sandbag

Cap or trap?

How the EU ETS risks locking-in carbon emissions

September 2010

About Sandbag

Sandbag is a not-for-profit campaigning organisation promoting real action to tackle climate change and focused on the issue of emissions trading. Our view is that if emissions trading can be implemented correctly, it has the potential to deliver the deep cuts in carbon emissions the world so badly needs to prevent the worst impacts of climate change.

Through producing rigorous but accessible analysis we aim to make emissions trading more transparent and understandable to a wider audience than those already involved in the market. In particular, we hope to shed light on the challenges the EU Emissions Trading Scheme faces in becoming a truly effective scheme for cutting emissions and to advocate the solutions that can help it to work better.

We are grateful to the European Climate Foundation for helping to fund this work.

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About this report

In July 2009 we published our report ‘EU ETS S.O.S: Why Europe’s flagship climate policy needs saving’. In it we uncovered significant inefficiencies in the EU’s leading climate policy and concluded that if they were not addressed the scheme was at risk of being rendered redundant. At that time, our key finding was that , while the scheme was marginally short of allowances overall there were significant surpluses in emissions permits accruing to industrial participants in the scheme. The volumes were such that if carried forward they would seriously undermine the effectiveness of the scheme in its third phase, running from 2013-20. We reached our conclusions by comparing the caps that had been set in the scheme with the actual emissions data that was emerging.

In February 2010 we released our ‘Carbon Fatcats’ report examining which sectors and which specific companies were receiving the largest surplus free allocations under the scheme. Our updated "Fatcats" analysis can be found on pages 35-42.

Both reports were based on 2008 data. This report updates both analyses in light of the 2009 data release.

In this report we have again stuck firmly to an analysis of the actual emissions, allocations and access to allowances that exist under the rules of the scheme. Where we have made future projections we have not made use of complex econometric models to predict the future but have instead used simple assumptions. What if emissions remain at current levels? What if they drop or grow gradually? These simple scenarios are nevertheless very useful in being able to obtain a picture of the future effectiveness of this policy. A simple approach based on actual emissions data also enabled us to draw up a shadow allocation plan to compare against current proposals, which have been made complex through design features such as benchmarking and the decision to peg future allocations against allocations in 2010 rather than emissions.

The last section of the report sets out some suggested repairs to the system that now urgently need to be implemented to rescue the policy from irrelevancy.

We are always interested to receive feedback on our work and would welcome any reactions, comments or corrections. Please email us at info@sandbag.org.uk.

Note of Correction

Since the original publication of this report we have identified two errors we made in interpreting EU emissions trading policy. While these have little bearing on our key findings, we should like to correct them here for the benefit of future readers.

• In discussing the Phase II caps – which are approximately 6% higher than Phase I caps – we mistakenly inferred that this meant they were “growth caps”. While scope changes within Phase I makes this difficult to investigate directly, the enlargement of the Phase II cap is almost certainly a consequence of the broadening scope of the ETS to include new Member States and new industrial processes rather than any loosening of the Phase I cap as such.

• Similarly, we inferred that the -21% reductions proposed for the traded sector were set in reference to 2005 allocations rather than 2005 emissions.

In both cases, a lack of transparency about scope change put the Phase II caps and the 2020 cap out of alignment with the baseline figures in 2005. We feel this lends even further weight to our recommendation for greater transparency on scope change.

Neither inference detracts from our evidence that Phase II ETS caps were set too high and will fail to seriously constrain emissions in the wake of the recession. Nor do they alter our finding that 1.8 billion offsets are likely to be legally available in Phase III, impeding abatement in the Europe for much, if not all, of the period between now and 2020 unless action is taken to tighten the cap.

Damien Morris – October 2010

The numbers

1.9 billion

Total annual emissions covered by the scheme

1.8 billion

Likely number of carbon permits carried over to 2013-2020 budget

34%

Amount EU emissions could increase by 2016 before abatement required

€14 billion

The profits installations could make selling excess permits received in 2008-2012

1.4 billion

Tonnes of carbon a 30% EU target would save from the 2013-2020 ETS budget

1.4 billion

Permits saved by basing Phase III caps on historical emissions rather than Phase II caps

Preface

This report updates our analysis of the state of ETS first published in 2009. A lot can happen in twelve months and in Europe we have experienced one of the most severe economic downturns in recent history. The recession had only really begun in the latter half of 2008 but in 2009 it was in full swing and the effect on emissions – as production lines scaled back and demand for energy fell – was unprecedented. Official figures released by the Commission show an emissions drop in the traded sectors of 11.6% in just one year. This followed a fall the previous year of 6%.

The impact of this on the trading scheme has been dramatic. In 2009, the effects of the recession encouraged participating power and industrial installations to begin selling off their credits to raise funds during the economic downturn. This caused carbon prices to tumble to €10.15 (in Feb 09), compared with highs in the region of €30 in the previous July. Since this fall, the carbon price has rebounded to a spot price today of around €14 (22 July 2010- €13.85)[1].

If the ETS was close to grinding to a halt in 2009 it is now in danger of shifting into reverse gear. That is not to say that trading activity will cease or that prices will crash again to zero – but rather that the scheme is in danger not only of failing the objective for which it was set up – to secure reductions in emissions – but that it could become an environmental hindrance. With emissions now below the level of the cap, the cap has become a trap – guaranteeing high level of emissions into the future rather than working to deliver reductions. There is currently no structural design feature that allows for a considered reaction to these circumstances and this is a major failing. The environmental integrity of the scheme is now reliant on political decisions to increase future targets provisionally set for it in 2008. In the debate surrounding these decisions we hope this report will offer some insights and stimulate discussion.

1 Current price from ECX. Historical price based on articles: http://bit.ly/d49NDK , http://bit.ly/4Qayxj , http://bbc.in/23Ar4j

Contents

Executive Summary

Phase II – large reductions, low abatement

We are now two years into the second Phase of the EU Emissions Trading Scheme (ETS) and it is already clear that, like Phase I, Phase II will fail to deliver significant abatement[2]. Policymakers set a Phase II cap sitting just 6% below 2005 allocations[3]. But as 2005 was actually overallocated by more than 7% meaning Phase II actually represents a 1% growth cap against 2005 emissions[4]. Furthermore, this unambitious Phase II cap was almost immediately blindsided by the recession. In 2009 the recession dragged down production levels by 13.85%, reducing emissions by 11.6%[5].

Even with an aggressive economic recovery, our projections find it unlikely that the Phase II cap would constrain emissions by more than 32Mt across the full 5 years of the phase (2008-12), a meagre 0.3% of the 10.5 billion tonnes we expect covered installations to emit across the period. To put this in context, the current phase of the ETS, which polices more than 12,000 installations, would have been almost twice as effective if it had simply enforced a cap on one of Europe's largest polluters: Drax power station in the UK is likely to face a shortfall of 60Mt across the same period, double the net effect of the entire scheme.

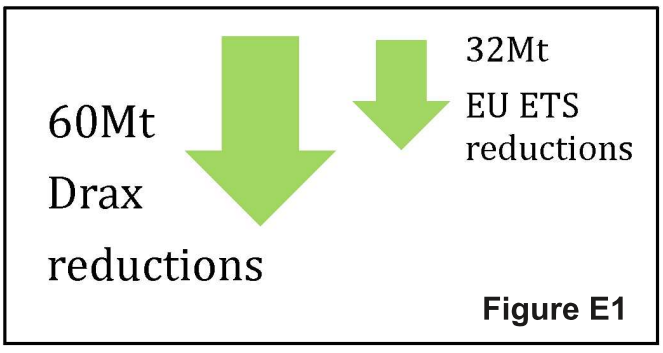


Figure E1

No net domestic abatement until at least 2017

Furthermore, the low cost and high availability of offsets make it is highly unlikely that this meagre 32Mt of abatement will take place in Europe. It is more probable that European emitters will purchase cheap offsets to give them a carbon space to grow domestic emissions. In fact, despite the promise of much more aggressive Phase III caps we find that on-going availability of cheap offsets could allow Europe's domestic emissions to grow a staggering 34% from current levels by 2016 (see Figure E2).

Sectoral overallocation - A billion tonnes of missed opportunity

While the net performance of the scheme is unpromising, the picture at the sectoral level is more discouraging still. The power sector is likely to face shortfalls of 1,132Mt across Phase II even after absorbing all of the permits available at auction. This could have delivered reductions across the Phase equivalent to a -16% cap instead of a -6% cap, saving more carbon than Germany's entire economy produces in a year, but the opportunity was squandered by freely

2 Phase I ran from 2005-2007, Phase II runs from 2008-2012, Phase III is due to run from 2013-2020

3 http://bit.ly/94XjDK

4 CITL records 2005 emissions at 2,014Mt and allocations at 2,172Mt. The aggregate Phase II NAPs give a cap of 2,033Mt. Exact comparisons across Phase I and Phase II are complicated by scope changes.

5 The 11.6% figure is taken from a European Commission press release on May 18 2010 http://bit.ly/aARxgE . The production figure is taken from Eurostat http://bit.ly/bTvcF8

6 Actual figure is 1,003 Mt. The remaining 97Mt gap to reach the 32Mt net position consists of an additional 192 unused NER credits re-entering the scheme counterbalanced by a 95Mt aviation shortfall (192-95 = 97)

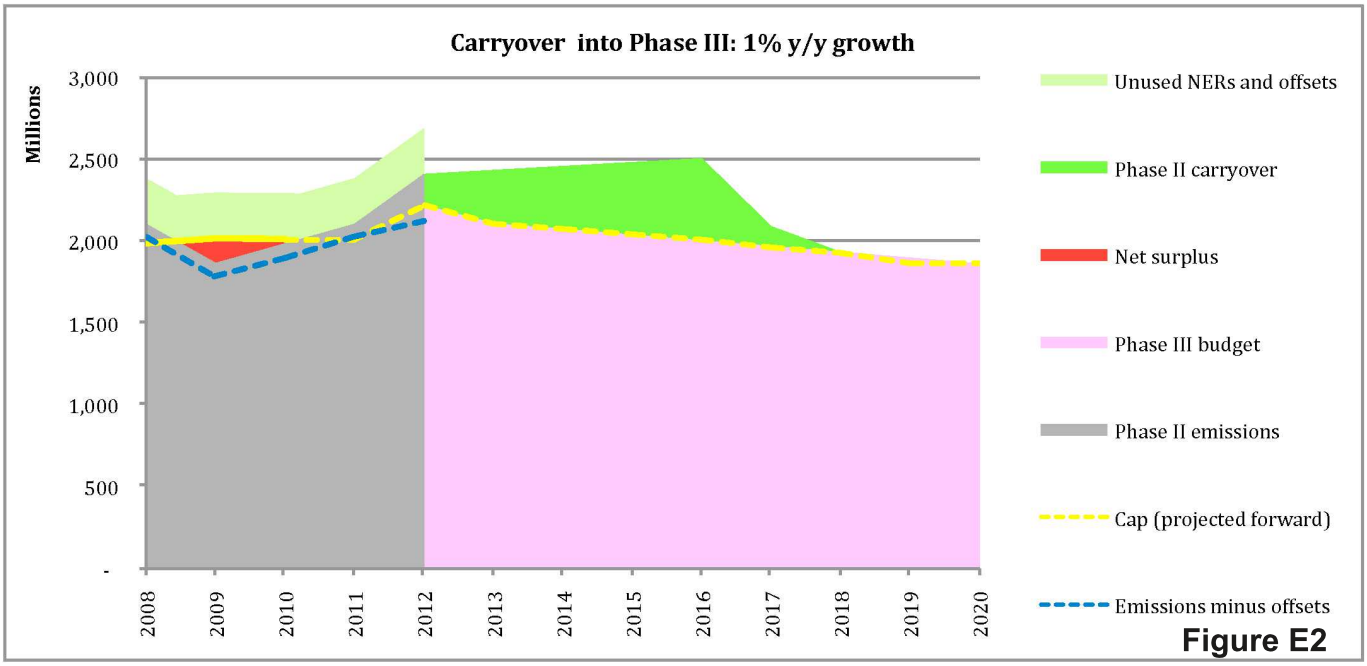


Figure E2

awarding a billion superfluous permits to industry and to combustion plant involved in manufacturing[6].

This sectoral overallocation not only cancels out the need for any abatement under the scheme, it fruitlessly gives away public assets currently worth €14 billion to industries taking no corresponding environmental action. Were this not sufficient affront to European citizens, as electricity consumers we are also obliged to bear the costs of this giveaway: the same permits are bought up by power companies to make up their shortfall and these costs are passed through to their customers.

The $teal sectors

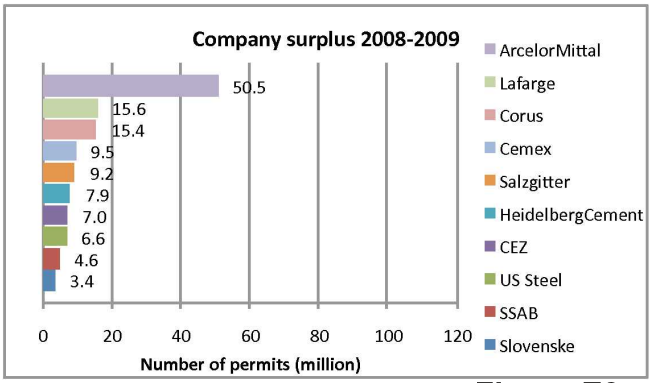
The largest share of the industrial surpluses accrued to the cement and steel industries, the two sectors which have lobbied most aggressively to weaken the ambition of the scheme and to be afforded special protections from carbon prices which might harm their competitiveness. Rather than being disadvantaged by the scheme these two sectors stand to gain carbon assets worth some €2.3 billion and €1.8 billion respectively across the phase. These are unearned assets which can either be liquidated now or banked forward to swell their benchmarked free allocations in Phase III, protecting them from the need to buy permits for most, if not all, of that phase.

As with the scheme overall, the emissions reductions delivering these surpluses were overwhelmingly caused by decreased output during the recession. Cement emissions were down 19.97% against an 18.98% drop in production, while steel emissions were down 28.96% against a 27.66% fall in output[7].

In addition to these overwhelmingly undeserved surpluses, it appears that these sectors are also surrendering offset credits to liberate more valuable European Union Allowances (EUAs), with 15.3 million credits purchased to date by the cement sector and 14.6 million by the steel sector. It is hard for these sectors to argue they fear competitive disadvantage when they are unnecessarily purchasing offsets for profit, some of which are likely to end up subsidising Europe's industrial competitors in countries such as China and India.

In 2009 alone, 2 million credits worth €24

7 Emissions figures are from CITL controlled for installations with incomplete information. The production figures are from Eurostat: http://bit.ly/cJh46d (Last updated 10/7/2010)



(Figures include 2008-9 offsets)

Figure E3

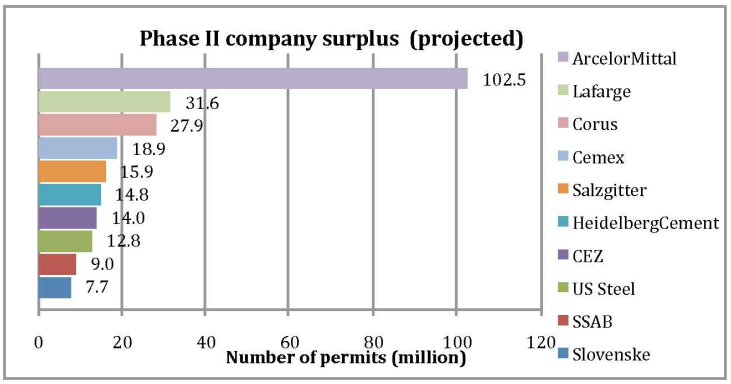


Figure E4

million went to steelworks in India and China, and we have found at least 3 examples of European steel works purchasing offset credits from steel works overseas directly subsidizing their foreign competitors.[8]

Carbon fatcats getting fatter

Earlier this year our Carbon Fatcats report[9] identified the 10 most overallocated companies in 2008, mostly consisting of steel and cement companies. Revisiting the same companies in 2009 we find that their EUA surpluses nearly quadrupled this year, reaching 119Mt up from 33Mt last year. Over the 5 years of the Phase, these companies can expect to accumulate 245 million permits worth €3.4 billion Euros at current prices. Steelmaker Arcelor Mittal claims 42% of this surplus, potentially accruing 102 million permits over the Phase worth €1.4 billion.

We have crudely approximated what Phase III benchmarks might look like for our industrial carbon fatcats and find that their Phase II surpluses may be so large as to allow them to collectively grow their emission 50% from 2009 levels by 2020.

The carbon fatcat with the highest overallocation in proportion with its emissions, SSAB steel, may be able to multiply its 2009 emissions two and a half times by 2020. Such large spaces for carbon growth suggest that these companies are if anything being competitively advantaged against overseas competitors. In fact Salzgitter is sufficiently unconcerned about international competitiveness that its Glocke Salzgitter steelworks buys 40,000 offset credits from Indian competitor Usha Martin Limited despite Salzgitter being in a surplus position[10].

Some of the strongest evidence for competitiveness distortion, however, is the disproportionate free allocations most of these companies have received against other European companies in their sector. As a proportion of its emissions to date, Heidelberg Cement has a fivefold allocation advantage over its European competitors in the cement industry, while Salzgitter has fourfold advantage against its European steel competitors.

Recommendations

As the essence of the scheme is to distribute carbon allowances to private companies, there is little recourse for reclaiming excess permits once they have been allocated. Furthermore, there is considerable inertia in the scheme with decisions affecting future fixed supplies of permits dictated many years in advance making them vulnerable to incorrect assumptions and unexpected events. The following recommendations seek

8 The purchases were between separate companies not subsidiaries of international companies

9 http://bit.ly/bEaV8u

10 See Sandbag's online Offset Map at http://bit.ly/9IkcKf

to prevent a repeat of the problems described above, and minimize the repercussions of existing issues into the future.

Recommendation 1: Adopt a 30% 2020 target

The current Phase III budgets are designed to achieve a 21% cut in traded sectors emissions from 2005 levels, in line with an economy wide cut of 20% against 1990 levels. This 20% target fails to reflect the advice of the IPCC for Annex I countries to adopt a 25-40% midterm target, and poorly reflects Europe's responsibilities as the world's third largest emitter and a self-styled climate leader. This target also conveniently ignores that considerable distance towards this target was made in the early 1990's before formal climate policies were adopted.

The European Commission has calculated that a 30% target would involve a 1.4 billion tonne reduction in the Phase III budgets, and has already recommended this quantity of permits be set aside in preparation. Reducing the supply of domestic permits by this amount would not only deliver increased abatement, it would greatly diminish the period over which offsets could delay domestic abatement.

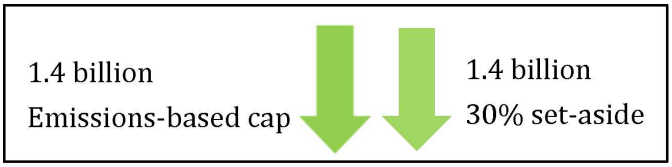


Figure E6

Recommendation 2: Adjust Phase III caps to reflect historic emissions

By electing to base Phase III caps on allocations in Phase II, the Commission risks contaminating the next phase with the overallocation of the current one. Each year in Phase II, there are likely to be conceled surpluses of 200Mt on average. If we base Phase III caps on a baseline derived from emissions since 2005, instead of inflated Phase II allocations, and apply the same emissions trajectory (i.e a 1.74%[11] annual decline backdated to 2010) we obtain a Phase III budget 1.4 billion tonnes smaller

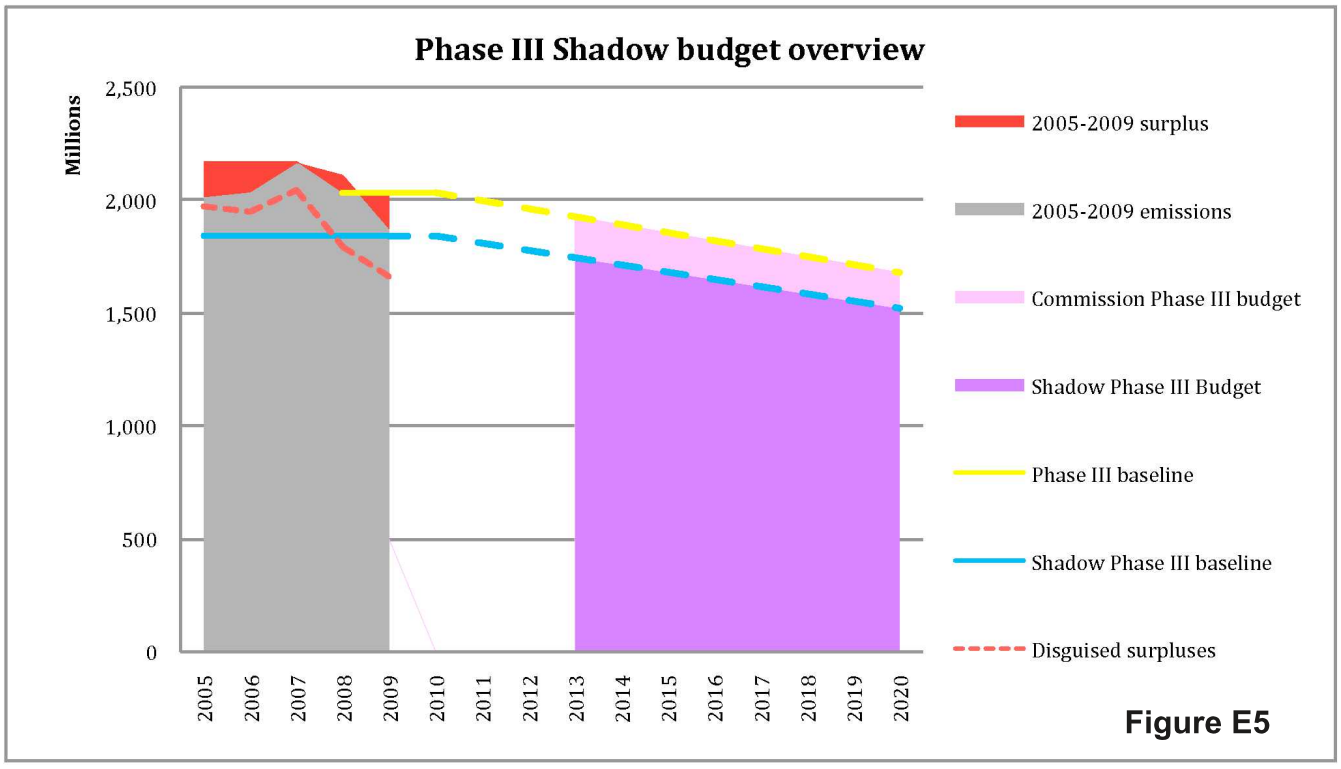


Figure E5

11 1.74% per annum is the propose rate of reduction in allocations from 2013 to 2020 as set out in the EU ETS Directive (http://bit.ly/cNmjyj)

than that currently prescribed by the European Commission, and reach a 2020 cap 30% below 2005 allocations, further supporting the swift adoption of a 30% economy wide cap (see Figure E5).

Recommendation 3: Reassess carbon leakage risks

Future assessments of carbon leakage need to take into account the large undeserved surpluses supposedly exposed sectors have accrued, lest these industrial sectors continue to be inappropriately cross-subsidized by electricity consumers while reducing overall abatement incentives. If industry continues to block moves towards higher targets out of competitiveness fears, it might be better to suspend industrial installations from the scheme altogether and instead subject them to direct emissions regulation.

Recommendation 4: Control for drops in demand

The ETS Directive currently lacks any provision to correct caps in light of exogenous emissions reductions such as those brought about by the recession. One way to control for this would be to establish a fixed-volume, precautionary reserve of permits at the start of future phases. The default setting of this reserve would be to release a full annual share of permits back into the market at the end of each year unless production levels were exceptionally low. Much more rigorous and uniform production data would be needed to be collected and verified across the scheme in order to put this measure in place.

