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Climate Change Policies Impact

The crisis: a new decisive piece on the political chessboard

■ Analysing political momentum on climate change is key

We are entering a strong political autumn period which will set the tone for the future of climate policies in the EU and the US. The current crisis is likely to damage the political momentum on climate change. However, energy security concerns keep providing good support for many climate change-related investment themes in our view: e.g. domestically available energies, energy efficiency. The financial crisis also gives a ticket to the 'greener' Barack Obama.

■ Tightening of the CO₂ constraint in EU

We provide a prospective analysis of the political forces driving the ongoing review of the climate & energy package that will enact the CO₂ constraint in the EU by 2020. At stake is a wealth transfer estimated at ~EUR440bn over 2013-2020 from EU industries to governments, and taking the form of CO₂ rights auctions.

■ It's now or never?

France wants to claim the credit for climate change during its EU Presidency and push for an ambitious deal to be clinched by December 2008. This is unlikely to be achieved without yielding to specific claims from some countries (e.g. Poland, Italy). Any delay would postpone the decision to the next EU Presidency (Czech) and significantly increases the risk of it being watering down.

■ Electricity utilities: support still seen for full auctioning

The market largely factors in the full auctioning scenario for electricity utilities from 2013, and a major alteration could free up significant upside in our valuation of CO₂-intensive players; e.g. RWE and Enel. However, exemptions are likely to come only for eastern European countries, since the EU giants (Germany, France, the UK, and Spain) are maintaining their support, as they are coveting ~EUR315bn from this process for their budgets.

■ Energy-intensive industries: quick on opt-outs

The economic slowdown has increased fears of job losses induced by the potential relocation of EU heavy industries due to the CO₂ constraint. Many sectors have good reasons to be spared this constraint and are likely to be exempted. Building materials is more at risk in our view. Being low-carbon remains key in sectors where a gradual phase-in of auctioning is still possible: cement (Lafarge; 2/OP) and other building materials (Imerys, 2/OP). We review 45 carbon mitigation strategies of groups concerned.

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Investment recommendation

The autumn of climate change policies, the springtime of energy security

We are entering a strong political autumn period which will set the tone for the future of climate policies in the EU and the US. The current crisis is likely to damage the political momentum on climate change. However, **energy security** concerns keep providing **good support for many climate change-related investment themes** in our view: e.g. domestically available energies and energy efficiency. The financial crisis also gives a **ticket to the 'greener' Barack Obama**, who could play a leadership role in the global battle against climate change.

Any delay in the EU climate and energy package would have long-term consequences

Any **delay would pose a major risk to political momentum** on climate change as: 1) it would undermine the next round of international talks on a **post-Kyoto agreement**, in December 2008; and 2) postpone the vote to March 2009, during the heart of the economic crisis, and under the Czech Presidency of the EU, with, consequently, an **increased risk of a scaling back** of climate ambitions.

All the measures should not be thrown out with the bath water

However, despite the economic crisis fuelling the protests of the seven eastern European countries and Italy, we believe the December 2008 vote on the package will go through, **including full auctioning as a norm for the power sector**: 1) Western European countries (France, Germany, Spain, etc.) are maintaining their support for this measure, as they are coveting a **EUR315bn pile of auctioning proceeds for their budget**, and seeking energy security and growth for clean energy sectors. 2) France is keen to maintain the climate change leadership of the EU and have the package passed under its Presidency, and it is thus pushing for a **early compromise**. There are still solid fundamentals, as the target and cap on greenhouse gas emissions have not being called into question. This provides **support to the CO₂ price signal in Europe**. We remain confident in our long-term price forecast of EUR35/tCO₂ (from 2013), which remains sensitive to the price of energy commodities (gas and coal).

But some are likely to be watered down. How far?

A compromise would **certainly meaning yielding to some of demands of eastern Europe and Italy**, leading to potential amendments such as: 1) Greater flexibility to meet CO₂ targets thanks to increased use of offset carbon credits (CERs), and similar flexibility for renewables targets (a request from Italy); 2) Temporary and specific **exemptions in auctioning for some countries**, whose power sectors rely heavily on coal (eastern Europe) and a potential cap & floor system for CO₂ auctions (asked for by Poland); and 3) **Auctioning dropped for most of the other energy-intensive industries**.

Impact on equities: can only be positive for CO₂-intensive power groups

The outcome of the forthcoming negotiations in Europe **can only be positive for CO₂-intensive electro-utilities**. The market largely factors in the full auctioning scenario for electricity utilities as of 2013, and we estimate that a **U-turn to a gradual phase-in of auctioning could free up significant upside** in our valuations of CO₂-intensive players such as RWE (1/Selected List; +7%), E.ON (2/Outperform; +4%) and Enel (2/Outperform; +8%).

For most of the other energy-intensive sectors likely to be spared the CO₂ constraint, being low-carbon compared to the peers' benchmark remains a competitive advantage (energy costs, potential surpluses of CO₂ rights) in our view. **In this report, we review the carbon mitigation policies of more than 45 companies covered under the EU ETS.**

Introduction: testing support for climate change policies in the crisis

■ Testing key supports of global action against climate change

In our view, political action against climate change has been based on three key pillars so far:

- Public opinion (citizens and NGOs) urging politicians to address the issue.
- Energy security: climate and energy issues are closely linked and share common solutions.
- Climate science and economics studies (e.g. the Stern report) concluding that the cost of inaction would be much more than the cost of action.

We discuss below how the financial and economic crisis can shake these pillars.

Public opinion: back to basics?

Climate anomalies have contributed to widespread awareness among citizens, who have thus been asking for more action from politicians to address the issue. Job losses and the difficult economic environment will certainly divert the attention of many citizens from the more long-term climate change issue, which is thus likely to lose some momentum in the political debate.

The energy security issue works as a back-up for clean energies

Energy security and climate change issues share common solutions such as energy efficiency and domestically available energy (e.g. renewable energies). **Most climate change related investment themes also work on behalf of improving energy security.**

Nicolas Sarkozy declared on 9 October that he wishes to make energy efficiency policies in Europe a priority. In our view, the energy security issue is the strongest reason for getting the core measures of the EU energy & climate package passed. Energy market prices remain at historically high levels, **tensions with Russia (the gas provider for Europe)** and the economic recession support the idea that energy security and **energy independence** will become a key theme for politics.

In the US and China, policies supporting the development of renewable energies have been developed for energy security reasons, not climate change.

This may **leave more room for coal**, which is better spread over the globe than natural gas resources. The funding of carbon capture & storage R&D programmes could lead to a shortfall in funds expected for renewable energies.

Climate science: the economic impact of inaction would be worse

The global political consensus on the need to tackle the impact of human activity (greenhouse gas emissions) on climate has been built upon the recommendations and findings of the International Panel on Climate Change (IPCC) and on economics studies concluding that the effect of climate change would cost more in terms of GDP than the financial effort needed for supporting policies to switch to a low-carbon economy.

Public support may
vanish the first...

... but the energy
security issue is a
strong back-up

The cost of inaction in
the face of climate
change is higher than
the cost of action

STERN REPORT: INACTION COSTS MORE THAN ACTION

The cost of inaction	The cost of action
With 5-6°C warming -which is a real possibility for the next century - existing models that include the risk of abrupt and large-scale climate change estimate an average 5-10% loss in global GDP , with poor countries suffering costs in excess of 10% of GDP	The review estimates the annual costs of stabilisation at 500-550ppm CO ₂ e to be around 1% of GDP by 2050 - a level that is significant but manageable.

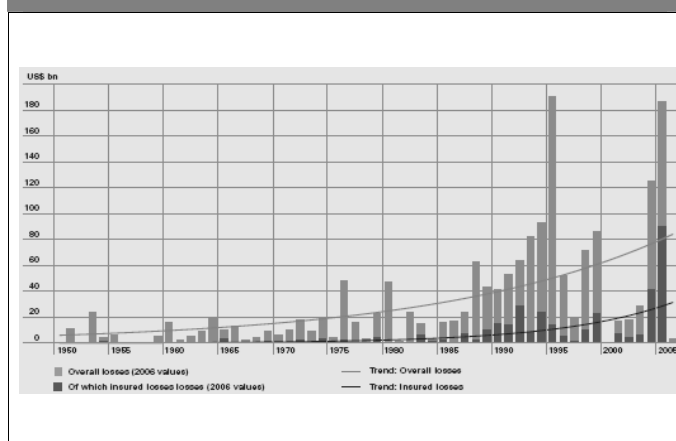
Source: Stern Report:

The cost of climate change – through substantial natural catastrophe activity – is already a reality, as reported by Munich Re (see left-hand chart below).

