



**Climate
Positive**

Basis of Preparation

**CO₂ emissions abatement
calculation for passenger cars**

Introduction

PricewaterhouseCoopers AG (PwC) has been engaged to provide limited assurance on ClimatePositive's CO₂ emissions abatement calculation for passenger cars procedures. Climate Positive is a brand created by SCB Brokers SA (SCB), headquartered at Avenue Perdtemps 23, 1260 Nyon, Switzerland. The methodology summarized below is intended to ensure that our procedures are carried out in a systematic manner, using data whose sources are documented, and all practices are recorded and consistent. This Basis of Preparation document sets out how the quantification procedures have been prepared and reported.

Data Sources

With operations throughout the world, ClimatePositive felt it was most appropriate to utilize data from official government agencies located in our largest geographical areas, the United States and Europe, as the framework of our CO₂ emissions abatement calculation for passenger cars.

All transactions outside Europe shall follow the average emissions of passenger cars as published by United States Environmental Protection Agency (EPA) and U.S. Department of Transportation (DOT). The EPA documents the typical emissions from passenger vehicle, which can vary based on a vehicle's fuel, fuel economy, and the number of miles driven per year¹.

Data Preparation

A. Extraction of the number of cars to be abated

The scope includes all passenger cars that ClimatePositive has helped to abate their carbon emissions during the calendar years from 2021 onwards.

B. The number of calendar years to be abated

The scope includes all the calendar years that the users have opted to abate their carbon emissions.

If the user has opted to abate only after the commencement of the calendar year, the abatement will be pro-rated respectively.

Example of pro-rated abatement

If the user has selected to abate between 1 July 2021 to 31 December 2022, the calendar year is calculated as 1.5.

If the user has opted to abate for multiple calendar years, the abatement will be multiplied respectively.

¹ United States Environmental Protection Agency, Greenhouse Gas Emissions from a Typical Passenger Vehicle, <https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle#:~:text=typical%20passenger%20vehicle%3F-A%20typical%20passenger%20vehicle%20emits%20about%204.6%20metric%20tons%20of,8%2C887%20grams%20of%20CO2.>

Example of multiple years of abatement

If the user has selected to abate 4 calendar years between 1 January 2021 to 31 December 2024, the calendar years is calculated as 4.

C. Determining the CO₂ emitted from average passenger car

In determining the GHG emissions, ClimatePositive analyzed approximately 800 different car models and their emissions as published by Which? UK Consumer Champion NGO². Their emissions vary based on their engine type as below:

- Electric cars produce lower emissions of up to 160 gCO₂ per kilometer driven.
- Regular cars with fuel or hybrid engines produce higher emissions of up to 372 gCO₂ per kilometer driven.

D. Determining the average annual mileage

In determining the average annual mileage, ClimatePositive utilized the average miles travelled by vehicle type in U.S. (United States) as published by DOT³, along with the average miles travelled by passenger car in E.U. (European Union) as published by Ecological Transition Agency (ADEME) below⁴:

- Average passenger car mileage in U.S. of 11,576 miles.
- Average passenger car mileage in E.U. of 11,879 km.
- Outside of U.S. and E.U. (hereafter "Rest of the World"), all average passenger car mileages shall follow the average passenger car mileage as published by DOT. These numbers are conservative, which help ensure full abatement of these passenger cars.

E. Margin of the tolerance

In determining the margin of tolerance where the calculated abatement standard may be exceeded to account for deviations from the actual sample, ClimatePositive utilized the margin of an additional 25% for each calculated CO₂ emissions.

- For electric cars, an additional 25% tolerance margin amount to an abatement standard of 200 gCO₂ per kilometer driven.
- For regular cars, an additional 25% tolerance margin amount to an abatement standard of 465 gCO₂ per kilometer driven.

² Which? UK Consumer Champion NGO, Car CO₂ Emissions, <https://www.which.co.uk/reviews/new-and-used-cars/article/car-emissions/car-co2-emissions-aRVNW9t0zLu6>

³ U.S. Department of Transportation, Highway Statistics Series, <https://www.fhwa.dot.gov/policyinformation/statistics.cfm>

⁴ Odyssee-Mure project is co-ordinated by Ecological Transition Agency, Change in Distance Travelled by Cars, <https://www.odyssee-mure.eu/publications/efficiency-by-sector/transport/distance-travelled-by-car.html>

F. Determining the CO₂ conversion factors for different measurement units

As average mileage above are calculated on a "per mile" basis, the factors were further converted into a "kilometer" basis using the conversion table published by University of Wyoming as below⁵:

- 1 mile = 1.61 kilometers

**G. Total offsets needed to abate the CO₂ emitted from average passenger car
(A x B x C x D x E or A x B x C x D x E x F)**

Lastly, the total metric tons of CO₂ emissions needed to be abated is calculated. The abated emissions of those passenger cars that would have occurred had ClimatePositive not assisted in offsetting their emissions. This figure is determined by multiplying the total number of passenger cars abated during the period by the CO₂ abated per passenger car, and by annual mileage, as adjusted for margin of tolerance as well as different measurement units.

Example of abatement of an average electric car in E.U. in 1 calendar year

- C. Electric cars produce emissions of up to 160 gCO₂ per kilometer driven.
- D. Average passenger car mileage in E.U. of 11,879 km.
- E. Additional 25% tolerance margin is applied.
- F. N/A
- G. (C) 160 x (D) 11,879 x (E) 1 + 25% = 2.38 metric tons of CO₂ emissions needed to be abated per car and year.

