CIRED
Centre International de Recherche sur l'Environnement et le Développement

CHAIRE EUROPEAN ELECTRICITY MARKETS
Fondation Paris-Dauphine

The Experience of the British Carbon Price Floor

A fiscal approach of a carbon price floor in one sector

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« Prix plancher du carbone et réforme de l'EU-ETS »

Carbon price floor:

Flexible tax added to the ETS price fo fossil fuel in power market

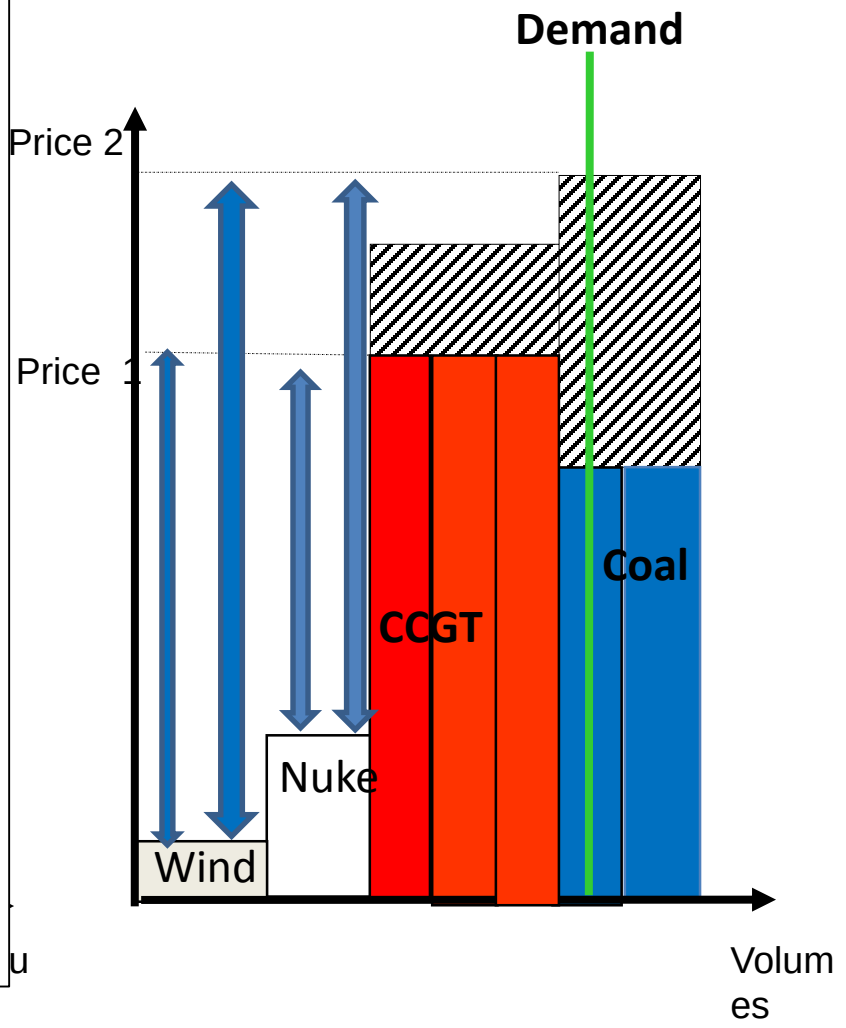
To give to the carbon price a stability and flexiblity needed to investors

Electricity market is guided by SRMC pricing

Low carbon technologies have a large fixed cost structure

Risky investment in Low carbon and renewables to recover large fixe cost per MWh

Increase of “infra-marginal rent” . with carbon price on hourly market



Investment in power sector not triggered by complete cost comparison between technologies

