Path Net Zero

Platform Source Data

Path Net Zero (PNZ) ensure that the data sources that feed into the platform are only ever recognised, verified, factual and specific to the individual metrics. This document is designed to provide our partners an understanding to our philosophy and choice of resources.

CO2 vs CO2e

Firstly, there is an important distinction here to understand: CO2 is a calculation of core carbon dioxide emissions, whilst CO2e factors in other GHG (Green House Gasses) emissions too, for example Methane. Wherever the data allows, PNZ use CO2e data.

International Flights:

Our flight data is precise in its distance calculation by applying airport codes and their respective longitude and latitude coordinates.

We apply detailed data across primary and secondary airport information including location and origination/destination points where we extrapolate the data that includes private and public airports, airstrips, helipads, seaports, or distance only data.

Location example for Dallas Fort Worth (DFW):

"code": "DFW",

"icao": "KDFW",

"name": "Dallas/Fort Worth International Airport",

"latitude": 32.89746,

"longitude": -97.036125,

"elevation": 607,

We then apply accepted emissions data from the International Civil Aviation Organisation's data (ICAO), a specialised agency of the UN to the distance, type (international or domestic), and cabin class by number of passengers in order to calculate the footprint.

For cabin class, we apply the space occupied by a passenger, and apply that as a relative multiple to the footprint:

Cabin Class	Measurement	Journey
Economy	1 X Emissions	One Way/Return
Premium Economy	1.67 X Emissions	One Way/Return
Business	3.5 X Emissions	One Way/Return
First	5.5 X Emissions	One Way/Return

Domestic Flights:

An additional metric to domestic flights when using airstrips/water destinations (Safari/Maldives etc.) is the ability to apply the following:

CABIN CLASS	MEASUREMENT	Distance	JOURNEY
Economy	1 X Emissions	Specific airport code or KM to location	One Way/Return
Business	3.5 X Emissions		One Way/Return

Travel (Non-flight):

PNZ integrates transport data from the 2021 UK Department for Business, Energy & Industrial Strategy's (BEIS) conversion factor and deem this a most accurate and reliable source. Where available, PNZ apply localised data however, in any case where local data is available, we cross-check and validate with the BEIS factors.

BEIS factors has the most proven, thorough, and reliable emissions factors relating to transport. A key difference and reason for always attempting to source local data is that in some developing countries, the vehicles may be slightly less energy efficient. However, as yet, there a few reliable sources for markets in regions such as Asia and South America so PNZ have kept to the BEIS data.

This is the same approach used by the UN in many parts of their worldwide emissions calculations. Within the 'Info & Sources' information contained in the UN's reference notes they have published "based on the UK BEIS emissions factors from 2020" in their calculations. PNZ apply data from BEIS data from 2021.

Given these conversion factors are in measured in km and we offer an additional measurement of time spent in each transport type, we've assumed an average speed of 50km/h across the board.

PNZ have taken the carbon emissions data across the additional following modes of transport:

Land Vehicles:

Vehicle	Fuel Type					
	Unknown	Diesel	Petrol	Hybrid	Plug In Hybrid	EV
Average/Unknown	●					
Small (< 1.4L)	●	●	●	●	●	●
Medium (1.4L - 2.0L)	●	●	●	●	●	●
Large/4X4 (> 2.0L)	●	●	●	●	●	●
Minivan	●	●	●	●	●	●
Regular Taxi	●	●	●	●	●	●
Black Cab	●					

*NB: Passenger vehicles classified under the impact per vehicle, and all journeys are measured in **Km/Hours or One Way/Return***

Motorbike:

Vehicle	Distance	Journey
Average/Unknown	KM/Hours	One Way/Return
Small (> 125 cc)	KM/Hours	One Way/Return
Medium (125cc – 500cc)	KM/Hours	One Way/Return
Large (>500cc)	KM/Hours	One Way/Return
Tuk Tuk	KM/Hours	One Way/Return

NB: Passenger vehicles classified under the impact per vehicle.

