Creating a secure and undistorted European energy market

& Bird & Bird

Steigenberger Grandhotel

4th February 2014 Brussels

Session 3 – Minimising distortion of the IEM

Generation Adequacy – Tadhg O'Briain, DG Energy

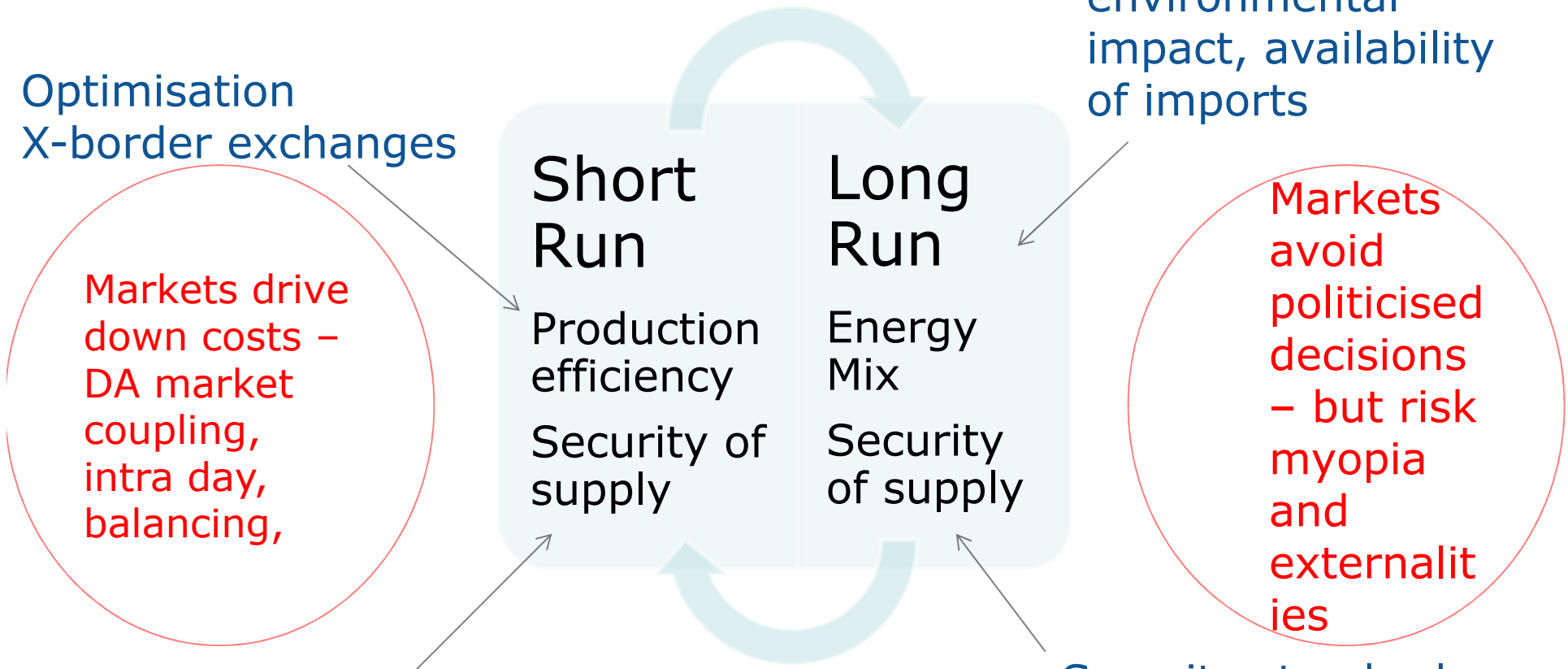
GENERATION ADEQUACY, SECURITY OF SUPPLY AND THE INTERNAL ELECTRICITY MARKET

Tadhg O'Briain

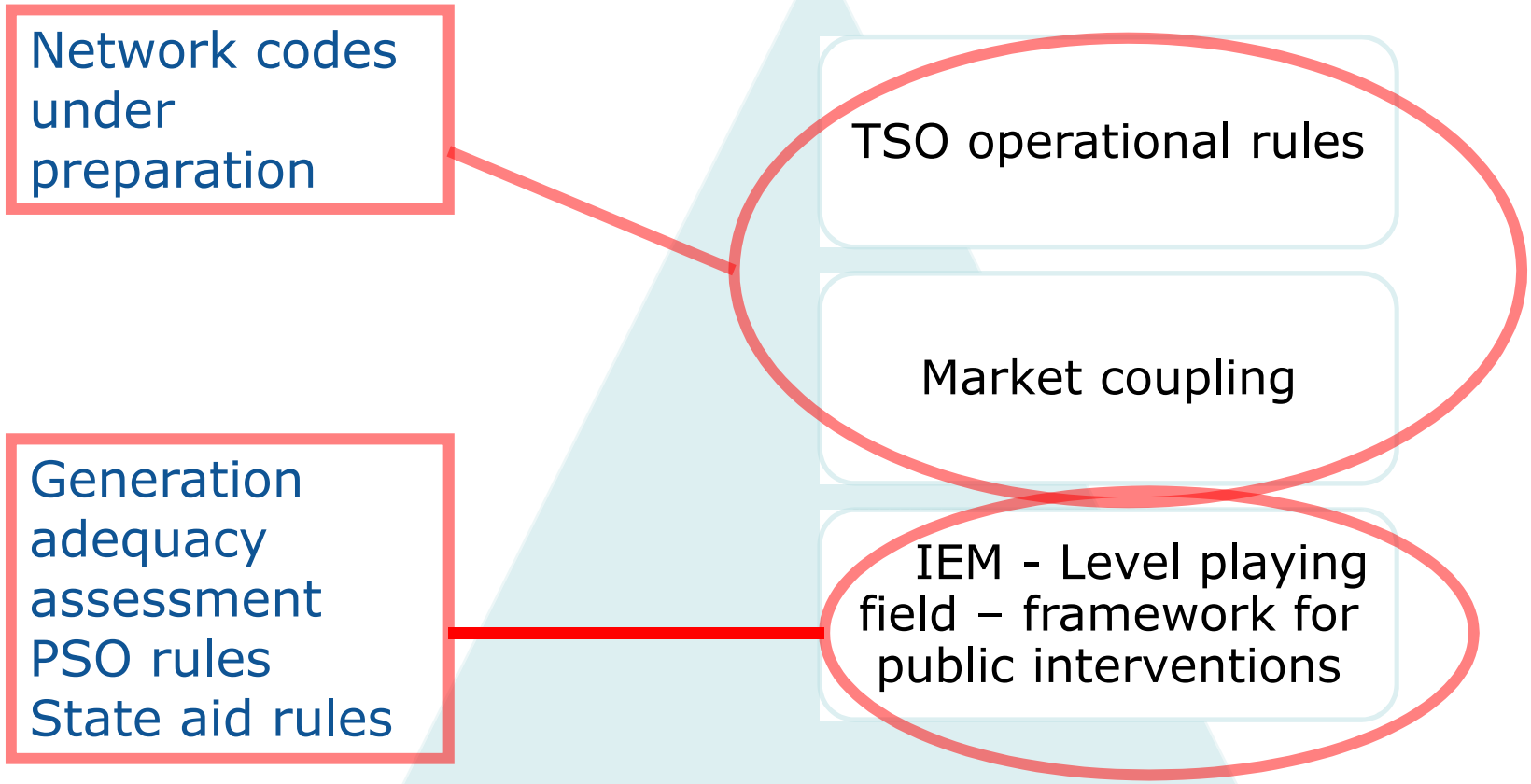
DG Energy, Unit B2 Wholesale markets : electricity and gas

Brussels 4 February 2014

Markets and systems



EU policy initiatives



Capacity mechanisms

On 22 May 2013 the European Council called for guidance on capacity mechanisms.