Example of abatement of an average regular car in E.U. in 1 calendar year

- C. Regular cars produce emissions of up to 372 gCO₂ per kilometer driven.
- D. Average passenger car mileage in E.U. of 11,879 km.
- E. Additional 25% tolerance margin is applied.
- F. N/A
- G. (C) 372 x (D) 11,879 x (E) 1 + 25% = 5.52 metric tons of CO₂ emissions needed to be abated per car and year.

Example of abatement of an average electric car in U.S. and the Rest of the World in 1 calendar year

- C. Electric cars produce emissions of up to 160 gCO₂ per kilometer driven.
- D. Average passenger car mileage in U.S. of 11,576 miles.
- E. Additional 25% tolerance margin is applied.
- F. 1 mile = 1.61 kilometers.
- G. (C) 160 x (D) 11,576 x (E) 1 + 25% x (F) 1.61 = 3.73 metric tons of CO₂ emissions needed to be abated per car and year.

⁵ University of Wyoming, Step Conversions, https://www.uwyo.edu/wintherockies_edur/win%20steps/coordinator%20info/step%20conversions.pdf

Example of abatement of an average regular car in U.S. and the Rest of the World in 1 calendar year

- C. Regular cars produce emissions of up to 372 gCO₂ per kilometer driven.
- D. Average passenger car mileage in U.S. of 11,576 miles.
- E. Additional 25% tolerance margin is applied.
- F. 1 mile = 1.61 kilometers.
- G. (C) 372 x (D) 11,576 x (E) 1 + 25% x (F) 1.61 = 8.67 metric tons of CO₂ emissions needed to be abated per car and year.

Carbon Offsets Schemes (not yet in scope of PwC's current limited assurance scope, as the underlying data will only be available at the end of the financial year 2021)

The total offsets needed to abate these emissions are then purchased from various carbon offset schemes that allow individual and companies to invest in environmental projects around the world to balance out their carbon footprints. These projects reduce carbon emissions, and every metric tonnes of carbon emissions reduced from such projects translates into the creation of one carbon offset. Examples of these environmental projects include rolling out clean energy technologies, planting of trees, capturing methane gas at landfill sites and distributing efficient cooking stoves.

At ClimatePositive, we only fund registered verified projects that meet United Nations Sustainable Development Goals⁶. ClimatePositive has chosen these schemes with the most stringent requirements that achieve United Nation Sustainable Development Goals. These goals are instrumental in attaining the 2030 Agenda for Sustainable Development⁷ that were adopted by all United Nations Member States in 2015.

Also, we only fund registered verified projects that meet the requirements of additionality, permanence, and an ensured avoidance of double counting.

Additionality: Carbon offset must generate units that represent emissions reductions, avoidance, or removals that are on top of any reduction or removals required by law, regulation, or legally binding mandate.

Permanence: Carbon offset must represent emissions reductions, avoidance, or carbon sequestration that are permanent.

Avoidance of double counting: Measures must be in place to avoid double issuance, double use, and double claiming.

Below is a table outlining the basic information of each program that meets all these requirements:

⁶ United Nations, The 17 Goals, <https://sdgs.un.org/goals>

⁷ United Nations, Transforming Our World: The 2030 Agenda for Sustainable Development, <https://sustainabledevelopment.un.org/post2015/transformingourworld>

Program	Registry	Scope of Eligibility
American Carbon Registry ⁸	ACR	ACR Emission Reduction Tons excluding California Registry Offset Credits & California Early Action Offset Credits
China GHG Voluntary Emission Reduction Program ⁹	GHGVERP	China Certified Emissions Reductions excluding Afforestation and Reforestation, CCUS, N2O from plants, Ag Ops, Fertilizers, Semiconductors, HFC refrigerants, SF6 insulating gas, HCFC22
Clean Development Mechanism ¹⁰	CDM	Certified Emissions Reductions excluding Afforestation and Reforestation
Climate Action Reserve ¹¹	CAR	Climate Reserve Tons excluding activities not reporting sustainable development contributions or co-benefits, Forecast Mitigation Units, California Registry Offset Credits & California Early Action Offset Credits
The Gold Standard ¹²	GSF	Verified Emission Reductions excluding Planned Emission Reductions, micro scale activities without validation and verification
Verified Carbon Standard ¹³	Verra	Verified Carbon Units excluding those issued from Scenario 1, 2, or 3 of REDD+, activities without reported sustainable development contribution or co-benefits, California Registry Offset Credits & California Early Action Offset Credits

When these carbon offsets are purchased, they are permanently retired by ClimatePositive. Retiring a carbon offset means that it is taken off the market forever and can never be reused again. For transparency, each carbon offset has its own assigned serial number, and can be tracked on publicly accessible emission registries^{14 15}.

At ClimatePositive, we commit to creating lasting benefits to the climate.

⁸ American Carbon Registry, How It Works, <https://americancarbonregistry.org/how-it-works/what-we-do>

⁹ International Civil Aviation Organization, China GHG Voluntary Emission Reduction Program, https://www.icao.int/environmental-protection/CORSIA/Documents/TAB/CCER_Programme_Application.pdf

¹⁰ Clean Development Mechanism, What is the CDM, <https://cdm.unfccc.int/about/index.html>

¹¹ Climate Action Reserve, Program, <https://www.climateactionreserve.org/how/program/>

¹² Gold Standard Foundation, Certify a Project, <https://www.goldstandard.org/take-action/certify-project>

¹³ Verra Organization, The VCS Program, <https://verra.org/project/vcs-program/>

¹⁴ Gold Standard Registry, Issuance and Retirements of Carbon Offsets, <https://registry.goldstandard.org/projects?q=&page=1>

¹⁵ Verified Carbon Standard Registry, Issuance and Retirements of Carbon Offsets, <https://registry.verra.org/app/search/VCS>