Carbon Conversion Factor Methodology 2026

This is a list of the emission conversion factors and methodology used on the IMPALA Carbon Calculator Tools for the purposes of calculating an organisation's carbon footprint.

The conversion factors are updated annually. For certain areas (e.g. estimated carbon footprint per unit manufactured), methodology and data availability is consistently evolving through the IMPALA Sustainability Taskforce and other external sources and will be refined over time. As a result, please be aware that you may notice some changes in your emissions recorded. These changes are made to bring greater accuracy and a more complete picture of your organisation's impacts.

The platform will use the conversion factors applicable to the financial/calendar year submitted by users when creating a report, based on best practice guidance for company reporting issued by the UK Department for Energy Security & Net Zero (DESNZ):

"You should use the version of the factors that correlates with the data on which you are reporting (for example, factors labelled as 2026 should be used for data from calendar year 2026). If you are reporting on an April to March year, the factors from the calendar year in which the greatest portion of your data falls should be applied (for example, the 2026 factors should be applied to data in the reporting year 01/04/26 – 31/03/27). Users that operate a July to June reporting year should apply the newest set of available factors."

Last updated: September 2026

Major Changes

Major changes to the conversion factors and methodology that will likely impact reporting companies.

The following table summarises the major changes in conversion factors and changes implemented across the IMPALA Carbon Calculator.

Any changes noted below impact the most recent methodology updates only, and do not impact previous years' reporting.

For DESNZ major factor changes, please refer to supporting documentation here.

Ref. Number	Conversion Factor	Unit	Reason for Change	Additional Information
Manufacturing Vinyl Factors - Update in 2025				
1	All vinyl factors within manufacturing	$kgCO_2e$ per unit	Updated methodology from the MCP and VA Supplier Programme Report - which explored the impact of vinyl manufacturing within 3 regions to provide labels more granular data on the carbon associated with vinyl manufacturing.	Additional information on the changes and methodology of the factors, can be found here.

Buildings:

Type	Name	Country	2026 Electricity Factor	2026 T&D Factor	Unit	Source	Notes
Energy	Mains Electricity Use Factors for Electricity Generation and Transmissions & Distribution Losses *The conversion factors used are determined by the country selected for the building location during set up.*	United Kingdom	0.13096	0.01299	$kgCO_2e$ per kWh	DESNZ (2026)	
		Austria	0.09421	0	$kgCO_2$ per kWh	Association of Issuing Bodies (AIB) (2026)	Production mix factor, excludes transmission and distribution losses. Figures given for CO2 only (not CO2e). (Base data year: 2023).
		Belgium	0.12186	0	$kgCO_2$ per kWh		
		Bulgaria	0.33095	0	$kgCO_2$ per kWh		
		Croatia	0.13735	0	$kgCO_2$ per kWh		
		Cyprus	0.47626	0	$kgCO_2$ per kWh		
		Czech Republic	0.51029	0	$kgCO_2$ per kWh		
		Denmark	0.04179	0	$kgCO_2$ per kWh		
		Estonia	0.3173	0	$kgCO_2$ per kWh		
		Finland	0.02419	0	$kgCO_2$ per kWh		
		France	0.0137	0	$kgCO_2$ per kWh		
		Germany	0.30494	0	$kgCO_2$ per kWh		
		Greece	0.22511	0	$kgCO_2$ per kWh		
		Hungary	0.14086	0	$kgCO_2$ per kWh		

		Iceland	0.0002	0	$kgCO_2$ per kWh		
		Ireland	0.24436	0	$kgCO_2$ per kWh		
		Italy	0.22504	0	$kgCO_2$ per kWh		
		Latvia	0.14553	0	$kgCO_2$ per kWh		
		Lithuania	0.13586	0	$kgCO_2$ per kWh		
		Luxembourg	0.04489	0	$kgCO_2$ per kWh		
		Malta	0.39785	0	$kgCO_2$ per kWh		
		Netherlands	0.24016	0	$kgCO_2$ per kWh		
		Norway	0.00569	0	$kgCO_2$ per kWh		
		Poland	0.60572	0	$kgCO_2$ per kWh		
		Portugal	0.07519	0	$kgCO_2$ per kWh		
		Romania	0.22041	0	$kgCO_2$ per kWh		
		Slovak Republic	0.08704	0	$kgCO_2$ per kWh		
		Slovenia	0.15783	0	$kgCO_2$ per kWh		
		Spain	0.10599	0	$kgCO_2$ per kWh		
		Sweden	0.00489	0	$kgCO_2$ per kWh		

