ECO-VISION PARTNERS

Candidate numbers: 12, 19, 22, 25, 26, 29, 35

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1. INTRODUCTION

In an era increasingly defined by climate change concerns, individuals and corporations are seeking ways to make a tangible difference. According to the latest report from the UN Intergovernmental Panel on Climate Change (IPCC), published in May 2022, climate change has already caused serious consequences such as species extinction, natural habitats destruction and increased frequency of natural disasters (Naturvernforbundet, 2022).

Long story short, climate change and pollution are real problems, and currently there is a need for tools to face it. Our team, who is aware of the dangers behind climate change and is willing to face them, has decided to take action and create a company which offers a new way of contributing to change.

While deciding what the company would be offering, we realized that transportation is one of the main contributors to the increase of greenhouse gas emissions and that there is room for improvement. Therefore, the team decided that the company would be related to it, and that is how *ECO-Vision partners* was born.

The company's service is an application with a calculator designed to track the carbon emissions generated by personal transportation choices. The service is designed to be consumed by Norwegian companies. Nevertheless, the business model chosen is business-to-business-to-consumer (B2B2C), which basically means that the service is purchased by companies but used by their workers.

Workers will use our application to keep track of the distances they travel and the transportation method they use. Not only for work-related travels, but also for their daily transportation choices. With the data provided, the calculator will give them the number of emissions emitted during their travels. Moreover, through intuitive interfaces and feedback mechanisms, the application aims to foster a sense of environmentally friendly lifestyle. Our first goal is indeed providing users with educational resources, on how their transportation habits are emitting and how they can reduce it.

Through corporate subscriptions, we provide our application to employees, fostering an environmentally conscious working culture that extends into employees' personal lives. This brings our second goal: to develop a caring working environment that acts beyond the corporation life and guides employees towards a green lifestyle. This point is further developed in the business model, target group (2.1).

Finally, our business model is designed to drive the corporations to achieve real change in the employees' lifestyle. Therefore, we have created our *ECO-Vision* Label, a certification that recognizes corporate efforts to inspire and motivate their employees to reduce carbon emissions.

In this paper, we will explain our application creation process. Focusing on the business model the company has chosen to follow, the methodology and data gathering behind the calculator, the functionality of the calculator itself and the innovations that we plan on implementing. Our aim is to motivate individual actions, as we firmly believe these are key to help solving the ecological crisis the world is currently facing.

2. BUSINESS MODEL

Eco-Vision Partners comprises a diverse team of programmers and economists with specialization in sustainability. Our team is unified by our commitment to UN's sustainability goals and addressing climate consequences. Furthermore, our comprehensive analysis has focused on emission from various transportation methods such as cars, planes, ferries and trains.

We recognize the importance of providing everyone with incentives to take part in reducing carbon emissions. Therefore, we license our application to companies, including their employees as users. The idea is that through their company, the employees get free access to use our application in their daily life, being able to track their transportation emissions. However, this approach prompts a fundamental question: *why should businesses invest in our services?*

The answer lies in the comprehensive suite of benefits that our application and accompanying services offer. Our unique incentive system revolves around our *Eco-Vision* label, awarded as companies and their employees reduce CO_2 emissions. This label serves a clear purpose to recognize and reward proactive efforts towards sustainability, with the following benefits:

- Increased Corporate Social Responsibility (CSR)
- Green funds (Help businesses fulfill the Environmental, Social and Governance criteria's)
- Attention from investors.
- Increased loan from banks to their capital (as banks often require businesses to have a certain level of sustainability)
- Increase efficiency and decrease costs (energy efficiency, waste management and resource depletion).

The label will be provided to the companies in a report, showing how sustainable the employees' transport decisions have been. This report will work as proof, and can be showcased to investors, banks, and other interested parties. By partnering with us, businesses not only bolster their CSR image, but also improve their Environmental and Social Governance (ESG) scores and help them with investing opportunities in the future.

We firmly believe our services are unique and relevant for the firms as our app fosters inclusivity by engaging all stakeholders in the carbon reduction journey. Through our business approach, we highlight the importance of businesses to encourage their employees to embrace green initiatives in their daily lives.

2.1. TARGET GROUP

Our target group comprises business-to-business-to-consumer (B2B2C) interactions. Presently, there is a noticeable shortage of tools to aid individuals in comprehending their emissions and how to reduce them. Our service will be a way for the companies' workers to easily face this problem.