Recommendation 5: Restrict the quality and quantity of offsets

To ensure at least 50% of abatement takes place in Europe, the offsetting budgets should be controlled for emissions reductions which do not result from abatement, and certainly lowered below the current limit of 10% of the overall cap. Furthermore, the Directive already empowers the Commission to rule on the quality of CER credits entering the ETS from 2013. The Comission should use these powers to prevent industrial gas credits entering the scheme in Phase III in order to prevent increasing risks of carbon leakage and to ensure that offset revenues are helping least developed countries to develop sustainably.

Additional recommendations

• An EU wide agreement to cancel unused new entrant reserve permits[12] would take 192 million permits out of the scheme

• A reserve price on permits sold at auction would shore up the carbon price while reducing oversupply

• Tax incentives for companies holding a surplus to voluntarily cancel their excess permits

• Just as caps make provision for New Entrants, they should be adjusted downward to reflect plant closures

• Greater transparency is needed regarding the companies controlling installations, the transfer of flue gases between different installations and past and future scope changes between different phases

Conclusion

Adopting these measures would go a long way to ensuring Europe takes full advantage of the opportunity to take a lead in the emerging green technology market. Without these or similar measures, the ETS risks becoming an emissions trap and an increasingly redundant tool in European climate policy. Meanwhile, Europe risks locking itself in to high carbon infrastructure and susceptibility to fossil fuel price fluctuations for many years into the future.

12 New entrant reserves were created by some member states to allow new installations access to free permits. They are unlikely to be used in full.

Introduction

The principle of cap and trade

Cap and trade is an excellent climate policy in principle. Regulators decide which companies should be covered by the scheme, prescribe a limit on the quantity of total carbon emissions they feel it would be acceptable for these companies to emit over a given period, and then allow the market to uncover the lowest costs to achieve that cap.

If manufacturer X finds an affordable way of lowering the emissions of its operations it should free up permits under the cap to be used by power station Y (or vice versa) and in this way the carbon price is kept low and the costs of abatement to reach a specific target are kept to a minimum.

In policy terms, a cap and trade system is called a "quantity instrument", in that the regulator controls the number of pollution permits to release and allows the market to establish the price. This is in contrast to "price instruments" like carbon taxes, where the regulator controls the price of carbon.

As carbon dioxide poses a quantity problem, a quantity instrument like cap and trade is eminently suited to addressing it. While carbon taxes (a "price instrument") may provide a clear investment signal, they risk failing to achieve desired emissions cuts (if the price is set too low) or achieving cuts too expensively (if the price is set too high).

A cap and trade scheme also has the advantage of sidestepping some of the political resistance that new taxation measures traditionally attract.

But while cap and trade is an excellent and appropriate climate policy in theory, the EU Emissions Trading Scheme (ETS) has proven to be an imperfect tool to date. There are some key historical reasons for this.

The realpolitik of establishing the EU ETS

When establishing the scheme, the Directorate General Environment, elected to include large industrial emitters alongside power stations. There is evidence to suggest the DG was obliged to incorporate industrial emitters in order to get the scheme underway, as a power only cap would have fallen under the remit of DG Energy which was less supportive of the concept.

Once industrial emitters were incorporated into the scheme, however, several problems were imported along with them:

- **Free allocation by grandfathering.**

Power companies have negligible exposure to international competition and could have been obliged to buy all permits at auction from the outset, passing all carbon costs incurred through to their domestic customers. Even if full auctioning to the power sector proved too politically difficult, initially the greater availability of data on power companies' emissions would have made it possible to benchmark free allocations against best available low-carbon technologies. Both auctioning and benchmarking apply the polluter-pays principle, albeit in different degrees.

A carbon price on European industry, by contrast, threatened to disadvantage it against its international competitors – potentially affecting European jobs and GDP. What is more, flight of operations and jobs outside of Europe may not lead to net carbon savings, as emissions were likely to migrate

with them. With a dearth of data making industrial benchmarking impossible for many years, the European Commission decided to allocate emissions rights on the basis of historical and projected emissions. This method is known as “grandfathering”: endowing the largest polluters in the scheme with the most carbon permits – an arrangement where, perversely, the polluter-profits.

• Competitiveness distortions

Fears about industrial competitiveness both within and without Europe drove most Member States, to create a generous carbon space for their industrial output to grow when drawing up their National Allocation Plans. This generosity to industry was partly disguised by low allocations to the power sector.

In this regard, the European Commission created an opportunity for Member States to game the system to competitively favour their own industries. With this pattern replicated across most states, the net effect was to create a massive state subsidy to key European industries, with large pan-European multinationals reaping the biggest rewards.

Industrial companies were not the only winners in the scheme, with power companies able to pass through the full opportunity-costs of the free carbon permits they received in order to make windfall profits. Larger power companies operating across several European companies are able to use the windfalls made from pass-through costs in countries with highly regulated energy markets to undercut competitors in countries with more liberalised markets.

• Compromised caps

The other net effect of this allocation pattern across Member States was to artificially inflate the overall cap with a margin for industrial growth which never materialised. Thus in the last two years we can see that a cap on the power sector alone would have saved some 370 Mt CO2 (equivalent to the annual emissions of Poland), while the cap inclusive of industrial emissions has, thanks to the ability to bank permits forward, actually accrued 197 Mt emissions for future domestic use (more than the annual emissions of the Czech Republic).

In light of the above problems, it is encouraging to hear other countries exploring a “utilities first” models for cap and trade legislation.

The EU ETS from here

Critics of emissions trading point to the poor environmental record of the European scheme as evidence that it should be dismantled in favour of national regulation and carbon taxation. But, while impatience with the EU ETS is certainly justified, calls for it to be disbanded underestimate the wide political resistance to taxation and the potential for regulatory failure from governments.

The EU ETS has been slow to get underway – largely hampered by the inclusion of industrial emitters from the outset. It was further waylaid by the recession, which undermined the Phase II caps just as they were first beginning to bite. But the EU ETS is not without positive developments:

• After 5 years in the scheme, enough data has been accumulated on industrial emitters to begin benchmarking their Phase III free allocations against the lowest-carbon installations in their product category, introducing much greater demand for permits and strengthening the carbon price.

• The overwhelming majority of power companies will be expected to buy all of their emission permits at auction from 2013.

• The overall Phase III cap is set to decrease at 1.74% a year, leading the traded sector to

a 2020 cap 21% below 2005 levels.

• Despite the surfeit of permits exacerbated by the recession in 2009, the carbon price has not only remained stable but substantially risen as fears of scarcity in Phase III drove companies under the scheme to hedge against future carbon price exposure.

Europe has a lot of environmental ground to make up yet, but this will not be best served by dismantling the flagship environmental policy just as it is begins to work. However, nor will the environmental goals of the scheme be served by trusting complacently in the "power of the market" to deliver. While we must be sensitive to the risk of regulatory failure we must be equally sensitive to the risks of market failure, especially when, as Nicholas Stern has stated, climate change represents the "the greatest market failure the world has seen"[13]. The EU ETS is not a natural market dictated by spontaneous scarcity of a valued commodity, but is rather an artefact of policy designed to correct for market failure. The installations covered by the ETS and the net supply of pollution permits available to them, are politically arbitrated as a practical and moral response to climate science. The scope of the scheme and the supply of permits within it should, therefore, be regularly re-examined in light of changing scientific and moral circumstances.

It is encouraging then, to see the European Commission explore the prospect of a unilateral move beyond 20% in light of worsening scientific predictions and the drop in emissions resulting from the recession. They have proposed a 1.4 billion reduction in the Phase III carbon budget for the traded sector to reflect a 30% economy-wide target[14].

As we will see below, this proposed set aside neatly corresponds to the Phase III cap when its baseline is corrected for overallocation. Even were such a cap agreed, though, neither this nor the new benchmarking rules would redress the accumulation of surplus permits to certain sectors and companies in Phase II. Neither would it protect the scheme from future dips in production.

In the report that follows we will explore the problems weakening the scheme in Phase II and the implications these have for Phase III before proposing some solutions to these issues which could deliver a trading scheme which is environmentally fit-for-purpose.

13 Nicholas Stern, lecture at the Royal Economic Society "Climate Change, Ethics, and the Economics of a Global Deal" 29.11.2007

14 European Commission "Analysis of options to move beyond 20% greenhouse gas emission reductions and assessing the risk of carbon leakage" 26.5.2010 http://bit.ly/bNLNGI

Section A: The scheme in overview

In this section we explore the environmental performance of the scheme in aggregate. We find that Europe's low economy-wide targets put it on an abatement pathway out of step with the scale of its contribution to dangerous climate change, and inadequately account for the early abatement Europe inadvertently achieved through unrelated policies and measures. Meanwhile, the excessive availability of both domestic carbon permits and foreign credits, combined with new banking rules threatens to defer domestic abatement until at least 2017, substantially undermining Europe's putative role as a global climate leader.

Problem 1: Inappropriate ambition

Europe's share of the global climate challenge

The UN Intergovernmental Panel on Climate Change (IPCC) has stated that the world needs to be on a path to reduce emissions at least 50% below 1990 level by 2050 if we are to have a reasonable chance of avoiding "dangerous levels" of anthropogenic global warming (2° C).[15] That global target represents -80% to -95% targets amongst developed nations, with the IPCC recommending midterm (2020) targets in the range of -25% to -40%.[16]

Midterm targets are key because delayed trajectories towards the 2050 target increase the total emissions contributed to the atmosphere over time. Furthermore, delayed action makes abatement more expensive, with the International Energy Agency estimating that the global costs of reaching current targets increases by $500 billion every year we delay action.[17]

The current unilateral European 2020 target of -20% plainly falls below the minimum effort recommended by the IPCC. This commitment is certainly not proportionate with Europe's contemporary responsibility for climate change as the third largest global emitter, leaving aside the question of its far greater historic responsibilities.

Furthermore, while 1990 is an appropriate baseline year, based on the new moral and epistemic duties inherent in the release of the IPCC's First Assessment Report (AR1), it is also a highly convenient one for Europe.

The countries now comprising the EU27 saw their emissions drop below their -8% by 2012 Kyoto target as early as 1994, **three years before the Kyoto protocol was even adopted**.[18] Nor were these reductions the outcome of "early action" – most had resulted from economic and technological developments that had nothing to do with climate policy. The 1990 baseline further benefitted the EU as new Eastern Europe Member States brought with them "hot air": surplus Kyoto credits resulting from their recent economic contraction.

15 IPCC Fourth Assessment Report; http://bit.ly/l1FFv, p.20.

16 Intergovernmental Panel on Climate Change 4th Assessment Report, Working Group III report. Climate Change 2007: Mitigation of Climate Change (Cambridge University Press, Cambridge, 2007), chapter 13, Box 13.7 on page 776

17 http://bit.ly/45RGnQ

18 UNFCCC GHG register http://bit.ly/dCD9PR

Given the size of its head start, a 20% target ill-befits Europe as a self-styled leader on climate change. As a minimum, the EU should be matching the effort tabled by the most ambitious developed economies *going forward*, e.g. Japan's -25% target, translates to a -30% target against a 2005 baseline.[19]

While the current conditionality of Europe's adoption of a -30% target reflects a sensitivity to the risk of carrying free-riders in addressing a global problem, Europe's risk-aversion threatens to limit its stake in the emerging clean energy economy estimated to be worth some $2.3 trillion by 2020.[20]

Europe's ambition in the traded sector

The most cost effective and efficient policy the EU has in place to curb emissions is the EU Emissions Trading Scheme, currently covering just under half of the EU's emissions of carbon dioxide (representing around 2 billion tonnes per annum) and exerting legally binding caps on some 12,000 participating installations.

In 2008 the EU agreed a new climate and energy policy package in which it set out revised rules for the trading scheme. These had to take into account the conditional nature of the EU's international climate targets. With no global deal in place the caps were set in line with a 20% economy-wide reduction target, which translated into a 21% reduction in the traded sector against 2005 levels. Regrettably, this 2005 baseline was set in reference to 2005 *allocations* which were 7.3% higher than actual emissions. This means the Phase II cap, is actually a 1% growth cap against 2005 emissions, and the 21% target in the traded sector corresponds with just a 16-17% cut against 2005 *emissions*.[21]

Given the large potential for abatement in the traded sectors and the flexibilities and cost efficiencies inherent in trading, this target was already modest. The closure of many large coal plants under the Large Combustion Plants Directive and the planned increase of renewables to 20% of the EU energy mix make this target even less ambitious, as both factors are certain to pull the traded sectors emissions down. Finally, the rules also allowed for generous access to international offsets making the requirement to deliver abatement in Europe weaker still.

With these preconditions set, the market needed to see sustained growth in production for there to be any real demand for additional abatement reductions. What happened next was of course precisely the opposite.

19 See our policy briefing on EU ambition at Copenhagen http://bit.ly/76ULx2

20 Centre for American Progress, "Out of the Running" http://bit.ly/aAkkLA

21 CITL gives 2005 emissions as 2,014Mt and allocations as 2,172Mt. The commission announcement of 2013 allocations implies a 2020 cap of 1,679Mt. Scope changes to the installations covered by the ETS mean the 2020 cap does not relate directly to 2005 figures.

Problem 2: Too many domestic permits

The first phase of the emissions trading scheme was discouraging, to say the least. More carbon permits were issued by Member States than polluters needed to carry on as usual and the ensuing lack of demand caused the carbon price to crash.

Defenders of the scheme dismissed these as teething problems and characterised Phase I as a data gathering "test phase", but this learning period didn't seem to teach us many lessons: two years into the new and improved second phase, we find ourselves once more in a situation where the carbon market is in surplus, or "long" in the parlance of traders. This is despite the European Commission's intervention to require most Member States to cut back on their allocation plans. This makes 2008 the only year in the 5 years that the ETS has been running in which the cap has actually been below annual emissions.

A feeble Phase II cap

While an initial glance at the 2009 net position (emissions-allocations) finds the market long by 86Mt, this fails to account for some 65 million permits sold at auction purchased pushing the 2009 surplus up to 151Mt (3.4% of the initial allowance of 1,952Mt).

With 2008 the only year under the scheme to face a shortfall (of 117Mt) since the start of the scheme in 2005, strictly speaking the net signal of the scheme to date has been to *increase* emissions by 34 MtCO2e, more than Norway emits each year. Looking forward across the rest of the Phase, even an optimistic forecast for economic recovery does not find the scheme faring very well.

In Figure A2 we have charted a rough projection of how we expect Phase II to unfold. The graph breaks emissions down into three sectors – industrial emitters, underallocated combustion and overallocated combustion, which we shall explore more in section B. A fourth sector, aviation, enters the scheme in 2012 pushing up emissions that year and, to a lesser extent, the cap.[22] The graph already factors auctions into the cap (marked as yellow line) and shows both the net projected surplus and the masked surplus arising from unequal allocation of allowances amongst the sectors.

Our model anticipates a strong and emissions-intensive economic recovery which finds emissions returning to 2008 levels by 2011.[23] Under these conditions the net position appears, on first inspection, to be short some 531Mt overall, however when auctions are factored in, our projections anticipate that the Phase will only be short some 224Mt against emissions of 10,472 in the same period (see Table A1).

This 224Mt largely vanishes, however, once unused New Entrance Reserve permits re-enter the market at the end of the Phase. To protect new installations covered by the scheme from being disadvantaged against incumbents, several Member States put a reserve of EUAs aside from which to allocate free permits to latecomers. As a corollary, any installations shutting down their operations during the trading period are required to hand back their allocations to the reserve. The reserve is therefore dynamic with the number of permits in it changing over time. Market analysts at Deutsche Bank have made a detailed assessment of how reserves are operating in order to predict how many allowances within the reserves

22 DECC projections aviation emissions will be 305MtCO2e in 2012 against an allocation of 210 million permits. "Impact Assessment of Second Stage Transposition of EU Legislation to include Aviation in the European Union Emissions Trading System (EU ETS)" http://bit.ly/93E1C4

23 We assume that auctions will continue at 2009 levels through to 2012.

may remain unused and therefore re-enter the market, and have estimated that some 192 million permits will enter the market at the end of Phase II.[24] This leaves the supply of domestic permits across Phase II short only 32Mt against total emissions of 10,472Mt.

To put this in context Phase II of the ETS could have been almost twice as environmentally effective if it had only enforced caps on one installation instead of 12,000 – Drax power station is set to face a shortfall of 60Mt over the Phase.[25]

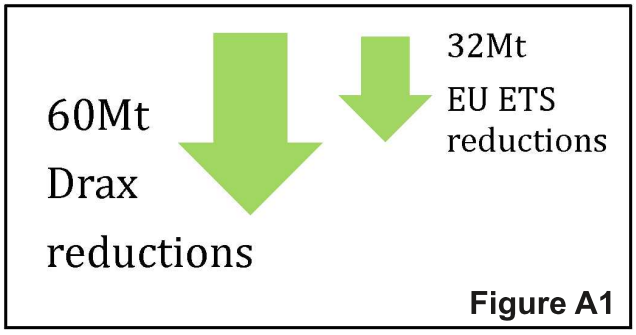


Figure A1

Disputing this conclusion, some have contended that abatement contributed a significant share of the emissions reductions seen over 2008 and 2009. This claim is difficult to support, however, in the face of the dramatic decreases in output that have corresponded with emissions reductions. In 2009 the 11.6% drop in emissions corresponded with an even larger 13.85% drop in the industrial production index (including electricity generation) for the EU27.[26]

A squandered opportunity – surpluses disguised by the net position

This 32Mt shortfall is the *net* abatement required across the Phase, and disguises highly uneven compliance obligations within different sectors which we explore in detail in Section B. To briefly anticipate this section, we find that *all* industrial sectors[27] are holding large surpluses, as are most installations in

Table A1: Phase II projections in numbers (Mt)

	2008 Actual	2009 Actual	2010 Estimate	2011 Estimate	2012 Estimate	Total
Total emissions	2,105	1,866	1,986	2,105	2,410	**10,472**
Total free allocations	1,944	1,952	1,948	1,943	2,153	**9,942**
Permits sold at auction	44	66	66	66	66	**307**
Net position before offsets	-117	+151	+28	-96	-190	**-224**

24 Deutsche Bank, "An ABC of the NER" 22.2.2010

25 As with our model for Phase II, we have assumed Drax emissions recover to 2008 levels by 2011. Drax can expect a shortfall of 60.3 million EUAs over Phase II.

26 See Eurostat database http://bit.ly/afaPne

27 i.e. activity Codes 2-99 in the EU Community Independent Transaction Log

the combustion sector. **A billion superfluous permits have been handed out in Phase II representing a wasted opportunity to avoid 10% of 2008-12 emissions without requiring any additional effort in the scheme.** This 'what if' cap is shown as the "masked surplus" line in Figure A2.

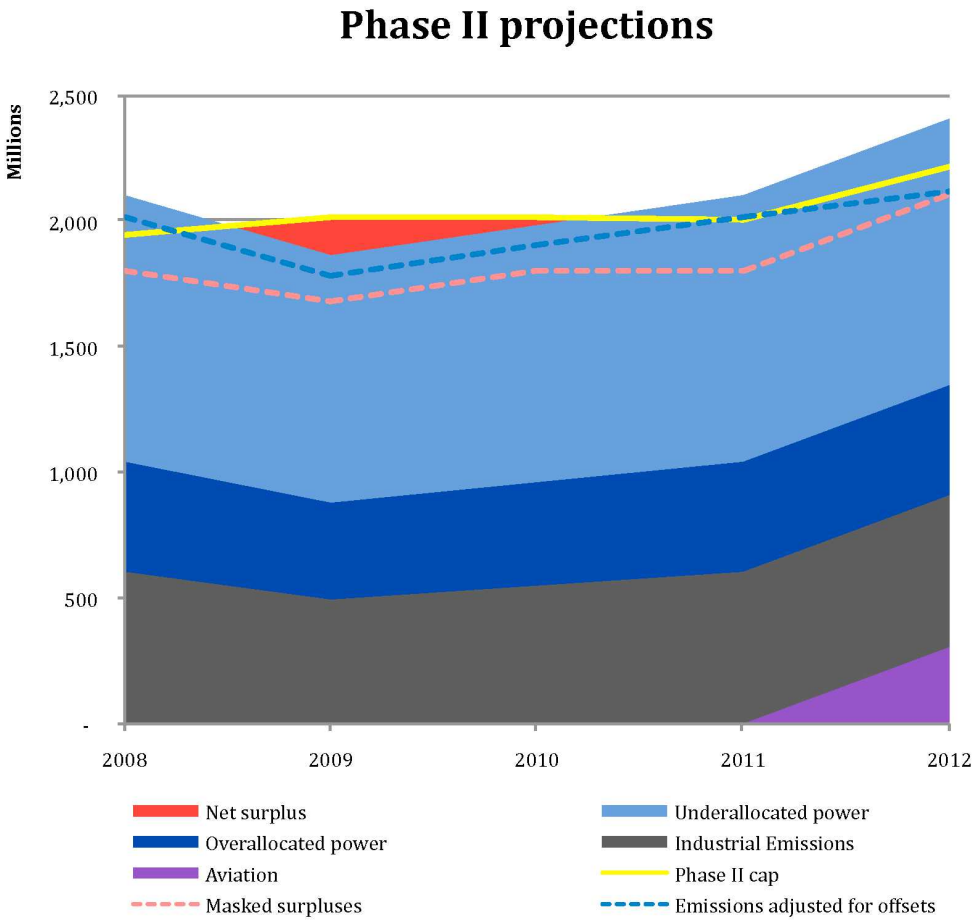


Figure A2

Problem 3: Excessive access to foreign offsets

The Linking Directive made it possible to use international emissions credits generated under the Kyoto Protocol's Joint Implementation (JI) programme and Clean Development Mechanism (CDM) for compliance with EU ETS caps. The reason for linking was to reduce compliance costs for participants and thereby act as a safety valve against potential price spikes.

Limits on the number of offsets available for use were generously fixed at 10% of the total Phase II cap, a limit set with a view to ensuring at least 50% of abatement effort remained in the EU. But as our Phase II model shows the offset budget wildly overestimated the level of abatement that would be required by the domestic cap. **Consequently, we find ourselves in a situation where offsets not only substitute for domestic abatement, but perversely create a space for European emissions to grow.**

Deutsche Bank estimates that maximum volume of emissions credits that are allowed for use in Phase II is 1.43 billion in Phase II and predict a further 250-500 million will be allowed in Phase III.[28] However, globally only 414Mt of credits have so far been issued

28 Deutsche Bank, "Chapter and Verse: EU ETS rules for CER-ERU use beyond Copenhagen", 16.11.09

Table A2: Phase II projections with offsets (Mt)

	2008 Actual	2009 Actual	2010 Estimate	2011 Estimate	2012 Estimate	Total
Net position before offsets	-117	+151	+28	-96	-190	**-224**
Offsets surrendered	81	81	81	81	287	**611**
Net position before offsets	**-36**	**+233**	**+109**	**-15**	**+96**	**+387**

globally under CDM with a further 1.79 billion currently "in the pipeline".[29] We expect some 401 million credits to be generated by JI up to 2013.[30] Unused credits from phase II will be carried forward into phase III.

Roughly 81 million offsets were surrendered for compliance both in 2008 and 2009, and we have projected this compliance pattern forward across the rest of the Phase. Many commentators expect a steep rise in offset purchasing in 2012 to hedge against carbon exposure and potential restrictions on offset use in Phase III. We have factored this in by assuming a full fifth of the offset allowance will be used in 2012.[31]

With the 2008 market short 117 Mt and the 2009 market long 151 Mt, the net effect of the Phase to date has been to store up a 34Mt space for carbon growth. With 162 million offsets purchased over the same two years, this will allow European installations to grow their emissions by 196Mt.

Over the full course of Phase II, the scheme will probably deliver something in the region of 32Mt of carbon savings once 192 NER permits are factored in, but the use of offsets could put the domestic market long by 579 million permits. **This would allow the European traded sector to grow its Phase II emissions by an amount equivalent to a year's emissions from France and Greece combined.**[32]

It is unlikely that emissions are even capable of growing this fast in the remainder of Phase II, which means this domestic growth margin will be carried over to Phase III. Furthermore some 1.2 billion offset credits could remain available for use in Phase III, enlarging that space for carbon growth in the EU dramatically, as we explore below.