		Switzerland	0.00725	0	$kgCO_2$ per kWh		
		Australia	0.62	0.07	$kgCO_2e$ per kWh	Department of Climate Change, Energy, the Environment and Water (DCCEEW), Australian Government (2025)	Total Production fuel mix factor inc. Generation (Scope 2) and Transmission & Distribution (Scope 3). (Base data year: 2023)
		Brazil	0.10638	0.01873	$kgCO_2$ per kWh	Carbon Database Initiative (2026)	Electricity Generation Emissions Factor (Scope 2) and T&D Factor (Scope 3) (Base data year: 2022)
		Canada	0.1	0	$kgCO_2e$ per kWh	Environment and Climate Change Canada, Government of Canada (2026)	Generation only (Transmission & Distribution marked as 0, Negligible). (Base data year: 2022)
		United States	0.34967	0.01533	$kgCO_2e$ per kWh	USEPA (2025b)	Total Production fuel mix factor. Generation (Scope 2) and Transmission & Distribution (Scope 3) derived using Grid Gross Loss (%) from EPA eGrid Summary Tables. – US Average. (Base data year: 2022)
		A note on 'Green Tariff' electricity: although the IMPALA Tools allow users to indicate whether they are on a 'Green Tariff,' *this does not change the company carbon footprint result*. This is because the carbon conversion factor for grid electricity is calculated on the basis of all energy generation feeding into the grid (i.e. the climate benefits of renewable energy are already included in the overall average for *all* grid users).					

Type	Name	Country	2026 Factor	Unit	Source	Notes
Energy	Mains Gas Use	All countries	0.18231	$kgCO_2e$ per kWh	DESNZ (2026)	Natural gas (Gross CV).
		United States	0.18215	$kgCO_2e$ per kWh	USEPA (2025a)	Natural gas. CO2e figure derived using GWP of CH4 and N20 provided.
	Onsite renewables	All countries	0	$kgCO_2e$ per kWh	N/A	Julie's Bicycle zero rate all renewable electricity sources, in recognition of exclusion of life cycle emissions from fossil fuel conversion factors.
	District Heating	United Kingdom *Also used for all other countries except Germany.*	0.17529	$kgCO_2e$ per kWh	DESNZ (2026)	Heat and steam > District heat and steam. Conversion factors are based on an industry average fuel mix for combined heat and power (CHP) based heat and steam. In future, the IMPALA Tools may allow users to enter supplier-specific data for carbon intensity per kWh.
		Germany	0.298	$kgCO_2e$ per kWh	NRW Energy4Climate	Personal correspondence.
	Bottled Gas	All countries	1.55713	$kgCO_2e$ per litre	DESNZ (2026)	Liquefied Petroleum Gas.
		United States	1.50707	$kgCO_2e$ per litre	USEPA (2025a)	Liquefied Petroleum Gases (LPG). CO2e figure derived using GWP of CH4 and N20 provided.
	Oil	All countries	3.07094	$kgCO_2e$ per litre	DESNZ (2026)	Burning oil. Well-to-tank included in factor
		United States	2.69036	$kgCO_2e$ per litre	USEPA (2025a)	Kerosene. CO2e figure derived using GWP of CH4 and N20 provided.
	Oil – Well-to-Tank	All countries	0.53078	$kgCO_2e$ per litre	DESNZ (2026)	Burning oil.
		United States	0	$kgCO_2e$ per litre	USEPA (2025a)	No well-to-tank figure provided by source.

