



## The European Union emissions trading scheme: a cost-effective tool for addressing climate change

There is unequivocal proof that global average temperatures are rising. There is also very strong evidence, underpinned by a substantial and growing body of research, that human activities are to blame.\* These temperature rises will have effects that may well exceed our capacity to adapt if we don't act now.

Climate change is a clear and urgent threat to continued economic prosperity in the EU and around the world. It may undermine, or completely surpass, efforts to alleviate poverty in developing countries. It is already measurably impacting on the earth's natural systems on which humanity ultimately depends, and it is seriously compounding existing pressures on biodiversity. Ocean acidification is a related, less publicised, but nonetheless concerning threat to our marine environment from rising carbon dioxide levels.



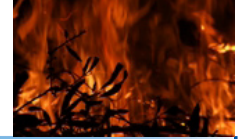
The economic case for immediate, ambitious reform to drastically reduce human output of greenhouse gases is overwhelming. The relatively minor costs that accrue from adjusting to a new way of doing things are simply dwarfed by the potential costs of doing nothing.

In concert with its 27 Member States own efforts, the European Union continues to develop a comprehensive suite of policies to address climate change. The European Union emissions trading scheme (EU ETS) is one such policy.

### What is emissions trading?

Emissions trading is a market based approach for controlling pollution. It is certainly not a new idea. It has been used successfully in the US to control air pollutants like sulphur dioxide, since the 1990s and before this in the phase-out of leaded petrol. New Zealand and Switzerland have schemes operating now; Korea and Japan are examining emissions trading; and China is considering piloting market-based mechanisms in domestic sectors. The United States has one regional emissions trading scheme in operation involving ten US states (Regional Greenhouse Gas Initiative). Despite recent setbacks, the Obama Administration has also reiterated its commitment to climate action at a federal level.

*\*Science is an innately sceptical discipline based on evidence, rational analysis and debating probabilities. Arguments around notions of absolute certainty in climate change science are misguided. There are some things we understand well and some things we do not. However, the EU believes the case for meaningful action is overwhelmingly strong.*



The EU ETS is a ‘cap-and-trade’ system. That is to say it caps, through legislation and enforcement, the overall level of emissions allowed, but within that limit, participants in the system can buy and sell allowances as required. These allowances, sometimes referred to as permits, are the common trading currency at the heart of the system. One allowance gives the holder the right to emit one tonne of CO<sub>2</sub> or the equivalent amount of another greenhouse gas. The overall cap on the total number of allowances creates scarcity in the market and provides environmental integrity in the system.

Emissions trading helps decouple emissions from economic development in several ways. Firstly and most importantly, there is an absolute limit placed on the emissions from sectors under the scheme. Crucially, this cap is then reduced over time. The scarcity of permits means that they are priced by the market. Having a price on carbon creates, in itself, an incentive for firms to consider investing in less polluting technologies.

### **Why did the EU choose cap-and-trade, not a carbon tax?**

Both a tax and cap-and-trade have their pros and cons. It’s true that a carbon tax puts a price on carbon. However, this mechanism has a few drawbacks. For example, the level of tax would have to be set very carefully and constantly changed to achieve a given level of abatement. Also, as is the case with an ETS, a tax does not overcome the debate about industries seeking exceptions and legitimate concerns about industries moving to where there are no similar measures (carbon leakage).

The greatest advantage of a well designed cap-and-trade system is that it achieves abatement at a lower cost to the economy. Put simply, trading provides firms the flexibility to choose either adopting lower emissions technologies and practises, or purchasing permits. For firms facing greater expenses to reduce emissions compared to other firms, it makes more sense to buy permits. Whereas for some, it will make sense to invest in new plant or novel production methods to reduce emissions. This inherent flexibility amongst participants in the market means emissions trading can achieve emissions reductions with a lower overall cost. This is precisely why the EU chose cap-and-trade for electricity generators and energy intensive sectors. There are other policies for other sectors.





### EU ETS basics

The EU ETS applies to the 27 Member States of the European Union, and also Norway, Iceland and Liechtenstein. It covers around 50% of EU CO<sub>2</sub> emissions and about 40% of total EU greenhouse gas emissions.

