

A Report on the European Union Emissions Trading System (EU-ETS)

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The European Union's Emission Trading System (EU-ETS) is currently the world's largest market for trading greenhouse gas (GHG) emission allowances (also referred to as permits or credits), and is the EU's 'flagship' climate change mitigation policy. However, in its first eight years the EU-ETS has not been the driver of domestic EU climate change mitigation that was originally envisaged. An estimated oversupply of 2 billion emission allowances² within the system has contributed to a 'carbon price' (the value of emission allowances in €/tCO₂) that has been too low to stimulate the anticipated investment in domestic emission reduction measures.

Furthermore, some claim that the oversupply of free allowances and the high volume of offsetting in the first two phases of the EU-ETS are undermining other mitigation measures within the EU. This briefing note describes the EU-ETS and the problems that have emerged in the first and second phase. It also reviews current actions within the EU, and future options that are available, to correct these issues for the third phase.

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² See European Commission, (2013), *Structural reform of the European carbon market*, Available at: http://ec.europa.eu/clima/policies/ets/reform/index_en.htm (Accessed 07/08/2013)

THE EU-ETS

The stated aim of the EU-ETS is to ‘combat climate change’ by reducing GHG emissions in a ‘cost effective’ way.³ The two aspects of this statement, reducing GHG emissions and being cost effective, reflect two EU goals that are both embedded in the same policy; environmental sustainability and economic competitiveness. This duality in purpose is important when considering the design of the EU-ETS and the causes of some of its problems. The following section describes how the EU-ETS should work as a background to discussing its current problems and possible ways forward.

Emissions Trading Theory:

The EU-ETS draws on neo-liberal economic theory to conceptualise environmental problems as an economic *externalities*. Within this framework the inability of ‘markets’ to address environmental problems, such as greenhouse gas emissions, is defined as a *market failure*. Emission trading schemes (ETS) seek to commodify environmental pollution so that it has an appreciable value that will appear on the balance sheets of market participants (agents/actors).⁴ This is done by ‘capping’ the pollution allowed within a geographic region (market area). Polluters are either awarded (typically on the basis of historic pollution – known as grandfathering) or bid for (often through an auction system) a proportion of the fixed number of pollution allowances available within the cap (Kopsch 2012). The pollution from market participants is quantified and verified (usually by a

third party assessor) at which point the participant ‘surrenders’ the equivalent amount of allowances for their pollution. A punitive fine is issued for every unit of pollution not covered by an allowance. Market participants can choose to use up their allowances, take measures to reduce their pollution so that fewer allowances are required to avoid a fine, or they can trade allowances with other participants.

The price of allowances when they are traded between ETS participants is set by the market for trading allowances (such as a carbon market). High prices allowances should send a signal for ETS participants to invest in measures that reduce their emissions as a cost effective alternative to buying allowances and would make selling allowances profitable. High allowance prices will also increase the costs for high emission industries such as coal power stations and cement production, thereby passing on the costs of emissions to consumers as a price signal reduce consumption or seek lower emission alternatives.

The price of allowances should respond to their availability. When businesses are growing there emissions will ‘push’ against the cap unless they take action to lower the emission intensity of their activities. When businesses are not growing demand for allowances will weaken causing a lower allowance price. Such an approach to reducing pollution is favoured by many commercial and industrial entities over approaches such as taxation and regulation (Nye and Owens 2008; Wråke, Burtraw et al. 2012). This is because it gives them the flexibility to reduce their emissions on their own terms (e.g. decide a timeframe for low carbon investment tailored to their business plan) and do so in the most cost effective manner. It should also makes the cost of carbon responsive to wider market interactions, so that industries are not burdened by a fixed carbon cost that is not sensitive to economic cycles. The price of allowances can also be stimulated by a gradual ‘tightening’ of the cap, which makes fewer

³ European Commission, (2013), *The EU Emissions Trading Scheme (EU-ETS)*, Available at: http://ec.europa.eu/clima/policies/ets/index_en.htm (Accessed 01/08/2013).