- **Guidance in the Communication and elaborated in this Staff Working Document**

Aim to help ensure that capacity mechanisms

- **meet aims of EU energy policy aims (IEM)**
- **comply with the common competition rules**

BUT detailed treatment of capacity mechanism and State aid in Energy and Env. SA guidelines

The November package on State intervention

RES support schemes

Capacity mechanisms

Cooperation mechanisms

Demand response

EVIDENCE BASED POLICY MAKING

Analyse generation adequacy concern objectively

- **Recognize reality: cross-border assessment**
- **Maximize interconnection capacity**
- **Include potential of DSR**
- **Distinguish from profitability concerns**
  (take into account overcapacity and economic crisis)

Identify the causes of the concern

- **Regulated wholesale and retail prices:**
  Is intervention proportionate if price caps reduce investment
- **Existing support schemes:**
  are RES support schemes in line with best practices?
  Support for fossil and nuclear generation?
- **Do effective intraday and balancing markets exist?**
  Can the demand side participate in these markets?

EFFECTIVE AND EFFICIENT INTERVENTION

Design of public intervention

- A strategic reserve is normally less distortionary, less costly and easier to implement; BUT not suitable for every problem
- One-off tendering could be less distortionary and easier to implement when there is a clearly identified and temporary investment gap – must be credibly one off
- Where market wide capacity remuneration schemes are considered, capacity payments are less desirable and capacity markets are to be preferred

Design features

Technological neutrality

- **old + new production, demand participates on equal basis**

Transitional with an exit strategy

- **allow price to fall to zero, address market and regulatory failures**

Regional schemes least cross-border participation

- **RECOGNISE practical difficulties**
- **BUT vital to account for benefits of IEM**

Minimizing distortions of competition and trade

- **no adverse effect on market coupling; no export restrictions)**

Financing – beneficaries of SoS should pay

Guidance for MS Choices

Intervention after:

careful and objective assessment of needs

Addressing regulatory and market failures
cost/benefit analysis compared to other solutions and value of lost load

Recommendations:

chose the right instrument to address the problem identified

Design the measure to minimize distortions

Ensure mechanism is reviewed as underlying concern addressed

Generation adequacy assessment

- Accelerate work on creating common methodology
  - QUESTION: Role of ENTSO-E vs. other groups (e.g. JRC, ACER)
- Work on European data base
  - Economic – demand trends, economic – investment trends, climatic etc. including scenarios
- Appropriate body to endorse methodology/input/results
  - ECG, ACER, Elec. cross-border committee???
- MS to formalise their generation adequacy standards
  - European range of min/max??? – limited choice of measures (EUE, LOLE)…


European Commission
Thank you for your attention!
Energy

Session 3 – Minimising distortion of the IEM

Creating a secure and undistorted European energy market – Robin McCormick, General Manager SEMO & SONI

Bird & Bird
Creating a secure and undistorted European Energy Market

Robin McCormick, General Manager SEMO & SONI

Tuesday 4 February 2014

European Energy Market

Single Electricity Market
Drivers & objectives for SEM
Package of market and support mechanisms
EU Target Model in 2016
Challenge of interfacing with neighbouring markets
Delivering the market

European Energy Market

2007

European Energy Market

EIRGRID

CER
Commission for Energy Regulation
An Coimisiún um Rialáil Fuinnimh

Department of Communications, Energy and Natural Resources
Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádúrtha

SONI
System Operator for Northern Ireland

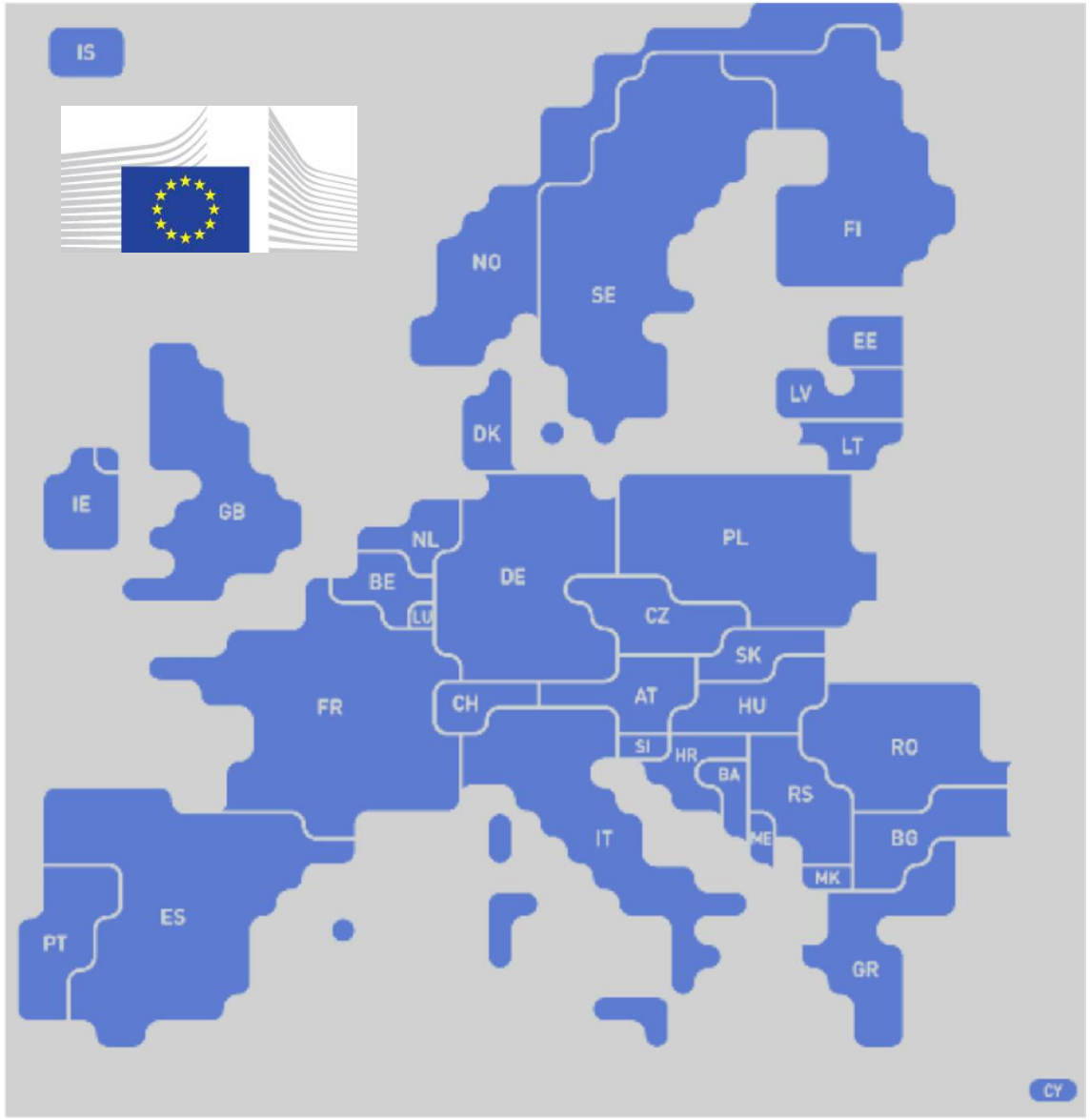
Utility Regulator
ELECTRICITY GAS WATER

Department of
Enterprise, Trade
and Investment
www.detini.gov.uk

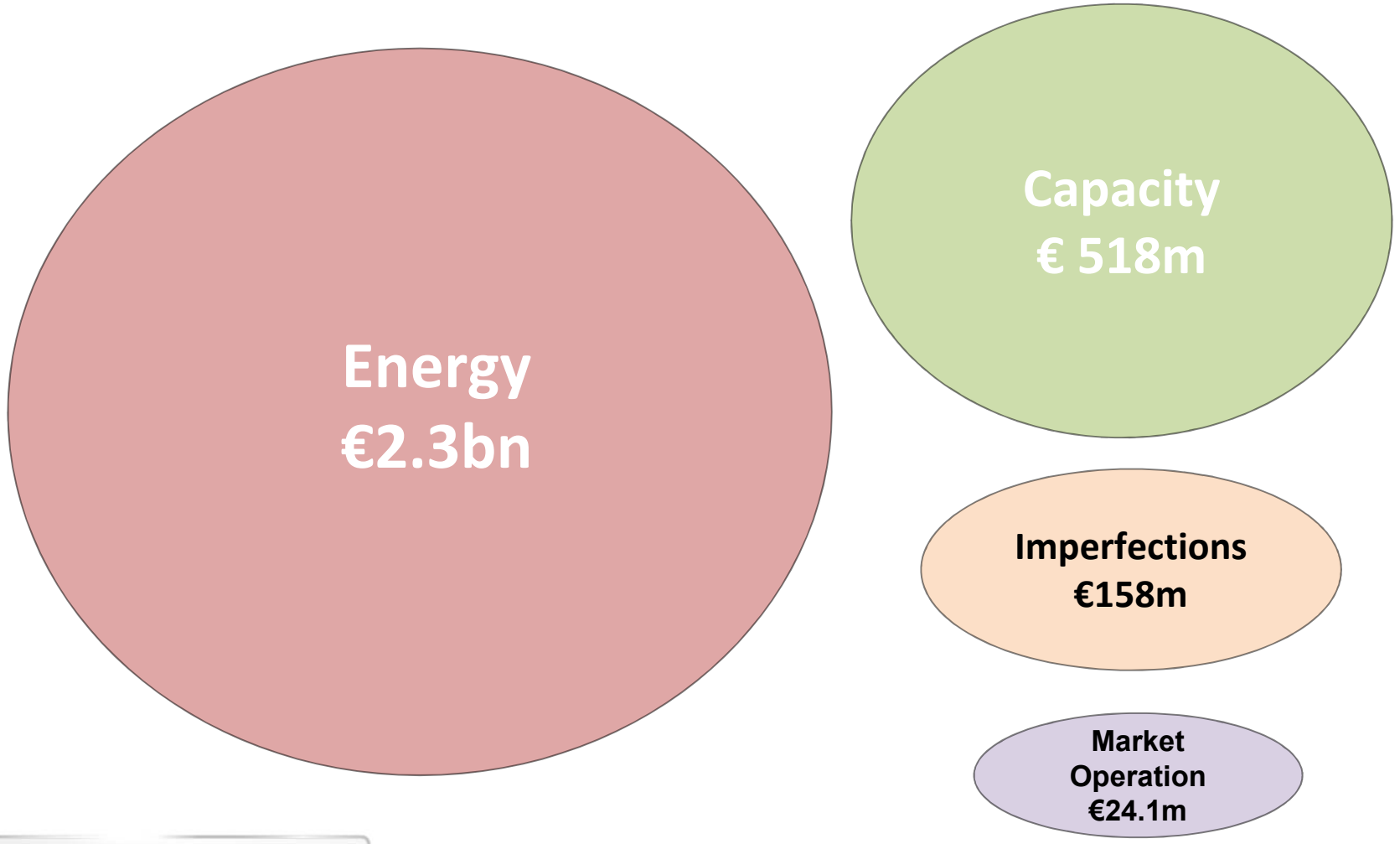
EIRGRID semo SONI

European Energy Market

- 1999 ETSO

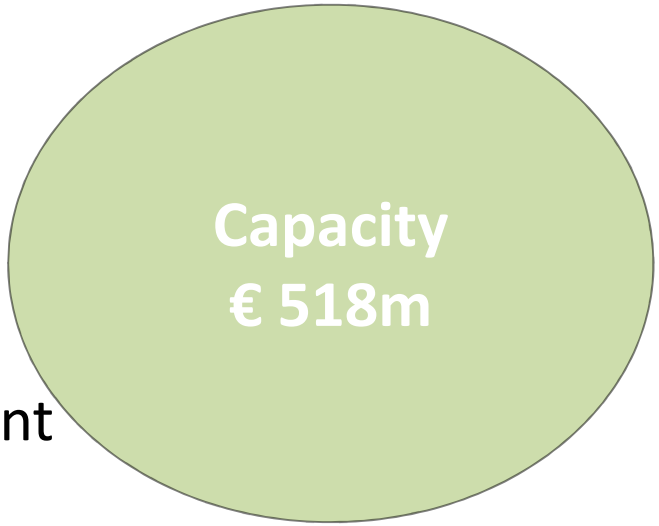


European Energy Market



European Energy Market

SEM Capacity Payment Mechanism



Payment Pot based on:

- Generation adequacy assessment
- Best New Entrant costs

Annual CPM pot split into 12 monthly pots

- 30% fixed year ahead – weighted against demand forecast
- 40% determined month ahead – weighted by LOLP
- 30% determined ex-post based on month end LOLP

