

Carbon footprint

The use of any carbon-based fuel - either directly as a heating or transport fuel or indirectly as a means of generation of electricity - will result in the emission of carbon dioxide.

This, in turn, means that virtually every individual in the Western world will, from the time they awake and put on a light or kettle or percolator, have an impact on the global environment. This impact will generally continue during their journey to work, either by car or by public transport, with both of these alternatives utilising some quantity of fossil-based (carbonaceous) fuels. This environmental impact is much more pronounced when one considers the activities of an organisation, employing numbers of individuals.

The notion of the "carbon footprint" created by an individual or organisation is one that has been taken up by the popular press and the general public and is currently very widespread. The idea behind the "carbon footprint" is basically fairly simple: it is an attempt to quantify in terms of carbon (or carbon dioxide equivalent) the greenhouse gas emissions to the atmosphere that certain activities will cause. The quantity of fossil fuel used to generate electricity or to propel our car (or truck or plane) will, depending on the quantity of electricity used or the type of vehicle driven and for how long, determine just how much carbon dioxide (in kilograms) is emitted.

It is axiomatic that the reduction of our individual or corporate carbon footprint would proportionately reduce the negative impact caused by the emission of carbon dioxide.


While man and the entire animal kingdom rely on oxygen for survival, breathing in oxygen and expiring carbon dioxide, plants utilise carbon dioxide in much the same way. Plants, if you like, "breathe in" carbon dioxide and use their chlorophyll with water and sunlight to synthesise carbohydrates and "breathe out" oxygen. Plants, then, can be used to 'clean up' carbon dioxide from the air ¹.

There are companies that will arrange (on the payment of a fee) for trees to be planted to "offset" the carbon dioxide emissions being created by an organisation. These plantings can be anywhere in the world (on the basis that the climate change problem is a global problem). One of the problems that can occur here is that the plantings are often of a monospecies, that is, only one type of tree is planted. This can have a seriously restrictive effect on the local biodiversity of other species (animals, insects, plants etc).

There are other problems associated with offsetting, since any technique involving carbon offsetting requires long-term maintenance of that scheme. For a planting scheme to have a long term beneficial effect, it is necessary that the planted trees be looked after for a considerable period of time and that they are not damaged by hurricanes etc.

The same argument requiring long-term political/meteorological stability applies to other offsetting schemes such as the installation of wind turbines or hydro-electric generating projects.

Many companies throughout the world use this technique of "carbon offsetting" to reduce (on paper) their carbon emissions. As the Carbon Trust has said, "offsetting allows organisations to indirectly reduce their carbon footprint through the purchase of carbon credits associated with emissions reduction programmes . that have occurred elsewhere, typically in developing countries."



In an article² in the March 2007 edition of "The Environmentalist" [the official journal of the Institute of Environmental Management and Assessment], the statement is made, "while economists may be happy that a carbon emissions trading market has been created, we're left wondering whether it's a licence to operate as 'business as usual'."

The Carbon Trust has set forth a 'three-stage approach' to outline how an organisation truly committed to addressing climate change should act.

These stages² are:

1. Firstly, focus on direct emissions, implementing all cost effective energy efficiency measures and. reducing the carbon intensity of its energy supply;
2. Secondly, {work} with other organisations. to reduce emissions . up and down the supply chain.;
3. Then, (if appropriate), consider the option of developing an offset strategy

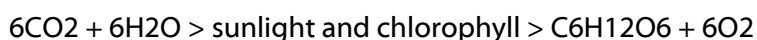
The important point to be taken from this approach is that the first, and most important step, is to look at your own carbon dioxide equivalent emissions and look to reduce these as far as possible. These are regarded as "direct emissions", and relate to energy consumption by the organisation itself. The second step involves conducting much of the same introspective examination, this time involving the organisation's supply chain, and it is only as a last step that consideration should be given to purchasing carbon offsets.

Bywaters wholeheartedly supports this philosophy, and has started a rigorous evaluation of the actual carbon footprint of its new transfer station at Lea Riverside. The introduction of biodiesel as a fuel for the company transport fleet is also under review and a wind turbine is scheduled to be erected on site to produce totally renewable electricity supply for the offices.

References and Notes

¹ In 1780, the famous English chemist Joseph Priestley found that plants could "restore air which has been injured by the burning of candles." He used a mint plant, and placed it into an upturned glass jar in a vessel of water for several days. He then found that "the air would neither extinguish a candle, nor was it all inconvenient to a mouse which I put into it". In other words, he discovered that plants produce oxygen.

The chemical reaction that takes place here is the one between carbon dioxide and water, catalysed by sunlight, to produce sugar and a waste product, oxygen. The sugar is either directly used as an energy source by the plant for metabolism or growth, or polymerised to form higher carbohydrates (such as starch or cellulose), so it can be stored until needed. The waste oxygen is excreted into the atmosphere, where it is made use of by animals for respiration.



² "Offsetting the Carbon or Just the Guilt?"

S Hodgson 'The Environmentalist'; pp 16-18; Issue 45; March 2007