Whilst allowing offsetting is a sensible precaution in a trading scheme with tight caps, the combination of high levels of offsetting with very low levels of demand serves to undermine the price signal for investment in domestic abatement. Instead of supplementing 'domestic action', under recessionary conditions, it is highly likely that offsetting is substituting for domestic effort.

29 http://bit.ly/9dQ9sm

30 http://bit.ly/9H7vWH

31 See Appendix 2 "Notes on Methodology" for more details on estimated offset availability.

32 France's 2007 economy-wide emissions were 463Mt (including LULUCF) in 2007. Greece's were 128Mt http://bit.ly/aOUm0i

Implication: Limited domestic abatement in Phase III

With the scheme assailed by low midterm ambitions, weak Phase II caps, and an oversupply of cheap offsets, new rules allowing permits to be banked forward will enable domestic emissions to grow unabated until at least 2017.

In Phase I when the trading period was self-contained, the problem of excess permits ended with the Phase in 2007, but, since 2008, new provisions in the EU ETS Directive allow for unlimited banking forward of permits between Phases.[33]

This means that the surplus carbon permits accrued during any phase with weak caps from Phase II onwards will return to dog the scheme until they are surrendered against emissions sometime in the future.

Unlimited banking is a valuable mechanism in principle – granting companies the flexibility to meet their caps at a time which suits them best and smoothing out potential bottlenecks in supply. It has the potential to incentivise early action. Unfortunately it also enables undeserved surpluses generated under the scheme to haunt it indefinitely. Carbon budgets intended to place a ceiling on pollution levels, can perversely become guarantees that this pollution will take place at some point in the future. The carbon cap can become a carbon trap.

As we have seen, the use of offsets is likely to leave the Phase II market long by 579 million EUAs which can now be carried forward into Phase III. Over 1.2 billion offset permits could then be available for use in Phase III, giving a total carryover of roughly 1.8 billion carbon allowances.

To explore to what degree this carryover would buffer ETS participants in a 20% scenario we have modelled two different scenarios for emissions in Phase III.

Scenario 1: 1% Year-on-Year Emissions Growth

Building on our projection of emissions rebounding to 2008 levels before aviation emissions enter the scheme, our first scenario explores how long emissions could rise at 1% a year relative to 2012 levels before the carryover is exhausted by the requirements of the current Phase III cap.

To plot the cap we have applied the following paragraph from Article 9 of the Emissions Trading Directive:

"The Community-wide quantity of allowances issued each year starting in 2013 shall decrease in a linear manner beginning from the mid-point of the period from 2008 to 2012. The quantity shall decrease by a linear factor of 1,74 % compared to the average annual total quantity of allowances issued by Member States in accordance with the Commission Decisions on their national allocation plans for the period from 2008 to 2012."[34]

We take it to mean that the 2013 cap will be 5.22% below the average Phase II cap, and will decline a further 1.74% each year until 2020. This reading fits with the 2013 allocations announced by the Commission on 9 July 2010.[35] The resulting budget for Phase III is then compared against our projections for emissions in covered sectors.[36]

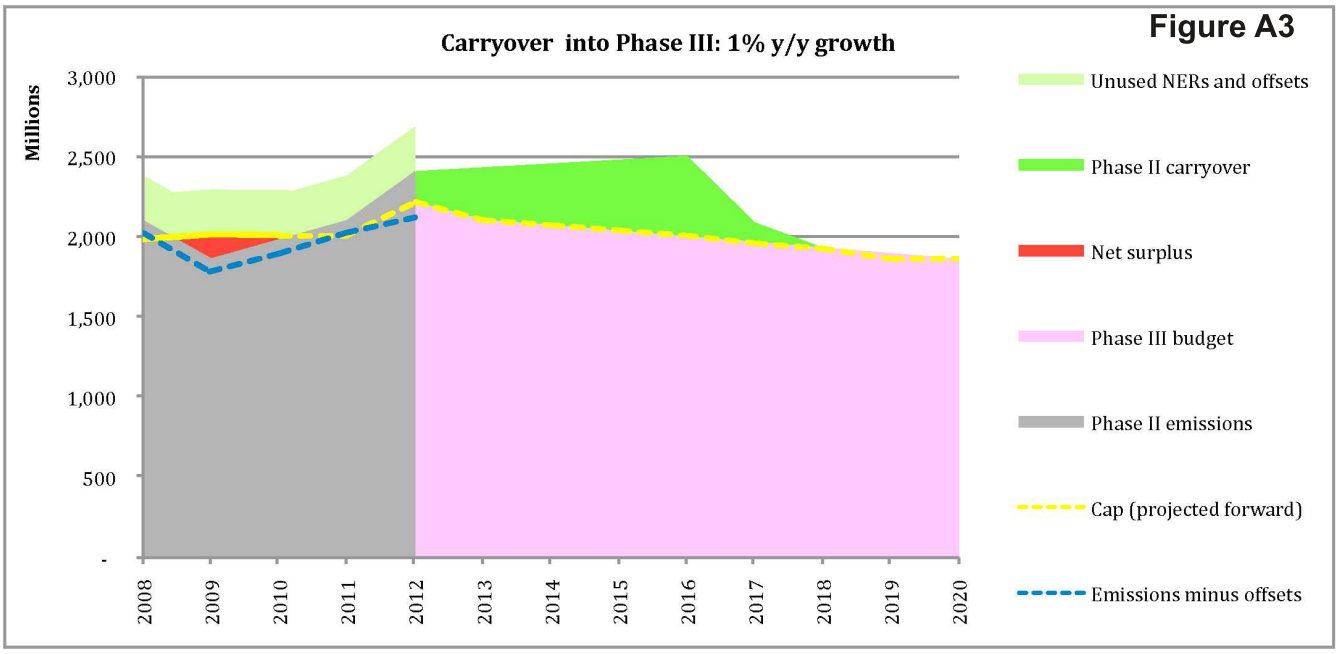
A 1.8 billion carryover enlarges the proposed

33 Article 13, Paragraph 2B Consolidated ETS Directive at http://bit.ly/dlRwum

34 Consolidated ETS Directive at http://bit.ly/dlRwum

35 http://bit.ly/98JA8q

36 Note: To keep our projections in proportion with the reduced sample of installation data used in this report, we have derived the Phase III budget rather than used the new Commission figures. This gives us an average Phase II cap of 2,007Mt, and an annual reduction rate (backdated to 2010) of 34.9Mt, generating a 2013 budget of 1,903Mt and a Phase III

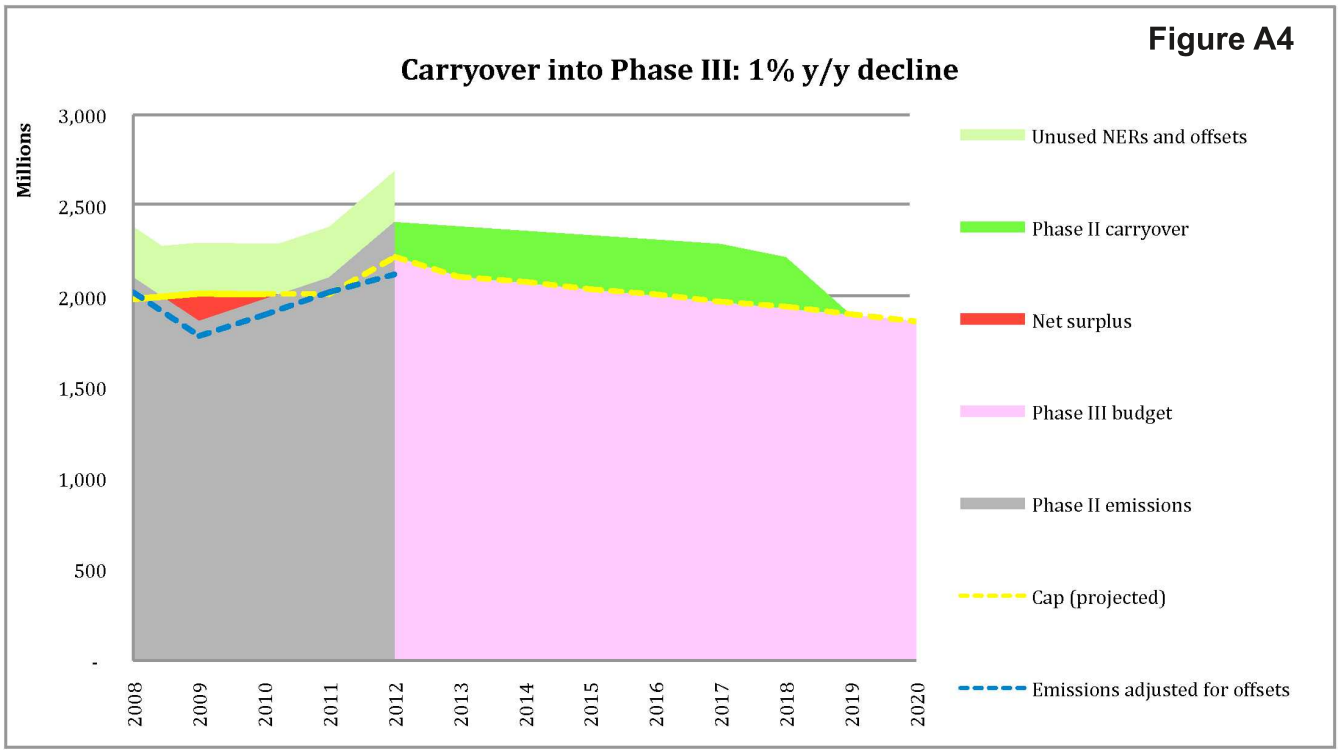


Phase III budget by 11.2%. Because the Phase III cap declines 1.74% each year, against a background of rising emissions, the carryover is depleted exponentially more each year we progress into the phase. **Despite this we find that the carryover would allow emissions in the EU to grow until 2017 – reaching 2.5 billion in 2016, a massive potential increase of 34% from 2009 levels (see Figure A3).**

Scenario 2: 1% Emissions Decline

Year-on-year

We have also explored how far the carryover would extend if the net effect of climate policies (such as the legally binding renewable energy targets and increases in energy efficiency) and circumstances external to the ETS drove emissions to gradually decline from 2013. Under these conditions we find that the ETS would fail to constrain emissions until 2018, and even then very weakly. The trajectory of emissions



would not need to change substantially until 2019 when the carryover was completely exhausted (see Figure A4).

While it should not be forgotten that the biggest portion of this carryover represents abatement of greenhouse gases overseas, there is a clearly a risk of the ETS becoming redundant as a driver of domestic abatement for most of Phase III.

This disproportionate weighting towards overseas abatement means Europe will not reap the promised advantages of being a leader in the new green economy. It also misses an essential diplomatic opportunity to demonstrate to developing and emerging economies that low carbon growth and prosperity are genuinely possible. In the meantime, European expenditure on CDM projects subsidizes our industrial competitors overseas while discouraging emerging economies from taking on domestic targets which would close off this source of income.

Section B: Sectoral analysis

In our overview of the EU ETS in Section A, we have raised fundamental concerns about how the overall cap is operating, with Phase II caps delivering a negligible shortfall and offset credits enabling domestic emissions to grow well into Phase III. Further problems lurk beneath the surface of the scheme, with massive surpluses accumulating to most sectors under the scheme.

Not only are all industrial sectors overallocated, but most installations in the combustion sector are overallocated as well, only a small share of combustion installations – mostly large electricity generators – are facing significant shortfalls. These few installations are left to do all of the work under the scheme. The remainder not only get a free ride, but can actually profit from the scheme in the near term.

Over Phase II this overallocation is likely to amount to a billion permits. A missed opportunity to save as much carbon as Germany, the largest European polluter, produces in a year. [37]

Overallocation or abatement?

Some commentators have argued that it is impossible to distinguish deserved surpluses (owing to abatement) from undeserved surpluses (resulting from over-allocation and recession). However, it is clear that the overwhelming majority of emissions reductions in sectors holding surplus permits have resulted from declines in production, not investment in abatement.

The Eurostat industrial production index (which includes electricity) finds the EU27 down 13.85% in 2009[38], which we feel is safe to assume is overwhelmingly responsible for the 11.6% drop in 2009 emissions against 2008 levels.

Eurostat records electricity production declining by 7.1% in 2009, while emissions dropped 8.6% indicating some fuel switching taking place and the effect of renewables policy. Similarly, iron and steel production was down 27.7% while emissions dropped 30%, and cement production was down 19% while cement emissions dropped by 20%. With emissions reductions at every sector closely matched by reduced output, it is clear that overallocation, not abatement effort, is overwhelmingly responsible for these reductions.

In short, the evidence is stacked against the ETS currently delivering sufficient price signals to drive investment in domestic abatement and this evidence is starkest in the industrial sectors.

To reveal the surpluses obscured by the net position we have analysed how different sectors, subsectors and sectoral groups have performed under the scheme to date.

37 In 2007 Germany's economy-wide emissions were 934 Mt including LULUCF UNFCCC GHG register http://bit.ly/aOUm0i

38 http://bit.ly/afaPne

Table B1: 2009 reductions in output vs. reductions in emissions

Sector	2009 emissions	2009 output[39]
All sectors (including electricity)	**-11.6%[40]**	**-13.85%[41]**
Electricity generation transmission and distribution (CITL 1)	-8.56%	-7.05%
Manufacture of basic iron and steel and of ferro alloys (CITL 5)	-28.96%	-27.66%
Manufacture of cement (CITL 6)	-19.97%	-18.98%
Manufacture of clay building materials (CITL 8)	-32.01%	-30.30%
Manufacture of glass (CITL 7)	-14.64%	-15.44%

39 http://bit.ly/chxPkg (Last updated 10/7/2010)

40 As stated in EC press release on 18/5/2010 (our controlled sample delivers a reduction of 11.35%) http://bit.ly/brwzUf

41 http://bit.ly/afaPne

Heavy industry

Heavy industry consisted of all installations which recorded sector 2-99 for their "main activity type", i.e. activities which generate process emissions rather than emissions as a by-product of energy generation. Within this group, surpluses can appear higher than they are because there is a transfer of waste gases and associated permits from some steel plant to nearby power plants which use the gases as fuel.

We have adjusted our allocations to account for the estimated waste gas transfers to under-allocated power stations, but even after taking these into account we still find industrials sitting on very large surpluses.[42]

Looking at Figure B1, we see industrial installations long in permits right from the start of Phase II, with recession in the last two quarters of 2008 dragging productions levels down and having a knock on effect on emissions. Production and emissions went into free-fall in 2009 with four quarters of recession, bringing surpluses to date to 226 million. We project Phase II surpluses for these sectors to reach 436 million permits (see Table B2).

Despite an overallocation likely to exceed total emissions by 15% we nevertheless find substantial quantities of offsets being surrendered to meet compliance obligations. This amounts to 48 million credits to date and may total as much as 184 million by the end of Phase II. This implies industrials might be purchasing offsets in order to enlarge their EUA surpluses.

Offsets are nearly always substantially cheaper than EUAs, and substituting offsets for compliance allows the more valuable EUAs to be sold on at a profit or retained for use against future targets.

With offset substitution included industrial sectors are projected to accrue surpluses of 620 million EUAs over Phase II. This is more carbon than all industrial plant emits in a year. This delivers potential windfalls of €6.5 billion once offset costs are deducted.[43]

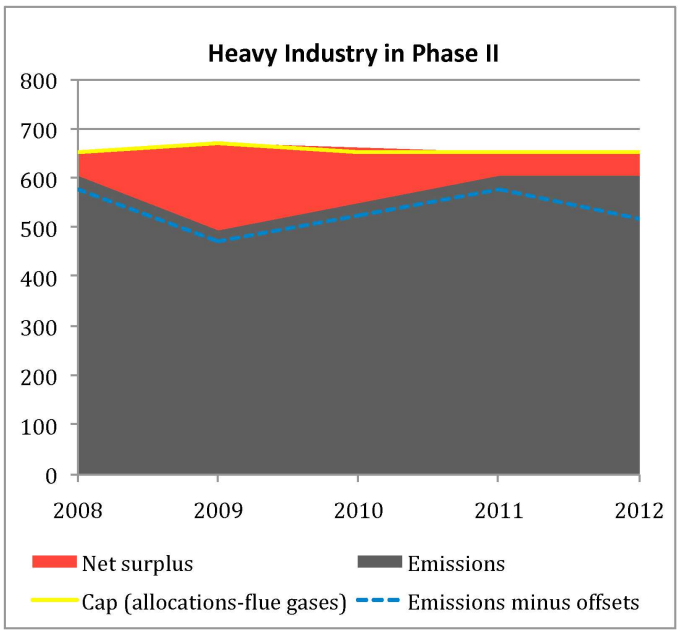


Figure B1

42 See Appendix 2: Notes on Methodology for more information on our estimates for waste gas transfer.

Table B2: Heavy industry projections in numbers (Mt)

	2008 Actual	2009 Actual	2010 Estimate	2011 Estimate	2012 Estimate	Phase II Total
Total emissions	605	495	550	605	605	**2,860**
Total allocations	695	700	698	695	695	**3,484**
Flue gas permits transferred	-42	-29	-35	-42	-42	**-189**
Net position without offsets	**+49**	**+177**	**+113**	**+49**	**+49**	**+436**
Offsets surrendered	27	21	24	27	85	**184**
True net EUA position	**+75**	**+199**	**+137**	**+75**	**+134**	**+620**

43 EUAs are calculated as €14 and offsets at €12

Breakdown of industrial sectors

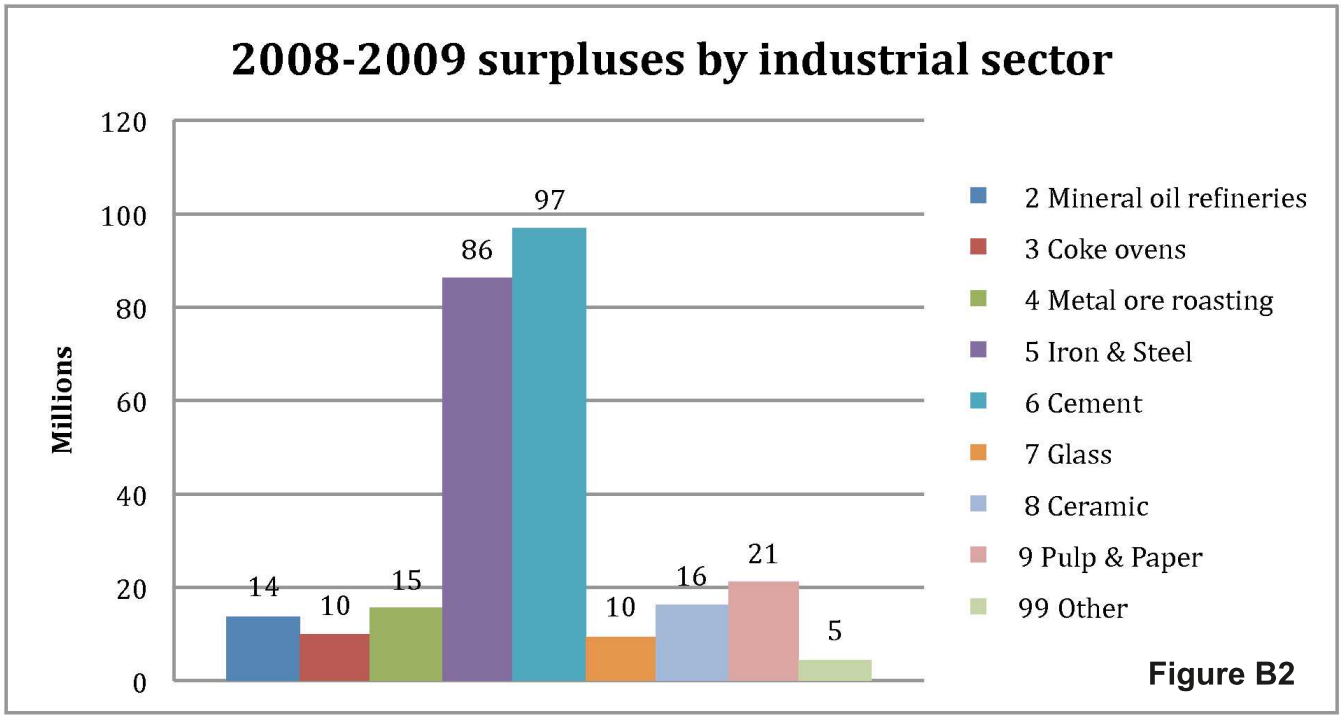


Figure B2

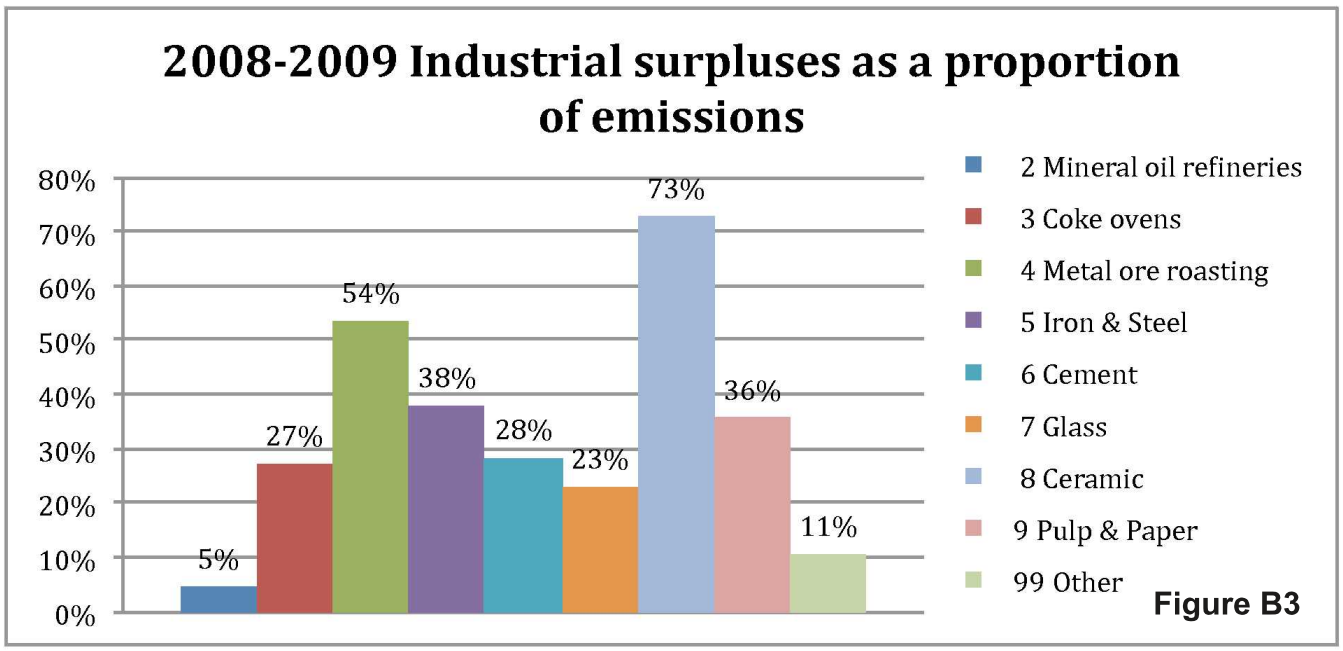


Figure B3

If we divide industry into its constituent activity codes we find that the lion's share of industrial surpluses accrue to both steel (sector 5) and cement (sector 6), which together account for 183 million surplus permits to date, or 67% of the total industrial surplus (see Figure B2).[44]

Given the scale of the surpluses these two sectors have already accrued as a result of their generous treatment in National Allocation Plans across Europe, it is remarkable to find them aggressively resisting a unilateral move to 30% and advocating continued generous free allocations in Phase III.

Both Eurofer and Cembureau, the main European lobby groups for steel and cement respectively, have consistently pushed for

44 These surplus figures include offsets.

reduced economy-wide targets. Gordon Moffat, Director General of Eurofer described the -30% 2020 target as "fatal"[45] to the European steel industry, and both organisations are key members of the Alliance for Competitive European Industry which submitted an open letter to the Presidents of the European Council, Commission and Parliament to resist a move to -30%.[46] Using the same premise of competitiveness disadvantage, potential job losses and carbon leakage, both organisations have lobbied for special privileges and free allocations under the scheme.

