

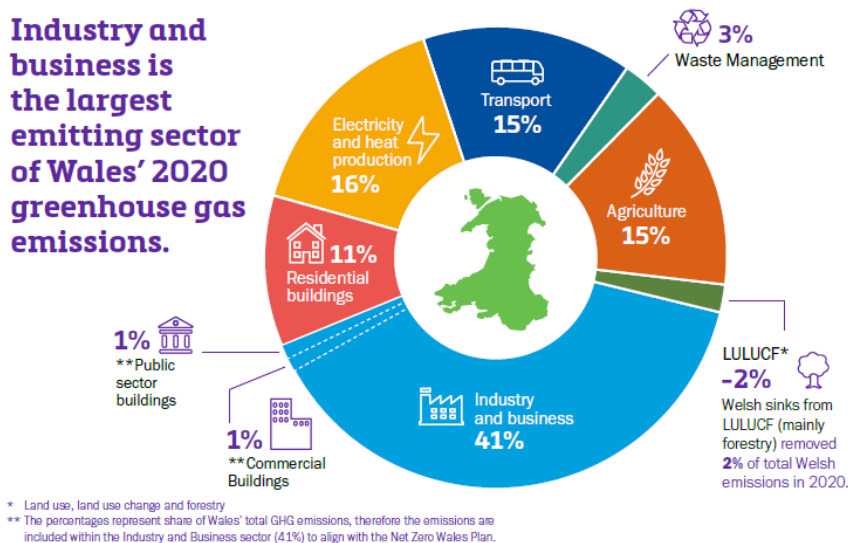
Introduction to Carbon Credits – buying and selling

When considering the carbon markets – it is perhaps easiest to view this as any other new product and consider markets and supply chains. The carbon market exists to provide a means by which industry and private individuals can offset the CO₂ emitted by burning fossil fuels in travel, manufacturing processes etc. – in effect purchase of a carbon credit to set against emissions. The declaration of a climate emergency and the imposition of net zero targets is turbo-charging the carbon market and there is already considerable price volatility and rapid increase in demand.

However, before describing how this market works there are a few very distinct peculiarities of carbon and its' relation to other public goods to consider:

- Carbon takes a long time to accumulate and there are few means to increase performance.
- Carbon is *rival* and *excludable* – a carbon credit is exclusively owned and can only be used once
- Carbon supply is therefore *inelastic*.
- Carbon is inextricably linked to land – so sales have to be backed by long-term contracts on land. The shorter contracts are for 30-40 years with an upper limit of 100 years.
- Demand for carbon credits can be expected to increase sharply as businesses attempt to offset residual emissions to meet net zero targets – this includes net zero targets for farm businesses.
- Prices in this immature market are volatile and there is as yet no experience of how these long contracts will work.
- Expect rivalry in medium term to be expressed as pitches to farmers to enter into carbon contracts and purchase of land on open market for purpose of creating a carbon asset for sale and profit.
- Carbon is related to delivery of other public goods e.g. amenity, recreation, water management, abatement of pollution etc.. Sellers and buyer's objectives may include some of all of these and this may affect pricing, contract conditions and relationship between seller and buyer.

For now, woodland carbon is at present the only tradable means of capturing and storing carbon. The 2020 summary of Wales' greenhouse gas emissions (below) – shows it is only land use change and forestry which remove carbon from the air and this is only 2% of emissions. Consider the scale of offsets required to offset these emissions. Even attaining net zero agriculture is problematic – it has been estimated that 15-50% of beef and sheep farms in Wales would need to be afforested to achieve farm-level net zero¹.



¹ McNicol, L., Williams, P., Styles, D., Rees, R. M. & Chadwick, D. (2022) Strategies to reach zero carbon beef and sheep production on Welsh farms. *Animal - science proceedings*. 1 ed. Vol. 13. p. 8-9

A credible carbon marketplace

There is no formal regulation of the carbon market but for transactions to be credible there must be some means of verifying that the carbon *real, quantifiable, additional and permanent*. This is done through the voluntary carbon codes which set out best practice standards for land management and quantification of carbon capture. At the present time there are two active codes: the Woodland Carbon Code (WCC)² and the Peatland Carbon Code (PCC)³ with codes in development for Soil, Saltmarsh and Blue (coastal) carbon.