Global warming sceptics riding a cool wave?

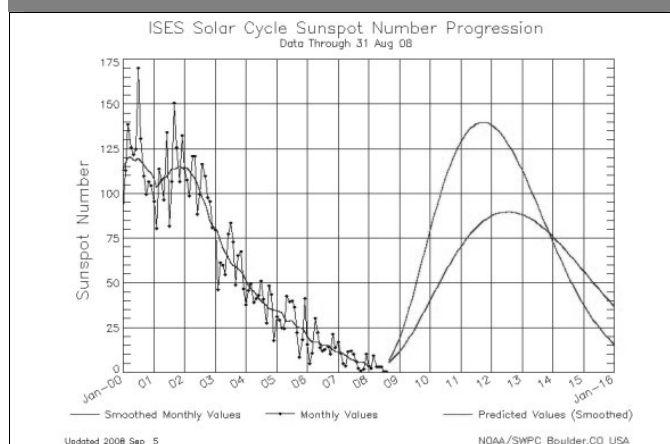
Some scientists point out that next few years may be unusually cool, due to the conjunction of an unusual low point in solar activity (see right-hand chart below) and a cold La Niña stream in ocean cycles. Although such short-term predictions do not fundamentally contest the long-term global warming projections of the IPCC, this may (re)-fuel the arguments of global warming sceptics and play negatively on the commitment of some politicians.

OVERALL LOSSES AND INSURED LOSSES



Source: Munich RE:

SOLAR ACTIVITY IS ALSO DECLINING



Source: NOAA/SWPC

**Financing issues may
slow help for
emerging countries**

■ Copenhagen deal at stake? EU and US leadership crucial.

The next key international negotiations on climate change are due to take place in Poland (Poznan) in December 2008 and in Copenhagen in December 2009, where the conclusion of a post-Kyoto climate deal is possible. The crisis comes on the top of the collapse in July of the World Trade Organization's Doha round, which tarnished international multipartite cooperation.

Reacting to the new environment, UN climate chief Yvo de Boe, in an interview given on 6 October expressed his concerns and sees a worrying development, partly due to "growing pressure .. from the point of view of competitiveness".

Technology transfers (via Kyoto Clean Development Mechanisms) and adaptation funds are a cornerstone of the United Nation Framework on Climate Change and a condition for a higher commitment of developing countries. The liquidity crisis is likely to hamper such investments and China has very recently denounced the lack of commitment of developed countries and expressed its pessimism about a future deal in Copenhagen.

The leadership of the EU and the next US President will be crucial for a positive outcome for the Copenhagen negotiations.

EU and US leadership will be crucial

Obama appears more ambitious on climate goals...

However, some hope may come from a strong signal of commitment of the next President of the US at the next international talks on climate change in Poland in December 2008.

The voting through of the EU's ambitious climate & energy package by that date would also reassure emerging market on the strong commitment of developed countries on the burden sharing issue.

■ US: the crisis gives a helping hand to the greener Obama

Both Barack Obama and John McCain are declared **supporters of a federal cap and trade scheme** for greenhouse gas emissions, but Mr Obama's climate change programme (see the table below) appears more ambitious in terms of carbon constraint (80% cut of emissions by 2050; auctioning of emissions rights) and support given to clean energies (25% of total energy from renewable sources by 2025) and energy efficiency (50% improvement by 2030).

If elected, Senator McCain would put Sarah Palin in charge of energy issues, which may include climate change policies. Mr McCain's position on federal climate change regulation falls outside the line of the Republican party (no regulatory intervention).

COMPARISON OF THE PRESIDENTIAL CANDIDATES' CLIMATE CHANGE PROGRAMMES

	Mc Cain	Obama
Reducing carbon emissions - Target	Supports 65% reductions by 2050	Supports 80% reductions by 2050
Cap & Trade scheme	Supports a mandatory cap on emissions, no articulated position on auction	Supports a mandatory cap on emissions and 100% auction of pollution permits
Coal plants	Believe new plants should be able to use carbon capture & sequestration technology	Would consider a moratorium on new coal plants if a mandatory cap does not slow the construction of new plants
Nuclear plants	Wants to provide incentives to build 45 new nuclear power plants by 2030	Supports nuclear as long as waste disposal and nuclear proliferation issues are addressed
Energy efficiency	General support for efficiency; no target specified	Supports a 50% reduction in energy intensity by 2030
Renewable electricity standard (RES)	Would not push a national RES; supports efforts by states and local governments to create their own standards	Supports 25% of total energy from renewable sources by 2025
Fuel efficiency	Supports improved fuel efficiency; no target specified	Supports 52 mpg fleet wide standard by 2026

Source: Reuters, L CV, Cheuvreux:

... and receives the support of the crisis

We see mainly two main consequences of the current crisis:

■ First, as it seems that the economic crisis has adversely affected McCain in recent voting opinion polls, because of the legacy left by the Republican party, this **increases the likelihood of the 'greener' Barack Obama being elected.**

■ **However**, due to the current economic context, Mr Obama has stated that he would have to **shift priorities** and certainly delay some parts of his energy policy programme, if he is elected. The Democratic candidate is a proponent of full auctioning of CO₂ rights in a future US ETS, but he would admittedly be flexible in order to build a political consensus strong enough to have a bill passed.

The new President would not start from scratch though. His commitment would be key to fast tracking a law implementing a federal cap & trade system, but a lot of work has already been achieved thanks to climate bills proposed to the Senate and House of Representatives and existing greenhouse gas registries for regional cap & trade systems.

I— CO₂ regulatory risk in Europe: fading with the crisis?

The climate & energy package proposed by the European Commission in January 2008 is being reviewed by the European Parliament and the EU Council, under the normal joint-decision procedure, before it becomes law. The risk of a delayed and watered down final text has clearly increased, as governments are scaling back their ambitions and trying to protect their industries, in contrast with the tough stance of MEPs.

■ The vote by the MEPs sets a tough negotiating line

The EU climate and energy package includes a reshaping of the EU Emission Trading Scheme for the third trading period (2013-2020).

The key topics are:

■ **A phase-in of auctioning of CO₂ rights by governments** instead of having them granted for free. This would lead to a gradual materialisation of emission costs for industries regulated under the EU ETS, and raises competitiveness concerns with regard to companies in non-capped countries.

■ **The use of cheaper carbon offset credits (CERs)**, in addition to EU CO₂ rights, to comply with CO₂ emissions caps. This is a key pillar for instance in the CO₂ compliance strategy of Enel-Endesa until 2012.

■ **The use of auctioning proceeds by governments** and the attempt to exceptionally ring fence part of the amount for the funding of climate policies

We are at the beginning of the legislative procedure that was kick-started on 6 October by the vote of the European Parliament's Environment Committee on the amended text proposed by the European Commission in January.

The table below presents the different acted positions so far on key measures. The **position of the MEPs is broadly in line with the proposals of the European Commission** in January.

MEPs have backed the core measures of the package

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

	European Commission	European Parliament (Environment Committee)	Comment/Cost implications
Emissions cut by 2020	21% below 2005 emissions	As for the EC	Higher CO ₂ constraint on heavy industries. Transport and building subject to a 10% cut.
Allocation for electricity utilities	Full auctioning as soon as 2013	Full auctioning as soon as 2013; except district heating and cogeneration units	An estimated EUR375bn cost for the sector over 8 years, with an impact on electricity prices expected only in countries with regulated tariffs
Carbon Capture & Storage	Not mandatory, state subsidies allowed	Compulsory from 2015; 500m CO ₂ rights set aside for financing	Up to EUR17.5bn would be made available for 12 demonstration plants
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	Identification of sectors exempted for competitiveness concerns not before international climate talks (Dec. 09). EUR225bn of CO₂ costs at stake for four industries
Use of offset credits	No additional use allowed. Limit of 1.4bn CERs over 2008-2020.	4% of installation emissions, PROVIDED that it used only 6.5% in phase II. Overall ~1.4bn over 2008-2020E	Offset credits (CERs) can be sourced at half the price of EU CO₂ rights and limit compliance costs
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 countries	Member states reluctant as budget allocation is under national sovereignty

Source: EU sources, Cheuvreux

A tight legislative schedule...