But

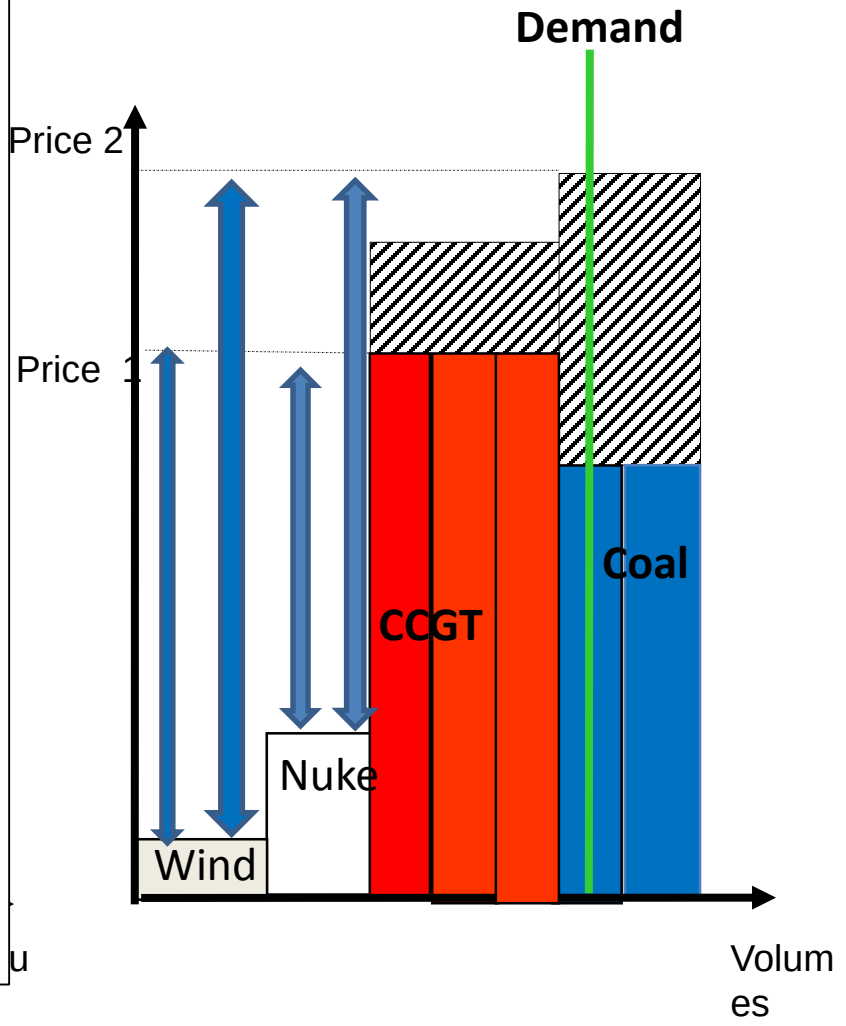
Triggered by Prospects of net hourly surpluses for the NPV

NPV increase with carbon price :

Prospect of higher surplus for low carbon plants on hourly markets

Issue of risk management on electricity markets with uncertainty on fuel price and ……..carbon price

Increase of “infra-marginal rent” . with carbon price on hourly market



Contenu

1.Comparaison d'un prix plancher fiscal avec un prix plancher de l'ETS

2. Motivation and implementation of Carbon Price Floor in Electricity Market Reform 2013

3. Some lessons

1. Comparaison d'un plancher de prix fiscal et d'un plancher par prix de réserve d'un ETS

Avantage institutionnel

Approche individuelle possible dans l'EU (par contre difficile au niveau de l'EU)

Approche individuelle plus facile pour un pays de l'EU que d'attendre prix de réserve de enchères pour crédibiliser le prix

Avantage sur prix de réserve

Plus effectif qu' un prix de réserve qui suppose l'ETS bien conçu

Effectivité du prix de réserve facilement en question

> si trop plein de permis à cause de la conjoncture ou autre, les opérateurs ont assez de permis et ne recourent pas au marché de l'ETS

Mais le cas britannique éclaire un autre aspect:

la relation avec d'autres

2. Motivation and implementation of the Carbon Price Floor in Electricity Market Reform 2013

Motivation: An intrinsic distrust vis-à-vis the EU ETS price

Admitted overlapping of climate policy instruments

- Climate change levy CCL since 2001
- Climate change agreements CCA (energy efficiency) since 2001
- renewable obligation
- energy efficiency obligation.

When adoption of the EU-ETS in 2005 , remaining CCLs and CCAs in the ETS sector

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From the end of the 2000s , discussion of an Electricity market Reform (EMR) for decarboniation

Electricity is the first sector in line for large scale decarbonisation.

Because risky investment in Low carbon and renewables to recover large fixe cost per MWh

Because EU ETS price variability and low level, search of own British solution to act effectively

From 2010 to 2013, debate about the new structure of the Electricity Market reform

To find compatibility with the EU electricity markets directives and the influence of the other EU markets (EU ETS, power markets)

The four elements of the electricity market reform

1.Fixed prices for low carbon generation by auctioned long term contracts (CfDs)

CfD and FiTs offer price (energy+carbon) certainty and are high enough to support low carbon generation such as nuclear, CCS, etc

Payment of the costs of the CfDs and the FITs by a levy

Costs are controlled by a cost containment procedure

2.Carbon Price Support(CPS)

CPS needed to raise price of carbon for fossil generation to encourage switching

3. Emissions PerformanceStandard (EPS)

Just in case, we don't get price based incentives right,

EPS ensures that high CO2 fossil plants do not get built.

