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Carbon Emissions

Tomorrow and Tomorrow and Tomorrow

Impact of COP-16 on EU-ETS limited in substance but negative for sentiment

COP-16 made progress on a range of issues, but we note it did nothing to reassure us that a globally binding climate deal to succeed Kyoto can be secured at COP-17. Indeed, reaching a binding global agreement on a second international commitment period through the UN process looks very difficult to us for the foreseeable future. In turn, this makes it unlikely in our view that the EU will raise its 2020 emissions-reduction target in 2011. Accordingly, we think the key to EUA prices over the next 12 months will continue to be the dynamics of the German power market.

A second international commitment period remains a long way away

With the US mid-term elections in November likely having wiped out any residual chance of legislation on a federal cap-and-trade scheme there until 2013 at the earliest, and with Japan, Russia, and Canada refusing at COP-16 to countenance a two-year extension of existing Kyoto commitments (in large part because neither the US nor China have binding commitments under Kyoto), we do not see any prospect of a second international commitment period being in place by 1 January 2013. Indeed, we think it is now likely to take some years for a new legally binding global deal to be negotiated. This raises the prospect of the CDM existing beyond 2012 without a second international commitment period, a scenario that while perfectly possible under the governance arrangements of the CDM was nonetheless not the original assumption when the Kyoto Protocol was ratified.

Focus in 2011 will likely be on bottom-up approaches in domestic markets

In the absence of material progress towards a new international climate deal at Cancun, market interest outside the EU in 2011 is likely to be focused on California and Australia. In California, the AB32 legislation is now set to move forward, with a cap-and-trade scheme beginning in 2012 (power generators only to start with, and then covering all of heavy industry from 2015). The impact of the Californian scheme on international carbon markets may be limited, however, as if allowed at all the admissibility of CDM credits into the scheme will likely be very restricted. By contrast, if the Australian government were to decide next year in favour of an emissions-trading scheme similar in design to the CPRS that it almost enacted in 2009, this could ultimately have a big impact on international markets, but the policy debate there is starting again from first principles, and a carbon tax rather than an ETS remains a possibility. One way or the other, though, there could finally be clarity on how and when carbon will be priced in Australia by the end of 2011.

This makes it harder for the EU to commit to a 30% reduction target in 2011

With no realistic prospect of a new global deal in the foreseeable future, we do not think there will be sufficient appetite amongst EU Member States for raising the EU's 2020 emissions-reduction target to 30% over the next 12 months, particularly if the Commission succeeds in imposing qualitative restrictions on the admissibility of industrial-gas credits into the EU-ETS from 2013.

German power-market dynamics still the key to EUA prices in 2011

We expected EUA prices to continue the rise seen over H1 2010 into H2, and were targeting €18-20/tonne by year end. However as dark and spark spreads declined in H2, the demand from German generators simply did not materialize in the volumes we had forecast. This means that German and EU generators have barely begun to hedge their 2013 power sales yet, which in turn means that both power and carbon prices are likely to be more volatile in 2011. This is because as and when German generators do begin selling power for 2013 delivery in earnest, larger volumes of electricity will likely have to be contracted at shorter-dated maturities than usual.

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New deal as elusive as ever

The recent COP-16 meeting in Cancun made progress on a range of issues, but in our view ultimately did not change the underlying geo-political situation in a way that would enable a new globally climate deal to be secured at COP-17. Indeed, a second international commitment period now looks highly unlikely to us for the foreseeable future, in turn making it unlikely in our view that the EU will raise its 2020 emissions-reduction target in 2011. Accordingly, we think the key to EUA prices over the next 12 months will continue to be the dynamics of the German power market.

COP-16: progress on certain issues but no major breakthrough

In their response to the outcome of COP-16, the EU and European Commission expressed satisfaction at the progress made on a range of issues, including a number of the key points first enshrined in the Copenhagen Accord that resulted from COP-15 last year, notably:

