Sustainable Hospitality Alliance

In support of
Glasgow Declaration **
Climate Action in Tourism

Supported by
GREENVIEW | WORLD TRAVEL & TOURISM COUNCIL | ∞ GSTC
Global Sustainable Tourism Council

Overview

HCMI is a methodology, and accompanying excel tool, which was developed by the hospitality industry to calculate and communicate the carbon footprint of hotel stays and meetings in a consistent and transparent way.

The methodology covers all GHG emissions resulting from activities within their premises (known as scope 1 and 2 emissions) and, if applicable, from outsourced laundry operations (scope 3 emissions). It applies the GHG Protocol Corporate Standard at the hotel property level to serve as hotel sector guidance.

It was initially developed by the Carbon Measurement Working Group, a joint initiative of the Sustainable Hospitality Alliance (SHA) (formerly known as International Tourism Partnership (ITP)) and the World Travel &Tourism Council (WTTC).

This HCMI Calculation Tool (Version 2.0) was updated by Greenview and should be used in connection with the HCMI FAQ (Version 2.0), which can be obtained from the Sustainable Hospitality Alliance website.

The default emission factors and unit conversion factors used in this Tool were provided by Greenview. The default emission factors are based off those for reporting data from calendar year 2021.

How the methodology works

What data is needed

• Energy and electricity consumption data for 12 months using meter readings or invoices

• Area data (square meters or square footage) for:

   – Guest rooms and corridor area

   – Meeting space area

   – Total area

• If you have private areas (e.g. private apartments or on-site staff accommodation): area of private space and total conditioned area

• If you outsource your laundry: carbon emissions or energy consumption data from your supplier OR laundry tonnage per annum

• If you have significant refrigerant gas usage: refrigerant gas usage

• If you have significant transport fuel consumption: fuel consumption

• If you purchase or use energy from renewable sources: certificates of origin, supplier bill detailing energy mix, on-site generation meter readings

Who it's designed for

Property-level hotel staff

What it will tell you

• Total carbon footprint for guestrooms and meeting space during the specified reporting year, per occupied room on a daily basis, per area of meeting space on an hourly basis, and per area on an annual basis

• Total renewable energy and electricity used by the hotel, Total renewable electricity used by the hotel, Total ren

• Scope 1, Scope 2 and partial Scope 3 greenhouse gas emissions

How the information should be used

For Group and individual hotel responses to corporate RFPs or requests for the footprint of their booking

Summary of Changes

• Added "Carbon Footprint per sqm/sqft on an annual basis" output.

• Added "Total renewable electricity used by the hotel (% of total electricity use)" output.

• Added market purchases of renewable electricity such as RECs to impact the calculation of the final HCMI metrics, which were previously left out in prior methodology versions.

• Enhanced hotel reporting on renewable energy and electricity use in following breakdown: on-site generation and market-based purchases.

• Added more energy sources for inclusion in hotel energy consumption and carbon emissions calculations.

• Added default emission factors for all energy sources, where publicly available.

• Automated the conversion of energy and default emission factors based on hotel's location.

• Enabled the choice of using the default emission factor when available, or manual entry of the emission factor.

• Updated refrigerant GWPs based on latest publications.

*** Final validation in progress*

How to Guide

1. Hotel Details and Result

Step 1	Proceed to Tab 1. Hotel Details and Result.
Step 2	Fill up the Contact & Hotel Details section.
	*Refer to the Definitions tab for description of terms marked with **
Step 3	Fill up the Supplementary Questions section.
	If your answer is NO for all the supplementary questions, proceed to Tab 2. Energy Consumption.
	If your answer is YES for any of the supplementary questions, proceed to Tab 2. Energy Consumption. Thereafter, proceed to the various tab(s) as indicated.
	For Q2 on refrigerant use and Q3 on mobile fuel consumption, participants can estimate data by selecting "Yes (default to 1% of total emissions)".
	Estimated data is subject to an uplift to encourage all participants to improve the accuracy of their data.
	For Q4 on whether there is private space and if your answer is YES –
	If you are able to provide ACTUAL energy consumption of the private space, input accordingly in Tab 2. Energy Consumption (Column I).
	If you are not able to provide actual energy consumption but able to provide the % of private space of total conditioned area, input the % to ESTIMATE consumption in Tab 2. Energy Consumption (Column J).
Step 4	The Results section will auto populate to output the following results after the other tabs have been completed:
	o Carbon footprint: Total for guestrooms and meeting space during the specified reporting year, per occupied room on a daily basis, per area of meeting space on an hourly basis, and per area on an annual basis
	o Renewable energy & electricity: Total renewable energy and electricity used by the hotel, Total renewable electricity used by the hotel, Total renewable energy and electricity used by the hotel
	o Greenhouse gas scopes: Scope 1, Scope 2 and partial Scope 3 emissions