Moreover, today's world is characterized by growing emphasis and expectations for businesses to prioritize social responsibility, often referred to as Corporate Social Responsibility (CSR). For example, the Transparency Act, or "*Åpenhetsloven*," implemented in Norway 2021, mandates public access to information, to ensure fair working conditions and uphold human rights (Forbrukerkjøpsloven, 2024). With the UN's sustainability goals in mind, it's plausible that new regulations and requirements will be implemented, and carbon emissions reports may be necessary for medium and small sized companies as well. Therefore, we expect the demand to be high and increase.

While small or medium-sized companies typically are not obligated to report their carbon emissions, we anticipate that this will not be a problem and expect a significant demand for our services.

All in all, our goal is to reach out to Norwegian companies of all sizes that have a real commitment to CSR values and the UN sustainability goals. We want compagnies that are open to innovation, that are aware of their employees' well-being beyond corporate life, and that emphasize the importance of reducing carbon emissions. Once the company is reached, they will be the ones in charge of providing the service to their customers (the employees), so that they can individually track their carbon emissions.

2.2. KEY ACTIVITIES

We aim to engage as many companies as possible and raise awareness about carbon emissions. To achieve this, we have developed a business model with a strategic approach and identified two main activities.

Our first need is to make sure our application calculator is up to date. We need to overcome coding challenges and update the data we use in the carbon calculator. Providing direct and individual feedback through graphs that provide an overview of the usage of different means of transport is included in this coding mission.

Secondly, we will provide the compagnies with precise and clear guidelines on how to reach the certification of our *ECO-Vision* label. Thanks to the company's' data collected over time; we will certify the efforts in annual reports. The guidelines will be based mostly on the number of workers in the company.

2.3. KEY PARTNERSHIPS

When considering key partnerships, we understand the critical importance of credibility in emissions tracking. We designed our business model with our solid background of economists and programmers with specialization in sustainability. However, we recognize that our carbon calculator application may be perceived as unreliable without trustworthy data. Therefore, to guarantee the accuracy of our information, our approach involves forming partnerships with companies that possess the requisite tools to provide us with precise, up to date data. Externalizing this activity ensures the reliability of our data and enhances the credibility of our carbon calculator application.

2.4. VALUE PROPOSITION

Our company is offering value in two different ways. On the one hand, for the company, who pays for the application deployment service, and on the other hand, for the workers, who use the service not only for work related travels but in their daily life.

By using the calculator of the application, we are offering the users an easy way to understand how their transportation habits are contributing to climate change. They can keep track of their carbon emissions and get started without worrying about the subscription fee for using our application. We offer a tool to act on the fundamental current need to mitigate emissions.

On the other hand, one of the benefits for companies that adopt our service is the public recognition and visibility of their sustainability efforts. Considering the ongoing need of companies to care about CSR, the company that uses the application could be rewarded with our *ECO-Vision* label. If they achieve our determined goals, they will be rewarded with the *ECO-Vision* label and win credibility for their sustainable achievement. In addition, the *ECO-Vision* label also represents an opportunity to bring investors to the compagnies.

Therefore, this service establishes competitive advantages that make our application stand out to customers.

2.5. CUSTOMER SUPPORT

Our service will need strong technical support to maintain customer satisfaction. Unfortunately, the team does not have the required skills to best provide this assistance.

As such, we will outsource customer support. Methods of helping customers could be through an assistance email and phone number, as well as potentially adding an online chat feature.

2.6. CHANNELS

Our main platform would be our application; however, we will also utilize other social media to spread our message. Due to how social media has a crucial role today, we will use platforms like YouTube, TikTok, Instagram, and Facebook to create short videos to spread our message effectively and advertise our application calculator. Furthermore, we will attend networking gathering to present our applicationlication to firms, find new partnerships and raise attention from press.

Please find the business model canvas we will inlcude in our webpage in the appendix.

3. METHODOLOGY

In this part, we will provide some background on how the carbon emissions are calculated when a user reports their transportation journey in our application. We focus on some theoretical insight of how CO_2 emissions in transportation can be calculated for each passenger and explain how and why we got the data used in the first deployment of the application.

3.1. DATA SOURCE

The quality of the service our company is offering relies hugely on the quality of the data used to offer this service. Therefore, to develop the formula needed for carbon emission tracking, we had to rely on consistent and trustable data sources. For the launch version of our application, we chose emissions values from multiple sources. These sources differ in some ways by their investigation techniques but are credible enough for our usage. As mentioned in our business model, a future goal would be to form partnerships with companies that possess the requisite tools to provide us with precise, up to date and reliable data.