⁴ The European Commission states that the EU-ETS will put “climate change on the agenda of company boards across Europe.” See European Commission, (2013), *The EU Emissions Trading System (EU-ETS) Fact Sheet*, Available at: http://ec.europa.eu/clima/publications/docs/factsheet_ets_2013_en.pdf (Accessed 06/08/2013)

allowances available each year in line with a target to reduce the overall emissions within an ETS.

Some sectors may be considered vulnerable to ‘leakage’, meaning that high allowance costs within the an ETS compel industries to move production to outside of the ETS. This does not reduce the global impact of that industry, the emissions simply happen outside of the cap. Sectors vulnerable to this (such as cement and chemical industries) may be given extra emissions allowances to prevent this. A coal power station may not be considered for leakage protection as if one closes within the cap area it cannot provide the same electricity load from outside to users within the ETS territory⁵.

The theoretical rationale for emissions trading as being both environmentally, socially and economically beneficial has been challenged by a number of academics and commentators (Nye and Owens 2008, Toke 2008, Bailey and Maresh 2009, Broderick 2011). These criticisms broadly focus on whether markets can properly value emissions that have long term and global impacts; the effect of incorporating non-state actors, specifically industry and commercial groups, into climate governance; whether price signals are as effective as taxation and regulation to reduce pollution. This review will not cover these theoretical arguments in detail and will instead focus on the problems and solutions relating the EU-ETS within the framework that it was formed under.

The EU-ETS:

The EU-ETS is a conceptual successor to the US Acid Rain Program in the 1990s to limit US sulphur dioxide and nitrogen dioxide emissions, and the voluntary UK emissions trading scheme (UK-ETS) 2002-2006 for GHG emissions (Kopsch 2012). The

⁵ As discussed in the final section of this report, in the EU-ETS where coal power is important to a member state’s economy additional allowances have been made in the third phase.

first phase of the EU-ETS (2005-2007) acted as a pilot programme to test the structure and mechanisms of the system. The second phase (2008-2012) expanded the EU-ETS and applied an emissions cap aimed primarily at EU-15⁶ compliance with the Kyoto protocol⁷. The third phase (2013 to 2020) is based on an internal EU GHG emissions reduction target of 20% (against 1990 levels) by 2020⁸. In the third phase the EU-ETS, participation is mandatory for around 11,000 large GHG emitting facilities and airlines operating within 28 EU states plus Norway, Liechtenstein and Iceland. These sectors include; oil refineries, steel works and production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals (European Commission 2013). Following the inclusion of aviation in 2012 the EU-ETS covers 45% of GHG emissions within the EU 28⁹. The EU-ETS is co-ordinated by the European Commission (EC), but the allocation of allowances - either through grandfathering or through auction - and emissions verification are administered by member states based on EC rules¹⁰.

⁶ The 15 European states in the EU prior to 2004.

⁷ See European Commission, (2013), *The EU Emission Trading System*, Available at: http://ec.europa.eu/clima/policies/ets/index_en.htm (Accessed 06/08/2013)

⁸ It was proposed that the EU will increase this target to 30% if there is what it considers to be strong international action on climate change.

⁹ See European Commission, (2013), *The EU Emission Trading System*, Available at: http://ec.europa.eu/clima/policies/ets/index_en.htm (Accessed 06/08/2013)

¹⁰ Changes to this process for the third phase are discussed in the final section of this report.

