



Flix 2024 Avoided Emissions Methodology



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Introduction

Flix is a global travel-tech company aiming to provide sustainable and affordable travel options to millions of travellers worldwide. Flix is offering its services via its proprietary and innovative technology platform, with an established presence in geographies such as Europe, North America and Türkiye, and ongoing further expansion in Latin America and India. When customers use Flix services to travel, they are foregoing an alternative transportation solution. Our services enable emissions avoidance when the carbon footprint of travel with Flix is lower than the alternative travel mode the passenger would have selected.

At Flix, we have been estimating the Avoided Emissions since 2021 and working on improving the methodology year on year. These figures are reported annually on our ESG reports.

This document presents the results of our 2024 avoided emissions estimation, and explains our methodology in calculating the figures, including key assumptions, data sources, and scope of the approach. Our motivation behind this disclosure is to demonstrate a more complete picture of climate impact of Flix services, in comparison to alternative modes of transport.

Flix-specific terms and definitions

Term	Abbreviation / Definition
PAX	Passenger
Driven km	Distance travelled by our buses and trains
PAX km	A passenger-kilometer, abbreviated as pkm, is the unit of measurement representing the transport of one passenger by a defined mode of transport (road, rail, air, sea, inland waterways etc.) over one kilometer.
Checked Pax	Passengers who paid for a ticket and took a ride with Flix, i.e. excluding paying but not travelling customers.
Bus line	Label for a set of trips regularly operated by our buses and trains, usually all following the same route or having little deviations between each other
Order item (Passenger level)	Number of rides taken by a customer Example: If a customer booked a trip with interconnections from A to B and B to C, A-B and B-C are individual order items.
Flix products	Flix provides two main products: bus and train travel
Flix brands	Flix provides its services through various brands such as FlixBus, FlixTrain, Greyhound (bus) and Kamil Koc (bus).



2024 Organizational boundaries at Flix

The 2024 avoided emissions calculation includes all our global operations that were part of Flix Group as on 31st December 2024. For Flix' internal purposes, the global markets in scope of this calculation are divided into 19 business regions across 38 geographical countries.

The table below compares the various countries and brands for which the scope of calculating Flix's avoided emissions extends to:

Business Regions	Primary Operating Countries of a Business Region¹	Brand(s)	Included in 2023 calculation	Included in 2024 calculation
BeNeLux Bus	Belgium	FlixBus	Yes	Yes
BeNeLux Bus	Luxemburg	FlixBus	Yes	Yes
BeNeLux Bus	Netherlands	FlixBus	Yes	Yes
Black Sea Bus	Bulgaria	FlixBus	Yes	Yes
Black Sea Bus	Greece	FlixBus	No	Yes
Black Sea Bus	Romania	FlixBus	Yes	Yes
Brazil Bus	Brazil	FlixBus	Yes	Yes
Chile Bus	Chile	FlixBus	Yes	Yes
Croatia Bus	Bosnia-Herzegovina	FlixBus	Yes	Yes
Croatia Bus	Croatia	FlixBus	Yes	Yes
Croatia Bus	Serbia	FlixBus	Yes	Yes
Croatia Bus	Slovenia	FlixBus	Yes	Yes
Czech Republic Bus	Czech Republic	FlixBus	Yes	Yes
Czech Republic Bus	Hungary	FlixBus	Yes	Yes
Czech Republic Bus	Slovakia	FlixBus	Yes	Yes
DACH Bus	Austria	FlixBus	Yes	Yes
DACH Bus	Germany	FlixBus	Yes	Yes
DACH Bus	Liechtenstein	FlixBus	Yes	Yes
DACH Bus	Switzerland	FlixBus	Yes	Yes
DACH Train	Germany	FlixTrain	Yes	Yes
Denmark Bus	Denmark	FlixBus	Yes	Yes
France Bus	France	FlixBus	Yes	Yes
Greyhound Bus	Mexico	Greyhound	Yes	Yes

¹ Flix uses "business regions" for internal reporting purposes of its operations. These business regions consist of a larger amount of operating bus or train lines that cross multiple geographic countries. Lines are usually assigned to business regions by their most significant country market by driven revenues. For the purpose of this table, we have listed the primary geographic countries of each business region. For example, Germany is the primary country of the business region DACH besides Austria and Switzerland. On the other hand, there are 13 different business regions with bus lines operating within the country borders of Germany.