3.2. CARBON CALCULATOR

To be able to calculate the emissions per kilometer travelled depending on the means of transport used, we need to break down a general formula. A common practice observed in multiple research papers (Noussan M. et al., 2022), is to include a parameter that captures an emission factor for each means of transport. As we know, Carbon Dioxide is not the only greenhouse gas that causes climate change. Therefore, we need a common scale to review the total emission of the user. To do so, we use Carbon Dioxide equivalents (CO_2e). This unit represents a global warming potential that differs when considering different sources of emissions such as Carbon Dioxide, Methane or Nitrous Oxide. Once we find data that is converted in a comparable unit (CO_2e), we can use it for all different means of transport.

Our different sources consider direct and indirect emissions that are emitted respectively when using the means of transport, during the supply of fuel or during the generation of electricity. This means that we can compare the emissions whether an electric or fueled vehicle is used. Indeed, even electric vehicles can indirectly contribute to CO_2 emissions if the electricity utilized for their battery charging is derived from fossil fuels. Finally, as our service basically will consist of informing our users of their carbon footprint for transportation, the data needs to be addressed per person and per kilometer travelled.

For each mean of transport, we found a CO_2e number that represents the *emission factor* in the following formula:

$$Emissions\ of\ travel\ journey\ with\ i = EmisionFactor_i * km_i$$

This formula represents the CO_2e emitted for a travel journey with the means of transport "*i*". It multiplies the emission factor of the mean of transport *"i"*, by the number of km travelled with it.

The final step to get the cumulative Carbon Dioxide equivalent of every means of transport used by the user is to sum up every input of the user. The result will represent the total emission of the user in his travel journeys.

$$Total\ emissions = \sum_i EmisionFactor_i * km_i$$

Here, each calculation of individual journey with the means of transport *"i",* is summed up to get the total emissions of the user.

In the next section, we will discuss and present the emission factor in grams of CO_2 per kilometer and per passenger for the different means of transport we suggest in our application calculator.

I. MOTOR VEHICLES

The impact of different modes of transport on our environment, particularly in terms of emissions, is a topic of considerable importance. This paper concentrates on various types of motor vehicles including electric, hybrid, and fossil fuel-powered vehicles, specifically diesel or gasoline. The information provided here is based on general averages due to the vast diversity of potential vehicles. These figures have been sourced from credible reports by Statistics Norway (Fedoryshyn, 2016) and DNB (Eide, 2023), as well as the VY 2023 sustainability report (VY, 2023).

A. ELECTRIC VEHICLE

The emissions from motor vehicles are heavily influenced by the type of vehicle and the source of its energy. Electric vehicles (EVs), for instance, can have significantly different emission levels depending on how the electricity used to power them is generated. In countries like Norway, where electricity is largely sourced from renewable resources such as hydropower, the indirect CO_2 emissions from operating an EV are lower. On average, a passenger EV using electricity generated in Norway emits $10gCO_2$/Km, while the same vehicle in the EU, where the energy production mix is different, emits $34.6gCO_2$/Km. Electric buses, according to the VY report, emit an average of $13gCO_2$/Km.

B. FOSSIL FUEL VEHICLE

Fossil fuel vehicles, on the other hand, also have varied emissions. Here are some averages:

- Passenger car: $156.47gCO_2$/Km
- Motorcycle: $85.20gCO_2$/Km
- Diesel Passenger Car: $130.09gCO_2$/Km
- Light Truck (pickup): $181.85gCO_2$/Km
- Heavy Truck (highway truck): $1000.90gCO_2$/Km
- Bus: $855.40gCO_2$/Km

II. PLANE

Air travel is another major contributor to emissions, with levels greatly determined by the size of the aircraft. Data from the International Council on Clean Transportation (B. Graver et al, 2020) provides the following averages:

- Regional jets (small planes, typically in a 2x2 seating configuration): 162gCO_2/passenger/Km or 12635gCO_2/Km for cargo
- Narrowbody (medium planes, typically in a 3x3 or 2x3 seating configuration): 86gCO_2/passenger/Km or 15480gCO_2/Km for cargo
- Widebody (large planes with two aisles): 89gCO_2/passenger/Km or 25810gCO_2/Km for cargo

Despite these figures, it is essential to remember that the stated emissions only account for a fraction of the actual climate impact of traveling by plane.

