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Master

E-scooter regulations in Norway

A comparative study of e-scooter regulations in Norway, using three Norwegian cities

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Foreword

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Abstract

In response to the lack of research done on e-scooter regulations, and the micro-mobility world in general. This thesis explores and attempts to increase our understanding of the regulations of shared e-scooters in Norway, and how it has impacted the market. By looking at three different Norwegian cities in a comparative perspective, I was able to find differences in the three cities. I then proceeded to conduct an interview with the three cities, one for each city. Where I asked questions about the differences in regulations and the process of developing regulations. My main findings from this study are that the three cities have either have had an "emergency" approach to regulating the shared e-scooter market, or they have a "future thinking" approach where they actively try to use e-scooters and micro-mobility as a solution to other problems, such as the lack of buses in an area or in an attempt to reduce car usage. Oslo and Bergen seem to have an "emergency" approach to the regulating of shared e-scooter, while Kristiansand have more "future thinking" approach and are actively using e-scooters to improve their public transportation system. The main differences in the three cities are that Kristiansand have chosen to delegate the authority and responsibility of administrating the rental of e-scooters to their local public transportation authority (AKT). Meanwhile Oslo and Bergen decided not to delegate and keep the responsibility and authority.

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1.0 Introduction

This section is an introduction to the thesis and the study of the regulations in Norwegian e-scooter markets. I will present a short background and context for the study, as well as the goal of the thesis and what questions will be investigated.

1.1 Introduction and background

Over the past 5 years we have seen a rapid increase in the use of e-scooters in urban areas. The rapid increase in use and popularity has resulted in cities seeing it necessarily to regulate their markets. There has been published a large amount of news articles covering the development within the field of micro-mobility and e-scooters in Norway, and I have been following the regulatory development and its debate within the e-scooter and micro-mobility markets in Norway. The introduction and expansion of shared e-scooters in Norway have presented new and unique challenges and opportunities that the cities have not encountered before. There has been a lot of conflict and debate related to the development of regulations over the recent years. Micro-mobility companies and municipalities in Norway have taken each other to court multiple times, and both have experienced wins and losses in the court room. There was a large frequency of court cases before the law in 2021 was created. As an example, some of these court cases revolved around whether operators were allowed to use public ground for the purpose of renting out e-scooters. The Norwegian operator, Ryde, won against the municipality of Trondheim all rounds up to, and including, the supreme court (Venæs, 2021). Similar to Trondheim, the municipality of Bergen also took Ryde to court and lost (Johannessen, 2020). Not only has it been court cases, but the public debate on e-scooters has also played a big role in the news over the recent years. There seems to be only two sides of the discussion, people who use it and people who hate it. With the new regulations being presented in 2021 it sparked a debate on the dramatic decrease in number of e-scooters in the capital of Norway, Oslo. People and companies were disagreeing with the decrease in e-scooters, people who were actively using e-scooters were worried that there will not be as much availability due to the decrease (Sviggum & Hagfors, 2021).

In 2021, June 18th, the Norwegian government created a new law that would be used as the regulatory framework for the municipalities to use for regulating their shared e-scooter markets. The new regulatory framework was made with the purpose of facilitating for the rental of e-scooters (the law calls e-scooter for “small electric vehicles”) on public land,

making it possible for municipalities to regulate areas of the market to keep public spaces accessible and safe (Lov om utleie av små elektriske kjøretøy på offentlig grunn, 2021). This is the law that has made it possible to regulate, and gave the municipalities a legal tool to deal with shared e-scooters.

1.2 Research Questions

The aim of this thesis is to explore the local regulations in three Norwegian cities in accordance with a general framework, and the goal of the thesis is to explore and increase our understanding of the regulations of the shared e-scooters, and how it have impacted the market. We compare three main cities in Norway (Oslo, Bergen, and Kristiansand), and will attempt to address the following questions:

1. What is regulated, and what are their similarities and differences? This question will be explored by looking at the local regulations in the three cities with a comparative perspective.
2. Why do they differ one from each other? Do such differences depend on the differences in local needs, or it it due to the process of developing the regulations?
3. What implications did the regulations have on the market?

2. Literature review and theory

In the pursuit to gain a better understanding of micro-mobility and e-scooters as a transportation method, we turn to academic research on these topics as well as public transport more in general. Theory on public transport governance is also relevant and will be reviewed and used in this section to present the new transportation method, e-scooters, and its regulatory challenges.

2.1 Micro-mobility & Public Transport

Micro-mobility can be defined as a sustainable, cost-effective, and on-demand urban transport solution that offers short-distance travel options (Glavić et al., 2021). Micro-mobility consists of lightweight devices like bicycles, scooters, skateboards, segways, and hover-boards, which can be human-powered or electric and it can be privately owned or shared through private providers (Shaheen et al., 2020). This innovative approach on transport could help reduce the use of private vehicles for short-distance travel. Some of the more known transport solutions that goes under the definition of micro-mobility is bike and e-scooter sharing. The work of Abduljabbar, Liyanage and Dia (2021) presents bike-sharing over four generations. The first generation, which was introduced in Europe, introduced bicycles through a non-profit program in the Netherlands that made fifty white-painted bicycles available for public use throughout the inner city. The second generation used the experience from the first generation, where the main challenge was identified as bike thefts, and introduced coin-deposit bicycle locks. The success of the coin-deposit bicycle locks led to the expansion of bike-sharing programs throughout Europe and North America. The third generation of IT-Based Systems saw the use of advanced technologies to improve efficiency, safety, and reliability. This led to over 100 bike-sharing programs operating in 125 cities worldwide, with over 139,000 shared bicycles. France and Spain were the top two programs, with 22 and 21 bike-sharing programs respectively. The challenge of bike thefts was solved by introducing member-specific programs and making the customer required to provide their details before they could make use of the service. Making the customer required to provide details, worked as a preventive measure to combat theft since the first and second generation of bike-sharing had issues with theft due to the bikes anonymity and there being no way to trace who had used what bike (Shaheen et al., 2010). The fourth generation aimed to provide demand-responsive services with advanced capabilities to facilitate for the possibility of multimodal connectivity. The knowledge gained from cities around the world provided valuable lessons

and a better understanding of key success factors for the wide deployment of micro-mobility as a low-carbon mode of urban transport (Shaheen et al., 2010).

