



Humí Methodology:

How a Tour Carbon Footprinting Tool
Measures Carbon Emissions

Introduction

Humí is developed by [Sustainable Travel International](#), a Public Benefit Corporation that has been building carbon footprint methodologies for the tourism sector for over 20 years.

Humí takes a tour itinerary — a web page or a PDF — and produces a carbon footprint for the trip it describes. This document explains how that figure is produced, what it assumes, and how far it can be relied on. The Annex maps every emission category to its factor source, the parameters applied, and how emissions are shared. Where this document references calculations developed in-house rather than drawn from a published external source, they are marked "Proprietary."

A detailed technical version, including emission factor values and equipment specifications, is available to enterprise clients and auditors under a non-disclosure agreement (§9).

Common questions: What travel class do you assume? (§4) · Does the footprint include a traveler's flights to the start of the tour? (§5) · What happens when the itinerary doesn't name the hotel? (§4, §7) · Can you use electric vehicles? (§7) · How do we derive our Humí Score? (§6)

Key Terms

- **Activity data** — the physical quantity that is measured: a flight distance, a room-night, a vehicle-kilometer, a meal. The methodology is activity-based — every figure begins from a physical quantity, never from cost.
- **Block hour** — the time an aircraft is under power, from leaving the stand to arriving at the next one, including taxi. Charter and private aircraft are measured on fuel burned per block hour rather than per passenger-kilometer.
- **Carbon dioxide equivalent (CO₂e)** — the amount of a greenhouse gas (GHG) whose atmospheric impact equals one unit mass of carbon dioxide (CO₂), based on the gas's global warming potential (GWP). It lets emissions of different gases be added on one scale.
- **Circuity factor** — the ratio between the distance actually traveled and the straight line between two points. Where a route cannot be resolved, a published circuity factor converts straight-line distance into a realistic traveled distance — 1.74 by road, 1.10 by water.
- **Emission factor** — a published figure for how much CO₂e one unit of activity produces (kg CO₂e per km, per room-night, per meal).
- **Humí Score** — the share of a footprint's input facts that came from your itinerary rather than an industry-standard default (§6). It describes where data came from, not how accurate the result is.
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- **Load factor** — how full a vehicle is, as a share of its capacity. Per-passenger factors embed an average load factor, so a service running emptier than that average emits more per passenger than the factor states.
- **Metric ton (t)** — the standard unit for reporting CO₂e (1 t = 1,000 kg).
- **Passenger-kilometer (pkm)** — one passenger carried one kilometer. A factor expressed per passenger-km already divides a vehicle's emissions among the people aboard, so it is multiplied by travelers rather than vehicles.
- **Proprietary** — a figure Sustainable Travel International derived in-house from equipment specifications and operational research, rather than drawn from a published external source.
- **Provenance** — the record, kept for every value, of whether it was stated in the source, calculated from stated values, inferred, or a standard default. It is the basis of the Humí Score (§6).
- **Radiative Forcing Index (RFI)** — quantifies how aviation's non-CO₂ warming (contrails, water vapor, NO_x) amplifies the overall warming impact relative to its carbon dioxide release alone.
- **Scope 3** — under the GHG Protocol, emissions arising in an organization's value chain rather than from its own operations or the energy it buys. The trips a tour operator sells are usually mostly Scope 3, which is why this methodology follows the Scope 3 accounting rules.
- **System boundary** — the set of activities counted in a given total, and the rule by which an activity is included or excluded (§5).
- **Well-to-Wake (WTW)** — the full fuel lifecycle reported for transport, per ISO 14083: emissions from burning the fuel (Tank-to-Wake) plus those from producing, processing and delivering it (Well-to-Tank).

