Carbon Budgets and Individual Carbon Emissions — Updated Tables

Originally prepared 2013; updated April 2026

Table 1: Estimated Annual Per-Person Carbon Budget for 2°C Warming

The table below compares the 2013 figures with updated 2025 data. The 'equal per-person budget' is derived by dividing the remaining global carbon budget (50% chance of staying below 2°C) by world population and expressing it as an annual figure over the remaining budget period.

	CO2-e tonnes per year	
Category	**2013 figure**	**2025 update**
Equal per-person annual budget (50% chance of staying below 2°C warming)	4.1	**~3.4 [a]**
Recent average annual per person emissions — USA (all GHGs)	21.7	17.6 [b]
Recent average annual per person emissions — Australia (all GHGs)	14.0	22.0 [c]
Recent average annual per person emissions — Australia (excluding livestock & fugitive emissions) [c2]	—	**~12.6 [c2]**
Recent average annual per person emissions — UK (all GHGs)	11.7	5.8 [d]

Notes — Table 1

[a] The Global Carbon Budget 2024 (Friedlingstein et al., Global Carbon Project) estimates the remaining budget for a 50% chance of staying below 2°C at 1,110 GtCO2 from January 2025. Dividing by 8.1 billion people and spread over 27 years gives approximately 3.4 t CO2 per person per year as an equal per-person annual allocation. Note that the remaining 2°C budget has tightened significantly since 2013.

[b] USA: 17.6 t CO2e/person/year (2023). Source: EDGAR / European Commission, reported in CEIC Data.

[c] Australia: 22.0 t CO2e/person/year (2023) — the highest of any OECD country. Source: Our World in Data / OWID, Statista (November 2024). Note: the 2013 figure of 14.0 reflected CO2 only; the updated figure includes all GHGs (CO2, CH4, N2O, F-gases). Australia's high methane emissions from livestock and fugitive gas emissions account for much of the elevated total.

[c2] Australia excluding livestock & fugitive emissions: Australia's 2023 national GHG inventory total was approximately 459 Mt CO2e (DCCEEW, 2023). Agriculture contributed roughly 79 Mt CO2e (~17% of total, predominantly livestock methane and nitrous oxide), and fugitive emissions (methane leaks from coal mining and gas production) contributed roughly 45 Mt CO2e (~10%). Removing these two sectors gives approximately 335 Mt CO2e. Divided by Australia's population of ~26.6 million, this yields ~12.6 t CO2e per person per year — closer to what an average urban Australian directly drives through their energy use, transport, food choices and consumption, and more comparable to the basis on which USA and UK figures are typically reported.

[d] UK: territorial CO2 only ~4.5 t/person (2023); including all GHGs (territorial basis) ~5.8 t/person. Source: Global Carbon Project / Statista (November 2024). Note: consumption-based emissions (including imports) are higher at ~9.5 t CO2/person per carbonindependent.org. The 2013 figure of 11.7 was on a consumption-including basis; the updated figure here uses a comparable all-GHG territorial measure.

Key References — Table 1

Friedlingstein, P. et al. (2024). Global Carbon Budget 2024. Earth System Science Data. https://essd.copernicus.org/articles/17/965/2025/

Global Carbon Project (2024). Key Targets. https://globalcarbonbudget.org/key-targets/

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CEIC Data (2023). United States Greenhouse Gas Emissions: Tonnes of CO2 Equivalent per Capita. https://www.ceicdata.com/en/united-states/environmental-greenhouse-gas-emissions-annual

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DCCEEW (2023). National Greenhouse Gas Inventory Quarterly Updates. Australian Government Department of Climate Change, Energy, the Environment and Water. https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-gas-inventory-quarterly-update-september-2023

Wikipedia — Greenhouse gas emissions by Australia (sectoral breakdown). https://en.wikipedia.org/wiki/Greenhouse_gas_emissions_by_Australia

Table 2: Indicative Per-Person Per Annum CO2-e Contributions — Updated 2025

Figures are indicative and will vary with individual circumstances, location, and grid mix. Key changes since 2013: electricity figures lowered to reflect cleaner grids in all three countries; hybrid and electric vehicle rows added; flight figures revised using current DEFRA 2024 emission factors including radiative forcing.

