U&We

Catalyst for Good Business

Greenhouse Gas Protocol Report for U&W/ZM

Assessment Period: July 2015 - June 2016

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Assessment Details

Consolidation Approach

Operational Control

Organisational Boundaries

Operations of U&W/ZM

Included

- U&W/ZM
- U&We
- ZeroMission

Operational Boundary

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- Coffee and fruit
- Copy Paper
- Electricity - Green Tariff
- Employee owned cars
- Estimated emissions
- Ferry
- Hotel night stays
- Incinerated waste
- On foot
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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	22.7	89.5
Estimated	2.68	10.5
Total	25.4	100

Table 2. Data Quality and Availability

Source of emissions	Data quality
Premises	
District heating	N/A
Electricity - Green Tariff	Actual
Business Travel	
Air travel	Actual
Bus and coach	Mixed
Cars	Mixed
Employee owned cars	Estimated
Ferry	Estimated
Hotel night stays	Actual
Rail (train, tram, light rail, underground)	Mixed
Taxi	Estimated
Commuting	
Bicycle	Estimated
Bus and coach	Estimated
Employee owned cars	Estimated
On foot	Actual
Rail (train, tram, light rail, underground)	Mixed
Inbound third-party deliveries	
Cars	N/A
Road freight, shared vehicle (tonne.km factors)	N/A
Vans	N/A
Waste	
Estimated emissions	Estimated
Incinerated waste	Estimated

Landfilled waste	N/A
Recycled waste	Actual
Office supply	
Coffee and fruit	Actual
Copy Paper	Actual
Estimated emissions	Estimated
Paper and printed material	N/A
Water	
Water supply	Unknown

Key Assumptions

Estimations have been used for waste to incineration. This would have a very low impact on the overall result since the impact is so small.

We also assume that all consultants in U&We and all employees in ZM have taken responsibility to report their major business travel, hotel nights stay and commuting.

Assessment Summary for U&W/ZM

Gross Overall Emissions: 25.4 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
181 Floor area (square metres)	0.14 tCO_2e per square metre
34,742 Turnover (KSEK)	7.31e-4 tCO_2e per Turnover (KSEK)
13 Full Time Equivalent Employees	1.95 tCO_2e per Full Time Equivalent Employee

Summary by Activity (tCO_2e)

By Activity	tCO_2e/year	%
Premises	0.115	0.454
Business Travel	21.9	86.3
Commuting	2.63	10.3
Waste	0.072	0.283
Office supply	0.677	2.66
Total	25.4	100

Summary by WBCSD/WRI Scope (tCO_2e)

Scope	tCO_2e/year	%
Scope 2	0.109	0.43
Scope 3	25.3	99.6
Total	25.4	100

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year	tCO_2e/year
CO_2	1	22.6	22.6
CH_4	25	0.00408	0.102
N_2O	298	5.81e-4	0.173
CO_2e	1	2.57	2.57
		Total	25.4