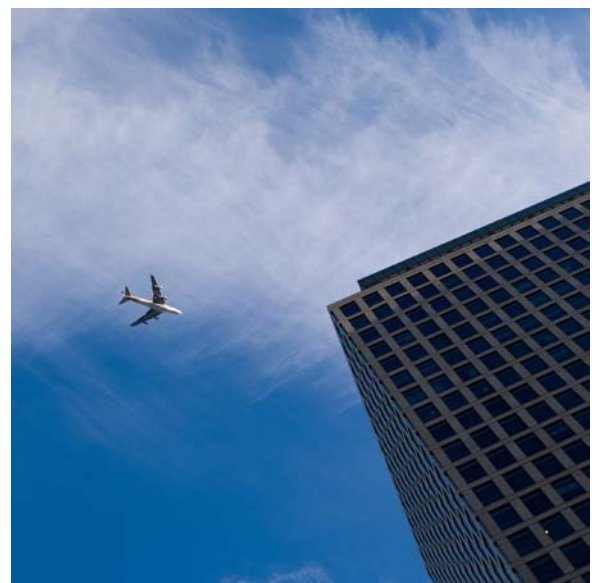
The EU ETS commenced in 2005. Phase one ran from 2005 until 2008 and was very much a learning-by-doing period. We are now in phase two, which corresponds to the Kyoto commitment period: 2008 – 2012. Phase three will run from 2013 until 2020.

Legislation dictates that emissions under the EU ETS will decline 21% from 2005 by 2020. Some 11,500 emissions intensive installations performing specified activities have obligations under the scheme. Since the start it has covered, above certain capacity thresholds:

- power stations and other combustion plants;
- oil refineries;
- coke ovens;
- iron and steel plants;
- cement production;
- glass;
- lime;
- bricks;
- ceramics; and
- pulp, paper and board.

As for greenhouse gases, it currently covers mostly carbon dioxide emissions, with the exception of the Netherlands, which has opted in emissions from nitrous oxide. Aviation will also be included from the beginning of 2012, but if equivalent measures are applied to aviation in other countries, incoming flights can be exempted from the European system.

Any company failing to comply with obligations under the EU ETS and failing to submit sufficient permits incurs a penalty of €100 / tonne of CO<sub>2</sub> and is still required to submit permits for the outstanding emissions. Member States may impose further penalties depending on the nature of the offence.



The EU ETS has generated considerable financial flows to developing countries through the Kyoto Protocol's Clean Development Mechanism (CDM). Investors in low emissions projects in developing countries can generate credits under the CDM and these can be used for EU ETS compliance. The idea is that such projects would not have made it off the ground were it not for CDM funding. Access to CDM credits lowers the costs of achieving emissions reduction objectives for operators under the EU ETS. However, the EU has determined that the bulk of abatement effort must be made by EU companies themselves. So to ensure environmental objectives are met, there are explicit qualitative and quantitative limits applied to the use of these offsets.



Whilst many aspects of the CDM have been successful, the EU sees benefits to reforming the mechanism to ensure greater environmental integrity and a broader geographic spread of projects.



### **Lessons have been learnt and the scheme improved**

The commencement of the EU ETS successfully brought climate change into the boardroom and created a market for greenhouse gases. However, initial incomplete emissions data and the lack of an ability to carry forward unused allowances (banking) led to an over-allocation of permits - so the price subsequently collapsed. Also, despite the fact that power companies were allocated permits free of charge, they still raised prices and reaped 'windfall' profits (in economics parlance: passed on the opportunity cost).

These issues have now been addressed. We now have accurately measured and verified emissions data and this has allowed the Commission to ensure that the cap on national allocations under the second phase is set at a level that results in real emission reductions. Banking will be also allowed from phase two to three.

### **2013 – An even stronger ETS**

Auctioning is a simpler, more efficient way of allocating permits. At present, only about 4% of permits are auctioned under the scheme. From 2013 this will rise to around 50%; and in light of lessons learnt so far, the default rule for the power sector will be 100%, albeit with some limited and temporary opt-outs for newer Member States.

From 2013 there will also be a single declining cap and single registry across the scheme, instead of the present National Allocation Plans for each country. This is a simpler, fairer system that will minimise the chances of disputes over allocation plans.

Phase three will run for a longer period - 8 years, and will bring in new sectors, including:

- petrochemicals;
- ammonia; and
- aluminium; as well as
- N<sub>2</sub>O and perfluorocarbons from certain industrial processes.