Table of Contents

1. Standards	5
2. How a Footprint is Calculated	5
3. What Humí Measures	6
4. How Humí Reads an Itinerary	7
5. What Humí Results Provide	7 - 8
6. The Humí Score	8 - 9
7. Known Limitations	9 - 10
8. How Humí Uses AI	10 - 12
9. What We Publish and What We Do Not	12
10. Versions, Restatement and Questions	12
Annex — Factors, parameters and sources by category	13 - 17

1. Standards

Humí follows the [GHG Protocol](#) and [ISO 14064-1](#) for greenhouse gas accounting, and the fuel-lifecycle conventions of [ISO 14083](#) for transport. Transport is reported [Well-to-Wake](#): emissions from burning the fuel, plus emissions from producing and delivering it. Global warming potentials are those of the [IPCC Fifth Assessment Report \(AR5\)](#), 100-year horizon.

Humí is activity-based: every figure begins from a measured physical quantity — a distance, a room-night, a meal — never from what something costs. Under the GHG Protocol, activity-based measurement is the preferred method for Scope 3 emissions; spend-based estimation is accepted only as a starting point, and activity data is materially more accurate.

Humí has not undergone independent third-party assurance against these standards. ISO does not itself certify calculation methodologies — assurance is something an accredited verification body provides by assessing a methodology against a named standard. What we offer today is a methodology built to withstand that kind of scrutiny: standards-based, fully traceable (§4, §10), and available in technical detail under NDA (§9), so your organization's auditor or verification body can assure your reported figures with confidence. We are evaluating pursuing formal third-party assurance and will update this section if that changes.

2. How a Footprint is Calculated

Every calculation is the same operation: **activity data × emission factor**.

A hotel stay is room-nights × a factor for the property's rating and location; a meal is one serving × a factor for its diet; a transport leg is its distance or time × a factor for that mode. Accommodation is shared across a room's occupants, and meals are counted per traveler.

Transport is where the arithmetic needs the most care, because how a vehicle's emissions are shared is the largest single source of error in travel footprinting:

- **Scheduled, shared services are calculated per passenger.** A seat on an airline, train, coach or ferry is a per-passenger product; the figure scales with the number of travelers.
- **Chartered vehicles, aircraft and vessels carry their whole emissions,** regardless of headcount. A chartered minibus burns the same fuel with four passengers as with eight. We calculate the unit's emissions and multiply by the units the group requires — not by the number of people.

Scheduled flights are calculated on the distance between resolved airports, in distance bands. Chartered aircraft and vessels are modeled from equipment specifications and operating time rather than per-seat factors, with a vessel's auxiliary load counted throughout an excursion rather than only while underway.

3. What Humí Measures

Humí footprints the **transport, accommodation, and meals** an itinerary describes.

Category	Covered
Air	Scheduled flights; charter and private aircraft; scheduled small aircraft; aerial experiences
Road	Cars, luxury cars, SUVs, vans and minibusses, motorcycles, buses and coaches; scheduled coach and urban bus; off-road and polar vehicles, ATVs, snowmobiles, dune buggies, tuk-tuks, Segways, e-bikes
Water	Ferries of every kind, including overnight crossings; cruises and liveaboards as floating accommodation; private boats and excursions — yachts, catamarans, speedboats, skiffs, zodiacs and jet skis
Rail	Long-distance and high-speed passenger rail
Accommodation	Hotels by rating and location; off-grid stays — camping, campervans, caravans, tents, mountain huts
Food	Meals by diet type, including food waste
Zero-emission modes	Walking, cycling, paddle craft and animal-powered transport are recorded at zero direct emissions, so a footprint describes a whole journey rather than omitting parts of it

Air — what a flight figure includes. Aviation warms the climate through more than CO₂ — contrails, water vapor and nitrogen oxides. We use the published DESNZ aviation factors, which already include a radiative-forcing index for these effects (a 1.7× multiplier applied to the CO₂ component), and we add the well-to-tank emissions of producing and delivering the fuel, giving a **Well-to-Wake** figure (§1, ISO 14083). Calculators differ in how — and whether — they account for these non-CO₂ effects and the fuel lifecycle, so flight figures are not directly comparable between tools: a figure that reports combustion CO₂ alone is measuring something narrower, while a tool applying a larger radiative-forcing multiplier will report more. The uplift is applied uniformly, not as a route-specific contrail model, because contrail forcing varies with route, altitude, time of day and atmospheric conditions and no widely adopted per-flight method exists.

