

# Understanding Capacity Remuneration Mechanisms

## *Drivers and Basic concepts*

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## Disclaimer

**This presentation by no means reflects:**

- **Elia's judgement on the necessity of a CRM**
- **Elia's preference pro or contra a particular CRM design**

# TOC

**Intro: What's in a name?**

**Theory: Raison d'être, Design families**

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## **Intro: CRM<sup>(\*)</sup> – What's in a name?**

**CRM refers to a group of mechanisms designed to provide an extra capacity-based revenue stream as a complement to the energy-only market**

### **Other names:**

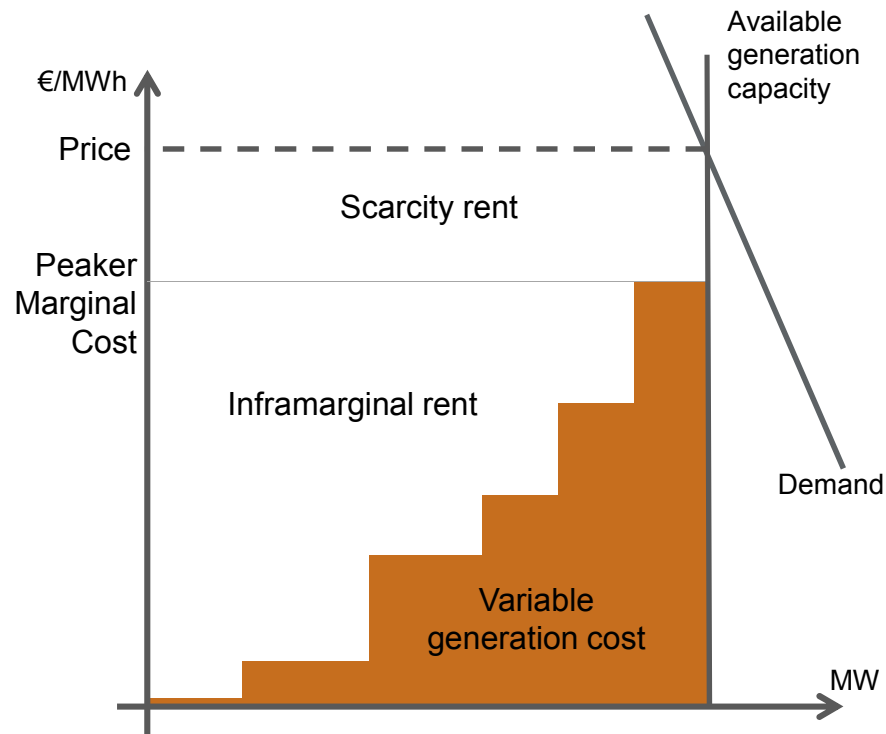
- Capacity mechanisms
- Capacity payments
- Capacity auctions
- ...

### **Note:**

- Whereas some people consider the above names as a general concept, they can also refer to a specific design or implementation (e.g. Capacity payments are used in Spain).
- We use CRM as a general concept, without implying a specific design.

**(\*) CRM = Capacity Remuneration Mechanism**

## Theory: CRM – Raison d’être (\*)



→ CRM should solve the ‘missing money’-problem by replacing the lack of scarcity (and inframarginal) rents by a capacity-based remuneration

### Fixed costs recovery in an energy-only market?

→ Inframarginal + scarcity rents

*However:*

- Several reasons why rents can be insufficient (price caps and other imperfections)
- Paradigm shift: increased low-cost RES limits infra-marginal rents for other technologies

= ‘Missing money’-problem

(\*) The above describes the ‘missing money’-theory and by no means proves the existence of missing money for the Belgian electricity market.