Water	Water use (water supply)	All countries	0.19130	$kgCO_2e$ per cubic metre	DESNZ (2026)	Note these values are based on UK average carbon intensity for the water supply and treatment system, however should nonetheless provide an indicative value in other countries, especially given the comparatively small carbon impact of water consumption. Water conservation measures are still valuable for reducing overall environmental impact, especially in water-stressed countries.
	Waste water (water treatment)	All countries	0.17088	$kgCO_2e$ per cubic metre	DESNZ (2026)	
Waste	Landfill - Commercial and industrial waste (Landfill)	All countries	520.58023	net $kgCO_2e$ per tonne	DESNZ (2026)	Note these values are based on UK average carbon intensity for waste treatment services. We will keep their use under review for other countries, subject to availability of transparent and verifiable carbon conversion factors. Where companies are unable to provide waste figures by weight, the Tools use approximate volume (e.g. bin bags, skips) and density to estimate weights.
	Recycling – Paper and board: mixed; Plastics: average plastics; Metal: mixed cans; Glass (Average of Closed-loop)	All countries	4.65358	net $kgCO_2e$ per tonne	DESNZ (2026)	
	Energy (Incineration) - Commercial and industrial waste (Combustion)	All countries	4.65358	net $kgCO_2e$ per tonne	DESNZ (2026)	
	Composting – Organic: food and drink waste (Composting)	All countries	9.00687	net $kgCO_2e$ per tonne	DESNZ (2026)	

Note: Homeworking does not have specific set factors. The conversion factors used are determined by the country selected for the building location during set up. The Tools then use the following formulas derived from the *Homeworking Emissions Whitepaper* (EcoAct (2020)):

Home Office Equipment:

Working Hours x 0.15 kWh x (Country Electricity Conversion Factor + Country Transmission & Distribution Conversion Factor)

Home Heating:

Working Hours x 3.33333 kWh x Country Gas Conversion Factor

Digital Emissions

Digital emissions do not have specific set factors. The conversion factors used are determined by the location of the servers hosting the website or cloud storage. The tools use the following methodology as factored from carbon accountancy Greenly. Cloud Storage and website factors are based on an approximation of ~ 0.0078 kWh/GB-month devised by Greenly, which was calculated from declared power usage efficiencies by cloud service providers such as AWS.

Website Storage:

Total emissions = Volume (GB) x 12 x CloudStorage (0.0078*) x Grid Energy (Country Electricity factor; UK by default)

Cloud Storage
Total emissions = Volume (GB) x Duration (Months) x CloudStorage (0.0078*) x Grid Energy (Country Electricity factor; UK by default)

Business Travel, Artist Travel, Commuter Travel:

Type	Name	Country	2026 Factor	Unit	Source	Notes
Fuel	Diesel	All countries	3.28564	$kgCO_2e$ per litre	DESNZ (2026)	100% mineral diesel. Conversion factor inclusive of well-to-tank emissions.
	Petrol	All countries	2.96036	$kgCO_2e$ per litre	DESNZ (2026)	100% mineral petrol. Conversion factor inclusive of well-to-tank emissions.
Road Travel	Petrol car (distance)	All countries	0.16152	$kgCO_2e$ per vehicle km	DESNZ (2026)	Cars (by size) > Average car > Petrol.
	Diesel car (distance)	All countries	0.17265	$kgCO_2e$ per vehicle km	DESNZ (2026)	Cars (by size) > Average car > Diesel.
	Hybrid car (distance)	All countries	0.12961	$kgCO_2e$ per vehicle km	DESNZ (2026)	Cars (by size) > Average car > Hybrid.
	Regular taxi (distance)	All countries	0.20806	$kgCO_2e$ per vehicle km	DESNZ (2026)	Taxis > Regular taxi.
	Coach	All countries	0.03948	$kgCO_2e$ per passenger km	DESNZ (2026)	Bus > Coach.
	Bus	All countries	0.10151	$kgCO_2e$ per passenger km	DESNZ (2026)	Bus > Average local bus.
	Car travel (spend)	All countries	0.38736	$kgCO_2e$ per £	Own calculations + BEIS	This estimate is based on the official UK government mileage reimbursement rate of £0.45 per mile, using the conversion factor for an average petrol car. Spend-based figures are always rough estimates that may vary between territories based on local costs. If your business has a set mileage rate to reimburse employee travel, we would suggest instead dividing your total