- That for the first time it has been acknowledged in a UN document that global warming must be maintained below 2°C compared with the pre-industrial temperatures, and a process established to fix a date by which global emissions should peak;
- That the emission pledges of both developed and developing countries have been enshrined within the UN process, along with the need for overall mitigation efforts to be enhanced to restrict warming to no more than 2°C;
- That it has been agreed to launch a process to re-inforce the transparency of actions, thus allowing for more effective monitoring of progress;
- That the objective for developed countries to mobilise US\$100 billion in climate funding for developing countries annually by 2020 has been confirmed, and a Green Climate Fund established to help achieve this goal;
- That a "REDD+" mechanism has been launched to reduce emissions from deforestation and forest degradation in developing countries;
- That it has been agreed to consider establishing new carbon-market mechanisms beyond purely project-based approaches;
- That a Technology Mechanism has been established, to expedite the development and transfer of technologies;
- That a clear process has been established for reviewing the 2°C target, with the possibility of considering a tightening to 1.5°C, a process to be completed in 2015;
- That it has been agreed that the work of the ad hoc working groups under the UNFCCC and the Kyoto Protocol should be extended for a further year while leaving open the legal form of the eventual outcome of the negotiations.

At the same time, however, the EU Commissioner for Climate Action, Connie Hedegaard, was quoted as saying that significant challenges remain (press release on Commission website dated 11 December 2010):

"The EU came to Cancun to get a substantial package of action-oriented decisions and keep the international climate change negotiations on track. We have helped to deliver the successful outcome the world expected and needed. But the two weeks in Cancun have shown once again how slow and difficult the process is. Everyone needs to be aware that we still have a long and challenging journey ahead of us to reach the goal of a legally binding global climate framework".

The Commissioner thus stopped well short here of stating that a legally binding deal to succeed Kyoto was in sight, thus seeming to emphasize instead how challenging it will be to agree a new deal.

We believe the same point was made even more clearly by the chief international climate negotiator for the United States, Todd Stern. In an article that appeared on Bloomberg Finance LP newswires on 14 December, Mr. Stern was quoted as follows: *"While there may be some kind of legal treaty down the road, that's not happening, I think, anytime soon"*.

In our view, Mr. Stern was here simply reflecting the reality of US politics. With President Obama having failed to pass federal legislation on a cap-and-trade scheme for the US, and with the recent mid-term congressional elections likely having removed any residual chance of such legislation until 2013 at the earliest, there is in our view no prospect of the US signing up to a new international climate deal before that date either.

In short, we are of the view that for all the progress made on a range of issues at COP-16, the political conditions required for an over-arching legally binding agreement to succeed Kyoto after Cancun remain as elusive as ever.

Against this backdrop we think that the outlook for international carbon markets and prices in 2011 will depend on bottom-up initiatives in certain jurisdictions (and here we would highlight California and Australia), and, in particular, on whether the EU finds the outcome of COP-16 sufficiently positive to raise its 2020 emissions-reduction target over the next 12 months.

Outside the EU, focus in 2011 will be on California and Australia

In the absence of material political progress towards a new international climate deal at Cancun, market interest outside the EU in 2011 is likely to be focused on California and Australia.

In California, the AB32 legislation is now set to move forward, with a cap-and-trade scheme beginning in 2012 (power generators only to start with, and then covering all of heavy industry from 2015).

The impact of the Californian scheme on international carbon markets will likely be limited, however, as if allowed at all the admissibility of CDM credits into the scheme will be very restricted.

We will be following events in California closely over 2011 in the run-up to the start of the cap-and-trade scheme for generators, and for detailed background on the Californian legislation and trading scheme please see our report *California Gleamin'*, 3 September 2008.

In Australia, meanwhile, the recently elected minority government lead by Prime Minister Julia Gillard has begun a broad consultation on carbon pricing, which is due to be completed by the end of next year.

If at the end of this consultation period the Government was ultimately to decide in favour of an emissions-trading scheme similar in design to the CPRS (Carbon Pollution Reduction Scheme) that its predecessor almost enacted in 2009, this could ultimately have a big impact on international markets, but the policy debate there is starting again from first principles, and a carbon tax rather than an ETS remains a possibility.

One way or the other, though, there could finally be clarity on how and when carbon will be priced in Australia by the end of 2011, and as with California we will be watching events there closely (for background on Australia's previous attempts to legislate for a carbon price see our report *Aussie Carbon Rules*, 13 August 2009).

Cancun outcome makes it hard for EU to raise 2020 target in 2011

With no prospect in our view of a new global deal being reached in the foreseeable future, we do not think there will be sufficiently widespread support amongst EU Member States for raising the EU's 2020 emissions-reduction target to 30% within the next 12 months, particularly if the European Commission succeeds in imposing qualitative restrictions on the admissibility of industrial-gas credits into the EU-ETS from 1 January 2013.