Table 1: Overview of the EU Emissions Trading Scheme

	Phase One	Phase Two	Phase Three	Aviation
Timeframe	2005-2007	2008-2012	2013-2020	2012-2020
Cap		6.5% below 2005 level	EU wide cap. 1.74% annual reduction from second phase emissions base case	5% below average emissions OF 2004-2006
Allowance Allocation	100% Grandfathering through National Allocation Plans (NAPs)	90% Grandfathering via NAPs, 10% auctioning	Auctioning for power sector, other sectors 20% auctioning in 2013 up to 70% by 2020	15% auctioned, 82% grandfathering, 3% reserved for new entrants and fast growing airlines
Offsetting	No	CDM and JI allowed	CDM and JI allowed	CDM and JI allowed
Coverage	EU-15 (CO ₂)	Iceland, Liechtenstein and Norway join (CO ₂ , N ₂ O)	Croatia joins (CO ₂ , N ₂ O, PFCs) Aviation added	Flights; within/between EU ETS states and to/from non-ETS states from/arriving in EU-ETS

The EU-ETS has two key distinguishing features; the way in which emission allowances are allocated and the option to obtain offset allowances.

Emission Allowances: Within the EU-ETS framework one emissions allowance is a permit to emit a single metric ton of CO₂, or the CO₂ equivalent of other GHGs (CO₂e) covered by the ETS - currently nitrous oxide (N₂O) and perfluorocarbons (PFCs). In the first and second phases of the EU-ETS a grandfathering approach was used¹¹. This appears to be the approach most favoured by established industries who want their existing situations reflected in the allocation (Hepburn, Grubb et al. 2006). The allocations of GHG emission permits, European Union Allowances (EUAs), were set by national allocation

plans (NAPs) which were based on historical emission trends and assumptions about how many allowances sectors would need for business as usual (BAU) emissions growth. This approach however contributed to problems in the EU-ETS (discussed later in this review) that lead to proposals to change the system to an auction process in the third phase.

Beginning in 2013, 40% of allowances all EU-ETS will be offered through an auction process instead of grandfathering, with this proportion increasing over time to almost 100% by 2020. Initially all allowances for electricity generators covered by the EU-ETS in the EU-15 plus Latvia and Cyprus will be distributed by auction. Poland, Bulgaria and members who joined the EU in 2004 will still be allowed to award free allocations for a proportion of their allotted allowances. For other sectors except aviation, at least 20% of allowances will be auctioned in all member states, with the EC mandating an increase to 70% by 2020. As shown in Table 1, aviation has a separate set of rules and will begin with an auction of 15% of allowances, which

¹¹ Some member states had auctions in phase two, but this accounted for less than 10% of the allowances in the phase. See European Commission, (2013), *EU-ETS 2005-2012*, Available at: http://ec.europa.eu/clima/policies/ets/pre2013/index_en.htm (Accessed 06/08/2013)

may increase over time. An auctioning approach is supported by much of the academic literature on this subject (Hepburn, Grubb et al. 2006), however free allocation to some industries is seen as necessary to maintain European economic competitiveness and prevent 'carbon leakage' (European Commission 2013).

Offsets: Offsetting is the broad description of emission allowances that ETS participants can obtain through GHG reduction outside of their ETS area. Offsetting has been allowed within the EU-ETS via the Linking Directive (2004/101/EC) since the second phase. Two types of offsetting are allowed and are in line with Kyoto Protocol mechanisms: Firstly, Certified Emissions Reductions (CERs) based on the Clean Development Mechanism (CDM) for projects in developing countries with no Kyoto Protocol obligations (Morris, Crow et al. 2013). Secondly, Emission Reduction Units (ERUs) through the Joint Implementation (JI) mechanism, where projects in Kyoto compliant countries are also backed by allowances from the host country's national carbon budget (AAUs) (Morris, Crow et al. 2013).

Offsetting has advantages for ETS participants who can reduce their compliance costs through offsets, and in theory this process should also enable the transfer of sustainable technologies and practices from Europe to developing countries (Trotignon 2012). However during second phase of the EU-ETS market participant behaviour in relation to offsets was problematic. The European Commission had stated that up to half of emission reduction allowances could be in the form of offsets (around 1.7billion allowances) between 2008 and 2020. However one-third of this was used within the first three years of this period (European Commission 2013) and in 2011 to 2012 a large volume (an estimated 337million allowances) of ERUs from projects in Russia and Ukraine alone came into the EU-ETS (Morris, Crow et al. 2013).