						annual spend on employee car travel reimbursement by this to obtain an actual distance travelled by car; or if you reimburse employee car travel based on fuel receipts, dividing your total annual spend on employee car travel reimbursement by the average cost of fuel per litre in your country to obtain a figure of fuel in L. Tool uses a conversion of 1 EUR to 0.84 GBP and 1 USD = 0.782 GBP
	Taxi travel (spend)	All countries	0.12841	$kgCO_2e$ per £	Own calculations + private correspondence	This figure is based on actual information from several companies' private hire records where spend and mileage were available. Spend-based figures are always rough estimates that may vary between territories based on local costs. We will keep this estimate under review as more data becomes available.
Rail Travel	Train (distance)	All countries	0.03092	kgCO2e per passenger km	DESNZ (2026)	Note this is based on the value for UK National Rail. The carbon intensity of rail travel can vary between countries in Europe depending on whether trains are electrified or not, and the electricity mix of the countries they are travelling through. For

						example, Thalys has published a value of 0.0086 kg CO_2e/passenger km in their 2017 carbon footprint report (Source), however as this value pertains to a single train operator we have for now chosen to continue using UK averages. We will keep their use under review for other countries, subject to availability of transparent and verifiable carbon conversion factors.
	Train (spend)	All countries	0.93	kg CO_2e per £	Defra and DECC (2012)	Supply chain emission factors for spending on products > Railway Transport.
Air Travel	International flights average	All countries	0.14253	kgCO2e per passenger km	DESNZ (2026)	Flights > International, to/from non-UK > Average passenger > With RF (radiative forcing).
	International flights economy	All countries	0.10916	kgCO2e per passenger km	DESNZ (2026)	Flights > International, to/from non-UK > Economy class > With RF (radiative forcing).
	International flights premium economy	All countries	0.17465	kgCO2e per passenger km	DESNZ (2026)	Flights > International, to/from non-UK > Premium economy class > With RF (radiative forcing).
	International flights business	All countries	0.31656	kgCO2e per passenger km	DESNZ (2026)	Flights > International, to/from non-UK > Business class > With RF (radiative forcing).
	International flights first class	All countries	0.43663	kgCO2e per passenger km	DESNZ (2026)	Flights > International, to/from non-UK > First class > With RF (radiative forcing).

	Air travel (spend)	All countries	2.86	$kgCO_2e$ per £	Defra and DECC (2012)	Supply chain emission factors for spending on products > Air Transport.
Accommodation	Hotel night	All countries	18.8	$kgCO_2$ per room per night	DESNZ (2025)	Carbon conversion factors published by DESNZ are specific to certain countries. Due to the difficulty associated with keeping business travel records to the level of detail of # hotel nights spent in different countries, we have chosen to use a figure of kg CO_2 per night based on an average of all the country-specific figures published by DESNZ for European countries

Distribution:

Type	Name	Country	2026 Factor	Unit	Source	Notes
Freight	Van freight	All countries	0.63511	$kgCO_2e$ per tonne.km	DESNZ (2026)	Average diesel van (up to 3.5 tonnes) – based on UK average load and fleet but assessed to be a valid proxy for other territories in the absence of EU-wide conversion factors.
	Trucking freight – Average rigid	All countries	0.19947	$kgCO_2e$ per tonne.km	DESNZ (2026)	Freighting Goods > HGV (non-refrigerated,all diesel) > Average non-refrigerated rigids > Average Laden) – based on UK average load and fleet but assessed to be a valid proxy for other territories in the absence of EU-wide conversion factors.
	Trucking freight – Average articulated	All countries	0.07926	$kgCO_2e$ per tonne.km	DESNZ (2026)	Freighting Goods > HGV (non-refrigerated,all diesel) > Average non-refrigerated artics > Average Laden – based on UK average load and fleet but assessed to be a valid proxy for other territories in the absence of EU-wide conversion factors.
	Trucking freight - All HGVs	All countries	0.10356	$kgCO_2e$ per tonne.km	DESNZ (2026)	Freighting Goods > HGV (non-refrigerated,all diesel) > Average non-refrigerated HGVs > Average Laden (if unknown whether rigid or articulated) – based on UK average load and fleet but assessed to be a valid

