What happens to the price of carbon has a significant influence on power and gas prices. A CO_2 price collapse similar to that of 2006-07 is unlikely but according to Per Lekander of UBS[1], the future carbon price is uncertain because it will be driven by abatement strategies rather than economics.

Uncertain Outlook for EU Carbon Price

The market can choose to either buy a lot of 'Kyoto-allowances' (CERs) now and face very steep CO_2 reduction requirements after 2012 or reduce domestic emissions now and smooth CO_2 reductions over time.

We think the former is more likely indicating that the current E23/t CO_2 price could be sustainable over the next few years. On the other hand, if players 'save' CERs to use them in the much tighter Phase III there will be a bigger need to cut emissions and we think that a CO_2 price of E30-40/t is more likely.

For Phase III, the pricing dynamics are clearer. There will be a need to cut EU emissions, probably in the range of 15%. The CO_2 price needs to be high enough to reduce European coal power generation by almost 50%. This will, considering current fuel prices, require a carbon price of E40/t.

PHASE II: A BINARY CALL

Table 1 below shows our estimate of the ETS emissions deficit in 2007-2012. In 2007, the last year of Phase I of ETS, we estimate that the volume of issued allowances was 5% above the level of emissions. For 2008-2012, we estimate business as usual with emissions 8-9% higher than the volume of issued allowances. A CO_2 price collapse similar to that of Phase 1 is therefore unlikely.

However, uncertainty about the CO_2 price remains significant (see below). The current price, about E23/t, is just about in the middle of our forecast range.

Table 1 Allowances deficit estimate 2007-2012

	2007	2008	2009	2010	2011	2012
2007 emissions	2050	2050	2050	2050	2050	2050
Scope adjustments Phase 2		166	166	166	166	166
Inclusion of airlines					30	31
2007 emissions adjusting for scope	2050	2216	2216	2216	2246	2246
Allocation	2,152	2081	2081	2081	2081	2081
Gross deficit at 2007 emissions	-102	135	135	135	165	165
Emissions growth		54	81	108	135	162
Emissions savings		-23	-43	-56	-113	-160
BAU emissions deficit	-102	165	173	187	186	167
% of allocations	-5%	8%	8%	9%	9%	8%

Source: UBS

1 The views expressed in this paper are personal and do no necessarily represent the views of UBS.

FUEL SWITCHING IMPLIES A HIGHER PRICE

If the emissions deficit is met primarily by domestic European emissions reductions it would, considering current fuel prices, require a much higher CO_2 price. Chart 1 shows our estimated 'carbon abatement cost' for UK and the rest of Europe and we compare it to the CO_2 price.

> "This volume is almost twice our estimate of the emissions gap and CERs could easily cover the full emissions deficit."

We have calculated these prices by estimating what CO_2 price is required to equalise clear spark and dark spreads. The implied price moves in accordance with coal and gas prices. The CO_2 price has tended to move in line with movements in this implied price, but the movements have been much smaller and have been at a lower level. In the current situation, we estimate that in order to accomplish significant emissions saving via fuel switching we would need a CO_2 price in excess of E30/t.