Not measured: event venues, office energy and wider company operations, which our other tools and analyst-led assessments cover; the embodied emissions of vehicles, vessels and infrastructure, which fall outside the operational boundary this methodology measures; and souvenirs, attractions and site entries, non-food waste, water use and the energy used to cook meals, for which no reliable activity data exists at trip level and which are small against transport and accommodation emissions. These are candidates for inclusion as data availability improves.

4. How Humí Reads an Itinerary

Humí reads the itinerary for you — a web page or a PDF, in any language — and turns it into the flights, stays, transfers and meals a footprint needs. **AI does the reading; it does not decide the numbers.** Fixed rules and published factors set every value that affects the figure, so the result never rests on an AI's guess at how much something emits.

Three principles govern what happens when an itinerary — written to sell a trip, not to measure one — leaves something out:

- **A stated value always wins.** Where the itinerary states something, we use it. Defaults fill genuine gaps only, and are overridden the moment real information is provided.
- **Nothing is invented.** Where a required fact is absent, we apply a documented default and flag it. We do not fabricate an endpoint, a distance or a piece of equipment. Where an itinerary clearly implies a return journey without spelling it out, we recover it — but only where its own words support it, checked against the source. Where a value cannot be established at all, the item is shown and held out of the total..
- **Every default is published.** The most consequential are that flights default to **economy class**, unnamed accommodation to a **mid-tier (3-star)** property in that location, rooms default to **double occupancy**, and meals default to a **regular meat-based diet**. The Annex lists the full set, including vehicle occupancies, transfer distances and meal patterns.

Every distance is stated, measured or derived. Where the itinerary states a distance, we use it. Where it doesn't, we measure the route between the places it names. Where a place can't be resolved, we use the straight-line distance adjusted by a published circuitry factor — 1.74 by road, 1.10 by water — or a documented default. We are extending route measurement across every mode.

Where an itinerary is clear, the figure is stable and reproducible; where it is vague, the reading is less certain — and the Humí Score (§6) shows exactly where.

5. What Humí Results Provide

A trip does not have one footprint — it depends on whose emissions are counted. Humí reports three figures, each a different system boundary:

- **Traveler footprint** (*the headline*) — everything inside the trip a traveler incurs, whether the operator provided it or they arranged it themselves.
- **Operator footprint** — the parts included in the package the operator sells, and the figure an operator uses to report on its own product.
- **Optional excursions** — reported separately, counted in neither headline.

The itinerary's day structure decides what is inside the trip. Days the itinerary frames as a pre- or post-trip extension are treated as outside the assessed tour and are **not included** in the footprint — they add nothing to any total. Humí measures only what the itinerary presents as the tour itself, and never invents an extension that isn't described.

Home airport. Flights between a traveler's home and the trip gateway count in the traveler footprint only. This is the one fact a user can add: supply a home airport and Humí resolves and includes those flights; leave it out, and that leg is held pending — shown, awaiting the home airport, and not counted until it's supplied.

6. The Humí Score

The Humí Score tells you one thing: **how much of the information behind your footprint Humí captured from your itinerary, and how much it had to fill in with industry standards.** It describes where the information came from, not how accurate the footprint is.

Every input fact is graded by its provenance — where it came from — from highest score to lowest:

- **From you directly** — you gave it to us yourself.
- **From your itinerary** — stated directly in your itinerary.
- **Worked out from your details** — calculated from what your itinerary provides.
- **Our assumption** — your itinerary points to it without saying it outright.
- **Industry standard** — your itinerary was silent, so we applied a published standard.

For example: two named airports come **from your itinerary**, and the distance between them is **worked out from your details**; an unnamed transfer taken to be private is **our assumption**; an unnamed hotel measured as 3-star is an **industry standard**. Only industry standards count against the score; every value counts once, whatever its share of the footprint; and the AI's confidence in its own reading never counts at all...