						proxy for other territories in the absence of EU-wide conversion factors.
		United States	0.12853	$kgCO_2e$ per tonne.km	USEPA (2025a)	Medium- and Heavy-Duty Truck: includes Combination Trucks and single frame trucks that have 2-Axles and at least 6 tires or a gross vehicle weight rating exceeding 10,000 lbs. CO2e figure derived using GWP of CH4 and N20 provided.
	Air freight	All countries	0.89939	$kgCO_2e$ per tonne.km	DESNZ (2026)	Freight flights > International, to/from non-UK > With RF (radiative forcing).
	Sea freight	All countries	0.01612	$kgCO_2e$ per tonne.km	DESNZ (2026)	Cargo ship > Container ship > Average.
	Rail freight	All countries	0.02779	$kgCO_2e$ per tonne.km	DESNZ (2026)	Note this is based on the value for UK rail freight. The carbon intensity of rail travel can vary between countries in Europe depending on whether trains are electrified or not, and the electricity mix of the countries they are travelling through – however there is a lack of transparent, publicly available rail freight conversion factors at the European level. We will keep the use of UK factors under review for other countries, subject to availability of

						transparent and verifiable carbon conversion factors.
		United States	0.01451	$kgCO_2e$ per tonne.km	USEPA (2025a)	CO2e figure derived using GWP of CH4 and N20 provided.

Manufacturing:

Type	Name	Country	2026 Factor	Unit	Source	Notes
CDs	Softpack/digifile (100% card packaging) - single	All countries	0.493	$kgCO_2e$ per unit	Own calculations based on various: ICE V2 and V3 (2019); Umweltbundesamt (2020); Koomey (2010); JB & Arup (2009)	Estimated on the basis of: (1) Carbon embodied in CD material by weight – aluminium, polycarbonate, solvent. Material conversion factors used from *The Inventory of Carbon and Energy* (also known as the ICE database) by Circular Ecology, originally published by the University of Bath. (2) Carbon embodied in packaging material by weight – paperboard conversion factor used from ICE database. (3) Fabrication energy for CD, kWh estimated from Weber, Koomey and Matthews *The Energy and Climate Change Implications of Different Music Delivery Methods.* Assumed manufacturing location is Germany; this may change for future versions. The per-unit variance compared to other manufacturing locations is around -20% to +15% but labels are not all in a position to report down to manufacturing location level.

						(4) Fabrication energy for CD packaging, based on Arup + Julie's Bicycle, *Reducing the Carbon Emissions of CD packaging.* Assumed manufacturing location is Germany; this may change for future versions. The per-unit variance compared to other manufacturing locations is ca 10-15%.
	Softpack/digifile (100% card packaging) - double	All countries	0.791	$kgCO_2e$ per unit	Own calculations based on various: ICE V2 and V3 (2019); Umweltbundesamt (2020); Koomey (2010); JB & Arup (2009)	As above, but with CD embodied materials and fabrication energy doubled and proportional upwards adjustment for packaging weight.
	Digipack (card/plastic mix packaging) - single	All countries	0.561	$kgCO_2e$ per unit	Own calculations based on various: ICE V2 and V3 (2019); Umweltbundesamt (2020); Koomey (2010); JB & Arup (2009)	Estimated on the basis of: (1) Carbon embodied in CD material by weight – aluminium, polycarbonate, solvent. Material conversion factors used from *The Inventory of Carbon and Energy* (also known as the ICE database) by Circular Ecology, originally published by the University of Bath. (2) Carbon embodied in packaging material by weight –

						paperboard and polystyrene conversion factors used from ICE database. (3) Fabrication energy for CD, kWh estimated from Weber, Koomey and Matthews *The Energy and Climate Change Implications of Different Music Delivery Methods.* Assumed manufacturing location is Germany; this may change for future versions. (4) Fabrication energy for CD packaging, based on Arup + Julie's Bicycle, *Reducing the Carbon Emissions of CD packaging.* Assumed manufacturing location is Germany; this may change for future versions.
	Digipack (card/plastic mix packaging) – double	All countries	0.954	$kgCO_2e$ per unit	Own calculations based on various: ICE V2 and V3 (2019); Umweltbundesamt (2020); Koomey (2010); JB & Arup (2009)	As above, but with CD embodied materials and fabrication energy doubled and proportional upwards adjustment for packaging weight (including doubling of polystyrene plastic tray).
	Jewel case (plastic packaging) - single	All countries	1.3	$kgCO_2e$ per unit	Own calculations based on various: ICE V2 and V3	Estimated on the basis of:

					(2019); Umweltbundesamt (2020); Koomey (2010); JB & Arup (2009); Private correspondence	(1) Carbon embodied in CD material by weight – aluminium, polycarbonate, solvent. Material conversion factors used from *The Inventory of Carbon and Energy* (also known as the ICE database) by Circular Ecology, originally published by the University of Bath. (2) Carbon embodied in packaging material by weight – paperboard and polystyrene conversion factors used from ICE database. (3) Fabrication energy for CD, kWh estimated from Weber, Koomey and Matthews *The Energy and Climate Change Implications of Different Music Delivery Methods.* Assumed manufacturing location is Germany; this may change for future versions. (4) Fabrication energy for CD packaging, based on Arup + Julie's Bicycle, *Reducing the Carbon Emissions of CD packaging.* Assumed manufacturing location is Germany; this may change for future versions.