## **Theory: CRM – Raison d'être**

### **Which problems can it possibly solve?**

**CRM provides a capacity-based remuneration**

→ ***In principle***, it could serve any capacity-related problem

**At least two capacity-related problems can be identified:**

- Generation adequacy (*'Old school'* CRM driver): cover peak demand and periods with limited RES infeed
- Capability (*'New school'* CRM driver): ensure sufficient flexibility is available  
*[cfr. Presentation F. Dunon on 06/03/2012]*

**Both problems can be linked...**

However, a CRM should still be **complemented with well-functioning energy markets** to ensure efficient short-term signals (and they will still provide part of the rents needed for fixed cost recovery)

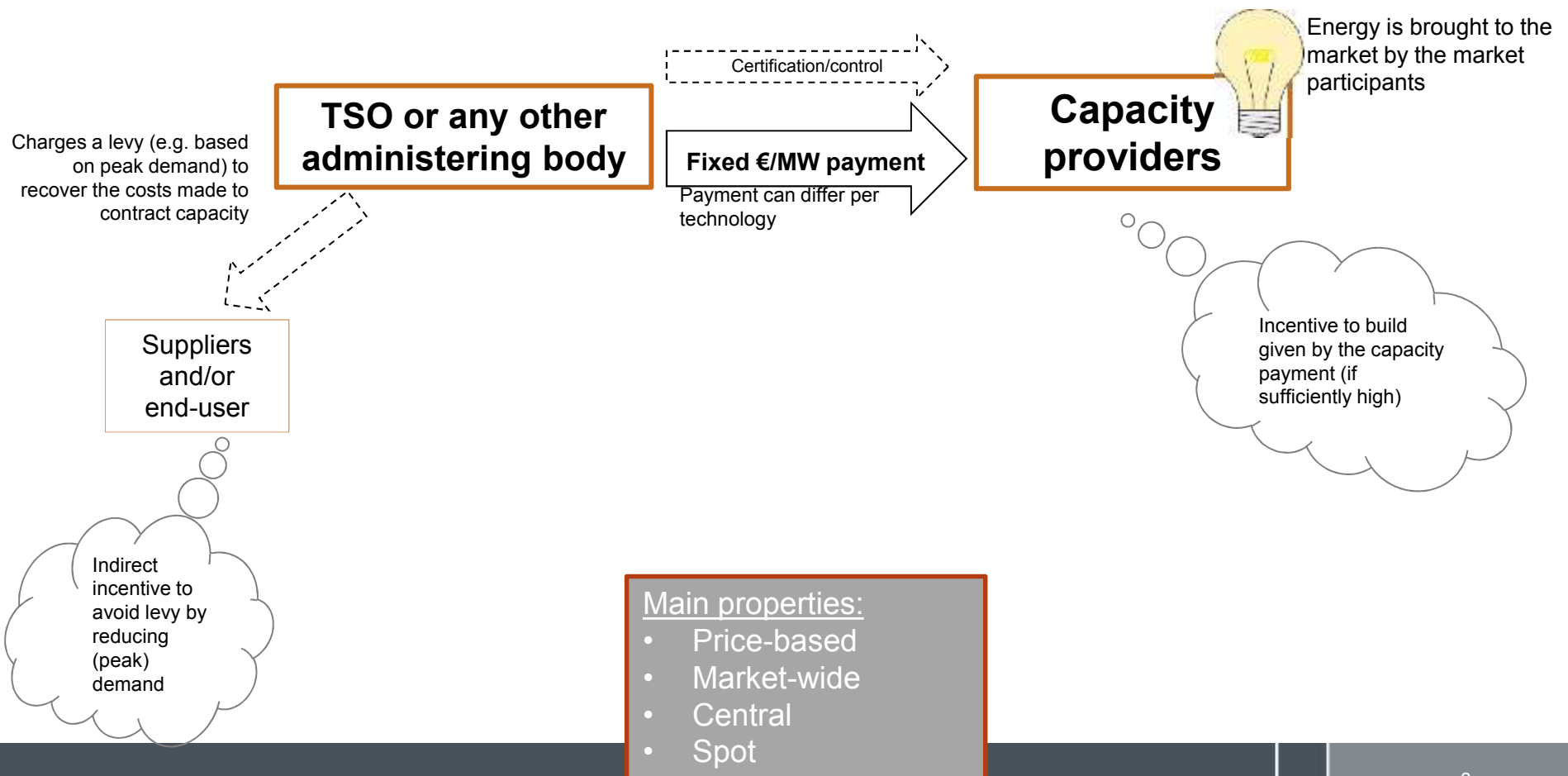
## ***Theory: What are the big families?***

