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GreenMobility: Car Sharing, Electric Vehicles and the Future of Green Urban Mobility

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Summary

The future of Green Urban Mobility is electric, clean, cheap and shared. GreenMobility, is based in Copenhagen. The company leverages current global megatrends and industry expertise to create value for stakeholders and customers alike. We are pioneers of Green Urban Mobility and are poised to be a part of several exciting projects involving electric vehicles in the future.

Keywords: car sharing, fleet, EV (electric vehicle), business mode, mobility concept

1 Introduction

1.1 The future of Green Urban Mobility is electric, clean, cheap and shared. Electric vehicles and more specifically, electric vehicle car sharing are integral aspects of this future. According to experts, "the mobility sector needs to undergo a transition towards sustainability." Although electric car sharing is a profitable business, which positively impacts the environment, these types of businesses do come with their own unique set of challenges [1]. Furthermore, Sustainability, urbanisation and the sharing economy are three current global megatrends, that are expected to continue for years to come.

Green mobility is a forerunner in the electric car sharing industry, leveraging these megatrends to drive a successful, environmentally responsible business. This type of company takes a step in the right direction towards climate change. We look forward to growing this concept sustainably, with exciting innovations, such as smart-grids and self-driving cars. Currently, there are hundreds of car sharing operations throughout the world. However, only a select few possess purely electric fleets.

2 GreenMobility and Electric Vehicles

2.1 GreenMobility

GreenMobility was founded by Henrik Isaksen, a perennial entrepreneur, in October 2016. The company was listed on the Nasdaq Copenhagen stock exchange in June 2017. Our ambition is to be among the leading players in the fast-growing market for European car share providers, with a sustainable focus. We have profound experience working with the three major business segments. In addition to B2C, we have extensive experience and success working with both B2B and B2G

Current State of Implementation: At present, GreenMobility operates a fleet of 400 electric vehicles (EVs) in Copenhagen. We operate an additional 200 vehicles in Oslo, together with one of our partners, the Norwegian National Railway (VY). So far, the company has experienced remarkable results. In less than two years, we

helped to reduce the number of private cards by almost 5% [2]. Moreover, 21% of our members have decided not to buy a new car and have switched to GreenMobility's EVs instead.

Our ambition is +15 cities by 2021. We aim to create a greater environmental impact through our presence. We have used a variety of parameters to determine, which European cities will be the best fit for GreenMobility. Implementing our service in strategically chosen cities, enables us to help reduce high levels of traffic congestion, noise and CO2 emissions. We have found several cities that fit the parameters we are looking for and we are currently looking for partners in these cities to work with in our exciting, expanding operations.

2.2 Free Float Car Sharing, Satellites and Hotspots

Free-float car sharing is based on operating a fleet of cars, operating within a defined zone. In mid-size to large cities, the zone usually includes the entire city and select suburbs. Unlike station-based car sharing, the cars do not have to be picked up from or returned to certain stations. Instead, the user can choose from a seemingly endless number of pre-approved parking spaces, Hotspots and satellite zones, where they can end their trip. The user can also make stopovers outside of the operational zone.

The GreenMobility concept also includes Hotspots and satellite zones. Both offer still more parking opportunities, though they perform different functions. Satellite zones are certain areas, outside of the operational zone, where the user can start and end their trip. Examples of these satellite zones in Copenhagen include hospitals, universities and businesses with campuses outside of the operational zone. Hotspots are parking spaces, that are reserved specifically for GreenMobility vehicles. For instance, we have several Hotspots in the form of parking in the form of parking garages in downtown Copenhagen. Hotspots are also locations, where users can find cars, that are ready to book and drive. These Hotspots are usually located in areas of the city, where it is very difficult to find parking.

2.3 Electric Vehicles- Acceptance and Use

GreenMobility and electric vehicles are inherently intertwined**.** Electric vehicles are an ever-improving, sustainable alternative to gasoline and diesel-powered cars. Researchers at the Technical University of Dortmund discovered that acceptance of electric vehicles increases, as more people become acquainted with using them. "The acceptance and intention to use innovations is significantly influenced by two variables: perceived usefulness and perceived ease of use [1]." Their study found that survey participants with car sharing experience rated the perceived the usefulness of EV's significantly higher than those who did not have experience with car sharing [1]. In other words, people who have used electric cars think they are easier to use and more useful.