This is because we estimate that the imposition of qualitative restrictions on industrial-gas credits from 1 January 2013 would raise compliance costs for ETS operators already under the existing 20% scenario, thereby making some Member States more wary of the further costs to be incurred by raising the 2020 emissions-reduction target to 30% (for our detailed analysis of the impact of qualitative restrictions on the use of industrial-gas credits in the EU-ETS and of moving to a 30% target by 2020 see our reports *Hard to Credit*, 22 June 2010 and *May You Live in Interesting Times*, 30 August 2010).

In this respect, it is also interesting to note that the EU Presidency in 2010 will be held by two eastern European Member States, namely Hungary and then Poland. This is potentially significant given that in our view it is western European countries such as the UK, France, and Germany that are most in favour of the EU's raising its 2020 emissions-reduction target, while the newer Member States of eastern Europe are, we think, less enthusiastic.

In short, we think that while the Commission, EU Member States, and the EU Parliament, will certainly continue to debate the merits of moving to a 30% emissions-reduction target over the course of 2011, it is unlikely in our view that a decision to raise the current 20% target will actually be made next year.

German power-market dynamics still the key to EUA prices in 2011

Earlier this year, in our report *Hammer to Fall* (26 April 2010) we outlined our rationale for expecting EUA prices to reach €18-20/tonne by year end 2010. Our argument was based on the need for EU power generators in general, and German power generators in particular, to start hedging the carbon liabilities associated with meaningful forward sales of electricity for 2013 delivery.

In turn, this argument was based on the assumption that German generators would over the course of 2010 sell 30% of their 2013 power production, in keeping with the pattern observed in previous years whereby at the end of a given calendar year German generators have typically sold 30% of power for delivery three years forward.

On this basis we derived the supply-and-demand profile for the EU-ETS over 2008-12 shown in Figure 1 below (as originally shown in our report *Hammer to Fall*). As can be seen, for 2010 we were assuming that the total demand from EU generators in 2010 for EUAs/CERs/ERUs would be 352m, comprising 74m to cover the shortfall in 2010 itself, and 278m to hedge liabilities against 2013 forward power sales.

Taking this analysis a step further, we then showed how we expected this 2010 demand from the generators to be satisfied in real time (Figure 2, again as originally shown in our report *Hammer to Fall*). With demand of 352m, we estimated that industrials would sell half of their surplus in 2010 (78m on our estimates), 200m of CERs would be used, and that generators would cover the rest of their deficit by carrying forward surplus EUAs from 2009 (50m) and borrowing a small amount from 2011 (24m).

Figure 1: Previous DB estimate of Phase-2 ETS supply-and-demand dynamics (Mt)

	2008	2009E	2010E	2011E	2012E	TOTAL
DEMAND						
Gross allowances needed on the market by the power sector for Phase 2	-248	-118	-142	-158	-152	-820
Average allowances in reserve to be auctioned/sold	+68	+68	+68	+68	+68	+342
<i>Net allowances needed by the power sector for Phase 2 (after purchase of auctioned EUAs)</i>	<i>-180</i>	<i>-50</i>	<i>-74</i>	<i>-90</i>	<i>-84</i>	<i>-478</i>
<i>Allowances needed on the market by the power sector for Phase 3</i>	<i>0</i>	<i>0</i>	<i>-278</i>	<i>-404</i>	<i>-576</i>	<i>-1,258</i>
Total net power-sector carbon demand by year-end 2012	-180	-50	-352	-494	-660	-1,736
SUPPLY						
Total estimated surplus of all other ETS sectors	90	204	155	145	105	699
<i>o/w assumed amount sold to power sector</i>	<i>81</i>	<i>50</i>	<i>78</i>	<i>73</i>	<i>53</i>	<i>334</i>
<i>Assumed use of following year's EUAs</i>	<i>+17</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>-17</i>	<i>+0</i>
<i>Surplus EUAs from Phase-2 NER and other reserves to be sold/auctioned</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>+192</i>	<i>+192</i>
<i>EUAs from Phase-3 NER to be sold by EIB</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>+200</i>	<i>0</i>	<i>+200</i>
Early auctioning of Phase-3 EUAs	0	0	0	0	+200	+200
<i>Assumed use of CERs/ERUs</i>	<i>+82</i>	<i>+100</i>	<i>+150</i>	<i>+173</i>	<i>+305</i>	<i>+810</i>
Total supply before early auctions	180	150	228	446	733	1,736
NET POSITION WITH EARLY AUCTIONING OF PHASE-3 EUAs IN 2012	0	100	-124	-48	+73	0

Source: Deutsche Bank

However as dark and spark spreads declined in H2 of this year, the demand from German generators for hedging 2013 forward-power sales simply did not materialize in the volumes we had forecast, and at the end of 2010 we estimate that they have sold only about 10% of their total output for 2013 (see our report *German Power: The Time Is Out of Joint*, 17 November 2010 for more background on this).