Category	Detail / Example	CO2-e tonnes / yr	Notes / change since 2013
Food	Average vegan diet (all bought food)	1.5	Unchanged — consistent with multiple studies
	Average vegetarian diet (all bought food)	1.7	Unchanged
	Average omnivore diet (all bought food)	2.5–3.8	Upper end now better documented; 3.8 t/yr for omnivore vs 2.1 for vegan (Frontiers in Nutrition, 2025)
Electricity (if not renewable)	Average US household (per person)	2.2	Reduced from 2.8 — grid getting cleaner; US grid ~0.37 kg CO2/kWh (2023)
	Average Australia (per person)	2.0	Reduced from 2.6 — significant renewable growth; grid ~0.5 kg CO2/kWh (2023)
	Average UK (per person)	0.5	Reduced from 0.9 — UK grid now ~0.21 kg CO2/kWh (2023); major shift to wind/nuclear
Gas (heating, cooking)	Variable by climate and household size	Variable	Typically 0.5–2.0 t/yr; lower where heat pumps are replacing gas boilers
Car — petrol/diesel	Small car, 7 L/100 km, 15,000 km/yr	2.6	Unchanged
	Medium car, 9 L/100 km, 20,000 km/yr	4.6	Unchanged
Car — hybrid (HEV)	Medium hybrid car (~5 L/100 km), 20,000 km/yr	~2.5	New row. Hybrids ~40% less fuel; lifecycle CO2e approx. 2.5–3.0 t/yr [e]
Car — plug-in hybrid (PHEV)	PHEV driven ~50% on electric, 20,000 km/yr	~1.1	New row. US News (2024): ~2.2 t CO2e/yr lifecycle; lower in cleaner grids [e]
Car — battery electric (BEV)	Medium BEV, 20,000 km/yr (average grid)	~0.5–1.0	New row. Lifecycle 66–74% lower than petrol car in US (ICCT, 2024); varies by grid [e]
Flights *	1,000 km return, e.g. Sydney–Brisbane or London–Berlin (economy)	0.5	Unchanged
	4,000 km return, e.g. San Francisco–New York (economy)	1.1	Revised down from 2.0; based on DEFRA 2024 factors (~0.19 kg CO2e/pkm with RF)
	6,000 km return, e.g. Paris–New York or Sydney–Singapore (economy)	2.3	Revised down from 3.0; based on DEFRA 2024 factors
	17,000 km return, e.g. London–Sydney (economy)	6.0	Revised down from 8.0; based on DEFRA 2024 factors (~0.18 kg CO2e/pkm with RF)
Train	1,000 km return, e.g. London–Edinburgh or Sydney–Melbourne	0.12	Slightly revised from 0.16 — continued electrification improvements
Products & services	Variable — includes government services, manufactured goods	2.0+	Unchanged. Rarely below 2.0 t in US, UK or Australia

Notes — Table 2

* Flight calculations include radiative forcing (RF), which approximately doubles the warming impact of aviation emissions compared to CO2 alone, because emissions at altitude have additional effects (contrails, NOx). The UK government's DEFRA methodology applies an RF multiplier of ~1.9. This approach is consistent with the original 2013 table.

[e] EV/hybrid figures are lifecycle (well-to-wheel) annual estimates and depend heavily on the carbon intensity of the electricity grid. A BEV charged entirely on renewable energy approaches near-zero operational emissions, though manufacturing (especially battery production) adds ~12 t CO2e over the vehicle's lifetime. In the US in 2024, BEV lifecycle emissions are 66–74% lower than a comparable petrol car (ICCT, 2024).

Key References — Table 2

Frontiers in Nutrition (2025). Vegan diets can halve carbon footprints. https://www.frontiersin.org/news/2025/11/11/frontiers-nutrition-plant-based-diets-reduction-carbon-emissions-land-use

Shrink That Footprint (2023). The Carbon Foodprint of 5 Diets Compared. https://shrinkthatfootprint.com/food-carbon-footprint-diet/

DEFRA / UK Government (2024). Greenhouse Gas Conversion Factors 2024. https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024

International Council on Clean Transportation — ICCT (2024). Life-cycle greenhouse gas emissions of U.S. sedans and SUVs. https://theicct.org/wp-content/uploads/2024/07/ID-180-US-GHGs_brief_final.pdf

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