Micromobility comes with considerable environmental, economic, and social benefits, including a reduction in emissions, crashes, and less congestion and improved health (Rabl & De Nazelle, 2012; Woodcock et al., 2014). It can also contribute to a cut in CO2 emissions by serving as an option to short-distance private vehicle trips (Abduljabbar et al., 2021). Electric bicycles and electric scooters (e-scooters) are emerging as a new wave of mobility that can be placed in the fourth generation presented by Abduljabber et al. (2021), with e-scooters being the most popular. These small mobility devices are designed for carrying one or two people, or last-mile deliveries. Their advantages include dimensions, weight, speed, maneuverability, and flexibility, making them suitable for first and last-mile travel. As cars are usually the dominant mode of transport over short distances, e-scooters could represent an alternative mode of transport to use for short distances. An increase in e-scooter usage could possibly lead to a reduction in car usage, which could have a positive impact on the environment and the urban sustainability of cities. This new and sustainable mode of transport is gaining popularity in cities (Glavić et al., 2021). A study in Chicago evaluated 30,000 hypothetical random trips with approximately 1,000-1,250 scooters distributed in the area. The results showed that e-scooters were beneficial for trip distances of less than 2 miles and would appear as a competing alternative to private vehicles. The addition of e-scooters provided a clear niche compared to other modes such as walking and cycling (Smith & Schwieterman, 2018). Micro-mobility vehicles are also beneficial for "last mile" delivery services, with reported benefits including lower costs compared to traditional fossil-fueled services, easy parking locations, fast delivery, and enhanced productivity for service providers (Lia et al., 2014; Nocerino et al., 2016). Micro-mobility services can offer first-and-last-mile connectivity to suburban areas and locations not easily accessible by public transport or private vehicles. These services provide users with access to services and economic opportunities in shorter times compared to public transport, private vehicles, or walking (Milkais et al., 2020).

The environmental benefits of micro-mobility have been discussed in comparison to other forms of public transportation and to cars. On the one hand, micro-mobility may be less environmentally friendly than some form of public transportation. For example, a study in Paris found that the introduction of free-floating shared e-scooters increased greenhouse gas emissions by 12,000 tonnes per year due to the shift from people using environmentally

friendly buses to people using e-scooters that did not use renewable energy (ITF, 2020). The production of electric micro-mobility vehicles also involves the use of scarce resources for battery production and consumption of fossil-based energy, resulting in a possible net negative impact on the environment. On the other hand, micro-mobility options as first and last-kilometer services have the potential to provide emission benefits compared to cars. In the US, micro-mobility can replace about 30% of car trips, but it is not likely to take trips away from public transport (Fitt et al,. 2019). Micro-mobility services, such as bicycles and small electric-driven vehicles, result in the lowest fuel consumption values compared to passenger cars (Brunner et al., 2018). Micro-mobility solutions can play a significant role in improving access and connectivity to public transport. In North America, bike-sharing schemes have reduced personal car and taxi use and attracted users from various travel modes (Martin & Shaheen, 2014; Shaheen et al., 2013). Factors affecting micro-mobility as a commuting mode include a positive attitude towards cycling, availability of bicycle storage facilities, requirement to use a bicycle during work hours, and showering facilities (Heinen et al., 2013).

The COVID-19 epidemic played a big role in the spread of e-scooters as a micro-mobility phenomenon, as people searched for a safer and more active transportation alternatives while complying to the social distancing standards given by governments all over the world (Dias et al., 2021). The first rentable e-scooters made their appearance in Los Angeles in 2017 by the US operator Bird, who later filed for bankruptcy in 2023 (Gössling, 2020; Klein & Yerak, 2023). Since then, the world has witnessed a very rapid expansion of rentable e-scooters, and the discussion on the new way of transportation has increased over time and spread across country borders. E-scooter sharing systems first appeared in the United States, but quickly expanded to Europe and Asia (Dias et al., 2021). This rapid expansion in urban mobility is built on previous micro-mobility projects, such as the expansion of city bicycle infrastructure. E-scooters, which were formerly used for transportation from the 1910s to the 1940s, now benefit from technological developments in electric batteries, smart grids, and smartphone accessibility, making them more widely available (Dias et al., 2021). The transition from non-electric dockless bikes to e-bikes and e-scooters, resulted in a peak of 84 million journeys in the United States in 2018. Europe also had a similar trend, as this has been shown by Paris's rapid adoption of 20,000 e-scooters ran by multiple companies within a year. Spain and Portugal also saw an increase of e-scooter usage (Dias et al., 2021). Governments throughout the world have been incorporating micro-mobility into urban mobility initiatives in an attempt

to cut emissions, improve the transportation resilience and to improve well-being in cities (European Commission, 2020). However, some difficulties have developed due to the lack of regulatory frameworks made to control e-scooter sharing markets. Several cities have attempted trials and experimental programs to gain a better understanding of, and how to manage these systems (Dias et al., 2021). [1]

Micro-mobility and E-scooters can be placed somewhere between public transportation and private transportation. Bikes and e-scooters are both something you can own private, and it can also be used as public transportation where it is managed by the market and regulated by governments. According to Veeneman (2021), public transport has been a crucial tool for policy makers worldwide since the 19th century. Policy makers saw public transportation as an instrument providing various benefits to the public such as connecting countries, facilitating urban growth, providing access to labor, reducing congestion, improving health, and providing mobility for the disabled (Saif et al., 2019; Veeneman, 2021). The provision of public transport services requires high investments, primarily in infrastructure. Automobility grew due to the development of infrastructure for cars and a rise in income for countries. Individual modes of transport eroded the potential for collective transport, which lead to an increasing involvement of governments in public transport. As an effect of the increase in global urbanization, the role of high-capacity public transport in metropolis functioning has become more important (Veeneman, 2021). The increase in population has caused an increased demand for mobility (Saif et al., 2019). The government plays a crucial role in developing a coordinated collective transport system, with the private sector playing a major role in vehicle development and infrastructure. Private investors and operators also support governments in providing services to travelers (Veeneman, 2021). Public transportation can be made more appealing by providing "door to door mobility," and transportation service development is a key aspect of social quality (Saif et al., 2019). This is where e-scooters can be utilized and offer the public a transportation method that is “door to door”.
By sorting the core actors in public transport into three categories, we have travelers, operators, and the government (Veeneman, 2021). The government acts as a bureaucratic agency managing contracts with operators and for the travelers the government might be used as the representative political body the travelers can use to appeal for a better public transport system. Operators can range from the driver of the bus, train, or tram, to a shareholder of a

[1] Parts of this paragraph are based on previously submitted work in the course ST-423

company that operates within the public transpiration sector. Travelers can range from regular commuters to domestic and foreign city tourists (Veeneman, 2021). All three actors have different sets of interests or demands from the public transport system, rule sets are in place in order to organize a decision-making process in a multi-actor context such as in public transport (Veeneman, 2021).