The specific problems from this volume of offsets for the functioning of the EU-ETS are discussed in the later section, yet offsets are also potentially problematic in terms of their environmental impacts. Technically, under the conditions of the Kyoto Protocol offsetting should be to supplement substantive domestic GHG abatement action and be additional to abatement actions that would have happened in the host country without a CDM project (Trotignon 2012). These guidelines are in place to ensure that offsetting does not negate global GHG emission reductions by replacing mitigation action in developed countries. Yet some claim that additionality can be difficult to consistently define for project verifiers (Spalding-Fletcher, Narayan Achanta et al. 2012; Morris, Crow et al. 2013). Furthermore there is concern about the 'environmental validity of offsets, specifically whether CDM projects actually deliver the emissions savings equivalent of the allowance they are awarded (Spalding-Fletcher; Narayan Achanta et al. 2012, Morris, Crow et al. 2013)¹². The combined effect is to reduce ETS participant incentives to invest in domestic GHG reduction and to potentially reduce confidence in the environmental benefits of the EU-ETS.

The limit on the overall number of offset allowances that can be surrendered between 2008 and 2020 does mean that this trend will change. However this 'frontloading' of international allowances means European industries have saved a significant number of EU allowances that will enable them to emit GHG in the later stages of the EU-ETS. Climate change science is very clear that, because of the cumulative effect of CO₂ build up in the atmosphere, successful mitigation action is time sensitive (Anderson and Bows 2011). Delaying climate change mitigation in Europe makes the rate of reduction required to stay within the EU's proposed '2°C emissions budget'¹³

¹² Also see UNFCCC, (2013), *CDM Policy Dialogue*, Available at: <http://cdm.unfccc.int/about/policy/index.html> (Accessed 07/09/2013)

¹³ The EU has subscribed to the notional goal of limiting global mean temperature rise to less than 2°C above

significantly more challenging, and therefore the offset activity in the EU-ETS may jeopardise the 2°C goal.

PROBLEMS WITH THE EU-ETS

The EU-ETS has not functioned in the way that was intended in the first and second phases, and reforms are needed if it is to perform as a driver for GHG emission reductions in Europe. The central problem of the EU-ETS is the oversupply of around 2 billion emission allowances (European Commission 2013), which is reflected in a carbon price that is much lower than expected (from a high of €30/tCO₂e in 2008 to around €4/tCO₂e in July 2013). Consequently there is a very weak incentive for participants in the EU-ETS to invest in emission reduction measures. The oversupply of allowances in the EU-ETS is as a result of the allowance allocation process, the 2008 financial crisis, the ‘frontloading’ of offset allowances in the early years of the ETS, and to a lesser extent, other EU energy policies.

The oversupply of allowances in the first phase of the EU-ETS was the result of the European Commission and the member states overestimating the number of allowances industries would need to comply. The intention for the second phase was to improve the methodology for estimating base case emissions from each sector, based on the data generated by the first phase, and then apply a cap 6.5% below this level. To provide industries with information in advance the base case for industries was determined two-three years before the cap was applied, and allowances were based on historic emissions.

pre-industrial levels outlined at the Copenhagen Climate Change Conference in 2009. It is now unlikely that this goal will be achieved. See Anderson, K. and A. Bows (2011). "Beyond 'Dangerous' Climate Change: Emission scenarios for a new world." *Philosophical Transactions of the Royal Society A* 369(1934): 20-44.

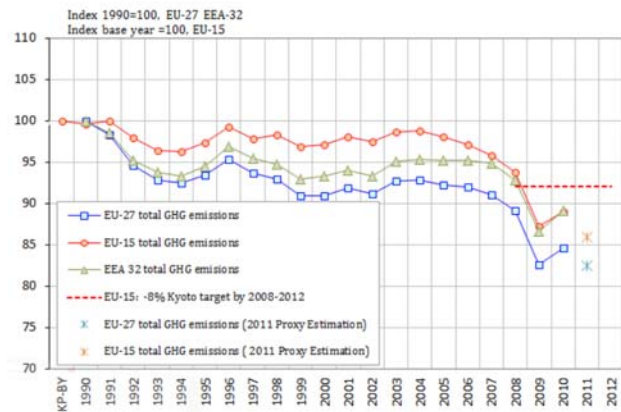


Figure 1: GHG Emission Trends, from European Environment Agency (2012)