- **Give a capacity payment to available capacity**
- **Strategic reserves** (i.e. reserves triggered by extreme market or system security circumstances)
- **Install a (forward) capacity market**
  - Decentralized: between suppliers and capacity providers
  - Centralized: between single buyer and capacity providers
- **Reliability options** (a financial instrument)  
*Not further discussed, because never used in practice so far*

# Theory: CRM – How can it look like?

## Family 1: Capacity payment

**Principle:** Each MW installed receives an ex ante determined payment for its availability.

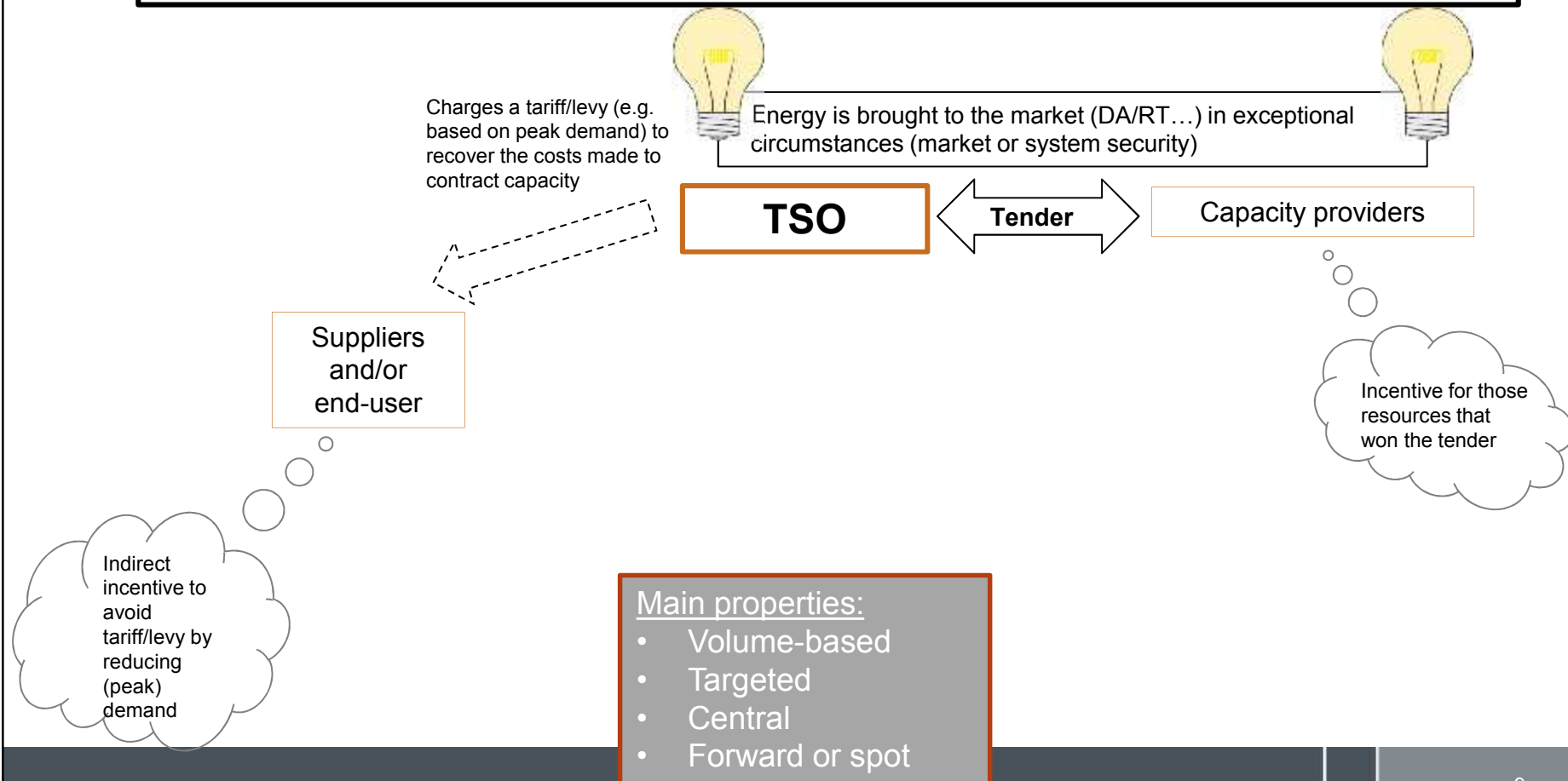




# Theory: CRM – How can it look like?

## Family 2: Strategic reserves

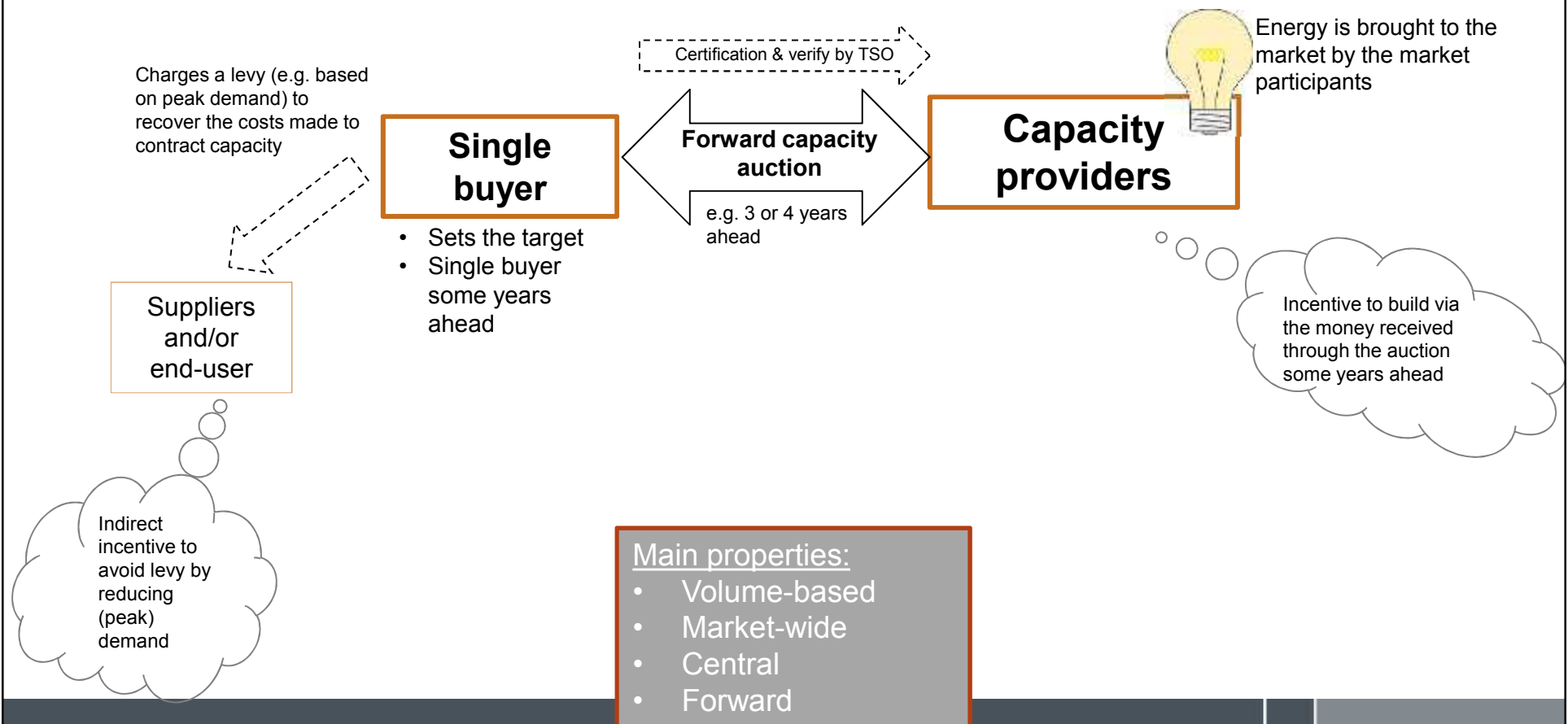
**Principle:** TSO contracts strategic reserve capacity which can be dispatched in exceptional circumstances.