2.2 Public Transport Governance & theories of regulation

Multi-level governance theory has been developed within the public administration field to help frame our understanding of how policies are developed and implemented, policy effectiveness and the accountability of policies (Veeneman & Mulley, 2018). The key aspect of multi-level governance theory is that the national level of government does not operate as the sole nor the dominant policy making unit. Policy formulation and implementation happens within different tiers of government. The tiers can be international, national, regional, sub-regional or local. Multi-level governance theory also emphasizes that policy development and implementation is not always clear cut in regard to a single level of government (Veeneman & Mulley, 2018). When it comes to e-scooters in Norway and the governance of the new transportation mode, we observe actions being taken on a national and local level. The national level created the legal/regulatory framework in 2021 (Lov om utleie av små elektriske kjøretøy på offentlig grunn, 2021). This framework gives the local governments the opportunity to develop their own regulations based on the framework made by the national government.

Veeneman (2021) identified four levels which affect how rules will be defined. First level, the rule sets are affected by cultural traits. Cultures have different values, some cultures may have a collective focus, while others might have a stronger individual focus. In a culture that is collectively oriented, the decision-making at an operator level will prioritize the collective good. Culture can set rules for the decision-making of actors on how to deal with the different interest of each actor. On the second level the rule sets are laid down in laws. Many of the rule sets for public transport are laid down in laws. The key discourse for the field of public transport has been on the regulatory regimes. On the third level, the rule sets are set up by actors who are in the field of public transport themselves, on a long-term relation not aimed at a specific decision. Within such an arrangement two or more actors agree on the rules they will abide by. In an agreement like this, one of the actors tend to be in the lead with

developing the rule set. Last and fourth level is explained as the level where actors directly interact with each other. There are two perspectives we can look at this level through. In the first one, rule sets can be agreed upon by actors who are active in a specific decision-making process. The second perspective involves many small decisions. All the smaller, and bigger, decisions will eventually tally up to the overall performance of a system. All four levels influence each other, and they condition each other, both up and down. Changing rule sets on these levels can have different time scales. As an example, culture is changing more slowly than laws would change (Veeneman, 2021).

E-scooters are, as mentioned earlier, a new and popular mode of transport. The rental of E-scooters in Norway is offered to the public through different operators (Ryde, Voi, Bolt, etc.) who provide the e-scooters and the technology needed. This form of transportation is for everyone who fits the requirements, and whoever wishes to, can take advantage of this service. The work of Veeneman (2021) presents a set of governance mechanisms that are relevant for public transport. These mechanisms are known as hierarchy mechanisms, market mechanisms, and network mechanisms. First, hierarchy as a governance mechanism deals with the conflicting interests that appear between actors through a unilaterally set of rules. An example of this would be that a government created visible rule sets through a legal framework, and the government has the power to enforce those rules. Secondly, markets as governance mechanisms deal with conflicts that develop between actors through competition. A conflict between the suppliers (actors) within a public transportation system is settled through the public opinion/choice. Meaning, those who are chosen less end up losing their market share, and those who are chosen often win and gain the market share the other actor lost. Third, networks as governance mechanisms works by actors finding their way out of conflicts through negotiations. This is illustrated within public transport through the interaction between authorities and operators in a concession. The interest of the authority might be on covering the whole area in question and good peak services. While operators might focus more on profit and low-cost service provision. The “network” mechanism is when all interest from both parties is on the table and shared solutions are being discussed and attempted to be made (Veeneman, 2021). Governance mechanisms do not operate in isolation, an example of this is competitive tendering. All three mechanism can be seen in the process of competitive tendering, and the key mechanisms interact through time. Competitive tendering itself uses market mechanisms, where governments use their ability to choose an operator to put force behind the rule set (Veeneman, 2021). Hierarchy mechanism comes to

light with the authority being the principal with the most power in a contractual hierarchy (Veeneman, 2021). Network negotiation mechanisms is the key mechanism where the operator has the power, due to the operator having a better understanding of key decision points than the authority have. This knowledge gives the operators more power in decision-making. Generally, operators have a better understanding of their line of work and knows best, and authorities should build on the knowledge they get from the operators. This puts the operators and authorities in a negotiating position, instead of a hierarchical one (Veeneman, 2021).

Economic regulation has a role to ensure that prices, quantity, and quality of services are aligned with the public interest (Hensher, 2021). We can distinguish between two types of economic regulation: structural economic regulation and conduct economic regulation. Structural economic regulation relates to the regulation of market structure and the markets restrictions on entry and/or exit. Conduct economic regulation is used for regulating the behavior of the suppliers and consumers in a market (Hensher, 2021). Sometimes the public sector lacks knowledge of an industry sector, this lack of knowledge makes a case for contribution from the industry sector in question. Provided that this contribution complements the role of government, and that this contribution does not singularly promote private-sector interest that are not aligning with achieving government objectives (Hensher, 2021). Stigler (1971) argued that economic regulation is designed to benefit specific industry groups, meanwhile Posner (1971) argued that regulation benefited the customer groups. This can be confirmed through looking at the regulatory practices. Regulated industries are either monopolistic, i.e. rail transport in most countries, or the industries are highly competitive industries such as freight and ride sharing (Hensher, 2021).
According to Stiglers (1971), competitive industries have much to gain from economic regulations, and the industries are in a better position than consumers to ensure favorable regulations. The need to monitor performance remains unquestionable regardless of what procurement model is being used. Monitoring performance is not only to be used to ensure that the performance that is agreed-upon is maintained through the duration of a contract. It can also be a way to provide useful information to a regulator. Two concepts that are of particular interest in regulation are efficiency and effectiveness. The efficiency measures can be looked at as *doing things right* and effectiveness is about *doing the right things* (Hensher, 2021).

2.3 Regulating private providers of e-scooter services in the public sector.

In this section I am going to review what previous studies explored in terms of regulation of e-scooters and private e-scooter providers to see how, or whether, they respond to the main questions of this study: What aspects are regulated? How do they come into specific regulations? What is the impact of regulations? Some regulations regards both private e-scooters and public (rental) e-scooters. I will focus mostly on regulation that regards the providers. I will look at both international studies and studies from Norway, though Norway is more relevant considering that my thesis are looking at three Norwegian cities; Oslo, Bergen, and Kristiansand.

2.3.1 What is regulated?

The introduction of E-Scooters as a transportation mode sparked widespread public discussion across nations regarding the regulation and ownership allowances of e-scooters. Issues such as e-scooters not being considered motorized vehicles were one of many problems that had to be addressed. As a result of e-scooters not having a clear definition in the law, the user/rider does not have to be insured, which can result in legal issues if injuries are caused with an e-scooter (Gössling, 2020).

