THE SUSTAINABLE APP

We are EcoVera – the fastest and easiest app to become more Eco.

Every day, billions of people make a simple choice: how to get from A to B. That choice is responsible for **30%** of the global CO_2 emissions, and most people have no idea what their journey costs the planet. EcoVera changes that, facilitating the everyday choice. It calculates your emitted CO_2 in seconds and recommends possible alternatives for the journey – simplifying greener decision-making.

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HOW WE WORK

We are a team of students from different countries, working together across multiple locations. Due to this, we schedule regular weekly meetings where we prepare for the weekly challenges, discuss progress, and divide upcoming tasks. This helps us stay aligned and avoid confusion about who is responsible for what.

For collaboration, we use GitHub as a shared development environment. Each team member works on their own computer and contributes to the project through the repository. Smaller or completed changes can be uploaded directly to the main branch, while more complex features are developed in separate branches. This allows us to work in parallel without interfering with each other's code.

Using this system, we can keep track of all changes, easily fix mistakes, and maintain a structured development process. Overall, our workflow allows us to collaborate efficiently despite working remotely and ensures steady progress throughout the project.

METHODOLOGY

ASSUMPTIONS

Our methodology is based on a few necessary assumptions to ensure the app remains both user-friendly and relevant to our target group (students and businesses).

While our app is available globally, we have primarily based our methodology on Norwegian and European baseline data (e.g., SSB, DEFRA, and EU EEA). We assume that for users within Europe, these factors are highly representative. For users outside Europe, we clarify that regional differences in energy sources and transportation infrastructure may affect accuracy, and the proxy model using Norwegian standards is a conservative estimate until regional data are available.

Furthermore, there are variables that will naturally affect emissions but are difficult to estimate. To avoid making the app complicated or demanding for our users, we use average values that represent typical conditions. Most users do not know their car's exact carbon output per kilometer, so for both private and corporate transport, we use an average vehicle emission factor by fuel type (e.g., Diesel, petrol, EV) rather than specific engine models. The same applies when calculating certain types of public transport; we calculate emissions per passenger using an average passenger rate, since users usually do not know how many passengers the total emissions should be distributed among.

This problem disappears in the calculations for cars and motorcycles, though it results in a small adjustment to the formula shown below. These simplifications ensure that the app remains easy to use while still providing customers with meaningful, trustworthy insights into their travel-related emissions.

LIMITATIONS

While the methodology provides a reliable estimate of the carbon impact, there are still some limitations in our data.

The application's data is based on the average emission factors rather than real-time data, which can be affected by vehicles, buildings, and the weather. For example, the app offers dependable insights they can trust for their planning and decision-making. The app does not know if you are driving an old car that uses a lot of fuel or a brand-new one that is very efficient. It also cannot see if you are stuck in heavy traffic or driving in a cold Norwegian winter, both of which make a vehicle burn more energy. However since we want the app to be fast and easy to use, we accept these small differences in exchange for a better user experience.

Moreover, the geographical focus is on Norwegian and European datasets, the app will be more accurate in these regions. We want users to feel that their specific context is taken into account, especially since Norway relies on clean energy sources like hydropower, which our calculations reflect. If a student or a business uses the app in a country that relies on coal or gas for electricity, they should be aware that the app might show a lower carbon footprint than actually occurs.

We aim to make users feel understood by clarifying regional differences and limitations, ensuring they interpret results appropriately. Additionally, the accuracy of the final report depends entirely on the integrity of user-reported data, as the app cannot independently verify the distances or fuel types the user enters.

CALCULATIONS

Our app calculates the carbon footprint of a trip by multiplying the distance traveled by a specific emission factor. We use two variations of this formula depending on the type of transport.

PUBLIC TRANSPORT

For public transport, the calculation is straightforward. The calculation uses passenger-kilometers (pkm) as the unit. The app assumes a pre-calculated emission factor that already accounts for average passenger occupancy:

CO2 = DISTANCE X EMISSION FACTOR (G CO2/ PKM)

- CO2: The total amount of carbon dioxide emitted for each trip (measured in grams or kilograms).
- Distance: The total length of the trip in kilometers (km).
- Emission Factor: The average amount of CO2 produced per passenger-kilometer for that specific mode of transport (e.g., bus, train, tram).

