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**Correcting price-cost discrepancy:  
Complementing generators' revenues by  
transforming market regime**

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# Introduction

- This market framework present a significant obstacle in the effort to develop a robust energy market for low carbon technologies (LCT)
- The existing market structure is driven by prices aligned on short run marginal costs.
- These technologies have high upfront capital costs and low short run marginal costs
- Increase problem with penetration of RES-E out of market with support of long term price arrangements (FIT):
  - increasing level of subsidies while whole sale price decrease
  - Increasing distorted effects on the long term price signal
- A strange mix of liberalised market and long term support arrangements

- How to order in all this?
- Is it the best method to do it by imposing the strict respect of the competition principles at all costs?
- All these arrangements are state aids :
  - the application of new guidelines on state aids could be very restrictive

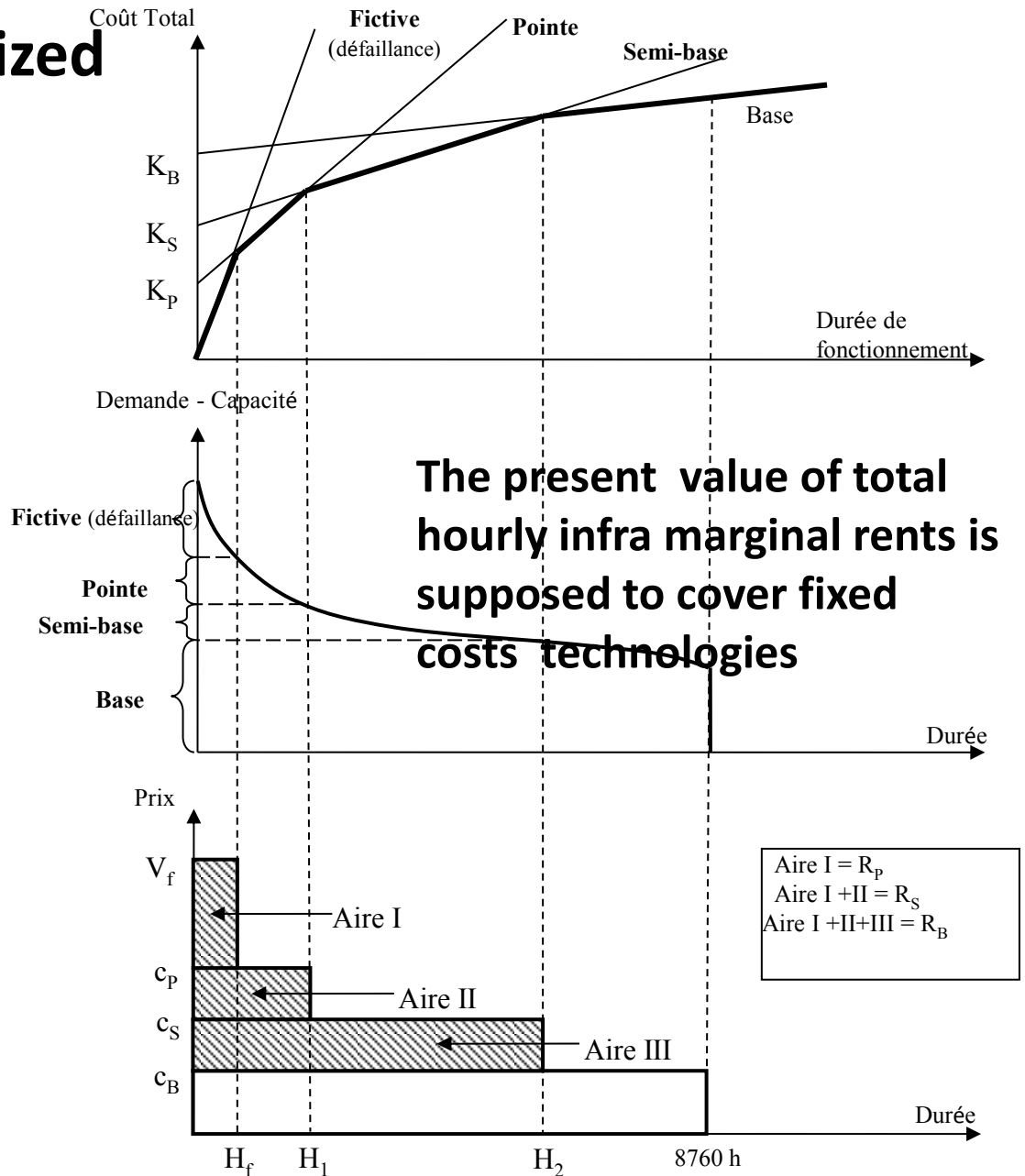
# **Part 1**

**Increasing market failures  
by correcting market failures**

# Investment in idealized Electricity market

**Classic representation of long term optimal mix by screening curves**

- Price on energy only market
- Shortage cost as a linear function
- Area 1 = scarcity rent for every technology/ peaking units
- Area II as infra-marginal rents for mid load and base load
- Area III for base load equipment