We have experienced the same anecdotal evidence with employees at our headquarters in Denmark. We hypothesize that as more people become accustomed to using electric cars that they will become more comfortable using them, which will lead them to use these types of vehicles more frequently; influencing their friends and family to do the same. We have also noticed that acceptance and frequency of use in our Norway operation has been very rapid- much faster than anticipated.

3 Global Megatrends

3.1 Sustainability

GreenMobility leverages three current global megatrends: sustainability, urbanisation and the sharing economy in order to implement a successful business model and generate profit. First, Sustainability is a key concept in today's climate change discourse. Sustainability in terms of car sharing means a car sharing service that both benefits the environment and creates value and a source of revenue for stakeholders, so that it can thrive long-term. GreenMobility incorporates this sustainable mentality by improving the lives of not only their customers, rather all residents in the cities in which GreenMobility operates.

The EU supports the Green Agenda and GreenMobility initiatives, such as electric vehicles. Such support creates a palpable change in their usage. For instance, Norway provides the largest incentives for electric vehicles and, as a result, has the highest number of EVs per capita in Europe, according to the International Energy Agency in 2016.

3.2 Sharing Economy

The Sharing economy has seen exponential growth over the past five years. In 2019, there is no sign of this trend slowing down any time soon. Instead, the reverse is true."Car-sharing can certainly contribute to reducing the number of cars on the road, since replacement rates can be as high as 15:1, i.ie. 15 prior car owners can be accommodated by 1 car sharing vehicle [3]." GreenMobility leverages this sharing economy to create value for customers and shareholders alike.

3.3 Urbanisation

Ever-increasing urbanisation exacerbates many challenges in mid-size and large cities, including congestion and parking. This increase produces a need for change and more sustainable solutions for urban environments. Although changes must be undertaken in many areas, GreenMobility, and by extension this paper, focuses on the need for change solely in terms of mobility. Green mobility is a carbon neutral, electric car sharing service. For this reason, GreenMobility and its employees, are true Changemakers.

Gasoline and diesel cars are very noisy compares to electric vehicles. Reduced noise makes major cities more liveable. An entire fleet of electric vehicles increases this positive change exponentially
We help cities reduce the number of private cars with reduced CO2 and NOX levels. In this way, we are changing the future, making cities more liveable. We offer urban residents a simple, convenient, sustainable addition to public and private transportation by meeting their mobility needs.

4 Challenges and the Green Agenda

According to experts, "the mobility sector needs to undergo a transition towards sustainability." Although electric car sharing is a profitable business, which positively impacts the environment, these types of businesses do come with their own unique set of challenges [1]. For example, difficulties caused by government and municipality rules. Despite the fact that many government entities and municipalities have committed to support and encourage environmentally friendly mandates and businesses, such as electric vehicle car sharing services. However, from our experience, these mandates are not at the top of their priority list in practice. As such, it can sometimes be difficult to convince these entities to act in accordance with their commitments.

Parking is another challenge, to varying extents in the cities we have worked in. The number, cost and administration of fines pose a continual challenge and at present, government authorities are reluctant to intervene. Given the increased focus on the Green Agenda, it is highly likely that the value and frequency of electric vehicle and car sharing subsidies will increase. This could be highly advantageous for electric vehicles in general and more specifically for free-float electric car sharing services, like GreenMobility.

4.1 Climate Change and Development

Many European cities have committed to reducing CO2 emissions and adopting other measures to impede climate change. A number of these cities are falling short of their commitments. We can help cities towards their goals because our cars are carbon neutral and do not release harmful gasses into the atmosphere. GreenMobility is committed to reducing the amount of CO2 and NOX released into the atmosphere. Since opening in 2016, we have prevented over 1000 tons of CO2 from being released into the atmosphere [2].