PRIVATE TRANSPORT

For private vehicles, the vehicle's total emissions are divided by the number of people sharing the ride. This rewards users for carpooling, as it lowers their individual carbon footprint:

CO_2 = DISTANCE X (EMISSION FACTOR/ PASSENGERS) (G CO_2/KM)

- Passengers: The number of people in the vehicle (input by the user).
- Emission Factor: This represents the vehicle's total emissions per kilometer.

The formulas are taken from the GHG Protocol (2013) and are referred to as activity- or distance-based formulas. This is clear since we multiply the distance in kilometers by the emission factor.

INDIVIDUAL TRANSPORT

CAR

Road traffic remains a primary focus for carbon reduction in Norway. While Norway has the highest percentage of electric vehicles in the world, with EVs accounting for over 90% of new car sales in 2025 (OFV, 2026), its total fleet still includes many petrol and diesel vehicles. Our methodology uses specific fuel-based data to show students and businesses the clear impact of their transport choices.

The emission factors data in our app are sourced from the UK Government's Department for Energy Security and Net Zero (DESNZ/DEFRA, 2025). These figures represent the CO_2 equivalent (CO_2e) produced per kilometer by an average-sized car.

Fuel type	Emission factor (g CO_2/km)
Petrol	162g
Diesel	158g
Electric	37g

Petrol and diesel car
Traditional internal combustion engines burn fuel directly to make the vehicle run efficiently. According to the UK Government (2025) data, a standard petrol car emits 162g per km, while a diesel car is slightly more efficient at 158g per km. While the difference between petrol and diesel is small, both are still significantly higher than electric alternatives.

Electric Car
Even though electric vehicles have no tailpipe emissions, they are assigned a value of 37g/km based on the carbon produced during electricity generation (UK Gov, 2025). It is important to note that this 37g figure is based on the UK's energy mix. For our users in Norway, this is a "conservative estimate," as the Norwegian energy grid is even cleaner due to high hydropower production (Miljødirektoratet, 2026). The electric cars in Norway are estimated to emit around 8-11g CO2/km (Miljødirektoratet, 2026). However, using the UK standard ensures our app remainsrobust and applicable for businesses operating across European borders.

MOTORCYCLE

Motorcycles are often seen as a middle ground between private cars and public transport. Because they are lighter and have smaller engines, they typically use less fuel than cars. We use UK Government data (DESNZ, 2025) on motorcycles. The numbers represent an "average" motorcycle size (between 125cc and 500cc).

Fuel type	Emission factor (g CO2/km)
Petrol	111g
Electric	23g

BUS

Buses are significantly more efficient than private cars because they distribute their total emissions among many passengers. In our methodology, we use an average passenger load to calculate the "per passenger" footprint. This effect is even greater now that more cities have switched to electric buses, which significantly reduces emissions. We have adopted the European Union (EEA, 2025) standards for our bus calculations.

Fuel type	Emission factor (g CO2/km)
Diesel	102g
Electric	21g

LIGHT RAIL TRACK (BYBANE)

In Bergen, most people often use the light rail track, Bybanen, as their main form of daily transportation. According to its 2023 sustainability report, Bybanen AS's emissions totaled 1210 tonnes CO_2 (Bybanen AS, 2023), with only 212 tonnes from electricity and heating (Bybanen AS, 2023). The annual boardings for 2025 are 26.3 million (Skyss, 2025). Assuming an average trip length of 9 km, we can estimate the total passenger-kilometres per year and calculate the carbon footprint, which comes to about 4 g CO_2 per passenger-kilometer.