<http://www.eea.europa.eu/data-and-maps/indicators/greenhouse-gas-emission-trends/greenhouse-gas-emission-trends-assessment-4#toc-1>

However, before the second phase cap came into force Europe went into an economic recession. Figure 1 shows how EU emissions fell substantially in this period as economic problems reduced energy demand and industrial output. This event drastically altered the business as usual emissions case for most industries. Figure 2 illustrates that by the start of the second phase, base case emissions were not only below the ‘pre-recession case’, but also below the emissions cap:

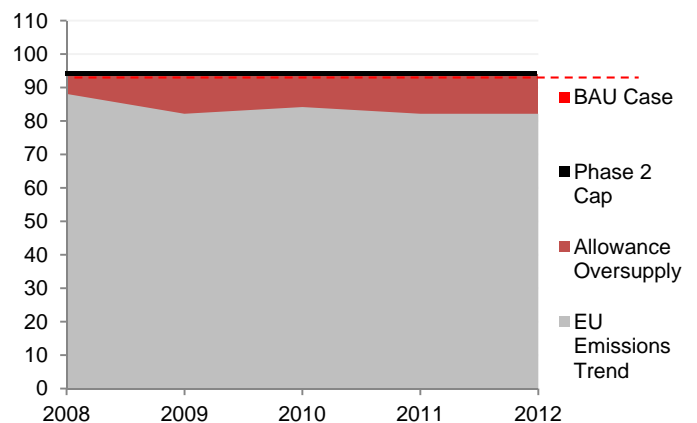


Figure 2: Illustration of Emission Allowances Oversupply in the EU-ETS Second Phase (percentage change from 2005 emissions case)

The second factor is the frontloading of offsets allowed by the Linking Directive. As described in the previous section, offsetting can be a low cost way to obtain emission allowances. The influx of allowances from offsets in the second phase of the EU-ETS has exacerbated the surplus of allowances. This practice also means some participants have a 'stockpile' of emission allowances they can currently use in third phase, that may underline the carbon price in the future (Morris, Crow et al. 2013)¹⁴.

The third factor potentially undermining the carbon price in the EU-ETS is the role of the Energy Efficiency Directive (EED) and the Renewables Directive. These directives compel national governments within the EU to implement policies that lower energy consumption and decarbonise their energy systems through mechanisms that are external to the EU-ETS. An example related to the EED is the 'white certificate' system operating in Italy, Denmark and France where energy companies have an obligation to obtain a certain number of energy reduction certificates – either through their own actions or by trading with others. Feed in tariffs (FiTs) and Renewables Obligation Certificates are examples of national policies to incentivise renewable energy developments that reduce the emissions intensity of transport fuel and electricity through government subsidy and/or increases to consumer energy bills. Emission reductions resulting from these policies benefit energy producers participating in the EU-ETS by reducing their emissions and making more allowances available to them. If these ancillary reductions are not effectively reflected in the ETS cap then this can also contribute to the surplus of emission allowances (Thema, Suerkemper et al. 2013).

In practice, the short term impacts of this oversupply have not been detrimental to EU policy to reduce emissions in a cost effective manner. GHG emissions

within the EU have fallen by around 15% against the 1990 baseline, surpassing the 8% Kyoto protocol requirement. Furthermore the low carbon price has meant that the EU-ETS has not added significantly to the costs of industries during the recession. This economic benefit itself is seen as a favourable feature of ETS in comparison to a carbon tax for industry (Morris, Crow et al. 2013; Thema, Suerkemper et al. 2013). However, when combined with the free allocation of allowances based on historic emissions through the grandfathering process it becomes a problem. Such an approach has shown itself to be vulnerable and unresponsive to exogenous shocks, such as an economic recession (Kopsch 2012). An auctioning approach would, some argue, alleviate this issue by providing more flexibility (Hepburn, Grubb et al. 2006). Bidding for allowances makes participants, who should be best placed to access their changing needs, responsible for obtaining allowances, and an auction price instead of free allocation should disincentivise accumulating a surplus of allowances.

