

Carbon Research

EU climate package: scaled-down, but the economic signal is preserved

■ EU strikes a deal setting post-2012 CO₂ constraint

EU leaders finally reaffirmed the EU's commitment to reduce by at least 20% its greenhouse gas emissions by 2020, and agreed on Directives setting an estimated EUR360bn CO₂ constraint over 2013-2020, with more than 80% of this cost borne by the power sector. The text was informally accepted by EU Parliament officials on Saturday, before a plenary vote on Wednesday.

■ The equilibrium of the climate package is preserved

Despite heavy concessions given to heavy industries and some eastern European countries, we estimate that the wealth transfer resulting from the phase-in of auctioning of CO₂ rights will ensure an extra ~EUR300bn for governments, and that ~1/3rd of this CO₂ pile would be enough to finance subsidies for wind power and help to meet the EU renewable energy target.

■ Electricity utilities: no real relief for CO₂-intensive players

Based on technical details of the text, we calculate that only eight eastern European countries will be eligible for transitional free CO₂ rights. While Greek company PPC has outperformed the sector by 52% over the past month, it is now certain that the group will stop receiving free CO₂ rights starting 2013. No real relief can be expected on post-2012 CO₂ costs for CO₂-intensive players. The low-CO₂ energy mixes of GDF-Suez, Iberdrola, EDF and Fortum are best positioned in this environment in the long-term, in our view.

■ Heavy industries: the risk of direct CO₂ costs vanish, but only for CO₂-efficient players

Heavy industries are the main winners of the deal, since EU leaders set criteria de facto maintaining free CO₂ rights through 2020 for most heavy industries such as steel, pulp & paper, but also refining and cement industries. However, the economic signal remains, since in any case companies will receive free CO₂ rights only up to a benchmark of best available technology, thus penalising players with the poorest CO₂-efficiency. We favour Buzzi Unicem over Cementir and Italcementi, Imerys over Wienerberger.

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I— Post-2012 overall CO₂ cost revised down

On 12 December after months of tough negotiations, EU leaders eventually agreed on key parts of the EU climate and energy package.

The compromise backs the overall target of reducing greenhouse gas emissions by a minimum of 20% by 2020 (compared to 1990 levels), and consequently sends a strong signal for future international talks on climate change, while at the same time reinforcing the continuity of the CO₂ price signal in Europe by 2020.

Despite the decision to broadly spare heavy industries, we estimate that this decision makes definitive an estimated EUR360bn cost for EU industries (power sector mostly), and ensures an extra ~EUR300bn for governments (proceeds of CO₂ sales) that should help to support and finance the development of renewable energies.

EU confirms commitment to reduce greenhouse gas emissions by 20% by 2020

The deal clinched on Friday (12 December) by EU heads of State **confirms the target of reducing greenhouse gas emissions by 20% by 2020** and defines sub-targets and measures to achieve it in three additional Directives.

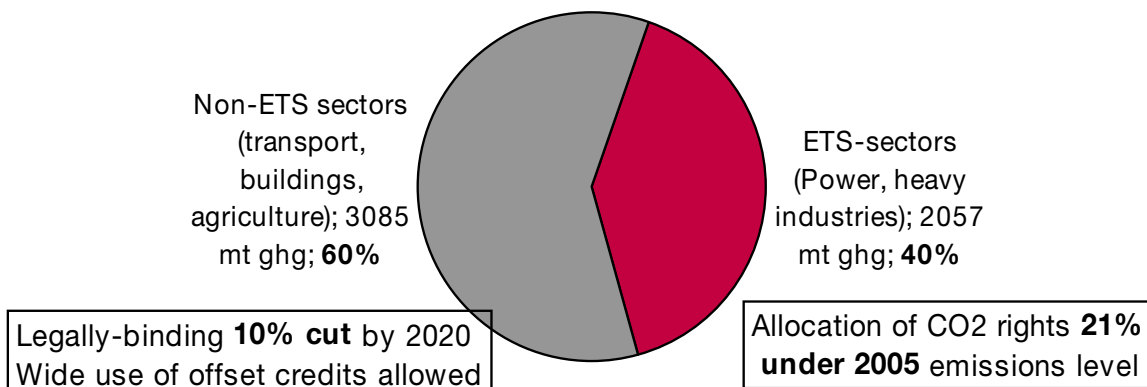
The EU climate and energy package consists of several Directives. An informal agreement between EU legislators (Commission, Parliament, and Council) had already been reached on three of them (CO₂ emissions from cars, renewable energies, fuel quality).

The three additional texts amended by EU leaders already received the informal backing of Parliament's officials on Saturday, and are now only subject to a plenary vote of the European Parliament, which is unlikely to block it at this stage, in our view.

- The **EU Emissions Trading Scheme** regulates emissions of the power sector and heavy energy-intensive industries (~40% of EU greenhouse gases). It has been decided to **decrease the amount of CO₂ rights by 17%** (360mt CO₂) by 2020 compared to the 2nd phase in 2008-2012. Decisions have also been taken on whether to auction CO₂ rights to industries instead of granting them for free. We develop this point in other parts of this Flash Note.