TRAIN

Here, we distinguish between diesel-powered and electric trains. An electric train offers several advantages, such as its ability to recover energy during braking, and a positive impact on its users in terms of noise pollution: less sound and a more pleasant ride (Vy Group, 2025). Diesel trains, on the other hand, typically have a negative impact on the environment directly along the route in terms of air and noise pollution.(DESNZ, 2025)

Fuel type	Emission factor (g CO2/km)
Diesel	91g
Electric	7g

AIRPLANE

If we focus on aircraft emissions across different cabin classes, the following becomes apparent: typical CO_2 emissions in economy class are significantly lower than in business class. This is because the number of seats in economy class is significantly higher, so emissions are spread across more passengers. While the economy "only" consumes 80–100 g CO_2 per passenger kilometer, business class typically emits 200–400 g CO_2 per passenger kilometer. This is because the same emissions are spread across fewer people. Business class, therefore, causes 2–4 times more emissions per person than economy. If we now look at aircraft size, we see a similar pattern. The smaller the aircraft, the higher the CO_2 emissions per seat. The CO_2 emission of a Bombardier CRJ900 is 120 to 180 g CO_2 per passenger-kilometer. A medium-sized aircraft such as the Airbus A320 consumes less, namely 80 to 110 g. A large aircraft consumes the least: the Boeing 787, for example, emits 70-100 g of CO_2 per passenger-kilometer (Gössling et al., 2026). It can therefore be concluded that space and passenger numbers are decisive factors. The worst-case scenario would thus be business class on a small aircraft.

Airplane size	Emission factor (g CO2/km)
Small	120 - 180g
Medium	80 - 110g
Large	70 - 100g

Cabin Class	Emission factor (g CO2/km)
Economy	80 - 100g
Business	200 - 400g

FERRY

Ferries are amongst the most polluting forms of transport, due to their need for diesel. Ferries emit around 200 g of CO_2 per kilometer. However, they are not as commonly used throughout Europe. Modern Ferries use LNG (liquefied natural gas), which reduces emissions slightly.

Fuel type	Emission factor (g CO_2/km)
Diesel	180 - 220g
LNG Natural Gas	150 - 165g

BICYCLE

When we look at bicycles, emissions are, logically, very low to the point of being negligible. A standard bicycle emits around 5 g of CO_2 per kilometer. However, this is not caused by riding the bicycle but by the bicycle's manufacturing. With an e-bike, the electricity used for charging is added to this figure. This also amounts to 5–10 g of CO_2 per kilometer. Nevertheless, the overall emissions from cycling remain low and sustainable.

Fuel type	Emission factor (g CO_2/km)
Traditional	5 - 12g
Electric	13 - 22g

WALKING

Walking is the most emission-friendly mode of transport as it doesn't produce any direct CO_2 emissions. It requires no fuel during the journey

BUSINESS TRANSPORT

TRUCK & VAN

For businesses, especially logistics companies, trucks and vans are among the most common modes of transportation for delivering goods. Our methodology uses 2025/2026 data from the UK Government (DESNZ) and the European Environment Agency (EEA), focusing on grams of CO_2 per kilometer (g/km) for vans and per tonne-kilometer(g/tkm) for trucks.

Fuel type (Van)	Emission factor (g CO2/km)	References
Diesel	245g	DESNZ 2025
Biodiesel (B100)	104g	RTFO / DESNZ
Electric	48g	DESNZ 2025
Hydrogen	28g	Pilot Data 2026

Fuel type (Truck)	Emission factor (g CO2/km)	References
Diesel	75g	EEA/ DESNZ 2025
Biodiesel (B100)	32g	HVO 100 Standards
Electric	18g	Volvo 2026
Hydrogen	14g	Alstom/ Daimler 2026

AIR FREIGHT (CARGO PLANE)

Unlike passenger travel, cargo emissions are strictly linked to weight. In professional logistics, these emissions are measured in grams per tonne-kilometer (g/tkm), meaning the carbon cost of moving one tonne of cargo for one kilometer. We use the UK Government (DESNZ, 2025) and IATA (2026) standards for dedicated freighter aircraft.

Aircraft type	Fuel type	Emission factor (g CO2/km)	References
Dedicated cargo plane	Jet fuel (fossil)	602g	DESNZ 2025
Belly cargo (passenger plane)	Jet fuel (fossil)	410g	IATA / DESNZ
Dedicated cargo plane	SAF (Sustainable Aviation Fuel)	102g	IATA

Belly cargo is the normal passenger flight that carries cargo (goods) in the belly of the plane to save cost, since it is shared with the passengers
Dedicated cargo refers to specialized freight planes (for example, DHL, UPS, Qatar Cargo, Etihad Cargo, KLM Cargo, etc.) that carry only goods. Their footprint is higher because the entire fuel burn is attributed to the cargo.