More troubling for the environmental validity of the EU-ETS is the claim that with the current situation the ETS negates other mitigation activities within Europe¹⁵. For example actions by individuals and organisations to reduce their energy consumption will in theory make more allowances available for the power sector to increase its emissions proportionally. Such a situation may lead to lower confidence and support for the EU-ETS by environmental organisations, particularly as the EU-ETS continues to oversupply emitters with allowances.

In the medium to long term without reform the EU-ETS will fail as a transformative climate change mitigation policy. As can be seen in Figure 1, the fall

¹⁴ See European Commission, (2013), *Structural reform of the European carbon market*, Available at: http://ec.europa.eu/clima/policies/ets/reform/index_en.htm (Accessed 07/08/2013)

¹⁵ For example see Perino, G. (2013). Private provision of public goods in a second-best world: Cap-and-trade schemes limit green consumerism. *CBESS Discussion Paper*. <http://www.uea.ac.uk/documents/166500/0/CBESS-13-01/bb866dfc-ce62-4d3b-8142-5252120f4e2f>, University of East Anglia.

in EU-wide emissions correlates strongly with economic recession in Europe rather than the implementation of GHG reduction measures. As a result of the European recession energy demand and its associated emissions dropped considerably, and despite a slight rebound in 2010 – attributed to a very cold winter – it has remained below pre-2008¹⁶ levels. In 2012, while EU emissions fell, the number of allowances in surplus annually doubled to an estimated 950million¹⁷. In this scenario GHG emission reductions have actually weakened incentives for industry to invest in GHG abatement measures and to switch from coal burning. Therefore if the EU economy experiences economic recovery, emissions would return to near 2008 levels unless there is investment in domestic GHG abatement measures. The EU-ETS will not drive such investment unless the carbon price rises and stabilises at a much higher rate than it is currently at.

THE WAY FORWARD

For the third phase of the EU-ETS, the European Commission has proposed a number of interventions that aim to reduce the overall number of allowances within the cap and stimulate a higher carbon price.

The first type of invention is a set of reforms to the implementation of the ETS. Firstly a single EU-wide cap will replace national cap. Secondly auctioning (see Table 1) will gradually replace grandfathering. Thirdly the base cases for industrial emissions, originally set by National Allocation Plans, will be determined by EU-wide ‘harmonised’ standards.

¹⁶ See European Environment Agency (2013), *Greenhouse Gas Emission Trends (CSI 010)*, Available at: <http://www.eea.europa.eu/data-and-maps/indicators/greenhouse-gas-emission-trends/greenhouse-gas-emission-trends-assessment-5> (Accessed 05/08/2013)

¹⁷ See European Commission, (2013), *EU ETS: continuing decline in emissions but growing surplus of allowances in 2012*, Available at: http://ec.europa.eu/clima/news/articles/news_2013051601_en.htm (Accessed 07/08/2013). This is almost half of the total surplus for 2008-2013.

These three measures suggest that the European Commission suspects that member states and industries, acting in their own interests, are in part responsible for the over-allocation of allowances, most likely through exaggerated base cases for emissions (Wettestad 2009). There is analysis which suggests that industrial sectors, who often provide all the data for base case assessments, have intentionally overstated their allowances needs (Okereke and McDaniels 2012). The reforms to the implementation of the EU-ETS by the EC, centralises authority and should make the system less vulnerable to abuses by participants and member states.