Although the vote of the Environment Committee does not represent the final say of the EU Parliament, the **Committee is highly influential** and the results of the vote point to a **high enough consensus among MEPs** to estimate that the Committee's vote is likely to receive the support of the whole Parliament in plenary session.

Despite the difficult economic outlook for EU industries, **industry lobbies have failed to influence the vote of MEPs**, who have set a tough negotiating line to prepare unavoidable discussions and compromise with the EU Council.

■ What's next: three months of debate ahead as governments will strive to limit the cost

The legislative process follows the co-decision procedure, implying tripartite negotiations between the European Commission, and the European Parliament and the EU Council (Member states). We give a chart presenting the full process on page 9.

The ball is now in the hands of the EU Council., which is expected to define a common position for the 27 governments during the upcoming sessions (15-16 and 20-21 Oct.).

UPCOMING MEETINGS OF EU LEGISLATIVE INSTITUTIONS

	October	November	December
EU Council (Heads of state)	15 & 16		11 & 12
Environment Council	20 & 21		4 & 5
Energy & Transport Council	9 & 10		8 & 9
Parliament (plenary session)	20 - 23	17 - 20	15-18

Source: EU institutions

The EU Council is much more divided, notably due to a group of new member states claiming that the CO₂ burden sharing, as defined by the European Commission, would unfairly hurt their developing economies.

**... likely to force
yielding to some
specific claims**

Since the French Presidency wants to complete the procedure by the end of the this year, it will have to establish a consensus:

- 1) yielding to some claims of Eastern European countries and governments that echo the grievances of their industrial lobbies, in order to avoid opposition from a blocking minority and a delay that could postpone the deal to H1 2009 and the Czech Presidency of the EU.

- 2) keeping the core measures backed by the European Parliament, so as to avoid a never ending conciliation procedure with the Parliament. After the vote of the Environment Committee, the EU Council now looks rather isolated in its attempt to bring major changes to the proposals of the European Commission.

We note that since the institutional reforms, a qualified majority (74% of votes) is used for most of decisions to be adopted by the EU Council. This avoids the possibility of a veto from isolated member states.

We expect the Council to:

- Propose greater use of carbon offset credits, as an efficient way to limit the cost of emissions reductions.

- Firmly oppose any ring-fencing of auctioning proceeds. Notably the 100% ring-fencing proposed by the MEPs has no chance of being passed, in our view, as it does not take into account the losses of corporate tax for governments, resulting from auctioning.

We further develop our analysis later on in this report with regard to the potential outcome of these discussions for the two key measures that are set to directly impact the more than 45 European stocks in our universe.

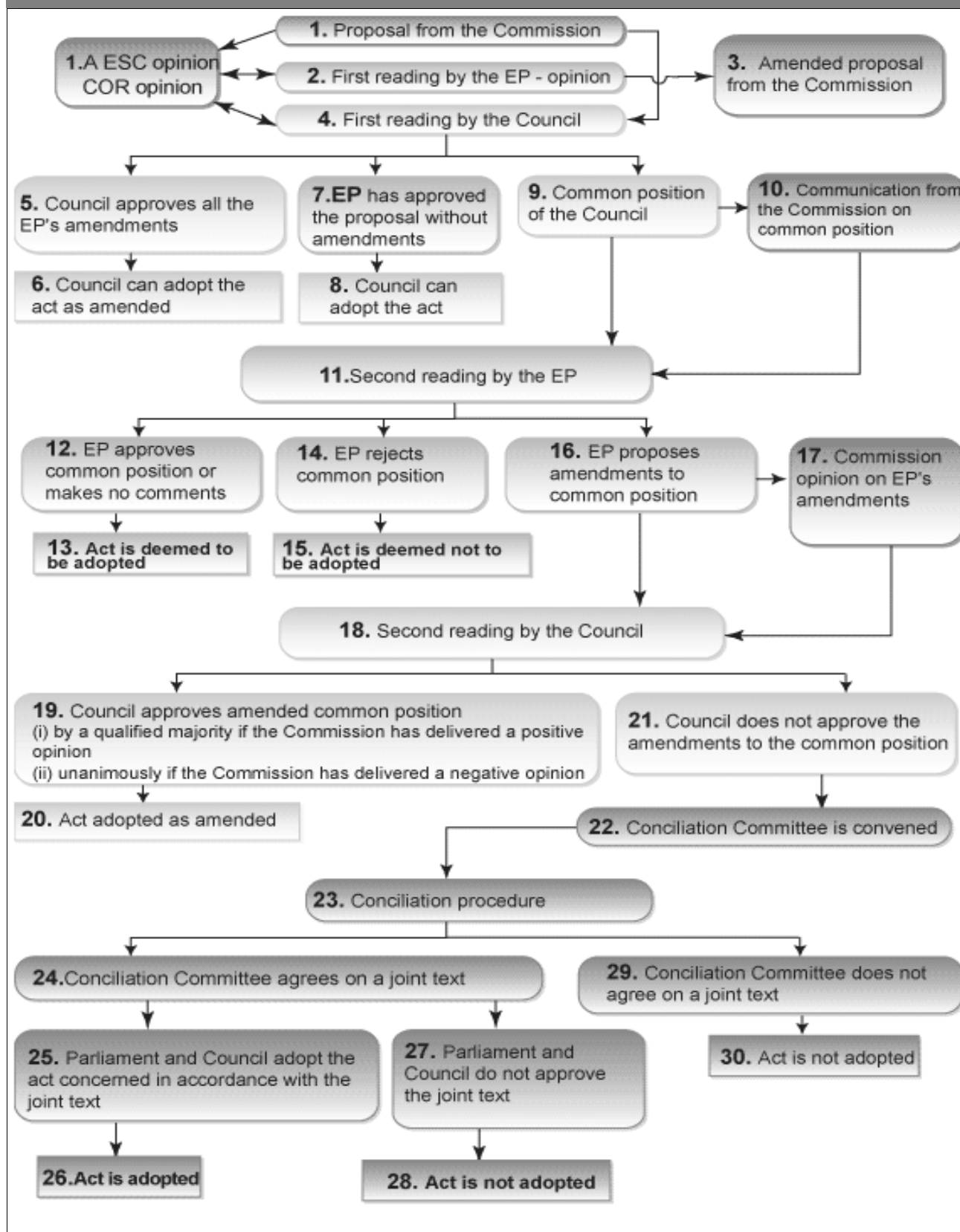
- Full auctioning measure for electricity utilities as soon as 2013

- A gradual phase-in of auctioning for other energy-intensive sectors, which keep receiving their CO₂ rights mostly for free over the second trading period (2008-2012)

Once the EU Council has determined its position, we expect the legislative process to last until December at least, with the bill passed in a first reading, i.e., the final law would be enacted in December 2008 at the earliest, or in March 2009 at the latest, that is to say just before the end of current Parliament's legislature.

The outcome of this vote will set the regulatory framework for the long-term CO₂ constraint for EU heavy industries.

A COMPLEX EU CO-DECISION PROCEDURE TO ENACT DIRECTIVES



Source: European Union

■ CO₂ price signal in Europe: low risk of downside

Fundamentals remain strong: downside risk for CO₂ price is likely to be very limited

Beyond the continuity of the EU ETS post-2012, which has not been called into question by any member state, our CO₂ price scenario for Europe relies on the fundamentals listed in the table below.