But in light of these large surpluses, these lobbying efforts look less like petitions for competition protection and more like requests for free money. Far from being a competitive disadvantage, the EU ETS appears to have helped subsidize these industries as the recession entered full swing. This not only represents a total perversion of the environmental purpose of the ETS, but potentially violates WTO rules prohibiting state-aid.[47]

Furthermore, research done by CE Delft and Climate Strategies suggests that both sectors may be passing on the opportunity costs of their freely allocated permits to their consumers, totally undermining their case that carbon pricing pushes them out of the global market. CE Delft estimates that nearly 100% of EUA opportunity costs have been passed through steel customers to date[48], and Climate Strategies estimates that 33-90% of EUA value will be passed through to cement consumers in Phase III.[49]

International competitiveness distorted by offsets

Another curiosity in the competitiveness debate has been the resistance of Business Europe and others to quality restrictions on carbon offsets, despite the fact that millions of Euros in offset revenues are currently subsidising Europe's industrial competitors.

In our report 'Offsetting and the EU ETS 2008'[50] we showed, for the first time, where compliance credits used in the ETS were originating from. We also illustrated the flows of credits on an interactive map linking all compliance users to the projects they had bought from, and vice versa.

This exercise revealed a stark picture of large amounts of finance flowing to mainly chemical companies in China and India. While there were examples of other projects receiving finance, the vast majority of the money spent on compliance buying for the ETS has helped to boost the coffers of large industrial installations. The projects funded require very little in the way of infrastructure investment and deliver very little in terms of helping countries to adapt their energy systems to deliver low carbon growth for the future. Arguably this fails to meet the objective set for the CDM to deliver sustainable development benefits.

A further problem is that in addition to diverting investment away from Europe, offsetting also has the potential to exacerbate any competitiveness distortions arising from a non-global cap being introduced in globally traded markets. This is because under the rules of the CDM any source of emissions in developing countries can apply for

45 http://bit.ly/9ZsC8l

46 http://bit.ly/cYx7on

47 Carbon Trust, "Tackling Carbon Leakage", page 2, http://bit.ly/90kp37

48 http://bit.ly/apwuLQ

49 "Climate change and the cement sector" by G.Cook, Climate Strategies, 2009, p.15 http://bit.ly/91ou4K

50 http://bit.ly/afIlHc

accreditation for emissions reductions. Therefore steel manufacturers and chemical companies can receive subsidies for investment undertaken to improve their carbon/fuel efficiency while companies in the same sectors in Europe are facing increased costs from the same policy. Removing eligibility for projects in competitive sectors must be one of the first reforms of the EU emissions trading policy that is considered, certainly ahead of any more disruptive options such as the introduction of border tax adjustments.

The starkest examples of this competitive distortion are direct transfers of wealth from European installations to competitors in the same sector. Three European steelworks – Glocke Salzgitter, Integriertes Hüttenwerk Duisburg and Elektrostahlwerk Trier – directly funded abatement projectsin Indian and Chinese steelworks, purchasing 77,000 CERS from them currently valued at €1.15 million. Our most recent offset report finds that 2 million CERs from foreign steel projects were surrendered into the EU ETS[51] representing a subsidy to foreign steel of €24 million.

51 See our latest report on offsetting in the ETS http://bit.ly/bvTrDN

Combustion

Last year in our ETS SOS report, we observed that industrial sectors were accruing large surpluses while combustion (CITL code 1) undertook all the effort under the scheme. This year we have subdivided combustion to reveal another layer of overallocation further diluting the effort under the scheme. On closer inspection we find that just 1/3rd of combustion installations are shouldering all of the effort within the whole scheme, while the remaining combustion and most industrial plant are sitting on large, undeserved surpluses.[52]

Over-allocated combustion

Over-allocated combustion includes all combustion plant (CITL activity code 1) which achieved a total net surplus when its emissions were subtracted from its free allocations in 2008 and 2009. Roughly 2/3rds of all code 1 installations (4,783) fell under this category, mostly consisting of smaller installations that are owned by industrial companies to power manufacturing processes (e.g. car manufacturers).

While accounting for fewer emissions than the industrial sector, these combustion plants are even more acutely over-allocated, we expect 567 million superfluous permits to be awarded them over Phase II, a 27% overallocation (see Table B3).

As all of the installations in this category have, by definition, been overallocated in 2008-9, the purchase of 40 million tonnes of offsets is strong evidence of the scheme being gamed for profit by these installations. With offset usage estimated at 151 million credits across the Phase, these installations could make €302 million from substitution

Table B3: Overallocated combustion projections in numbers (Mt)

	2008 Actual	2009 Actual	2010 Estimate	2011 Estimate	2012 Estimate	Phase II Total
Total emissions	438	386	412	438	438	**2,112**
Total allocations	533	543	538	533	533	**2,679**
Net position without offsets	**+95**	**+157**	**+126**	**+95**	**+95**	**+567**
Offsets surrendered	20	20	20	20	71	**151**
True net EUA position	**+114**	**+178**	**+146**	**+114**	**+166**	**+718**

52 For more information on how these power subsectors were derived please see Appendix 2: Notes on Methodology

alone. Were all surplus EUAs sold at current prices these installations stand to make €8.2 billion.

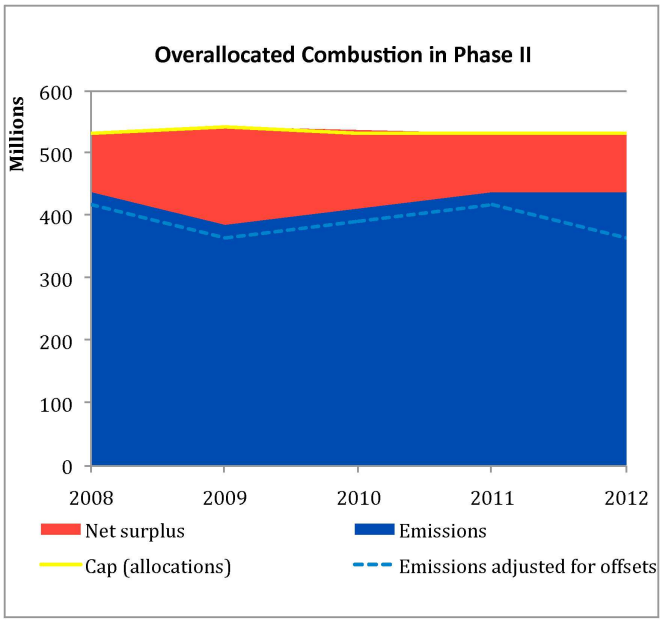


Figure B4

Under-allocated power

Under-allocated power refers to all remaining combustion plant, which registered a total shortfall over the course of 2008-2009 when its emissions were subtracted from its free allocations. This amounted to roughly 1/3rd of all combustion installations (2,339), however these generally consist of large electricity generators– highly concentrated sources of emissions accounting for about 2/3rds of the emissions across the entire scheme. We have assumed all flue gas transfers and auctioned permits are absorbed by this sector and have calculated their shortfall accordingly.

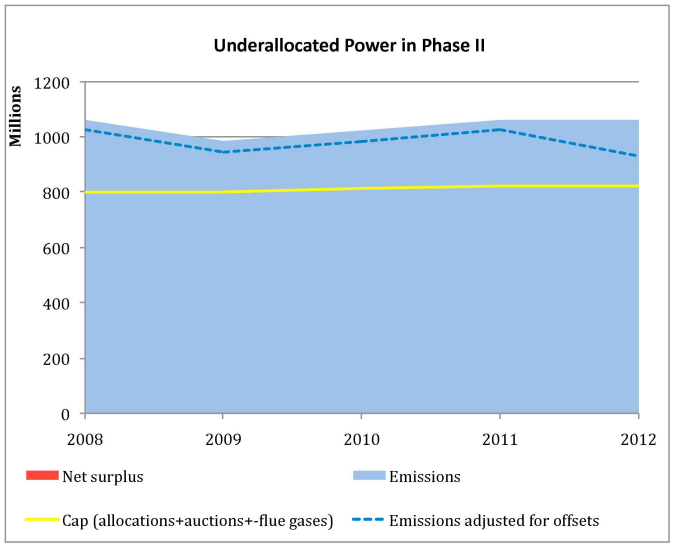


Figure B5

This subsector, representing a relatively small number of installations, is doing all the work within the scheme, and, looking at Figure B5 we can see at a glance that its caps are quite challenging. It is short 443 million permits to date and is on track for a shortfall of over 1.1 billion permits across the scheme. This represents a 22% shortfall against its projected emissions for the phase. We expect this shortfall to be partly met through the use of some 277 million offsets (see Table B5).

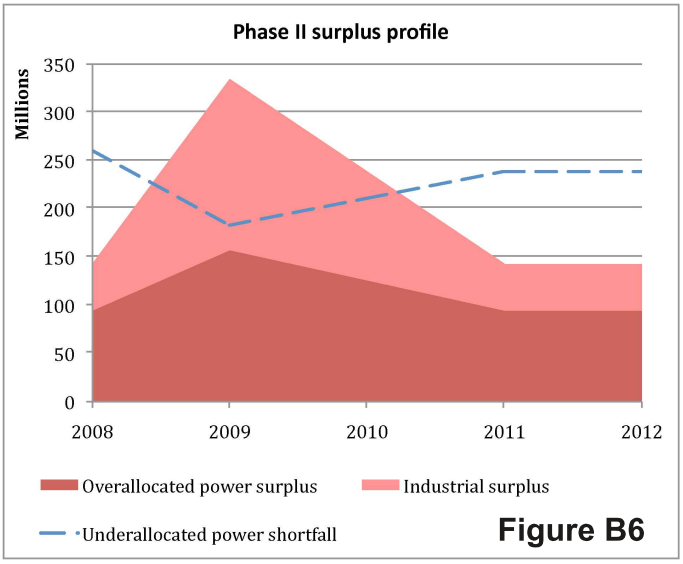


Figure B6

It is this shortfall in the under-allocated power sector which conceals and absorbs the surpluses of the other two sectors in the net position. We can see this more clearly in Figure B6 where we have plotted power's shortfall (as a broken blue line) against the surpluses in combustion and industry (in red). On top of the power shortfall a further 95 million permits shortfall for aviation is expected in 2012 (not shown).

Table B4: Under-allocated power projections in numbers (Mt)

	2008 Actual	2009 Actual	2010 Estimate	2011 Estimate	2012 Estimate	Phase II Total
Total emissions	1,062	986	1,024	1,062	1,062	**5,195**
Total allocations	716	709	712	716	716	**3,568**
Flue gas permits transferred	+42	+29	+35	+42	+42	**+189**
Net position without offsets	**-260**	**-183**	**-211**	**-239**	**-239**	**-1,132**
Offsets surrendered	35	39	37	35	130	**277**
True net EUA position	**-226**	**-144**	**-174**	**-204**	**-108**	**-856**

Table B5: Disguised surpluses and shortfalls

	2008 Actual	2009 Actual	2010 Estimate	2011 Estimate	2012 Estimate	Phase II Total
Combined surpluses	143	335	239	143	143	**1,003**
Power shortfall	-260	-183	-211	-239	-239	**-1,132**
Net position (without aviation)	**-117**	**152**	**28**	**-96**	**-96**	**-129**

Despite this shortfall, under-allocated power installations are under weak pressure to abate emissions owing to the availability of large quantities of international offsets and the surplus permits accrued by over-allocated industrials and combustion. With the average price of offsets and EUAs usually remaining below even the cheapest abatement options (fuel switching) there is currently little market incentive to invest in abatement technologies as the following figures from ECX and Deutsche Bank illustrate.[53] As Price fluctuations in the fossil fuel markets do sometimes make fuel switching more affordable, emissions in 2008 and 2009 were reduced in the electricity sector.

Table B6: Comparative Compliance Costs

	CER	EUA	Fuel Switching[53]
Price/tonne	**€13**	**€15**	**€18-20**

Implications of flawed policy

Raising costs to taxpayers and consumers

The inefficiencies inherent in the ETS are imposing a cost on European consumers vastly disproportionate to the level of environmental benefit being achieved. Rather than providing incentives for all participants to reduce their emissions, the way allocations have been handed out has created a carbon price penalty for centralised electricity generators but a carbon based subsidy for over-allocated industrial and many manufacturing sectors.

Over the course of Phase II European governments are likely to give away a billion permits to installations which don't currently need them, a distribution of public assets worth €14 billion at current prices. Overallocated installations stand to enlarge this surplus by 335 million by surrendering offsets instead of freely awarded EUAs, gaining additional assets worth an additional €670 million.

As we have explored above, these overallocations not only discourage abatement in the installations receiving them, but also discourage abatement in underallocated power installations, which instead meet their caps by buying spare EUAs. European power companies then pass these costs on to their consumers.

Perversely, then, European electricity consumers are potentially paying some €14.7 billion for assets their governments gave away, effectively a massive cross-subsidy to industry for doing nothing. This amounts to an average of €30 for each and every EU citizen.[54]

These figures do not include the much larger costs that power companies are already passing through to their customers to cover the nominal value of their own free allocations in Phase II. There is also mounting evidence, as discussed in Section B on industrial competiveness above that many industries are passing through most of the market value of the free allocations they

53 Deutsche Bank, "(While We're Waiting for the) Hammer to Fall" April 2010

54 EU27 population reached 501.1 million as of Jan 1 2010 (501,108,417) http://bit.ly/cVdtPx

use for compliance.[55] The consumer is losing out at every turn.

Undermining of EU leadership position internationally

Sectoral overallocation in Phase II was engineered by Member States wishing to cushion their competitive industries by giving them generous allocations in line with their Business As Usual projections, many of which contained overly optimistic growth assumptions. Our investigation into company level analysis in Section C suggests that certain companies were more successful than others at inflating their projections. The same Member States reduced allocations to power companies to compensate, giving the overall appearance of tight caps which the Commission then approved with little investigation into sub sectoral allocation proposals.

The only safeguard introduced to guard against oversupply in the event these projections were not realised was unlimited banking forward of allowances, thereby shoring up the price with the promise of scarcity in future phases of the scheme. This is why the long market in 2009 has not caused the prices to plummet as they did in Phase I. Banking is not necessarily a bad idea, under normal circumstances it encourages and rewards early action. It should not, however, be the only design feature relied on to underpin prices in the face of unexpected gluts in supply.

Some have argued that once the recession is over the spare pollution permits will be needed so that growth can once again resume, but this presumes that that the link between economic growth and emissions cannot be broken. This is a strange assumption considering how zealously Europe has been entreating emerging economies to pursue low carbon development. By insisting on a carbon-intensive recovery from our position of relative prosperity, we risk making hypocrites of ourselves. The recession grants Europe an opportunity to demonstrate convincingly that clean growth is possible. This purpose is not served by stockpiling spare permits to enable us to continue polluting into the future.

55 http://bit.ly/apwuLQ G.Cook, Climate Strategies “Climate change and the cement sector” 2009, p.15 http://bit.ly/91ou4K

Section C: Carbon fatcat companies

Earlier this year, our Carbon Fatcats report took a snapshot of the 10 most over-allocated companies in 2008. Now with the 2009 data available we can investigate how these same companies have fared another year into the Phase, as the recession has further depressed production levels.

In each case we find that the massive surpluses in 2008 were greatly augmented in 2009. In 2008 these top ten companies held 33 million excess permits. In 2009 this grew by 86 million tonnes, bringing them to 119 million permits so far this Phase, worth over €1.7 billion at current prices. These surpluses were then swelled by a further 10.5 million (or 8.8%) by using offsets for compliance, delivering an additional windfall of €21 million.[56]

We find that nearly a quarter of the surpluses in the entire scheme are concentrated in the hands of just 10 companies.[57] The 8 industrial companies on our fatcat list have received excess allocations roughly equal to half (48%) the surpluses in the whole industrial sector.[58]

All figures have been adjusted for estimates of the transfer of waste gases to nearby power stations.

Figure C1

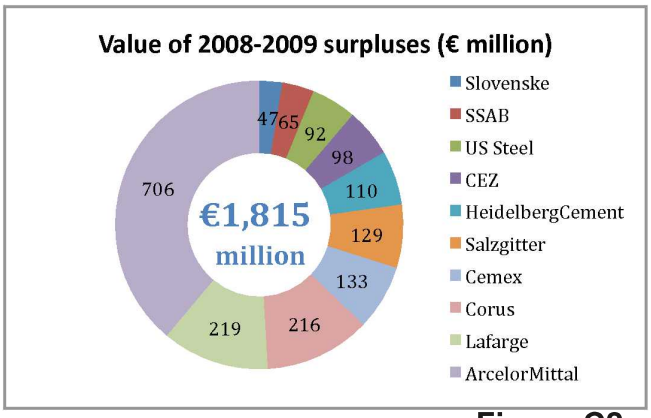
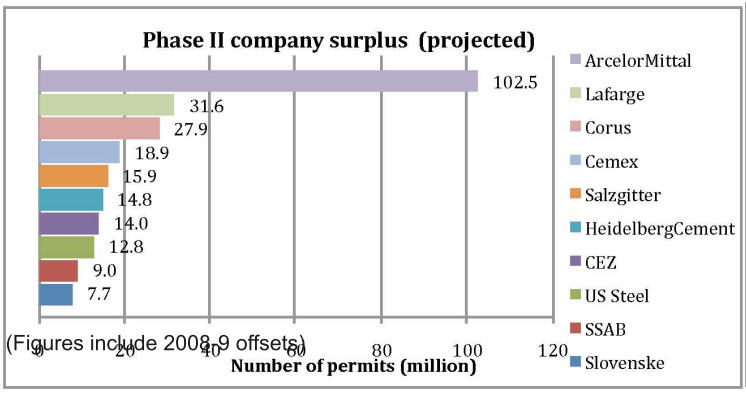


Figure C2



(Figures include 2008-9 offsets)

Figure C3

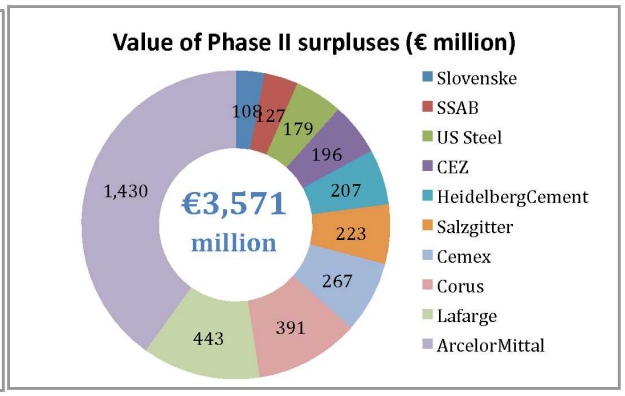


Figure C4

56 EUAs are calculated at €14 and CERs at €12

57 That is 130 million out of a total 2008-2009 industrial and power surplus of 566 million.

58 Excepting the two power companies (CEZ and Slovenske) from our top ten, we reach a 2008-9 surplus of 109 million out of an industrial total of 226 million. As some of these industrial companies are in possession of installations combustion plant assets, strictly speaking this does not compare like with like.

Offset Substitution

Looking at a company level we see unambiguous evidence that offsets are being surrendered by surplus holding companies, suggesting that they are using the scheme for profit.

Of our ten carbon fatcats, only two – SSAB and Slovenske Elektrane – have so far resisted the lure of offset substitution. In the Table C1 we list the substituted offsets both as absolute quantities and also as proportions of the emissions in each company. Lastly we translate these into profits at recent market prices.

Table C1: Offset substitution and indicative profits

Name	Offsets substituted in 2008-9	Proportion of 2008-9 emissions	Potential profits at margin of €2
Salzgitter	3,625,000	27.00%	€7,250,000
Corus	2,691,004	5.52%	€5,382,008
US Steel	1,505,000	9.11%	€3,010,000
Cemex	1,410,495	7.06%	€2,820,990
Heidelberg Cement	1,048,400	2.78%	€2,096,800
CEZ	115,030	0.15%	€230,060
Lafarge	108,542	0.24%	€217,084
ArcelorMittal	39,563	0.04%	€79,126
TOTAL	**10,543,034**	**2.86%**	**€21,086,068**

Overview of Phase II and Phase III

Phase II overview

Looking forward over the whole of Phase II we can expect these ten companies to accrue 255 million surplus permits worth €3.6 billion.[59] This is roughly equivalent to the ETS auction revenues hypothecated for renewables and CCS projects across the whole eight years of Phase III.[60] These have been adjusted for waste gas transfers.[61]

A 255 million surplus is 53% more than the 2009 emissions for these companies. If these permits are not sold to make windfall profits they represent an enormous buffer against future caps.

Phase III carryover

The Commission proposes to benchmark the free allocation of Phase III permits against the 10% least carbon intensive installations in each specific industrial subsector, using 2007 and 2008 as reference years. As a crude indication of how their Phase II surplus will protect them against benchmarks, we have calculated how the 8 industrial fatcats would perform as a group if their Phase III allocations were calculated roughly in line with the overall Phase III cap. We have, therefore, taken their slightly depressed 2008 emissions as an indicative baseline and applied a linear "technological evolution factor" (commencing in 2011) of 1.74%.[62]

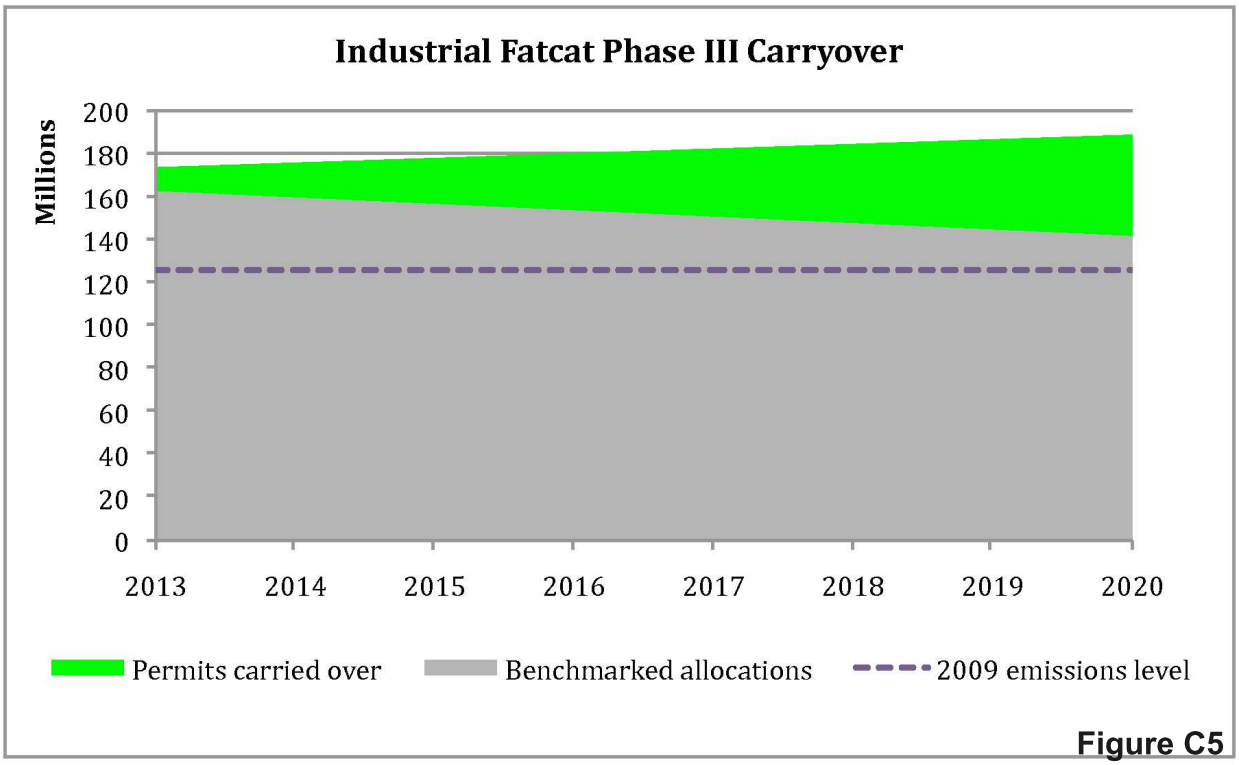


Figure C5

59 This projection ignores the contribution of offset substitution in 2010-2012 which is expected to be unusually high. The value of EUAs retained through offset substitution is prices at €2 (the difference between CERs and EUAs)

60 The revenue arising from auctioning 300 million permits will be set aside for these projects. See Article 10(a) 8 of the revised Emissions Trading Directive 2009/29/EC.

