

2023 Avoided Emissions Reporting Criteria

In alignment with World Business Guidance for Sustainable Development guidance

Flix is a global travel-tech company whose goal is to drive sustainable and affordable travel for everyone to discover the world. The Company is headquartered in Munich, Germany, with more than 25 offices worldwide and operates long-distance buses and trains.

When customers use Flix services to travel, they are foregoing an alternative transportation solution. Our services enable emission avoidance when the environmental impact of travel with Flix is lower than that of the alternative travel mode the passenger would have selected. By calculating the emissions avoided by our customers, we want to evaluate the real-world impact of Flix as a sustainable travel solution for our customers.

For FY23, we followed the [Guidance on Avoided Emissions](#) developed by the World Business Council for Sustainable Development (WBCSD) to calculate and communicate on our avoided emissions in a transparent, consistent and robust manner. This document presents the results of our 2023 avoided emissions estimation and explains our methodology in calculating the figures in alignment to the WBCSD recommendations.

Description of Flix's contribution

Flix offers one core solution to our end customers: travel. In this respect, entity-level and solution-level avoided emissions are equivalent for Flix. However, the practical approach we take when calculating avoided emissions is a bottom-up assessment of solution and baseline scenarios for all our bus and train routes operated by Flix and our bus partners across all regions.

Step 1: Identifying timeframe of assessment

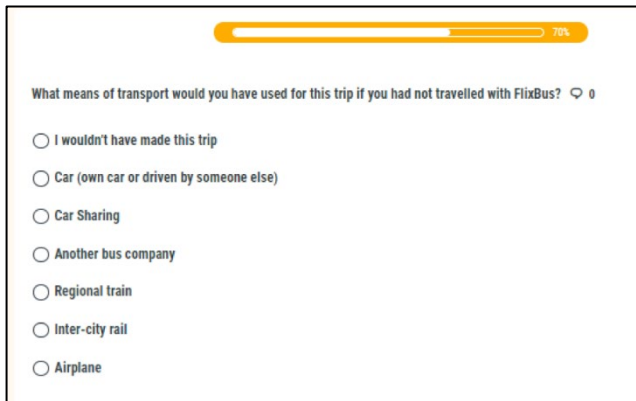
Flix avoided emissions are calculated annually on an entity-level basis, where Flix is consolidated on a group level. The 2023 avoided emissions calculation, covering the reporting period as January 1st to Dec 31st 2023, includes all our global operations that were part of Flix Group during this period.

Step 2: Defining our reference and solution scenarios

Flix uses direct customer surveys to establish a counterfactual scenario to travelling with Flix. Through this approach, we aim to minimise errors in making average behavioural assumptions, and to define the reference and solution scenarios to the level of each individual route we provide services on, which in turns help us provide clarity to our avoided emission claims. Our network is diverse, spanning across regions with different incumbent transport infrastructure, multiple alternative travel modes available, as well as customer behaviour patterns.

When Flix customers book a ride, they receive a Post Ride Survey (PRS) from Flix with aims to capture various aspects such as customer demographic, personal preferences, and their feedback on

improving the ride in the future. Among other questions, the primary survey question that form the basis of our reference scenario is the following ‘Alternative to Flix’ question:



In 2023, we received over 1.4 million survey responses for our Post Ride Survey, resulting in an average of 2.8% survey response rate. The full scope of our survey responses from our Flix customers portray our solution scenario (customers purchasing and taking a specific ride), whereas the counterfactual scenario of our Flix customers choosing an alternative mode of transport portray our reference scenario. The difference between these scenarios is then considered the emission avoided by our customers by choosing Flix.

Key assumptions:

- The customer responses are used as a sample to extrapolate the responses of all eligible passengers, covering the total passenger km. Eligible passengers consist of checked passengers, those who paid for a ticket and took a ride with Flix, i.e. excluding paying but not travelling customers.
- As part of the avoided emissions calculations, we account for survey responses for those rides that departed in 2023, even if the actual survey responses were submitted in 2024.
- Data from these marketplace bookings (which refer to bookings for those rides that are not operated by Flix bus partners, instead by external third parties who use Flix tech platform to sell tickets for their rides) are excluded from the avoided emission calculations.

Step 3: Assessing life cycle emissions

For our 2023 calculation, emission factors for Flix were assumed as:

Bus Regions	Emission Factor Used (g CO ₂ e/ passenger km)	Source	Source Data Year
All European bus regions (including UK)	27.8	Flix Well-to-Wheel analysis 2021 (by our external)	2019

		partner atmosfair) ¹	
US/ Greyhound	42.0	Manually calculated using business operational data	2022
Turkey bus	45.6		2023
Brazil bus	47.8		2023
Chile bus	34.1		2023
DACH (Germany) Flixtrain	10.1		2023
Sweden FlixTrain	0 ²		-

Emission factors for alternative modes of transport were assumed as:

