

Your Carbon Tally

We each produce too much Carbon Dioxide in this country – about 10 tons each per year. The only safe way not to upset the balance of nature is to reduce that – drastically, and now! Could we manage on 1 ton each by 2050 or before? See how you and your household scores now: enter figures for your whole household then divide by the number of people therein. (Note: some figures are requested initially per household, others are for individuals. A car used by only one person counts as that person's emissions only.)

		One Ton of CO ₂ is about:	Number of tons
Domestic Fuels			
	Coal	7 sacks	
	Gas	£300 (exc standing charge) (5450 kWh)	
	Oil	400 litres, 80 gallons	
	Electricity	£650 (exc standing charge) (3255 kWh)	
	Wood	14 tons	
	LPG	2/3 cubic metre, 658 litres	
Travel		(1000 miles = 4 miles per day commute)	
	Car, vehicle miles based on 44mpg petrol, 48mpg diesel	4000 miles	
Passenger miles	Train	14,000 miles	
	Bus	6,000 miles	
	Coach	22,000 miles	
	Tram/Tube	16,000 miles	
	Taxi	4,000 miles	
	Air	1600 miles (ie Spain and back) UK – Miami return = 5 tons; to East Australia return 11 tons	
	Ferry: foot passenger car + driver	35,000 miles (or 250 returns across Irish Sea). 5,000 miles	
	Cruise	4 days	
Grand Total			

Notes

This is a rough and ready reckoner, we suggest you enter CO₂ no closer than to ½ ton. With 31% of UK energy used in the home, and 26% in transport, the general public has a lot under its control. (2001 figures.). It neglects contributions from industry, services, farming and landfill gas.

Air flights: www.futureforests.com/calculators/newflight4.asp, gives CO₂ emissions without a factor for radiative forcing. For that see www.chooseclimate.org

References: See "How We Can Save the Planet", by Mayer Hallman with Tina Fawcett, Penguin, ISBN 0141016922.

A lot of the factors have been derived from <https://www.carbonfootprint.com/calculator.aspx>. See that for a more precise calculation, with a lower factor for air travel (they've used a radiative forcing factor to double the CO₂eq, we've trebled the CO₂ eq.

<https://carbonintensity.org.uk/> gives instantaneous carbon intensity of electricity, with recommendations as to when to plug/unplug your car.

Ferry: not all ferries are equal!

Waste, for household

	One Ton of CO ₂ is about:	
Waste	2/3 of a wheelie-bin per fortnight (1.3 wheelie bins without compostables or recyclables)	

Food

	Each, tonnes CO ₂	Number of people	tonnes x people	After deductions *
Serious meat eaters (50% animal based)	2.25 tonnes			
Typical British diet (38% animal)	2 tonnes			
Lacto-vegetarians	1.4 tonnes			
Vegans	1 tonne			
Household Total				tonnes

***Deductions:** deduct 25% if all organic
 Deduct 0.4 tonnes per person if very little of your food is processed or imported.

Consumerism, Other Spending

	tonnes
All other spending: for every £2000, 1 tonne of CO ₂ (Think income minus what you've spent on energy, travel and food)	

Totals:

Fuel and Travel	
Waste	
Food	
Other spending	
TOTAL	
TOTAL PER PERSON*	

*You may prefer to allocate different emissions totals for different individuals. You may treat children as individuals, or adults may assume responsibility for the emissions of their progeny. Maybe it depends when the children start making lifestyle choices.

Notes

Some of the factors come from:

<https://calculator.carbonfootprint.com/calculator.aspx?tab=4>

10000 miles, average database.

Average diesel car, 147 g/km = 50mpg. 4200 miles

Large diesel 178 = 41mpg, 3500 miles

Medium diesel 143 = 52mpg, 4300 miles

Small diesel 120 = 62mpg, 5200 miles

Average petrol 152 = 44mpg 1 tonne = 4100 miles

Large petrol 235 = 29mpg, 1 tonne = 2600 miles

Medium petrol 160 = 42mpg, 1 tonne = 3900 miles

Small petrol 129 = 52mpg, 1 tonne = 4800 miles

Large motorbike 112/60mpg, medium 85/80mpg, small up to 125cc 70/97mpg

5500 miles, 7300 miles, 8900 miles

4000 miles for a tonne on a diesel car means emissions of 155gCO₂/km or 48mpg

4000 miles for a tonne on a petrol car means emissions of 155gCO₂/km or 44mpg

Uses 0.3072 kgCO₂/kWh of electricity. 1 tonne = 3255 kWh, from Good Energy that's £650 exc standing charge

Gas: 1000 kWh = 0.18 tonnes. 1 tonne = 5450 kWh

Oil 1000 litres = 2.54 tonnes. 1 tonne = 394 litres

Coal 10 tonnes = 28.82 tonnes. 1 tonne = 0.35 tonne, 7 sacks

LPG 1000 l = 1.52 tonnes. 1 tonne = 658 litres

Propane = 1.52

Wood 1 tonnes = 0.71 tonnes. 14.2 tonnes wood > 1 tonne CO₂

Manchester – Malaga return 0.32 tonnes, with RF 0.6 tonnes.