61 When projecting company performance forward across 2010-2012 we have assumed flue gas transfers follow emissions and allocation patterns as established in 2008 and 2009. Thus, 2010 flue gases and offsets are taken to be the average of 2008-9 levels, and are maintained at 2008 levels for the rest of the Phase.

62 This model is likely to be an overestimation of both the baseline and the technological evolution factor. Our technological evolution factor is more than double the 0.8% "evolution factor" in Dutch and Flemish benchmarks, but those benchmarks were set in 2001 and predated the ETS – which should in principle accelerate this evolution. A technological evolution factor would normally be expected to kick in from 2009 (See the CAN-Europe position paper at www.climnet.org)

We find that the fatcats' buffer of Phase II surpluses would not only protect them from making any emissions *cuts* across Phase III but would allow them room to *grow* their emissions 50% from 2009 levels by 2020 (see Figure C5).

Clearly, with such large surpluses already hoarded, this indicative benchmark totally fails to encourage the carbon fatcats to abate their emissions in Phase III. Very aggressive benchmarks, ideally accounting for overallocation in Phase II, must be pursued if we are to avoid wasting public funds continuing to line their pockets.

Repeating this benchmark model across each industrial fatcat, we see a similar story. Our most conspicuous carbon fatcat, ArcelorMittal, would be able to use its Phase II surplus of 102 million to grow its emissions 1.8% a year across Phase III, increasing its 2020 emissions to 75.6 Mt, 72% above 2009 levels (see Figure C6).

But while ArcelorMittal may be the most overallocated company in absolute terms, the most overallocated of our carbon fatcats in relative terms is Swedish Steel Company, SSAB. SSAB's 9 million permit Phase II surplus could allow it to grow its 2009 emissions two and a half times by 2020 (see Figure C7).

As our company analysis only examines the largest surplus holders in absolute terms, we can expect to find companies with equivalent or even larger proportional buffers elsewhere in the scheme. Our sectoral analysis in Section B found the ceramics sector to be the most disproportionately overallocated sector (see Figure B3), so this would probably be the best place to start.[63]

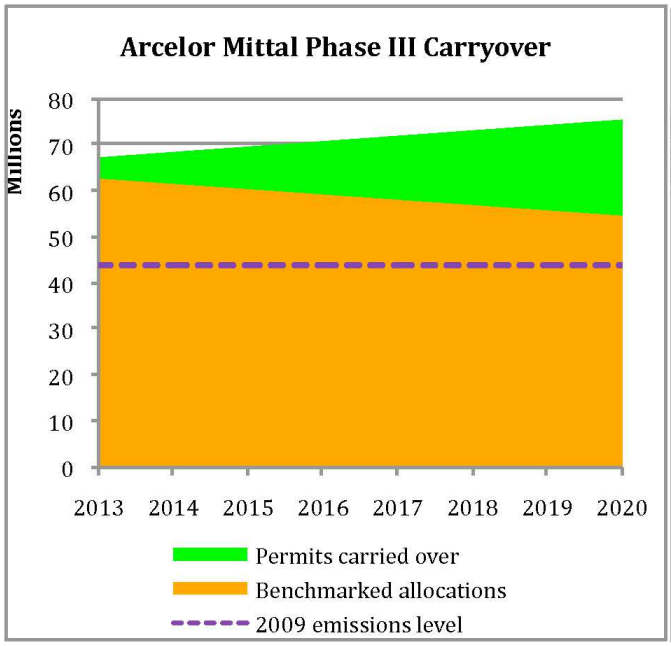


Figure C6

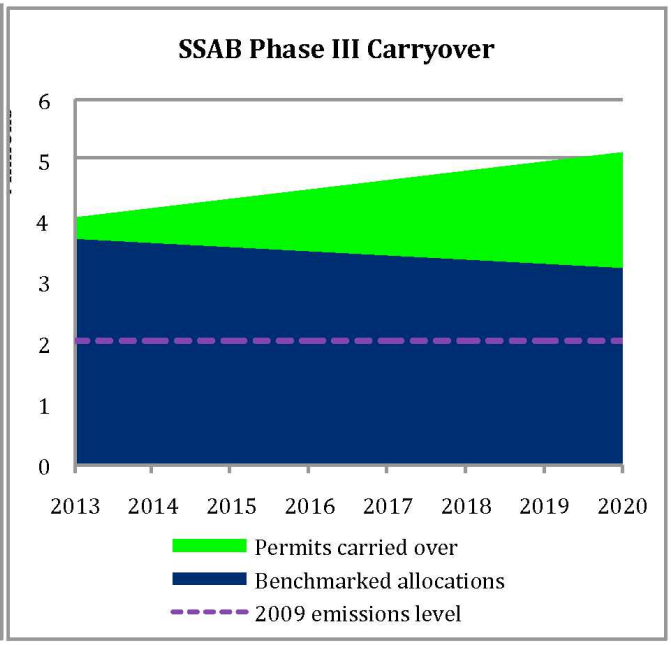


Figure C7

63 The metal ore roasting sector is similarly disproportionately allocated, but this surplus is entirely owned by Corus and ArcelorMittal.

Table C2: Fatcat emissions growth in Phase III

Company name	% increase of Phase III budget from carryover	Annual space for carbon growth in Phase III	2020 emissions as a % of 2009
SSAB	+32.6%	+3.9%	250.7%
Salzgitter	+29.8%	+3.4%	162.2%
Cemex	+22.9%	+2.0%	154.2%
ArcelorMittal	+21.7%	+1.8%	171.64%
US Steel	+20.1%	+1.5%	132.3%
Corus	+18.1%	+1.05%	108.4%
Lafarge	+17.3%	+0.9%	150%
Heidelberg Cement	+10.2%	-0.5%	112.81%
Aggregated figures	+19.2%	+1.3%	149.9%

Phase III carryover – combustion fatcats

In phase III the power sector in general shifts to a fully auctioned system. However, under Article 10c of the Emissions Trading Directive, some combustion plant will be entitled to “transitional free allocations”. This is for Economies In Transition with high dependence on coal. The maximum allowances an installation can receive in 2013 under this regulation is 70% of its average 2005-2007 emissions. This transitional free allocation will drop to zero in 2020.

If we assuming the full complement of both CEZ and Slovenske’s installations fall into this category, and assuming a linear trajectory dropping 10% against the 2005-7 baseline each year, CEZ’s total Phase III budget will be augmented 11.45% by its carryover and Slovenske’s a staggering 61.09%.

Competitive distortions between industrial companies

We can explore whether these companies are being disproportionately advantaged by the scheme by comparing the scale of their surpluses and emissions proportionally against emissions and surpluses across whole sectors. While we recognise that comparing emissions data with allocations alone, without production data, is a crude measure of how a company is performing it is nevertheless an important indicator of how individual companies have come to dominate this scheme.

Looking through Table C3 we find the largest competitive advantage has been granted to Heidelberg Cement who holds more than half of the surplus in the whole cement sector while only accounting for 10% of cement emissions giving it a fivefold advantage over its competitors in the industry. Heidelberg also runs installations in the combustion and ceramics sectors and we find it disproportionately overallocated across all three of the sectors it participates in, with nearly three times the sectoral average in both overallocated combustion and ceramics.

Similarly, while it only represents 3.2% of iron and steel emissions, Salzgitter has managed to secure 13.3% of the sector's surplus, more than four times the sectoral average.

ArcelorMittal has operations spread across most of the sectors in the scheme and is disproportionately overallocated across all of them except for ceramics (which is just one installation in Poland). While accounting for more than three quarters of all surpluses in metal ore roasting, it accounts for only half of the emissions in that sector. On balance, ArcelorMittal has 50% more permits than its average competitors in the sectors it participates in.

We also find that 99% of the overallocation in the coke ovens sector accrues to Corus despite only accounting for 66% of coke emissions, requiring all of its competitors in this sector (save ArcelorMittal) to face a shortfall. Corus's surplus in this sector is, counterbalanced by a low proportion of iron and steel surpluses, amounting to less than half of the sectoral average, this actually leaves Corus down 10% overall against the sectors it participates in.

This competitive advantage accruing to these companies through disproportional overallocations, should be a cause for concern to DG Enterprise and to other companies – especially those who may be net buyers under the scheme and may currently be obliged to directly line the pockets of their industry rivals.

While benchmarking of free allocations will mitigate against disproportionate overallocation in Phase III, the playing field will remain uneven until these benchmarks account and correct for lopsided allocation in Phase II which can provide either a direct financial head-start to these companies (if sold), or a hedge against carbon exposure (if banked forward).

Table C3: Competitive distortions in fatcat companies

ArcelorMittal	Proportion of sector's emissions (2008-9)	Proportion of sector's surplus (2008-9)	Proportional surplus
Sector 1: Overallocated Combustion	2.14%	2.79%	130.42%
Sector 3: Coke ovens	0.65%	2.02%	312.63%
Sector 4: Metal ore roasting	49.81%	77.74%	156.07%
Sector 5: Iron and Steel*	**34.07%**	**43.38%**	**127.32%**
Sector 6: Cement	0.21%	0.53%	249.55%
Sector 8: Ceramic	0.10%	-0.02%	NA
TOTAL	**7.45%**	**11.37%**	**152.56%**
Lafarge	**Proportion of sector's emissions (2008-9)**	**Proportion of sector's surplus (2008-9)**	**Proportional surplus**
Sector 1: Overallocated Combustion	0.02%	0.04%	198.98%
Sector 6: Cement	**12.97%**	**18.89%**	**145.62%**
Sector 8: Ceramic	0.08%	0.02%	25.81%
Sector 9: Pulp and Paper	0.11%	0.03%	23.72%
TOTAL	**3.56%**	**4.25%**	**119.29%**
Corus	**Proportion of sector's emissions (2008-9)**	**Proportion of sector's surplus (2008-9)**	**Proportional surplus**
Sector 1: Overallocated Combustion	0.02%	0.04%	244.57%
Sector 3: Coke ovens	**65.77%**	**98.91%**	**150.40%**
Sector 5: Iron and Steel*	10.51%	5.70%	54.24%
Sector 6: Cement	0.17%	0.52%	310.31%
TOTAL	**3.41%**	**3.08%**	**90.3%**
Salzgitter	**Proportion of sector's emissions (2008-9)**	**Proportion of sector's surplus (2008-9)**	**Proportional surplus**
Sector 5: Iron and Steel*	**3.32%**	**13.27%**	**400.18%**

Cemex	Proportion of sector's emissions (2008-9)	Proportion of sector's surplus (2008-9)	Proportional surplus
Sector 6: Cement	**6.05%**	**9.93%**	**164.07%**
Sector 8: Ceramic	0.02%	0.05%	203.28%
TOTAL	**5.68%**	**8.42%**	**148.17%**
Heidelberg Cement	**Proportion of sector's emissions (2008-9)**	**Proportion of sector's surplus (2008-9)**	**Proportional surplus**
Sector 1: Overallocated Combustion	0.21%	0.65%	314.78%
Sector 6: Cement	**10.41%**	**51.33%**	**493.22%**
Sector 8: Ceramic	2.51%	6.94%	276.38%
TOTAL	**3.17%**	**12.79%**	**402.79%**
CEZ	**Proportion of sector's emissions (2008-9)**	**Proportion of sector's surplus (2008-9)**	**Proportional surplus**
Sector 1: Overallocated Combustion	**8.68%**	**2.13%**	**24.49%**
Sector 99: Other	14.21%	34.68%	244.03%
TOTAL	**8.95%**	**2.70%**	**30.12%**
US Steel	**Proportion of sector's emissions (2008-9)**	**Proportion of sector's surplus (2008-9)**	**Proportional surplus**
Sector 5: Iron and Steel*	**7.27%**	**7.08%**	**97.41%**
SSAB	**Proportion of sector's emissions (2008-9)**	**Proportion of sector's surplus (2008-9)**	**Proportional surplus**
Sector 1: Overallocated Combustion	0.07%	0.01%	19.23%
Sector 5: Iron and Steel*	**2.38%**	**6.43%**	**269.91%**
TOTAL	**0.57%**	**1.43%**	**252.67%**
Slovenske	**Proportion of sector's emissions (2008-9)**	**Proportion of sector's surplus (2008-9)**	**Proportional surplus**
Sector 1: Overallocated Combustion	**0.90%**	**1.35%**	**149.47%**

* Company steel allocations have been adjusted for estimated waste gas transfers. See Appendix 2 Notes on methodology for details.

Section D: Recommendations

Rapid reforms to the ETS are needed if it is to begin delivering significant abatement in Phase III. It is essential that both the supply of carbon permits and overseas credits are reduced if we are to put the traded sector on a path more commensurate with Europe's climate responsibilities and protect it from the loose caps and overallocations of Phase II.

Recommendation 1: Increase ETS targets in line with 30% emissions reduction target for 2020

The caps in the ETS should be increased to deliver a minimum 34% cut on 2005 levels in the traded sector. This move should be made now and separately from discussions over the EU's total economy wide targets.

An immediate commitment to increase reductions under the ETS, in line with a minimum of 30% reduction across the EU, would show the EU is serious in seeking to lead on global action to tackle climate change. This would tighten Phase III caps to bring them closer to the levels of action needed to tackle climate change and drive inward investment in the EU.

Our analysis in Section A shows that the surplus accruing under the trading scheme, when carried over, removes the need to make additional domestic cuts until 2017.

Moves to increase ETS targets would increase confidence in the carbon market as an effective way of reducing emissions. However, if EU leaders are perceived as defending a scheme that is not currently delivering this could hamper global negotiations, and delay progress towards a more global carbon market.

The Commission has put forward a proposal in a recent communication to reduce the volume of permits allocated from 2013-20 by 1.4 billion tonnes. These permits would be initially set aside and not auctioned and then permanently deleted if/when an agreement to tighten the cap has been reached and the Directive amended accordingly. If such an agreement is reached the 2020 cap would be 34% below 2005 levels.

This is an important proposal that reflects the Commission's own analysis that targets which were previously considered ambitious are now far easier to meet.

Recommendation 2: Adjust Phase III caps to reflect historic emissions

In order to meet the current target of 21% below 2005 levels in the traded sector, the Directive requires that Phase III allocations decline by 1.74% per annum (backdated to 2010) as measured from the average allocations in Phase II. As we have seen in Section A, the Phase II caps will drive negligible net abatement, and as we have seen in Section B those caps carried a dead-weight of one billion superfluous permits allocated to industrial and combustion plants. Consequently this billion permits (divided

across the 5 years of the Phase) unnecessarily drives up the Phase III baseline by some 200 million permits.

In Phase III the overallocation to most industrial sectors is likely to be discontinued, as allocation shifts to a benchmarked system based on the top 10% of performers in each sector. This is a welcome development, but even if industry allocations are tightened, deriving future caps from overallocated Phase II caps keeps the total budget high and therefore simply makes more allowances available for purchase by the power sector in auctions. This scenario does not help the overall picture, and a larger power allocation is not ideal given the priority role that sector can play in decarbonising other sectors both within and without the ETS.[64]

To highlight this problem and to support the setting of an overall lower cap in phase III we have prepared a shadow budget allocation based on recent historic emissions.

We once again split sectors into three categories; industry, overallocated combustion, and underallocated power. For the over-allocated combustion and industry sectors we then derived a more appropriate baseline for Phase III by calculating each installation's average emissions over the period 2005-09 (see Figure D1 and D2). To minimise distortions, our averages ignored the data for any year where emissions were reported as less than 10% of the maximum emissions recorded in the period for a any installation. For these two sectors, we aggregated these average values to give us a baseline from which to apply the annual linear reduction target. We also took out plants which had reported zero emissions in both 2008 and 2009, deeming them to be closed. We have then plotted the caps generated from these lower baselines and compared them with the caps currently proposed by the commission.

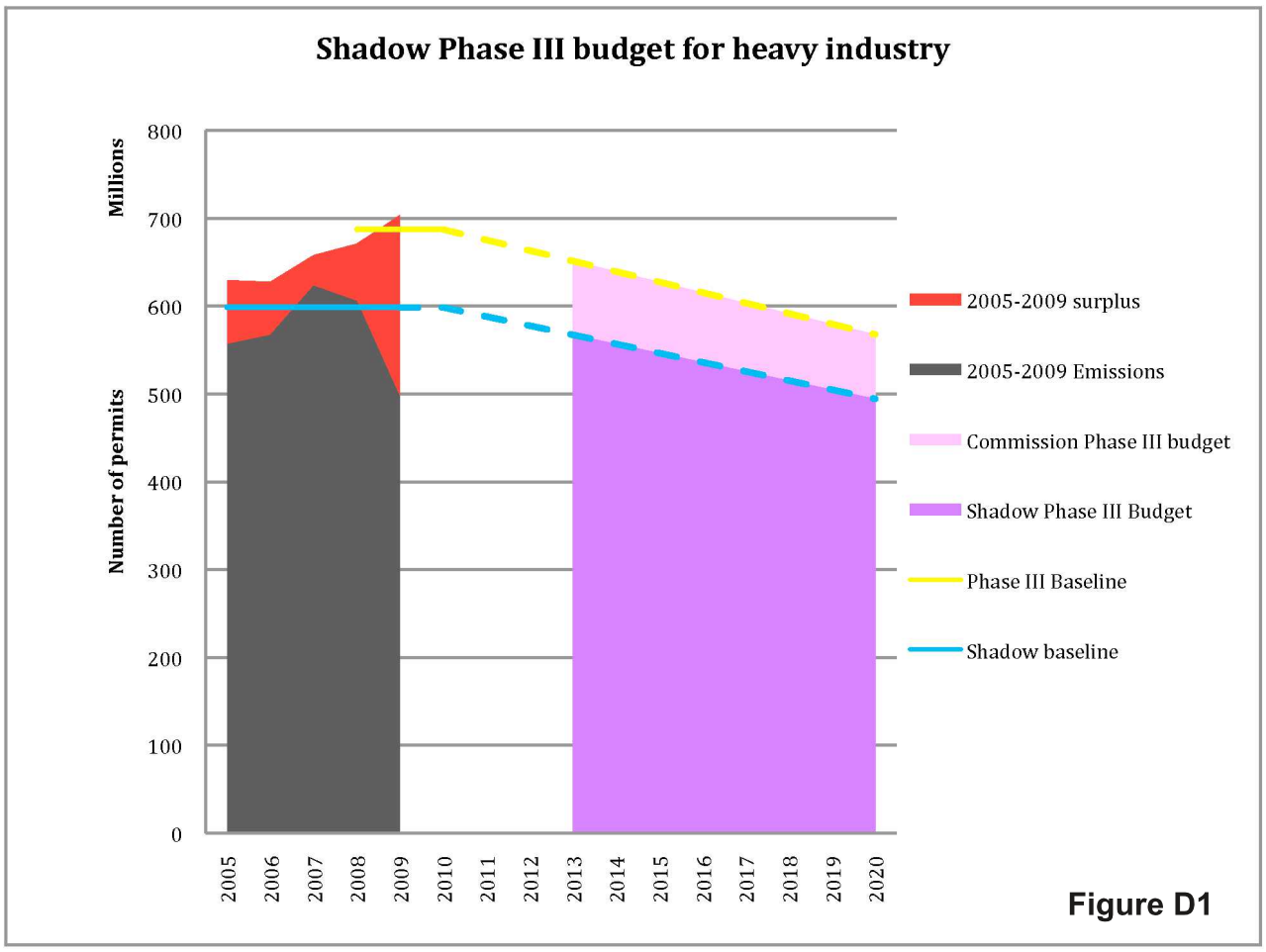


Figure D1

64 Through the electrification of space and water heating/cooling and the electrification of road transport.

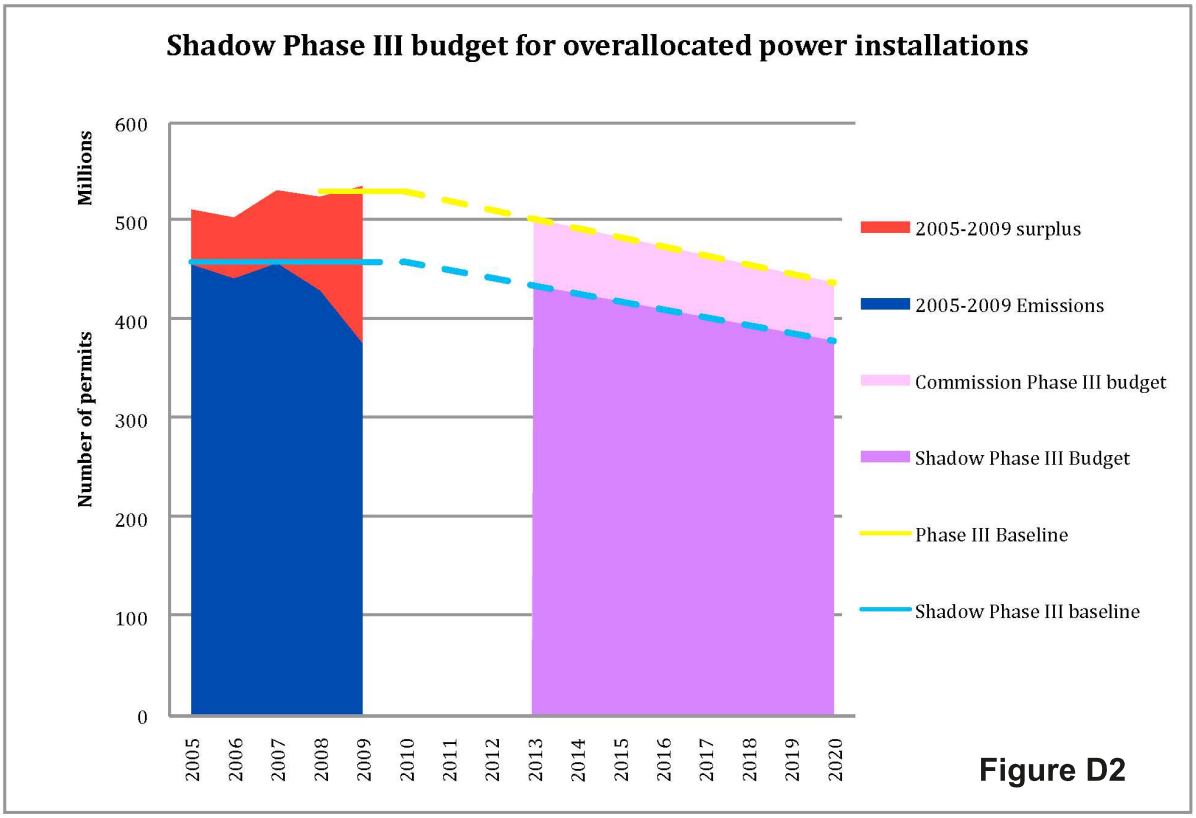


Figure D2

For the underallocated power sector installations, rather than forming a baseline from their average emissions over the period, which would have returned a far higher value than their allocations, we derived a baseline from their average allocations for 2008-09 reflecting an ongoing expectation of stringent targets (see Figure D3). Following the methodology used throughout the report, we have assumed all permits sold at auction be attributed to the underallocated power cap.