The second type of intervention is the ‘back-loading’ of allowances, to postpone the auctioning of some allowances until later in third phase. The intended effect would be to reduce the immediate surplus of allowances, without reducing the total number of allowances¹⁸. In 2011 the European Parliament’s Environment, Public Health and Food Safety (ENVI) proposed that 1.4billion allowances should be ‘set-aside’ to cancel out the oversupply in the second phase (Thema, Suerkemper et al. 2013). In April 2013 the European Commission proposed reducing the number of allowances available for auction by 900million, but this was rejected by the European Parliament. Back-loading was later passed by the European Parliament in a second vote in July 2013, by a narrow margin, but with the additional condition that this back-loading would be a ‘once only’ intervention¹⁹. The proposal must still progress through the European Council, made up of ministers from the 28 EU member states, but with vocal

¹⁸ See European Commission, (2013), *Structural reform of the European carbon market*, Available at: http://ec.europa.eu/clima/policies/ets/reform/index_en.htm (Accessed 07/08/2013)

¹⁹ See European Parliament (2013), *Parliament backs planned temporary boost to CO2 permit price*, Available at: <http://www.europarl.europa.eu/news/en/pressroom/content/20130701IPR14761/html/Parliament-backs-planned-temporary-boost-to-CO2-permit-price> (Accessed 13/08/2013)

opposition from members such as Poland it is not inevitable that it will become law²⁰.

The rejection of back-loading would be a significant issue for the EU-ETS. Without some form of back loading or cancelling out of allowances the carbon price will remain meaninglessly low. The problem stems from the EU's multi-level governance structure, with the European Commission unable to act unless there is consent from the European Parliament, which is in turn influenced by the political debate within each member state. The duality of the EU-ETS as an environmental policy and a pro-European industrial competitiveness policy appears to be central to the issue. For example Poland has been a vocal opponent of back loading and the harmonisation of industry base cases. This is largely because the Polish economy is more reliant on older coal power stations than other EU states²¹. Although the European Commission has tried to negotiate, by offering Poland and others free allocations for the power sector while they

'transition' to more efficient systems²², this has not been enough so far. Inversely, other European member states such as the UK, France and Germany have been calling for greater structural reform of the ETS, pointing out that the back-loading measure covers less than half of the allowance surplus²³.

Ultimately if the European Commission cannot overcome the opposition to back-loading the EU-ETS will fail to deliver its environmental aims. The ENVI and environmental NGO's such as Sandbag have suggested that the EU-ETS really needs to 'write off' surplus emissions by setting a third phase cap that achieves a 30% reduction in emissions by 2020 (against 1990 levels) (Morris, Crow et al. 2013; Thema, Suerkemper et al. 2013). However, with even a reduced offer for back-loading proving problematic this seems optimistic. Currently the dual purpose of the EU-ETS is serving one (cost effectiveness) at the expense of the other (climate change mitigation).

²⁰ For opinion on this issue, see International Centre for Trade and Sustainable Development (2013), *European Parliament approves carbon permit 'backloading' plan*, Available at: <http://ictsd.org/i/news/bioresreview/173358/> (Accessed 13/08/2013).

²¹ See Reuters, (2012), *Poland says ETS reform could bankrupt its industry*, Available at: <http://www.reuters.com/article/2012/04/19/us-eu-poland-carbon-idUSBRE83I14720120419> (Accessed 10/08/2013)

²² See European Commission, (2013), *Structural reform of the European carbon market*, Available at: http://ec.europa.eu/clima/policies/ets/reform/index_en.htm (Accessed 07/08/2013)

²³ See Department of Energy and Climate Change (2013), *UK rallies 12 EU countries behind backloading twin track emissions trading system (ets) reform*, Available at: <https://www.gov.uk/government/news/uk-rallies-12-eu-countries-behind-backloading-twin-track-emissions-trading-system-ets-reform> (Accessed 13/08/2013)

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- <http://www.europeanvoice.com/article/2012/october/eu-fails-to-agree-kyoto-negotiating-position/75527.aspx> Issues about internal debate within the EU
- <http://www.theguardian.com/environment/2012/dec/14/doha-climate-conference-success> Outline of the EU's new strategy – working towards 2015.