2. Energy Consumption

Energy Consumption

Step 1	Proceed to Tab 2. Energy Consumption to input your hotel's energy consumption.
Step 2	The first three energy types are set by default: Purchased Electricity (Grid), Natural Gas, Fuel Oil 2.
Step 3	Use the dropdown to select other energy types applicable to your hotel. This includes any mobile fuels used by your hotel.
Step 4	Use the dropdown to select the unit for each energy type.
Step 5	Input the total consumption for each energy type.
Step 6	If your hotel has private space and you have ACTUAL energy consumption of the space (e.g. sub-metered) –
	Input ACTUAL private space consumption for the relevant energy type(s) under Column I.
	If you are NOT able to provide actual energy consumption but able to provide the % of private space of total conditioned area –
	Input the % of private space in Tab 1. Hotel Details and Result > Supplementary Question 4b to ESTIMATE private space consumption under Column J.
	Actual/estimated private space consumption will not be included in the calculations.
Step 7	Use the dropdown to select whether Default or Manual emission factors (EFs) are to be used for each energy type.
	If Manual EFs are chosen, source and input the EFs manually.
Step 8	The emissions from each energy type and the total emissions from energy consumption will auto populate.

Market-based Renewable Electricity Purchases

Step 9	Indicate whether you would like to input market-based renewable electricity purchased from supplier.
	If your answer is NO, proceed to the other tabs to input other details (if applicable) or proceed to Tab 1. Hotel Details and Result to obtain the results.
	If your answer is YES, proceed to enter the description of the market purchase and amount in kWh. The amount will be used to offset electricity purchased from the grid.
Step 10	Note that the offset is capped at 100% of the amount of electricity purchased from the grid.

Tab A - Outsourced Laundry

Step 1	Proceed to Tab A - Outsourced Laundry if your hotel's laundry is outsourced.
Step 2	Use the dropdown to indicate whether you have your hotel's share of energy consumption from your laundry contractor.
	If your answer is YES, proceed to update Section A.1.
	o Use the dropdown to select the relevant energy types. Purchased Electricity (Grid) is a default energy type.
	o Ensure that the chosen energy types are also selected in Tab 2. Energy Consumption.
	o Input the total consumption and unit for each energy type.
	o Thereafter, proceed to the other tabs to input other details (if applicable) or proceed to Tab 1. Hotel Details and Result to obtain the results.
	If your answer is NO, proceed to the next question.
Step 3	Use the dropdown to indicate whether your hotel's laundry tonnage is known.
	If your answer is YES, proceed to the next question.
	o Input your hotel's laundry tonnage and unit.
	o Energy consumption from outsourced laundry will be estimated and reflected in Section A.3.
	If your answer is NO, your hotel's laundry tonnage will be estimated using the number of occupied rooms in Section A.2.
	o Energy consumption from outsourced laundry will be estimated and reflected in Section A.3.

Tab B - Refrigerants

Step 1	Proceed to Tab B - Refrigerants if you would like to manually add refrigerant leakage fugitive emissions to the calculations.
Step 2	Use the dropdown to indicate if your hotel used any of the listed refrigerants.
	If your answer is NO, your hotel's carbon footprint will be uplifted by 1% to account for fugitive emissions.
	o Proceed to the other tabs to input other details (if applicable) or proceed to Tab 1. Hotel Details and Result to obtain the results.
	If your answer is YES, input the amount of refrigerant used in your hotel in kg.
	o Input the amount for all applicable refrigerants in both "Common refrigerants with high GWP" and "Other refrigerants" list.
	o The emissions from each refrigerant and the total emissions from refrigerants will auto populate.