Firstly, let´s take a closer look at regulations made outside of Norway. Early deployments of micromobility services have led to safety, liability, operational, and infrastructure issues. Studies in Sweden and Greece show that regulations for bike-friendly infrastructures, fleet management policies, and proactive cultural engagement are essential (Nikitas, 2019). Early adoption of agile policies, affordable fees, and GPS tracking have led to increased cycling rates in Canada compared to the US (Pucher & Buehler, 2006). Initially, many countries lacked appropriate policies for shared e-scooter services. To address this, some countries introduced new regulations that specified e-scooter classification and their technical requirements. These policies included requirements for braking systems, lights, and maximum speed, as well as safety issues like helmet wear and minimum riders age (Bozzi & Aguilera, 2021). Local cities were unprepared for the introduction of e-scooter services and reacted differently. Bozzi & Aguilera (2021) did a study of ten cities worldwide and found that they repeatedly had to update their regulations. Some cities imposed regulations in response to cases of irresponsible riding, vandalism, and other negative aspects of the new transportation method. Paris, as an example, established permits for e-scooter providers and specifying operation zones (This was before Paris banned shared e-scooters). Other cities temporarily

banned e-scooter use, such as San Francisco, before reintroducing them with restrictions they developed during the temporary ban. Some cities have proactively been involved with the launch of e-scooter services, by introducing pilot projects to test and manage e-scooter impacts (Bozzi & Aguilera, 2021).[2]

Governments, such as in Australia, have passed legislative packages to address the definition issue, making national legislation for e-scooters largely identical to policies for cycling (Gössling, 2020). Italy classified e-scooters to be a part of a large family of lightweight wheeled vehicles propelled by the rider, making the e-scooter comparable to e-bicycles (D'andreagiovanni et al., 2022). Australia also has consistent rules in all states and territories in regards of helmet use being mandatory for e-scooter riders, bell, horn, and lights are required, no drivers' license or insurance is required, and no passengers is allowed (Zhang et al., 2023). E-scooters can be controlled and monitored at a distance with technology such as geofencing, giving regulators different tools to regulate the market. Geofencing gives the operators the opportunity to do things such as, make specific areas not available for parking or have parking only in designated areas, set a speed limit on specific streets/parts of the city, monitor how many e-scooters and where the e-scooters are, make areas unavailable for riding (Moran, 2021). The municipality of Rome regulated its market by allowing a maximum of 3000 vehicles in the central areas, hourly monitoring the location of e-scooters, and making operators comply with fleet limiting regulation by resulting in suspension or revocation if regulations were not followed (Della Mura et al., 2022). In Paris, before they banned e-scooters in 2023 (Roig-Costa et al., 2024), the regulators introduced an app made to report inappropriately parked or discarded e-scooters (Gössling, 2020). In terms of cities with a full ban on e-scooters, we have cities such as Paris. In April 2023, through a binding referendum, Paris voted to not extend licenses to operators and effectively ban the use of shared e-scooters from public spaces (Roig-Costa et al., 2024). In Riga a proposal was submitted to the Latvian parliament to have licenses of e-scooter sharing services revoked or suspended (Roig-Costa et al., 2024). Some cities in the US, such as Winston-Salem (North Caroline) and Dallas (Texas) banned e-scooters based on public safety concerns (Roig-Costa et al., 2024).
Moving to Norway and its regulations on the rentable e-scooter market, we have the Norwegian case of e-scooters and other electric vehicles presented by Fearnley (2020). This is study illustrates how the Norwegian government struggled to regulate the e-scooter market in

[2] Parts of this text are based on previously submitted work in the course ST-423

the beginning. In 2018, a legal amendment allowed e-scooters to be treated like ordinary bicycles, allowing them to be used by people of all ages, without helmets, on bicycle lanes and roads. The change in the positioning of e-scooters, treating them like ordinary bicycles, opened the Norwegian market for electric scooters, which experienced significant activity in 2019 (Fearnley, 2020). In 2019, Oslo municipality did not actively regulate the electric scooter market, citing a regulatory blind spot (Fearnley et al., 2020). Other Norwegian cities, such as Trondheim and Stavanger, banned e-scooters while they prepared the legal framework for operations (Fearnley, 2020). As a result of the increasing number of operators and e-scooters in the different cities in Norway, the law laying down the regulatory framework was created. This law lays down a regulatory framework that gives municipalities the opportunity to regulate their own cities (Lov om utleie av små elektriske kjøretøy, 2021).[3]

When e-scooters first were introduced in Norway's major cities like Oslo, Trondheim, and Stavanger, they faced controversy and a public discussion. The case of Bergen vs. Ryde, presented by Sareen et al, (2021), illustrates the controversy shared e-scooters faced at the beginning. In June 2020, *Ryde*, a Norwegian micro-mobility company that had pulled out of Oslo, placed 500 e´-scooters on Bergen's streets without permission from the municipality or the police. E-scooters were at this time considered to be similar to shared bicycles, but there were no established rules for traffic behavior or parking infrastructure. The initial model allowed e-scooters to be left anywhere, unlike shared bikes that typically need a dock (Sareen et al., 2021). Bergen municipality's Urban Environment Agency confiscated e-scooters blocking sidewalks and demanded a fine of 5,000 kroner per case. Ryde countered this by pointing out the slow approach to establishing an approval process, since Ryde claimed to have made their interest known early 2019. The municipality took Ryde to court for violating ordinances, resulting with the court ruling that Ryde could continue its operation. This outcome highlighted a gap in the existing regulation that were not ready for the new and popular transportation method (Sareen et al., 2021).

In this section I have attempted to find articles discussing e-scooter regulations in Norwegian cities and e-scooter regulations around the world. I was unable to find any articles that looked into my research question of comparing regulations in cities within the same country.

[3] Parts of this text are based on previously submitted work in the course ST-423

2.3.2 The development of regulations

By looking at how regulations are developed, we can get a better understanding of why regulators use the regulations they see most fit. One of my three questions in this thesis are related to why regulations differ from city to city based on the same national framework, and it will investigate how the difference in regulations between cities might be because of local needs, or if it is due to the process of developing the regulation. To gain a better understanding of this process I have looked at articles discussing the regulation of e-scooter markets and how the regulations are developed.

Some e-scooter companies pursue a path of "forgiveness" rather than seeking permission before launching their rental services (Button et al., 2020; Sareen et al., 2021). This is done by entering the market and wait for the authorities to respond. In 2020, Ryde Technology, a Norwegian micro-mobility company, entered the markets of Bergen and Trondheim without asking for permission (Sareen et al., 2021). Both Bergen municipality and Trondheim municipality took Ryde to court. In both cases the court ruled in the favor of Ryde, stating that Ryde did not have to seek permission before deploying their e-scooters on public ground (Johannessen, 2020; Venæs, 2021). This ruling was made before the law in 2021, which gave local authorities the opportunity to regulate the e-scooter market (Lov om utleie av små elektriske kjøretøy på offentlig grunn, 2021). Companies who choose to pursue the path of "forgivenss" rather than seeking permission might gain some commerical advantages, but this way of operating has brought some mixed reactions from the regulators side. E-scooter companies often adapt the "wait-and-see" approach due to it being unclear which is the appropriate supervisory authority, additionally it also allows the companies to introduce the potential market to their product and possibly develop support within the market (Button et al., 2020).