SAF is a fuel produced from non-fossil sources, such as waste fats, oils, and greases, that can be mixed with traditional jet fuel without requiring aircraft modifications. Unlike fossil fuels, which release carbon that has been locked underground for millions of years, SAF recycles carbon that is already in the biosphere. Over its full lifecycle, SAF can reduce carbon emissions by up to 80% compared to traditional jet fuel. (IATA, 2025)

RAIL FREIGHT

Rail is inherently more efficient than road or air because of low rolling resistance. However, the carbon footprint still depends on the locomotive's power source.

Fuel type	Emission factor (g CO2/km)	References
Diesel	28g	DESNZ 2025
Electric	6g	EEA / Vy 2025

CONTAINER SHIP

A conventional marine diesel engine typically emits between 10 and 15 g of CO_2 per tonne-kilometer (IVE mbH et al., 2024). A special type of oil, known as HFO, is often used and is particularly harmful to the environment. An LNG-powered ship emits less CO_2 per tonne-kilometer than a diesel-powered one. The problem, however, arises from the use of another substance, methane, which is about 80 times more potent as a greenhouse gas than CO_2 over 20 years. The climate-friendliness of biofuel-powered ships depends heavily on the country of origin. With sustainable biofuel, emissions are kept very low or neutral. “Poor-quality” biofuels, such as palm oil, can often be even worse than diesel in terms of sustainability.

