

UEFA EURO 2016 eco-calculator

Contact details and FAQs

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Who is UEFA?

UEFA is the governing body for European football responsible to its members for the governing of the sport of football in accordance with its statutes, regulations and technical rules.

UEFA is responsible for the staging of various football competitions including the final tournament of the UEFA European Football Championship™ 2016 which is due to be held in France between 10 June 2016 and 10 July 2016.

What is the UEFA EURO 2016 eco-calculator?

The UEFA EURO 2016 eco-calculator is an internet based tool developed by UEFA's supplier Climate Friendly, which helps you understand and explore how your journey to UEFA European Football Championship™ 2016 contributes to greenhouse gas emissions.

By entering where you are travelling from and where you are travelling to you can see how different travel methods have differing associated greenhouse gas emissions.

This may help you decide how you will travel to the tournament.

The eco-calculator also provides the option for you to offset the emissions from your journey by supporting a renewable energy project.

Who is Climate Friendly?

Climate Friendly is a pioneer in providing innovative carbon management solutions to businesses and households around the world who are ready to act to prevent climate change.

Climate Friendly has been selected by UEFA to make its expertise available to UEFA in view of UEFA European Football Championship™ 2016 and provide the UEFA EURO 2016 eco-calculator.

Climate Friendly is a profit-for-purpose company with over a decade of experience in helping individuals and organisations take action on climate change.

What are carbon credits or carbon offsets?

These are interchangeable terms. Carbon credits are certificates that represent a confirmed reduction of greenhouse gases in the atmosphere. Projects that either prevent the generation of greenhouse gases or remove greenhouse gases from the atmosphere earn these credits, which can in turn be used by other businesses and individuals to 'offset' their own emissions. One carbon credit equates to a saving of one tonne of carbon dioxide, or its equivalent in emissions of other [greenhouse gases](#).

Carbon credits are typically earned by projects which use renewable energy sources – such as wind, solar, hydro or renewable biomass energy – instead of fossil fuels to generate electricity and/or heat. Other common types of project include using energy-efficient technologies to reduce fuel consumption, capturing methane from household or agricultural waste and using it for energy, and preventing deforestation. The funds received from the sale of carbon credits essentially balance out the higher cost of renewable energy production and sustainable resource use, making these projects cost-effective.

So by buying carbon credits, you are effectively supporting the development of technologies that provide long-term solutions to climate change, and helping to accelerate the transition to a clean energy future.

How can I have confidence that my money is helping to combat climate change?

Your money from offsetting through the eco-calculator goes to UEFA's supplier, Climate Friendly, who facilitates the supply of carbon credits for UEFA. These carbon credits are then sourced from the project developer.

Only the highest quality carbon offset credits and renewable energy certificates, accredited under the most stringent international standards, are supplied. Rigorous selection criteria are applied and projects are conducted thorough due diligence. Credits are managed and retired on robust independent registry systems, and full access to [project documentation](#) is provided. International best practice, such as [International Carbon Reduction and Offset Alliance \(ICROA\)](#), are followed in all of the carbon management services and independent audits are held.

Warehousing and retirement

All carbon credits that are purchased are held in accounts on third party-maintained registries, specifically designed and approved for these products. These registry systems operate in much the same way as those used in the global financial markets, and are often operated by the same organisations. All products listed in these registries have unique serial numbers for tracking and management purposes, which ensures traceability and avoids double-counting of credits.

All offsets sold are subsequently retired. Retirement is an irreversible action whereby carbon credits are transferred to designated retirement accounts on the registries, from which they can never be withdrawn and resold.

Documentation and transparency

Full documentation for all projects are provided to customers on this [website](#), including factsheets, due diligence assessments, carbon project accreditation documents (project design, validation and verification reports) and links to the registries where the credits are held.

Details of credits retired are also accessible for public view on the registry websites.

[*Click here for information about the Prony and Kafeate Wind Project in New Caledonia.*](#)

Accounting and assurance

A robust internal accounting process is maintained to ensure that all sales are accurately recorded and that the associated offset credits are retired.

How do emission calculations work?

