CarbonGuru

Greenhouse Gas Protocol Report for The University of Edinburgh

Assessment Period: August 2007 - July 2008

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Assessment Details

Consolidation Approach

Operational Control

Organisational Boundaries

Operations of The University of Edinburgh

Included

- Academic estate
- Accommodation

Operational Boundary

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

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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.

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[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	77,742	98.9
Estimated	902	1.15
Total	78,643	100

Table 2. Data Quality and Availability

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

Assessment Summary for The University of Edinburgh
Gross Overall Emissions: 78,643 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
25,748 Number of students	3.05 tCO_2e per Student
733,000 Floor area (square metres)	0.107 tCO_2e per Floor area (square metres)
572,000 Thousand GBP Revenue (£)	0.137 tCO_2e per Thousand GBP Revenue (£)
7,919 Full Time Equivalent Employees	9.93 tCO_2e per Full Time Equivalent Employee

Summary by Activity (tCO_2e)

By Activity	tCO_2e/year	%
Premises	77,765	98.9
Company-Owned Vehicles	345	0.438
Waste	534	0.679
Total	78,643	100

Summary by WBCSD/WRI Scope (tCO_2e)

Scope	tCO_2e/year	%
Scope 1	38,633	49.1
Scope 2	35,823	45.6
Scope 3	4,188	5.33
Total	78,643	100

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year	tCO_2e/year
CO_2	1	77,088	77,088
CH_4	25	22.2	555
N_2O	298	0.934	278
Biogenic CH_4	24	0.96	23
CO_2e	1	700	700

Total	78,643

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	**38,540**	**2.71**	**0.0855**	**38,633**	**49.1%**
Company-Owned Vehicles Total	341	0.0116	0.0118	345	0.438%
Other fuel(s)	341	0.0116	0.0118	345	0.438%
Premises Total	38,199	2.7	0.0737	38,288	48.7%
Natural gas	37,966	2.69	0.0731	38,055	48.4%
Other fuel(s)	233	0.00447	5.84e-4	234	0.297%
Scope 2 Total	**35,590**	**0.743**	**0.717**	**35,823**	**45.6%**
Premises Total	35,590	0.743	0.717	35,823	45.6%
Electricity	35,590	0.743	0.717	35,823	45.6%
Scope 3 Total	**2,958**	**18.7**	**0.131**	**4,188**	**5.33%**
Premises Total	2,935	0.0689	0.0593	3,654	4.65%
Electricity: Electricity - transmission & distribution losses	2,935	0.0689	0.0593	2,954	3.76%
Water supply	0	0	0	207	0.263%
Water treament	0	0	0	493	0.626%
Waste Total	22.8	18.7	0.072	534	0.679%
Composted waste	0	0	0.072	44.5	0.0566%
Incinerated waste	22.8	0	0	22.8	0.0289%
Landfilled waste	0	18.7	0	467	0.593%
Recycled waste	0	0	0	0	0%
Total	**77,088**	**22.2**	**0.934**	**78,643**	**100%**

Summary by Company Unit

Company Unit	tCO_2e/year	FTE	tCO_2e/FTE
The University of Edinburgh	78,643	7,919	9.93
Academic estate	68,619	-	-
Accommodation	10,024	-	-

Annual Activity Data

Source of Emissions	Value	Unit
Company-Owned Vehicles		
Other fuel(s)		
Diesel	121,405	l
Petrol	8,855	l
Premises		
Electricity		
Electricity consumption	72,321,589	kWh
Natural gas		
Natural gas consumption	205,977,179	kWh
Other fuel(s)		
LPG	156,347	l
Water supply		
Water supply	713,972	m3
Water treament		
Water treatment (Europe)	678,274	m3
Waste		
Composted waste		
Composted waste	240	tonne
Incinerated waste		
Waste, incinerated (no heat recovery), MSW	100	tonne
Landfilled waste		
Waste, landfilled, MSW	841	tonne
Recycled waste		
Waste, recycled	994	tonne

References

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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: 68,619 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
584,911 Floor area (square metres)	0.117 tCO_2e per Floor area (square metres)

Summary by Activity (tCO_2e)

By Activity	tCO_2e/year	%
Premises	67,769	98.8
Company-Owned Vehicles	317	0.461
Waste	534	0.778
Total	68,619	100

Summary by WBCSD/WRI Scope (tCO_2e)

Scope	tCO_2e/year	%
Scope 1	35,217	51.3
Scope 2	29,826	43.5
Scope 3	3,576	5.21
Total	68,619	100

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year	tCO_2e/year
CO_2	1	67,231	67,231
CH_4	25	21.8	545
N_2O	298	0.796	237
Biogenic CH_4	24	0.96	23
CO_2e	1	582	582
Total			68,619

Assessment Summary for Accommodation

Gross Overall Emissions: 10,024 tCO_2e

Summary by Activity (tCO_2e)

By Activity	tCO_2e/year	%
Premises	9,996	99.7
Company-Owned Vehicles	28.2	0.282
Total	10,024	100

Summary by WBCSD/WRI Scope (tCO_2e)

Scope	tCO_2e/year	%
Scope 1	3,416	34.1
Scope 2	5,997	59.8
Scope 3	612	6.11
Total	10,024	100

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year	tCO_2e/year
CO_2	1	9,856	9,856
CH_4	25	0.376	9.41
N_2O	298	0.137	40.9
CO_2e	1	118	118
Total			10,024