Additionality is an important consideration in carbon markets. What is traded should be new carbon i.e. not carbon that would be captured anyway. So new woodlands count but old ones don't. The Carbon Codes both include additionality criteria which exclude projects where planting or management is required by law (so re-stock of a felled woodland is excluded as the law says this must be replanted which since this applies to new plantings incidentally resolves the issue of permanence. Additionality also precludes projects where the value of land and products after the project is higher than it was before as then it is reasoned that normal investment would suffice. The rules on additionality are still being evolving to try and avoid unintended consequences particularly where these distort land prices.

Adherence to the Carbon Codes gives rise to Carbon Units (CU) where one unit is equal to one tonne of CO_{2e} (carbon dioxide equivalent). However, the units derived from each Code are based on differing reasoning. The Woodland Code is the easiest to follow in that it involves creation of new woodland which will grow, capture carbon from the air and store it in the tree trunks. So, a Woodland Carbon Unit represents a net addition to carbon stores and a removal of carbon from the air. The Peatland Code is concerned with restoration of peatland to prevent carbon loss – usually involving re-wetting peat to prevent oxidation of the existing carbon store. So, a Peatland Carbon Unit is carbon which has been prevented from entering the atmosphere which, without the project, would have been released. In effect it maintains the status quo in terms of carbon balance though over time the peat also grows and will capture carbon.

The online Carbon registry is the international market place for carbon – it is here that units are offered for sale, ownership is transferred and units retired when they are 'consumed' as offsets. A project intending to trade carbon must be registered before any work takes place and an estimate made of the expected carbon capture or savings using models of carbon capture. These 'promises to deliver' carbon are placed onto the registry as a Pending Issuance Unit (PIU). After five years the project is inspected and actual carbon present is independently verified and a proportion of the PIU converted into verified CU Further inspections every ten years progressively verify the conversion of PIU to WCU/PCU.

Both the PIU and Carbon units can be sold but since the units themselves cannot be carried away by the buyer so the sales take the form of long-term contracts with the seller for a minimum of 30 years for peatland projects and up to 100 years for woodland projects (in clearfell conifer minimum of 40 years and for native woodland with minimum intervention 65-75 years). The ownership of the units is tracked on the international registry – though at the present time UK units can only be sold within the UK.

It is important to understand that although PIU and CU can be traded once a CU is used as an offset i.e. as a carbon credit it is retired from the registry. Offsets are themselves covered by standards such as PAS 2060:2014.

Selling carbon

A farmer or landowner wishing to manage carbon for income should first register a project with the WCC or PCC and have PIU placed on the registry. The PIU can then be offered for sale. If a buyer comes forward, a price is negotiated along with any other conditions on the contract such as species, specific management activities etc.. This can be complex and often requires the services of an agent or joining a group scheme. But it is possible to find your own buyer, organise a private sale and manage the transfer on the registry yourself.

Selling PIU is often done to help fund the project – 70% of the agreed price is paid once the trees are planted, 15% at year 5 and the final 15% at year 15. You can sell or just some of your PIU. Given prices for carbon appear to be rising

² Woodland Carbon Code: <https://www.gov.uk/guidance/the-woodland-carbon-code-scheme-for-buyers-and-landowners>

³ Peatland Carbon Code: <https://www.iucn-uk-peatlandprogramme.org/peatland-code/introduction-peatland-code>

many sellers are holding onto PIU to sell as verified CU as these might be expected to have a higher value as they can be used immediately as an offset.

For a farmer selling CU or PIU means the carbon cannot be used as a credit to offset farm emissions – which may mean forgoing achievement of net zero for the farm.

There has been some corporate purchase of whole farms for tree planting with the intention of creating a carbon asset for sale. This exploited a quirk of the additionality rule in the WCC which has since been modified to reduce undue distortions in market prices for land⁴.

Buying carbon

Decarbonisation of a business or household should be the priority – this means reducing emissions, switching to renewable energy, reducing air travel. Only once all reductions are done should purchase of carbon credits for offsetting of any residual emissions be done.

A prospective buyer of carbon credits has several options:

- Buy land, plant trees and grow their own CU
- Buy PIU – to be used in long term planning of offsets
- Buy CU to be used immediately as offsets

There are many established carbon brokers and the market place is becoming increasingly crowded as commitments to net zero begin to bite.

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⁴ Hepburne Scott J. (2023) Where is the Woodland Carbon Code today? Quarterly Journal of Forestry Jan 2023 Vol 117 No.1 pages 40-45.