A low score isn't a wrong answer — it flags where the itinerary was thin, and the surest way to raise one is a fuller itinerary, plus the details you give us yourself. The methodology in force sets what counts: as Humí reads more of an itinerary, it grades more values, so scores from different

versions aren't comparable, and a report keeps the score it was issued with (§10). A score describes one measurement of one itinerary, not a ranking of trips or operators.

A footprint is an estimate. The Humí Score shows the kind of evidence behind it, not a margin of error; where a category's own uncertainty is material, §7 says which way it runs.

7. Known Limitations

This is a living document. We publish known gaps rather than waiting until they close.

Electric road vehicles. Standard electric cars, vans and buses are not yet measured from electricity — a vehicle described as electric defaults to its diesel equivalent, which in most grids **overstates** it. Electric off-road and micro-vehicles are measured from electricity, on a global average grid intensity. We are moving to geography-specific grid intensity, so that an electric vehicle is measured against the grid it actually charges from.

Aviation — charter and private aircraft. The radiative-forcing uplift applies to scheduled flights. Charter and private aircraft, modeled from fuel burn, do not yet carry a radiative-forcing uplift; at the high cruising altitudes of long private-jet itineraries, this understates their non-CO₂ effect — a refinement is in development.

Accommodation is measured against a benchmark, not the property. Hotel emissions come from benchmark data for comparable properties in the same location, so a property performing better than its segment — through efficiency measures, on-site renewables or otherwise — is measured as average and **overstated**. A lodge, resort or eco-lodge with no stated quality level is measured as a standard mid-tier property there. We do not adjust for certification labels as they do not provide energy efficiency information.

Guide and tour-leader emissions. A guide or tour leader travels with the group — their journey to join the trip, their share of its transport, and their accommodation and meals — but these are **not yet included** in the footprint, so a trip's total is currently a slight **understatement**. The treatment in development adds the guide's logistics and on-tour activities to the trip's **total** (captured as an additional traveler), while still dividing the **per-traveler** figure by the paying group size, without counting the guide in that headcount — so the guide's footprint is shared across the travelers rather than diluting their average.

Re-measuring the same itinerary may not give exactly the same figure. The calculation is deterministic; the reading of an ambiguous itinerary is not. Where a document is explicit, repeat measurements agree closely; where it is vague, a second reading can resolve a journey differently. This is why a report stays tied to the measurement that produced it (§10).

Not every journey is routed yet. We are rolling out route measurement mode by mode. Until that is complete, some distances rest on a circuitry factor or a published default — as do the many itineraries that give a distance in round numbers, or none at all (§4).

Where a default applies, it runs in a known direction. Flights are measured in economy, so a premium or business trip is understated. Meals default to a meat-based diet, so a vegetarian trip is overstated. And where the group size isn't stated, the default sets how many vehicles, rooms and meals a trip needs — so it moves the whole footprint, not one line of it.

Flights to and from the trip are not counted until you tell us where you start. On long-haul itineraries, these can be most of the footprint. Humí shows them as pending rather than guessing an origin, so a traveler footprint without a home airport is an understatement. Supplying a home airport (§5) resolves it.

Transport factors we are refining. Three are worth naming:

1. **Rail** is measured with a single long-distance-rail factor, applied worldwide. It does not resolve a specific service, its country's grid, or its actual load factor, so a service running on a coal-heavy grid is **understated** and an efficient electric high-speed service is measured as though typical. A registry-driven model with country- and geography-specific factors is in development.
2. **Luxury and charter tourist trains** are calculated on that same rail factor, which does not reflect their low occupancy or continuous on-board hotel load, so their emissions are **substantially understated**. A dedicated treatment is in development.
3. **Ferries** Vehicle ferries use a published average factor that shares fuel between passengers and freight by weight, not by the passenger-equivalent basis ISO 14083 recommends — a change we are evaluating. Passenger ferries and water taxis have no published figure of their own and take the same one, so they are **understated**.
4. **Cruises are measured on one figure, that of a mid-size ship.** Most cruise passengers travel on larger ships, which use less per passenger, so they are **overstated** — a deliberately conservative choice — while a smaller ship may be **understated**. Expedition ships have their own figure, derived from the expedition ships reporting to EU MRV; one described only by its name, or as a cruise, may still be priced as a cruise ship.