- **Emissions from sectors not covered by the EU ETS** will mandatorily be cut by 10% by 2020 (compared to 2005), but the objective can be achieved by using up to ~2/3 of offset carbon credits, thus limiting the need for domestic emission reductions. In addition, sharing of the burden is based on a country's wealth, and the effort greatly varies from one country to another (e.g. Ireland has to cut by 20%, whereas Bulgaria is allowed to let emissions increase by 20% by 2020).

- Demonstration projects for **Carbon Capture and Storage technology** will be supported by a fund of 300m CO₂ rights, or ~EUR10bn (once sold, at EUR35/t CO₂).

BURDEN SHARING OF THE 20% CUT IN GREENHOUSE GAS EMISSIONS BETWEEN ETS AND NON-ETS SECTORS


Source: Cheuvreux

Effort increased to 30% in case of an ambitious international agreement on climate change

In the event that other developed countries would commit to an equivalent effort, the EU also confirmed its commitment to increase the reduction effort to 30% (instead of 20%) of greenhouse gases, compared to 1990 emission levels.

The calculation of the new effort sharing between ETS and non-ETS sectors would therefore follow a new legislative process.

Given the current economic context and the targets proposed so far by Australia and the US (maximum 10% cut compared to 1990), the likelihood of such a scenario has significantly decreased in our view.

Macro impact of the package of measures should be in the low range of expectations (~0.45% of EU-27 GDP in 2020)

The European Commission had estimated the **potential direct cost of the climate package measures to range between 0.45% and 0.66% of GDP 2020 at the EU-27 level.**

Since countries will be allowed to cover two-thirds of the reduction effort in non-ETS sectors thanks to the use of international offset carbon credits, final direct costs are likely to fall in the low range of these estimates.

Under the European Commission impact assessment, the cost in terms of percent of GDP per country **varies significantly between Member States** (e.g. 0.7% for Sweden, and 0.2% for the Czech Republic). In order to further compensate for this distortion, 12 countries will be allowed to use a higher amount of offset credits.

Eastern and central European countries also secured a solidarity fund, corresponding to 2% of CO₂ rights to be auctioned, in addition to the 10% reserve split on the basis of the GDP per capita of each country.

The above figures are expressed as direct costs and do not represent a loss in GDP.

Other expected macro impacts of the measures are (as assessed by the European Commission):

- -0.21% loss in GDP
- +0.21% change in private consumption

- +0.05% change in employment (as % difference with business as usual scenario)

Direct CO₂ costs for EU industries revised down to EUR360bn over the period 2013-2020

We now estimate that **direct CO₂ compliance costs** for EU industries whose CO₂ emissions are regulated under the EU ETS **will amount to ~ EUR45bn annually from 2013**, or EUR360bn over the period 2013-2020.

This is EUR80bn less than initially expected over the period due to larger concessions given to some eastern European countries and to heavy industries.

- **More than 80% of this cost will be borne by power generators** due to the end of free CO₂ rights as early as 2013 in 19 of the 27 EU countries. But eight eastern European countries will be able to continue granting some CO₂ rights for free by 2020.

- The EU Council has decided to broadly spare heavy industries (e.g. steel, cement, chemicals and refining industries). We now estimate that the gradual end of free CO₂ rights will be implemented only for a few industries, limiting the total CO₂ cost to only EUR17bn over the period. This cost will be borne either by industries such as glass, bricks and ceramics or by companies with below average efficiency in other sectors.

SUMMARY TABLE: DIRECT CO₂ COSTS AT STAKE FOR 2013-2020

	Emissions 2007 (mt)	Trend 2007/06, %	Previous estimates of direct CO ₂ costs (EUR bn)	New estimates of direct CO ₂ costs over 2013-2020 (EUR bn)
Power & Heat sector	1 526	4%	375	345
Oil refineries	153	3%	25	2.4
Steel	171	1%	0	5
Cement	192	6%	31	2.4
Other building materials (e.g. clay, glass..)	35	0%	6	5
Pulp & paper	29	-3%	0	0
Aluminium and chemicals	180 (estimate)		0	2.4
Total	2 468		436	362

Source: Cheuvreux

~300bn of CO₂ proceeds for EU governments, expected to help support renewable energies

Despite scaled down ambitions on auctioning, revenues from CO₂ auctions remain substantial since we estimate that **EUR35-40bn can be generated by governments through the sale of CO₂ rights (at EUR35/t CO₂)**.

The EU Council refused to ring fence this extra budget to fund exclusively for climate change mitigation or adaptation policies. Consequently, it is unlikely that all of this amount will be allocated for instance to supporting policies for renewable energies, as:

- We can consider that ~30% of the amount will be kept by governments to compensate for losses in corporate income tax.
- A total of ~EUR10bn will be set aside for the funding of Carbon Capture & Storage demonstration plants.

This would leave ~EUR23bn annually, which is **still enough to cover the estimated EUR10bn-15bn annual cost in 2020 of subsidising wind power** through feed-in tariffs, in our view.

