



Carbon credits : A brief overview

1. Background

Scientists have been able to correlate the amount of carbon dioxide (CO₂) in the atmosphere over time for many years now (using core samples from polar ice sheets) and have been able to link these changes to historic climatic events such as large volcanic eruptions.

It is only in recent times though that they have understood how the CO₂ and other greenhouse gasses (GHG's) work to trap the sun's heat in the upper atmosphere and create the "greenhouse" effect, rather than letting it filter back out into space.

Given the amount of GHG's being generated by humans on earth, many concerned governments met in Kyoto, Japan, in 1997 at a conference hosted by the United Nations to formulate a plan to reduce greenhouse emissions over time. The document that resulted from this meeting has become known as the "Kyoto Protocol".

The countries that were identified as some of the worlds' worst polluters at the 1997 meeting were unfortunately taken from 1990 data, (the most recent data available at the time). As a result, neither China nor India featured prominently on this list.

In spite of this, many 1st world countries signed the Kyoto Protocol, and agreed to work together to setup a framework for lowering CO₂ emissions over time.

The notable exception has been the USA, which has consistently refused to sign the Kyoto Protocol, citing the non-inclusion of India and China as the reason. (Ironically, California has been the exception within the USA, and is actively working towards lowering its CO₂ emission footprint.)

There are many other gases (such as methane) which are in fact far more damaging to the earth's fragile climate, but due to the sheer volume of CO₂ that mankind produces, all these pollutants (GHG's) are collectively known as "CO₂" emissions when discussing the greenhouse effect.

During the early 1990's at roughly the same time as the UN initiative, the European Union also began formulating their own plans to help combat CO₂ emissions within the EU.

Both these initiatives have been running in tandem on either side of the Atlantic ever since, and whilst there are certain fundamental differences between them, they are now drawing closer and closer together in their common objectives.

2. The reduction of CO₂

It's actually quite simple: All plants absorb CO₂ from the atmosphere and then release the oxygen component back into the atmosphere with the bulk of the carbon component ending up back in the soil. A win- win situation.

(An often quoted statistic is that if you drive a well-maintained 2-litre motor car, and did roughly 1600kms per month in it, it would take the work of 19 trees to break down the car's emissions. So if you really want to be "carbon neutral", merely planting 19 trees will offset all your car's emissions as long as you live..)

Thus the more trees that we plant, the more CO₂ will be absorbed, leading to a reduction in the greenhouse effect.

3. The UN Climate Change Initiative: “The Kyoto Protocol”

The 1997 meeting in Kyoto was organised by the United Nations' Framework Convention on Climate Change (or UNFCCC) which itself was established in 1992.

The fundamental objective that emerged from the meeting in Kyoto was that as each country produces CO₂, it must be able to contain those emissions through a combination of the following methodologies:

- Through the reduction of the CO₂ that it produces in the first place, by encouraging everybody from large corporates down to individuals to become more “energy-aware” and “energy-efficient”.
- Through tree planting, or any process that can absorb CO₂. (It is interesting to note that even the simplest of programs such as farmers allowing weeds to grow between their fields can have a major impact on the absorption of CO₂.)

In spite of these two major initiatives, the Kyoto agreement also acknowledged that some countries would produce more CO₂ than they could absorb, and these would have to purchase an “absorption-ability” from another nation. Hence the birth of the “Carbon Credit” currency.

One carbon credit is equal to one metric tonne of CO₂ and is called a CO₂e. (or CO₂ equivalent) Polluting nations will therefore have to buy CO₂e's from countries that have (for example) been planting trees specifically for this purpose.

(Treebound countries do not necessarily have loads of credits to sell though – The credit scheme only applies to trees planted after 1990.)

It is also hoped that through the introduction of the carbon credit currency we will measure the cost of everything we buy through CO₂ emissions. Companies will effectively be “taxed” through the forced use of carbon credits to become carbon neutral.

Hopefully this will see a return to “trading locally” where items such as fresh produce are grown in the vicinity of the end-user, rather than being flown half-way across the world at great expense to the environment.

The actual system developed by the UN to handle the trading of carbon credits is known as the “Clean Development Mechanism”, or CDM. The CDM allows industrialised countries with a greenhouse gas reduction commitment (so-called Annex 1 countries) to invest in emission reducing projects in developing countries as an alternative to what is generally considered more costly emission reductions in their own countries. The CDM is managed and run by the UNFCCC.

The CDM issues **carbon offsets**, also known as **CERs** (Certified Emission Reductions) every time a CDM registered project prevents one tonne of CO₂e from being emitted. A good example would be replacing coal fired electricity with clean technology, or methane capture from landfill sites.

The ultimate objective for issuing CERs is to help developed countries meet their emission targets at relatively affordable costs by investing in environmental projects in developing nations.

4. The European Union Emission Trading System. (EU-ETS)

As has already been mentioned, while the UN was developing their initiative throughout the 1990s, the EU Government was also hard at work on a very similar project that ultimately became known as the European Union Emissions Trading System, or EU-ETS.