III. FERRY

In a country like Norway, ferry is a widely used mean of transport. Its carbon emission depends on the type of energy used, whether it runs on fuel oil or on a low emitting technology. Relying on data from a Norwegian study (Helle, 2022), a ferry running on diesel emits 226 gCO_2/Km. E-Ferrys are not yet widely used but the emissions are indeed lower. Ferries running on hydrogen are also deemed to be emitting zero CO_2. However, data on these two means of transport are not yet very reliable. Moreover, as they are still not widely implemented, we will not consider these in our application.

IV. TRAIN

Railways emissions in Norway are especially low as they run on electricity. The same Norwegian study (Helle, 2022) stated previously presents the following emissions:

- Train in Norway: 7gCO_2/Km
- European mean: 45 gCO_2/Km
- Diesel-train: 91gCO_2/Km.

V. WALKING AND CYCLING

While some studies consider indirect emission caused by the manufacturing process of bikes, we will not take this into consideration for our application calculator. The direct usage of a bike does not emit any CO_2, nor does walking.

Please find a summary of the numbers we used in the application in the appendix.

4. APPLICATION DEPLOYMENT

Our first application deployment focuses on the emissions in the transportation sector. By giving precise inputs of their transportation journeys, the users will get an overview of their emissions. The first goal is to raise awareness about which transportation habits have to be adapted to lower emissions. As our business is in the implementation phase, we targeted our efforts in the core of the application. In line with our business model, we will implement further innovation to our application to enhance our value proposition.

4.1. FUTURE OUTLOOK

For further development, we aim to implement personalized services and two additional calculators for the users. These services focus on the user's lifestyle such as health, eating habits and shopping. The goal would be to have a wider impact and address multiple aspects of the user's well-being.

Our first improvement will be to implement personalized and individual guidance on how the user can reduce carbon emissions depending on what the output of its emission is. For instance, if a user uses the car for a lot of short distance travels, we encourage the user to try to use a bike instead. More generally, we will encourage the users to engage in less emitting activities. We would implement this service by coding specific lines, for example, if the users input exceeds three travel journeys by car of less than 10 km, a new window would appear to suggest an alternative mean of transport.

Secondly, we would like to expand our tracking system in other aspects of an individual's daily life that are very much emission consuming. Recent reports have underscored the significant role both of the retail sector (Lukić, R. 2017) and meat consumption (Aston, 2012) in driving domestic CO_2 emissions, as well as the profound implications for both environmental and social issues. Therefore, we would implement a new tracking system for shopping and meat consumption. The shopping tracking would calculate how much CO_2 equivalents are emitted depending on the origin of the product and its supply chain. The meat consumption tracker would calculate how much CO_2 equivalents are emitted in the farm production system.

These new implementations would bring several new challenges such as revising code, expanding the business model or conducting extensive data research. As our business model would expand, it surely will become a challenge to manage all the aspects of our activity. Therefore, hiring new specialists in data research and externalizing some activities, such as coding, would be a wise consideration.

5. SUMMARY

As climate change becomes a huge social issue, the companies' responsibility is being questioned more and more. Therefore, we are convinced that a tool to visualize corporate efforts is needed. As a team of programmers and economists specializing in sustainability, we decided to develop *ECO-Vision Partners* and meet the demand for corporations willing to take action in mitigating emissions.

With our coding achievements as well as our solid calculation methodology, we deployed an application that allows users to track the CO_2 emissions of their daily transportation habits. To extend the incentive for compagnies to use our service we created the *ECO-Vision* label. Our unique certification will be guaranteed for the companies that show real commitment to encourage sustainable transportation habits of their employees. Based on business-to-business-to-consumer (B2B2C) interactions, we create value for both the company and the employees. On one hand, we raise awareness of the user's CO_2 emissions and on the other hand we offer a valuable certification to the company that accounts for the efforts in reducing the employee's emission in their daily life.

Furthermore, we imagined some extension of our business model that would require externalization and the creation of partnerships. This would include support in data research as well as new tracking systems for shopping and meat consumption.

Finally, we firmly believe that *ECO-Vision Partners* provides effective solutions for addressing both Corporate Social Responsibility and the reduction of CO_2 emissions.