However, the **outcome of international negotiations may have a significant downward impact on this budget** as well, since:

- Part of government CO₂ proceeds could be pledged to a solidarity fund dedicated to emerging markets having to adapt the consequences of climate change.
- In addition, the change to a 30% cut in emissions (instead of 20%) in the event of an international agreement where developed countries would set comparable reduction targets, would reduce the amount of CO₂ rights made available to governments for auctions and **cut the CO₂ proceeds by ~EUR25bn**, down to EUR275bn.

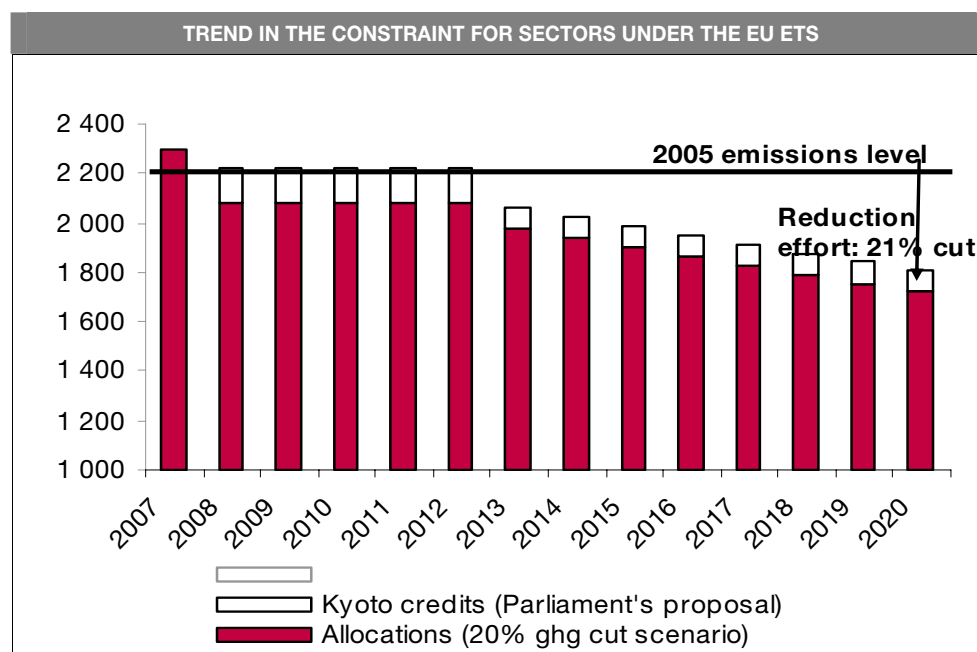
Continuity of the CO₂ price signal is ensured for the long-term

The confirmation of the objective of reducing greenhouse gas emissions by 20% by 2020 in Europe (compared to 1990 levels) was the most important point to be passed for ensuring the continuity of a CO₂ price signal in the long-term in Europe.

The auctioning issue barely influences CO₂ price equilibrium as it does not change the balance on the CO₂ market between supply and demand.

While the economic recession is likely to maintain a bearish environment in the short-term for EU CO₂ rights, the EU Council's decision supports the scenario of significantly higher CO₂ prices under the 3rd phase.

We will review our CO₂ forecasts shortly, but with confirmation of a steady decrease in CO₂ rights in the EU ETS system by 2020, we already do not expect to significantly change our long-term forecast of EUR35/t CO₂ (2013-2020).



Summary of final compromise on technical decisions on the design of the EU ETS

SUMMARY OF MEASURES PROPOSED SO FAR FOR POST-2012 EU ETS

	European Commission	European Parliament (Environment Committee)	Final compromise (amendments of the EU Council)
Emissions cut by 2020	21% below 2005 emissions	As for the EC	Confirmed
Allocation for electricity utilities	Full auctioning as soon as 2013	Full auctioning as early as 2013; except district heating and cogeneration units	Full auctioning as soon as 2013, except for eight eastern European countries (transitional regime).
Carbon Capture & Storage	Not mandatory, state subsidies allowed	Compulsory from 2015; 500m CO ₂ rights set aside for financing	300m CO ₂ rights set aside for public financing (~EUR10bn over 2013-2020)
Allocation for other energy-intensive industries	Gradual phase-in of auctioning: from 20% in 2013 to 100% in 2020. Case by case exemptions possible	From 15% to 100% in 2020, as for EC	Lax criteria set for exempting heavy industries to pay for CO ₂ emissions.
Use of offset credits	No additional use allowed. Limit of 1.4bn CERs over 2008-2020.	4% of installation emissions PROVIDED that only 6.5% used in phase II. Overall ~1.4bn over 2008-2020E	Proposal of the Parliament seems endorsed. The Council extended the use of offset credits only for non-ETS sectors.
Use of auctioning proceeds	Ring fencing of 20% of proceeds for funding climate policies	100% ring fenced for climate policies, half of which dedicated to help emerging markets	No ring fencing, unless such a commitment is made under an international deal on climate change

Source: EU sources, Cheuvreux

II— Power sector: no real relief for CO₂-intensive players

The EU agreed to offer a transitional regime to EU's poorest and coal-dependant countries in order to leave them more time to adapt to the CO₂ constraint. We analyse that these concessions impact only eight eastern European countries, where western Europe-based electricity utilities have no significant exposure.

