

Client: Envirocare Technical Consultancy Ltd

Address where work carried out:

St Blaise House
Vaughan Street
Bradford
West Yorkshire BD1 2LL

Monitoring Organisation: Envirocare Technical Consultancy Ltd
Address: St Blaise House
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Bradford
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Monitoring/Survey dates: February 2008

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1. INTRODUCTION

The purpose of this study was to calculate as accurately as possible the carbon emissions associated with the operations of Envirocare Technical Consultancy Ltd.

2. METHODOLOGY

The most significant problem encountered whilst attempting to determine the 'carbon footprint' of an entity is determining the boundaries and scope of the data to be included. The operational boundary of a footprint can be thought of as the aspects of the operations that the organisation is in control of.

The initial action was to consider the aspects of Envirocare's operations that give rise (directly or indirectly) to emissions of carbon. These aspects can be considered within one of three scopes:

1. Scope 1 – Direct Emissions: Can be considered as actual emissions of greenhouse effect gases (GHEG's) as a result of the operation of the organisation (e.g. Vehicular emissions, boiler emissions, combustion processes).
2. Scope 2 – Indirect Emissions (Power Generation): Are the emissions of GHEGs associated with the production of electricity. This may be the combustion of fossil fuels (where carbon emissions are created) or the generation of power from renewable sources (where no carbon is emitted). Scope 2 may also include the carbon emission associated with other utilities (e.g. purchased gas and water).
3. Scope 3 – All other Indirect Emissions: May include the carbon embedded in raw materials and the carbon associated with waste management.

The following aspects of Envirocare's operations were considered to create carbon emissions:

Vehicular emissions, air travel and purchased paper (all Scope 1); Purchased electricity, gas and water (all Scope 2); Waste management (Scope 3).

It is obvious that accounting for such a wide range of information will lead to data being presented in a variety of different units. This is the first reason for the use of carbon conversion factors (CCFs). CCFs are used to calculate the mass of CO₂e (carbon dioxide equivalent) emitted per unit. Units may be kilometres (Vehicular emissions), kWh (Electricity) or kilograms (raw material, waste) for example.

It should also be stated that the universal unit (kgCO₂e) is used as this expresses the emission of all greenhouse gases listed under the Kyoto Protocol, as CO₂. The six greenhouse gases determined at Kyoto (Methane, Nitrous Oxide, Hydrofluorocarbons, Perfluorocarbons, Sulphur Hexafluoride and Carbon Dioxide) all have a different potential for global warming. A common unit, carbon dioxide equivalent is used.

Carbon conversion factors have been determined by a number of sources. Those published by DEFRA are the most commonly used in the UK, and have been used in this study.

The data used in this study has been collected as accurately as possible. The audit period used was one year. The result is expressed as T CO₂e/yr.

3. RESULTS**Envirocare Carbon Footprint**

		Carbon Conversion Factor			
1	Scope 1 - Direct Emissions				
1a	Fuel:				
	Business Mileage Vans (Diesel)	8000l	2.63	21040	kgCO2e
	Personal Mileage (Large Diesel Car >2000cc)	2500mi	0.424	1060	kgCO2e
	Personal Mileage (Medium Petrol Car 1400 - 2000cc)	3000mi	0.348	1044	kgCO2e
1b	Air Travel:				
	Aircraft Travel	1400mi	0.158	241	kgCO2e
1c	Raw Materials:				
	Paper (Virgin)	164.5Kg	3.24	533	kgCO2e
	Paper (100% Recycled)	76.8Kg	1.76	135	kgCO2e
	Chemicals	NOT CONSIDERED			
2	Scope 2 - Indirect Emissions				
2a	Electricity:	15,000kWh	0.525	7868	kgCO2e
2b	Gas:	116,000kWh	0.206	23896	kgCO2e
2c	Water:	80m3	0.41	32.8	kgCO2e
3	Scope 3 - Embedded Carbon				
3a	Wastes:				
	Kitchen/Food Waste	2500Kg	0.258	645	kgCO2e
	Composting	125Kg	0.034	4	kgCO2e
	Paper/Card (recycled)	350Kg	-0.71	-250	kgCO2e
	Plastics (recycled)	20Kg	-1.01	-20	kgCO2e
		TOTAL		56094	kgCO2e
			or	56.1	T CO2e/yr
<p>Associated activities (e.g. couriering, travel to/from work & postage) are not within the scope of the carbon footprint of this organisation.</p> <p>Couriering for example is considered in the carbon footprint of the courier;</p>					

travel to/from work is considered in your personal footprint. This saves double counting.

4. **CONCLUSIONS**

It can clearly be demonstrated that vehicular travel (42.6%), and purchased natural gas (heating) (39.6%) represent the overwhelming majority of CO₂e emissions generated by Envirocare. Considering also purchased electricity (14.0%), these three aspects of operation make up over 95% of the total CO₂e emissions of Envirocare.

5. **RECOMMENDATIONS**

Based on the above data and conclusions it is obvious that the largest impact in reducing the total CO₂e emissions of Envirocare will be seen in reductions in the use of vehicular travel and gas heating. Before embarking on a programme of improvements, it is suggested that typical useages or carbon footprints are determined by benchmarking with other similar organisations. Any discrepancies here should indicate the priorities for establishing an improvement programme.

Potential options available are:

Reducing gas consumption by lowering thermostats in office environments and not heating when the building is not occupied.

Reducing the carbon footprint of vehicular travel by minimising the number of journeys (optimisation of use of vehicles) and by using a low or zero carbon fuel eg. biodiesel.

Reducing the use of electricity in the building by switching off appliances when not required (lights and computers) and increasing the use of low energy lighting.

6. **REFERENCES**

Carbon Trust (<http://www.carbontrust.co.uk>)

Climate Care (<http://www.climatecare.org>)

Electricity Info (<http://www.electricityinfo.org>)

The Greenhouse Gas Protocol Initiative (<http://www.ghgprotocol.org>)

Waste Online (<http://www.wasteonline.org.uk>)