IMPACT OF THE CRISIS ON FUNDAMENTALS SUPPORTING OUR CO₂ PRICE SCENARIO

CO ₂ valuation fundamentals	Potential changes due to the economic and financial
Deficit of CO ₂ rights based on projections on CO ₂ emissions and the trend in the emissions cap	Mixed impact but the deficit of CO ₂ rights remains real as: 1) the emission cap up to 2020 is not being called into question (21% under 2005). 2) the effect on CO ₂ emissions of the slowdown in industrial output is limited and likely to be partly compensated for by a delay in the greening of the EU energy mix due to financing issues
Inflow of Kyoto carbon credits into the EU ETS	Kyoto carbon credits (CERs) are unlikely to flood the EU ETS and push down the price of EU CO ₂ rights. Although our current forecast for the supply of Kyoto credits has low sensitivity to the project financing issue (non-financed future projects account for only up to 26% of supply), the persisting time-lag in issuance of Kyoto credits prevents flooding that would bring down EU CO ₂ price by 2012. Post 2012, our price scenario of EUR35/tCO ₂ already integrates the possibility of higher use of offset carbon credits.
Short-term coal-to-gas fuel switching threshold: equilibrium price for CO ₂	The CO ₂ price signal is based on a price differential between gas and coal. Since gas and coal prices fall in tandem (down by ~40% since the peak in July), this maintains the equilibrium price for CO ₂ in the historical price channel: EUR18-25/tCO ₂ . This relationship between energy commodities ensures a relative stability for the CO ₂ price.

Source: Cheuvreux

Consequently, we estimate at this stage that the internal reduction need within Europe is likely to be only slightly changed, requiring a similar CO₂ price signal that is high enough to trigger some coal-to-gas fuel switching.

Kyoto carbon credits offer a fundamental floor for the EU CO₂ price at ~EUR15/t.

We maintain our price scenario: EUR23/tCO₂ in 2008, EUR35/t long-term

We maintain our CO₂ price forecasts pending a revision that will integrate new energy commodity price forecasts (oil, gas and coal). We will take the coming occasion to adjust our CO₂ emission forecasts to our new economic scenario.

CHEUVREUX'S CARBON CREDIT PRICE SCENARIO

	2008E	2009E	2010E	2011E	2012E	LT
CO ₂ price forecast (EUR/t)	23	23	26	28	32	35
CER price, 2ndary market (EUR/t)	16	19	22	24	21	20

Source: Cheuvreux

For more information, please refer to our report "Carbon impact: CO₂ price preparing for take-off: climate pollution costs set to rise", April 2008.

4-8% upside in valuations of CO₂-intensive players at stake

We estimate the Poland-led group is still short of votes to block the measure

Italy may change the balance of power

II— Electricity utilities: a relief for coal-based producers?

■ Can Poland win its fight against 100% auctioning for electricity utilities?

The large political consensus around the programmed end of free CO₂ rights for electricity utilities as soon as 2013 has been built on the recognition and/or denunciation of huge windfall profits enjoyed by power generators on deregulated electricity markets.

The 100% auctioning scenario as soon as 2013 is our base case scenario, integrated in our valuation models for electricity utilities since January 2008. **At that time, we had cut our target price on RWE by EUR6 per share and that on E.ON by EUR2 per share** (figure recalculated post share split). We believe that the toughest scenario for coal-based electricity utilities is widely discounted by the market, and that **any change would provide significant upside to our valuations** of CO₂-intensive players.

We estimate that the return to a gradual phase-in of auctioning for the power sector would provide upside in our valuations of Enel, RWE and E.ON of 8%, 7% and 4% respectively.

However, despite the current strong lobbying of Poland to drop the measure, we explain below why EU-wide full auctioning remains the most likely scenario for the sector in our view.

We estimate that Poland has no blocking minority yet at the EU Council

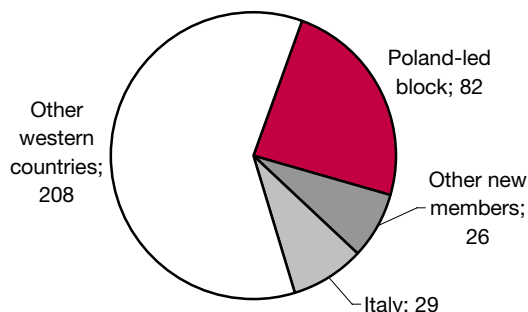
According to the Polish Environment Minister, as quoted by Reuters on 6 October 2008, Greece could join the Poland-led group of member states to form a blocking minority that would in particular oppose the adoption of the 100% auctioning measure for power generators from 2013.

However, since then, the Deputy Environment Minister of **Greece has denied** this, stating that Greece is "absolutely committed to the EU's proposed package on climate change"

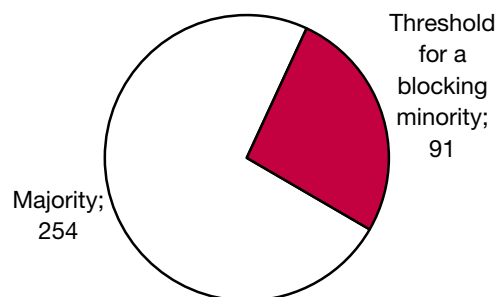
91 votes are needed to block a decision by the EU Council on its position, voted at a qualified majority (74% of votes). **Poland**, along with the Czech Republic, Hungary, Slovakia, Bulgaria and Romania, is likely to **gather only 82 votes**, meaning they **will not reach the threshold without the help of Greece**.

The addition of other new member states would provide enough votes (an additional 26), and there is growing contestation **in Italy**, which plans to replace its oil-fired plants with coal-fired plants. A big EU country like Italy joining the Polish coalition is the **main threat** in our view, but we have no formal signs of such a rallying yet. Italy is seeking more flexibility and higher use of CO₂ offsets.

However, the **block has seemed rather feeble** since at the beginning of October; Poland had said that it had gathered a blocking minority, but this is apparently no longer the case. And **the camp of pro-auctioning countries is strong**: we find EU giants such as Germany, France, the UK, and Spain on this side of the argument.

**BALANCE OF POWER: PROS/CONS ON FULL AUCTIONING
(NO. OF VOTES)**


Source: Cheuvreux, EU

**BLOCKING MINORITY THRESHOLD AT THE EU COUNCIL
(NO. OF VOTES)**


Source: Cheuvreux, EU

Czech Republic : the ultimate grain of sand

The presence of the **Czech Republic** (60% reliant on coal) in the opposition group might have a major consequence, as this country will head and give the tone of the next EU Presidency (H1 2009). In March, the Czech Industry Ministry expressed its worries over the impact of auctioning on electricity prices and its preference for a gradual phase-in.

Some options can satisfy Poland without calling into question the principle of EU-wide full auctioning

As mentioned above, the French Presidency is unlikely to risk any delay which would put the file in the hands of the Czech Presidency. We believe a likely consensus will try to satisfy the claims of the Eastern European countries without calling into question EU-wide full auctioning.

This can be achieved by:

- Giving a proportionally higher share of CO₂ rights to be auctioned to EU economies with higher growth rates. So far, 10% of total CO₂ rights to be auctioned are due to be rebalanced between countries, taking into account GDP growth.
- Special derogations "limited in scale and time" (as reported by Reuters on the basis of an informal draft paper by the French Presidency). This is expected to be limited enough to be accepted by all countries and not create competitive distortions within member states.

We therefore estimate there is only a slight risk of seeing a "U-turn" on the full auctioning measure for power groups, which in addition would secure ~EUR315bn of auctioning proceeds for governments over 2013-2020.

■ Relief from offset carbon credits?

It is likely in our view that the EU Council will **propose to greatly push the allowed use of CERs for the period 2013-2020**, compared to the EC's and EP's proposals that grant more flexibility in the use of offsets between the two phases but no additional volumes.

The German government for instance backs a measure that would allow just under 1 billion additional CERs to be used by industry for compliance in the EU ETS. (i.e. use of CERs allowed up to **50% of the reduction effort** compared to base year 2005).

This would **underpin** the offsetting pillar in **carbon mitigation strategies** of players such as **RWE (1/Selected List)** and **Enel (2/ Outperform)**-Endesa, which plan to limit their CO₂ compliance costs by 2012 by using CERs to fill respectively ~25%, 80% and 60% of their deficit of emissions rights over phase II (2008-2012). We already anticipate in our valuation model for RWE some continuous use of CERs: a **EUR6.3 per share option** compared to a worst case scenario (no use of CERs allowed post-2012).