8. How Humí Uses AI

Humí uses AI for one job: **reading your itinerary**. Itineraries are written to sell a trip, not to measure one — in any language, in any layout, on a web page or in a PDF. Working out what one actually describes is the hard part. Everything after that is arithmetic.

The AI reads; it does not calculate. It works out what your itinerary describes — which journeys, which nights, which meals. Those facts then go into the same fixed calculation every time, using

published emission factors (§2, Annex). No AI runs during that calculation. It never sets or changes an emission factor, never chooses a default, never decides a distance, and never grades its own work.

We check what the AI reads. If it reports that your itinerary gives a distance or a duration, we look for those words in your document before using them; if they aren't there, we fall back to our published standard. Nothing is invented where your itinerary is silent, and anything we genuinely cannot establish is shown to you and left out of the total rather than guessed (§4). What the AI thinks of its own reading counts for nothing in your Humí Score (§6).

What we send, and what happens to it. A third-party AI service does the reading. What leaves our systems is the itinerary you give us — the text of your web page or document — and our instructions for reading it. We do not send your contact details or your account. We pay for these services, and on paid terms the provider does not use what we send to train or improve its own AI, and keeps it only briefly, to spot abuse and meet legal obligations. Our Privacy Policy lists the services we use.

What we keep. We keep the itinerary we read, what we read from it, and the figure we produced. That is deliberate: a report stays tied to the version that produced it (§10), and we can only show you where a number came from while we still hold the words behind it. We do not train AI on your itineraries, and we do not pass them to anyone beyond the services listed in our Privacy Policy. When we change how Humí works, we re-run past measurements to check the change does what we expect. Where we use measurement data to improve Humí more broadly, we strip out anything identifying first. How long we keep things, and how to ask us to delete them, is set out in our Privacy Policy.

What you should not send us. A carbon footprint is built from places, dates, how many people, vehicles, hotels and meals. It needs nothing about the people traveling. Before you send an itinerary, take out traveler names, passport and ID numbers, dates of birth, contact details, payment details, and anything medical or dietary tied to a named person. None of it changes the figure, and leaving it out keeps it out of both our records and the provider's.

What is the measurement impact? Using Humí takes energy, as any digital tool does, and the footprint of reading one itinerary is incredibly small. Measuring a typical itinerary gives off around **7 grams of CO₂e** and uses about a **tablespoon of water** — covering your device, the network and the data center. Because we calculate this using the global average for electricity, and our data centers are generally cleaner than average, the real-world figure is likely even lower than what we publish.

This AI footprint sits outside what this methodology measures — it represents our operation, not your trip (§3) — and we report it because transparency is a fair expectation to place on a carbon

measurement company. Set against a tour footprint measured in hundreds of kilograms or tonnes, measuring it costs under one-hundredth of one percent of the total trip impact.

It is also significantly cleaner than the alternative. Doing this work by hand — reading the itinerary, sorting each journey, researching missing details, and manual data entry — takes between 30 minutes and two hours on a laptop. Humí does it in seconds, for a fraction of the energy, water, and carbon.

Ultimately, the purpose of measuring is the action that follows it. The choices that move a footprint the most — which flights to take, which vehicles to use, or how stops are spaced — are visible once the measurement exists, and invisible before it.

9. What We Publish, and What We Do Not

This document and its Annex set out our standards, our sources, the parameters applied to each category and every assumption that affects a figure — enough to judge whether a number is sound and to follow the reasoning behind it.

We do not publish individual emission factor values, vehicle and vessel specifications, the rules by which each fact is graded, or the rules by which Humí reads a source document. These represent research we have funded and are the intellectual property of the tool itself.