Emission calculators quantify the greenhouse gas emissions associated with a wide range of day-to-day activities. The emission factors used are selected from respected and well-recognised publicly available sources such as the [Greenhouse Gas Protocol](#), the [Intergovernmental Panel on Climate Change \(IPCC\)](#), the [UK Department for Environment, Food and Rural Affairs \(DEFRA\)](#), and the [Australian Department of Industry and Science](#).

Emissions from travel are expressed in kilograms or tonnes of carbon dioxide equivalent, or 'CO₂e'. This is a standard global unit for measuring greenhouse gas emissions and carbon footprints. Carbon dioxide is the most common greenhouse gas, but there are a number of others which are less prevalent but much more potent in terms of their contribution to climate change. For ease of comparison, and in order to express a carbon footprint as a single number, emissions of these other gases are converted into CO₂e, i.e. the amount of carbon dioxide that would have an 'equivalent' global warming impact.

How are distances calculated?

All journeys within the UEFA EURO 2016 eco-calculator are assumed to be return journeys, meaning that the user travelled from the point of origin to the destination and then back to the point of origin.

Flight distances

Distances are calculated using the haversine formula and the longitudinal and latitudinal coordinates of the locations.

The haversine formula is an accepted navigational equation in spherical trigonometry which provides the great-circle distance between two points on a sphere. In this case the sphere is the earth.

Car and bus travel distances

The distance travelled by road between two locations can vary based on a number of factors, including which route was taken and whether any detours were made.

The UEFA EURO 2016 eco-calculator calculates the road travel distance by taking the straight-line distance between the origin and the destination, as described under 'Flight distances' above, then applying a multiplying factor based on the average extra distance of road travel compared to a straight line.

This multiplying factor was ascertained by calculating the straight line distance and actual road distance between Paris and 39 different cities from across Europe. An average in the difference between the straight line and road distances for those 39 routes was then calculated. This average factor is applied to the straight-line distance to obtain the approximate road travel distance for all routes.

Rail travel distances

Rail journey distances are calculated in the same way as car and bus travel distances. This is a conservative assumption since rail routes tend to be more direct than roads.

Walking and cycling distances

Walking and cycling distances are calculated in the same way as car and bus travel distances.

How do flight emission calculations work?

The combustion of fuel in aircraft engines creates emissions of carbon dioxide (CO₂), the primary greenhouse gas responsible for climate change. Over and above these base CO₂ emissions, air travel creates additional direct emissions including water vapour, nitrous oxides and particulates, as well as further indirect impacts resulting from the formation of vapour trails and cirrus clouds and the release of emissions at high altitude.

Emissions from flights are calculated using the most up-to-date methods and assumptions from the most reputable international scientific sources.

Firstly CO₂ emissions are calculated from the fuel used, using emission factors published by the UK Department for Environment, Food and Rural Affairs (DEFRA). The factors are differentiated by journey length (short haul, medium haul and long haul), as this affects the amount of fuel used per passenger kilometre.

Secondly an adjustment is made for the indirect and non-CO₂ effects of flying, including the impact of releasing emissions at high altitudes. This entails applying a multiplier (known as the Radiative Forcing Index or RFI) to the base CO₂ emissions in order to give a final emission value which accounts for the full global warming impact of flying.

For carbon dioxide the global warming impact is well understood and can be calculated relatively accurately. The additional indirect and non-CO₂ effects are considered to be highly significant for the overall impact of aviation. However, the processes are complex and there is greater uncertainty within the scientific community around their precise quantification. The most in-depth and widely cited study was published by the [Intergovernmental Panel on Climate Change](#) in 1999, and suggested that in order to account for the non-CO₂ effects, the CO₂ emissions should be multiplied by an RFI of 2.7. Subsequent studies have made estimates ranging from 1.9 to 4.7. A default RFI multiplier of 2.7 based is used on this research. Differences in the RFI value used are the primary reason for variation in the values obtained using different flight emission calculators.

How do car emission calculations work?

CO₂ emissions are calculated from the fuel used by taking the distance travelled (see details above) and applying a standard emission factor. The emission factor used is published by the [UK Department](#)

[for Environment, Food and Rural Affairs](#) (DEFRA) and represents the average kilograms of CO₂ emissions per kilometre travelled for a journey in an average car.