European Energy Market

2016

Single Electricity Market Operator

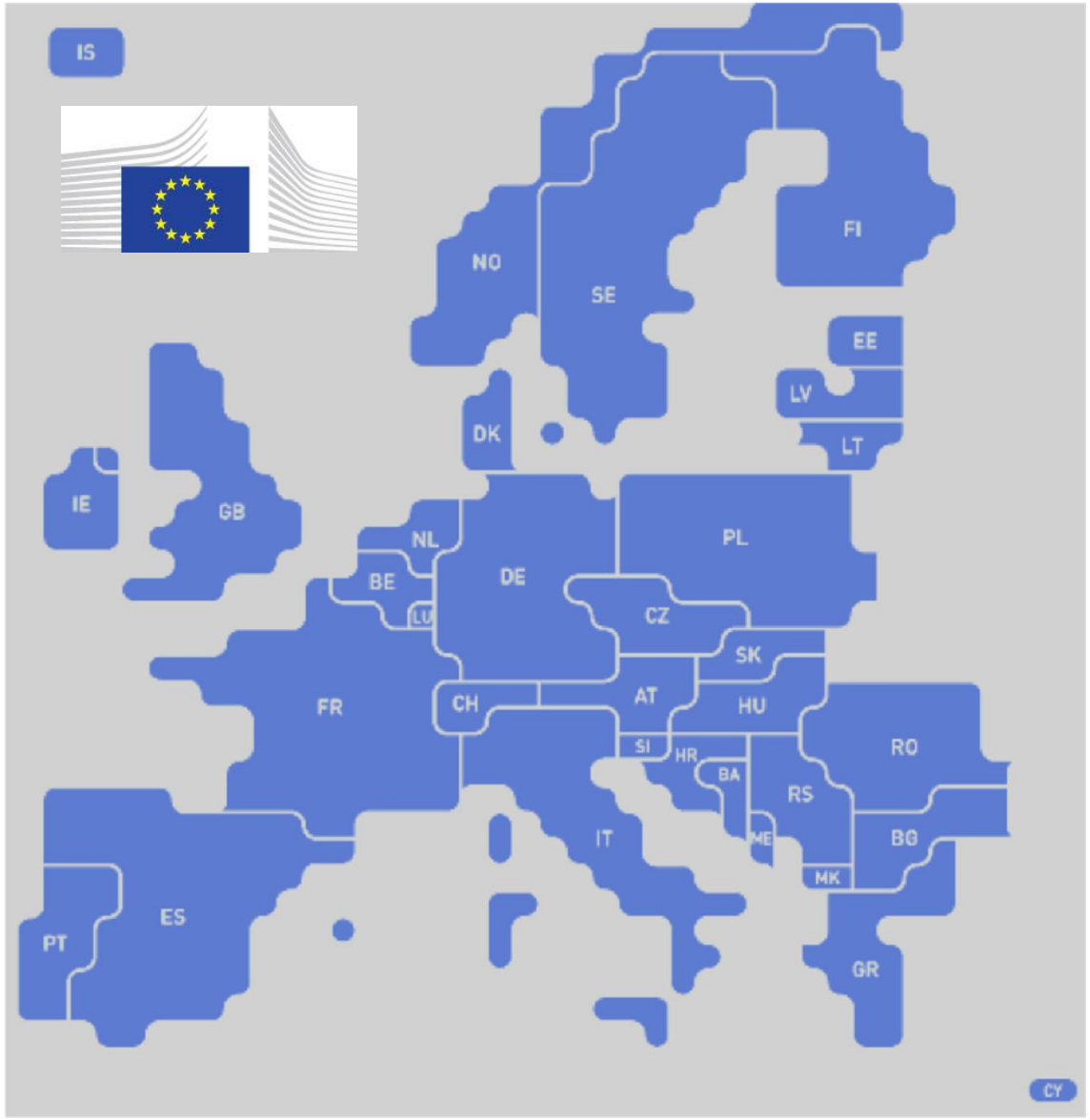
European Energy Market

- 1999 ETSO

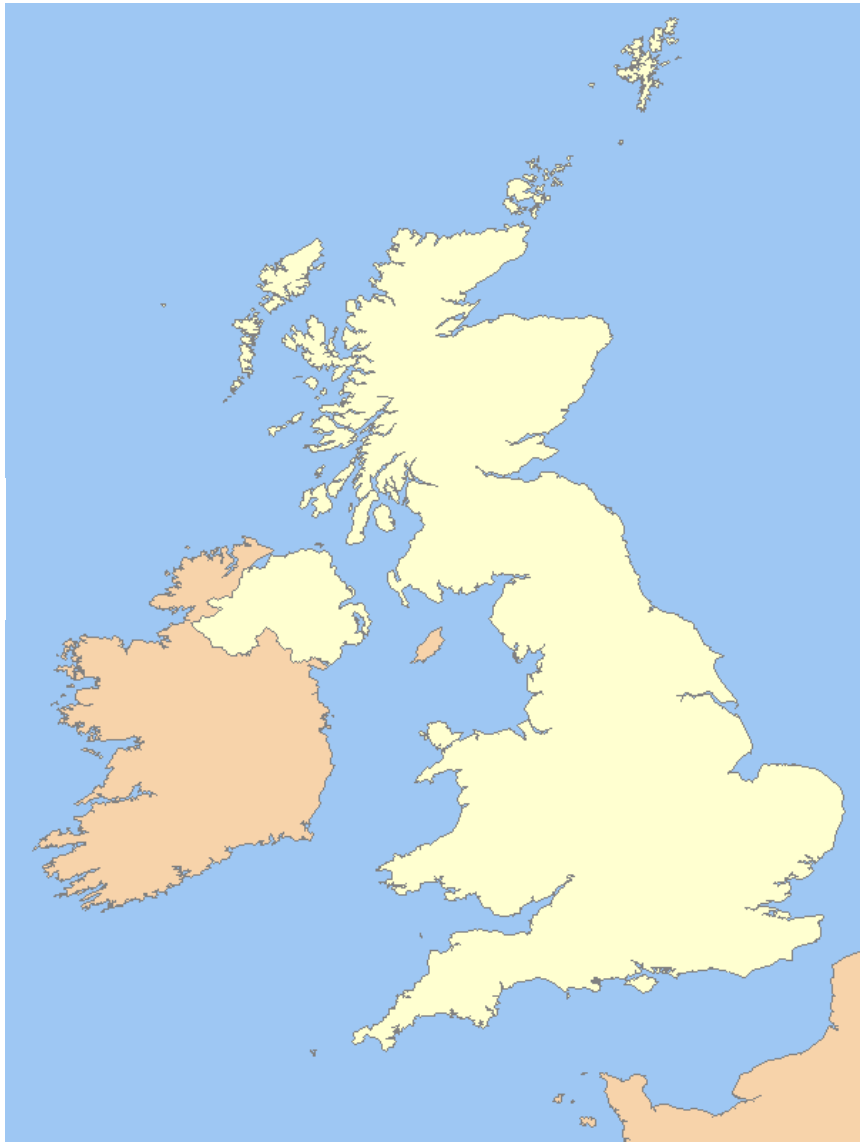
- 2009 ENTSO-e

- 41 TSOs from 34 countries are members

- 2010 ACER



European Energy Market



System Operator for Northern Ireland

EIRGRID

Utility Regulator
ELECTRICITY GAS WATER

CER
Commission for Energy Regulation

Department of
Enterprise, Trade
and Investment
www.detini.gov.uk

Department of Communications, Energy and Natural Resources
Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádúrtha

EIRGRID semo SONI

nationalgrid
The power of action.

ofgem

Department
of Energy &
Climate Change

European Energy Market

SEM with IDT and Target Model

Stage	Long Term	Day Ahead	Intra-day	Balancing	Settlement
SEM	Renewables and Legacy Contracts	Indicative Price and Quantities Physical IC Nominations	Implicit Auctions	SO-SO Trades Imperfections	Local
Target Model	Bilateral and Nominations	Single Price Coupling	Continuous Implicit	Balancing TBC	Local