Everywhere else, the end of free CO₂ rights as early as 2013 remains the rule, and we consequently expect no CO₂ relief for most CO₂-intensive players. Gifts in terms of public subsidies to new coal-fired power plants remain sporadic, and electricity utility groups with low-carbon energy mixes appear better positioned, in our view, under this long-term environment of increasing CO₂ costs.

■ A few gifts conceded to coal-dependant power sectors...

Extract: "Member States may give a transitional free allocation to installations operating by 31 December 2008 or to installations for which the investment process was physically initiated by the same date for electricity production if one of the following conditions is met:

1/ the national electricity network was not, in 2007, directly or indirectly connected to the network interconnected system operated by the Union for the Coordination of the transmission of electricity (UCTE);

2/ or where the national electricity network was, in 2007, only directly or indirectly connected to the network operated by Union for the Coordination of the transmission of electricity (UCTE) through a single line with a capacity of less than 400 MW;

3/ or where, in 2006, more than 30 % of electricity was produced from a single fossil fuel, and, where in 2006 the gross domestic product per capita at market prices did not exceed 50 % of the average gross domestic product per capita of the EU."

Analysis: We calculate that such exemptions from auctioning only impact existing capacities and that a not-yet-planned coal-fired power station would not be entitled to such treatment.

In addition, given the conditions required, we estimate that **only eight eastern European countries will be eligible** for a transitional free allocation regime. They include Cyprus, Malta, and the three Baltic countries, because of limited interconnections with the European power grid, and **Poland, Bulgaria, Romania**, due to dependence on coal and low GDP per capita.

These countries will have the right give to their power sector transitional free CO₂ rights by 2020 starting with 70% of free CO₂ rights in 2013 and gradually down to 0% by 2020.

COUNTRY ELIGIBILITY FOR TRANSITIONAL REGIME ON AUCTIONING FOR THE POWER SECTOR

EU country	Coal in % of total generation (2007)	EU average GDP / capita (2005)
Estonia	93.5%	50%
Poland	92.4%	47%
Czech Republic	62.1%	72%
Greece	59.6%	82%
Bulgaria	54.3%	30%
Denmark	47.3%	122%
Germany	47.3%	109%
Romania	41.2%	32%
Slovenia	36.7%	78%

Source: Cheuvreux, Eurostat

All throughout the negotiations in recent weeks, the cases of Greek's PPC and Czech's CEZ. We now estimate that **Greece and Czech Republic** do not match the criteria. **Despite their high dependence on coal** for power generation (respectively 60% and 62%), they **do not match the 'poverty' criteria**, neither the required degree of interconnection to the European electricity network.

Consequently, it is now clear that these PPC and CEZ will not benefit from continued free CO₂ rights in their home countries.

We analyse the exposure to central & eastern Europe of our universe of electricity utilities companies in the table below.

POWER GENERATION ASSETS OF GROUPS AND ESTIMATED CO₂ EMISSIONS IN C&E EUROPE

	Exposure to C&E country	Capacity	Estimated CO ₂ emissions subject to transitional regime on auctioning (mtCO ₂)
RWE	Hungary	~700MW of lignite-fired power capacity	0
E.ON	Hungary	0.95 TWh produced in 2007	0
GDF-Suez	Slovakia, Romania, Poland, Hungary	3.3 GW in C&E Europe, of which 1.65GW in Poland and 1.6GW in Hungary	
Enel	Slovakia / Bulgaria / Greece	5.6GW in Slovakia (diversified mix), 0.6GW in Bulgaria (coal) , 0.9GW (CCGT) in Greece	~3

Source: Companies

It appears that only Enel and GDF-Suez will benefit from exemptions.

German RWE and E.ON's power generation assets in central and eastern Europe are located only in Hungary.

Enel owns 0.6GW of coal-based power capacity in Bulgaria, but we estimate the impact on valuation is not significant at the group level: only ~6% of group's CO₂ emissions are impacted, which corresponds to costs avoided estimated at EUR170m (net present value).

Public subsidies made available to new super-efficient coal-fired power plants

The agreement also plans to make available public subsidies to new super efficient and CCS-ready coal-fired power plants, in order to cover up to 15% of investment costs; but this measure is only valid between 2013 and 2016.

In addition, 300m of CO₂ rights, or ~EUR10bn at EUR35/tCO₂, will be set aside to fund the 12 demonstration plants planned by the European Commission to develop the Carbon Capture and Storage (CCS) technology. In our view, this would largely cover the additional investment cost required by the technology. For its project in Germany, RWE estimates CCS would add EUR1bn of Capex to the planned 450MW lignite-fired power plant.