Figure 2: Previous DB estimate of Phase-2 ETS real-time supply-and-demand dynamics (Mt)

	2008	2009E	2010E	2011E	2012E	TOTAL
DEMAND						
Total net power-sector carbon demand by year-end 2012	-180	-50	-352	-494	-660	-1,736
SUPPLY						
Total estimated surplus of all other ETS sectors	90	204	155	145	105	699
<i>o/w assumed amount sold to power sector</i>	<i>81</i>	<i>50</i>	<i>78</i>	<i>73</i>	<i>53</i>	<i>334</i>
<i>Assumed use of following year's EUAs</i>	<i>+17</i>	<i>0</i>	<i>+24</i>	<i>+48</i>	<i>-89</i>	<i>+0</i>
<i>Assumed use of previous year's EUAs*</i>	<i>0</i>	<i>0</i>	<i>+50</i>	<i>0</i>	<i>0</i>	<i>+0</i>
<i>Surplus EUAs from Phase-2 NER and other reserves to be sold/auctioned</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>+192</i>	<i>+192</i>
<i>EUAs from Phase-3 NER to be sold by EIB</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>+200</i>	<i>0</i>	<i>+200</i>
<i>Early auctioning of Phase-3 EUAs</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>+200</i>	<i>+200</i>
<i>Assumed use of CERs/ERUs</i>	<i>+82</i>	<i>+50</i>	<i>+200</i>	<i>+173</i>	<i>+305</i>	<i>+810</i>
Total supply before early auctions	180	50	352	494	660	1,736
NET POSITION AFTER REAL TIME MARKET ADJUSTMENTS	0	0	0	0	0	0

Source: Deutsche Bank; *Of the 100Mt surplus registered in 2009 (as shown in Figure 1 above), we were here assuming that 50Mt would be carried over into 2010 as EUAs, and 50Mt in the form of CERs/ERUs.

In short, with German generators having only sold about one third of the volumes for 2013 delivery that we were earlier this year expecting they would have sold by this stage, and with other EU generators outside Germany probably not having started selling forward for 2013 at all, the deficit to be plugged by generators in 2010 has turned out to be much lower than the 352m we were assuming earlier this year.

As a result, it has in all likelihood been possible for the power sector to cover its total 2010 shortfall (i.e. actual 2010 deficit plus forward-hedging requirement) via a combination of EUA purchases from industrials with surplus allowances, CERs/ERUs, and a lower amount of fuel switching than we continue to think is consistent with achieving the cap out to 2020 at the lowest cost (in other words, we think the market is still being inefficient, and for more on the theory behind the optimal cost of compliance out to 2020 see our *Valuation* section below)

In our view, this explains why prompt EUA prices have ended the year at €14/tonne, instead of the €18-20/tonne we have been forecasting over the second half of 2010.

At this stage, our price forecasts for 2011 onwards are still assuming an efficient market that anticipates the future need for abatement over Phase 3 of the ETS in prices over 2011-12 (see our *Valuation* section below).

However, we think there is a risk of prices remaining below our forecast trajectory for 2011 if clean dark and clean spark spreads in the German power market remain at their current depressed levels, as this would continue to discourage German generators from selling significant volumes of electricity forward for 2013 delivery.

At the same time, of course, with German and EU generators having barely begun to hedge their 2013 power sales yet, both power and carbon prices are likely to be more volatile in 2011. This is because as and when German generators do begin selling power for 2013 delivery in earnest, larger volumes of electricity will have to be contracted at shorter-dated maturities than usual.

We will publish a more detailed analysis of our updated thoughts on this matter early in 2011, but at this stage we still see EUA prices trending higher next year, albeit with greater volatility than has been the case in 2010.

Valuation and risks

Revised DB base-case EUA valuation under existing 20% target

In keeping with the methodology we first set out in our report *It Takes CO₂ to Contango* (30 May 2008), expectations about a tighter cap in Phase 3 should make Phase-2 allowances more valuable given that they can be carried over into Phase 3. In effect, the bankability of Phase-2 EUAs means that the shortage of EUAs foreseen by the market in Phase 3 should already be anticipated in Phase 2 (assuming the market is efficient).