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 2 Total	**0**	**0**	**0**	**0.109**	**0.43%**
Premises Total	0	0	0	0.109	0.43%
Electricity - Green Tariff	0	0	0	0.109	0.43%
Scope 3 Total	**22.6**	**0.00408**	**5.81e-4**	**25.3**	**99.6%**
Business Travel Total	19.7	2.76e-4	5.74e-4	21.9	86.3%
Air travel	17.3	8.47e-5	5.5e-4	17.5	68.7%
Air travel: Flights, long-haul, average, upstream emissions	0	0	0	0.591	2.33%
Air travel: Flights, long-haul, ecomony, upstream emissions	0	0	0	0.757	2.98%
Air travel: Flights, medium-haul, average, upstream emissions	0	0	0	0.0448	0.176%
Air travel: Flights, medium-haul, business, upstream emissions	0	0	0	0.079	0.311%
Air travel: Flights, medium-haul, ecomony, upstream emissions	0	0	0	0.247	0.974%
Air travel: Flights, short-haul, upstream emissions	0	0	0	0.037	0.146%
Bus and coach	0.0412	1.08e-6	8.56e-7	0.0415	0.163%
Bus and coach: City bus, upstream emissions	0	0	0	0.00118	0.00464%
Bus and coach: Local bus, upstream emissions	0	0	0	0.00764	0.0301%
Cars	1.17	5.92e-5	1.49e-5	1.23	4.83%
Cars: Average diesel car, upstream emissions	0	0	0	0.0477	0.188%
Cars: Average petrol car, upstream emissions	0	0	0	0.0751	0.295%
Cars: Large petrol car, upstream emissions	0	0	0	0.09	0.354%
Cars: Medium CNG car, upstream emissions	0	0	0	0.00156	0.00615%
Cars: Medium diesel car, upstream emissions	0	0	0	0.0038	0.015%
Cars: Medium petrol car, upstream emissions	0	0	0	0.0128	0.0502%
Employee owned cars	0.0853	3.48e-6	1.8e-6	0.0859	0.338%
Ferry	0.00499	7.83e-8	1.25e-7	0.00503	0.0198%
Hotel night stays	0.985	2.09e-5	5.33e-6	0.987	3.88%
Rail (train, tram, light rail, underground)	0	0	0	0.0258	0.101%
Rail (train, tram, light rail, underground): Light rail, upstream emissions	0.0327	6.31e-5	0	0.0342	0.135%
Rail (train, tram, light rail, underground): Underground, upstream emissions	0.022	4.26e-5	0	0.0231	0.0909%
Taxi	0.0258	1.08e-6	2.33e-7	0.0259	0.102%
Taxi: Regular taxi, upstream emissions	0	0	0	6.72e-5	2.65e-4%
Commuting Total	2.42	0.0038	7.82e-6	2.63	10.3%
Bicycle	0	0	0	0	0%

Bus and coach	0.319	8.37e-6	6.64e-6	0.321	1.26%
Bus and coach: Average bus, upstream emissions	0	0	0	1.73e-4	6.81e-4%
Bus and coach: City bus, upstream emissions	0	0	0	0.00814	0.032%
Bus and coach: Local bus, upstream emissions	0	0	0	0.0599	0.236%
Employee owned cars	0.141	9.87e-6	1.18e-6	0.151	0.593%
Employee owned cars: Medium petrol car, upstream emissions	0	0	0	0.0276	0.109%
On foot	0	0	0	0	0%
Rail (train, tram, light rail, underground)	0	0	0	0.00958	0.0377%
Rail (train, tram, light rail, underground): Light rail, upstream emissions	0.836	0.00161	0	0.876	3.45%
Rail (train, tram, light rail, underground): Underground, upstream emissions	1.12	0.00217	0	1.18	4.63%
Office supply Total	0.488	0	0	0.677	2.66%
Coffee and fruit	0.484	0	0	0.552	2.17%
Copy Paper	0.00381	0	0	0.00381	0.015%
Estimated emissions	0	0	0	0.121	0.476%
Premises Total	0	0	0	0.00604	0.0238%
Electricity - Green Tariff: Electricity, Vattenfall AB Wind Power, T&D losses	0	0	0	0.00188	0.0074%
Electricity - Green Tariff: Electricity, Vattenfall AB Wind Power, upstream emissions	0	0	0	4.97e-4	0.00196%
Electricity - Green Tariff: Electricity, hydropower (Vattenfall AB), T&D losses	0	0	0	0.00364	0.0143%
Electricity - Green Tariff: Electricity, hydropower (Vattenfall AB), upstream emissions	0	0	0	2.91e-5	1.15e-4%
Waste Total	0	0	0	0.072	0.283%
Estimated emissions	0	0	0	0.072	0.283%
Incinerated waste	0	0	0	0	0%
Recycled waste	0	0	0	0	0%
Total	**22.6**	**0.00408**	**5.81e-4**	**25.4**	**100%**

Summary by Company Unit

Assessment	July 2014 - June 2015		July 2015 - June 2016	
Company Unit	**Total Emissions (tCO_2e)**	**Emissions per FTE (tCO_2e/FTE)**	**Total Emissions (tCO_2e)**	**Emissions per FTE (tCO_2e/FTE)**
U&W/ZM	16.7	1.28	25.4	1.95
U&We	2.55	0.283	15	1.66
ZeroMission	12.2	3.06	9.59	2.4