■ ... but low-carbon energy mixes remain best positioned in this environment

The support given to coal-fired power plants remains sporadic, and this long-term environment of high CO₂ costs for the European power sector, in our view, favours in the long-term companies with low-carbon energy mixes such as GDF-Suez, Iberdrola, EDF, Fortum, but also EDP which initiated an early switch to renewable energies.

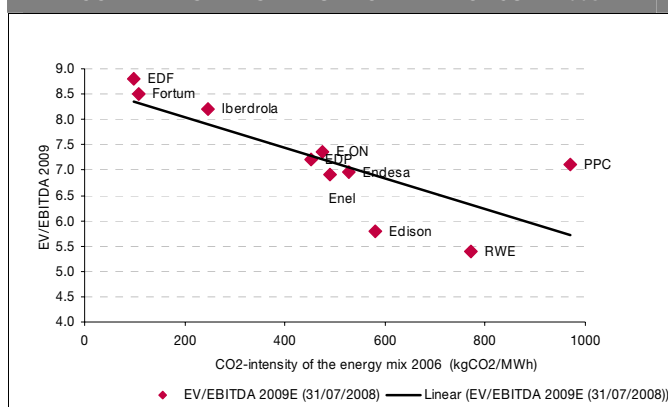
EXPOSURE TO CO₂ COSTS OF EU ELECTRICITY UTILITIES

	CO ₂ intensity, 2007 (kgCO ₂ /MWh)	Absolute emissions, mtCO ₂ 2007	EBITDA 2007	CO ₂ exposure (CO ₂ cost at EUR35/t and full-auctioning)	CO ₂ cost / MWh (post-2012)
Fortum	64	3.3	1 774	7%	2
EDF	145	94.1	15 210	22%	5
Iberdrola	183	12.1	5 538	8%	6
(GDF-Suez) Electrabel	300	42.3	12 517	12%	11
E.ON	403	87.5	12 450	25%	14
EDP	495	23.4	2 628	31%	17
Enel	496	46.7	10 023	16%	17
Endesa	530	64	7 485	30%	19
Union Fenosa	535	18.2	2 062	31%	19
CEZ	635	46.9	5407	30%	22
RWE	848	187.1	7 915	83%	30
PPC	984	53	819	227%	34

Source: Cheuvreux, PwC, Company data

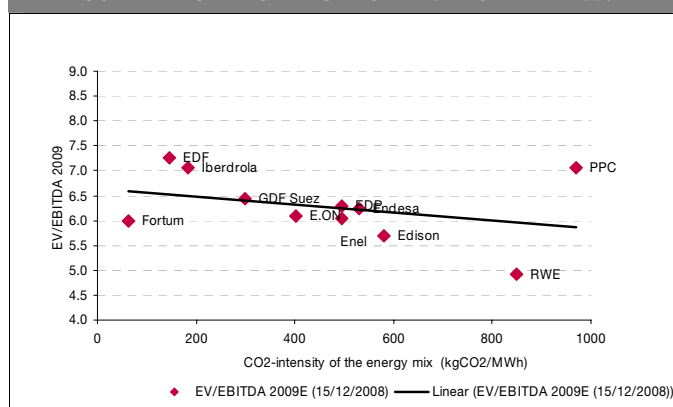
The CO₂ theme and the scenario of the end of free CO₂ rights as early as 2013 has been factored into valuations for more than one year, but we estimate that the continuous news flow on the potential failure of EU leaders to decide on the EU energy and climate package may have weakened this signal. This might represent an opportunity to come back to above-mentioned low-carbon players, notably GDF-Suez (2/ Outperform; TP EUR40) and Iberdrola (1/ Selected list; TP EUR8.4).