# Real world market: Market failures in investment in situation w/o RES-E policy

## 1. Market failure in investing in the technology mix (nuclear, coal vs CCGT)

- Risks and price-making on electricity markets
  - Large upfront cost technologies are in the bottom of merit order
  - Dependence on the marginal price setting is highly risky for these « inframarginal » technologies
  - Carbon price uncertainty adds to price risks
- So the “marginal cost setting technology” (the CCGT) is facing the least market risks in liberalised markets

**CCGTs have been almost the unique generation technology to invest in.**

## 2. Market failure to guarantee capacity adequacy

Peaking units very capital intensive per MWh

Risks + missing money (price cap, TSO operating procedure)

Answer by capacity mechanisms : revenues for guaranteed capacity

## **Ambitious climate policies : market could not deliver**

Decarbonation = need of capital intensive equipment (small sized and large sized renewables, CCS, new nuclear) to be developed

### **1. In theory increasing and predictable carbon price is supposed to be sufficient to give an advantage to low carbon technologies**

But no investment in low carbon equipment triggered by carbon price

- imperfection of carbon price setting
- Even with credible and foreseeable carbon price 30-50 €/tCO<sub>2</sub>, not sure low carbon investment so easy

### **2. Need of long term arrangements with a neutral agency with two functions**

- To guarantee revenues on long term (fixed cost recovery):
  - Risk to be shifted indirectly on consumers via public agency
  - Levy to compensate cost of the support
- To subsidize non commercially mature technologies

# First problem: It distorts price signal for long term choice

## Merit order effects

## Higher price unpredictability and volatility

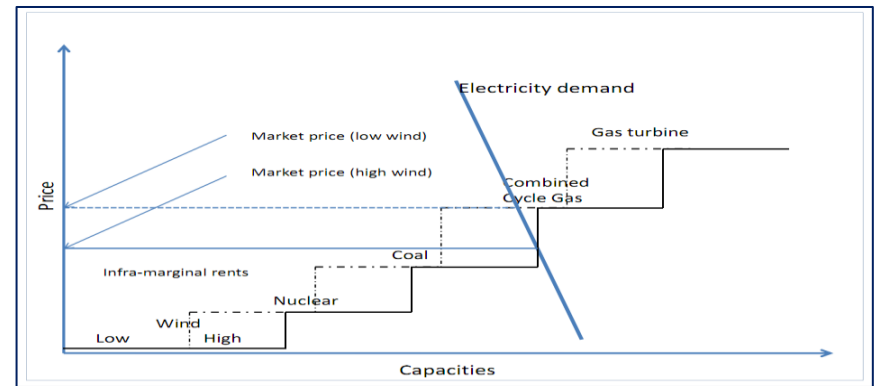
## Deterrence to investment

in fossil technologies: (mid load, back up, peaking units)

- increasing need of capacity revenues by new capacity payment to restore the long term signal
- CRM to be conceived with forward long term contracts