Tab C - Client Report

Definitions

1. Hotel Details and Result

Reporting Year Ending	o The 12-month data period is defined by each company internally
	o The most recent month within the company's defined 12-month period is not to exceed nine months from the date of calculation. For example, if calculations are performed and communicated to stakeholders in July 2022, the data set could be no later than December 2020 - November 2021.
Total area of conditioned space	Area of a hotel that is conditioned by any heating, ventilations, air conditioning (HVAC) equipment
Unit of Measurement for the above areas	Area can be entered in square meters OR square feet, as long as this is consistent in all 3 questions - Total area of (1) guest rooms and corridors, (2) meeting facility space and (3) conditioned space
Total number of occupied rooms	Sum of all rooms sold and complimentary rooms minus no-shows

2. Energy Consumption

Energy Consumption	This is your total energy consumption for all your premises, including any outdoors facilities or private appartements. You should obtain this data from your energy invoices or from taking meter readings at the beginning and end of the reporting period.
	Consumption data based on actual meter readings is preferable as energy bills can be inaccurate or based on estimated readings. It is good practice to take your own meter readings to measure your energy consumption and verify the accuracy of your energy bills. Meter readings should be scheduled to coincide with carbon monitoring and reporting periods. Meter readings should be taken at regular intervals and a process should be in place to record the readings.
	Energy consumption from the use of transport vehicles and other mobile equipment should be included as mobile fuels.
	Energy and heat generated on-site using solar panels or wind turbines, or any renewable sources (such as hydropower, geothermal energy, solar) should be included as Onsite Renewable Energy. Any renewable energy generated on site and sold back to the grid should not be counted in HCMI.
	Electricity purchased through Power Purchase Agreements (PPAs) should be included as Purchased Electricity (PPA).
	Default unit conversion factors will be used to convert energy consumption to kWh.
	Estimating data:
	Estimating consumption: if you do not have data for the entire year, you may estimate your consumption based on the following estimations techniques (Source: UK Environment Agency):
	o Pro rata estimation technique involves quantifying the missing data for a data gap using a proportional method based on actual consumption from another similar period.
	o Direct comparison method uses data that corresponds with a similar period of supply. The advantage of this is that it accommodates variability in energy demand.
	o Price settlement: using the unit price shown on an earlier bill for this billing period or an average price per unit to convert energy costs into consumption data.
Emission Factors (EFs)	Emission factors (EFs) convert energy consumption into greenhouse gases emissions. Emission factors for electricity production and common fuels are available in datasets updated annually by national government agencies who provide accurate and up to date emission factors. Some examples include US EPA, UK DEFRA, Australia's Department of Climate Change and Energy Efficiency, or Environment Canada. National government agencies often publish national datasets on a freely accessible platform online. Hotels should select the most current and relevant emission factors available. Electricity emission factors are updated annually to account for the change in how electricity is generated within a country or intra-national regions.
Default or Manual CO2e Emission Factors (EFs)	You can choose to use default emission factors sourced from public available datasets from national government agencies, or inputting your own emission factors manually.
Market-based Renewable Electricity Purchases	Energy and heat purchased from a supplier using renewable sources (e.g. green electricity supplier, Renewable Energy Certificates).
	Electricity purchased from a supplier generating electricity from renewable sources. HCMI follows Scope 2 protocol for market-based reporting only (not location-based). The amount of renewable electricity supplied should be verifiable through mechanisms such as Energy Attribute Certificates (EACs) or Renewable Energy Certificates (RECs). Certificates origin are recommended as the most robust source of data. In case certificates are not available, please refer to the energy mix or share of renewables disclosed on energy bills.

Tab A - Outsourced Laundry

Share of energy consumption from laundry contractor	The estimated amount of energy used by your supplier to wash and dry your laundry. For example, if your supplier's total electricity consumption for the year is 100,000 kWh and you represent 10% of their business, your share of electricity consumption is: 10,000 kWh. The same calculations should be carried out for any other sources of energy used by the laundry contractor.
Laundry Tonnage	If your laundry contractor is not able to provide your share of the energy consumption, the next best alternative is to estimate the energy consumption by providing your laundry tonnage in a 12 months period. The estimates are based on Industrial Energy Efficiency Accelerator - Guide to the laundries sector (CTG064)
Estimated Laundry Tonnage	If the two options above are not available to you, the tool will estimate your energy consumption by assuming laundry tonnage to be an average of 11.3 lbs per occupied room (Source: Laundry Today). This is equivalent to: 0.0051256 metric tonnes per occupied room.