In other words, bankability means that we have to consider the expected residual abatement requirement in Phases 2 and 3 together rather than separately. If there is insufficient fuel-switching capacity in the EU to meet the required level of abatement in the ETS then today's EUA price should reflect the long-run marginal cost (LRMC) of carbon, this being the carbon price required to ensure that CCGT gas-fired plant gets built ahead of coal-fired plant.

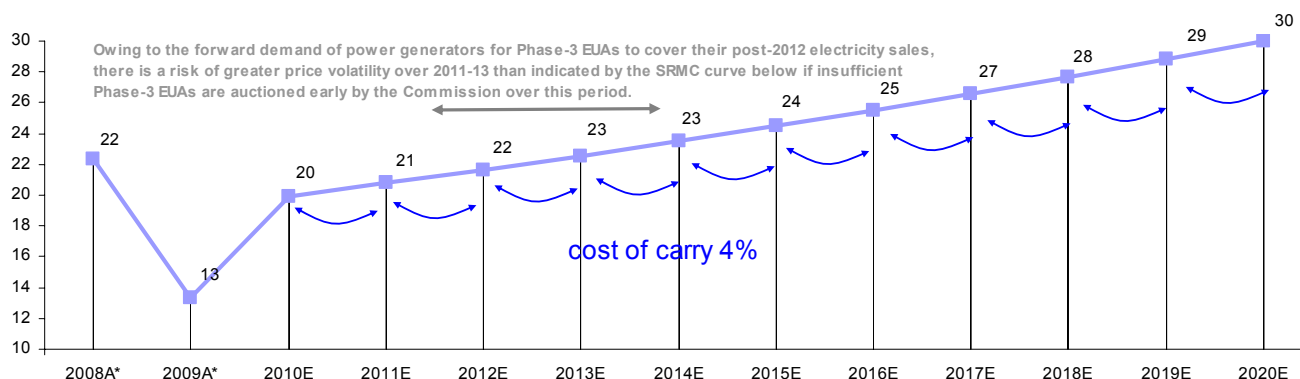
Our base-case estimate for the residual abatement required in the ETS over 2010-20 is 378Mt, and having already factored in all of the short-term fuel switching that can occur at prices of up to €20/t over 2008-12 in our report *Hammer to Fall* (26 April 2010), we project that all of the 378Mt residual abatement required to meet the cap by 2020 will have to occur over 2013-20.

We estimate that 30Mt per year of this could be achieved from existing power plants, and that a further 30Mt would be possible from the 8-9GW of new CCGT capacity that we expect to be on the grid by 2013. This means we see potential for up to 480Mt of fuel switching over 2013-20 from the capacity we expect to be in place by 2013, more than enough to meet the 378Mt abatement that we are now projecting will be required.

Under our base-case valuation for EUAs under the existing 20% target, then, prices should be set by the SRMC of fuel switching in the power-generation sector.

In a rational and efficient market, and using current prompt market prices for year-end 2010 of 57p/therm for UK gas and \$120/t for delivered coal to Europe, we would still have expected year-end 2010 CO₂ prices to reach €18-20/t, an outcome that would have been consistent with our previous base-case valuation scenario (Figure 3).

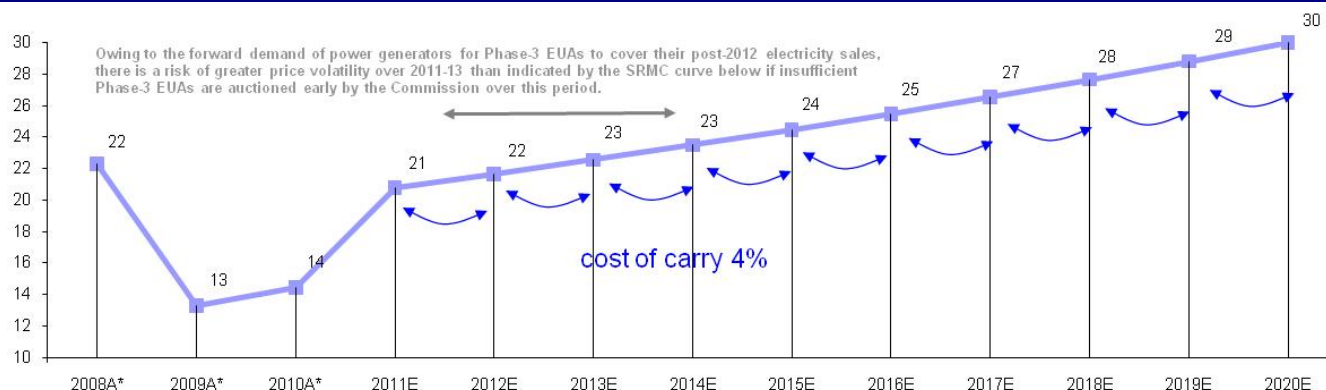
Figure 3: Previous DB base-case EUA forward curve over 2008-20E under the existing EU 20% reduction target (€/t)