Electric vehicle car sharing is not only good for the environment, it can be profitable. It can pay to be green. With all the know-how we have gained, we can prove that electric car sharing business can be both best for the environment and best for the wallets of our stakeholders.

We have chosen to operate GreenMobility as a franchise in other country. The possession of a fleet large enough to satisfy the demands of customers, but not too large that cars are idle and unused for long periods of time is a combination of fine art and science, determined by our data scientists.

4.2 Users and Trends

In 2019, we still refer to many of our customers as members of the firstmovers. In the new future, we believe that our customer base will change, becoming early majority and in a few years late majority users

Today's young users make up a significant portion of our customers and overall, are more readily accepting of shared electric vehicle solutions; more than their older counterparts. The youth of tomorrow will have grown up with both a familiarity with shared mobility solutions and enhanced awareness about climate change and environmental issues. We believe that this will translate into instantaneous acceptance pf and desire for access to shared electric vehicle fleet, when these future users become old enough to drive.

Big Data are highly important today and all signs indicate that this will continue to be true in the future. Soon, electric vehicle fleets like ours will gather immense amounts of information about driver behaviour, human driving tendencies, road conditions, etc…This data can then be used to increase the speed at which autonomous vehicles and robo taxis are developed. The data can also be used to enhance driver safety and warn drivers of a variety of hazards.

Already in 2019, we are seeing a tendency towards less private cars per capita. This movement from access to ownership is expected to continue. Especially as cities introduce more restrictions and taxes on privately owned gasoline and diesel-powered cars in urban areas. At the same time, governments and municipalities are aware of the multitude of benefits produced by a shared electric car sharing service, like GreenMobility. These benefits include reduced traffic, congestion, pollution and noise. Additionally, increased space and cleaner air resulting from a reduction in the number of private cars. In the future, cities will become stronger allies of shared electric fleet service providers. This will then result in fewer private cars and larger shared electric vehicle fleets on the streets of large cities.

5 The Future and Conclusion

The future of mobility is bright and exciting. In the next decade, we will likely see the widespread introduction of Smart Grids, Robotaxis and Self-Driving Cars. GreenMobility will be a key player in the development and implementation of these innovations. Our electric cars and tech whizzes will gather a wealth of data from the cars, which among other things, can help ease and speed the development of comfortable, reliable self-driving cars.

Similar to self-driving cars, GreenMobility believes that the data collected from our EVs and the behaviour of our users, will enable the company to expand into robo-taxis quite easily. Sentence needed here to tie things together. When the cities we operate in are connected on Smart Grids, the possibilities for innovation and growth will increase exponentially. Smart grids are expected to underpin urban environments in the future. Cities will be integrated according to the smart grids and Smart Grid Policy in Europe is organized as the smart grid technology platform.

Vehicle-to-grid allows EVs to communicate with the power grid and to sell demand-response services by wither returning electricity to the grid by throttling their charge route. Some believe that in Denmark, V2Gs will even have potential for balancing the power system. By using the properties of the electric vehicle as a power resource, electric vehicles can actively support the grid. This represents a future possibility for profit and support of the city. Smart Grids and V2G represent exciting possibilities for the future.

Green Mobility is proving that an electric vehicle car sharing service can be both the best solution for the environment and the best solution for creating value for stakeholders. The future of Green Urban Mobility is bright and exciting and GreenMobility will continue to leverage its expertise and experience for developing mobility solutions, today and in the future. From creating value for our current stakeholders and customers, to autonomous vehicles and beyond, GreenMobility is here and we will continue to be Changemakers.

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Anders Wall is GreenMobility's Chief International Officer and is the head of the International Team. Anders has lead a number of franchise and partner based businesses and has 18 years of experience with developing and growing international partner-based businesses within consumer products & services. Prior to GreenMobility, Anders was CEO of Paradis Group, where he had the responsibility of the company's expansion through partners in Denmark and USA. Anders holds an MBA from ATV Institute of Executive Education and joined GreenMobility as Chief International Officer in October 2017 where he leads the company's international expansion.

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