CarbonGuru

Greenhouse Gas Protocol Report for The University of Edinburgh

Assessment Period: August 2009 - July 2010

Produced on March 14, 2013 by *Our Impacts* on behalf of Carbon Masters

Assessment Details

Consolidation Approach

Operational Control

Organisational Boundaries

Operations of The University of Edinburgh

Included

- Academic estate
- Accommodation

Operational Boundary

- Cars
- Incinerated waste
- Landfilled waste
- Natural gas
- Other fuel(s)
- Composted waste
- Electricity
- Recycled waste
- Water supply
- Water treament

Quality Assurance Assessor

- Aphra Morrison - aphra@carbonmasters.co.uk

Table of Contents

Introduction

A greenhouse gas (GHG) emissions assessment quantifies the total greenhouse gases produced directly and indirectly from a business or organisation's activities. Also known as a carbon footprint, it is an essential tool, providing your business with a basis for understanding and managing its climate change impacts.

A GHG assessment quantifies all seven Kyoto greenhouse gases where applicable and is measured in units of carbon dioxide equivalence, or CO_2e[1]. The seven Kyoto gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), nitrogen trifluoride (NF_3), sulphur hexafluoride (SF_6) and perfluorocarbons (PFCs). The global warming potential (GWP) of each gas is illustrated in the Table 1.

Table 1. GWP of Kyoto Gases (IPCC 2007)

Greenhouse Gas	GWP
Carbon dioxide (CO_2)	1
Methane (CH_4)	25
Nitrous oxide (N_2O)	298
Hydrofluorocarbons (HFCs)	124 - 14,800
Perfluorocarbons (PFCs)	7,390 - 12,200
Nitrogen trifluoride (NF_3)	17,200
Sulphur hexafluoride (SF_6)	22,800

This assessment has been carried out in accordance with the World Business Council for Sustainable Development and World Resources Institute's (WBCSD/WRI) Greenhouse Gas Protocol; a Corporate Accounting and Reporting Standard. This protocol is considered current best practice for corporate or organisational greenhouse gas emissions reporting. GHG emissions have been reported by the three WBCSD/WRI Scopes.

Scope 1 includes direct GHG emissions from sources that are owned or controlled by the company such as natural gas combustion and company owned vehicles. Scope 2 accounts for GHG emissions from the generation of purchased electricity, heat and steam generated off-site. Scope 3 includes all other indirect emissions such as waste disposal, business travel and staff commuting. Reporting of these activities is optional under the WBCSD/WRI GHG Protocol, but as they can contribute a significant portion of overall emissions Ecometrica recommends they are reported where applicable.

A GHG assessment is an essential tool in the process of monitoring and reducing an organisation's climate change impact as it allows reduction targets to be set and action plans formulated. GHG assessment results can also allow organisations to be transparent about their climate change impacts through reporting of GHG emissions to customers, shareholders, employees and other stakeholders. Regular assessments allow clients to track their progress in achieving reductions over time and provide evidence to support green claims in external marketing initiatives such as product labelling or CSR reporting. Ecometrica GHG assessments are designed to be transparent, consistent and repeatable over time.

---

[1] Carbon dioxide equivalent or CO_2e is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO_2e signifies the amount of CO_2 which would have the equivalent global warming impact.

Data Quality and Availability

In order to provide the most accurate estimate of an organisation's GHG emissions, primary (actual) data should be used where it is available, up to date and geographically relevant. Secondary data in the form of estimates, extrapolations and industry averages may be used when primary data is not available. Table 2 details the quality of data submitted for this assessment with the key assumptions used stated below.

Data Quality Overview

Accuracy Overview	tCO_2e/year	%
Actual	82,774	99.1
Estimated	739	0.885
Total	83,513	100

Table 2. Data Quality and Availability

Source of emissions	Data quality
Company-Owned Vehicles	
Other fuel(s)	Mixed
Cars	Complete
Premises	
Natural gas	Complete
Water supply	Complete
Other fuel(s)	Complete
Electricity	Complete
Water treament	Estimated
Fuel oil	N/A
Waste	
Recycled waste	Complete
Incinerated waste	Complete
Landfilled waste	Mixed
Composted waste	Complete

Assessment Summary for The University of Edinburgh
Gross Overall Emissions: 83,513 tCO_2e

Key Performance Indicators

Absolute GHG emissions will vary over time and often correspond to the expansion or contraction of an organisation. It is useful therefore to use reporting metrics that take these effects into account and monitor relative GHG emissions intensity. A common emissions intensity metric is tonnes of CO_2e per full time equivalent. This has been calculated, along with other relevant metrics, in the table below:

Data	KPI
28,394 Number of students	2.94 tCO_2e per Student
731,000 Floor area (square metres)	0.114 tCO_2e per Floor area (square metres)
651,000 Thousand GBP Revenue (£)	0.128 tCO_2e per Thousand GBP Revenue (£)
7,920 Full Time Equivalent Employees	10.5 tCO_2e per Full Time Equivalent Employee

Summary by Activity (tCO_2e)

By Activity	tCO_2e/year	%
Premises	82,442	98.7
Company-Owned Vehicles	495	0.593
Waste	576	0.689
Total	83,513	100

Summary by WBCSD/WRI Scope (tCO_2e)

Scope	tCO_2e/year	%
Scope 1	44,566	53.4
Scope 2	34,811	41.7
Scope 3	4,136	4.95
Total	83,513	100

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year	tCO_2e/year
CO_2	1	81,773	81,773
CH_4	25	24.6	616
N_2O	298	0.914	272
Biogenic CH_4	24	0.976	23.4
CO_2e	1	829	829