Claims can be calmed down without dropping EU-wide auctioning

Higher offsetting would benefit ENEL, RWE

III – Energy-intensive industries: who is really at risk?

■ Gradual phase-in of auctioning planned, ... but highly contested on fears of job losses

As proposed by the European Commission, the standard allocation for energy-intensive industries other than power groups would include a **gradual phase-in of auctioning: from 20% (15% proposed by MEPs) as of 2013 to 100% in 2020.**

However, the aim of an emission trading scheme is fundamentally not to squeeze margins of CO₂-intensive industries but to send a price signal to end-consumers in order to potentially shift demand to products/services with lower carbon footprints (e.g. from concrete to clay bricks). Therefore, regulators had already planned to take **decisions sector by sector pending further analysis of the capacity of each industry to pass-through additional CO₂ costs** and the risk of carbon leakage (relocation outside Europe due to a loss of competitiveness).

While the EC and the European Parliament have asked to wait until the conclusion of an international post-Kyoto climate pact (expected in December 2009) before determining which sectors can be spared, EU governments are eager to speed up this process in order to provide industries with visibility on the future regulation and help investment decisions.

The economic crisis fuels concerns of job losses due to the carbon constraint

With the economic crisis looming and implied job losses, some governments have changed their position and now attempt to simply drop the idea of a gradual phase-in of auctioning, whatever any future analysis would reveal.

Post the financial crisis, the labour issues is likely to emerge as the most legitimate argument against climate change policies. Giving the recession ahead, unemployment is likely to replace climate change as the 'public enemy number 1'.

Our analysis of the potential climate change policies impact on employment is supported by and refers to studies carried between Syndex, our labour and social research partner and a consortium comprising the CES, Social Development Agency (SDA), the Wuppertal Institute and Istat.

The main figures:

- EU population: 470 million individuals and about 195 million people in employment.
- Unemployment: 17 million (8.7%)
- Industry accounts for 23% of GDP but only provides 12% of the labour force (24 million jobs).

Friend, not enemy..

The overall study analysis proves that EU climate change mitigation policies would have, overall, a slight positive impact on employment in Europe. It will however accelerate the labour shift across sectors, penalising the most carbon intensive industries.

Phase-in of auctioning
still the norm...

...and the fear of job
loss becomes the rule

WHICH SECTORS COULD SEE JOB LOSSES?

Sector	Impact on employment
Cement: no major impact	This is a relative low labour intensive sector with 53,000 employees in Europe and productivity which is 60% better than for the rest of the world. The sector has seen major labour-related restructuring over the past decade (headcount down 31% in Germany, 17% in the UK, 9% in France) and about 7% of plants have closed. The employment impact would still be a loss of 4,300 (-8%) jobs in 2012 and 16,000 (-16%) in 2030 under the median scenario.
Steel: a real issue	The last labour shift is behind us. In Western Europe the sector has lost 80,000 jobs from 330,000 to 250,000 employees with stable production at 160 Mt. Such a change has not taken place in Eastern Europe, which still employs another 110,000 people (Eurostat). But the loss of competitiveness appears to be real unless a gradual shift to low carbon steel could further translate into a competitive advantage and potential leadership globally. Relocation of 25% to 35% of European production would lead to 54,000 to 80 000 job losses. A large part of this is independent of the carbon constraint (e.g electricity price and staff costs). The study however shows that specific measures could reduce the job loss impact by 50%.
Refineries: a non issue	110,000 to 130,000 people employed in Europe: few adjustments expected
Aviation	The studies taking into account the new carbon burden for the sector show that the airlines market share in transportation stabilises in the medium, to long term at 13.3% in 2020 (13.6% in 2000) and therefore should not impact jobs per se

Source: Syndex, CES, SDA

Softer criteria for exemptions are more likely

On the other hand, the transition to a low carbon economy would create jobs in sectors that provide solutions, such as renewable energies (+82-96 jobs per TWh and per year), or energy efficiency in buildings (+150k jobs according to Ecofys-Eurima)

Softening criteria for exemption eligibility

Germany recently proposed limiting auctioning for all energy-intensive industries to a maximum of 20% until 2020. All governments are pushing for opt-outs.

■ We anticipate the decisions: all sectors spared but building materials?

Generally, governments **wish to speed up the process of deciding which industries could be spared** in order to avoid regulatory uncertainty that freezes investment decisions.

We **attempt to anticipate the outcome** of such analyses based on the clues presented below.

The assessment methodology is set

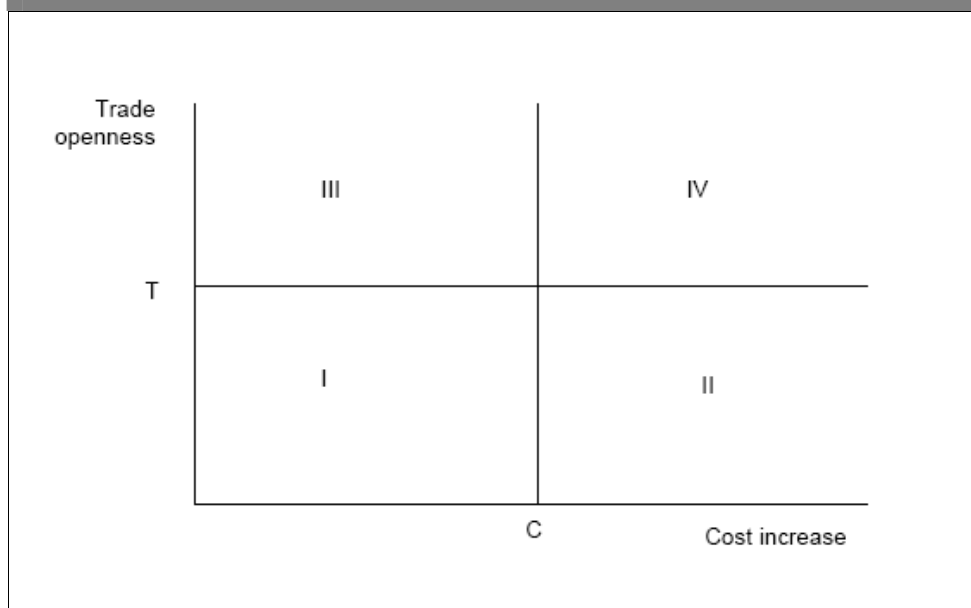
The European Commission has already provided the methodology and initial results for some sectors. The identification of sectors most exposed to the risk of carbon leakage will be based on two key criteria:

- CO2 induced costs, related product prices or value at stake;
- Exposure to non-EU trade, which serves as an indicator of the local pricing power of an industry

Notably, it has determined four different categories based on these two criteria (see chart below).

Sectors exposed to non-EU trade likely to be spared

FOUR RISK CATEGORIES DEFINED UNDER THE EUROPEAN COMMISSION'S METHODOLOGY



Source: EU non paper

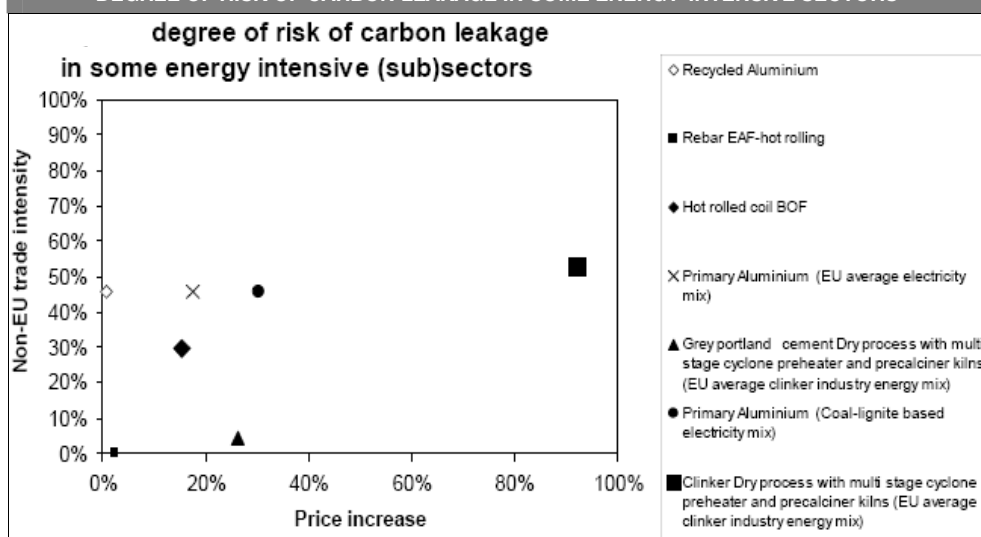
Sectors falling in category 1 (low exposure to non-EU-trade and a low cost increase) would be subject to the standard phase-in of auctioning, while conversely, industries with profiles falling into category IV, would likely be exempted from auctioning and would keep receiving 100% of their CO₂ rights for free until 2020.