It increases the confidence if investors (lower rate of capital)

4.CapacityMarket(CM)

Fossil generation needed to back up intermittent sources.

So needs of a complementary payment, via capacity market

The CPS complements the existing climate change levy (CCL) for the fossil fuel providers to power generators

- April 2013, the floor starts at around £16/tCO2
- **Target price trajectory of the CPF : £30/tCO2 in 2020, and 70 £ in 2030.**
- Two year forward defintion:
  - The reference ETS price is the one of the 2 year-futures market.
  - What if he EU ETS price is lower (implicit rebate)? is higher (no change)?

This effectively implies the **increase of the price of carbon emissions from the electricity sector in the UK above that in the rest of the EU.**

	2013	2020	2030
Carbon price floor(£/tCO2)	16	30	70
Hourly price increase (£/MWh)	5.7	10.8	25.2

Hypothesis : CCGTs is the marginal equipment each hour of the year

Calculation against a counterfactual of £ 0 /tCO2

Critics: issues of competitiveness and consumer bills

Initial Critics

By introducing a floor price only in the UK,

the competitiveness of UK business is diminished due to higher electricity prices.

The cost of overlapped instruments. : *"Only one of these proposals is needed to accelerate investment in low carbon electricity generation.*

We can't accept a situation which add further to the costs borne by UK manufacturers »

The cost for the households

« In 2015-16, it will raise household bills by 5-11% »

Answers of the government

1. Over the long term consumers will benefit from lower wholesale electricity prices:

- low carbon plants and renewables with low SRMC orient the wholesale price to decrease,
- they will the marginal technologies on the hourly markets

2. Recycling of the revenue of the tax: (2.5 billion)

Revenue neutrality.

- Part of tax revenues to the Energy Efficiency Fund and other carbon environmental measures.
- Another part for reduction of 1% in corporate taxes for the energy Intensive Industries.
- A decrease in fuel duty tax

Dec. 2014, Treasury decided to cap the CPS at £18 /tCO2 after2015

In the light of principles of optimal tax theory.

- the CPS distorts international competition :
  - Energy intensive industry will shift to continental Europe
- Lobbying of the British industry on this ground succeeds end 2014
  - Become official argument to cap the CPS to 18 £ on 2016-2021 (**i.e CPF = 24 £/tCO2)**

"EU ETS carbon prices are now substantially lower than was expected when the CPF was introduced

If kept in place, the current CPF trajectory would cause a large and increasing gap between the carbon price faced by UK energy users and those faced abroad.

This would result in UK firms facing significantly higher energy prices than those of competitors abroad, and raise energy bills for households."

(quoted in Treasury, 2015, **Carbon price floor: reform and other technical amendments)**

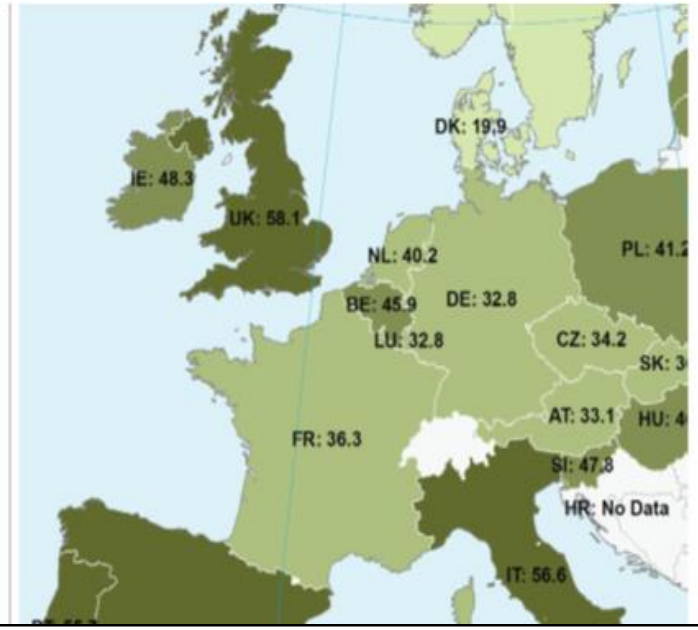
Not sure it was a provision in the inital EMR legislation: discretionary decision ?