Greyhound Bus	United States	Greyhound	Yes	Yes
Iberia Bus	Portugal	FlixBus	Yes	Yes
Iberia Bus	Spain	FlixBus	Yes	Yes
Italy Bus	Italy	FlixBus	Yes	Yes
Poland Bus	Estonia	FlixBus	Yes	Yes
Poland Bus	Finland	FlixBus	Yes	Yes
Poland Bus	Latvia	FlixBus	Yes	Yes
Poland Bus	Lithuania	FlixBus	Yes	Yes
Poland Bus	Poland	FlixBus	Yes	Yes
Sweden Bus	Norway	FlixBus	Yes	Yes
Sweden Bus	Sweden	FlixBus	Yes	Yes
Sweden Train	Sweden	FlixTrain	Yes	No
Turkey Bus	Türkiye	Kamil Koc	Yes	Yes
Ukraine Bus	Ukraine	FlixBus	Yes	Yes
Ukraine Bus	Moldova	FlixBus	Yes	Yes
United Kingdom Bus	United Kingdom	FlixBus	Yes	Yes
USA Bus	Canada	FlixBus	Yes	Yes
USA Bus	United States	FlixBus	Yes	Yes

Data sources

The data for this avoided emission calculation comes from three sources: (a) post ride survey data results owned by Flix' Marketing department and (b) business operational data (bus km, passenger km, etc) owned by Flix' Network Planning department, and emission factors of Flix products and alternate modes of transport chosen by the ESG team at Flix.

(a) Post Ride Survey data

When Flix customers book a ride, they receive a Post Ride Survey (PRS) from Flix which is primarily aimed to capture their customer satisfaction score. However, the survey also includes various other important segments that aim to capture the customer demographic, personal preferences, and their feedback on improving the ride in the future.



Additional information regarding the survey:

- Survey design: The survey is implemented on Survey Monkey.
- Survey scope: The survey is sent out to customers who have booked a ticket with FlixBus or FliXTrain and have specifically consented to receiving marketing communications.
- Survey channel: The primary channel of survey was via email, sent out to all customers in Flix SE and Flix North America. For Kamil Koç customers in Turkey, the primary channel of survey was via SMS.
- Survey language: The survey is sent in up to 18 languages depending on the Flix product (bus or train) and the region.

From a question bank of general and market-specific questions that are selectively chosen to be sent out based on purpose and region, the primary question that forms the basis of the avoided emissions calculation is the following:

What means of transport would you have used for this trip if you had not travelled with Flix?

70%

What means of transport would you have used for this trip if you had not travelled with FlixBus? 🗨️ 0

- I wouldn't have made this trip
- Car (own car or driven by someone else)
- Car Sharing
- Another bus company
- Regional train
- Inter-city rail
- Airplane

Survey limitations:

- The survey is sent only to those customers who consent to marketing communications, and up to 50% of the customer opt out or are in offline heavy markets.
- While a ride booking can be made for multiple customers across multiple order items or interconnections, the survey can only be sent to one person making the booking, and only for the first leg of the entire itinerary.
- Since this survey is considered under marketing activity by law, there is a frequency capping of 48 hours for the survey to be sent to the same customer, which often limits the survey being sent out for multiple bookings made within a weekend or holiday period.
- The survey is sent to the customer even if the customer did not board the bus/train or take the ride. That said, the avoided emissions are accounted only for the checked pax, meaning the ones paying and effectively boarding the bus/train.

Survey response rate: In 2024, we received over 1 million survey responses, resulting in an average of 1.35% survey response rate (as valid surveys / checked pax).²

(b) Business operation data

The business operation data relates to the actual driven kilometers, passenger kilometers, bus lines, business regions, etc, from Flix's global operations in 2024.

(c) Emission factor data

Emission factors for Flix were obtained from:

Bus Regions	Emission Factor Source	Year of Data Source
All European bus regions (including UK)	Flix Well-to-Wheel analysis done in 2021 (by our external partner atmosfair) using 2019 Flix fuel consumption data, which was our pre-COVID baseline.	2019
Non - European bus regions (US, Greyhound, Turkey, Brazil and Chile)	Manually calculated using business operational data	US, Greyhound - 2022 Turkey - 2024 Brazil, & Chile - 2024
DACH (Germany) FlixTrain	Manually calculated using business operational data	2024

The manually calculated emission factors were computed using the following formula:

WtW emission factor (Country A) in gCO₂e per pkm =

$$\left(\frac{\text{WtT emissions (Country A) in tCO}_2}{\text{Total pkm (Country A)}} \times 10^6 \right) + \left(\frac{\text{TtW emissions (Country A) in tCO}_2}{\text{Total pkm (Country A)}} \times 10^6 \right)$$

² Valid surveys and checked pax in this ration refer to surveys where customers responded to the question on alternative modes of transport relevant for this study, regardless whether the number of valid surveys for the line was higher than 10.