						Adjusted upwards based on additional data received from manufacturers.
	Jewel case (plastic packaging) - double	All countries	2.145	$kgCO_2e$ per unit	Own calculations based on various: ICE V2 and V3 (2019); Umweltbundesamt (2020); Koomey (2010); JB & Arup (2009); Private correspondence	As above, but with CD embodied materials and fabrication energy doubled and proportional upwards adjustment for packaging weight.
	Clambox (card)	All countries	0.534	$kgCO_2e$ per unit	Own calculations based on various: ICE V2 and V3 (2019); Umweltbundesamt (2020); Koomey (2010); JB & Arup (2009)	Estimated on the basis of: (1) Carbon embodied in CD material by weight – aluminium, polycarbonate, solvent. Material conversion factors used from *The Inventory of Carbon and Energy* (also known as the ICE database) by Circular Ecology, originally published by the University of Bath. (2) Carbon embodied in packaging material by weight – paperboard conversion factors used from ICE database. (3) Fabrication energy for CD, kWh estimated from Weber, Koomey and Matthews *The Energy and Climate Change Implications of Different Music Delivery Methods.* Assumed

						manufacturing location is Germany; this may change for future versions. (4) Fabrication energy for CD packaging, based on Arup + Julie's Bicycle, *Reducing the Carbon Emissions of CD packaging.* Assumed manufacturing location is Germany; this may change for future versions.
	Other	All countries	0.968	$kgCO_2e$ per unit	Own calculations based on various: ICE V2 and V3 (2019); Umweltbundesamt (2020); Koomey (2010); JB & Arup (2009)	Average of all other packaging types across both single and double albums to account for variety of custom packaging and/or unknown packaging types.
Vinyl	12-inch 180 gram vinyl - single	North America Europe Global	1.6123 1.0466 1.3037	$kgCO_2e$ per unit	Music Climate Pact and Vinyl Alliance Supplier Programme Report (2025)	Updated vinyl factors inclusive of print and packaging emissions.
	12-inch 180 gram vinyl - double	North America Europe Global	3.2246 2.0931 2.6074	$kgCO_2e$ per unit	Music Climate Pact and Vinyl Alliance Supplier Programme Report (2025)	Updated vinyl factors inclusive of print and packaging emissions.

	12-inch 180 gram vinyl - 3LP	North America Europe Global	4.8369 3.1397 3.9111	$kgCO_2e$ per unit	Music Climate Pact and Vinyl Alliance Supplier Programme Report (2025)	Updated vinyl factors inclusive of print and packaging emissions.
	12-inch 180 gram vinyl - 4LP	North America Europe Global	6.4491 4.1863 5.2149	$kgCO_2e$ per unit	Music Climate Pact and Vinyl Alliance Supplier Programme Report (2025)	Updated vinyl factors inclusive of print and packaging emissions.
	12-inch 180 gram vinyl - 5LP	North America Europe Global	8.0614 5.2329 6.5186	$kgCO_2e$ per unit	Music Climate Pact and Vinyl Alliance Supplier Programme Report (2025)	Updated vinyl factors inclusive of print and packaging emissions.
	12-inch 140 gram vinyl - single	North America Europe Global	1.254 0.814 1.014	$kgCO_2e$ per unit	Music Climate Pact and Vinyl Alliance Supplier Programme Report (2025)	Updated vinyl factors inclusive of print and packaging emissions.
	12-inch 140 gram vinyl - double	North America Europe Global	2.508 1.628 2.028	$kgCO_2e$ per unit	Music Climate Pact and Vinyl Alliance Supplier Programme Report (2025)	Updated vinyl factors inclusive of print and packaging emissions.
	12-inch 140 gram vinyl - 3LP	North America Europe	3.762 2.442	$kgCO_2e$ per unit	Music Climate Pact and Vinyl Alliance Supplier	Updated vinyl factors inclusive of print and packaging emissions.