Which distorting effects of this individual UK policy on the EU power and carbon markets ?

Effects of a CPF of 18 £/tCO2 on the power price: around 6 £/MWh

Limited effects on UK imports increase **on continental prices:**
interconexion constraints

Actual difference of power prices UK –France prices end 2015: 22 £/MWh



Different studies (Brauneis, Mestel, Palan 2013, CDC Climat recherche 2011, etc.)

CPF would limit emissions allowances demand between 26.6 MtCO2 and 37.6 MtCO2 to 2020 during the phase 3

- Lower the EU ETS carbon price
- Reduce the economic efficiency of the EU ETS
- Reduce EUA auction revenues for Member States

If EU ETS should have worked, these arguments would be receivable.
But CPF is an answer to previsible flaws of the EU-ETS (overallocation, offsets, et.)

A provision to be adopted :

reduction of quotas of the MS which uses a fiscal CPF

3. Some lessons

They could only be drawn in relation to the overall EM

In the « belt and braces » EMR reform, mechanism of CfD auctions look good for low carbon investment

(successful auctioning in 2015 for GW of renewables

But the role of Carbon Price Support(CPS) is unclear

The revenue guarantee by the auctioned CfDs is sufficient

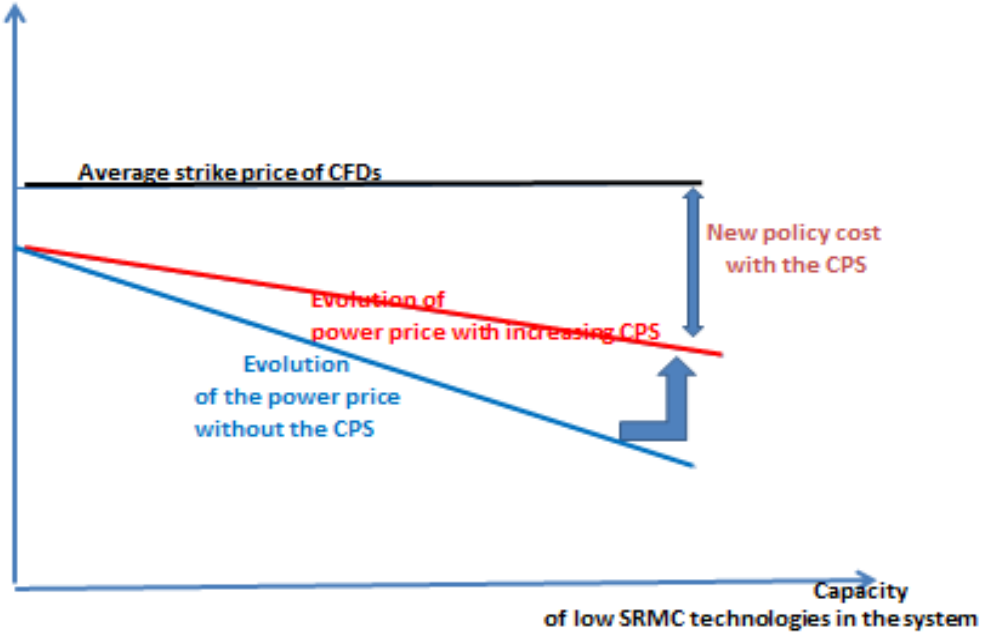
In fact the CPS could be effective for low carbon invstment only if there would not be CfDs

Lesson 2

The main role of the CPF is in fact indirect

- it makes **decreasing the apparent cost of the overall low carbon policy**
- Cost containment procedure (levy control framework) with a target of £7.5 billion in 2020
- It could be better respected with CPS, because the power price increases (by 11 $/MWh)

Lessons for
the control
of CSPE in France
& EEG in Germany ?



Lesson 3 in political economy

More important lesson to be drawn

« Fiscal » carbon price floor has predictable problems of unsustainability

Exposition to political pressures when increasing differences between the increasing floor and the EU-ETS price

Decision to cap the CPS at £18 /tCO2: Erosion of the credibility of the carbon price signal , …. but in fact CfDs compenses

It would be a problem in countries without massive programs of Low carbon development based on FITs, FiPs or RPS