European Energy Market

Target Model Options

Option	Forward trading	Day-ahead	Intraday continuous	Energy Balancing/TSO Actions	Imbalance/Ex-post
Adapted Decentralised Market	Bi-Lateral trade agreements	Voluntary participation on PCR	Voluntary participation on SOBF	Bilateral noms and DAM results as starting point with inc & dec to adjust	Balancing market with single marginal price
Mandatory ex-post pool for net volumes	Bi-Lateral trade agreements	Voluntary participation on PCR	Voluntary participation on SOBF	Bilateral noms and DAM results as starting point with mandatory complex bids with inc & dec to adjust	UUC with price taker volumes and single marginal price
Mandatory day-ahead "pool"	No physical trading	Mandatory participation on PCR	Voluntary participation on SOBF for adjustments	Results of DAM as starting point with mandatory inc & dec bids to adjust	Balancing market with single marginal price
Net Settlement of Gross Mandatory Pool	No physical trading	Voluntary participation on PCR	Voluntary participation on SOBF	Mandatory complex bids by all generators in central algorithm.	UUC with single marginal price and side payments

EIRGRID semo SONI

European Energy Market

Challenges for SEM

- Design
- Consult
- Decide
- Implement
- Trial
- Operate
- Change
- Monitor

European Energy Market
Challenges for SEM

Interfacing across interconnectors

- 2002 Moyle 500MW HVDC – NI (UK) – Scotland (UK/GB)
- 2013 EWIC 500MW HVDC – Ireland – Wales (UK/GB)
- Consideration being given to Ireland – France interconnector

Interfacing with neighbouring markets

- UK Electricity Market Reform
  - FiT/CfD
  - Carbon Price Floor
  - Capacity Payment Mechanisms?


EIRGRID
semo
Single Electricity
Market Operator
SONI
System Operator for Northern Ireland

Session 3 – Minimising distortion of the IEM

Capacity mechanisms from the generator's perspective – Marcel Cailliau, Head of Regulatory Affairs Power, BEE, GDF Suez

Creating a secure and undistorted European Energy market

Capacity mechanisms from the generator's perspective

Bird & Bird seminar

Brussels, 04/02/2014

Marcel Cailliau, Head of Regulatory Affairs Power, BEE, GDF SUEZ

GDF SUEZ

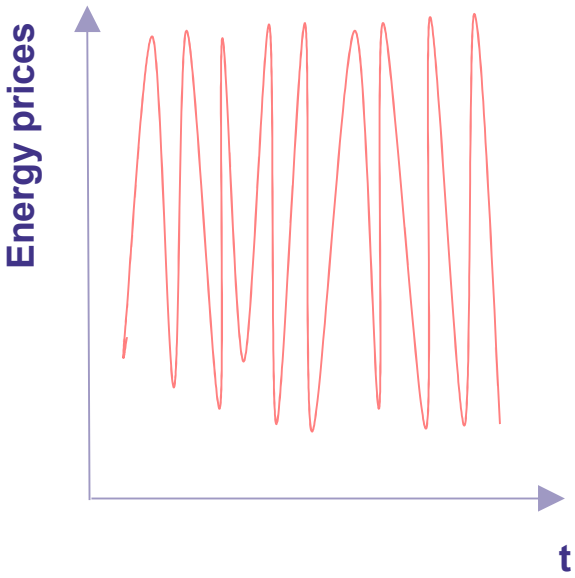
Capacity Markets are a complementary market design element to Energy Markets

- **Energy (Only) Markets do not provide adequate investment incentives needed to guarantee the adequacy of the system :**
  - Flaws like price caps, regulated prices, …
  - Only a very volatile EOM would create sufficient scarcity rent for attracting the needed investments
  - But such a volatile world does not give comfort to customers, regulators and investors resulting in strong Boom and Bust cycles !
- **Complementary Capacity Markets can create sufficient visibility for investors to**
  - Keep existing plants open needed for the adequacy
  - Build new plants whenever they will be needed for the adequacy
  - And thus mitigate Boom and Bust cycles
- **Capacity markets do not solve the (current) problem of over capacity, but they address the risk of closing more plants than acceptable for the adequacy**

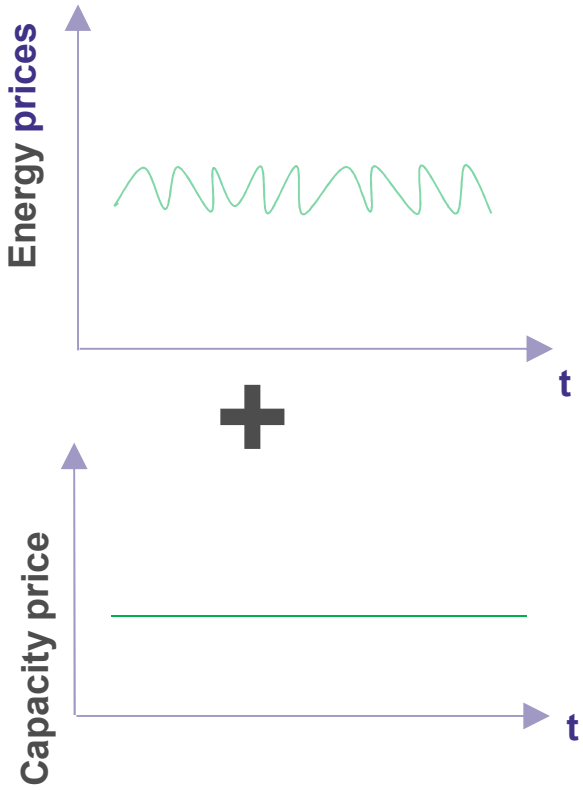
GDF SUEZ

Capacity Markets do not create a new income, but a replacement income

Volatile EOM prices



Smoothed EOM prices + CRM



EOM volatility could be due to lack of back up plants for variable RES, or due to lack of capacity for peak periods; spikes could happen often, or only randomly

GDF SUEZ

Capacity Markets have to be carefully designed

- **Energy Markets have to work properly:**
  - Day ahead market coupling, intraday market, balancing market: ASAP
- **RES has to be properly integrated in the market**
  - Balancing responsible,
  - Appropriate support schemes (Tender + FIP or only investment support)
- **All plants :**
  - Existing and new
- **Technology neutral**
  - Including demand side and storage
- **The total cost (Energy + Capacity) is depending on the required adequacy level**
- **Long term stability is required**
- **Harmonisation between interconnected regions enabling cross-border participation**

