on different theoretical assumptions

The preferred CRM is a result of different theoretical assumptions about a number of key criteria\*:

Criteria	Description
Value of lost load:	The cost of a MWh unsupplied energy to society.
Risk aversion:	The amount of additional profits which investors need to compensate them for a higher revenue uncertainty.
Regulatory error:	The extent to which the regulator will be unable to anticipate future system needs and evaluate performance of new technologies.
Competition level:	Extent to which market prices reflect the marginal production cost.

\*) [Winzer \(2013\): „Robustness of various capacity mechanisms to regulatory errors” EPRG Working Paper 1315.](#)

# CRM choice is based on different theoretical assumptions

The preferred CRM is a result of different theoretical assumptions about a number of key criteria:

Preferred CRM:	Value of lost load:	Risk aversion:	Competition level:	Regulatory error:
Energy Only Market	Low	Low	Spot Market: High Forward Market: Low	Spot Market: Low Forward Market: High
Strategic Reserve	High	Low	Spot Market: <b>Medium</b> Forward Market: Low	Spot Market: Low Forward Market: High
Capacity Payment	High	High	Spot Market: <b>Low</b> Forward Market: Low	Spot Market: Low <b>Forward Market: Low</b>
Capacity Market	High	High	Spot Market: <b>Low</b> <b>Forward Market: High</b>	Spot Market: Low <b>Forward Market: Low</b>

**When the preferred CRM choice does not match the national needs, countries tend to develop different CRMs at the same time, such as in GB and DE.**

# Learnings from GB and way forward

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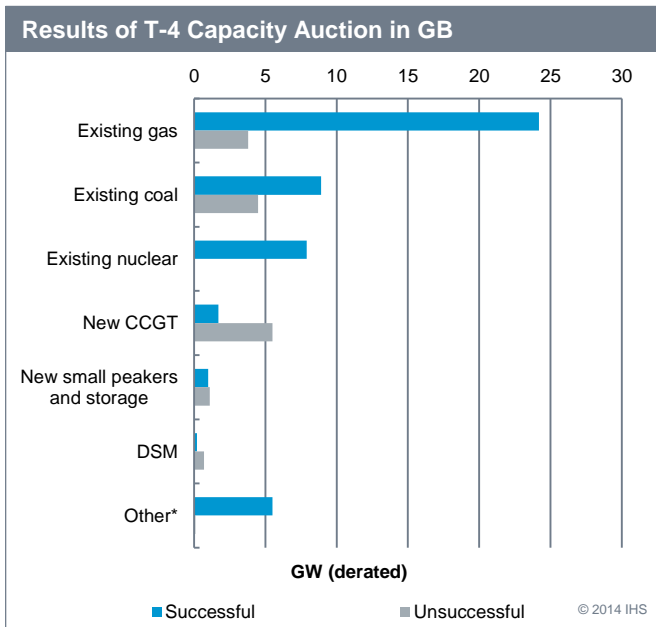
# Learnings from the first capacity market auction in GB

## Main Results:

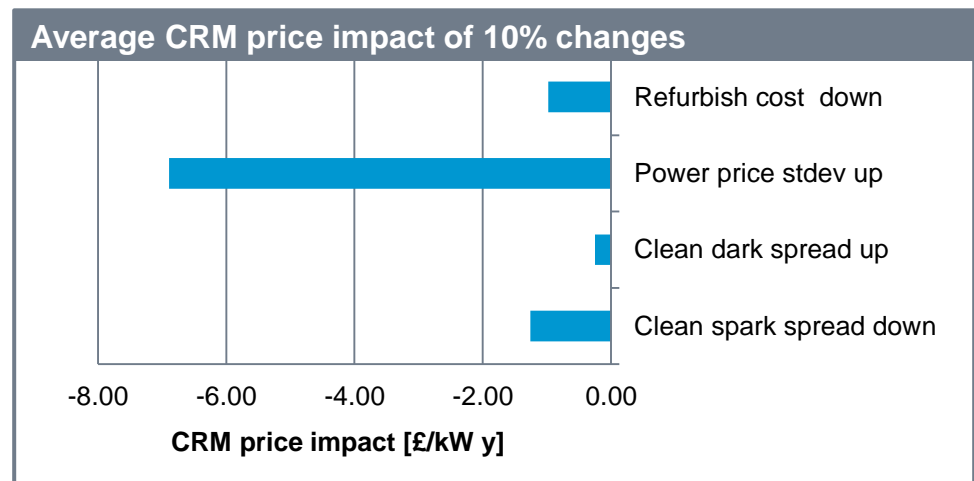
- 19.3 £/MW y clearing Price
- 49.3 GW out of 65GW contracted
- 2.6 GW new plants contracted
- 8.5 GW existing plants rejected

## Learnings:

- Low clearing price as a result of over-subscribed auction and sensitivity of CRM prices to future revenue assumptions
- Plants delaying refurbishment to compete in the auction
- Existing plants in region with high TNUoS displaced by new plants in region with low TNUoS.
- Flexible capacity additions from peakers, storage and DSM



Source: IHS Energy



# If the patchwork continues, countries need to address spill-over impacts from CRMs

## Spill-over:

- Capacity markets depress price in neighboring countries, lowering consumer cost but increasing plant closures.
- National capacity markets may favour new plants in more expensive locations.
- Capacity may be exported during scarcity conditions.
- Independent national capacity targets lead to overprocurement.