		Global	3.042		Programme Report (2025)	
	12-inch 140 gram vinyl - 4LP	North America Europe Global	5.016 3.256 4.056	$kgCO_2e$ per unit	Music Climate Pact and Vinyl Alliance Supplier Programme Report (2025)	Updated vinyl factors inclusive of print and packaging emissions.
	12-inch 140 gram vinyl - 5LP	North America Europe Global	6.27 4.07 5.07	$kgCO_2e$ per unit	Music Climate Pact and Vinyl Alliance Supplier Programme Report (2025)	Updated vinyl factors inclusive of print and packaging emissions.
	7-inch vinyl	North America Europe Global	0.7315 0.4748 0.5915	$kgCO_2e$ per unit	Music Climate Pact and Vinyl Alliance Supplier Programme Report (2025)	Updated vinyl factors inclusive of print and packaging emissions.
Merch	T-shirt	All countries	7	$kgCO_2e$ per unit	Carbon Trust (2011)	Full lifecycle estimate in the study is 15kg, of which raw materials, fibre/textile production, clothing production, is ~6kg (remainder is distribution, retail, consumer use + recycling). As we have limited CD and vinyl impacts to a cradle-to-gate boundary, we have also taken this approach for merchandise.

Overstock Destruction	CDs - Landfill - Commercial and industrial waste (Landfill)	All countries	520.58023	$kgCO_2e$ per tonne	DESNZ (2026)	Note this value is based on the carbon emissions from waste treatment facilities in the UK. We will keep its use under review for other countries, subject to availability of transparent and verifiable carbon conversion factors. Where companies are unable to provide specific weights and instead provide number of units, we estimate a total weight of 70g per CD with packaging.
	CDs - Energy (Incineration) - Commercial and industrial waste (Combustion)	All countries	4.65358	$kgCO_2e$ per tonne	DESNZ (2026)	Note this value is based on the carbon emissions from waste treatment facilities in the UK. We will keep its use under review for other countries, subject to availability of transparent and verifiable carbon conversion factors. Where companies are unable to provide specific weights and instead provide number of units, we estimate a total weight of 70g per CD with packaging.
	CDs – Recycling – Paper and board: mixed; Plastics: average plastics; Metal: mixed cans;	All countries	4.65358	$kgCO_2e$ per tonne	DESNZ (2026)	Note this value is based on the carbon emissions from waste treatment facilities in the UK. We will keep its use under review for other countries,

	Glass (Average of Closed-loop)					subject to availability of transparent and verifiable carbon conversion factors. Where companies are unable to provide specific weights and instead provide number of units, we estimate a total weight of 70g per CD with packaging.
	Vinyl - Landfill - Commercial and industrial waste (Landfill)	All countries	520.58023	$kgCO_2e$ per tonne	DESNZ (2026)	Note this value is based on the carbon emissions from waste treatment facilities in the UK. We will keep its use under review for other countries, subject to availability of transparent and verifiable carbon conversion factors. Where companies are unable to provide specific weights and instead provide number of units, we estimate a total weight of 260g per record with packaging.
	Vinyl - Energy (Incineration) - Commercial and industrial waste (Combustion)	All countries	4.65358	$kgCO_2e$ per tonne	DESNZ (2026)	Note this value is based on the carbon emissions from waste treatment facilities in the UK. We will keep its use under review for other countries, subject to availability of transparent and verifiable carbon conversion factors.

						Where companies are unable to provide specific weights and instead provide number of units, we estimate a total weight of 260g per record with packaging.
	Vinyl - Recycling – Paper and board: mixed; Plastics: average plastics; Metal: mixed cans; Glass (Average of Closed-loop)	All countries	4.65358	$kgCO_2e$ per tonne	DESNZ (2026)	Note this value is based on the carbon emissions from waste treatment facilities in the UK. We will keep its use under review for other countries, subject to availability of transparent and verifiable carbon conversion factors. Where companies are unable to provide specific weights and instead provide number of units, we estimate a total weight of 260g per record with packaging.
	T-shirts - Landfill - Commercial and industrial waste (Landfill)	All countries	520.58023	$kgCO_2e$ per tonne	DESNZ (2026)	Note this value is based on the carbon emissions from waste treatment facilities in the UK. We will keep its use under review for other countries, subject to availability of transparent and verifiable carbon conversion factors. Where companies are unable to provide specific weights and instead provide number of units, we estimate a total weight of 150g per t-shirt.