Public transport all 100000 miles

Bus 16.25	6000 miles
Coach 4.51	22000 miles
National rail 7.12	14000 miles
International rail 1.97	50000 miles
Tram 6.38	16000 miles
Tube 6.05	17000 miles
Taxi 24.69	4000 miles

For petrol engines divide 6760 by the car's MPG = gCO₂/km

For diesel engines divide 7440 by the car's MPG

All other spending – Pharmaceuticals, Clothes, textiles and shoes, Paper based products, Computers and IT, Television, radio and phone (equipment), Motor vehicles (excluding fuel), Furniture and other manufactured goods, Hotels, restaurants, and pubs etc, Telephone, mobile/cell phone call costs, Banking and finance, Insurance, Education, Recreational, cultural and sporting activities. These average out at about £2000 creates 1 tonne CO₂

By water:

Cruise (2 person standard cabin, 1000-2000 passengers) 4 days = 1 tonne

Ditto for <500 passenger vessel: 2 days = 1 tonne

> 3000 passengers: 5 days = 1 tonne

from <https://www.myclimate.org/compensate/>

discussion, esp on aviation emissions: https://www.drive-alive.co.uk/driving/relative_carbon_emissions.htm

I can't remember the figures for the Oscar Wilde (1458 passengers) off the top of my head, but Jonathan Swift consumes 5.3 tonnes per hour at 90% power, and the Val de Loire burned 75 tons

per day if she operated at 20kts in 24 hours. ...that's really interesting..so using the val de loire figures we could roughly say the oscar and celtic horizon would use 2-3 tonnes per hour all depending on weight, weather, speed etc etc.

oscar uses 55 tonnes hfo one way to cherbourg and about 45 to roscoff

from <https://www.irish-ferries-enthusiasts.com/forum/discussion-board/ferry-fuel-consumption/>
Holyhead – Dublin, Stena Line's Stena Superfast X and Stena Adventurer. About 3.5 hours each

Liverpool – Dublin: P+O don't do foot passengers! 8 hours each way.

Oscar Wilde: 19,800 kW, operational speed 21.5 kts. 1458 passengers, 1376 cabin berths. 62 freight vehicles on deck 3, about 250 passenger vehicles on deck 4. In the Med.

Stena Adventurer: travels at 20kn. Max 500 cars, 900 passengers.

Stena Superfast X Max 500 cars, 1200 passengers.

Stena Explorer, Dun Laoghaire to Holyhead, can do 40kts, but doesn't as it's gas turbine and fuel is expensive. It's been sold to Turkey as a floating office!

Ferry passengers and speeds: <https://www.irish-ferries-enthusiasts.com/stena-line/stena-line-fleet/>

https://en.wikipedia.org/wiki/High-speed_Sea_Service

Western Isles MV Larven, 42 passengers, up to 15kn, average 13.5kn.

<https://www.calmac.co.uk/fleet>

Figures from <https://www.bbc.co.uk/news/science-environment-49349566>

From BEIS/Defra Greenhouse Gas Conversion Factors 2019, g CO₂/passenger km

Domestic flights: 133 + 121 non-CO₂

Long Haul: 102 + 93

Car 1 passenger: 171

Bus 104

Car 4 passengers: 43

Domestic rail 41

Coach: 27

Eurostar: 6

ICAO excludes forcing in its calculators, Ecopassenger calculator (International railways Union and European Environment Agency) include it – but depends on height.

BEIS on ferries: 18g /pass km (29 g/pass mile) for a foot passenger, 128 g (206 g/pass miles) for driver and car. Very variable.

Cruises: Carnival Corporation and plc, which owns nine cruise lines, [says its 104 ships emit an average of 251g of carbon dioxide equivalent per "available lower berth" per kilometre.](https://carnivalsustainability.com/download-files/2018-carnival-sustainability-full.pdf)

(page 134 of <https://carnivalsustainability.com/download-files/2018-carnival-sustainability-full.pdf>)

Holyhead – Dublin is 73 miles, x2 x0.029 = 4.2 kg. x250 = 1 tons foot passenger commuting!

Using 128g: 30 kg, 7.5 tons car + driver commuting.

0.018 kg/pass km = 1 ton for 55,000 km, 35,000 miles

0.128 kg/pass km = 1 ton for 7800 km, 4900 miles.