## Solutions:

- Strategic reserve to prevent capacity shortfall.
- Allow remuneration of foreign plants.
- Adjust dispatch rules, or buy option contracts and increase national VOLL.
- Account for contribution of plants contracted by neighboring countries.

# In a harmonized approach, Europe needs to agree forward market rules and products but not quantities

## General recommendations:

- Greater role for forward contracts
- Increase role for consumers to determine security standards

## Questions that *need* to be harmonized:

**Procurement product:** - Option contracts ?  
- Align delivery time windows between countries?

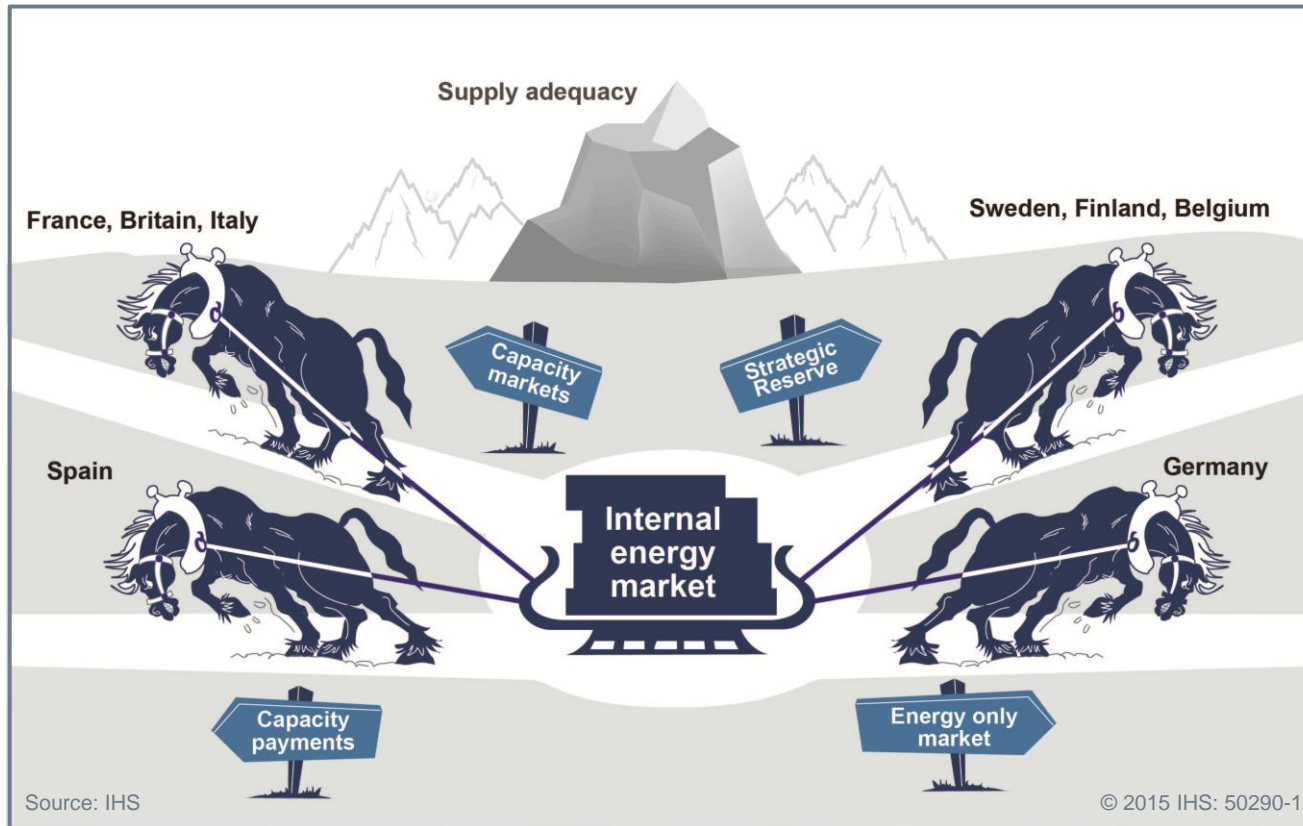
**Procurement market:** - Technology neutral, i.e. open to DSM and generation?  
- Regional, i.e. facilitate arbitrage between countries?

## Questions that do *not need* to be harmonized:

- How much capacity / flexibility should be procured?

# Europe at a cross-roads

There are different ways to achieve energy security, each of them with its own advantages.



However, choosing separate ways will risk to split the internal energy market.



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