### **Is the EU ETS actually working?**

Yes. Successive Point Carbon surveys paint a picture of the increasing influence of the ETS. In 2006, 5% of participants took future cost of carbon into account for investment, but by 2007 this had risen to 65%. And by 2010, the long term carbon price was cited as a decisive factor for new investments for 47% of participants (61% for large polluters). 54% in 2010 said 'EU ETS has already caused emissions reductions in my company'. What's more, as mentioned above, significant improvements for phase three are locked in.



### **A floating price: a functioning market**

In phase two (2008 – 2012), the carbon price has fluctuated from highs of over €30 per tonne to lows around €8 (as at November 2010 it was €15). A floating price is part-and-parcel for any functioning market. Naturally, Europe's recent economic woes have dampened demand for emission permits and the price is lower as a result. However, it's important to bear in mind that the ever-declining cap is enshrined in legislation and businesses inevitably face the prospect of increasingly scarce permits.

### **Carbon leakage and competitiveness concerns**

Carbon leakage refers to the prospect of firms moving to localities where they will not face any carbon constraint. The EU experience is that concerns over carbon leakage were hugely overstated. Furthermore, the issuing of free permits to sectors at risk remains a potential mechanism for dealing with this problem and the Commission has composed a list of sectors and subsectors subject to carbon leakage.

Regarding this free allocation of permits, it's very important to note that:

- The ever-declining EU ETS emissions cap applies to all covered sectors, including those at risk of carbon leakage.
- The total free allocation to industry is limited to the share of these industries' emissions in 2005 to 2007 and will decline with the emissions cap.
- The absolute number of allowances distributed for free, which are to be shared out among the sectors, will be determined by ambitious benchmarks based on the 10% most efficient installations in a sector.

In other words, even businesses found to be at risk of carbon leakage will still have to play their part.

Clearly, the more progress that is made internationally to combat climate change, the weaker the arguments for special measures. The EU continues to work through the United Nations Framework Convention on Climate Change (UNFCCC) to secure a global, ambitious and comprehensive international agreement.



## EU ETS revenues support renewables and CCS

Auctioning permits generates revenue which can be allocated for climate change purposes. For example, under the EU ETS agreement, revenue from 300 million allowances of the New Entrants Reserve are earmarked for carbon capture and storage (CCS) and renewables technology development. The money, some €4.5 billion at current permit prices, will be used to co-fund eight CCS initiatives and at least 34 projects involving innovative renewable technologies. The first call for proposals went out on the 9th of November.

## Setting a framework for investment

There is no doubt that there are costs associated with addressing climate change. However, delaying action means constraining warming will be more difficult and certainly more expensive. Commentary around the possible impacts of emissions trading often fails to discuss the economic impacts of doing nothing.

The EU recognises opportunities accruing from ‘green growth’ in confronting climate change. That is, creating the right environment for business innovation to capitalise on the drive for new low-emissions technologies. A tighter and tighter EU ETS emissions cap helps provide the certainty for investors looking to commercialise low emissions products.

*‘...Overall, the study’s empirical findings agree with much of the recent literature on the subject. They also help alleviate the oft-cited concern that climate policies can lead to significant costs to business and a corresponding loss of market share to companies in countries with laxer environmental laws. To be sure, firms with operations in Europe have made some adjustments since the introduction of the EU ETS and EU climate policies, but their concerns about loss of competitiveness have to date either been unfulfilled or assuaged through policy design...’* - The Effects of EU Climate Legislation on Business Competitiveness: A survey and analysis (2009) German Marshall Fund Climate and Energy Paper Series.





*'...the benefits of strong and early action far outweigh the economic costs of not acting...'* – Stern Review on the economics of climate change

A possible move to move beyond 20% is being considered by our Member States and EU institutions. The decision will not be taken lightly.

### **The EU ETS covers about 40% of greenhouse gas emissions – so what about the rest of the economy?**

The EU ETS does not cover all EU emissions and neither was it intended to. In designing the scheme, careful thought was given to determining which processes could be measured and regulated sufficiently rigorously to ensure the system is as efficient and cost effective as possible. A comprehensive and growing raft of policies complement and reinforce the ETS. A few examples include: ever tightening greenhouse gas emissions standards for passenger vehicles, EU-wide mandatory renewable energy targets, new fuel quality standards, mandatory appliance and building energy efficiency standards and labelling, and waste management standards.