Bus Regions	Regional train	IC train	Car sharing	Private car	Bus competitor	Domestic Flight	Emission Factor Source
All European and Turkey bus regions	58.0	31.0	93.0	166.0	31.0	238.0	German Environmental Agency (2022 UBA - gCO ₂ e/pax km)
Flix US, Greyhound, Brazil and Chile bus regions	134.0	114.0	70.4	176.0	71.6	209.0	US EPA Emission Factor 2024 - gCO ₂ e/pax mile. The unit of measure for private car is gCO ₂ /vehicle- mile
United Kingdom bus region	50.5	50.5	85.8	153.2	39.5	282.0	Department for Transport (UK Gov)'s 2022 Transport and environment statistics - gCO ₂ e/pax km

Key assumptions:

- For the alternate mode emission factors, we have assumed an average passenger occupancy of 1.4 person for a private car (based on [2022 UBA](#) source) and an average passenger occupancy of 2.5 person for car-pooling.

¹ Our approach is slightly different compared to [Well-to-Wheel analysis](#) 2021 run with atmosfair, which included all paying passengers.

² Zero emissions coming from trains running on 100% green energy.

- Emission factors are updated on annual basis based on data availability of both internal and external source data.
- For the Flix emission factors, we use life cycle (WtW) emissions of our bus and train operations.
- While we assume diesel fuel consumption as the basis for our Flix bus/train operations as well as for most of the other applicable alternative modes of transport, we believe it would be more appropriate to use an average emission factor for private cars as petrol cars are used more often than diesel cars. For EU and US, we have picked an average emission factor for private car³, whereas for UK, we have calculated a weighted average of the various car emission factors provided in the source data⁴.

Step 4: Calculating avoided emissions

Our Networking Planning team at Flix combine the survey response data from the Post Survey Ride data, internal business operational data as well as the emission factor data to calculate the avoided emissions figures.

Post-ride survey data is collected via an external survey tool that is securely integrated to our internal core data platform. Different monitoring and alerting mechanisms are in place to make sure no data records get lost or modified and only people with relevant permissions can access and process the data.

Each record represents a survey filled by a passenger and includes fields about the journey departure, line number, ride identifier, plus the answer that the pax gave to each survey business question. Out of these fields, we are interested in departure date, used to select only pax that travelled in 2023, line number, and the answer to the question asking which mode of transport the pax would have chosen for their journey if Flix was not available - referred from now on as “alternative mode”. When the latter is empty (i.e., the pax skipped such question while filling the survey), we consider the survey invalid for our purpose and discard the record. Then we aggregate at line level, counting the answers for each alternative mode, as well as the total, which allows us to convert those counts into percentages of pax of the line, among those who provided valid surveys, who would’ve chosen that specific alternative mode. Such sample is assumed to be representative of the whole population of the line’s pax if there are at least 10 valid answers; if this condition is not satisfied, we assume conservatively that the line is not contributing to CO2 savings.

Business operational data includes fields such as driven distances, ride count, pax count and pax-distances. The data is stored and maintained in our internal network management, booking and operational services solutions. Once collected via a real-time messaging platform, the data is made available in our central data warehouse solution to calculate the above mentioned KPIs.

In our data warehouse⁵, we have all relevant information available at ride-segment level, i.e., for each pair of subsequent stops on a specific ride on a specific day. For each segment we also have

³ Data source for EU (except UK) is available [here](#) and for US [here](#).

⁴ Source for UK emission factors is available [here](#), while for weighting split [here](#) (hybrid vehicles are excluded).

⁵ We have in place a SOC 1 Type 2 certification for our data warehouse solution. This demonstrates us that a proper Internal Control System is established on the software-owner side.

information about how many pax were on board. For this analysis, we only take into account checked-in pax. Pax-km⁶ (checked) for a segment is the product between the (checked) pax on board between the two subsequent stops and the segment's length in km, and for a ride or a line it's the sum of pax-km over all segments. In our analysis, we aggregate all business operational data at line level, providing in the end each line's bus-km, ride count, checked pax count and checked pax-km over 2023⁷.

Data is collected for each business regions, ensuring that we apply appropriate emission factors.

CO₂ emission factors per mode of transport per business region are provided by the ESG team of Flix, in grams of CO₂e per pax-km. They provide this data in our data warehouse solution where the main calculation is made.

CO₂ savings are calculated on a bus-line level, meaning that for each bus line we have as many data rows as the possible alternative modes of transport answered by users in the survey, each contributing to the line's CO₂ savings.

Key assumptions:

- We based our avoided emission calculations on the checked passengers (passengers who not only paid for the ticket, but who actually took the ride⁸).
- All the survey responses with less than 10 questions answered by the customer have been excluded from the avoided emissions calculation. This is in line with our conservative approach.

Impact

Flix services helped our customers avoid 1.1 million tonnes of CO₂ in 2023. For 2023, this means an average of 41 grams of CO₂ saved per passenger km and 1.11 kg of CO₂ saved per driven bus-km.