The detailed technical version, including factor values and specifications, is available to enterprise clients and to auditors under a non-disclosure agreement where an assessment requires verification.

Contact: carbon@sustainabletravel.com

10. Versions, Restatement and Questions

This document carries a version number, a publication date and the vintage of the factor data behind it, and is updated at least annually as new factor data is published. Each version records what changed. Every report Humí generates states the methodology version in force when it was generated and links to that version — not to the current one — so a figure can always be traced to the method that produced it.

A report is fixed once issued. It stays tied to the methodology version and factor vintage that produced it, and is not altered when factor data or methods are later updated. You can always re-measure an itinerary under the current version, which produces a new report rather than changing the old one.

If you believe an assumption here is wrong, or that a figure we have produced is mistaken, we would want to hear it. Write to carbon@sustainabletravel.com. Any substantive corrections will be reflected in the next version and credited in the changelog.

Annex — Factors, Parameters and Sources by Category

For each category: the unit the factor is expressed in, its source, the parameters applied, and how a unit's emissions are shared. Factor values and equipment specifications are held in the detailed technical version (§9). Emission factors are refreshed as their sources publish, typically yearly.

Where we derive a factor ourselves — marked *Proprietary* — the method is the same throughout: the equipment's own fuel consumption, from published specifications or our own operational research, multiplied by the DESNZ fuel factors on a Well-to-Wake basis; or, for electric equipment, by IEA grid intensity. The Source column below names only what is particular to that row.

Where an activity's duration is not stated, a published default duration for that activity type applies, and where a vehicle or vessel is not named, the smallest standard unit that seats the group.

[†] marks a parameter a known limitation applies to — §7 says which way it runs.

Parameters shown in italics are defaults. They apply only where the itinerary is silent, they are overridden by anything it states, and they grade as "Industry standard" in the Humí Score (§6).

Air

Category	Basis	Source	Parameters & Defaults	Allocation
Scheduled flights	per passenger-km, by distance band	DESNZ	Radiative-forcing uplift (1.7× on the CO ₂ component) and indirect-routing uplift (8%), both as embedded in the published factors; Proprietary distance bands. Class: economy [†]	Per passenger

Category	Basis	Source	Parameters & Defaults	Allocation
Charter and private aircraft	fuel burn per block hour, by aircraft type	Aircraft specifications — <i>Proprietary</i>	Block time; ICAO distance correction; published seat count determines how many aircraft the party needs [†]	Whole aircraft × aircraft required
Remote scheduled small aircraft	fuel burn per block hour per passenger, by aircraft type	Aircraft specifications — <i>Proprietary</i>	Modeled over block time at an assumed load factor; capped at the emissions of chartering the aircraft outright	Per passenger
Aerial experiences — balloon	per passenger-hour	Operational research — <i>Proprietary</i>		Per passenger
Aerial experiences — cable car	per passenger, via electricity	IEA grid intensity — <i>Proprietary</i>	Global average grid intensity [†]	Per passenger

Road

Category	Basis	Source	Parameters & Defaults	Allocation
Private vehicles and transfers — cars, luxury cars, SUVs, vans, minibuses, coaches and motorcycles, including airport and point-to-point transfers	per vehicle-km, by type and fuel	DESNZ	Occupancy for vehicle count — car 2, SUV 5, van or minibus 12, coach 35; power type — gasoline, diesel and hybrid; <i>a vehicle described as electric is defaulted as hybrid; a dedicated vehicle carries an allowance for its empty running to and from the group</i>	Whole vehicle × units required
Scheduled buses and coaches — public coach and urban bus services	per passenger-km	DESNZ	Average load factor embedded in the factor	Per passenger
Activity vehicles — off-road and polar vehicles, ATVs,	per vehicle-hour; electric	Operational research — <i>Proprietary</i> ;	Units required = group size ÷ occupancy, rounded up; e-bikes and Segways one per	Whole unit × units required

Category	Basis	Source	Parameters & Defaults	Allocation
snowmobiles, dune buggies, tuk-tuks, e-bikes and Segways	vehicles per km	IEA grid intensity for electric vehicles	rider; electric vehicles on <i>global average grid intensity</i> ⁺	