Authorities have used pilot projects as a tool during the policy/planning process (Riggs et al., 2021; Sareen et al., 2021). When e-scooters first arrived in the United Kingdom, the UK introduced 32 public e-scooter trials supported by the UK Department of Transport, and these trails were made to gather data that could be used to inform decisions related to future development of e-scooter regulations (Ventsislavova et al., 2024). In a study by Riggs et al. (2021), a total of 61 cities with e-scooter policy were identified and analyzed, where 54 % of total municipalities studied had pilot programs or previously have had a pilot program (Riggs et al., 2021). Many cities have implemented pilot programs to use as a tool to study the effects and use of e-scooters before implementing a permanent permitting system (Riggs et al.,

2021). Riggs et al. (2021) present two methods found to regulate the deployment of e-scooters. Firstly, operator caps, when authorities limit the number of operators that can operate within a city. Secondly, fleet caps, which is to limit the maximum number of vehicles each operator can deploy in a city. Another aspect of regulating e-scooters is presented as equity policy. This type of policy is connected to requirements from municipalities to ensure an equitable distribution and public access to e-scooters by all individuals regardless of their identity, race or income (Riggs et al., 2021). Some places have established chains of communication between the e-scooter companies, residents, and users, to deal with the on-going adjustments of regulations and to discuss the implementation of new regulations (Button et al., 2020). Complex solutions are required to ensure the safety of shared e-scooters and policymakers should encourage combining first and last-mile solutions (such as e-scooters) with public transport (bus, train, metro, etc) (Zhang et al., 2023).

In this section I looked for articles that could help explain/illustrate how e-scooter regulations are developed in different countries. By looking at how regulations are developed it gives us a better understanding of the process and it may help with understanding why regulations are made. I was unable to find any relevant academic work where the author attempted to answer my question on why regulations differ from city to city based on the same regulatory framework.

2.3.3 What is the impact of regulations on e-scooters?

When trying to find academic work related to the impact of regulations made on e-scooters and the market, I was unable to find much relevant work. This might have something to do with how new the concept of shared/rental e-scooters are. Some articles mention the different regulations made by cities to regulate the markets and how the operators could operate within the different markets with the new set of regulations (Button et al., 2020; D'andreagiovanni, 2022; Della Mura et al., 2022; Salas-Nino, 2022). The Italian government introduced in 2019 a national law giving Italian municipalities the authorization to develop its own specific local regulations, with some general constraints set by the government (D'andreagiovanni, 2022). As a result of authorities regulating the e-scooter markets, cities such as Rome had to limit their number of operators. The set of regulations decreased the number of operators from 7 down to 3, allowing each operator to supply between 2500 and 3000 vehicles, also giving each operator the option to fulfil certain criteria to get up to an additional 1500 vehicles per

bidder (Della Mura et at., 2022). In America numerous cities, such as Washington DC and San Francisco, introduced regulations limiting the number of e-scooter companies and their fleet size (Button et al., 2020). In Austin, Texas, the local government made obligations for the licensee to maintain a record of their maintenance history, with details such as unit identification numbers and what maintenance was performed on the specific scooter (Sales-Nino, 2022).

I was unable to find many articles discussing regulations that have been published after 2022. E-scooters is a new phenomenon, and authorities are still trying to figure out the best way to regulate the market. As a result of this, regulations are under constant change, and this might be the reason as to why there are so few articles discussing regulations of e-scooters. The issue with regulations changing as often as they have, is that articles written in 2022 might no longer be relevant since the regulations discussed in those articles have most likely changed. This will hopefully change as time moves on and the authorities gets a better understanding of the e-scooter market and its challenges.

3. Methodology

The goal of the thesis is to investigate i) what were the characteristics of the regulations in the three large municipalities, Bergen, Oslo and Kristiansand, as well as ii) how and why the municipalities came to different regulations based on the same regulatory framework, and iii) whether different regulations had implications in terms of usage, security, etc. namely the three criteria of the framework. The empirical analysis is organized to address the three questions. To understand what and how I will look at national legislation (regulatory framework) and local regulations made by municipalities. In addition to that, I will complement with some interviews with Oslo, Bergen and Kristiansand Municipality. This section of the thesis will present what methodology will be used to answer the questions above and the research design of the project.

3.1 Research Design

In this research project I have chosen a qualitative research approach. Jacobsen (2018) defines qualitative research as research where information is gathered as words rather than numbers. Qualitative research gives the researcher the opportunity to explore *how* type of questions, also known as exploratory question, where the reality is too complex to look at through numbers resulting in the researcher having to gather data through words (Jacobsen, 2018). This thesis will investigate the regulations of the Norwegian e-scooter market by looking into three different municipalities. Jacobsen (2018) presents a case as a study of one or more research units, and the case can be on different levels. The lowest level, also known as *absolute units*, are units who do not refer to others than themselves. One of the more known types of cases within this level is single individuals. Moving to the higher level of cases we find *collective units*, which are units containing several *absolute unites,* and can be identified as a group, organization, or communities. Within a group, organization, or community we can identify several *absolute units*. If the level of the unit reaches too high, it will no longer be identified as a case. In addition to this, Jacobsen (2018) mentions that a case could also be a specific situation or related to a special happening. In social science the interest is usually not aimed at individuals and therefor researchers within social science do not aim at the lowest level of cases when choosing cases (Jacobsen, 2018). In this project I will look at a total of three different cases; the municipality of Oslo, the municipality of Bergen, and the municipality of Kristiansand. Yin (2018) presents case study as a research method to use when; the research question is “how” or why” type of questions, the researcher has little to no

control over behavioral events, and if the focus of the study is on a contemporary phenomenon (a case). The more the research questions aim to explain a contemporary circumstance, the more relevant case study research is (Yin, 2018). Continuing with Jacobsen (2018), he presents three different goals one can have when performing a comparative case-study. First, for the purpose of analytical generalization, it could be beneficial to study multiple cases. This means that, by studying only one case, you will get a more narrow and specific results, but when you add multiple cases, the results can lead to analytical generalization more easily. Secondly, when the researcher is trying to explore causality. By looking at multiple cases with different sizes to see if they produce different effects/results. Thirdly, if two cases have different outcomes it could be due to the cases being different in several areas. To control this the researcher can make conscious choices when choosing cases. To analytically generalize, comparative case study aims to compare two or more cases in a limited time and space, comparing cases can explore causality (Jacobsen, 2018). My research design has a qualitative research approach including a comparative case study with a total of three different cases, the cases being the municipalities of Oslo, Bergen and Kristiansand.