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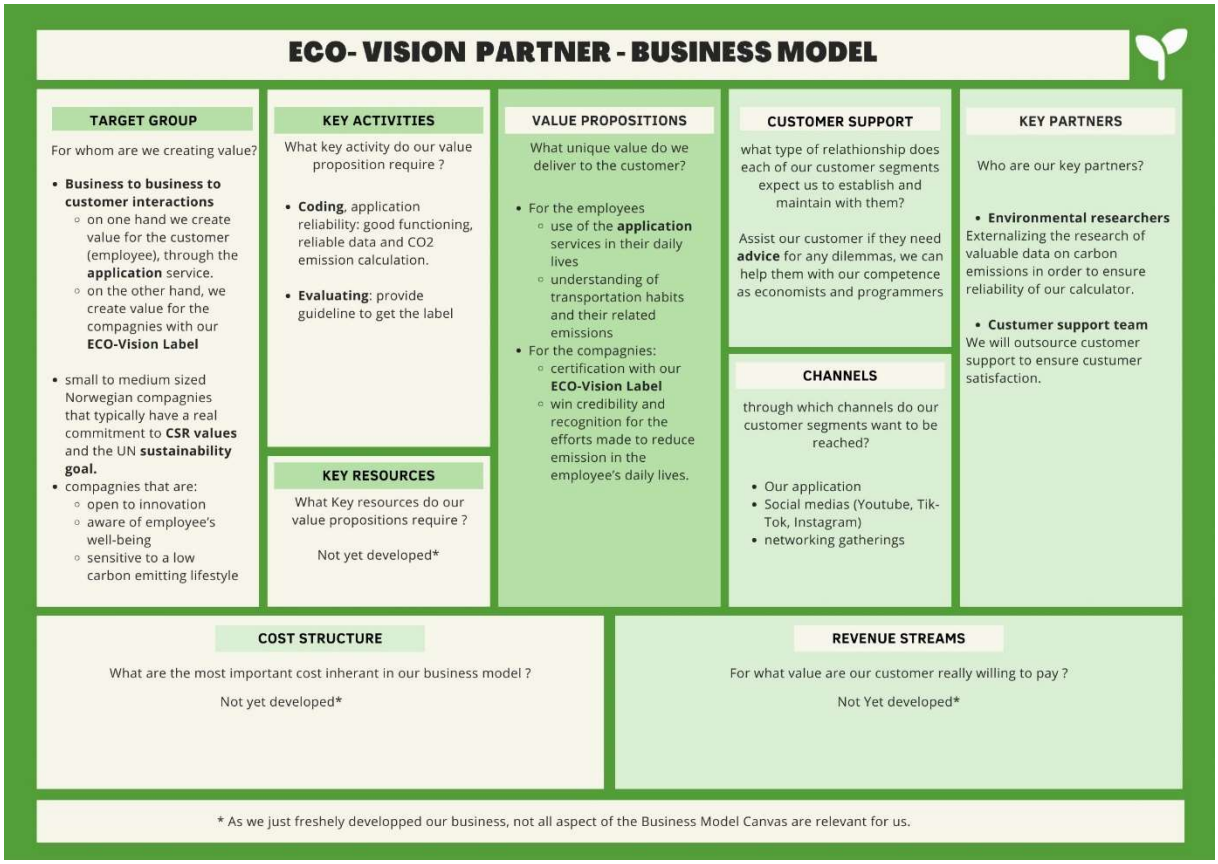
APPENDIX

BUSINESS MODEL CANVAS



SUMMARY TABLE OF NUMBERS USED IN THE APPLICATION CALCULATOR

Mean of transport	Generating power	Grammes of CO2 per passenger and per kilometer
EV in Norway	Electricity	10
EV in Europe (mean)	Electricity	34.6
Fossil Fuel car	Fossil fuel	156.47
	Diesel	130.09
Motor cycle	Fossil fuel	85.2
Light truck (pickup)	Fossil fuel	181.85
Heavy truck (highway truck)	Fossil fuel	1000.9
Electric Bus	Electricity	13
Bus	Fossil fuel	855.40
Train in norway	Electricity	7
Train in Europe (mean)	Electricity	45
Diesel-Train	Diesel	91
Ferry	Fossil fuel	226
Regional jet	Fossil fuel	162
Cargo regional jets	Fossil fuel	12635
Narrowbody plane	Fossil fuel	86
Narrowbody cargo plane	Fossil fuel	15480
Widebody plane	Fossil fuel	89
Widebody cargo plane	Fossil fuel	25810
Walking	-	0
Cycling	-	0