Source: Deutsche Bank; *For 2008 and 2009 the average realized price in each year is shown, while from 2010 onwards we use our forecast of the year-end price

In reality, however, prompt EUA prices are trading just below €14/tonne at the moment, and this is the average price at which they have traded over the course of 2010 (Figure 4).

Figure 4: Revised DB base-case EUA forward curve over 2008-20E under the existing EU 20% reduction target (£/t)



Source: Deutsche Bank; *For 2008, 2009, and 2010, the average realized price in each year is shown, while from 2011 onwards we use our forecast of the year-end price

Accordingly, our updated base-case scenario for EUA prices under the EU's existing 20% emissions-reduction target is €14/t by year-end 2010, but then with prices rising sharply to €21/t by year-end 2011, and then more smoothly at our assumed cost of carry of 4% over 2012-20, to reach €30/t by 2020.

This means that our price forecasts for 2011 onwards are still assuming an efficient market that anticipates the future need for abatement over Phase 3 of the ETS in prices over 2011-12. In reality, the market may continue to trade at levels below the CO2 price that on our calculations would be required to meet the cap at least cost over by 2020.

In particular, we think there is a risk of prices remaining below our forecast trajectory for 2011 as shown in Figure 4 above if clean dark and clean spark spreads in the German power market remain at their current depressed levels, as this would continue to discourage German generators from selling significant volumes of electricity forward for 2013 delivery.

Nonetheless, Figure 4 remains our best estimate at this point in time of the outlook for EUA prices over the next 10 years under our base-case analysis of the EU's current 20% emission-reduction target.

Risks to our base-case valuation under the 20% target

The main downside risk to our EUA valuation is that the current very modest EU economic recovery will falter in 2011 (in this respect we would highlight in particular the risk of contagion within the Eurozone given the still difficult situation in Greece, Ireland and certain other countries in the Eurozone). The main upside risk to our valuation would be the fact that qualitative restrictions may be placed on the use of CERs/ERUs in the ETS from 1 January 2013 or at any time thereafter, which could lead to a higher level of required abatement within the EU-ETS over 2013-20 than we are currently projecting.

Moreover, we think that the outcome of the COP-16 conference in Cancun in December 2010 still leaves some uncertainty over the continuation of the CDM and JI mechanisms beyond 2012, at least in their current forms. This could lead to increased volatility in CER/ERU pricing over 2011, and, indirectly, to greater volatility in EUA pricing as well.

Appendix A: Glossary

Figures 5 and 6 define the technical terms used throughout this report.