CO₂-INTENSITY VS. VALUATION – END OF JULY 2008



Source: Cheuvreux

CO₂-INTENSITY VS. VALUATION – 15 DECEMBER 2008

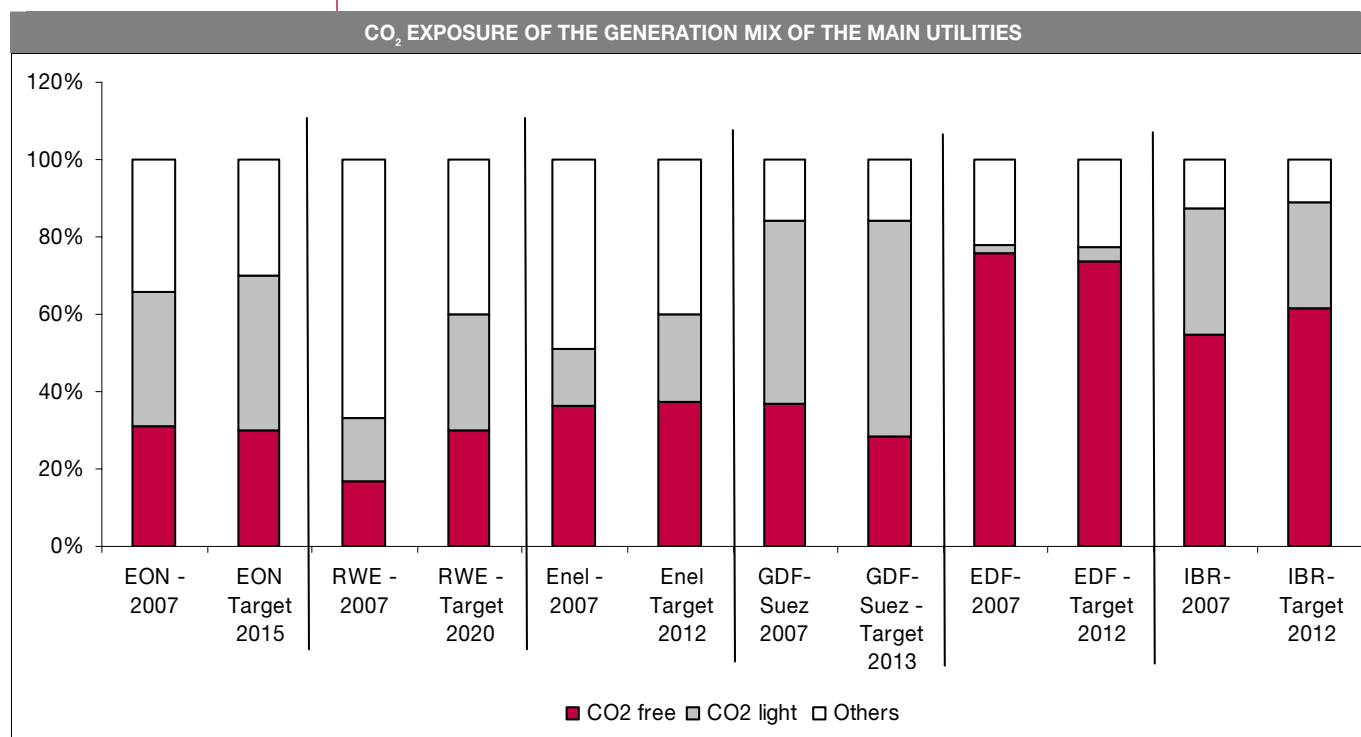


Source: Cheuvreux

Notably, some investors may have been tempted to play the option of a CO₂ relief for PPC in the case where Greece would have been allowed to keep giving some free CO₂ rights to its power sector after 2012. The stock has outperformed its sector by more than 50% over the past month.

Change in generation energy mix

Apart from RWE and EDP, we do not expect a massive change in the generation mix in the medium term. Thus, players that already benefit from the best generation mix are likely to maintain this level.



Source: Cheuvreux

III – Manufacturing sectors: broadly spared but competitive advantage remains

In our October report discussing the potential outcome of the negotiations, we had foreseen large exemptions for manufacturing sectors due to the difficult economic context and strong claims by Germany of the related risk on EU industry competitiveness. This has proven right.

However, whereas we estimated that the EU cement industry was still at risk of facing a gradual ending of free CO₂ rights through 2020, a change in the methodology applied to assess the risk of distorted competition has eventually spared the CO₂ constraint for this sector as well.

We analyse below which sectors are deemed eligible to receive free CO₂ rights until 2020 under the new criteria set by the Council, and which are still exposed to a gradual phase-in of auctioning.

■ Free CO₂ rights for most of heavy industries secured through 2020...

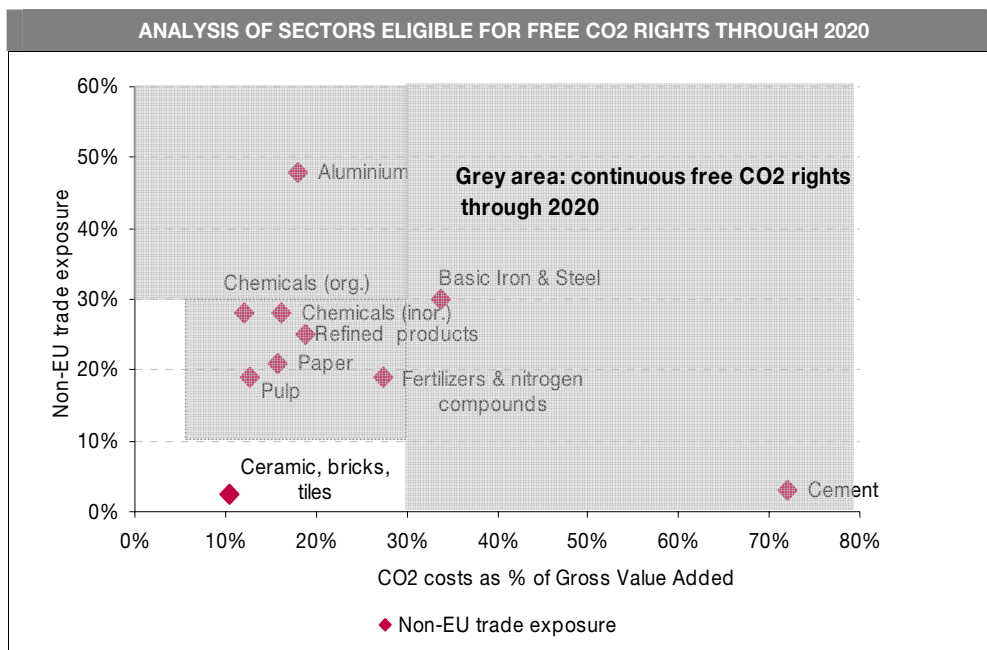
Although the EU Council's compromise I does not directly set a list of sectors eligible for receiving free CO₂ rights through 2020, it sets quantitative criteria in the two ways described below.