Our approach is to report year-on-year retrospective avoided emissions, based on actual distance travelled and updated emission factors data for the year (for those markets where latest emission factors are available).

Percentage of revenue from solutions generating avoided emissions:

- Our survey data on counterfactual behaviour covers 1.45% of our revenue.
- 81.6% of the reference scenario, customers respondents in the reference scenario communicated that they would have taken a more carbon intensive travel option than Flix, which represents 77.9% of our total driven pax-km in 2023.

⁶ A passenger-kilometre represents the transport of one passenger over one kilometre and is a fundamental metric to compare the different ways of transport.

⁷ Please note that this is done for all lines, including those filtered out because of insufficient valid surveys.

⁸ See footnote 1.

Eligibility assessment

Both on the company and solution-level, Flix fulfils the following three eligibility gates defined by the WBCSD:

Gate 1 – climate action credibility:

Flix aims at positioning itself as a frontrunner for carbon neutral travel provider in the EU by achieving carbon-neutral travel in Europe by 2040 and globally by 2050. Since 2019, Flix has been assessing its Scope 1-3 emissions, and has been reporting these emissions since 2022. In 2023, Flix publicly committed to the Science Based Targets Initiative (SBTi) to establish near-term science-based emission reduction targets as part of our climate strategy. For further details on Flix's climate strategy, 2023 GHG emissions as well as our emission reduction targets, please refer to the Planet chapter of our 2023 ESG Report.

Gate 2 – latest climate science alignment:

The latest climate science sets the expectation for companies to reduce their emissions in line with the 1.5°C pathway presented by the latest IPCC Assessment Report 6. In such scenario, transport plays a strategic role for the transition. In 2022, Flix conducted an in-depth climate scenario analysis following the Taskforce on Climate-related Financial Disclosures (TCFD) guidelines. The results of this analysis as well as the accompanying risk and opportunity assessment have laid the foundation for Flix decarbonization strategy, risk mitigation measures as well as the commitment to SBTi. For detailed information on this, please refer to our 2022 ESG Report, published on our website. (pg. 23-25).

Flix operations does not involve activities related to exploration, extraction, mining and/or production, distribution and sales of fossil fuels i.e., oil, natural gas and coal.

Gate 3 – contribution legitimacy:

Flix bus and train operations provide our customers with a sustainable alternative to carbon intensive long-distance travel, thus exhibiting decarbonising impact. This decarbonising impact directly contributes to customers' emission savings and is expected to be significant compared to alternative modes of transportation such as private car and airplane.

Limitations

Our methodology to estimate avoided emissions has several limitations:

- As indicated in the WBCSD guidance, establishing reliable and credible counterfactual scenarios can be one of the key challenges in estimating avoided emissions. Key limitation in our case is the relatively low response rate to the 'Flix Post Ride Survey'. Our mitigation plan is to increase survey participation by exploring SMS or app-notification channels for sending out surveys to customers in the upcoming years.
- Flix emission factors used for European bus fleet are based on 2019 data, which have not been updated due to data unavailability. We aim to achieve better data maturity in the

upcoming years by creating better working relationship with our bus partners in terms of data collection, or by developing robust internal proxies for the data dependent on external value chain stakeholders.

We also acknowledge that Flix services have wider environmental impacts beyond GHG emissions:

- Bus and rail travel services emit local pollutants and cause noise. We are committed to improving wider environmental performance our fleet, through adhering to most stringent environmental regulations, and transitioning our fleet to innovative drive options.

In addition, we acknowledge potential rebound effects from our services:

- For 12.4% of our passenger km, alternative travel modes chosen by customer respondents would have had lower emissions than Flix services. We are committed to offering best-in-class sustainable travel options and aim to mitigate this issue as we progress on our fleet decarbonisation journey.
- Across various bus lines offered, 6% of the survey respondents would not have made their journey in the absence of Flix service, resulting in induced emissions. While we constantly seek to provide sustainable travel options for our customers, we would also prioritise business ambitions to be available across broad geographical landscape, even in sparsely populated areas where Flix might be the customers' only travel option. Many a times, especially in the European regions, Flix maybe the only travel option available for its customers during the time of country-wide or region-wide transport strikes. However, these induced emissions are accounted for within the avoided emissions calculations and deducted from the emissions saved.

Acknowledgements

- ✓ We comply with the three eligibility gates defined by the WBCSD.
- ✓ We report our avoided emissions separately from our GHG emissions within our ESG report.
- ✓ We do not claim climate neutrality using avoided emissions.
- ✓ We assessed potential negative side-effects of our transport solutions in terms of environmental trade-offs and sustainability goals beyond GHG impact.
- ✓ We assessed potential rebound effects of our solutions.

External independent assurance

Avoided carbon emission data has been subject to external independent limited assurance by ERM Certification and Verification Services Limited ('ERM CVS'). For the results of the assurance, please refer to ERM CVS assurance report [available [here](#)].