# Theory: CRM – How can it look like?

## Family 3: A centralized capacity market

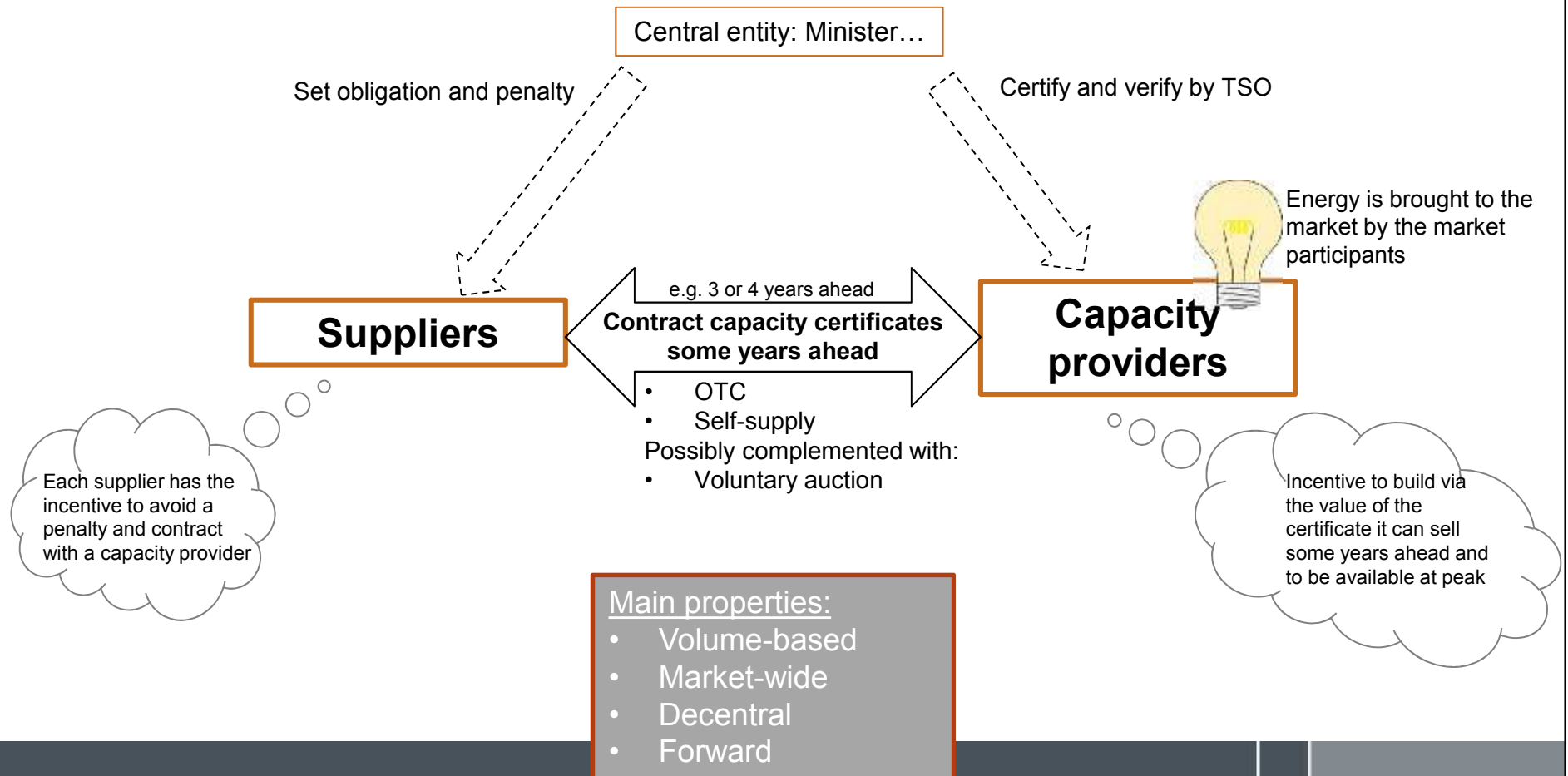
**Principle:** 'Single buyer' contracts sufficient forward capacity