Extract: "A sector or sub-sector is deemed to be exposed to a significant risk of carbon leakage if :

1/ "the sum of the direct and indirect additional costs ... would lead to an increase in production costs exceeding 30 % of its Gross Value Added **or** if the total value of its exports and imports divided by the total value of its turnover and imports exceeds 30 %.

2 / "the sum of direct and indirect additional [CO₂] costs would lead to an increase in production costs exceeding 5 % of its Gross Value Added **and** if the total value of its exports and imports divided by the total value of its turnover and imports exceeds 10 %."

Analysis: We present below a mapping of the situation of the various sectors covered by the EU ETS towards these two criteria, and highlight those that are clearly positioned to benefit from free CO₂ rights until 2020.



Source: Cheuvreux estimates

Any sector matching these criteria (grey area) is eligible to receive free CO₂ rights through 2020.

SUMMARY: SECTORS ELIGIBLE FOR 100% FREE CO₂ RIGHTS THROUGH 2020

	Sectors eligible for 100% free CO ₂ rights
CO ₂ costs > 30% of gross value added	Cement, lime
Market openness > 30%	Aluminium, Basic steel, Basic and agro-chemicals
CO ₂ costs > 5% of GVA and Market openness > 10%	Oil refineries, Pulp & Paper, Fertilizers, ...

Source: Cheuvreux

Sectors still exposed to a gradual phase-in of auctioning

We conclude that **only very few industries** with local markets, **such as building materials (ceramics, bricks and tiles, and potentially high value added glasses, etc.)** remain exposed to a gradual phase-in of auctioning of CO₂ rights.

These sectors shall receive 80% of free allowances in 2013, then gradually down to 30% in 2020.

■ ... but the economic signal remains thanks to the use of efficiency benchmarks

Even if most of the sectors will keep receiving CO₂ rights for free through 2020, the economic signal driving investments in CO₂-efficient processes will remain, since in any case free CO₂ rights will be allocated only up to the level of the benchmark.

Extract: "Installations in sectors or sub-sectors which are exposed to a significant risk of carbon leakage will be allocated 100 % of allowances free of charge at the level of the benchmark of the best technology available. "

Analysis: Consequently, we estimate that groups will differentiate and build competitive advantage by improving the energy efficiency standards of their production assets. Benchmarks will be set by subsector and not at the sector level, which makes it difficult to compare two groups of a same sector (e.g. different exposure to paper, pulp, paper board, etc.).

Pending further analysis on other sectors, we develop our view below on cement and clay brick industries.

■ Best plays by sector: focus on low-carbon players

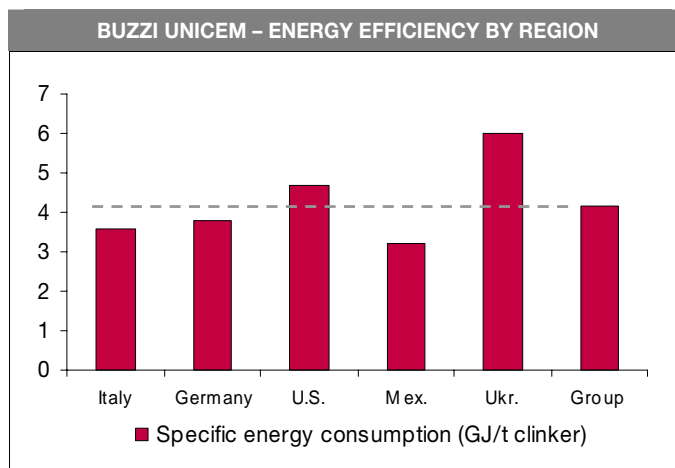
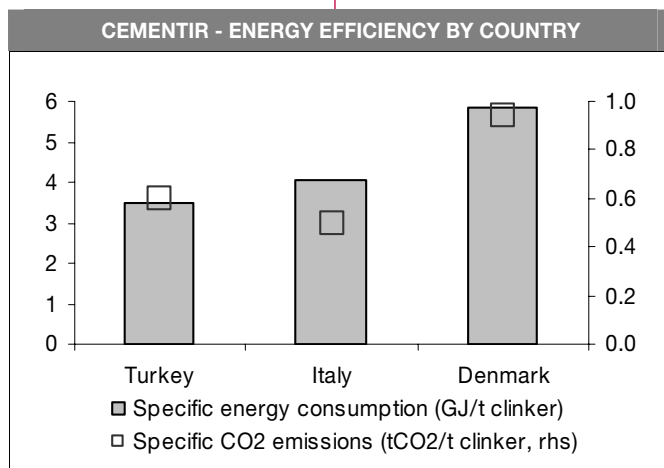
Cement: Buzzi Unicem preferred over Cementir and Italcementi

The sector will continue receiving free CO₂ rights through 2020. Best available technologies for cement production provide energy efficiency of the production of clinker of 3500MJ per tonne of clinker. This could be used as a common benchmark for the allocation of free CO₂ rights.