On agriculture, the EU's Common Agricultural Policy is being reformed and actions to combat and adapt to climate change being considered. Furthermore, existing Member State Rural Development Programs support mitigation measures, such as manure and soil management.

### **Will the EU reach its Kyoto target?**

Under the Kyoto Protocol, the 15 EU Member States at the time the Protocol was agreed, committed to reduce their collective greenhouse gas emissions in the period 2008-2012 by an average of 8% below levels in a chosen base year (1990 in most cases). This collective commitment has been translated into differentiated national emission targets for each EU-15 Member State which are binding under EU law.

There is no collective target for EU-27 emissions under the Kyoto Protocol. Ten of the twelve Member States which joined the EU in 2004 and 2007 have individual commitments to reduce their emissions to 6% or 8% below base year levels by 2008-2012. Only Cyprus and Malta have no emission target.

EU-15 greenhouse gas emissions in 2008 - the latest year for which full data are available – were 6.9% lower than base year levels even though the EU-15 economy grew around 45% over the same period - thus demonstrating a substantial decoupling of economic growth from emissions. For the EU-27 as a whole, emissions fell by 14.3% between the base year and 2008.





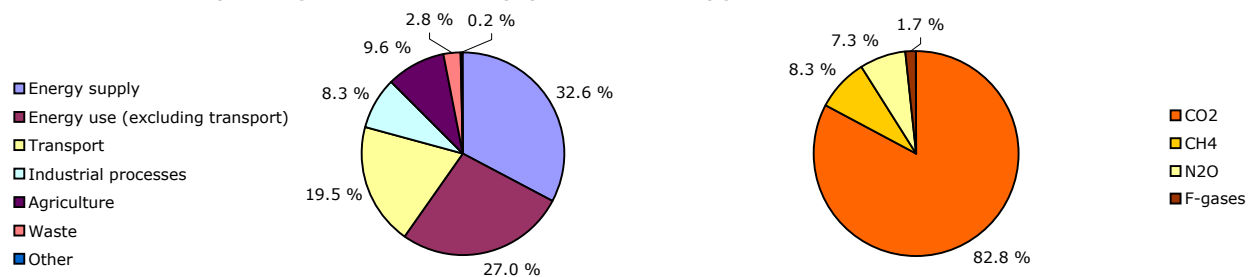
In a separate report (link below), the European Environment Agency provisionally estimates that in 2009 emissions fell sharply. In 2009 EU-15 emissions were estimated to be 12.9% below their base year levels while EU-27 emissions were estimated at already 17.3% below 1990 levels.

<http://www.eea.europa.eu/pressroom/newsreleases/deep-emission-cuts-give-the>

There's no doubt that the recession has been a factor recent EU emissions reductions, but the target was already well within reach before that. This is thanks not least to the literally dozens of policies and measures we have put in place under the European Climate Change Programme over the past 10 years and the most important of these initiatives is the ETS.

The graphs below show the spread of EU gas emissions across sectors and gases.

Share of GHG emissions (excluding international bunkers) by main source and by gas in 2008



### Towards an international carbon market

Countries will choose their own policies for addressing climate change. However, the EU is eager to explore options for the international linking of robust, compatible cap-and-trade schemes and stands ready to cooperate with other governments in sharing our experiences. Linking schemes could lower the overall costs for everyone and help ensure a more efficient market for greenhouse gases.

### Useful links on climate change science

For reliable, factual and up-to-date material on climate change and climate change research, many of the world's most respected scientific institutions have easily accessible information free to download. Some examples are provided below:

- European Union: Climate Action [http://ec.europa.eu/climateaction/index\\_en.htm](http://ec.europa.eu/climateaction/index_en.htm)
- Australian Academy of Sciences <http://www.science.org.au/policy/climatechange.html>
- The CSIRO <http://www.csiro.au/science/Changing-Climate.html>
- (United States) National Oceanic and Atmospheric Administration (NOAA) <http://www.ncdc.noaa.gov/faqs/index.html>
- National Aeronautics and Space Administration (NASA) <http://climate.nasa.gov/>
- The Royal Society <http://royalsociety.org/climate-change-summary-of-science/>

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