# Theory: CRM – How can it look like?

## Family 4: A decentralized capacity market

**Principle:** Each supplier is a years-ahead 'Capacity Responsible Party'



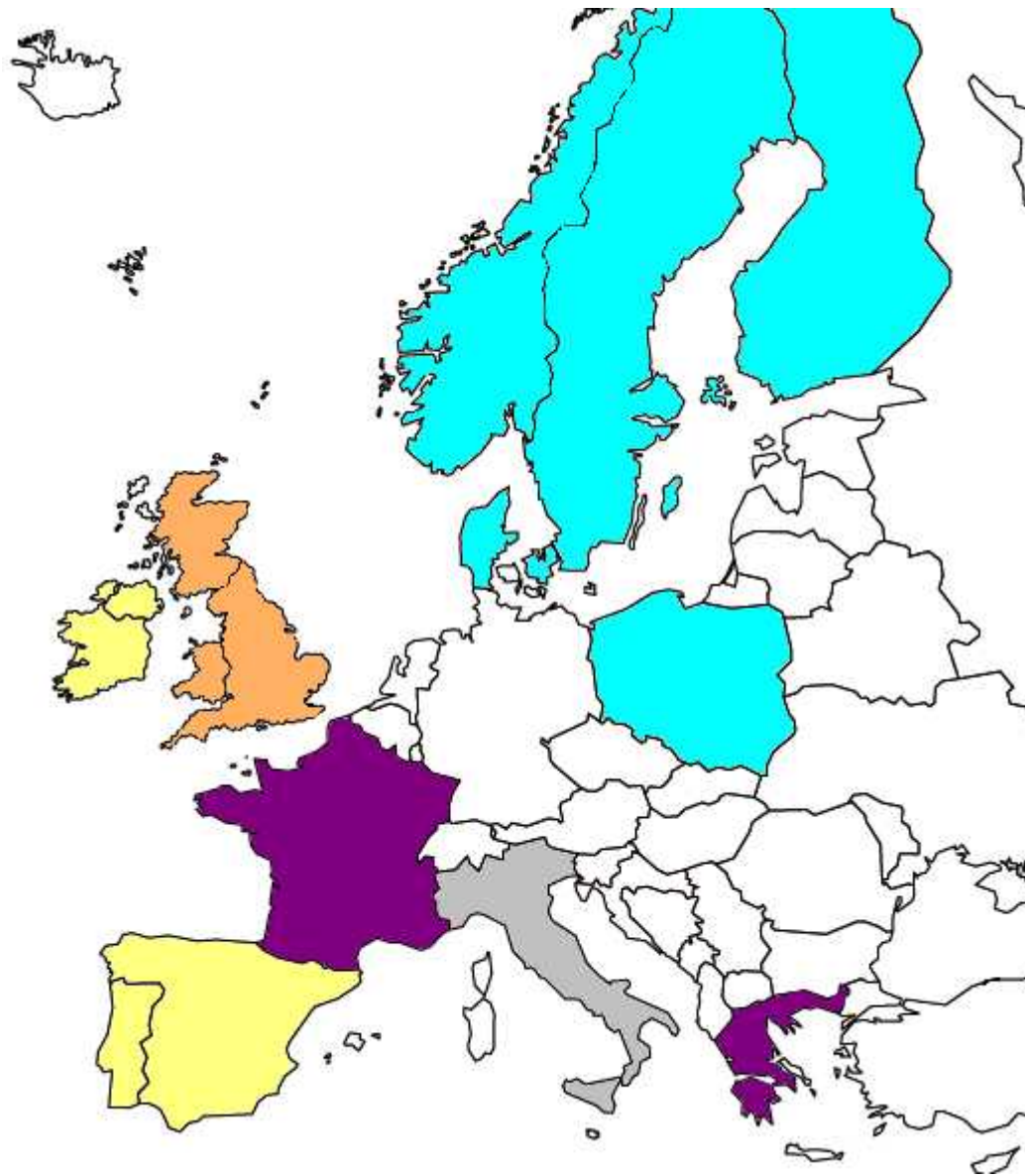
## *From theory to practice:* **CRM – Loopholes and distortions**