3.2 Data Collection

The case studies will be using two main techniques: document analysis and interviews. This part of the section will present the two techniques and how they will be performed in this project.

3.2.1 Document Analysis

Document analysis can be used when the researcher is looking for viewpoints on events or interpretation of events, as well as when the researcher wants to find out what was done in a situation (Jacobsen, 2018). Jacobsen (2018) presents two scenarios where document analysis is suitable. The first one being when it is impossible for the researcher to gather primary data. This can be due to the source no longer existing, or if the source is unavailable for the researcher, or if the source is not able to/do not have permission give out the information to the researcher. Second scenario is presented as when the researcher wishes to figure out what people has said and done in a specific situation. This is relevant to my case, since I wish to investigate what regulations was made in the three cities. I want to analyze documents related to a political process within a municipality, making the documents I need for the analysis open for the public and easy for me to retrieve.

Just like other research methods, document analysis has its advantages and limitations, the work of Morgan (2022) presents some of these. In some circumstances it would be beneficial for the researcher to conduct a document analysis rather than other forms of data collection methods and by using pre-existing documents the researcher gains the best source of data for their project. An example of this would be when researching historical events from hundreds of years ago where possible research participants are no longer alive. Another advantage for using document analysis – which is luckily not key in my setting - is to avoid possible dangerous situations such as travelling to wartorn countries or other highly violet settings, making document analysis the safer approach rather than fieldwork. Document analysis also allows the researcher to access data that normally would require significant effort and time to collect through other data collection methods (Morgan, 2022). Other advantages from analyzing documents are the stability of the data, whereas in interviews the researcher may influence the interviewee or participants of observations. Moving over to limitations presented by Morgan (2022); documents may not include important information other methods such as interviews and observations could uncover, documents can be deceptive and contain misleading/wrong information.

Morgan (2022) presents four factors one can use when deciding what documents to include when performing a document analysis. The four factors are; authenticity, credibility, representativeness, and meaning. First off, to evaluate the authenticity of a document you should make sure that the document is not forged or manipulated. Secondly, the creditability of a document can be evaluated by investigating the authors/producers of the document are reliable sources. Third, the representativeness can be measured through looking at how the material matches the content of documents on the same topi. Fourth and last, the meaning of a document is related to significance of the content to the document.
I will be performing a document analysis and go through documents related to the development of the regulations in the three cities presented as my chosen cases. Since the local regulations are based on the national framework, I will also be analyzing documents related to the national framework for e-scooter regulations. By analyzing documents related to the national framework it will help me gain the basic knowledge needed, before delving into the local regulations made by the three municipalities. The main documents that will be reviewed is listed in the table below.

Document name	Author	Date published	Government Level
Law Regarding Rental of Small Electric Vehicles on Public Ground	Ministry of Transportation, Norwegian Government – published on Lovdata.no https://lovdata.no/dokument/LTI/lov/2021-06-18-139	18.06.2021	National
Regulation on Rental of Small Electric Vehicles on Public Ground, Oslo Municipality, Oslo	Oslo Municipality – published on Lovdata.no https://lovdata.no/dokument/LTII/forskrift/2022-02-16-263	18.02.2022	Municipality
Regulation on Rental of Small Electric Vehicles on Public Ground, Bergen Municipality, Vestland	Bergen Municipality – published on Lovdata.no https://lovdata.no/dokument/LTII/forskrift/2022-03-30-521	05.04.2022	Municipality
Regulation on Rental of Small Electric Vehicles on Public Ground, Kristiansand Municipality, Agder	Kristiansand Municipality – published on Lovdata.no https://lovdata.no/dokument/LTII/forskrift/2024-01-24-148	01.02.2024	Municipality
Selection Criteria for operators	Oslo Municipality – published on https://www.oslo.kommune.no/etater-foretak-og-ombud/bymiljoetaten/kunngjoringer/utlysning-av-tillatelsesperiode-for-sma-elektroniske-kjoretoy#gref	Unknown – Document is for the 24-25 period	Municipality
Announcement of the permit period from April 1, 2024, to March 31, 2025, for the rental of small electric vehicles on public grounds in Oslo Municipality	Oslo Municipality – published on https://www.oslo.kommune.no/etater-foretak-og-ombud/bymiljoetaten/kunngjoringer/utlysning-av-tillatelsesperiode-for-sma-elektroniske-kjoretoy#gref	Unknown – Document is for the 24-25 period	Municipality
Selection Criteria for operators and documentation requirements	Bergen Municipality – published on https://www.mercell.com/nb-no/anbud/216359433/bme-x-2023-05-tillatelsesperiode-for-utleie-av-smaa-elektriske-kjoeretoey-paa-offentlig-grunn-i-bergen-kommune-2024-2026-anbud.aspx	20.11.2023	Municipality
Announcement of the permit period for the rental of small electric vehicles on public grounds in Bergen Municipality	Bergen Municipality – published on https://www.mercell.com/nb-no/anbud/216359433/bme-x-2023-05-tillatelsesperiode-for-utleie-av-smaa-elektriske-kjoeretoey-paa-offentlig-grunn-i-bergen-kommune-2024-2026-anbud.aspx	20.11.2023	Municipality

Concession contract for micro-mobility between Kristiansand and Vennesla Municipality 2024 – Assignment Description	Agder Kollektivtrafikk (AKT) – published on https://doffin.no/notices/2024-101303	29.01.2024	Municipality
Concession contract for micro-mobility between Kristiansand and Vennesla Municipality 2024 – Sanctions for breach of contract	Agder Kollektivtrafikk (AKT) - published on https://doffin.no/notices/2024-101303	29.01.2024	Municipality
Invitation to Tender – Micro-mobility Kristiansand Municipality and Vennesla Municipality 2024 – Procedural Rules	Agder Kollektivtrafikk (AKT) – published on https://doffin.no/notices/2024-101303	29.01.2024	Municipality
Concession contract – Micro-mobility Kristiansand/Vennesla 2024 between Agder Kollektivtrafikk AS og X – Contract terms	Agder Kollektivtrafikk (AKT) – published on https://doffin.no/notices/2024-101303	29.01.2024	Municipality

Table 1. Documents used for the analysis.