GDF SUEZ

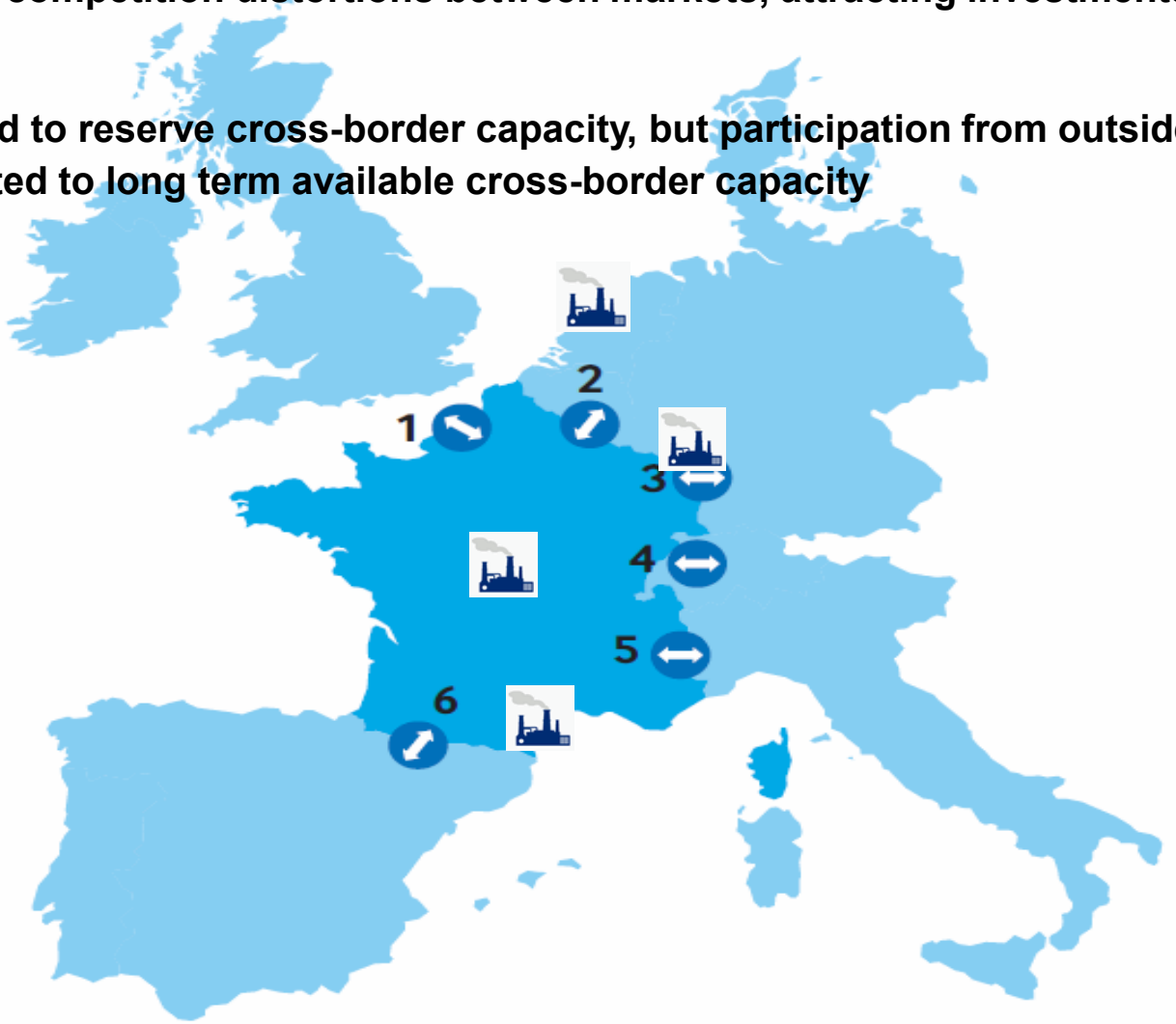
Only aiming at one target : a defined level of system adequacy resulting in a certain amount of firm available capacity → one mechanism cannot address different targets at the same time

- Environmental target is to be covered by the ETS
- Flexibility has to be remunerated via well designed spot and balancing markets, it means: no caps, marginal pricing principle, ..

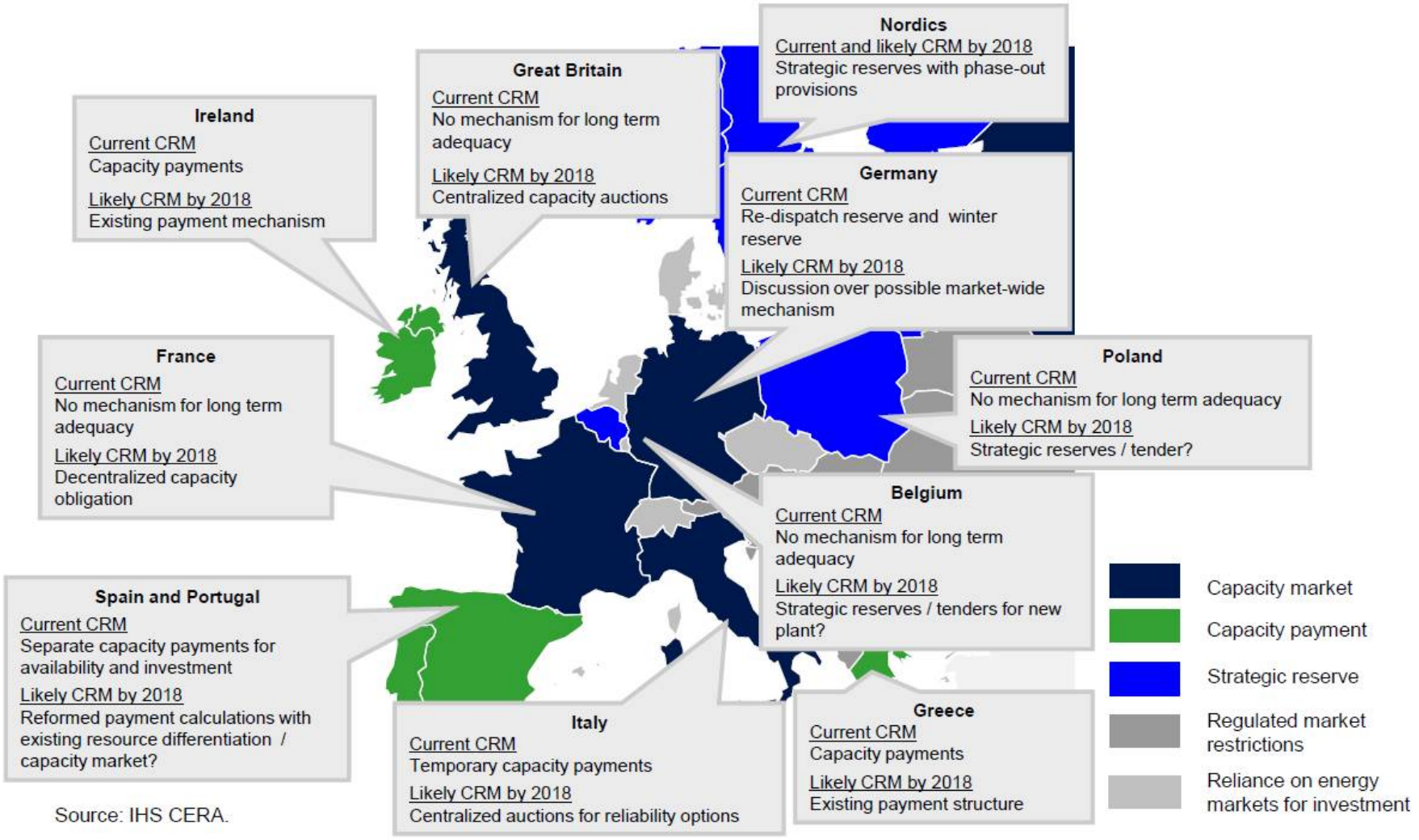
GDF SUEZ

Cross-border participation is necessary

- Increases number of participants in the market
- Avoids competition distortions between markets, attracting investments at the “wrong” place
- No need to reserve cross-border capacity, but participation from outside a market could be limited to long term available cross-border capacity



A patchwork of solutions is emerging :



Source: IHS CERA.