Figure 5: Glossary of terms

20% target/the 20% target/the 20% scenario	Shorthand for the EU's unilateral and legally binding commitment to achieve a 20% reduction of greenhouse-gas emissions by 2020 compared with 1990 levels, as decided in the European Council meeting of March 2007.
30% target/a 30% target/a 30% scenario	Shorthand for the EU's conditional commitment to achieve a 30% reduction of greenhouse-gas emissions by 2020 compared with 1990 levels as decided in the European Council of March 2007. This target is currently dependent on other developed countries making "comparable" commitments.
Allowance/carbon allowance	Carbon assets that are distributed/sold to Emissions Trading Schemes' participants by the relevant authority to be surrendered at the end of the period to cover emissions. In the ETS Directive this term refers specifically to EUAs.
Annex-B countries	Annex B in the Kyoto Protocol lists those developed countries that have targets for their GHG emissions over 2008-12.
Bankability/banking/bank	The carrying over of carbon credits from one phase to the next (or sometimes used for the intra-phase year-to-year transfer).
bbl	barrel
bn	Billion
c.	Circa
CCGT	Combined-cycle gas turbine, a kind of gas-fired power-generating technology.
CCS	Carbon Capture and Storage
CDM EB/EB	The CDM Executive Board approves CDM projects, certifies operational entities and issues carbon credits for CDM projects.
CDM project	Clean Development Mechanism project. Defined in article 12 of the Kyoto Protocol, CDM projects are undertaken in developing countries and are intended to meet two objectives: (i) to address the sustainable development needs of the host country, and (ii) to reduce/limit GHG emissions to generate emission credits that can be used to satisfy commitments of Annex-I Parties and thus increase their compliance options. Projects that limit or reduce GHG emissions generate CERs if approved by the CDM EB.
CER	Certified Emissions Reduction, a carbon credit generated by Clean Development Mechanism (CDM) projects.
CER/ERU quotas	The quantity of CERs and ERUs that are allowed to be used under a given emissions-trading scheme. In this report, we refer to the quotas of CERs/ERUs allowed in the EU-ETS. As a shorthand, we use "CER/ERU surplus for the unused share of the CERs/ERUs quota (i.e. the surplus CER/ERU quotas) in this report.
CO₂	Carbon-dioxide
CPRS	Carbon Pollution Reduction Scheme, legislation proposed by the last Australian Government for an emissions-trading scheme.
Credit/carbon credit	In common parlance, a generic term for carbon assets covering EUAs as well as CERs/ERUs and other emissions-reduction credits. However, in the context of the ETS Directive this term refers specifically to all credits other than EUAs (which are always referred to as "allowances" in the Directive).
CP	Commitment Period under international climate agreements. CP1 is the Kyoto compliance period (2008-12), CP2 is yet to be decided.
Directive 2009/29/EC, or the Revised ETS Directive	In the EU, the Directive amending Directive 2003/84/EC setting an Emissions Trading Scheme, the EU-ETS. Throughout this report we refer to this as "the revised ETS Directive".
€	Euro
e	Equivalent
E	Estimated
EU	European Union
EUA	European Union Allowance, being a type of carbon credit exclusively for use within the EU ETS (see "Allowance" above).
EU-ETS	European Union Emissions Trading Scheme, also referred to simply as "the ETS" in this report.
ERU	Emissions Reduction Unit, a carbon credit generated by Joint Implementation (JI) projects.
Eurozone	The collective term applied to the 13 countries that use the Euro as their currency.
GDP	Gross Domestic Product
GHG	Greenhouse gas
Gt	Billion tonnes or Giga-tonnes
Industrial-gas CERs/credits	Shorthand for CERs generated/issued from projects that reduce the emissions of industrial gases into the atmosphere. Also industrial gases refer to either HFCs, N ₂ O, PFCs or SF ₆ .
Industrial-gas projects	Shorthand for projects that reduce the emissions of industrial gases into the atmosphere with a view to generate emissions reduction credits.

Source: European Commission, UNFCCC, Deutsche Bank

Figure 6: Glossary of terms (continued)

Jl project	Joint Implementation project, a flexible mechanism defined in Article 6 of the Kyoto Protocol. It allows developed countries, or companies from those countries, to co-operate on projects to reduce GHG emissions and share the Emissions Reduction Units (ERUs). As JI projects occur in Annex-B countries, no new emissions units are generated.
KP	Kyoto Protocol, the climate-change agreement reached at Kyoto in December 1997.
Kyoto	Shorthand for the Kyoto Protocol
LRMC	Long-run marginal cost
m	Million
Mt	Million tonnes or Mega-tonnes
o/w	Of which
p.a.	Per annum
Phase 1, Phase 2, Phase 3	Trading periods of the EU-ETS running from 2005 to 2007, 2008 to 2012, and 2013 to 2020 respectively.
SRMC	Short-run marginal cost
t	Tonne
Therm	A unit of heat energy equivalent to 100,000 British thermal units.
UNFCCC	United Nation Framework Convention on Climate Change
y/e	Year-end

Source: European Commission, UNFCCC, Deutsche Bank

Appendix 1

Important Disclosures

Additional information available upon request

For disclosures pertaining to recommendations or estimates made on a security mentioned in this report, please see the most recently published company report or visit our global disclosure look-up page on our website at <http://gm.db.com/ger/disclosure/DisclosureDirectory.eqsr>.

Analyst Certification

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst(s). In addition, the undersigned lead analyst(s) has not and will not receive any compensation for providing a specific recommendation or view in this report. Mark C Lewis

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