The EU-ETS is the European equivalent of the UNFCCC, in that it is the ultimate controlling body for the management of climate change in the EU.

The major difference between the UN and the EU initiatives is that while the UN was looking at the problem on a macro-basis, and tended to look at the figures on a country-by-country basis, the EU plan actually identified around 12000 physical installations within the member states that were large emitters of carbon dioxide.

These covered 6 major industrial sectors, and these installations are estimated to contribute around 40% of the total greenhouse gas emissions of the EU. (Interestingly, the aviation industry has not been included up to now, but will form part of the EU-ETS from 2010.)

All 12000 sites were then investigated, and obliged by law to submit accurate annual estimates of their carbon emissions to the EU-ETS.

Based on the initial 2005 figures, each installation is then given an allowance, or carbon permits as they are known, allowing them to emit a specific amount of CO₂ annually without penalty. These permits are known as EUA's. (or EU allowances)

These annual allowances are slowly being reduced for all emitters in an effort to force them to reduce their carbon footprint. If an emitter is able to reduce his CO₂ emissions significantly, and has spare permits available, he may sell his spare allowances to anybody in the marketplace.

Who would buy them? Emitters who have NOT been able to reduce their carbon footprint and achieve their emission targets will be forced to either buy permits on the free market, or failing that, will have to buy extra permits from their sovereign government.

The process of merely giving the emitters their permits is known as grandfathering, and has been widely criticised due to abuse by some countries with lax audit procedures.

In fact, some countries were giving such generous allowances that the price of 2007-EUAs fell from around €30 in April 2006 to around €0.10 in September 2007 on the news that some member countries were giving their industries such generous emission caps that there was no need to further reduce emissions.

As a result of this widespread abuse, it is planned that all new permits will be issued by a central EU body rather than the sovereign states themselves. Although it is hoped that this procedure will be instituted imminently, it is unlikely to occur before 2013.

The introduction and issuing of EU allowances has been broken down into two phases:

- Phase 1: From 1 January 2005 until 31 December 2007, and
- Phase 2: From 1 January 2008 until 31 December 2012.
- (Phase 3: will be after January 2013)

Until recently, the only issuers of permits have been the 26 countries forming the EU, with the notable exception of Great Britain. (The UK started issuing permits in 2006).

Listed below are some figures of interest, which show CO₂ emissions for the "worst" six EU countries, which really gives one food for thought (All are in million CO₂e's)

	2005	2006	2007	05/07 Change	% of total
European Union total	2012	2033	2049	+1.9%	(100%)
Germany	475.0	478.0	487.0	+2.5%	23.8%
United Kingdom	242.5	251.2	256.5	+5.8%	12.5%
Italy	225.9	227.4	226.4	+0.2%	11.0%
Poland	203.1	209.6	209.6	+1.9%	10.2%
Spain	183.6	179.7	186.5	+1.6%	9.1%
France	131.3	126.9	126.6	-3.5%	6.2%

As you can see, the worst six polluting member nations of the EU account for over 72% of the total greenhouse emissions of the 27 member states of the EU.

5. Carbon credits, permits and offsets

5.1 The jargon

The jargon surrounding this industry is daunting, although the instruments traded are actually quite simple :

A carbon credit is the generic word used to describe both “carbon permits” and “carbon offsets”

A carbon offset is a UN issued allowance, also called a CER.

A carbon permit is an EU issued allowance, also called an EUA.

5.2 The differences between permits (EUAs) and offsets (CERs).

Both permits and offsets are equal to one metric tonne of CO₂ (CO₂ e), so in theory carry the same value and could be traded and offset against each other.

The EU only decided to accept CER's as being equivalent to EUA's at the beginning of 2008, so in future it will be possible to trade EUAs and CERs on a one-to-one basis within the same system.

Unfortunately the EU has announced that this facility is being delayed until at least mid-2009 while it overcomes technical issues connecting to UN systems.

Interestingly, CER's only started trading when the Kyoto Protocol actually came into force in February 2005, whereas the first trades in EUA's began a month earlier in January of that year.

CER's only expire in 2012. (The expiry-year of the Kyoto protocol)
EUA's have a finite life, normally of 1 year.

EUA's issued during phase 1 could be interchanged for any of the three years (2005/6/7) but effectively they all expired in December 2007, and cannot be used in phase 2.

EUA's issued during phase 2 can be interchanged with any year up until 2012, which brings them into line with UN issued CER's.

The ultimate controlling body for CER's is the UNFCCC.
The ultimate controlling body for EUA's is the EU-ETS.

Related Reading:

For more information on this topic read

- The Stern Report Executive Summary
- The UNFCCC website
- The 4th Assessment Report of the IPCC, (the summary for policymakers (ie. the short version is at http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf)
- The **full report** is available at: <http://www.ipcc.ch/ipccreports/ar4-syr.htm>
- The IPCC website is : <http://www.ipcc.ch>

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Last revised : 15 March 2010