Tab B - Refrigerants

Fugitive emissions	Emissions that are not physically controlled but result from the intentional or unintentional releases of GHGs. They commonly arise from the production, processing transmission storage and use of fuels and other chemicals, often through joints, seals, packing, gaskets, etc. (GHG Protocol Definition)
	For example - emissions from refrigerants, air conditioning and refrigeration units

Key	
	To be manually completed by hotel
	Select from dropdown
	Automatically calculated
	Not applicable
*	See definitions tab for guidance or refer to comments

CONTACT & HOTEL DETAILS

1	Name	Gyula Kanel	
2	Job Title	General Manager	
3	Reporting Year Ending*	December	2024
4	Name of Hotel	Hotel Moments Budapest	
5	Name of Hotel Group	Continental Group	
6	Address	Andrássy út 8.	
7	City	Budapest	
8	Country	Hungary	
9	State/Province		
10	Zip/Postal Code		
11	Total area of guest rooms and corridors		5,035.00
12	Total area of meeting facility space		90.00
13	Total area of conditioned space*		5,815.00
14	Unit of Measurement for the above areas*	Square meters	
15	Total number of guest rooms		99
16	Total number of occupied rooms* for reporting year		29,076

SUPPLEMENTARY QUESTIONS

1	Is your laundry outsourced?	Yes	Proceed to Tab A - Outsourced Laundry
2	Would you like to add refrigerant leakage fugitive emissions to your calculation?	No don't add	No need to complete Tab B - Refrigerants
3	Would you like to include fuel consumption of all vehicles and other equipment (such as landscaping equipment)?	No don't add	No action required
4	Do you have private space not accessible by guests?	Yes	Proceed to Question 4.a
4.a	Are you able to provide the energy consumption of the private space?	No	Proceed to Question 4.b
4.b	Are you able to provide the % of private space of total conditioned area?	No	No action required

Note: If your answer is NO for all the supplementary questions, your carbon footprint is calculated automatically based on Tab 2. Energy Consumption

Once steps 1-16 are completed, go to tab 2. Energy Consumption

RESULTS

CARBON FOOTPRINT

Total CO2e for reporting period	**235.64**	**tCO2e**
Total Guestrooms Carbon Footprint	231.50	tCO2e
Total Meetings Carbon Footprint	4.14	tCO2e
Carbon footprint per occupied room on a daily basis	**7.96**	**kgCO2e/occ room**
Carbon footprint per area of meeting space (1 sqm/sqft) on an hourly basis	**0.012597**	**kgCO2e/sqm/hr**
Carbon footprint per sqm/sqft on an annual basis	**45.98**	**kgCO2e/sqm/yr**

RENEWABLE ENERGY & ELECTRICITY

TOTAL renewable energy and electricity used by the hotel (kWh)	-	kWh
TOTAL renewable electricity used by the hotel (% of total electricity use) *Note: Onsite Renewable Energy (if applicable) is assumed to be electricity source*	-	%
TOTAL renewable energy and electricity used by the hotel (% of total energy consumption)	-	%

GREENHOUSE GAS SCOPES
Based on data input into calculator only (no estimation for mobile fuel consumption & refrigerants)

Scope 1	Fuels burnt on site e.g. gas, oil Mobile fuels and Refrigerants	201.66	tCO2e
Scope 2	Purchased electricity Purchased heating/cooling	1.47	tCO2e
Outsourced laundry Partial scope 3	*Please note that full Scope 3 figures should include other sources (e.g. supply chain emissions)*	32.51	tCO2e

Key	
	To be manually completed by hotel
	Select from dropdown
	Automatically calculated
	Not applicable
*	See definitions tab for guidance or refer to comments