3.2.2 Interviews

Interviews are one of the more common data collection methods within qualitative research. Interviews can be identified as a phenomenon where a researcher and an informant have a dialog where the data being collected is in the form of words, sentences, and stories, which comes to light through the dialog between the researcher and informant (Jacobsen, 2018). In social science there is two types of interviews that are commonly used, individual interviews and group interviews. I will only be conducting individual interviews in this research project, and therefore I will not be elaborating more on group interviews. Jacobsen (2018) presents three scenarios where individual interviews is more suitable than group interviews. First off, individual interviews are suitable when only a limited number of units are going to be studied. This is due to interviews being rather time consuming considering the length of the interviews are usually 30 min to an hour, and the researcher has to do a lot of administrative work before the actually interview takes place. Not only is there a lot of work to be done prior to the interview taking place, but the researcher must go through and review larger amounts of data after each interview. This process takes a long time, and it is due to this that individual interviews are more suitable for projects where a limited amount of units is studied than projects where numerous units are to be studied. Secondly, individual interviews are suitable for when we are interested in what the individual has to say. By sitting down one-on-one, the researcher is able to highlight the informant's attitude and perceptions. Third and last, individual interviews are suitable for when the researcher is interested in how someone interprets a special phenomenon. Individual interviews can take place in the form of e-mail correspondence, phone calls, chats, and face-to-face (Jacobsen, 2018).

Similar to document analysis, utilizing interviews as a data collection method has its advantages and limitations. The work Alshenqeeti (2014) presents some of the advantages and limitations of using interviews as a data collection method. It can potentially uncover information that other data collection methods would not uncover, and it gives the researcher the opportunity to establish mutual understandings between the researcher and respondent by rephrasing questions or simplifying questions that were not understood, making the answers more appropriate and the data more accurate. On the other hand, related to Jacobsen (2018) first point for when individual interviews is suitable, interviews can be time-consuming in relation to the data collection (the interview itself) and the analysis of the data such as transcribing. Interviews also lack anonymity, and they can have the potential for subconscious bias.

It is fully possible to only use interviews as data collection, however, interviews can go hand in hand with other data collection techniques. Alshenqeeti (2014) argues that by using more than one data collection method it will be beneficial as it will make the researcher obtain richer data and as a result validating the research findings. In my case, I will be performing a document analysis and then interviews based around the document analysis. In terms of how I will be performing interviews, it will be digitally face-to-face, and I will be recording my interviews. An advantage of recording the interviews is that the researcher reviews this recording several times, making the interview report more accurate than if the researcher does an on-the-spot note taking (Alshenqeeti, 2014; Jacobsen, 2018). By interviewing face-to-face the researcher has the ability to establish trust and openness easier than if the interview were to happen over phone/text, making the conversation flow better and both parties tend to be more concentrated (Jacobsen, 2018). The interview will be "semi" structured with an interview guide as the foundation for the conversation. The structure of the interview relates to how the researcher has organized the details regarding the questions and the possible answer options, an interview can be fully open with no interview guide, to being "fully closed" where the interview has questions with fixed response options in a fixed order (Jacobsen, 2018). In my case, I will have an interview guide with questions, but there will be no fixed answers.

3.3 Validity and Reliability

Jacobsen (2018) argues that in all studies the researcher should always strive to minimize problems related to reliability and validity. We should be critical when analyzing the data we collect. By being critical when collecting and analyzing data it raises the quality of the research project.

Internal validity involves the results of a study and if the results are correct (Jacobsen, 2018). Jacobsen (2018) presents a set of questions the researcher should ask themselves to help validate their studies in relation to internal validity. First, do we have the right sources? Jacobsen argues that the validity of the data is dependent on the sources, and the researcher should be critical when choosing sources. In the context of my research this involves the source of the documents I have used for the document analysis, and the informants I have chosen to interview. The documents I have analyzed is from directly from the authorities that have worked on the development of e-scooter regulations. I have used documents from all three municipalities that all are relevant to use to enlighten my research questions. The documents are open for the public and that makes it possible for the reader to go through the same data that I have. The informants used for interviews are working with the municipalities and have had a role in the development of the regulations.
Second, does the source give the correct information? The researcher can evaluate this question by looking at how "close" the source is to the phenomenon we are studying. Starting with the document analysis, the documents are from the municipalities itself and I believe that this makes it so that the information retrieved from the documents are the most accurate I can find, coming from the primary source – the municipality. The same goes for the informants for the interviews, the informants have first-hand experience on the matter, making them the best option for my data collection.

External validity is related to if the researcher can generalize the results from a study (Jacobsen, 2018). Jacobsen (2018) argues that research gains strength if its results can be applied beyond the study at hand. Generalization depends on two factors; number of units studied, and how the units are selected. Jacobsen (2018) explains that the more units being studied, the easier a generalization can be made from the results. In this project I have chosen to look at three different cities, where two cities (Oslo and Bergen) are of the larger size and the third city (Kristiansand) being a smaller city. I believe that by looking at cities with

different sizes and layouts (Oslo and Bergen have a totally different layout, but the size is somewhat similar), it can help with generalizing the results. The second factor, how the units are selected, revolves around if the unit chosen can be representative for several units (Jacobsen, 2018). In relation to my chosen cases and similar to the first factor, I believe they can be representative towards other cities and therefor contribute towards a generalization of the results.

Reliability of a study is related to how the study itself has created the results from the study, this can be investigated through the research design, data collection, and the analysis of the results (Jacobsen, 2018). When conducting interviews the situation around the interview can have effects on the result, this is also known as the *interview effect,* where the one being interviewed can be influenced by the interviewer by the attitude of the interviewer, appearance, body language, etc (Jacobsen, 2018). Another factor that can affect the results of a study is related to the context the information is being collected, this is also known as the *context effect* (Jacobsen, 2018). Jacobsen (2018) refers to two different contexts information can be collected in; unnatural and natural. My interviews are done at the informants' workplace, and I let them choose where and when, making the informants as comfortable as possible. I have also planned the interviews with the informants, giving the informant time to prepare. Another factor that can threaten the reliability of a research project is inaccurate registration av data (Jacobsen, 2018). In most research projects there is a lot of data that needs to be registered, collected, and analyzed. If the data that is collected, is not registered correctly, it can create major problems for the research project. My data collection has been from in the form of documents and interviews. I have made sure to go through the documents to check if the data is relevant and correct. The interviews was recorded and transcribed, where I have went through the recordings and checked the transcreation multiple times to make sure that I have accurately written down what was said. The last factor that can create issues for the reliability of the research project is if the data has been inaccurately analyzed (Jacobsen, 2018). To prevent inaccurate analysis of the data I have discussed the results with my mentor.

4.0 Data collection

In this section I will be performing a document analysis of documents I believe will be useful to study the research questions of this project. The documents have been found on the municipality's official websites and a table with all documents has been presented in methodology section 3.2.1, where I present document analysis as a data collection technique. After performing a document analysis, I will be interviewing the municipalities to follow up my findings from the document analysis. The document analysis section will begin with the document from the national level, presenting the national legal framework, and then I will be going through documents related to regulations in the three cities. All relevant rules, regulations, requirements, and other relevant information gained from the document analysis has been added to the appendix.