## Dynamic effects of self entertainment of RES:

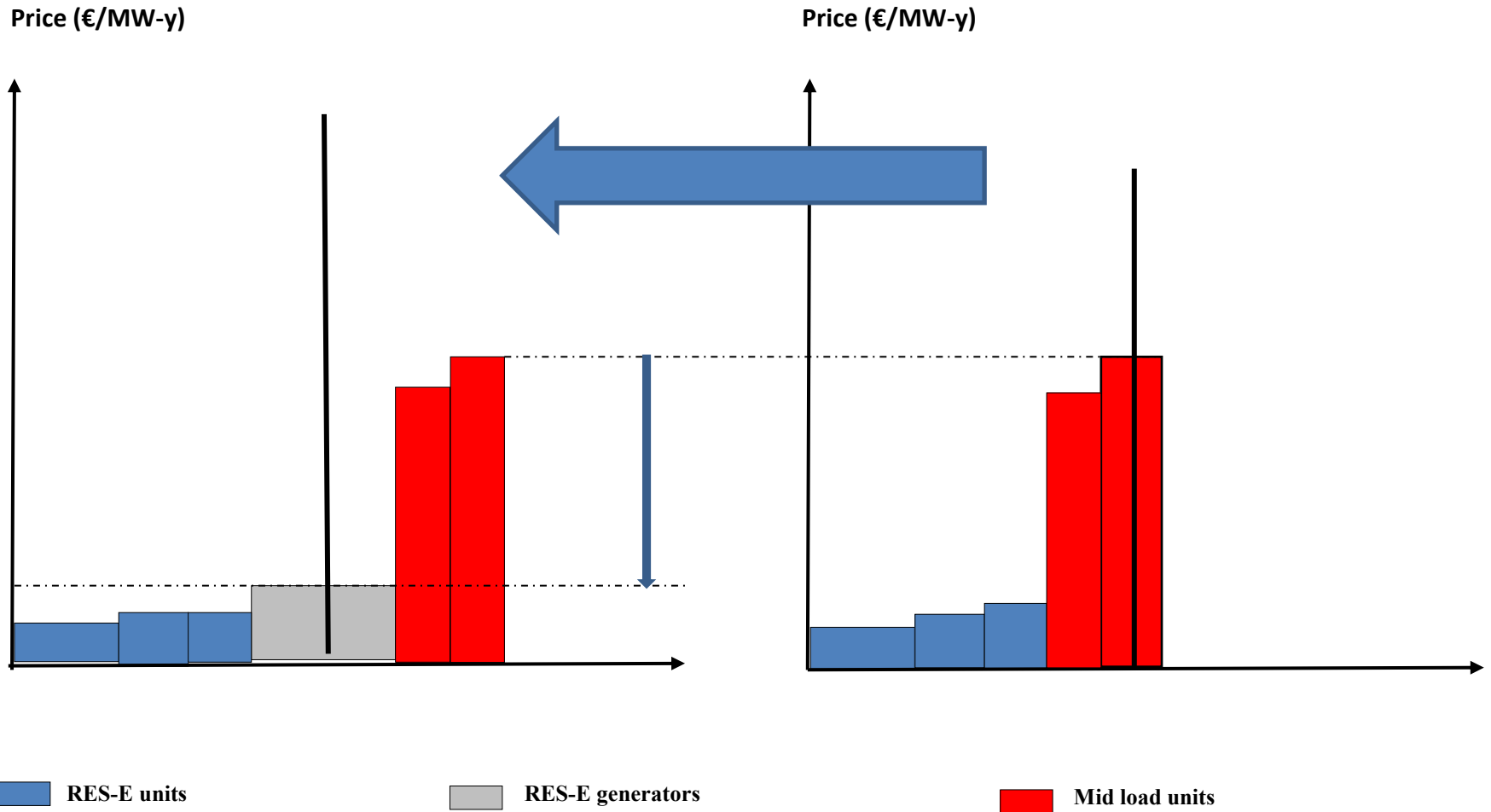
- increased merit order effects
- **W/O long term arrangements** ( need to shift the risk on consumers):  
**no more investment**





# Increased problem in the 2020's

## Long term effects of RES-E et LCT policies on marginal price



## 2<sup>nd</sup> Problem . The costs of the long term arrangements :magnitude? who pays?

- German Example :
  - levy equivalent to wholesale price
- Overcost increases not only with installed capacities , but with
  - Wholesale prices decrease
  - Quid when RES-E and LCT with low var. cost will be marginal?

### 1. Acceptability problem

Whole sale price decrease when retail price/tariffs increase

Risk of political questioning of arrangements

(importance of private contractualisation for credibility)

### 2. Distributional problem

Discretionary allocation of the overcost onto price-inelastic consumers (ex. Germany , France) or partly on public budget

# Distorted allocation of long term costs

## In the former vertically integrated utilities model

- **Tariffs aligned on average cost for all the consumers**

(eventual horo-seasonality with non linear tariffs with capacity price)

- Some cross- subsidisation for large consuming industries  
(quite controlable)

## In the market model with decarbonisation

Wholesale price (sourcing costs ) + uniform levy for capacity + discriminatory levy for decarbonation policy

Huge implicit cross-subsidization (under political discretion)

**A need of clarification:  
Because it is not a simple  
subsidization**

## **2. To recognize the shift towards a new electricity model : an hybrid Planning & Market regime**

**Discrepancy between wholesale price and average generation cost is definitive**

# An hybrid Planning & Market regime

## Auction/tender LT contracts for RES-E and low-C generation

Credible counterparty to LT contract, low interest rate

– CfDs when controllable, FiTs when not

## FITs/FIPs for small-size RES-E

## Capacity mechanism

Free entry of fossil generation,

bid for Long term capacity contract

## Contracts, capacity payments, :Where is market?

Economic dispatching

Valuation of flexibility services

## Retail competition: a severe issue

Payment of the Cost of support by LT Contracts: **uniform levy or not ?**

**MARKET could be no MORE the only BENCHMARK**

# **Commission tentative to control energy & climate policy, via State aid control**

**In fact member states have moved to regain control of energy policies to realize their climate policy**

- Development of different types of long term support to invest in capital intensive technologies Low carbon/RES-E
- example of British EMR

Reaction of EC in November 2013 : **Guidance to Member States on state intervention in electricity markets** to clarify EC objectifs.