GDF SUEZ

Type of Capacity Market is less important for XB participation, but harmonisation is key

- **Gradually over time, models will evolve to more harmonisation,**
- This has been the also the case for day ahead market coupling,
- Likewise it is the case for intraday trading and balancing markets.
- **Eurelectric work has shown that cross-border participation between 'NO-CRM', Capacity Obligations and Capacity Auctions is possible,**
- But it is evident, the more harmonisation, the more easily CRM integration will be achieved
- **However, it can be shown XB CRM participation is less straightforward for Capacity Payments with the other models mentioned above**
- **Strategic reserves (SR) need a more case by case analysis depending on their purpose**

GDF SUEZ

Session 3 – Minimising distortion of the IEM

Analysing capacity mechanisms for Germany – Dr Christoph Reichmann, Director, Frontier Economics

Analysing capacity mechanisms for Germany

Dr Christoph Riechmann

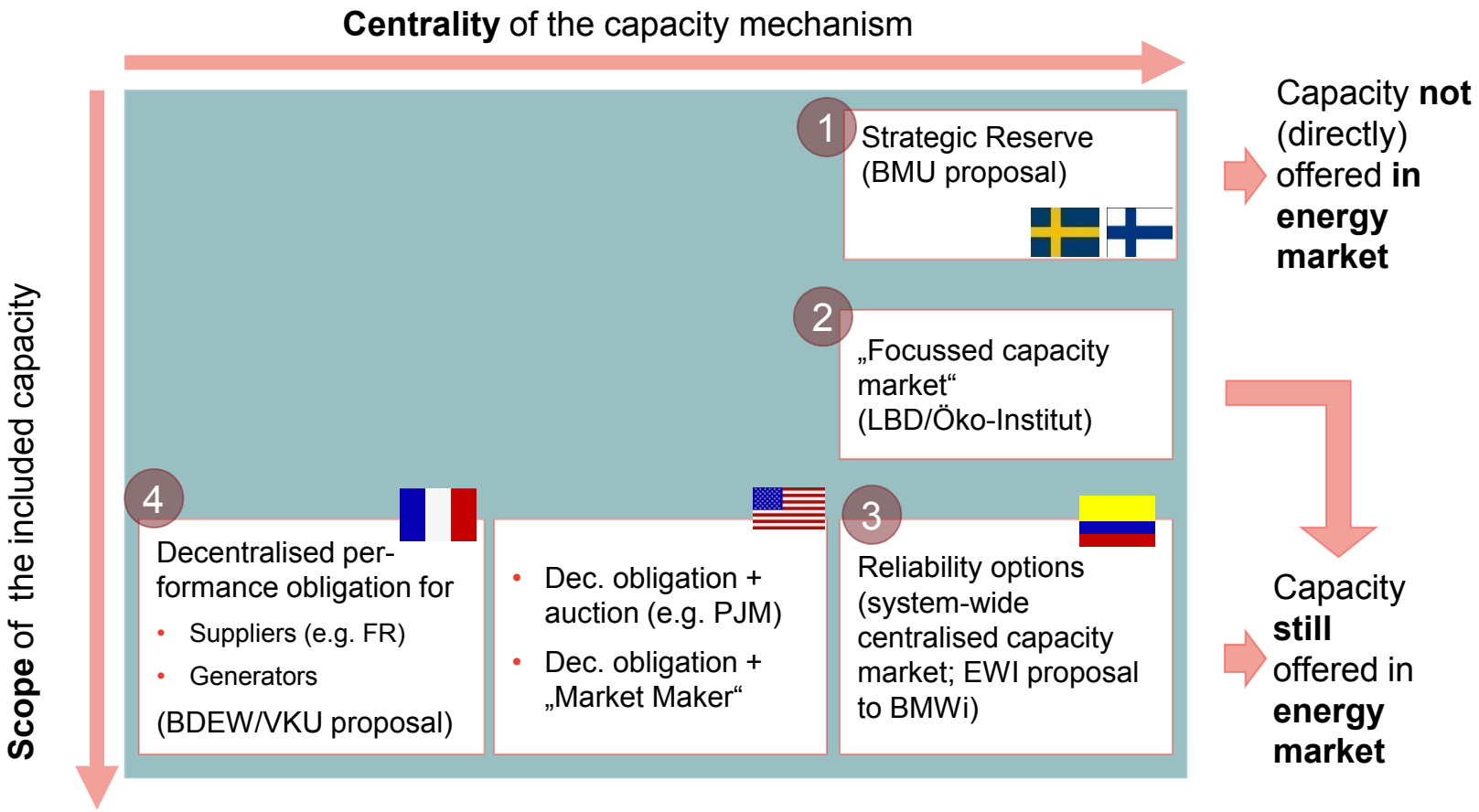
04 February 2014

The German coalition agreement

- In the short term
  - Further develop the network reserve (based on existing plan)
  - The regulator will explore and possibly ensure the establishment of regionally required plant capacity
- In the medium term a capacity mechanism is to be developed, considering cost efficiency in conforming with EU regulations and ensuring a competitive and technology-open solution

Coalition agreement between CDU, CSU and SPD, p. 57

4 models in the running



… against a refined „energy only“ market

Some convergence

		1 Strategic reserve (BMU)	2 Focussed capacity market (LBD/Öko-I)	3 Central capacity market with (Reliability options EWI)	4 Decentral mechanisms (supplier obli.)
Objective		Secured capacity	Secured capacity + Low consumer prices, flexibility, competition, other environmental aspects	Secured capacity + prohibiting market power + reduced volatility of prices (for consumers)	Secured capacity/reliability
Capacity demand	**Control mechanism**	Central capacity coordination (for small part of capacity)	Central capacity coordination (for large part of capacity)	Central capacity coordination (for all capacity)	Centrally defined penalty, but decentral choices on capacity
	Decided by …	Central agent	Central agent	Central agent	Retailers/balance responsible parties
Supply	**Prequalification**	Low prequal.	Focussed on qualifying plant	Low prequal.	-
Procurement	**Process**	One-sided auction	One-sided auction	One-sided auction	Choice of retailers (e.g. OTC or exchange based)
Product	**Dispatch**	Only when no market clearing feasible in the energy market	Dispatch also in the conventional energy market		

… but some fundamental differences remain

Initial comparison

Refined energy only market	Least interventionist Appropriate when policy makers trust market forces (do not fear market failures)
1 Strategic reserve	Suitable as temporary / interim measure (allows buying time) or as an insurance if the performance of the EOM is uncertain Less suitable in case of proven market failures
2 Focussed capacity market	Pursues several policy objectives, thereby open to policy intervention In case of underlying market failures this will evolve into a full central mechanism
3 Central capacity market (EWI)	Policy makers know with high certainty what capacity they get However, significant intervention in the market
4 Decentral mechanism (supplier oblig.)	Market players incentivised to find efficient solutions to optimise reliability Will be more complex than it first looks, to enforce compliance

… and quantitative results to follow …

Energy market reform …

- Market **integration of renewables** with marketing and balancing obligation (fixed rather than flexible market premium)
- Reform of **balancing energy prices**
  - Asymmetric balancing prices
  - VOLL-based prices
  - Marginal prices
- Appropriate **reward for ancillary services** (incl. redispatch)
- Facilitating **demand-side participation** (where efficient) …