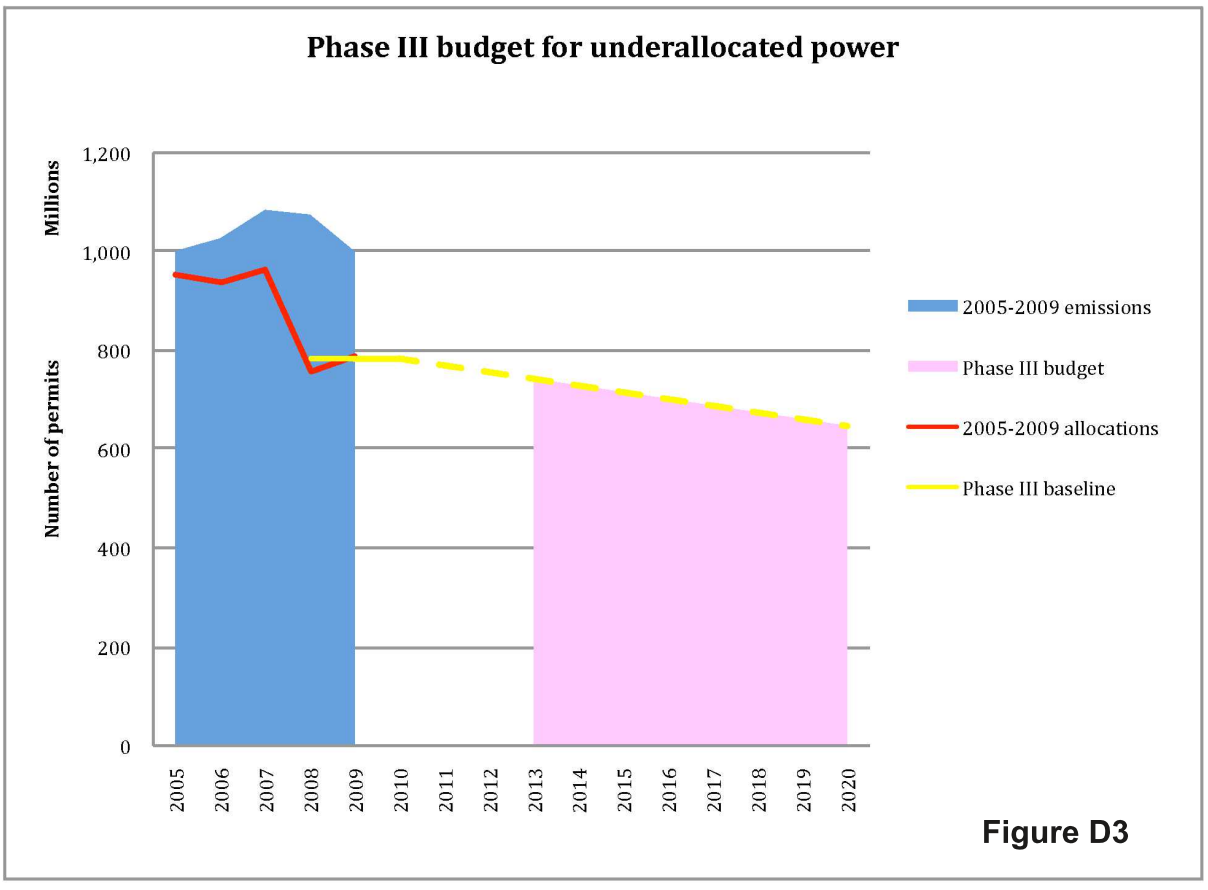


Figure D3

Adding these figures produces a baseline reflecting the true current need for permits in industry and overallocated combustion whilst maintaining current effort in underallocated power.

Comparing the effect of applying the linear reduction factor to this more realistic baseline gave an overall emissions allocation for the period 2008-12 some 1.4 billion tonnes lower than the current Phase III budget (see Figure D4).

The Phase III budgets corrected for overallocated baselines are almost identical in size to those proposed by the Commission as part of a move to 30%. This strongly supports the idea that the EU should move now to adopt a more ambitious target for the traded sector.[65]

Our shadow budget allocation for Phase III, which simply removes industrial over-allocations, illustrates that the caps can be tightened in line with the 30% target without requiring any additional effort from participants in the scheme.

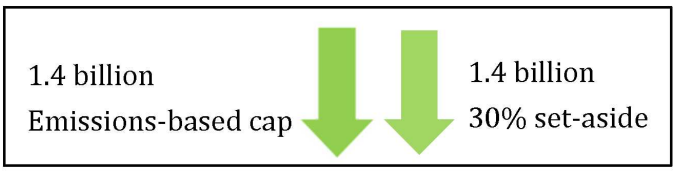


Figure D5

Finally, the above calculations take the 1.74% decline rate as a given, however, it can be argued that a steeper rate of decline should be enforced to increase the level of effort in the traded sectors relative to the rest of the economy. Targets for the scheme are set in reference to 2005 allocations, however, these were set above 2005 emissions. The current 2020 target may be 21% below 2005 allocations, but it is actually only 17% below 2005 *emissions*. Likewise our shadow allocation plan delivers a 2020 target 30% below 2005 allocations, but only 24% below 2005 emissions.[66]

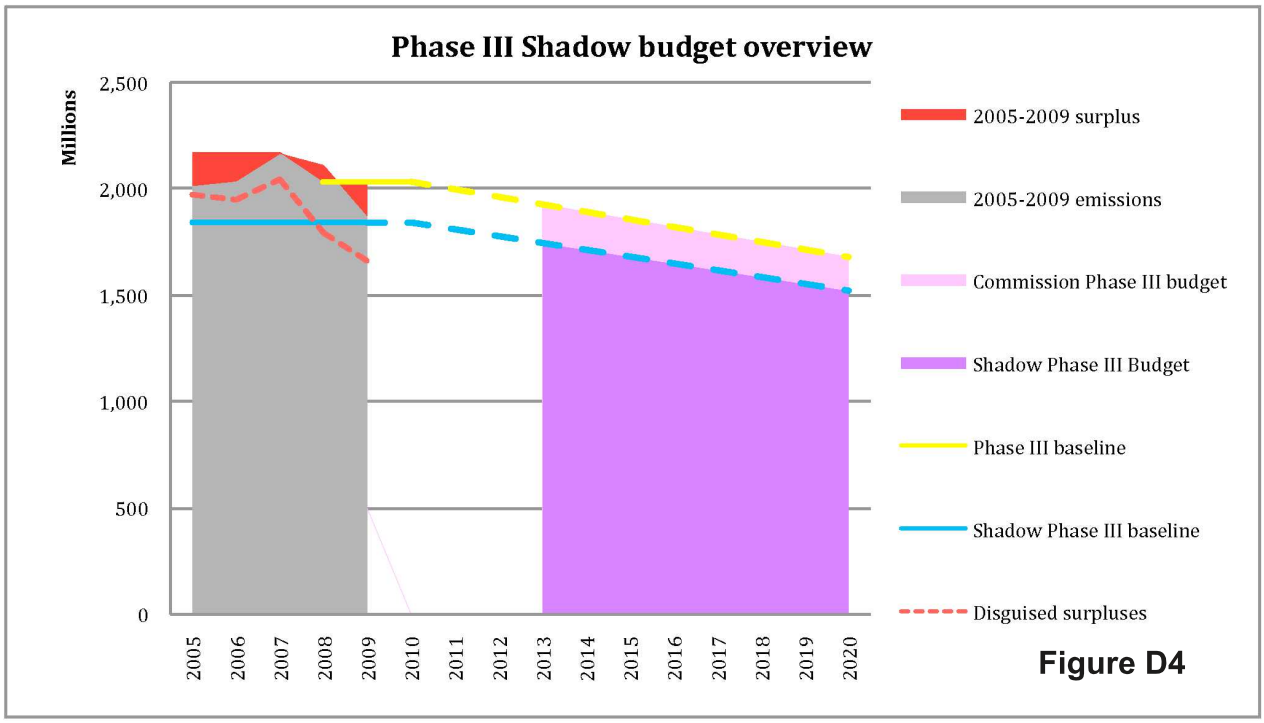


Figure D4

65 N.B. This analysis represents an update on figures included in a Sandbag briefing published on May 26th, In this we stated that a shadow allocation could deliver a substantially larger Phase III reduction of 2.3 billion permits. That analysis mistakenly presumed that the 1.74% decline started from 2013 rather than 2010 which has been corrected subsequent to the Commission publishing its proposed allocations in 2013.

66 The 2020 cap implied by the Commission's announcement of 2013 allocations is 1,679Mt against 2005 emissions of 2,014Mt. Our shadow allocation delivers a 2020 cap of 1,521Mt.

Recommendation 3: Reassess carbon leakage risks

The ETS Directive required that a list of sectors deemed to be exposed to 'carbon leakage' be drawn up and that these sectors should continue to receive allocations of allowances for free. The Commission's carbon leakage has been criticised on a number of points not least the decision to use a high carbon price in assessments of the impact of the scheme of sectors' competitiveness. A price of €30/tonne was used which is almost double the price today. This exaggerated the likely risks of exposure to many sectors, and thereby increased the number of sectors deemed "at risk".

The assessment of the impact of the scheme also failed to take into account the fact that many sectors, rather than facing a carbon price, are currently profiting from the surpluses they are accruing under the scheme. Surpluses which this report shows can cushion participants against the impact of future targets for the majority of the next phase. As we have seen in Section B, the steel and cement sectors have so far accumulated surpluses of 72Mt and 81Mt respectively (before factoring in offsets). Across Phase II steel can expect to accrue at least 127Mt, which is 35% more than it emitted in 2009, while cement can expect to accrue 164Mt, 8% more than its 2009 emissions.

Carbon leakage assessments in the future must take these issues into account and the list of sectors receiving free allocations should be reduced since continued free allocation is an inefficient allocation method. Handing yet more free allowances to industries which already hold significant surpluses simply exacerbates the problem where electricity consumers are paying a subsidy to heavy industry.

If industry continues to block moves towards higher targets on the basis of exaggerated fears about impacts on international competitiveness then it would be better environmentally to remove these sectors from the scheme and police them through direct regulations such as Emissions Performance Standards. Their inclusion currently gives rise to considerable potential for profit making and wastes money that could otherwise be spent on genuine abatement rather than compensating for reduced production.

Recommendation 4: Control for drops in demand

There are currently no supply side controls in the ETS that allow for a strategic adjustment in light of unexpected circumstances. To protect against unexpected drops in demand, we advocate that future phases set aside a fixed-quantity, strategic reserve of permits. This should incrementally return permits to the market unless certain unusual conditions are met.

This is different to the set-aside of permits currently proposed by the Commission, which is a device to make a one-off reduction in allowances if agreement is reached on -30% pending new legislation to tighten the cap.

Currently there is no clear provision in the Directive to allow a strategic reserve to be created, nor is there any other method by which supply can be adjusted without a fundamental revision to the Directive. This is cited as a strength as it provides the market with 'certainty' and prevents pressure from being applied to increase caps. However, given the trend towards repetitive and continued over-allocation, the scheme currently provides certainty of the wrong kind (i.e. low prices) and the lack of flexibility constitutes a serious weakness in the current design.

The first formal opportunity to review the

Directive is in 2020. However, bearing in mind all previous experience, it is unlikely that we will have correctly estimated the appropriate supply of emissions permits over a decade from now. In addition, the next IPCC review of the science of climate change is expected at the end of 2014.[67] If, as expected, the 5th Assessment Report indicates that more urgent action is needed to avert dangerous climate change, then it seems prudent for there to be an easily manageable and predictable process through which to respond.

A strategic reserve could work in a number of ways. A simple version would be to create a fixed volume pool of permits at the start of the phase from which permits are released or withheld according to an annual *ex post* adjustment for underlying economic growth. The total volume would remain fixed but it would create some degree of flexibility to respond to external circumstances.

A variation on this would be to create a target band of carbon prices against which to assess the release or cancellation of permits. If targets are consistently below or above the desired range then the appropriate action is triggered.

A third version would see a fixed volume reserve which again adjusts allocations ex-post, but this time operating at the level of installations or companies and pegged to productivity data rather than underlying economic growth. This idea has been put forward by sections of industry as a way of preventing windfall profits from accruing to some participants simply as a result of decreased production and would instead reward those companies who managed to genuinely decouple productivity from emissions. Though attractive in principle there are dangers in this approach since the current regulatory infrastructure in the EU lacks the capacity to appropriately regulate and verify production data.

A strategic reserve could be overseen by a number of different bodies. It could remain under the control of the EU and be adjusted by regulation, or it could be handed to a non-political professional body to oversee – as the management of interest rates in the UK is managed by a Committee chaired by the Bank of England. Depoliticising decisions about the level of supply of allowances has many attractions, not least of which is the prospect that the strong lobbying power of vested interests would be rendered less effective, since those being asked to make the decisions would not be overly sensitive to the threat of job losses. Currently decisions are influenceable by the Commission, the Parliament and the Member States via the Council of Ministers. This creates numerous lobbying targets requiring large resources to cover all bases. The corporate lobby seeking to protect vested interests is far and away better resourced to accomplish this task than the small number of environmental and sustainable development trade associations who are currently engaged on this topic.

67 http://bit.ly/9klS3l

Recommendation 5: Restrict the quality and quantity of CER credits

Paragraph 9a in Article 11a of the EU Directive implementing the Emissions Trading Scheme allows the Commission to rule on the quality requirements for offset credits that can be used in the ETS from 2013.[68] The Commission should seize this opportunity and ensure that only the highest calibre of offsets have access to the EU market. This would reduce the huge potential supply that is currently available relative to demand while incentivising best social and environmental practice in offset projects.

Revising offset budgets to reflect domestic abatement

The offsetting budgets were fixed to limit the amount of abatement which would take place overseas, but as we have seen emissions reductions caused by the recession are currently discouraging domestic abatement, and instead creating a carbon space for domestic emissions growth.

The ETS offsetting budgets need to be revised to better reflect domestic *abatement* rather than domestic emissions *reductions*. Ideally, offsetting budgets would be revised in line with reduced domestic budgets as described above (recommendation 1-4).

In addition, however, reducing the offsets allowed as a percentage of the cap to less than 10% would help restore the balance between domestic and foreign abatement, or better still, weight it towards domestic abatement.

Restricting HFC credits

With the post-Kyoto legal framework in doubt and no American cap and trade scheme yet in sight, Europe represents the only large and reliable buyer of offset credits after 2013. Consequently any controls it places on the offsets it accepts carry global influence.

Recently China and India have blocked changes to the Montreal Protocol which would have directly funded the abatement costs for HFC-23, a powerful greenhouse gas. This leaves little doubt that the disproportionate offsetting revenues these countries receive for HFC projects pose a barrier to more economically efficient GHG reduction. Excluding HFC projects after 2013 would dramatically reduce the incentives for resisting this amendment to the Montreal Protocol.

Similar quality restrictions should also be considered on the use of JI credits to prevent the entry of yet more 'hot air' into the ETS.

Providing clean development to least developed countries

At present an extraordinary proportion of CDM revenues are directed towards the rapidly emerging economies of India and China (74% in 2009)[69] when other less developed countries are in greater need of the revenues CDM can bring.

Established infrastructure and institutional capacity makes offsetting cheap in China and India, but rapid growth in low carbon investment is already underway in these countries. It may also be possible that reliance on offsetting revenues is delaying the graduation of emerging economies to stronger domestic emissions controls.

It would be better to incentivise abatement in rapidly emerging economies through linked sectoral trading schemes while restricting offset purchases to countries below a development threshold.

68 The directive states "From 1 January 2013, measures may be applied to restrict the use of specific credits from project types". http://bit.ly/dlRwum

69 China and India generated 54% and 21% of credits respectively http://bit.ly/bvTrDN

Restricting credits which exacerbate carbon leakage risks

Before allowing competitiveness fears to excuse domestic industries from abatement obligations, the Commission should exclude offsets which subsidize Europe's industrial competitors. This should take a priority over other carbon leakage measures such as enlarged free allocations or border adjustments.

An additional measure to deter the practice of swapping in cheaper CERs to release EUAs would be to peg the limit on the use of offsets to the level of effort required under the caps. This would provide access to offsetting to those that most needed it and discourage rent seeking amongst participants with generous surpluses.

Additional recommendations

Supplementing the major recommendations discussed above, the following list of measures would further serve to reduce the oversupply of permits and improve the environmental performance of the scheme. Many of the following recommendations could be implemented within Phase II.

Cancel unused New Entrants Reserve Permits

An EU wide agreement to cancel unused NERs would prevent nearly 200 million permits from entering the market in 2012, further depressing the carbon price. Ireland and Malta have already adopted this policy.

Committing to sell unused permits is yet another example of decision makers failing to take control of the supply of permits to deliver higher levels of environmental action and clearer investment signals.

Reserve price on permits sold at auction

Member States who plan to release more permits via an auction could introduce a reserve price to limit volumes entering the market in the event of a sustained low price signalling too much supply in the market. Any unsold permits as a result of the price floor could be rolled over and then cancelled at the end of the period. In Phase III, when the auctions become more centralised, this could become a harmonised policy essentially choking off supply if low demand causes prices to fall below the auction floor price.[70]

Incentives for permit cancellation

Once companies are given a legal property right to an emissions permit the vast majority of permits in circulation can then only be removed through voluntary cancellation. This could be incentivise through, for example, the granting of tax incentives against cancelled permits, or allowing companies to retire their permits as alternatives to offsets for their emissions in sectors such as transport which are not currently covered by the ETS.

Adjust for closures

While the Directive makes specific provisions for caps in Phase III to be adjusted to take into account the arrival of new entrants into the scheme there is no matching requirement for the total cap to be reduced to take into account closures of plant. This is an important loophole and one which must be closed. If caps continue to be derived in a top down fashion based on historic allocations, adjusted upwards for new entrants, they will become increasingly inaccurate and inflated as plants shut and open over time. This is particularly relevant in a time of recession where the levels of closures might be expected to be higher than would otherwise be the case.

70 Michael Grubb, "Reinforcing carbon markets under uncertainty" Climate Strategies, 4 March 09 http://bit.ly/9AgyT9

Greater transparency of public information

One of the great advantages of cap and trade systems over taxation is the amount of useful data they generate; however, the ETS data available through the Community Independent Transaction Log remains difficult to analyse on many key fronts:

• Company level information

While a column exists on the CITL spreadsheets to list the company owning each installation, this information is not reliably listed for most Member States, and requires very labour intensive research for third party organisations like Sandbag to complete. The completion of this field by account holders should be made mandatory across Europe.

In many cases, the companies which own a specific installation are owned by a larger parent company or companies. Wherever parent companies owner a major stake in a subsidiary controlling an installation they should also be listed in a separate column or columns.

As the economic agents ultimately responsible for the performance of installations under the scheme it is important that a transparent and reliable analysis of their performance can be carried out. As we have seen in our company analysis in Section C, this is also essential to be investigate and correct for unforeseen competitive distortions.

• Waste gas transfer

Once again it is very difficult to identify the installations transferring or receiving waste gases and their corresponding carbon permits, or to identify the quantities of such transactions. It is especially important that this information be available as it bears substantially on allocations to the steel sector and its eligibility for protections from carbon leakage. Any EUAs exchanged as part of a waste gas transfer should be annually reported to the Commission and recorded clearly on the CITL database.

• Scope change

A proper assessment of the emissions trend under the EU ETS since 2005 is hampered by the fact that in 2008 the coverage of the scheme changed due to an expansion in the scope of activities covered. A further change will take place between 2012 and 2013. There is no easily accessible source of public data indicating the scale or nature of this expansion which hinders proper analysis. This should be rectified with information made publicly available about the nature of these historic changes. Similarly, changes in scope between Phases II and III must be clearly articulated and all data made public.

Conclusion

While the announcement of the Commission's decision to allocate 1,927 million permits in 2013[71] has been praised in some quarters, and has even managed to bolster carbon prices, the cap projecting forward from this starting point remains distinctly unimpressive when seen in the light of current emissions levels and the large surpluses which are likely to accumulate over Phase II.

The Phase III starting point of 2013 allocation stands some 2.88% above 2009 emissions (which were 1,873 Mt), before taking into account the 389Mt EUA net surplus which we estimate will accrue over Phase II - a conservative estimate based on expectations of a rapid and carbon-intensive recovery from the recession.

On top of this we expect around 192 million NERs will be released back into the market, and some 1.2 billion offsets to remain available for use in Phase III. **This 1.79bn permit carryover represents a 10.9% enlargement of the total Phase III budget.** Our calculations find that this would allow Phase III domestic emissions to grow at 1% a year unabated until 2017 – or make the Phase III caps essentially redundant if emissions decreased 1% a year as the result of external policies or events.

We find that the suggested 1.4 billion set aside proposed to achieve a -30% economy wide climate target in 2020 for the traded sector corresponds almost exactly with the budget which would be reached if the Phase III baseline was adjusted for continued selective overallocation.[72]

Even with the overall caps contracted, particular companies will benefit from unfair competitive advantages in Phase III if their benchmarked or transitional free allocations are not adjusted downwards to correct for the disproportionately large surpluses they received in Phase II.

Finally, even if greater scarcity of EUA carbon permits is implemented in Phase III, the excessive supply of cheap overseas credits is set to discourage domestic abatement for many years to come. Quality restrictions on the offsets used for compliance in Europe could reverse this trend while simultaneously encouraging sustainable development in least developed countries, ending subsidies to Europe's industrial competitors, and encouraging emerging economies to graduate to stronger carbon targets.

Only through greater scarcity in Europe's carbon budgets – including the offset component of this budget – can the ETS help Europe become an effective climate leader, demonstrating low-carbon development at home and encouraging climate responsibility overseas. Without this scarcity, the ETS risks becoming a redundant policy trapping us into high emissions pathways, and continued reliance on fossil fuels with the exposure to price fluctuations that entails. Pressure will build for the introduction of less cost effective policies to meet domestic and diplomatic climate objectives wasting resources and unnecessarily complicating the policy framework.

71 Note that this value is provisional and subject to revision following inclusion of new sectors and gases and new entrants. http://bit.ly/aPuB8h

72 See Section D for details.

Appendix 1: 2009 Country level overview

The overall performance of the EU Emissions Trading Scheme masks some very different circumstances at the level of participating Member States, which we explore briefly here.

Table AP1 shows the 2009 position of each EU country counting all installations for which verified data has been made available and adjusted for releases of permits by auction. By tallying the annual surplus for each country we see an indication of how the sustained recession in 2009 has stored up emissions for future use for most countries. The net position including offsets reveals the space opened up for *domestic* EU emissions growth.