Between categories II et III, the **non-EU trade exposure factor is likely to have a higher weight** than the cost increase in the decision to soften the phase-in of auctioning for a given sector, though this is not yet clearly stated.

Some initial figures are already available: aluminium and steel are likely to be spared

Upon the request of the French Presidency of the EU Council, the European Commission has carried out initial non-definitive analysis for some sectors (see table below)

DEGREE OF RISK OF CARBON LEAKAGE IN SOME ENERGY-INTENSIVE SECTORS



Source: EU non-paper

Aluminium, steel: best candidates for 100% free CO₂ rights

The analysis was carried out for sub-sectors to identify potential distortion of competitiveness with the value chain of each product and distinguish between different production processes (e.g. EAF/BOF for steel)

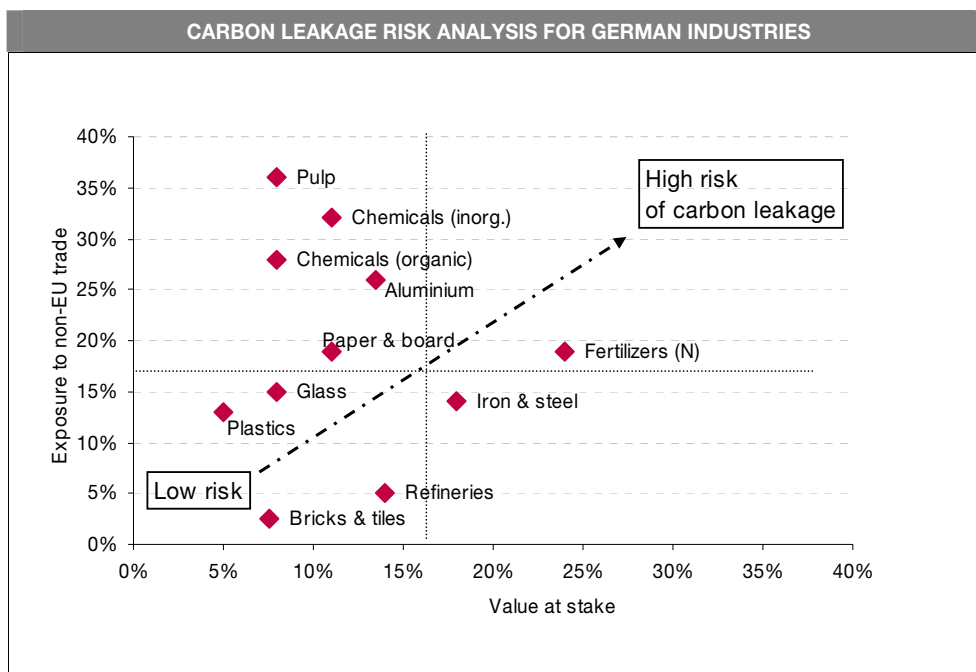
It concluded that **aluminium and BOF steel can be identified as sectors potentially eligible for continued free CO₂ rights until 2020.**

Although **clinker** the (main component of cement) is also mentioned, the positioning of the sub-sector on the chart is based on what we consider to be erroneous figures that are likely to be corrected in the future. We estimate that non-EU trade intensity for the EU clinker market is a bit higher than for cement, but still <10%, and that the EU clinker market has low exposure to non-EU trade. In our view, cement remains one of the industries most at risk to see a phase-in of auctioning.

Prospective views for other sectors: building materials and refineries appear to be more at risk

For other sectors covered or to be covered under the EU ETS from 2013, data has yet to be collected at the European level. However, an analysis led by Germany's federal Ministry for Environment gives a view of non-EU trade intensity for German sectors. At EU level, overall non-EU trade-intensity might be higher, as Germany is a continental market, but we would not expect future EU-wide analyses to show radically different results.

Low risk of tough CO₂ regulation on pulp & paper, chemicals, and steel



Source: Germany's Environment Ministry

Pulp, paper and paper board, and chemicals industries (fertilizers and nitrogen compounds, other basic organic and inorganic chemicals) also appear relatively more exposed to a risk of competitive distortion, in the German context.

This confirms the view of the EU analysis for aluminium and steel sectors.

Exposure to non-EU trade for the German **refining** market seems lower (5%) than the EU average, as figures from BP's annual Statistical Review point to a recurrent ~25% openness to extra-EU trade.

The case for building materials (bricks & tiles, glass, and cement) is far less obvious.

...but building materials may fall short of arguments

Summary table: direct CO₂ costs at stake by sector

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

	Emissions 2006 (mt)	Emissions 2007 (mt)	Trend 07/06, %	Phase III – estimated CO ₂ cost (EUR bn)	Exposure to non-EU trade / Comment
Power & Heat sector	1 470	1 526	4%	375	Very low
Large power plants (667 installations)	1 275	1 338	5%	375	Very low, CO ₂ price signal is already integrated on free electricity markets
Small plants (6,915 inst.)	195	189	-3%	0	Cogeneration and waste to energy efficient plants likely to be exempted from auctioning
o/w 11 east. European countries	311.8	361		58	An exemption for eastern Europe would avoid a ~EUR43bn cost for the sector
Oil refineries	149	153	3%	25	Structural imports of diesel cover the shortage of EU capacities on these product grades.
Steel	168	171	1%	0	High exposure, powerful unions and high job loss concerns.
Cement	182	192	6%	31	Low exposure. Spain is the most open market. Local markets due to high transportation costs.
Other building materials (e.g. clay, glass..)	35	35	0%	6	
Pulp & paper	30	29	-3%	0	High exposure. Auctioning unlikely. No direct CO ₂ costs expected.
Aluminium and chemicals		180 (estimate)		0	Inclusion planned in 2013, highest exposure due to a combination of high value at stake and openness to non-EU trade
Total		2 468		436	

Source: Cheuvreux

IV – Coping with the constraint: carbon mitigation strategies

EU ETS-regulated sectors are required to reduce their greenhouse gas emissions by 21% by 2020 compared to 2005. Assuming 2% normalised GDP growth in the EU-27, this points to a needed annual improvement in CO₂-intensity of 3.6%, which can be achieved mainly on the supply side by a switch to low-carbon fuels and investments in energy efficiency. In addition of evaluating the direct maximum financial exposure to CO₂ costs in Europe, we highlight the carbon mitigation policies of 45 European stocks.

■ Electricity utilities: greening the energy mix has a cost

Low-carbon players such as EDF, Fortum, Iberdrola, and GDF Suez are still well best positioned in our view in this environment of higher CO₂ costs.

For other players, the 'greening' of their energy mix by switching to more gas capacities or renewable energies has a cost. Notably, the general deterioration of project IRR, and for renewable energies in particular (higher cost of equipment and fixed feed-in tariffs), tend to increase the implied cost of CO₂ emissions abatement, notably compared to the use of CO₂ offset credits, as Kyoto carbon credits (certificates received from the UN for the reduction of 1t of CO₂e in emerging markets) can be purchased on the primary market at ~EUR10-12/tCO₂ in average.

In our view, the carbon mitigation strategy of RWE is now more in line with the future regulatory development on climate change, as 1) the group now targets a more diversified energy mix by 2020; 2) the use of offset carbon credits is likely to be extended by amendments to the Climate & Energy package; and 3) some public funding is likely to be made available for the CO₂-free demo power plants planned by RWE by 2020.