Fuel type	Emission factor (g CO2/km)
Diesel	10g - 15g
LNG	10g
BioFuel	3g - 8g

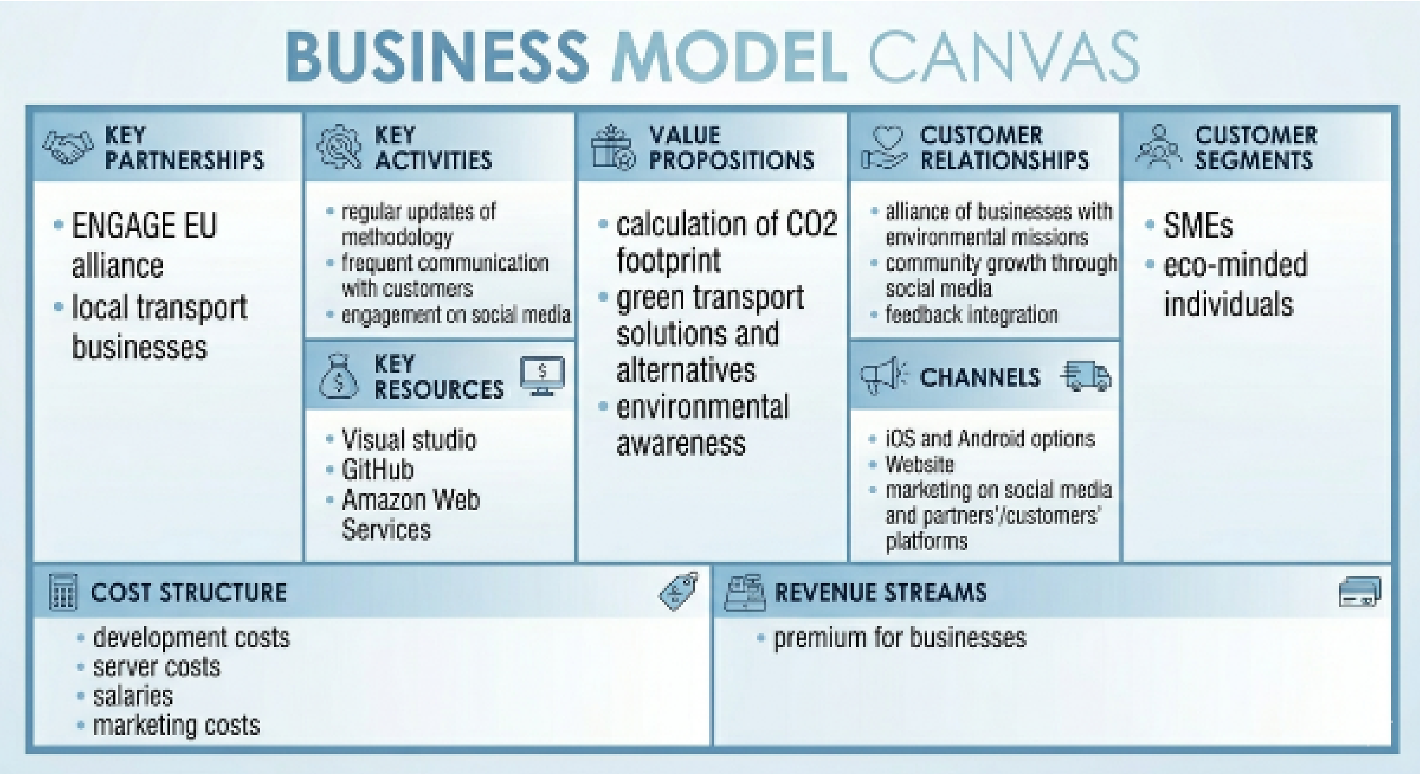
PIPELINE

A pipeline powered by fossil fuels typically consumes between 15 and 25 g per tonne-kilometer. The environmental impact depends on the specific type of fuel used (IEA, 2024). In the case of gas-powered pipelines, this is compounded by the use of methane, which is a potent greenhouse gas. The combustion of natural gas or diesel also results in direct emissions along the route. Electrically powered pipelines consume between 7g and 10 g of CO2 per tkm (CE Delft, 2003). They produce no direct emissions along their route and completely eliminate methane use. As with trains, infrastructure and cost issues are relevant here.

Fuel type	Emission factor (g CO2/km)
Gas Powered	15g - 25g
Electric	7g - 10g

BUSINESS MODEL

Our business model aims to spread awareness and help individuals and businesses change. We want to shift the narrative around green solutions – making them more visible, accessible, understandable, and implementable.



KEY PARTNERSHIPS

For this project with the intended significant impact, it is important to work in an efficient, collaborative team with key partners and valuable external support. The alliance between ENGAGE.EU universities played a crucial role in making the project a reality. In the future, we intend to collaborate more closely with local transport companies and networks to broaden our reach and promote our idea. We believe awareness is key to making a change.

KEY ACTIVITIES

With each innovation and technological solution, frequent updates are essential. We want to ensure a smooth and comfortable experience for our users; therefore, regular communication with our partners and customers, as well as keeping methodology and calculations up to date, are our key priorities. Communication is reached through the app, website, or social media. We consistently work with experts on global warming to bring the latest and most accurate methods for calculating emissions.

KEY RESOURCES

We use a diverse range of resources, mainly Visual Studio and GitHub for development, and Amazon Web Services for the server of the app. Meanwhile, we focus on deploying the latest tools on the market to maintain our competitive edge and deliver the best experience for our consumers.

VALUE PROPOSITIONS

EcoVera breaks down the big problem: global warming and CO2 emissions. It makes the solution easier to understand and implement in users' daily routines and business strategies, while tracking daily distances and CO2 emissions. The change becomes part of daily life or business decision-making, a planted habit towards a more sustainable future.

CUSTOMER RELATIONSHIPS

We aim to build a strong, trusting community of individuals united by the same mission to tackle rising CO2 emissions. Moreover, we want to create an alliance of our business customers to work on a sustainable future together. We want to make the transition towards greener solutions as seamless as possible; hence, trusting and open relationships are our key focus.

CHANNELS

The app is available for Android and iOS devices, and on the website. It is featured on our social media and mentions of our partners. We manage multiple channels to reach the widest possible user base and to offer multiple options for our customers.

CUSTOMER SEGMENTS

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COST STRUCTURE & REVENUE STREAMS

The main cost drivers are development and server costs, with salaries and marketing expenditure. We use a freemium structure – free for individuals and premium for businesses. Our services are offered to medium and small enterprises, which are our primary source of revenue. The premium plan will be designed to the business's specific needs - structured according to the range of services demanded and the amount of data to analyze.

SUMMARY

EcoVera brings a mission-driven solution for both individuals and businesses. With a clear value proposition and long-term revenue growth, we are ready to make greener choices the obvious choice – not the exception.

EcoVera is here for you, every day, 24/7.

Climate change starts with every small decision we make.
Count your emissions, compare your alternatives, and make a better decision today.

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