In parallel review of **EU Guidelines on State Aid for Environmental Protection**, including now **Energy for 2014-2020**

- Redefinition of the type of RES-E & Low Carbon technology support

**Control of State Aids : becoming the key instrument of energy policy available to the Commission in the area of electricity**

# Review of the EU Guidelines on State Aid for Environmental Protection and now Energy (published in April 2014)

## Areas reviewed

- 1. Harmonise and simplify rules
- 2. Energy infrastructure
- 3. System stability and generation adequacy : **Capacity mechanism**
- 4. **Support to low-carbon energy sources**
  - Renewables (RES)
  - CCS
  - : **exclusion of nuclear technology,**
- 5. Exemptions from taxes and other charges

(energy intensive sectors, granting them **reductions on the charges levied to support RES**)

**On every issue , very strict normalisation and strict control imposition**

- Irrelevance of “strong competition and market” beliefs
- Long term arrangements are state aid: allowance by Commission needed
- Risk management by long term arrangements is not really taken into account
- EC ‘s State aid approach ignores
  - the reality of failures of electricity markets coordination
  - The constraints to invest in capital intensive equipment peaking units, RES-E , large LCT
  - The learning investment constraints



## **Exemple of the recommandation on Revision of RES-E support**

To be authorized, operating aids for RES should be:

- **paid in from Feed-In Premiums (FiP)**
- **granted by technology neutral bidding process (to not distort competition )**
- **Technology neutrality**
  - Exception for less mature technology

## Comments on Feed in Premium:

### Is exposure to market price the good answer?

- No real improvement of incentives to operational efficiency,
  - Variability incites to be operational during any time
- Incentive to cut wind generation **when negative prices > premium**
  - Do not solve the entire problem
- Long term
  - Exposure to longer term price signal by wholesale market if overcapacity
    - But is it so simple?
    - Market is totally distorted by RES-E entries
- **And more risks for developers for fixed costs recovery**
  - Exposure to decrease of fuel cost and carbon costs (difficult to anticipate)
  - So higher risk premium (+3%), **less investment** : So **higher cost of the policy** per MW.
- Fine tuned FIT (or CFDs ) with annual quantity control are better in this respect

# Conclusion

## Need a clear recognition of the change of the electricity market model

At this stage we are only with

- Unusefully restricting guidelines
- Communication « Delivering the internal electricity market and making most of the public intervention » is insufficient

## Need of a new directive to clarify the situation

- To recognize priority of long term objectives on market coordination
- To recognize the central place of planning beside a market with only secondary role
- To recognize long term contracts with neutral agency as a necessity, despite limitations to competition
- To recognize central buyer/ central risk manager (neutral agency)
- **Policy cost to be paid by all the consumers : which rules of definition of the levy?**

Such process should lead to change the « guidelines on Environment and Energy » 2014-2015

It will be a long long way...



# Criteria introduced by the EC Guidelines on State aid for environmental protection and energy (April 2014 )

- **Contribution to a well-defined objective of common interest**
  - The objective of the measure may vary but needs to be consistent with ENTSO-E adequacy analyses; and
  - It should not contradict the objective of phasing out environmentally harmful subsidies.
- **Need for State intervention to be demonstrated**
  - Impact of RES development, but also on remaining regulatory and market failures.
- **Appropriateness of the aid measure**
  - The CM should be open to both existing and future generators, as well as storage or DSR; and should take into account the potential contribution of interconnection.
- **Incentive effect**
  - The aid should not change the behaviour of the market players.
- **Proportionality of the aid (aid to the minimum)**
  - A competitive bidding process is recommended to lead to reasonable rates or return; and
  - The measure should be designed so that the price paid tends to zero when the level of capacity supplied is adequate
- **Avoidance of major undue negative effects on competition and trade between Member States**
  - There should be no discrimination aside technical performance required
  - Operators from other member states should be allowed to participate where it is physically possible;
  - Negative effects on the internal energy market should be avoided, e.g. price caps or bidding restrictions; and
  - The measure should not reduce incentives to invest in interconnection or undermine generation investment.
- **Transparency of aid:**
  - Need for easy access to all relevant acts and to pertinent information about the aid awarded thereunder.