	Total	83,513

Detailed Results

Detailed Summary by WBCSD/WRI Scope

Source of Emissions	tCO_2/yr	tCH_4/yr	tN_2O/yr	Total Emissions (tCO_2e/yr)	%
Scope 1 Total	**44,459**	**3.08**	**0.0976**	**44,566**	**53.4%**
Company-Owned Vehicles Total	492	0.0116	0.0112	495	0.593%
Cars	3.01	7.71e-5	3.9e-5	3.03	0.00363%
Other fuel(s)	489	0.0115	0.0111	492	0.589%
Premises Total	43,968	3.07	0.0864	44,070	52.8%
Natural gas	43,566	3.06	0.0844	43,667	52.3%
Other fuel(s)	402	0.0129	0.002	403	0.482%
Scope 2 Total	**34,586**	**0.784**	**0.69**	**34,811**	**41.7%**
Premises Total	34,586	0.784	0.69	34,811	41.7%
Electricity	34,586	0.784	0.69	34,811	41.7%
Scope 3 Total	**2,727**	**20.8**	**0.126**	**4,136**	**4.95%**
Premises Total	2,714	0.0682	0.0531	3,560	4.26%
Electricity: Electricity - transmission & distribution losses (carbon masters standard)	2,714	0.0682	0.0531	2,732	3.27%
Water supply	0	0	0	280	0.336%
Water treament	0	0	0	548	0.657%
Waste Total	13.2	20.7	0.0732	576	0.689%
Composted waste	0	0	0.0732	45.3	0.0542%
Incinerated waste	13.2	0	0	13.2	0.0158%
Landfilled waste	0	20.7	0	517	0.62%
Recycled waste	0	0	0	0	0%
Total	**81,773**	**24.6**	**0.914**	**83,513**	**100%**

Summary by Company Unit

Company Unit	tCO_2e/year	FTE	tCO_2e/FTE
The University of Edinburgh	83,513	7,920	10.5
Academic estate	72,965	-	-
Accommodation	10,548	-	-

Annual Activity Data

Source of Emissions	Value	Unit
Company-Owned Vehicles		
Cars		
Large hybrid car	8,939	mi
Other fuel(s)		
Diesel, retail station biofuel blend	186,959	l
Petrol, retail station biofuel blend	5,063	l
Premises		
Electricity		
Electricity consumption	71,573,756	kWh
Natural gas		
Natural gas consumption	237,778,690	kWh
Other fuel(s)		
LPG	270,083	l
Water supply		
Water supply	824,743	m3
Water treament		
Water treatment (Europe)	783,506	m3
Waste		
Composted waste		
Composted waste	244	tonne
Incinerated waste		
Waste, incinerated (no heat recovery), MSW	58.3	tonne
Landfilled waste		
Waste, landfilled, MSW	932	tonne
Recycled waste		
Waste, recycled	1,296	tonne

References

Defra/DECC (2011). Guidelines to Defra/DECC's GHG conversion factors for company reporting. Department of Environment Food and Rural Affairs/Department for Energy and Climate Change, London.

IPCC (2006). Revised IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.

IPCC 2006. IPCC Guidelines for National GHG Inventories Smith et al 2001. Waste management options and climate change

Smith, A., K. Brown, S. Ogilvie, K. Rushton, and J. Bates, 2001: Waste management options and climate change. Final Report ED21158R4.1 to the European Commission, DG Environment, AEA Technology, Oxfordshire.

Assessment Summary for Academic estate

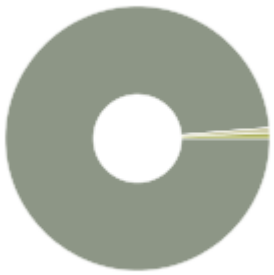
Gross Overall Emissions: 72,965 tCO_2e

Key Performance Indicators

Absolute GHG emissions will vary over time and often correspond to the expansion or contraction of an organisation. It is useful therefore to use reporting metrics that take these effects into account and monitor relative GHG emissions intensity. A common emissions intensity metric is tonnes of CO_2e per full time equivalent. This has been calculated, along with other relevant metrics, in the table below:

Data	KPI
610,453 Floor area (square metres)	0.12 tCO_2e per Floor area (square metres)

Summary by Activity (tCO_2e)



By Activity	tCO_2e/year	%
Premises	72,016	98.7
Company-Owned Vehicles	470	0.644
Waste	479	0.656
Total	72,965	100

Summary by WBCSD/WRI Scope (tCO_2e)

Scope	tCO_2e/year	%
Scope 1	40,646	55.7
Scope 2	28,898	39.6
Scope 3	3,421	4.69
Total	72,965	100

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year	tCO_2e/year
CO_2	1	71,526	71,526
CH_4	25	20.3	508
N_2O	298	0.78	232
Biogenic CH_4	24	0.976	23.4
CO_2e	1	675	675
		Total	72,965

Assessment Summary for Accommodation

Gross Overall Emissions: 10,548 tCO_2e

Summary by Activity (tCO_2e)

By Activity	tCO_2e/year	%
Premises	10,426	98.8
Company-Owned Vehicles	25	0.237
Waste	97.2	0.922
Total	10,548	100

Summary by WBCSD/WRI Scope (tCO_2e)

Scope	tCO_2e/year	%
Scope 1	3,920	37.2
Scope 2	5,913	56.1
Scope 3	715	6.78
Total	10,548	100

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year	tCO_2e/year
CO_2	1	10,247	10,247
CH_4	25	4.31	108
N_2O	298	0.134	40
CO_2e	1	154	154
		Total	10,548