	T-shirts - Energy (Incineration) - Commercial and industrial waste (Combustion)	All countries	4.65358	$kgCO_2e$ per tonne	DESNZ (2026)	Note this value is based on the carbon emissions from waste treatment facilities in the UK. We will keep its use under review for other countries, subject to availability of transparent and verifiable carbon conversion factors. Where companies are unable to provide specific weights and instead provide number of units, we estimate a total weight of 150g per t-shirt.
	T-shirts - Recycling – Paper and board: mixed; Plastics: average plastics; Metal: mixed cans; Glass (Average of Closed-loop)	All countries	4.65358	$kgCO_2e$ per tonne	DESNZ (2026)	Note this value is based on the carbon emissions from waste treatment facilities in the UK. We will keep its use under review for other countries, subject to availability of transparent and verifiable carbon conversion factors. Where companies are unable to provide specific weights and instead provide number of units, we estimate a total weight of 150g per t-shirt.

Other:

Type	Name	Country	2026 Factor	Unit	Source	Notes
Office furnishing and fitting	Office furnishing and fitting	All countries	0.48	$kgCO_2e$ per £	Defra and DECC (2012), Centre for Sustainability Accounting (CenSA), Leeds, UK	Spend on 'Furniture, other manufactured goods, recycling services' related to UK SIC codes 36, 37. Tool uses a conversion of 1 EUR to 0.84 GBP and 1 USD = 0.782 GBP Spend-based carbon conversion factors are necessarily indicative only. We have also consulted the Quantis GHG Protocol Scope 3 Evaluator spend-based categories, however have opted to use Defra as the nearest Quantis categories ('general construction') are less specific, and there is little difference in the age of the data set.
Equipment	Office equipment	All countries	0.53	$kgCO_2e$ per £	Defra and DECC (2012), Centre for Sustainability Accounting (CenSA), Leeds, UK	Spend on 'Office machinery and computers' related to UK SIC codes 30. Tool uses a conversion of 1 EUR to 0.84 GBP and 1 USD = 0.782 GBP Spend-based carbon conversion factors are necessarily

						indicative only. We have also consulted the Quantis GHG Protocol Scope 3 Evaluator spend-based categories, however have opted to use Defra as the nearest Quantis categories ('electrical and optical equipment') are less specific, and there is little difference in the age of the data set.
	Studio & audio equipment	All countries	0.48	$kgCO_2e$ per £	Defra and DECC (2012), Centre for Sustainability Accounting (CenSA), Leeds, UK	Spend on 'Radio, television and communications' related to UK SIC codes *32.20/2 Manufacture of radio and electronic capital goods* and *32.30 Manufacture of television and radio receivers, sound or video recording or reproducing apparatus and associated goods*. Tool uses a conversion of 1 EUR to 0.84 GBP and 1 USD = 0.782 GBP Spend-based carbon conversion factors are necessarily indicative only. We have also consulted the Quantis GHG Protocol Scope 3 Evaluator spend-based categories, however have opted to use Defra as the nearest Quantis categories ('electrical

						and optical equipment') are less specific, and there is little difference in the age of the data set.
Transport – company owned	Company cars (purchased)	All countries	0.70	$kgCO_2e$ per £	Defra and DECC (2012), Centre for Sustainability Accounting (CenSA), Leeds, UK	Tool uses a conversion of 1 EUR to 0.84 GBP and 1 USD = 0.782 GBP Spend-based carbon conversion factors are necessarily indicative only.
Marketing	Printing & publishing (physical marketing materials, posters, etc.)	All countries	0.36	$kgCO_2e$ per £	Defra and DECC (2012), Centre for Sustainability Accounting (CenSA), Leeds, UK	Spend on 'Printing and publishing' related to UK SIC codes 22. Tool uses a conversion of 1 EUR to 0.84 GBP and 1 USD = 0.782 GBP Spend-based carbon conversion factors are necessarily indicative only.

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