2.0 ENERGY CONSUMPTION*

	Energy Type	Unit	Total Consumption	Private Space Consumption		Outsourced Laundry (kWh)	Total (kWh)	Default or Manual CO2e Emission Factors (EFs)*	Manual EFs (kg CO2e/kWh)	Default EFs (kg CO2e/kWh)	Emissions (kg CO2e)
				Actual	Estimated						
1	Purchased Electricity (Grid)	kWh	5,347.43			16,020.00	21,367.43	Default		0.27411	5,857.03
2	Natural Gas	CuM	93,579.00			138,840.00	1,134,473.75	Default		0.20254	229,779.94
3	Fuel Oil 2					105,548.45	-			0.26832	-
							-			-	-
							-			-	-
							-			-	-
							-			-	-
				TOTAL (kWh)		260,408.45	1,155,841.18			TOTAL (kg CO2e)	235,636.97

2.1 MARKET-BASED RENEWABLE ELECTRICITY PURCHASES*

Would you like to input market-based renewable electricity purchased from supplier using renewable sources, in kWh (e.g. green electricity supplier, Renewable Energy Certificates)?	No	No action required

	Description of Purchase	Amount (kWh)	Comments
	TOTAL (kWh) - capped at 100% of Purchased Electricity (Grid) Consumption	-	

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Key

	To be manually completed by hotel
	Select from dropdown
	Automatically calculated
	Not applicable
*	See definitions tab for guidance or refer to comments

A. Please complete this section if you outsourced your laundry

1	Can you get your share of the energy consumption* from your laundry contractor for the reporting year?	No	Proceed to Question 2
2	Do you know your laundry tonnage*?	Yes	Proceed to Question 3. Fill in both Laundry Tonnage and Unit.
3	Please enter your laundry tonnage.	**Laundry Tonnage**	**Unit**
		89	Metric Tonne

A.1 Energy Consumption from Outsourced Laundry

	Energy Type	Total Consumption	Unit

A.2 Estimated Laundry Tonnage*

A.3 Estimated Energy Consumption from Outsourced Laundry

		Energy Type	Total Consumption	Unit
1	Estimated Consumption:	Purchased Electricity (Grid)	16,020.00	kWh
2	Estimated Consumption:	Natural Gas	138,840.00	kWh
3	Estimated Consumption:	Fuel Oil 2	9,879.00	Litres

Source: Carbon Trust - Guide to the laundries sector (CTG064)

Source: Laundry Today

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Key	
	To be manually completed by hotel
	Select from dropdown
	Automatically calculated
	Not applicable
*	See definitions tab for guidance or refer to comments

. Please complete this section if you would like to add refrigerant lea

1	Is the refrigerant gas used in your systems one of the following: HCFC-22/R22 = chlorodifluoromethane, HFC-134a/R-134A, R-404A, or R-410A?

B.1 Amount of each refrigerant used in the re

Common refrigerants with high GWP		

Other refrigerants		

Source:

WMO Scientific Assessment of Ozone Depletion: 2018, Global Ozone Research and Monitoring

UNEP Refrigeration, Air Conditioning and Heat Pumps: Technical Options Committee 2018 Ass

UNEP Refrigeration, Air Conditioning and Heat Pumps: Technical Options Committee 2010 Ass

FAQ

Is there any guidance to help me calculate the refrigerant leakage for my particular air co

Further guidance on how to calculate refrigerant leakage is provided in the UK government 'Envi

kage fugitive emissions* to your calculatio

No	Your total carbon footprint will be uplifted by 1%. No further calculations are required

porting year (in kg)

Global Warming Potential (GWP) of refrigerant (kg CO2e)	CO2-equivalent emissions (tonne)

Global Warming Potential (GWP) of refrigerant (kg CO2e)	CO2-equivalent emissions (tonne)

TOTAL (tCO2e)	-

Project—Report No. 58

essment Report

essment Report

nditioning system?

ironmental reporting guidelines'.

Name of Hotel	Hotel Moments Budapest
Name of Hotel Group	Continental Group

CLIENT DETAILS

1	Client Name	Gyula Kanel
2	Job title	General Manager
3	Reporting Year Ending *The most recent month within the defined 12-month reporting period*	December
4	Total number of room nights	29076
5	Total area of meeting space occupied (sqm/sqft)	90
6	Duration of meetings (Hours)	4

RESULTS

CARBON FOOTPRINT

Client's Guestrooms Carbon Footprint	231,498.95	kgCO2e
Client's Meetings Carbon Footprint	4.53	kgCO2e
Client's Total Carbon Footprint	231,503.49	kgCO2e