Annual Activity Data

Source of Emissions	Value	Unit
Business Travel		
Air travel		
Long-haul, average class (RFI 2)	29,000	pass.km
Long-haul, economy (RFI 2)	48,514	pass.km
Medium-haul, average class (RFI 2)	2,500	pass.km
Medium-haul, business (RFI 2)	3,000	pass.km
Medium-haul, economy (RFI 2)	14,100	pass.km
Short-haul (RFI 2)	1,250	pass.km
Bus and coach		
City bus	75	pass.km
Local bus	300	pass.km
Cars		
Average diesel car	820	km
Average diesel car	31.2	l
Average petrol car	2,000	km
Large petrol car	1,558	km
Medium CNG car	48.2	km
Medium car (unknown fuel)	34.2	km
Medium diesel car	104	km
Medium ethanol car (E85)	254	km
Medium petrol car	325	km
Vehicle gas car (biogas/CNG)	426	km
Employee owned cars		
Average car (unknown fuel)	308	km
Medium car (unknown fuel)	150	km
Ferry		
Average ferry passenger	25	pass.km
Ferry, car passenger	16	pass.km
Hotel night stays		
Hotel night stays	50	night
Rail (train, tram, light rail, underground)		
Light rail	450	pass.km
Swedish rail	21,282	pass.km
Underground/Subway	330	pass.km
Taxi		
Average taxi	100	km
Average taxi	2	pass.km
Commuting		
Bicycle		

	Bicycle	20,883	km
Bus and coach			
	Average bus	8	pass.km
	City bus	518	pass.km
	Local bus	2,350	pass.km
Employee owned cars			
	Medium ethanol car (E85)	200	km
	Medium petrol car	705	km
On foot			
	On foot	77	km
Rail (train, tram, light rail, underground)			
	Light rail	8,930	pass.km
	Swedish rail	7,920	pass.km
	Tram	2,580	pass.km
	Underground/Subway	16,802	pass.km
Office supply			
Coffee and fruit			
	Mixed fruit	484	kg
	Organic coffee	53	kg
Copy Paper			
	Copy paper (Sweden)	18.5	kg
Estimated emissions			
	Total CO2e emissions	121	kg
Premises			
Electricity - Green Tariff			
	Electricity, Wind Power (Vattenfall AB)	2,160	kWh
	Electricity, hydropower (Vattenfall AB)	9,098	kWh
Waste			
Estimated emissions			
	Total CO2e emissions	72	kg
Incinerated waste			
	Waste, incinerated (heat recovery), MSW	200	kg
Recycled waste			
	Waste, recycled	274	kg

Key Observations

The total emissions for 2015-16 amount to 25,4 ton CO2e. Major changes in emissions stem from travels by flights (up 90%) and train (increase by a factor of 10), and reductions in consumption of office supplies and hotel nights (-50%). Flights have increased due to increased long distance flights, as well as the addition of upstream emissions. The consumption of milk, coffe, fruit and produced waste has decreased, possibly due to the exclusion of Futerras consumption.

Train travel has a new upstream emission factor that is 8 times larger (from NTM), in combination with an increase in commuting travel by 40%. Train travel as business travel has decreased by about 35% from previous year, in passenger km.

U&We have increased their emissions from 2,55 to 15 ton CO2e, mainly due to an increased number of flights. Emissions per full time employee is 1,66 ton/FTE (0,28 ton/FTE), and emissions per turnover amounts to 1,27 kg/KSEK (0,14 kg/KSEK).

ZM has reduced its carbon footprint per full time employee (2,4 ton/FTE), and emitted 9,6 ton CO2e, compared to last years 12,2 tons. Per turnover ZM has 0,42 kg/KSEK.

Reduction Actions

We have invested in a video conferencing system during summer. Next year we'll be able to evaluate what effect this has on our business travel. Maybe we could have an indicator for participation in international conferences / meetings by video conference? This could be good to evaluate if we can decouple participation in international fora from long distance business travel (and there could be set a goal for the ratio of international participation that should be by link).

During the year our landlord has changed the glass in the windows. Unfortunately the glass is still only double glass. We can't evaluate if there has been an effect on the energy consumption yet, since the glass change was done during spring (the effect would be biggest during winter) and since the energy consumption has a very high variability (probably due to the fact that we use electricity for heating). Hopefully this could be evaluated next year.