As a result, the following emission factors have been used for Flix:

Bus Regions	Flix Emission Factor Used (g CO₂ e/ passenger km)
All European bus regions (including UK)	27.8
US/ Greyhound	42.0
Turkey bus	42.1
Brazil bus	48.5
Chile bus	40.8
DACH (Germany) - FlixTrain	10.9

Emission factors for alternative modes of transport were obtained from:

Bus Regions	Emission Factor Source	Year of Data Source
All European and Türkiye bus regions	German Environmental Agency (UBA)	2023
Flix US, Greyhound, Brazil and Chile bus regions	US Environmental Protection Agency Emission Factor Hub for the Tank-to-Wheel part and UK Government GHG Conversion Factors for the Well-to-Tank part. As an exception, UBA (above) was used for flights due to the lack of a consistent source.	2024 & 2025
United Kingdom bus region	UK Government GHG Conversion Factors . Regional train factor was applied also to Inter-City for a better representation of Flix alternative modes of transport in the region.	2024

For the alternate mode emission factors, we have assumed an average passenger occupancy of 1.4 person for a private car (based on [2023 UBA](#) source) and an average passenger occupancy of 2.5 person for car-sharing.

Where relevant, emission factors for alternative modes of transport were converted to gCO₂/pax km.

Since the US EPA emission factors are accounting for combustion emissions only (Tank-to-Wheel), the upstream emissions (Well-to-Tank) were added based on the UK DEFRA source, as prescribed by the [US EPA's Scope 3 Inventory Guidance](#).

As a result, the following emission factors have been used for alternative modes of transport (g CO₂e / passenger km):



Bus Regions	Regional train	Inter-City train	Car sharing	Private car	Bus competitor	Domestic Flight
All European and Turkey bus regions	49.0	26.0	91.8	164.0	30.0	297.0
Flix US, Greyhound, Brazil and Chile bus regions	92.2	61.4	90.9	162.3	48.2	297.0
United Kingdom bus region	35.5	35.5	95.1	169.8	27.2	272.6

Calculation methodology

The responses from Post Ride Survey question are used by our Network Planning team to calculate the emissions avoided by Flix customers. In order to reduce manual work and increase the data reliability and scalability, all calculations and estimations were done directly on our internal data system; this is possible because data about lines and Pax km is also stored there.

Following is the 2024 data workflow used by the Network Planning team to calculate the emissions avoided:

1. Definition of analysis boundaries: Flix franchise (no marketplace) rides departed between 1st Jan and 31st Dec 2024 in the business regions in our organizational boundaries;
2. Extraction and cleaning of business data, providing for each line the corresponding business region, the total checked pax-km and pax count, and the ride count.
3. Extraction and cleaning of survey data from our database, providing for each line the count of responses with a valid answer to the alternative mode question, as well as the count and percentage for each alternative option over such number. Combination of the previous two sources, resulting in a table where each record is a combination between a Flix line and a possible alternative mode of transportation. Pax and Pax-km are distributed to the alternative modes according to the share they have for that line.
4. Combination with emission factors per pax-km in that business region, for that alternative mode and for mode Flix provides the total CO₂ (virtually) emitted, and the difference is the absolute CO₂ saved thanks to that Flix line. In case of alternative mode "I would have not travelled if Flix was not there", we consider it instead as induced CO₂.
5. Aggregation and sum provides ultimately the total figures of saved and induced CO₂ per business region and Flix, and when divided by the total checked pax, pax-km or bus-km provide the relative figures.³

³ Please note that unlike the totals, these denominators (such as pax-km) take into account all lines, including those with less than the minimum count of valid surveys.



Key assumptions:

- **Minimum responses threshold and valid surveys:** The Post Ride Survey starts with the NPS question and then proceeds to other questions when the customer expands the survey link. We assume that a minimum of 10 surveys with answers to the alternative modes of transportation question will be representative of all the line's checked pax and pax-km, hence will be counted as valid surveys.
- All the survey responses with less than 10 questions answered by the customer have been excluded from the avoided emissions calculation. This threshold was used for the first time within the 2023 calculation and applied again this year.
- **Induced emissions:** For those customers who responded with the option 'No trip' indicating that they would not have taken the trip should the FlixBus or FlixTrain option not be available, the resultant emissions saved are negative. These 'induced emissions' are already accounted for within the calculation and are deducted from the emission saved.
- **Extrapolated data:** The responses from the Post Ride Survey are used as a sample to extrapolate the responses of all eligible passengers, covering the total passenger km.
- **Marketplace bookings:** Marketplace bookings, meaning bookings for those rides that are operated by external third parties who use Flix tech platform to sell tickets for their rides, are excluded from the avoided emission calculations.
- **Data cut-off:** As part of the avoided emissions calculations, we account for survey responses for those rides that departed in 2024, even if the actual survey responses were submitted in 2025.

2024 results

In 2024, Flix helped customers avoid **1.5 million tonnes** of CO₂ emissions. For 2024, this means an average of 53.5 grams of CO₂ saved per passenger km and 1.4 kg of CO₂ saved per driven bus-km.

Reporting criteria

While there are currently no global standards that guide the reporting of avoided emissions, this document has been inspired by the [World Business Council for Sustainable Development \(WBCSD\)'s guidance for avoided emissions](#) methodology criteria.

For further queries on the topic, please reach out to responsibility@FlixBus.com.