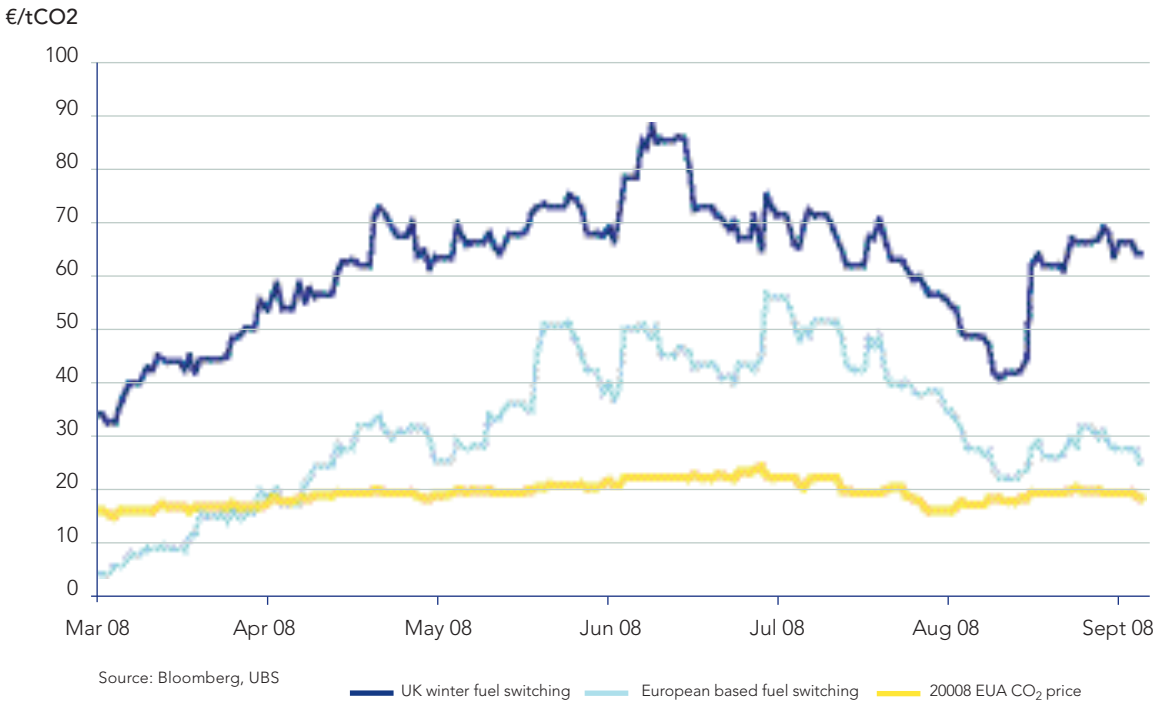
CERs INDICATE A LOWER PRICE

Alternatively, European companies could make so much use of CERs, or Kyoto-allowances, that there will not be a need to cut domestic European emissions. As the cost of CERs is significantly below the current CO_2 price, possibly around €12-15/t for recent projects, this could createa significant potential for a fall in the CO_2 price. We think that a plunge towards this cost level is unlikely as there exists an option to use the CERs also in Phase III. However the risk of a price fall in Phase II cannot be excluded.

In total, 1.4bn tonnes of CERs could be used in ETS Phase II or 280 Mtonnes/y. This volume is almost twice our estimate of the emissions gap and CERs could easily cover the full emissions deficit.

The proposed rules for Phase III, to be adopted by the end of 2008, leaves the CER volume unchanged at 1.4bn tonnes, but extends the possible use of it to the full 13 year period 2008-2020. This would equate to about 108 Mtonnes/y.

Chart 1 European versus UK-based fuel switching costs



Source: Bloomberg, UBS

Table 2 shows that if the lower volume 108 Mtonnes/y is utilised, ETS Phase II would have a remaining emissions deficit of 60-80 Mtonnes or 3-4%. On the other hand, at the regulatory barrier of 280 Mtonnes per year ETS would be 4-5% long. This would obviously not happen but the surplus could be carried over to Phase III. However, it demonstrates that CERs potentially could cover the full deficit for Phase II and thus there could be a significant further downside risk to the CO_2 price.

We think that the second scenario is more likely. CER-use will be front-end loaded. CERs will be used in Phase II and given the costs associated of holding on to CERs, most are likely to be used immediately. However, at the same time, given that the opportunity price, set by the switching cost is much higher, we do not see a major risk of a fall in the CO_2 price.

PHASE III: UP AND AWAY

For Phase III we believe in a different logic and in a way the uncertainties are lower. Table 3 below shows our estimates for how the emissions deficit changes from Phase II (2012) to Phase III (2013-2020). We estimate that the gross deficit grows from 8% to 21% of underlying baseline emissions. If we then assume that CERs are equally distributed over the 13 year period, and not 'front loaded', as is our scenario above, then the deficit would be around 15%. With front loading, the Phase III deficit would obviously increase further.

Table 2 Net emissions deficit 2007-2012 depending on CER use.

	2007	2008	2009	2010	2011	2012
BAU emissions deficit	-102	165	173	187	186	167
% of allocations	-5%	8%	8%	9%	9%	8%
CERs used over 13 years						
CER supply		108	108	108	108	108
Net deficit	-102	58	65	79	79	59
% of allowcations	-5%	3%	3%	4%	4%	3%
CERs used over 5 years						
CER supply		280	280	280	280	280
Net deficit	-102	-115	-107	-93	-94	-113
% of allocations	-5%	-5%	-5%	-4%	-4%	-5%

Source: UBSe

Table 3 Emissions deficit Phase III

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Emissions Phase 2 scope (Mtonnes)	2246	2247	2247	2248	2248	2249	2250	2250	2251
Scope adjustments Phase 3 (Mtonnes)		150	150	150	150	150	150	150	150
Allocation (Mtonnes)	2081	1978	1945	1913	1881	1849	1818	1788	1758
Gross deficit (Mtonnes)	165	418	452	485	518	550	581	612	643
% of allocations	8%	21%	22%	21%	21%	26%	26%	27%	27%
CER supply (Mtonnes)	108	108	108	108	108	108	108	108	108
% of allocations	3%	15%	16%	15%	15%	20%	20%	21%	21%

Source: UBS

In our view, it will be very difficult for Europe to achieve the CO_2 emissions targets implied by ETS, even assuming the full implementation of the EU's renewables targets, leading to c.190GW of new wind and almost 300 TWh of additional nuclear output. If CER-use in Phase II is front-end loaded, the challenge will become even greater.

"If 470TWh was only to displace coal stations in the generation mix, it would reduce emissions by 423mt CO_2."

Given our estimates, we would need an additional 470TWh of renewable capacity to meet the target set by the EU. A large amount of the increase is expected in France, Germany, Spain, Italy and the UK. 470TWh would be equivalent to 192GW of new onshore wind across Europe (running at a load factor of 28%). If 470TWh was only to displace coal stations in the generation mix, it would reduce emissions by 423mt CO_2. This is an upper limit as there are markets (e.g., Spain, Italy, and the UK) where the potential new renewable capacity would displace gas generation and hence, would have a smaller impact on emissions. The total coal and lignite generation in EU is around 1000 TWh per year. Therefore if EU emissions targets are to be achieved a 50% reduction in coal generation is required and to achieve this the CO_2 price would need to rise to about E40/t.