Table AP1: Overview of EU27 2009 ETS figures

Country	Emissions	Allocations	Auctions	Surplus	Offsets	Net domestic position	Emissions drop	Production drop
Germany	427,999,287	388,012,215	40,000,000	12,928	26,670,298	26,683,226	8.4%	11.9%
UK	231,695,005	216,123,450	25,000,000	9,428,445	5,168,691	14,597,136	12.5%	13.9%
Poland	190,949,787	200,852,396		9,902,609	10,535,602	20,438,211	6.4%	18.2%
Italy	184,249,014	203,167,030		18,918,016	8,574,802	27,492,818	16.5%	8.7%
Spain	136,625,875	150,535,768		13,909,893	8,212,414	22,122,307	16.3%	13.1%
France	109,390,579	128,665,409		19,274,830	4,219,070	23,493,900	11.6%	16.3%
Netherlands	80,968,235	83,769,002		2,800,767	761,062	3,561,829	2.4%	15.1%
Czech Rep	72,577,539	85,833,755		13,256,216	3,123,924	16,380,140	9.7%	25.9%
Greece	63,641,772	63,246,705		-395,067	154,856	-240,211	8.9%	15.8%
Romania	48,492,477	72,667,210		24,174,733	3,731,625	27,906,358	23.5%	21.2%
Belgium	45,627,951	55,854,992		10,227,041	638,893	10,865,934	16.6%	12.2%
Finland	33,871,066	36,637,859		2,766,793	1,329,984	4,096,777	5.9%	10.3%
Bulgaria	31,987,459	40,578,499		8,591,040	0	8,591,040	16.5%	9.2%
Portugal	27,776,716	30,378,037		2,601,321	1,527,532	4,128,853	7.1%	17.3%
Austria	27,283,423	31,864,806	500,000	5,081,383	392,309	5,473,692	14.7%	4.2%
Denmark	25,453,046	23,912,314		-1,540,732	132,806	-1,407,926	4.1%	18.4%
Hungary	22,353,777	23,427,576		1,073,799	1,303,303	2,377,102	17.2%	Unavailable
Slovakia	20,844,218	32,140,581		11,296,363	1,229,241	12,525,604	17.1%	14.6%
Norway	19,211,933	7,957,234		-11,254,699	536,678	-10,718,021	0.7%	15.8%
Sweden	17,414,398	21,053,201		3,638,803	429,662	4,068,465	12.9%	15.8%
Ireland	17,178,838	19,951,503	185,000	2,957,665	223,643	3,181,308	15.7%	12.1%
Estonia	10,322,875	11,678,257		1,355,382	0	1,355,382	23.8%	7.6%
Slovenia	8,066,524	8,215,651		149,127	537,557	686,684	9.0%	3.6%
Lithuania	5,786,405	7,573,712		1,787,307	1,545,739	3,333,046	5.2%	3.6%
Latvia	2,302,781	3,160,624		857,843	488,815	1,346,658	15.7%	8.6%
Luxembourg	2,181,694	2,488,229		306,535	23,352	329,887	-3.9%	5.9%
Malta	1,897,113	2,121,453		224,340	0	224,340	6.0%	17.9%
Cyprus	84,286	249,341		165,055	0	165,055	37.2%	17.5%
Lichtenstein	13,379	19,497		6,118	0	6,118	32.7%	14.1%
Total	**1,866,247,452**	**1,952,136,306**	**65,685,000**	**151,573,854**	**81,491,858**	**233,065,712**	**11.3%**	**13.9%**

The Big Five Polluters

This report has explored the asymmetries in effort required by the different companies and sectors under the cap. Similar asymmetries exist between EU Member States and a quick survey of the above table will show that surpluses correlate poorly with emissions for many States. In the following pages we shall briefly examine the top five carbon emitters in more detail to get a sense of how different Member States are faring under the scheme.

Germany, the UK, Poland, Italy and Spain are the 5 biggest polluters in the EU, together accounting for 63% of 2009 emissions and 61% of 2009 allocations (including auctions).

In the analysis below we consider the overall availability of permits in each of the top five relative to their emissions. We have adjusted the caps to account for emissions released at auction (i.e. in Germany and the UK) and, consistent with the rest of the report, have assumed that all auctioned permits were absorbed by the same country's (underallocated) power installations.

While our sectoral analysis in Section B showed an EU-wide trend of underallocating power and overallocating industry, not all countries followed this principle. While the UK, Germany and Spain made use of this flexibility in their National Allocation Plans, Poland and Italy bucked the trend. We can attribute this difference to their relative lack of liberalised energy markets, and the close relationships between their governments and power sectors.

None of the top five emitters accrued the largest surpluses under the scheme in 2009 either in absolute terms or in relative terms. The dubious honour for largest absolute surplus goes to Romania, gaining 24.2 million EUAs, while Cyprus received the largest proportional surplus, which at 165,000 was twice the size of its listed emissions for 2009.

Please note that waste gas transfers have not been estimated for the analysis below.

Germany

Overview

In 2009 Europe's largest emitter found its production levels down nearly 12% against 2008 levels, with emissions down 8.4%. The recession delivered only a small surplus to Germany of 13,000 permits. This means that, despite being the largest emitter in Europe, responsible for nearly 23% of the EU's 2009 emissions, Germany accounts for less than

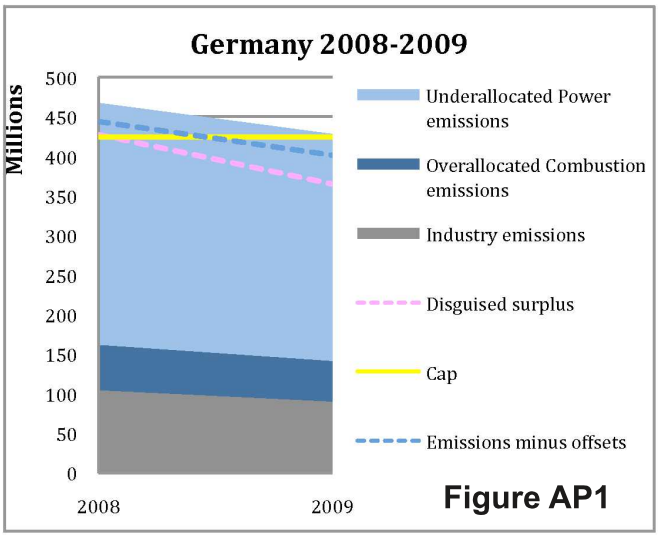


Figure AP1

0.01% of Europe's 2009 surplus.

While Germany's net position in 2009 is effectively neutral, it acquired a carbon space for future domestic emissions growth by purchasing 26.7 million offset credits.

Concealed surpluses and missed opportunities

Unfortunately this neutral net position conceals very large undeserved surpluses accruing to industry (42.3Mt) but cancelled out by a combustion shortfall of equal size (see Figure AP1). This combustion shortfall conceals further surpluses of 20.8Mt accruing

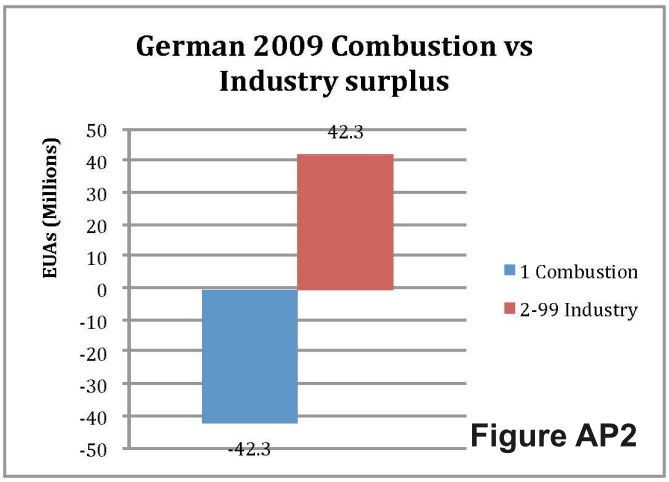


Figure AP2

to overallocated combustion plant, but concealed by a shortfall of 63.1Mt in larger centralised power stations.

Overestimation of the emissions in these sectors means Germany has missed the chance to achieve 103Mt of abatement to date without requiring additional effort, equivalent to lowering the 2008-9 cap by 12.1%. It also means that just 20% of German installations are contributing all the effort under the scheme while surpluses across the remaining 80% of installations cancel this out.

Industrial surpluses by sector

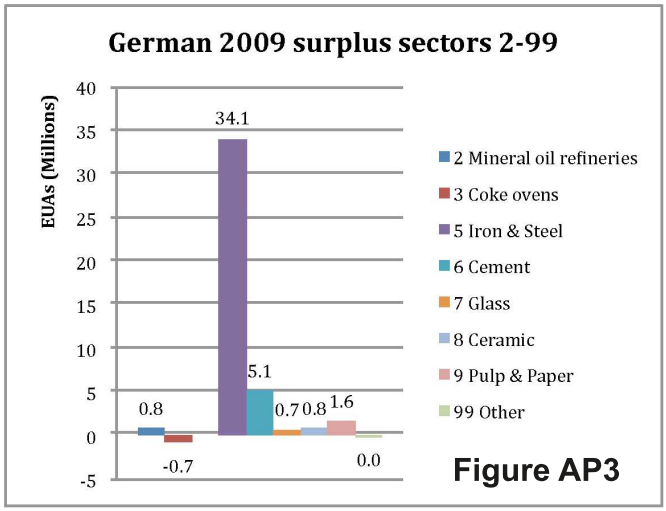


Figure AP3

Looking more closely at this 42.3Mt industry surplus in Figure AP3, we find that this overwhelmingly accrues to the German steel sector which accounts for 34.1Mt, or 81% of the industry surplus. The German cement sector comes a distant second at 5.1Mt or 12% of the industry surplus.

German steel was awarded 140% more permits than needed to meet its emissions in 2009, while German cement was awarded 20% more than it needed.

Intra-European competitiveness distortions

As a whole, Germany's industrial surplus is 39% larger than the European average for its ETS covered sectors (see Table AP2).

Germany's cement surplus, while sizeable, is still only half the size of the European average for the sector. But German steel accrues more than double the average European steel surplus.

The UK

Overview

Britain is Europe's second largest emitter in the ETS, contributing 12.4% of 2009 emissions in the traded sector. The recession brought down national production levels 13.9% in 2009 which overwhelmingly contributed toward a 12.5% reduction in national emissions that year. This left the UK holding 4.1% more permits than needed to cover its emissions (9.4 million EUAs). UK installations further augmented this space for future carbon growth by purchasing 5.2 million offset credits.

The UK's contribution to the 2009 EU surplus was 6.2%, which remains low (i.e. half) proportional to its share of EU ETS emissions. In Figure AP4 we see the cap increase as 2009 sees UK beginning to release its auctioned permits in earnest.

Concealed surpluses and missed opportunities

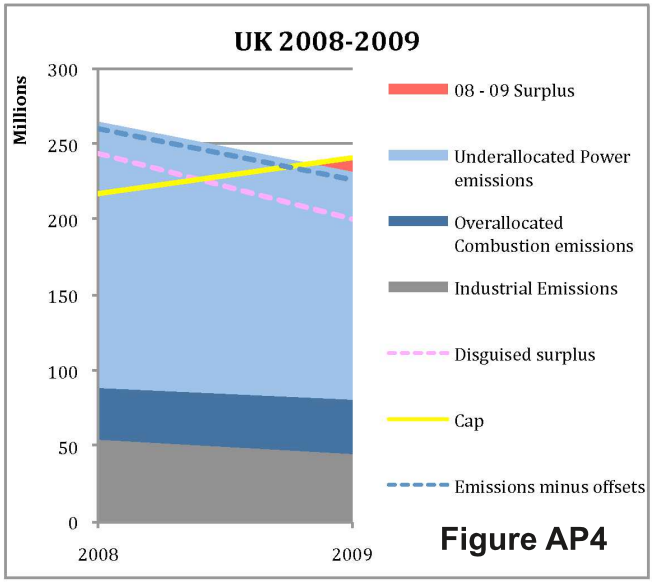


Figure AP4

The UK's 9.4Mt long net position conceals much larger surpluses at the sectoral and subsectoral level, with 18.3Mt accruing across industrial sectors, and 12.8Mt accruing to part of the combustion sector. Most of this is hidden by a 21.7Mt shortfall in remaining power installations (see Figure AP5).

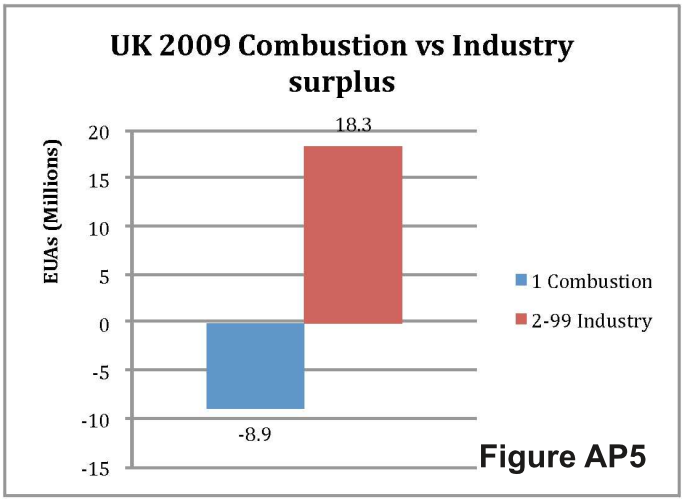


Figure AP5

Just 26% of the UK installations covered by the scheme are delivering all of the effort with the remaining 74% work against them. The total permits allocated to industry and combustion over 2008-9 amount to 52.1 million, representing a missed opportunity for abatement which would have lowered the cap by 11.4% to date.

Industrial surpluses by sector

Breaking the 18.3Mt industrial surplus down by sector in Figure AP6 we find that roughly one third of this came from the Cement sector (34% or 6.3Mt) and another third from the Coke Ovens sector (32% or 5.8Mt).

UK cement was allocated 78% more permits than it needed to cover its emissions in 2009, while UK coke ovens were overallocated by 56%.

Intra-European competitiveness distortions

As a whole, Britain's industrial surplus is 22% larger than the European average for its ETS covered sectors relative to emissions (see Table AP2).

Like Germany, the UK cement surplus is proportionally quite small at 43% below the European average, but UK coke ovens are 31% larger than the EU average. The UK's most proportionally overallocated sector, though, is glass which has accrued nearly twelve times the average surplus for the industry.

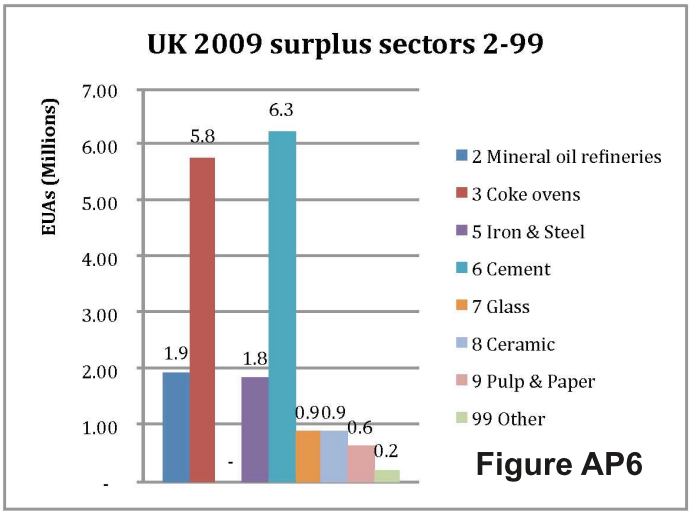


Figure AP6

Poland

Overview

Taking third place in Europe's largest 2009 emitters, Poland emitted 191 Mt of CO2e contributing 10.2% of EU emissions. Recession hammered the Polish economy dragging production down 18.2% that year, however, Poland's emissions were amongst the least affected in the EU dropping only 6.4%. This may be a symptom of Poland's high carbon intensity, requiring very large drops in production to affect emissions.

This relatively small drop in emissions was still sufficient to induce a 9.9Mt surplus that year, a space for future emissions growth which was further increased by purchases of 10.5 million offsets. Poland's contributed 6.5% of the 2009 EU ETS surplus.

Concealed surpluses and missed opportunities

As discussed in our introduction to this Appendix, Poland is unusual amongst Member States in that it did not underallocate its combustion sector as aggressively in order

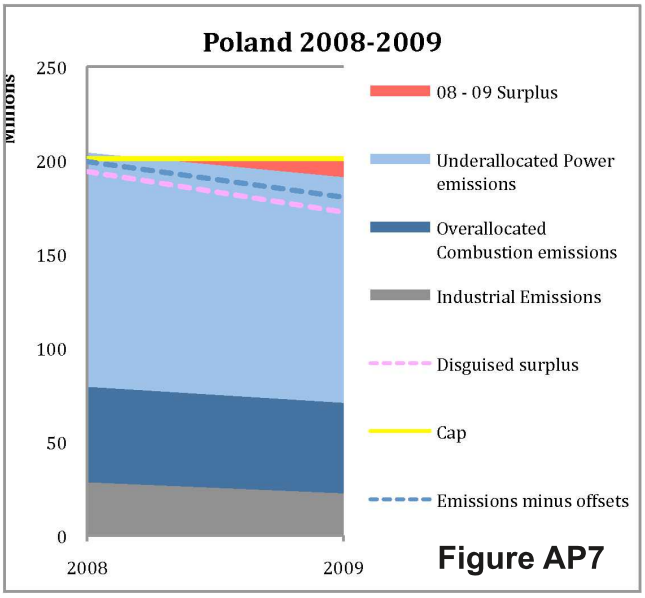


Figure AP7

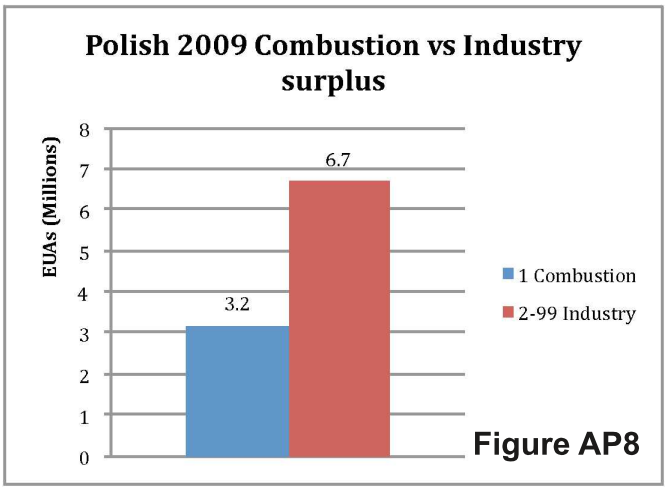


Figure AP8

to cushion its industrial sectors. Thus while the UK and Poland have similar net surpluses, Poland's industrial surplus is around a third of the UKs. The UK has enabled this by working its underallocated power plants three times as hard as those in Poland.

In Figure AP8 we see both industry *and* combustion are in surplus. Nonetheless, the 3.2Mt combustion surplus disguises 8.6 Mt of effort undertaken by a small number of centralised power plants within this sector, but overwhelmed by 11.8Mt of surpluses in remaining combustion plant. This means 16% of Polish installations are undertaking all of the effort.

Industrial surpluses by sector

Breaking the 6.7 Mt industrial surplus down by sector in Figure AP9 we find 37% of this accruing to the Cement industry (2.5Mt) followed closely by the Steel sector at 32% (2.2Mt).

Poland allocated its cement sector 23% more permits than it needed to cover its emissions in 2009, and gave its steel sector 74% more than it needed.

Intra-European competitiveness distortions

As a whole, Poland's industrial surplus, while substantial, is nevertheless 31% smaller than the European average for its ETS covered sectors relative to emissions (see Table AP2).

Again, like Germany and the UK, Poland's cement surplus remains smaller (-42%) than the European average. Polish steel, meanwhile is 14% larger than the European average.

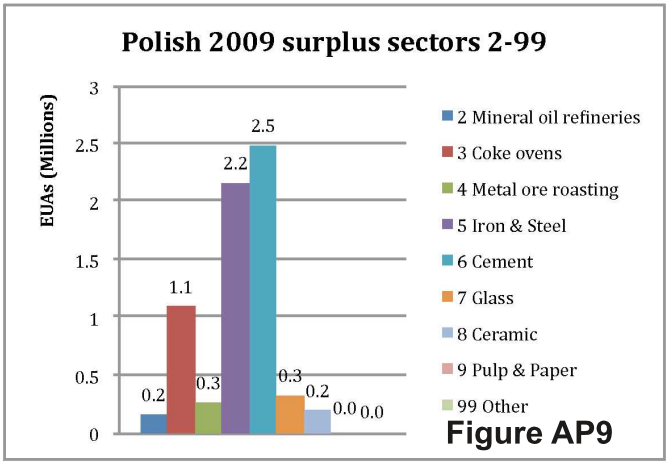


Figure AP9

Italy

Overview

Italy is the fourth largest emitter in the ETS, emitting 184 Mt CO2e or 9.9% of traded emissions in 2009.

While overall production levels fell less (8.7%) than in most other Member States, emissions dropped precipitously by 16.5% from 2008 levels.

This steep drop in emissions found Italy with a surplus of 18.9Mt, which at 12.5% is proportionally larger than its share of EU emissions. This surplus was further increased by purchasing 8.6 million offsets.

Concealed surpluses and missed opportunities

Like Poland, Italy's combustion sector is in surplus overall, with underallocated combustion installations accounting for an unusually small proportion of emissions. Nonetheless these power installations, which account for 17% of Italy's ETS installations,

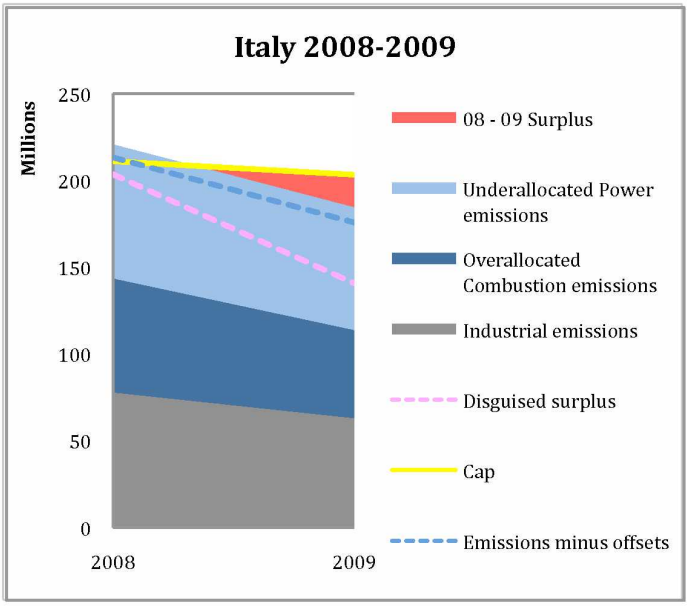


Figure AP10

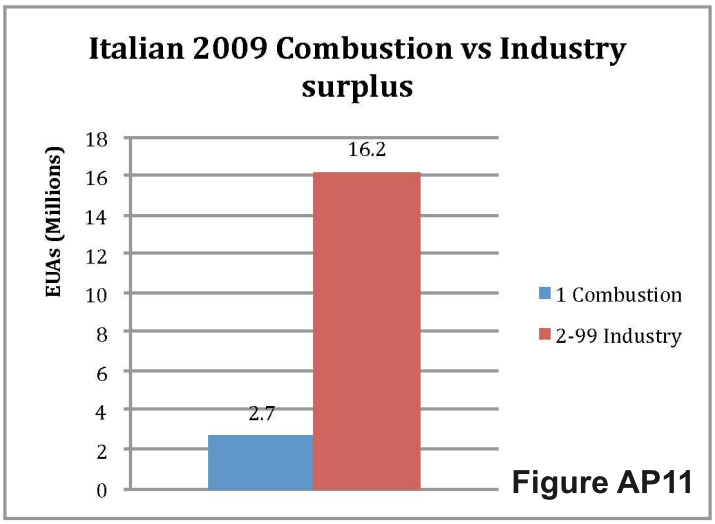


Figure AP11

are short 24.7Mt, greater effort than the UK required of the same subsector.

Unlike the UK, however most of that slack was taken up by massively over-allocated combustion installation accruing a surplus of 27.4Mt.

Italy's industrial surplus is 16.2Mt overall, but Italy is unusual in having a whole industrial sector, refineries, substantially short by 3.4Mt in 2009, pushing the concealed surplus up to 19.7Mt. This means an overall surplus totalling 47.1Mt accrued to Italian installations in 2009 and 69.3Mt in Phase II to date, suggesting the 2008-9 caps could have been lowered by 16.7% without requiring additional effort.

Industrial surpluses by sector

Breaking down the full 19.7Mt industrial surplus, in Figure AP12 we find the most 52% of this consists of steel surpluses (10.2Mt) and 39% consists of cement surpluses (7.7%).

Italy allocated its steel sector more than double (218%) the permits it needed to cover

its emissions in 2009, and gave its cement a third more permits than it needed.

Intra-European competitiveness distortions

As a whole, Italy's industrial surplus is 5% larger than the European average for its ETS covered sectors relative to emissions (see Table AP2).

Italy's cement surplus is lower (17%) than the EU average for the sector, while the steel surplus is 81% larger than average.