Water

Category	Basis	Source	Parameters & Defaults	Allocation
Ferries — vehicle ferries (Ro-Pax), passenger ferries, water taxis, high-speed ferries and overnight ferries with cabins	per passenger-km; overnight crossings per night aboard	DESNZ; EU MRV for high-speed and overnight services — <i>Proprietary</i>	Vehicle-ferry fuel shared between passengers and freight by weight, not route-adjusted; passenger ferries and water taxis take the same figure, as a floor; overnight crossings priced per night, in place of accommodation ashore;	Per passenger
Cruises and liveaboards — cruise ships, expedition ships, liveaboards, and multi-day sailing and river cruises	per passenger-day	EU MRV, mid-size cruise ships (cruises); EU MRV, expedition ships — <i>Proprietary</i> Expedition ships and liveaboards; analysis of liveaboard operations in Palau — <i>Proprietary</i> Breda University (sailing and river cruises)	Replaces accommodation for those nights. Cruise ships take one figure, that of a mid-size ship, including time in port; expedition ships, recognized by how the itinerary describes them, take their own figure; liveaboards a small-ship figure ⁺⁺	Per passenger
Private boats and excursions — chartered yachts and catamarans, sailing yachts,	fuel burn by vessel specification and operating time	Vessel specifications — <i>Proprietary</i>	Cruising, idling and stationary time, with hotel load where the vessel has cabins; a named vessel is matched to its own	Entire vessel

Category	Basis	Source	Parameters & Defaults	Allocation
speedboats, skiffs, zodiacs, pangas and jet skis			specification where we hold it; sailing vessels on a 60% motoring share	

Rail

Category	Basis	Source	Parameters & Defaults	Allocation
Long-distance, high-speed and tourist rail	per passenger-km	UIC world average	World-average load factor and traction mix embedded in the factor. No resolution of service, country grid or actual load factor; country- and geography-specific factors in development; luxury and charter tourist trains are not differentiated ^{† †}	Per passenger

Accommodation, Meals and Activities

Category	Basis	Source	Parameters Applied	Allocation
Hotels	per room-night, by star rating and location	CHSB Index	<i>Double occupancy default; mid-tier (3-star) default where no rating is stated or implied; city → country → global fallback; segment benchmark, not property-specific</i>	Per room, divided by occupants
Off-grid stays	per person-night	Breda University (BUas / CSTT)	No star rating applied	Per person
Meals	per meal, by diet — cradle-to-gate	Scarborough et al. (2023), <i>Nature Food</i>	A daily diet figure taken as one of three meals. <i>Regular meat-based diet default; standard meal pattern applied to days inside the trip with no meal information</i>	Per person
Food waste	per meal, added to the diet factor	International Food Waste	End-of-life: disposal and treatment of the food that	Per person

Category	Basis	Source	Parameters Applied	Allocation
		Coalition (2024) + DESNZ waste — <i>Proprietary</i>	isn't eaten, the largest stage after retail. Also taken as one of three daily meals	

Acronyms and Sources used in this Annex

- **DESNZ** — UK Department for Energy Security and Net Zero (formerly BEIS; publisher of the UK Government greenhouse-gas conversion factors, earlier issued by DEFRA)
- **IEA** — International Energy Agency
- **CHSB** — Cornell Hotel Sustainability Benchmarking Index
- **UIC** — International Union of Railways (Union Internationale des Chemins de fer)
- **ICAO** — International Civil Aviation Organization
- **EU MRV** — the European Union's Monitoring, Reporting and Verification system, under which ships calling at EU ports report their fuel use and emissions each year. Published by the European Maritime Safety Agency (EMSA)
- **RoPax** — a roll-on/roll-off passenger ferry, carrying both foot passengers and accompanied vehicles
- **BUas** — Breda University of Applied Sciences (Netherlands); CSTT — its Center for Sustainability, Tourism and Transport