Among Italian players, **we prefer Buzzi Unicem** because, compared to its peers, the group runs the most energy efficient plants in Italy and has a well-balanced carbon mitigation strategy overall.

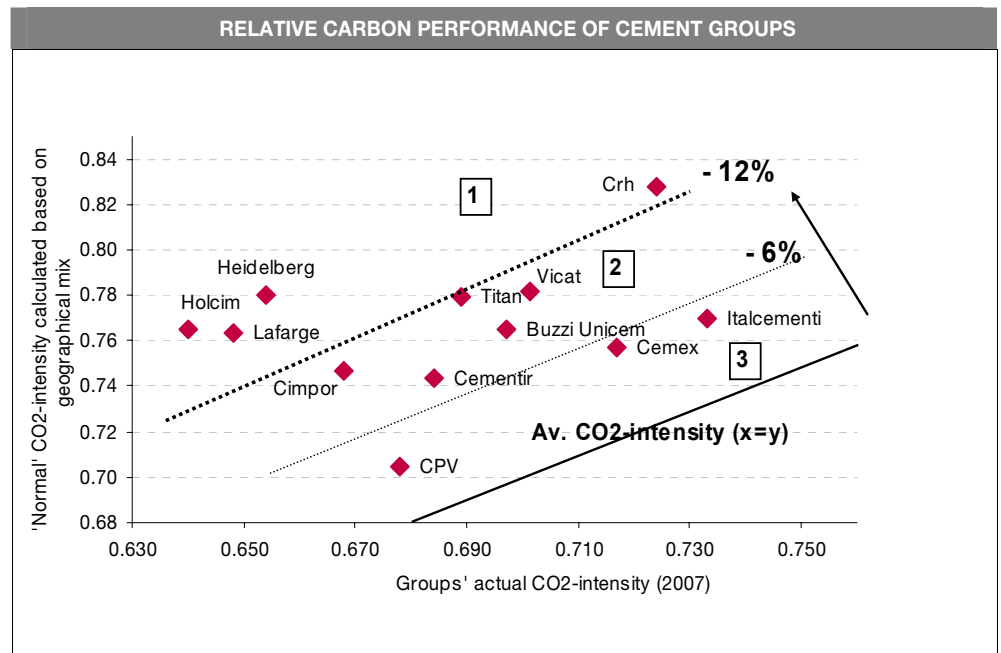
Cementir has a negative exposure to the theme, in our view, mostly because of an outdated cement kiln in Denmark (3.5mt capacity, or ~23% of group's capacities) which emits around 50% more than an average cement plant. The group could thus receive free CO₂ rights only for 2/3 of the plant's emissions, and have to buy the remaining on the market. This **could translate into annual CO₂ costs of ~EUR26m**.

As shown in the charts below, Buzzi Unicem has a better energy efficiency in Europe than Cementir.



Italcementi is in the process of upgrading its plants with low energy-efficiency.

We have assessed the average CO₂ outperformance of cement groups relative to their local competitors in our report '*Cement vs. Carbon: Carbon challenge becomes concrete*', September. 2008. The chart below draws the conclusions of this analysis.



Clay bricks: we prefer Imerys

The clay bricks sector remains at risk of facing a gradual decrease of CO₂ rights.

The production of clay bricks requires 2-2.5 MJ of energy per kg brick. This points to a CO₂ intensity < 2tCO₂/t brick, depending on the fuel mix. Process-related emissions account for only 6% of the total. The industry has been switching to natural gas, and additional reduction potential can be tapped by energy efficiency investments and higher use of biomass/gas.

We estimate that the price hike needed to offset full CO₂ costs would be under 6% by 2020.

Between our two clay brick producers – Wienerberger and Imerys, we favour Imerys due to a lower CO₂ risk on EBITDA and more visibility on energy efficiency improvements (4% improvement in energy efficiency expected in 2008).

Imerys preferred over Wienerberger

CO₂ RISK AND CARBON MITIGATION STRATEGIES OF CLAY BRICKS PRODUCERS

	CO ₂ emissions under the EU ETS, mt, 2007	EBITDA 2007 (EUR m)	CO ₂ valued at EUR35/t, as % of EBITDA	Our current financial recommendation	Carbon mitigation policy
Imerys (20 installations)	0.373	676	2%	2/OP	Energy efficiency: 3.4% improvement achieved in 2007, and 4% expected in 2008
Wienerberger (50 installations)	0.78	551	5%	3/UP	Continues the switch to natural gas (new burner replacing heavy oil in Croatia)

Source: Company data, CITL, Cheuvreux

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