… is feasible and desirable

The European dimension …

	Issues	Options
Targets and objectives	• How to define security? • What level of security do we aspire to (and do we need transnational consensus)?	Input based (in MW) or output based (in probabilities) National versus EU targets
Lending each other reliability	• To what extent can we rely on our neighbours? • To what extent are we obliged to help our neighbours?	Implicit or explicit recognition of foreign capacity (or offers by IC operators) Does some of my capacity actually count as reserve for my neighbour?
Interaction between capacity regimes	• How to handle that any national mechanism has indirect effect on neighbours (via the interconnected energy markets) • How to enable x-border reserves?	Regulate under state aid law? – unlikely to lead to optimal economic outcome Develop a common EU policy? – Could infringe on subsidiarity

… raises further issues

Summary

- German coalition agreement prescribes ***development* of capacity mechanisms** – (but also implementation?, and if so which and when)
- The Economics Ministry has committed to an **impact assessment of 4 alternative models** - Recent discussions suggest convergence between them
- But fundamental **choices remain**
  - Full or partial mechanisms
  - Central or decentral mechanisms
- Independent of that, some **reforms within the energy market** are feasible and desirable
- **International integration** poses further challenges

Session 3 – Minimising distortion of the IEM

Capacity Mechanisms – Potential and Pitfall – Seabron Adamson, Senior Consultant, Charles River Associates

Capacity Mechanisms – Potential and Pitfalls

Bird & Bird European Energy Markets Conference

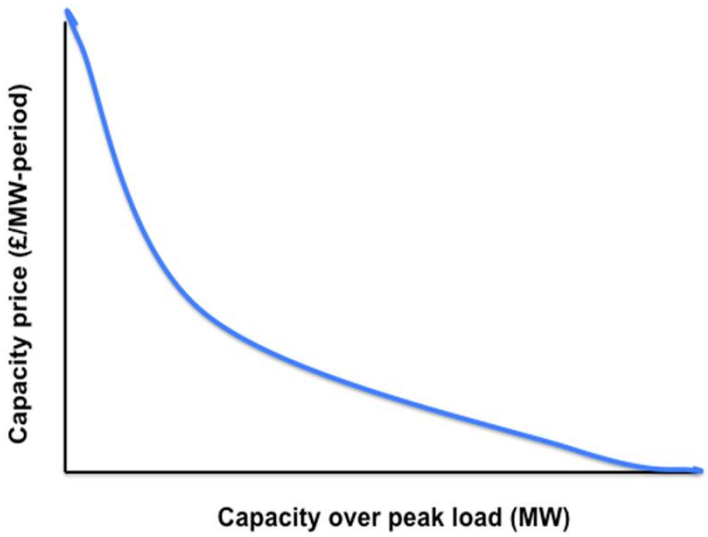
Seabron Adamson

Charles River Associates

February 2014

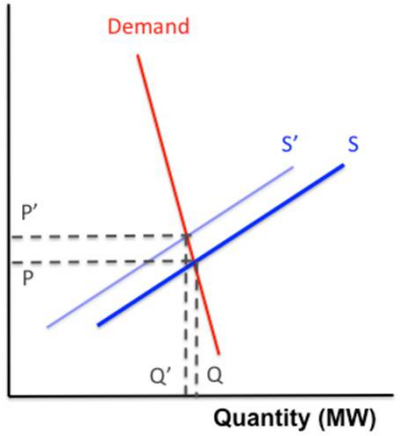
Why are capacity markets so hard to get right?

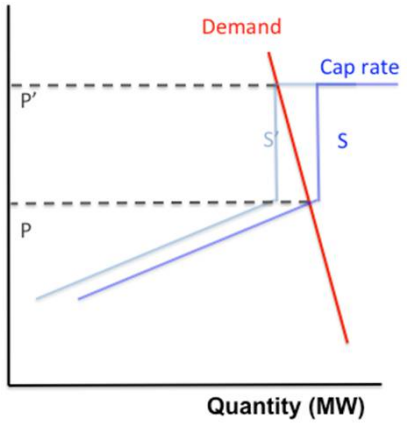
- Capacity markets reflect supply/demand dynamics which are extremely sensitive to the net capacity balance – a knife-edge type problem
- Reliability is probabilistic – not deterministic
- Investment decisions have long time horizons, lead times and are reflect (highly imperfect) expectations
- Tied to complex energy markets – transmission constraints, reserves, etc.



Capacity market competition issues

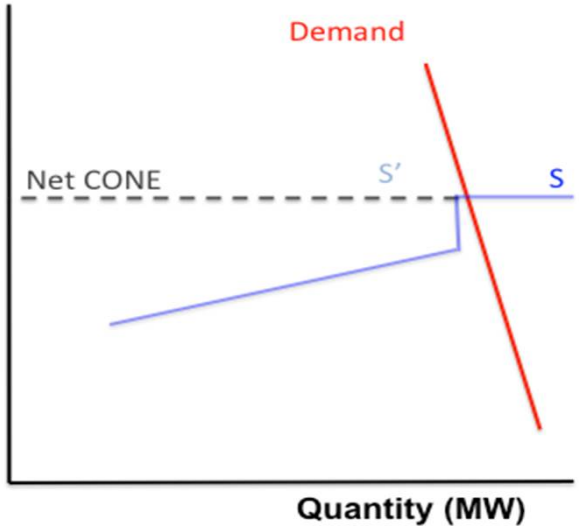
- Capacity constraints in the short-run fix supply – limiting immediate competition
- Steep demand curve reflecting marginal reliability impacts near target reserve level
- Typical concentration of existing capacity in most European markets
- Strong withholding incentives for incumbents
- Need for mitigation protocols for existing plan



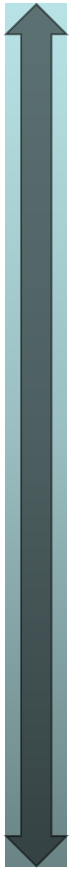


What might capacity market designers do?

- Move the capacity delivery period forward a few years – so new entry is possible
- This helps make the CM contestable and hence more competitive
- Mitigation schemes for existing plant – must-offer and caps in many cases
- Controls on plant de-listing etc.
- A pretty centralized type affair



What's the capacity/reserve product anyway?



Supplemental reserve

Pure installed capacity

Unforced capacity – adjusted for availability

Performance incentives around peak periods

Call options on capacity with soft cap on unavailability downside

Pure call options with VoLL type penalties

Elements

Location

Timing

Delivery

Penalty/incentives

Flexibility

Duration

Force majeure

....

Some practical lessons from the CM front line

- The initial CM design will have problems – flexibility to fix
- Governments/buyers may prefer supplemental reserve auctions paid only to that capacity – discriminating against existing suppliers lowers costs
- CM design is much harder in decentralized energy markets without efficient spot clearing and price discovery
- Strong incentives on generators sound great – but can risks be hedged and managed? Could be a barrier to smaller non-portfolio participants?
- CM mitigation and monitoring are necessary – but intrusive
- Inter-market capacity flows are possible – also requires more rules and verification
- CM designs start simple – they never end that way

Seabron Adamson
sadamson@crai.com

The views expressed herein are the personal views of the speaker and may not reflect those of Charles River Associates or its clients or affiliates.

London
Tel +44 (0)20 7664 3700
99 Bishopsgate
London EC2M 3XD
United Kingdom

Boston
Tel +1 617 320 4105
John Hancock Tower
200 Clarendon Street
Boston, MA 02110

www.crai.com

CRA Charles River Associates

Thank you & Bird & Bird