**Competitive
advantage for low-
carbon players : EDF,
Iberdrola, GDF Suez**

**More positive view on
RWE's CO₂ strategy**

CO₂ RISK AND CARBON MITIGATION STRATEGIES OF ELECTRICITY UTILITIES COMPANIES

	CO ₂ -intensity 2006 (kgCO ₂ /MWh)	CO ₂ emissions 2006	EBITDA 2007E (EUR m)	CO ₂ valued at EUR35/t, as % of EBITDA	Our current financial recommendation	Carbon mitigation policy
EDF	99	58.5	15 210	13%	2/OP	Investment in new nuclear capacities, and renewable energies through EDF Energies Nouvelles; EDF carbon fund 4th in terms of no. of projects.
Fortum	107	5.8	1 774	11%	1/SL	EUR3bn investment planned in 1.3GW of low-CO ₂ power plants (nuclear, CHP, hydro, wind) in Nordic countries
Iberdrola	247	17.7	5 538	11%	1/SL	50% CO ₂ -free energy mix, high share of capex plan (48%) directed to renewable energies, of which EUR2.4bn in Spain and the UK
Electrabel (GDF-Suez)	314	40.4	7 029	20%	2/OP	Possible extension of the Belgian nuclear power plants. Gas projects and development of RNW (1.5GW in wind power)
E.ON	476	77.5	11 982	23%	2/OP	EUR3bn to be invested in RNW by 2010. CO ₂ -free coal-fired demo plant
Enel	490	54.5	9 954	19%	2/OP	Carbon offsets expected to cover 80% of CO ₂ rights deficit by 2012. CCGT and clean coal replacing fuel oil-fired power capacities. 18% of capex plan in RNW by 2012.
Union Fenosa	514	15.8	2 062	27%	3/UP	Conversion to CCGT
Endesa	528	65.4	7 485	31%	2/OP	Investments mostly planned in gas CCGT capacities. ~60% of the deficit of CO ₂ rights by 2012 expected to be hedged with cheap Kyoto carbon credits.
EDP	568	24.8	2 666	33%	2/OP	Fast decrease of CO ₂ -intensity expected by 2010. RNW-oriented strategy: 62% of the EUR8.3bn 2008-2010 capex plan. Listing of EDP Renovaveis.
Edison	542	28.1	1 605	61%	2/OP	+28% in RNW capacities by 2013
RWE	771	178	7 902	79%	1 / SL	Diversification of the energy mix to more gas and RNW. Creation of a subsidiary for developing RNW (4.5GW target by 2012; 14% of capex plan). CO ₂ -free coal-fired plant planned by 2015 (CCS). CO ₂ offsets
PPC	969	50.5	819	216%	2 / OP	2.3GW of lignite and "capture-ready" hard-coal fired plants planned. ~EUR2bn in RNW

Source: Cheuvreux, PwC, CDP

We highlight the well-balanced carbon strategies of Lafarge and Buzzi Unicem

■ Cement groups: local low-carbon competitive advantage

Cement groups can leverage on three main measures to reduce the carbon intensity of the production process:

- The switch to low-carbon fuels such as natural gas and biomass,
- Energy efficiency improvements, and
- Production of blended cements (lowering the percentage of clinker)

Although the technology for the production process is basically the same, the potential for improvement is high (estimated at between 20% to 50% depending on the region). The average CO₂-intensity of the European industry is the lowest in the world. For instance, the US cement industry has a CO₂-intensity that is almost 50% higher.

Combining our current financial recommendations and CO₂ risk analysis, we highlight Lafarge and Buzzi Unicem due to their well-balanced and delivering carbon mitigation strategies. For more in-depth analysis of cement groups' carbon mitigation strategies, refer to our dedicated report 'Cement vs. Carbon: Carbon challenge becoming concrete'.

CO₂ RISK AND CARBON MITIGATION STRATEGIES OF EU CEMENT COMPANIES

	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
Buzzi Unicem	10.8	981	39%	2/OP	Well balanced strategy; a leader on alternative fuels, investment in energy efficiency will increase standards
Cementir	4.5	274	57%	3/UP	Negative view due to energy inefficient Danish cement plant and strategy of development in CO ₂ -intensive white cements
CPV	7.67	621	43%	3/UP	Effective clean-up in the US should be achieved by next year, but we estimate that more could be done in Spain
Holcim	13.3	4 218	11%	3/UP	Clear low-carbon leader, strong on low-carbon cements. Securing sourcing of alternative fuels and raw materials is now key
Italcementi	15.7	1 404	39%	3/UP	One of the highest CO ₂ -intensities with low improvement achieved. New reduction target is undemanding
Lafarge (pre-Orascom)	24.9	4 183	21%	2/OP	Increased flexibility in production dispatching with Orascom's export capacities. Good momentum in CO ₂ emission reductions
Titan	6.2	426	51%	3/UP	Insignificant use of alternative fuels and little improvement in specific emissions since 2003.
Vicat	2.6	593	15%	2/OP	Good standards on alternative fuels, but no CO ₂ reduction target and low blending of cements

Source: CDP, Cheuvreux

Imerys preferred over Wienerberger

■ Other building materials: clay bricks and glass

Clay bricks, glass, and ceramics production facilities are also covered by the EU ETS.

Clay bricks

The production of clay bricks requires 2-2.5 MJ of energy per kg brick. It 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 9%. We estimate that the materialisation of the CO₂ price signal is likely to further benefit clay bricks over concrete (in addition of thermal insulation properties)

Between our two clay brick producers, 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).

Glass and other materials

Glass production is electro- and CO₂-intensive, with 500-1000kgCO₂/t, depending on the type of glass. The use of recycled materials allows to cut specific CO₂ emissions by 250-300kgCO₂/t.

Saint-Gobain's carbon mitigation policy is product-oriented. The group is a play on the energy efficiency theme with thermal insulation materials in its product mix, but currently exposed to a slowdown of construction markets. The group's CO₂ emissions come from glass production facilities, which have an average CO₂-intensity of 605kgCO₂/t. The group targets reducing this level by 15% by 2010 (vs. 1990 levels)

CRH is more exposed to heavy materials (concrete, asphalt, etc.), hence to CO₂ costs in its EBITDA. However, despite a poor track record until recently, **we view positively the new strategy defined in 2007** for the cement business, which aims to reduce CO₂-intensity by 15% by 2015, and initial encouraging results in 2007 (higher blending of cements).

CO₂ RISK AND CARBON MITIGATION STRATEGIES OF BUILDING MATERIALS COMPANIES

	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 inst.)	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)
Saint Gobain	5.9	5 629	4%	3/UP	Targeted 15% cut of CO ₂ -intensity by 2010. Use of recycled materials for glass production. Lighter and insulation products
CRH	9.4	2 860	11%	2/OP	Targets a 15% cut in CO ₂ -intensity of the cement business by 2015. A EUR500m investment in clean cement production assets and offset carbon credits will help to reduce CO ₂ costs.

Source: CDP, company data, CITL, Cheuvreux

■ Oil & Gas: focus on energy efficiency in the refining business

Oil & Gas companies are mostly covered under the EU ETS for their refining facilities. Although their carbon mitigation strategies are also focused on reducing greenhouse gas due to gas flaring in upstream operations, we focus here on reduction plans for the downstream business.

CO₂ emissions in refining are largely proportional to the energy intensity of the plants. Investments in desulphurisation units, made to comply with tougher sulphur standards for fuels sold in the EU, tend to increase CO₂ emissions of EU mineral oil refineries. Plant shutdowns also contribute to a deterioration of the energy efficiency of a refinery from one year to the next. In addition, refineries producing higher grades of petroleum products have higher energy intensity.

We estimate that **maximum EBITDA exposure to CO₂ costs ranges from 1% (BP) to 11% (Neste Oil)**, but these figures reflect the exposure to the downstream business in the EU rather than a competitive disadvantage.

Improvement rates among companies are **roughly similar for Total, Repsol and ENI**. We find that the CO₂-intensity in Total's refining activity has improved by 1% on average since 1990. This is comparable to Repsol's target to improve energy efficiency by 1% each year (-2.2% progress last two years). ENI plans a cut of 0.5tCO₂ by 2011 in its refining facilities, which corresponds to an annualised 0.8% improvement.