Our emissions from heating is very low since we use renewable energy, but our impact on energy consumption/demand is relatively big and a change to another source of heating (district heating for example) would lead to a greatly decreased environmental impact in a system perspective. This could be done by investing in a air heating system ("luftvärmepump") and/or by setting up solar heating panels on the roof. The landlord is pivotal in this change and a space for discussions with him/her and the rest of the tenants could be a good way to start.

Apart from this the business travel is the biggest source of impact and therefore one of the most strategic areas to reduce emissions. This year the impact from air travel have increased, as have the presence on the international arena. U&We & ZM need to live by their travel policy and try to minimize impact from air travel by using other means of communication, try to push for renewable energy sources and avoid flying (especially for domestic travel).

References

NTM (2015). NTMCalc 3.0 Emissions and energy use report.

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CIBSE (2012). Energy Efficiency in Buildings, Guide F. The Chartered Institution of Building Services Engineers.

Defra/DECC (2012). 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.

Defra/DECC (2014). UK Government conversion factors for greenhouse gas reporting. Department of Environment Food and Rural Affairs/Department for Energy and Climate Change, London.

Defra/DECC (2016). UK Government conversion factors for greenhouse gas reporting. Department of Environment Food and Rural Affairs/Department for Energy and Climate Change, London.

EPA (2015). GHG Emission Factors Hub. Center for Corporate Climate Leadership. November 2015. http://www.epa.gov/climateleadership/inventory/ghg-emissions.html. Accessed July 2016.

EPA (2016). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2014. United States Environmental Protection Agency.

Environdec (2013).Vattenfall Wind Power certified Environmental Product Declaration EPD of electricity from Vattenfall's wind farms, available online at: http://gryphon.environdec.com/data/files/6/9018/epd183_Vattenfall_Nordic_Wind_2013.pdf

Environdec (2015). EPD® Hydropower Summary of certified Environmental Product Declaration EPD® of Electricity from Vattenfall’s Nordic Hydropower.

Environdec (2015). EPD® Hydropower Summary of certified Environmental Product Declaration EPD® of Electricity from Vattenfall’s Nordic Hydropower.

FHWA (2015). Highway Statistics 2014. US Federal Highway Administration. Washington DC 20590. December 2015.

IEA (2015). CO2 Emissions from Fuel Combustion, 2015 Edition. International Energy Agency.

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

NTM (2015). NTMCalc 3.0 Emissions and energy use report.

NTM (2015). NTMCalc 3.0 Emissions and energy use report.

SJ (2011). SJ AB Sustainability Report 2010

Trafikverket (the Swedish Transport Administration) 2012. Uppdaterade reduktionsvärden för etanol- och gasfordon till bilindex.

U&W (2011). Client specific LCA (temporary source)

U&We (2011). Greenhouse gas assessment for coffee.

provided by Antalis Paper Merchant

Assessment Summary for U&We

Gross Overall Emissions: 15 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
11,799 Turnover (KSEK)	0.00127 tCO_2e per Turnover (KSEK)
9 Full Time Equivalent Employees	1.66 tCO_2e per Full Time Equivalent Employee

Summary by Activity (tCO_2e)

By Activity	tCO_2e/year	%
Business Travel	12.8	85.7
Commuting	2.14	14.3
Total	15	100

Summary by WBCSD/WRI Scope (tCO_2e)

Scope	tCO_2e/year	%
Scope 3	15	100
Total	15	100

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year	tCO_2e/year
CO_2	1	13.4	13.4
CH_4	25	0.00311	0.0777
N_2O	298	3.48e-4	0.104
CO_2e	1	1.35	1.35
		Total	15

Assessment Summary for ZeroMission

Gross Overall Emissions: 9.59 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
22,943 Turnover (KSEK)	4.18e-4 tCO_2e per Turnover (KSEK)
4 Full Time Equivalent Employees	2.4 tCO_2e per Full Time Equivalent Employee

Summary by Activity (tCO_2e)

By Activity	tCO_2e/year	%
Business Travel	9.11	94.9
Commuting	0.488	5.09
Total	9.59	100

Summary by WBCSD/WRI Scope (tCO_2e)

Scope	tCO_2e/year	%
Scope 3	9.59	100
Total	9.59	100

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year	tCO_2e/year
CO_2	1	8.66	8.66
CH_4	25	9.68e-4	0.0242
N_2O	298	2.34e-4	0.0696
CO_2e	1	0.839	0.839
		Total	9.59