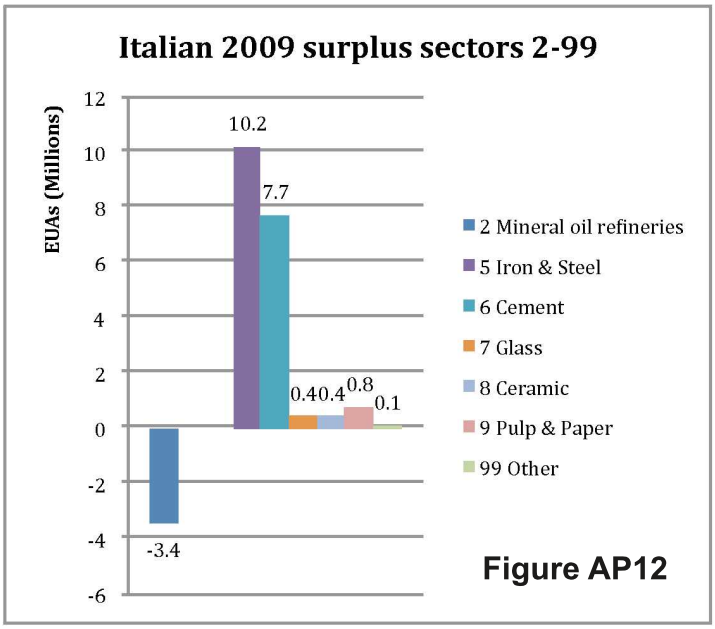


Figure AP12

Spain

Spain

Overview

Spain is the fifth largest emitter in the ETS, emitting 136.6 Mt CO2e or 7.3% of traded emissions in 2009. The recession lowered overall Spanish production by 13.1%, but with help from a rapid deployment of renewables, Spanish emissions were reduced 16.3%. Spanish installations were sitting on a net surplus of 13.9Mt, or 9.2% of the EU surplus for that year, considerably more than their share of emissions. This surplus was further enlarged by purchases of 8.2 million offset credits.

Concealed surpluses and missed opportunities

Spain adopted the conventional strategy of underallocating its combustion sector to buffer its industrial sectors. In 2009 this underallocation was concentrated in a 22.8Mt shortfall to power stations, leaving the majority of combustion plant free to gather a surplus of 11.2Mt. Industrial sectors collectively achieved a further surplus of 25.5Mt. If we add this combined surplus of 36.7Mt to the 2008 surplus we find that Spain could have lowered its 2008-9 cap by 18.9% without requiring any additional effort of its installations.

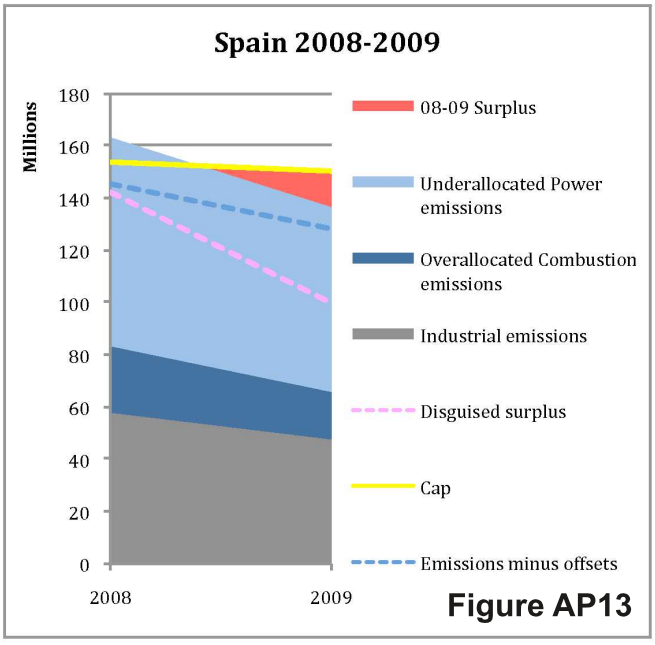


Figure AP13

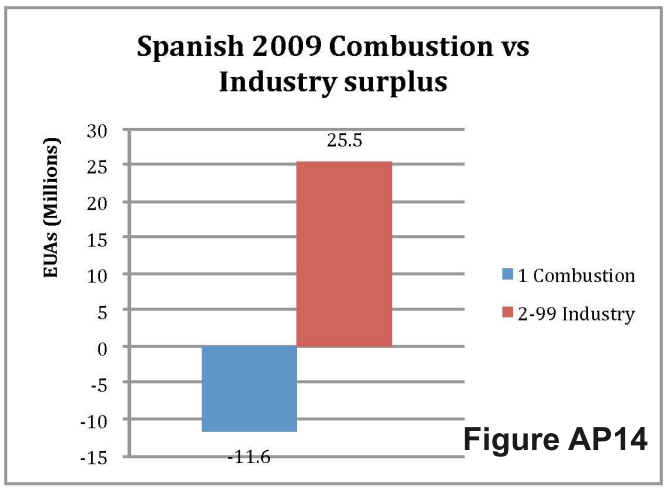


Figure AP14

Just 16% of Spain's installations are currently undertaking all of the national effort, while most of the remaining 84% cancel out that effort.

Industrial surpluses by sector

Breaking the 25.5Mt industrial surplus down by sector in Figure AP15 we again find 45% of this surpluses accrued to the cement industry (11.5Mt) and 24% to the steel industry (6.2Mt).

Spain allocated its cement sector 58% more permits than it needed to cover its emissions in 2009, and gave its steel sector double the permits it required.

Intra-European competitiveness distortions

As a whole, Spain's industrial surplus is 35% larger, relative to emissions, than the

European average for its ETS covered sectors (see Table AP2).

Unlike the top 4, Spain's cement surplus is 44% larger than the EU average for the sector, while the Spanish steel surplus is 81% larger than the European average.

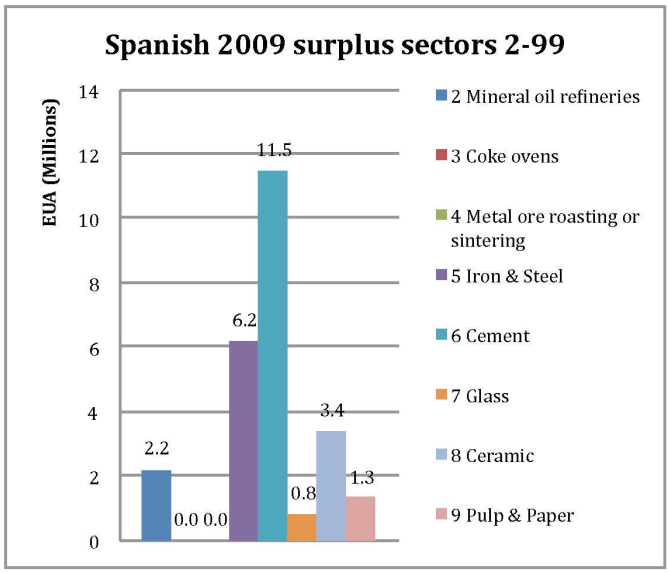


Figure AP14

Table AP2: National shares of EU surpluses by sector

Germany 2009	% sector emissions	% sector surplus	proportional surplus
Sector 2: Mineral oil refineries	18.09%	11.21%	61.97%
Sector 3: Coke ovens	16.93%	-10.91%	NA
Sector 5:Iron and Steel*	**25.90%**	**55.32%**	**213.58%**
Sector 6: Cement	**16.82%**	**8.42%**	**51.08%**
Sector 7: Glass	20.17%	10.99%	54.47%
Sector 8: Ceramic	13.46%	7.98%	59.25%
Sector 9: Pulp and Paper	19.43%	15.51%	79.86%
Sector 99: Other	0.07%	-0.33%	NA
TOTAL	**18.70%**	**26.04%**	**139.30%**
UK 2009	% sector emissions	% sector surplus	proportional surplus
Sector 2: Mineral oil refineries	11.44%	27.84%	243.45%
Sector 3: Coke ovens	**66.08%**	**86.83%**	**131.41%**
Sector 5:Iron and Steel*	5.91%	0.00%	0%
Sector 6: Cement	**5.32%**	**3.02%**	**56.70%**
Sector 7: Glass	8.19%	104.03%	1270.47%
Sector 8: Ceramic	7.49%	8.84%	118.04%
Sector 9: Pulp and Paper	5.53%	8.21%	148.65%
Sector 99: Other	1.42%	14.13%	996.16%
TOTAL	**8.33%**	**10.17%**	**122.07%**
Poland 2009	% sector emissions	% sector surplus	proportional surplus
Sector 2: Mineral oil refineries	2.00%	2.24%	112.34%
Sector 3: Coke ovens	11.56%	16.34%	141.35%
Sector 4:Metal ore roasting	10.45%	2.37%	22.72%
Sector 5:Iron and Steel*	**3.08%**	**3.50%**	**113.66%**
Sector 6: Cement	**7.03%**	**4.09%**	**58.18%**
Sector 7: Glass	6.16%	5.37%	87.22%
Sector 8: Ceramic	5.99%	1.97%	32.85%
Sector 9: Pulp and Paper	3.81%	0.40%	10.46%
Sector 99: Other	0.14%	0.17%	123.96%
TOTAL	**5.54%**	**3.85%**	**69.35%**
Italy 2009	% sector emissions	% sector surplus	proportional surplus
Sector 2: Mineral oil refineries	15.83%	-49.81%	NA
Sector 5:Iron and Steel*	**9.13%**	**16.55%**	**181.31%**
Sector 6: Cement	**15.43%**	**12.73%**	**82.53%**
Sector 7: Glass	13.56%	7.16%	52.77%
Sector 8: Ceramic	3.95%	4.37%	110.42%
Sector 9: Pulp and Paper	15.46%	7.26%	46.93%
Sector 99: Other	1.30%	2.54%	195.77%
TOTAL	**12.28%**	**12.86%**	**14.73%**
Spain 2009	% sector emissions	% sector surplus	proportional surplus
Sector 2: Mineral oil refineries	9.27%	32.11%	346.30%
Sector 3: Coke ovens	0.10%	0.24%	234.28%
Sector 4:Metal ore roasting	2.00%	0.12%	5.81%
Sector 5:Iron and Steel*	**6.48%**	**10.05%**	**155.11%**
Sector 6: Cement	**13.17%**	**18.96%**	**143.96%**
Sector 7: Glass	10.30%	13.64%	132.40%
Sector 8: Ceramic	21.35%	35.05%	164.14%
Sector 9: Pulp and Paper	13.87%	12.51%	90.19%
TOTAL	**10.36%**	**14.01%**	**135.19%**

Appendix 2: Notes on Methodology

Allocations and emissions data

For most of the calculations in our report, we used a reduced sample of the publically available data in the Community Independent Transaction Log. Our data was principally sourced from the compliance data spreadsheet released on Mon 17th May 2010, but was also supplemented by data taken directly from the CITL website since then.[77]

Our reduced sample filtered out any installations which were closed before Phase II, or registered incomplete emissions or allocations data across 2008 and 2009, and was used both to form a clearer picture of how Phase II is performing to date, and to predict how it might perform in the future. When Phase I data was referenced a similar filter is applied unless otherwise stated.

Table AP3: Sandbag controlled sample

	CITL release	Sandbag sample
# Installations	12,242 (100%)	11,133 (91%)
2009 allocations[78]	1,966,518,548 (100%)	1,952,136,306 (99%)

Sectoral categories

For the purposes of our sectoral overview we divided our analysis into three sectors. Heavy industry, overallocated combustion and underallocated power:

Heavy industry consisted of all installations which recorded sector 2-99 for their "main activity type", i.e. any installation which was not registered as a combustion plant.

Combustion plant (CITL code 1) was divided in to two subsectors to capture over-allocation in parts of this sector:

Over-allocated combustion includes all combustion plant which achieved a total net surplus when its emissions were subtracted from its free allocations over 2008-2009. Zero was counted as a surplus position. Roughly 2/3rds of all code 1 installations (5,689 out of a total of 8,246) fell under this category representing a third of emissions in that sector.

Underallocated power refers to all remaining combustion plant registering a total shortfall over the course of 2008-2009 when its emissions were subtracted from its free allocations. This amounted to roughly 1/3rd of all CITL activity-code 1 installations (2,557 out of a total of 8,246), however these installations are very large emitters accounting for around 2/3rds of the

77 http://bit.ly/99I93B

78 Does not include 65,685,000 permits auctioned that year.

emissions across the entire scheme.

Once these three sectors were determined, we then calculated their net position by correcting for offset usage and adjusting for waste gas transfers (see below). We have assumed all permits at auction were purchased by the underallocated power sector, and have raised this sectoral cap accordingly.

Company analysis

Our 2009 update of our 2008 Carbon Fatcats relied on Account Holder information on CITL and company information where provided. This was then supported by extensive research of the websites and financial reports of the listed companies as well as other online databases.

Waste gas transfer

At present there is little public information on the installations or the scale of waste gas transfer between industrial plant and combustion plant and the attendant exchange of carbon permits. The volumes are potentially quite significant, however, and key issues relating to levels of allocations and surpluses relate to steel, the main sector transferring waste gases. We have therefore attempted to estimate the impact of these transfers.

Waste gases at sectoral level

For the purposes of this report we estimate 42 million permits were transferred from the steel sector to the underallocated power sector in 2008 and a further 29 million permits in 2009.

The Öko institute has identified 30 combustion installations receiving waste gas transfers from steel plants, and in some cases has been able to provide specific data on what percentage of emissions in these combustion installations arise from burning waste gases. Where this information is available we have assumed a corresponding number of EUAs were transferred to the combustion plant. Where Öko lacked these percentage figures, we have assumed any shortfall of EUAs in the identified power plants is made up entirely by a transfer of permits from the steel sector.

This methodology leaves us without any means of calculating waste gas transfers to any power plant which is already

Table AP4: Company waste gas transfer

Waste gas producer	Waste gas user	2008	2009
SSAB	**1 installation**	**2,207,439**	**1,619,851**
SSAB Luleå	Luleå KVV	2,207,439	1,619,851
ArcelorMittal	**3 installation**	**7,334,454**	**5,700,904**
Arcelor Mittal ESPAÑA, S.A.	ES033301000215	2,309,593	2,001,608
Arcelor Mittal Roheisen-und-Stahlerzeugung	Dampfheizkraftwerk VEO	1,919,987	1,436,188
ArcelorMittal Gent	Electrabel-Centrale Rodenhuize	3,104,873	2,263,107
Corus	**2 installations**	**4,471,457**	**3,245,142**
Corus Staal B.V., locatie IJmuiden	Nuon Power IJmond	1,571,327	0
	Nuon Power Velsen	2,900,130	3,245,142

(Source: Öko institut, Sandbag)

overallocated, and is in this regard likely to be an underestimation. However, this should be balanced out by instances where the shortfall of waste gas recipients is not met through steel transfers. The paucity of information currently available on waste gas transfer makes more detailed analysis very difficult at this time.

Table AP5: Sectoral waste gas transfer (from steel to under-allocated power)

Recipient combustion installations	% annual emissions from waste gases (where given)	2008 waste gas estimate (combustion shortfall where no detailed information given)	2009 waste gas estimate (combustion shortfall where no detailed information given)	Country
Voestalpine Kraftwerk Linz		1,088,438	533,026	Austria
Voestalpine Stahl Linz sonstige Anlagen		331,025	147,216	Belgium
Electrabel - Centrale Rodenhuize	82%	3,104,873	2,263,107	Belgium
ArcelorMittal Liège Upstream Energie Ougrée		66,101	0	Belgium
ArcelorMittal Liège Upstream Energie Seraing		304,980	0	Belgium
Block 3 Bremen		1,252,458	1,257,286	Germany
Block 4 Bremen		982,299	617,758	Germany
Modellkraftwerk Völklingen		214,862	0	Germany
FVS Kesselanlage		207,862	80,955	Germany
Kesselhaus Prosper		27,534	0	Germany
Kesselstation der DH		537,454	420,561	Germany
Kraftwerk Hallendorf		2,964,847	2,157,598	Germany
Kraftwerk zur Stromerzeugung		349,071	199,912	Germany
Dampfkesselanlage SAG		46,245	48,202	Germany
Dampfkesselanlage Bremen		59,283	88,941	Germany
Dampfheizkraftwerk VEO		1,919,987	1,436,188	Germany
Dampfkesselanlage Dortmund		10,207	7,895	Germany
Heizkraftwerk ThyssenKrupp Stahl AG Duisburg Hamb		2,661,063	1,571,796	Germany
Dampfkesselanlage Duisburg Hamborn	96%	3,562,141	2,004,626	Germany
Kraftwerk Huckingen	89%	3,581,378	1,658,020	Germany
Kraftwerk Hamborn	98%	3,027,837	2,706,049	Germany
Dunaferr Meleghengermu		10,801	0	Hungary
ISD POWER Eromu	88%	1,155,445	1,031,773	Hungary
Stabilimento di PIOMBINO	71%	1,493,426	1,088,382	Italy
STABILIMENTO DI TARANTO	40%	3,707,608	2,369,929	Italy
Nuon Power Velsen		2,900,130	3,245,142	Netherlands
Nuon Power IJmond		1,571,327	0	Netherlands
Hidrocantábrico S.A - Aboño 1 y 2	35%	2,309,593	2,001,608	Spain
Luleå KVV	99%	2,207,439	1,619,851	Sweden
TOTAL		**41,655,715**	**28,555,821**	

(Source: Öko institut, Sandbag)

Waste gas transfer – company level

At the company level we have investigated whether any steel plant in companies from our top 10 overallocated companies is in reasonable proximity to the waste gas recipients identified above. Where there are several steel plants owned by different companies nearby, we have given companies from our top 10 the benefit of the doubt and assumed all the waste gases being transferred to the combustion plant come from their plant. This is therefore likely to be an overestimation. In some cases, combustion installations identified as waste gas recipients were owned by the same company as the donor steel plant, and therefore lead to no changes in the company allocations. Several ArcelorMittal plants fit this description.

Other Data Sources

Offsets

Our installation level information on offset usage was recorded from the CITL database. Our figures on total offset availability over Phase II and III were taken from Deutsche bank estimates.[79] Deutsche calculates Phase II availability at 1443.5 million. For Phase III Deutsche estimates between 250 million and 500 million additional permits will be available; we have used the midpoint of that range (375 million). We have followed wide predictions that 2012 will see a jump in offset usage and have assumed a fifth of all offsets available in Phase II (288.7 million) will be used that year. Sectoral offset usage in 2012 has been calculated using the proportions of total offsets surrendered by each sector used in 2008-2009.

Aviation

Our projections for Phase II and our Phase III caps were adjusted to include emissions and allocations for the aviation sector as predicted by DECC in "Impact Assessment of Second Stage Transposition of EU Legislation to include Aviation in the European Union Emissions Trading System (EU ETS)".[80] DECC predicts aviation emissions of 305MtCO2e in 2012 against an allocation of 210 million permits, the annual Phase III aviation budget is expected to be 206 million permits, while aviation emissions are expected to gradually rise approximately 12Mt a year.

Productivity Levels

Statistics on productivity levels for particular countries, industries or for the EU overall were gleaned from the production index on the Eurostat database. Our main point of reference was Eurostat's "Industry production index - annual data - percentage change (NACE Rev.2)".

79 Deutsche Bank, "Chapter and Verse: EU ETS rules for CER-ERU use beyond Copenhagen", 16.11.09

80 http://bit.ly/93E1C4

Table AP6: Overview of Phase II report data

Sectoral breakdown	#Installations	emissions_08	emissions_09	Offsets 08	Offsets 09	Waste gas 08	Waste gas 09	alloc_08	alloc_09	Surplus to date (no offsets)	Phase II surplus (no offsets)
EU ETS overview	10,868	2,105,181,371	1,866,247,452	81,020,041	81,228,856	-	-	1,987,923,641	2,017,821,306	34,316,124	-223,828,774
1 Combustion	7,122	1,500,075,228	1,371,735,487	54,231,566	59,764,249	41,655,715	28,555,821	1,292,651,861	1,317,397,933	-191,549,385	-564,646,882
Underallocated power	2,339	1,061,859,409	985,889,893	34,668,522	39,137,126	41,655,715	28,555,821	759,861,451	774,316,919	-443,359,396	-1,131,511,080
Overallocated combustion	4,783	438,215,819	385,845,594	19,563,044	20,627,123	0	0	532,790,410	543,081,014	251,810,011	566,864,199
Heavy industry	3,746	605,106,143	494,511,965	26,788,475	21,464,607	- 41,655,715	- 28,555,821	695,271,780	700,423,373	225,865,509	435,818,108
2 Mineral oil refineries	148	154,772,842	146,207,672	4,351,018	4,715,083	0	0	152,824,265	153,123,368	4,967,119	3,553,525
3 Coke ovens	21	20,988,704	15,736,988	1,408,550	406,459	0	0	22,531,002	22,409,275	8,214,585	15,406,474
4 Metal ore roasting	26	17,630,430	11,016,705	168,408	168,021	0	0	21,812,336	21,878,669	15,043,870	30,929,617
5 Iron & Steel	231	132,778,341	94,326,625	8,920,583	5,712,167	-41,655,715	-28,555,821	184,346,083	184,562,760	71,592,341	127,212,566
6 Cement	546	188,887,199	151,171,078	8,113,664	7,188,552	0	0	209,735,243	211,817,862	81,494,828	163,938,330
7 Glass	422	22,638,626	19,323,507	958,836	339,240	0	0	24,972,022	25,352,027	8,361,916	17,209,666
8 Ceramic	1,026	13,283,795	9,032,313	581,515	958,077	0	0	18,274,588	18,767,398	14,725,878	32,070,403
9 Pulp & Paper	800	31,403,277	27,831,850	2,267,737	1,920,206	0	0	37,842,885	38,361,878	16,969,636	38,333,670
99 Other	526	22,722,929	19,865,227	18,164	56,802	0	0	22,933,356	24,150,136	4,495,336	7,163,858
Aviation	-	-	-	-	-	-	-	-	-		-95,000,000

Carbon Fatcats	#Installations	emissions_08	emissions_09	Offsets 08	Offsets 09	Waste gas 08	Waste gas 09	alloc_08	alloc_09	Surplus to date (no offsets)	Phase II surplus (no offsets)
ArcelorMittal	81	66,198,916	44,039,311	0	39,563	7,334,454	5,700,904	86,811,631	86,827,199	50,365,245	102,104,390
Lafarge	56	25,805,782	18,556,933	0	108,542	0	0	29,934,352	29,934,217	15,505,854	31,515,921
Corus	12	26,989,279	21,728,419	2,025,000	666,004	4,471,457	3,245,142	34,525,796	34,635,151	12,726,650	25,220,095
Cemex	19	11,743,712	8,837,066	1,220,052	190,443	0	0	14,509,627	14,168,283	8,097,132	17,677,527
Salzgitter	9	7,532,633	5,892,729	0	3,625,000	0	0	9,502,591	9,502,591	5,579,820	12,309,646
HeidelbergCement	48	20,345,730	17,318,718	981,582	66,818	0	0	22,079,745	22,422,772	6,838,069	13,725,134
CEZ	20	40,402,956	37,201,509	0	115,030	0	0	42,167,958	42,349,580	6,913,073	13,899,614
US Steel	1	8,960,471	7,555,668	750,000	755,000	0	0	10,793,886	10,793,886	5,071,633	11,274,280
SSAB	3	3,913,416	2,048,297	0	0	2,207,439	1,619,851	7,164,051	7,259,447	4,634,495	9,038,136
Slovenske	3	4,079,023	3,343,724	0	0	0	0	5,406,520	5,406,520	3,390,293	7,740,434
FATCAT TOTAL	252	215,971,918	166,522,374	4,976,634	5,566,400	14,013,350	10,565,897	262,896,157	263,299,646	119,122,264	244,505,175

Other things we do: Research consultancy

Sandbag is the NGO leading in research-led campaigning for effective emissions trading. Our informed reports, briefing papers, consultation responses and workshops have reached and influenced European policymakers at the highest levels and been widely reported in the European and international press.

Sandbag can provide your organisation with:

• **Commissioned reports:** our reports combine rigorous research with clear and targeted messaging.

• **Research and data analysis:** Sandbag has extensive experience analysing the key EU ETS data, and has developed some unique tools (such as our offset and emissions trading maps) to make these more transparent. Sandbag has also developed extensive profiles of specific sectors, companies and countries within the scheme.

• **Workshops:** We have provided workshops to MEPs and UNFCCC delegates on such topics as offset reform, carbon leakage, ETS reform, and sectoral trading.

For more information on our research consultancy services please contact info@sandbag.org.uk