Multi Occupancy Road Vehicles:

Bus/Coach:

Vehicle	Distance	Number of PAX	Journey
Local Bus (Inner City)	KM/Hours	Individual Journey	One Way/Return
Coach (National/International)	KM/Hours	Individual Journey	One Way/Return

NB: Multi Occupancy classified under the impact per PAX.

Rail:

Vehicle	Distance	Number of PAX	Journey
National	KM/Hours	Individual Journey	One Way/Return
International	KM/Hours	Individual Journey	One Way/Return
Light Rail/Tram	KM/Hours	Individual Journey	One Way/Return
Underground/Metro	KM/Hours	Individual Journey	One Way/Return

NB: Multi Occupancy classified under the impact per PAX.

Water Transport*:

Vehicle	Distance	Number of PAX	Journey
Foot Passenger	KM/Hours	Individual Journey	One Way/Return
Car Passenger	KM/Hours	Individual Journey	One Way/Return
Average	KM/Hours	Individual Journey	One Way/Return

NB: Multi Occupancy classified under the impact per PAX.

*2023 RELEASE: PLATFORM UPDATE SCHEDULED TO INCLUDE MULTIPLE WATERCRAFT INCLUSIVE OF INLAND SLATWATER, PONTOON AND OFFSHORE SALTWATER CRAFT.

Hotels:

For our hotel calculations PNZ use the Cornell University Hotel Sustainability Benchmarking Index, which is a thorough sustainability analysis of over 15,000 hotels worldwide.

Within this index, we extrapolate data specific to each region, and mediate the low, mean, or high values dependant on star rating (as per the applicable data set by the Hotel Carbon Measurement Initiative) measurement for C02e emissions. This is the industry-accepted way to measure Scope 1 & 2 emissions from hotels - noting this does not include Scope 3 e.g., indirect emissions from workforce travel (notoriously very hard to calculate without commissioning a private piece of research)

Scope 1	Scope 2	Scope 3
Direct emissions that come from an organisations operation and are under their control, including: ➢ Fuel combustion on site such as gas boilers ➢ Fleet vehicles ➢ Air Conditioning	Indirect emissions generated by the purchase of electricity, including: ➢ Steam ➢ Heating and cooling consumed by an organisation	Indirect emissions, including: ➢ Purchased goods and services ➢ Business travel, Employee commuting, Transportation, and distribution ➢ Waste disposal ➢ Investments ➢ Leased assets and franchises ➢ Use of sold products

Integrating data from the HCMI enables PNZ to calculate a clear, precise measurement by geography and room class (1–5-star accommodation) which then provides us the data where we take the Mean of Measure 1: HCMI Rooms Footprint Per Occupied Room (kgCO2e) in each star rating and room category within the available data set and apply the number of occupied nights.

An example hotel stay below covers **per room occupancy**, based on an **upper midscale segment** class of hotel room in Bangkok, Thailand utilising Hotel Sustainability Benchmarking Index 2021: Energy/Water/Carbon

MEASURE	Count	Low	Lower Quartile	Mean	Median	Upper Quartile	High	SD
HCMI Rooms Footprint Per Occupied Room (kgCO2e)	31	11	19	32	28	44	67	14

Food & Beverage:

For food & beverage data we have used the measurements set out in: **Poore, J., & Nemecek, T. (2018)** *Reducing food's environmental impacts through producers and consumers.*

To enable ease of calculation we have created general set meal plans to select from, and below are some examples:

	Meal Type					
	Breakfast (Vegan)	Breakfast (Vegetarian)	Breakfast (Meat)	Lunch/Dinner (Vegan)	Lunch/Dinner (Vegetarian)	Lunch/Dinner (Meat)
Bread/Pastry	●	●	●	●	●	●
Fruit	●	●	●	●	●	●
(Tea/Coffee)	●	●	●	●	●	●
Soft Drink	●	●	●	●	●	●
Pasta	●	●	●	●	●	●
Vegetables	●	●	●	●	●	●
Eggs		●	●		●	●
Milk		●	●		●	●
Cheese		●	●		●	●
Fish			●			●
Meat			●			●
Alcohol				●	●	●

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