I drive a hybrid or diesel car. Why can't I choose this in the UEFA EURO 2016 eco-calculator?

The UEFA EURO 2016 eco-calculator was set out to be fun, educational and easy to use. All systems that calculate emissions make some assumptions as part of their process. This is due to a very large number of variables which impact the actual emissions from a journey.

For simplicity this UEFA EURO 2016 eco-calculator applies the same emission factor for all car journeys regardless of the car size, type or fuel.

If you do drive a vehicle with lower emissions than the average and choose to offset your emissions through the UEFA EURO 2016 eco-calculator you may be offsetting slightly more than your own emissions, which means you will be doing a great thing for the environment!

How do bus emission calculations work?

CO₂ emissions are calculated from the fuel used by taking the distance travelled (see details above) and applying a standard emission factor. The emission factor used is published by the [UK Department for Environment, Food and Rural Affairs](#) (DEFRA) and represents the average kilograms of CO₂ emissions per passenger kilometre for bus journeys.

How do rail emission calculations work?

CO₂ emissions are calculated from the fuel used by taking the distance travelled (see details above) and applying a standard emission factor. The emission factor used is published by the [UK Department for Environment, Food and Rural Affairs](#) (DEFRA) and represents the average kilograms of CO₂ emissions per passenger kilometre for international rail journeys.

How are cycling and walking emissions calculated?

All journeys on foot or by bicycle are considered to have zero CO₂ emissions.

Why do I only see emissions from plane travel?

When travelling from within Europe you will see travel emissions from plane, car, bus, rail, cycling and walking. If your point of origin is outside Europe the UEFA EURO 2016 eco-calculator will only display plane travel.

This is because when travelling from outside Europe it is not possible (or at least very unlikely) that you could take land transport to France.

How is the number of footballs of emissions calculated?

In order to provide users of the UEFA EURO 2016 eco-calculator with a better sense of the scale of the emissions from their travel to and from UEFA European Football Championship™ 2016, the equivalent in footballs full of carbon dioxide is displayed alongside the emission value.

This is worked out using the figures from the table below.

Due to the number of variables that affect the weight of CO₂ in a football, such as temperature and altitude, these numbers are intended to be a guide only.

Description/Item	Amount	Measurement	Notes/Assumptions
Gauge pressure in a soccer ball	8.70	psi	http://www.soccerballworld.com/Physics-FAQ.htm
Gauge pressure in a soccer ball	59.98	kPa	http://www.convertunits.com/from/PSI/to/kPa
Absolute pressure in a soccer ball	160.98	kPa	Gauge pressure + atmospheric pressure at sea level (101 kPa)
Circumference of a soccer ball	0.70	m	http://www.soccerballworld.com/Laws.htm
Radius	0.11	m	calc
Volume of a soccer ball	5.80	l	calc ($\frac{4}{3} \pi r^3 \times 1,000 \text{ l/m}^3$)
Number of molecules in a soccer ball	0.38	mol	calc ($n = PV/RT$, with P in kPa, V in litres, R=8.314 J/K.mol, T=20°C=293.15K)
CO ₂ weight	44.00	g/mol	CO ₂ molar mass
Weight of CO₂ in a soccer ball	16.85	g/ball	calc (Volume of a soccer ball x number of molecules in a soccer ball)

Why is there a minimum amount I can offset?

After entering where you are travelling from and travelling to, the UEFA EURO 2016 eco-calculator shows you the emissions for different types of travel.

For example, a journey from London to Paris may result in the following emission values:

Type of travel	Emissions in tonnes of CO ₂ equivalent (tCO ₂ e)
Plane	0.17
Car	0.04
Bus	0.08

You then have the option to choose to offset the emissions from your chosen type of travel. In the above example the emissions from plane travel are 0.17, but you will notice you only have the option to pay to offset half a tonne of CO₂e.

For each purchase of carbon offsets there are associated costs. This includes processing fees from financial institutions and costs relating to our strict quality control and audit requirements. For the above reasons we have established a minimum purchase amount of half a tonne of CO₂e.

If your own emissions are below this minimum level, consider including the people you are travelling with in your purchase. If your emissions are still below 0.5 tonnes, please consider the difference as an additional contribution to the protection of the environment.