***Main principle:*** Do not create bigger distortions than the ones you would like to solve. Be prudent and aware of the loopholes.

### ***For instance:***

- **Market power:** CRM can decrease market power (e.g. by reducing price peaks), but be aware not to export market power to the CRM mechanism
- **Double payments:** Fixed costs should only be recovered once.
- **Risks:** Assignment of new responsibilities and rewards/penalties introduce new (and possible undesired) incentives and can alter market behaviour.
- **Interconnections and leakage:** What if two different CRMs operate in the same region? What if one country has a CRM and a neighbour has not?
- **Liquidity:** If a new market is created, it only works if it is liquid.

# Practice: CRM in Europe – A patchwork



-  Strategic reserves
-  Centralized capacity market
-  Capacity payment
-  Decentralized capacity market
-  Reliability options

+ in several countries the debate has (almost) started, e.g. BE, DE

*In the long run...*

## **Can capacity markets be avoided?**

Several stakeholders claim that a CRM should be limited in time.

→ Is this realistic?

**IF a CRM is considered necessary today:**

- **No evidence that fixed cost recovery in the future can rely on energy markets only**
- **On the contrary, will increased RES not further deepen today's (perceived?) problem?**

E.g.: Quid profitability of a CCGT in 2030 in a RES dominated generation mix? Will there be any inframarginal rent for the CCGT?

***Open question:***

***Will CRM be the dominant electricity market in the future?***

# ANNEX

## ***From theory to practice: CRM – Time to market***

**Complex mechanisms take a long time to implement:**

**E.g.: France:** a decentralized mechanism

- Loi NOME: entry into force December 2010
- First test auction: 2013(?) for capacity 2015-2016(?)
- Transitory mechanism required for ST needs (in casu a tender)

***?? Quid impact François Hollande ??***

**E.g.: UK:** a centralized capacity market

- Primary legislation by spring 2013(?)
- Secondary legislation by Spring 2014(?)
- Launch: 2014-2015(?) for capacity 2016(?)
- Transitory mechanism required (not defined yet)



## Practice: Examples beyond Europe

### Main and often cited examples:

**US East-Coast markets (PJM, NE ISO):** a *re-design* experience lasting more than a decade

- From a decentralized capacity market to a centralised capacity auction
- From short-term reserve requirement to forward reserve requirement

*Satisfaction with the current mechanism is growing.*

- ❖ Note: US examples resulted in activation of significant amount of **Demand Response** (up to 10-15% of peak demand)

However, also in Latin-America several CRMs are implemented (e.g. Brazil, Chile, Colombia)