Improvement in energy efficiency at **RD Shell's** refineries has been limited to 2% since 2002, and the group now targets placing its refineries in the first quartile in terms of CO₂-efficiency vs. peers. **Neste Oil** is the most exposed in terms of EBITDA exposure. The group does not communicate externally on reduction targets with a climate change strategy more focused on products.

**Total, ENI, Repsol
post similar gains in
energy efficiency**

CO₂ RISK AND CARBON MITIGATION STRATEGIES OF OIL & GAS COMPANIES

	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
RD Shell	22.4	37 106	2%	2/OP	5% cut in direct emissions relative to a 1990 baseline. Energy efficiency improved by 2% since 2002 in refineries. Targets first quartile in terms of CO ₂ -efficiency for most plants vs. peers.
ENI	24	25 332	3%	2/OP	In refineries, in addition of the 70ktCO ₂ saved in 2007, the 2008-2011 plan (EUR65m) should reduce emissions by 0.5tCO ₂ (vs. 2007)
BP	12	28 765	1%	3/UP	USD450m investment anticipated in operational energy efficiency and flare reduction by 2010. Investments in low carbon business activities (>USD8bn by 2015)
Total	24	29 902	3%	2/OP	Specific energy efficiency target for refining for 2012 (8pt energy intensity improvement vs. 2004). 16% cut achieved per tonne refined since 1990. ~EUR325m planned capex for refining and chemicals reduction programmes
Repsol	12	8 573	5%	1/SL	Carbon policy well articulated since 2003. Energy efficiency programme targets a 1% annual improvement in processes efficiency in refineries. This has been achieved on average in past two years. CDM programme.
Neste oil	3	968	11%	2/OP	No externally communicated reduction target. Next implementation of energy efficiency measures expected in 2010. Energy intensity index improved by 8% since 1998.
OMV	8	3 163	9%	2/OP	Developing a carbon strategy. EUR3bn investment planned in modernization of Petrom infrastructure should achieve high energy efficiency potential

Source: CDP, Cheuvreux

■ Steel industry: time needed for a real change in production processes

There are two side to the coin for the steel industry. Crude steel can be obtained by two production processes with two different CO₂ profiles:

■ **Blast furnaces (BOF)** have a high CO₂-intensity: 1.5-2 tCO₂ is emitted per tonne of crude steel produced. Potential for further reductions in Europe is limited in the short-term and would require a technological breakthrough. Sensitivity to indirect CO₂ costs is low: electricity represents ~4% of production costs and a high share is produced internally thanks to waste gas recovery.

■ **Electric furnaces (EAF)** have a lower direct CO₂-intensity (<0.2tCO₂/t of crude steel) but this process has a higher sensitivity to electricity prices (hence indirect CO₂ costs: electricity accounts for ~8% of production costs)

In the current situation pointing to a likely exemption of blast furnaces from a direct CO₂ constraint through auctioning, electric arc furnaces appear more at risk.

Apart from **ThyssenKrupp**, no company has defined a climate change policy so far with an CO₂ emissions reduction target. **Outokumpu** has a group target for energy efficiency.

After having a claim rejected by the EU Court of Justice with regard to the treatment of steel industry under the EU ETS, **ArcelorMittal** is in the process of developing its strategy, and has launched a carbon fund to source cheap carbon credits to be used for compliance under the EU ETS.

Assuming continued free CO₂ rights for steel factories, **scrap-based steel producers (Outokumpu, Acerinox)** appear more at risk, despite a lower CO₂ intensity. This is due to indirect CO₂ costs charged in electricity prices.

Electric furnaces paradoxically more at risk (Outokumpu, Acerinox)

CO₂ RISK AND CARBON MITIGATION STRATEGIES OF STEEL COMPANIES

	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
Arcelor-Mittal	74.4	14 173	18%	2/OP	The group is in the process of developing a formal climate strategy. Recently launched a carbon fund to help meet compliance targets
Thyssen Krupp AG	15.2	5 215	10%	3/UP	Targets a 22% cut of CO ₂ -intensity by 2012 (vs. 1990). Waste gas recovery, notably for electricity production.
Salzgitter	7.44	1 537	17%	3/UP	No reduction target. Modern production plants. Product innovation
Rautaruukki	4.5	790	20%	2/OP	No target. Product-oriented solutions.
SSAB	3.4	1093	11%	2/OP	No reduction target. Reporting of CO ₂ -intensity.
Outokumpu	0.676	793	3%	2/OP	Site-specific targets on energy efficiency. Group target to improve energy efficiency by 2% in 2008. 80% of electricity consumed comes from CO ₂ -free sources. Increases self-sufficiency to 16%.
Acerinox	0.225	655	1%	2/OP	No reduction target. CO ₂ -intensity reduced by 1.5% in 2007. Investments in next generation lighters, modification of boilers to increase energy efficiency. Ongoing initiatives.
Schmolz and Bickenbach	0.178	416	1%	2/OP	No reduction target

Source: CDP, Carbonmarketdata, Cheuvreux

■ Pulp & Paper industry: electricity prices are a greater concern

We estimate that the pulp & paper industry will keep receiving more CO₂ rights than needed by 2012 and has a significant chance of being eligible for 100% free CO₂ rights thereafter given its high exposure to non-EU trade. By 2012, a slowdown in activity is likely to provide significant surpluses of CO₂ rights. We estimate that such sales of CO₂ rights can increase EBITDA by 0.2% (Norske Skog) to 1% (Stora Enso) in 2008.

CO₂ RISK AND CARBON MITIGATION STRATEGIES OF PULP&PAPER COMPANIES

	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
Stora Enso	3.2	1 455	8%	2/OP	CO ₂ reduction target of 20% by 2020. Increased use of carbon neutral biomass and low carbon fossil fuels
UPM Kymmene	2.1	1 623	5%	1/SL	No fixed reduction target but already 60% of UPM's heat and electricity needs are from CO ₂ free energy sources
SCA	1.4	1 760	3%	3/UP	Implements a number of project but no overall target is set. Replacing coal and oil with biofuels or natural gas, and implementing an internal energy saving program
Norske Skog	0.5	409	4%	2/OP	CO ₂ reduction target of 25% by 2020. Continuous improvement when small investments are needed. Substantial investment on case by case basis for large 'step change'
Holmen	0.3	452	2%	/OP	15% improvement target by 2020. Policy mix includes energy efficiency and increased use of biofuels. 43% of purchased electricity comes from biomass sources

Source: CDP, Cheuvreux

Electricity amounts to ~12% of production costs

Direct CO₂ costs are likely to remain limited in our view. However, since the industry is highly electro-intensive (electricity amounts to ~12% of production costs), the main CO₂ risk for the sector comes from indirect CO₂ costs through purchased electricity integrating the CO₂ price signal on free markets.

In Nordic countries, most of the companies have either high self-sufficiency or long-term hedging contracts for most of their energy needs.

We note that Billerud has a particularly good momentum on hedging its exposure to electricity market prices. Purchased electricity has decreased by 36% in two years following investments in internal power production facilities.

INDIRECT CO₂ RISK THROUGH ELECTRICITY PURCHASES

	% of electricity consumption generated internally (2006)	Comment
Ence	100%	Net seller, 78% of the electricity production is sold on the grid
UPM-K	70% (100% in Finland)	2.54GW of own power generating capacity (nuclear + hydro)
M-Real	60%	Hedging policy
Stora Enso	46%	Up 6pp vs. 2005; owns nuclear power generation capacity in Finland
Billerud	50% (2007)	SEK1.090m invested in bark boilers and electricity turbines at Swedish mills. Purchased electricity down by 36% in two years + 10-year fixed-price contract signed in 2007 securing 80% of electricity requirements.
Holmen	30%	In Sweden 85-95% of purchased electricity hedged up to 2012; 70% from 2013 to 2015
SCA	25%	SCA is building a refuse derived fuels power plant in Germany, long-term supply contracts at fixed price
Norske Skog	8%	Norway: 80% hedged; electricity costs +10% in 2006 on per tonne basis

Source: Company data, Cheuvreux

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