4.1 Document analysis – National legal framework

The first document is on the national level, and it presents a legal framework for regulating E-scooter markets in cities in Norway. The legal framework gives the municipalities the opportunity to regulate their own markets for rental of small electric vehicles. All municipalities refer to this law when regulating their own cities.
This legal framework gives the municipalities the opportunity to regulate the e-scooter market on areas such as:

- places and zones used for placement and parking of the small electric vehicles.
- Areas on public ground where usage regulations can be implemented (such as speed limits and prohibition of use).
- Time periods where rental is allowed
- Standards for the requirements to the small electric vehicles (e-scooters)
- Requirements related to technology that can help ensure compliance of regulations on parking, usage, and opening hours
- Data sharing

Municipalities are given the option of making rental available only through permission/license. The national legal framework gives the municipalities the option to arrange a tender competition to select their preferred operators based off their own selection criteria. Additionally, municipalities can withdraw licenses due to repeated violations of regulations or in cases of serious violations. Municipalities are also given the right to have fees for the operators that is meant to cover the municipalities expenses related to administration and planning, and supervision and control, of the e-scooter market.

4.2 Document analysis – Oslo, Bergen, and Kristiansand

This chapter will consist of two sections. In the first section I will be focusing more on the question of what has been regulated in a comparative perspective across the municipalities trying to stress what the main similarities and actual differences are. The second section will be a comparative analysis of the regulations in the three cities, looking mainly at the differences. A detailed overview of each regulation found in the documents from the three municipalities has been added to the appendix (attachment 1).

4.2.1 What has been regulated?

This section will present the main regulations of the rental of small electric vehicles in Oslo, Bergen, and Kristiansand. All documents that were used to make the summarizing table can be found in Table 1, in the methodology chapter. The documents has been analyzed, and the main regulations have been listed in Table 2. I went through three documents in each city, where in Oslo and Bergen the documents were similar in the way that the documents had mostly the same names and layouts. Documents from Kristiansand stands out from Oslo and Bergen, where AKT (local public transport company/authority owned by Agder county and Kristiansand Municipality) is the publisher and not the municipality. This is because AKT has been delegated the responsibility of administrating the rental of small electric vehicles in Kristiansand. Another aspect where Kristiansand stands out from Oslo and Bergen is with their choice of using concession contracts. Oslo and Bergen have chosen a permit/license approach where operators are given a permit/license to rent out e-scooter, but in Kristiansand the operators are under a concession contract with AKT.

Regulation	Oslo	Bergen	Kristiansand	Oslo	Bergen	Kristiansand
	Yes/No	Yes/No	Yes/No	Details	Details	Details
Zones	Yes	Yes	Yes	4 zones	4 zones	3 zones
Fleet Cap	Yes	Yes	Yes	Total fleet cap of 8000, distributed across the 4 zones.	Fleet cap ONLY in zone 1 and zone 2	Fleet cap ONLY in zone 1 and zone 2
Operator Cap	Yes	Yes	Yes	Cap of 3 operators	Cap of 3 operators	Cap of 2 operators
Technology/ Data sharing	Yes	Yes	Yes	Operators are required to share real-time and historical data of their vehicles	Operators are required to share real-time and historical data of their vehicles	Operators are required to share real-time and historical data of their vehicles
Nighttime ban	Yes	Yes	No	Closed 23:00 – 05:00 everyday	Closed 23:00-05:00 night till Saturday and Sunday. Closed 01:00 – 05:00 on nights till weekdays	Closed 23:00 – 05:00 night till Saturday and Sunday
Placement/ Cleaning of vehicles	Yes	Yes	Yes	Operators are required to remove, move, or clean up small electric vehicles that are obstructing general accessibility	Operators are required to remove, move, or clean up small electric vehicles that are obstructing general accessibility	Operators are required to remove, move, or clean up small electric vehicles that are obstructing general accessibility
Zone parking restrictions	No	Yes	Yes		Restrictions for parking in zone 1 (city centrum), can only park on designated parking areas	Restrictions for parking in zone 1 (city centrum), can only park on designated parking areas
Duration of permit				1 Years	2 Years	3 Years
Fees	Yes	Yes	Yes	1240 kr per vehicle	6 500 000 kr proportionally distributed between the operators	600 000 kr per license
Selection Criteria	Yes	Yes	Yes	3 criteria's (Accessibility of public space, safety of public space, environmental	3 criteria's (Same as Oslo)	4 criteria's (Quality of vehicle, Cleaning of city space, Sustainable modal shift, quality of service in zone 3)

Table 2. Overview of regulations in Oslo, Bergen, and Kristiansand.

4.2.2 Analysis and comparing of regulations

The section above presented the regulations in Oslo, Bergen, and Kristiansand with the help of documents from the municipalities. This section will attempt to go deeper into each difference in the regulations of the e-scooter markets in Oslo, Bergen, and Kristiansand, and present the main differences in an analytical approach. In the previous section it got mentioned that Oslo and Bergen had the most similarities in relation to the naming of documents and layout. From looking at Table 2 we can see that Oslo and Bergen also has the most similarities when it comes to the actual regulations. The differences in regulations from city to city will now be presented, starting with zoning regulations.

Zoning

Municipalities are using geofencing technology to supervise the regulatory compliance of zone regulations such as vehicle caps and placement of vehicles. Operators are required to update their geofences in accordance with the municipality's changes. From analyzing the documents and organizing the regulations in a table (Table 2), we can see that there is a difference in the regulation of zones in the three cities. Oslo and Bergen have split the city into four different zones, whereas Kristiansand has split the city in to three zones. Previously it was stated that Oslo and Bergen are mostly similar, but in the case of having restrictions on parking, we can see that Bergen and Kristiansand has implemented restricted parking in zone 1 (City center) and Oslo do not have any parking restrictions in any of the four zones. Restricted parking makes the users have to park the e-scooters in designated parking spots. This does not mean that Oslo does not have any restrictions on parking. All municipalities have the option to regulate usage in smaller areas all around the city, such as implementing areas with no parking, limiting speed in certain streets, forbid the use of e-scooter in certain areas, etc. The operators are required to implement all new zone regulations the municipalities present.

Limitation on the number of vehicles and operators

Operators are not only regulated with zones, but they are also required to follow different limitations depending on the city. All three cities have implemented limitations on number of vehicles allowed. Bergen and Kristiansand have done a similar approach and set a limit of the number of vehicles allowed in Zone 1 and 2, but no limit in the remaining zones. Oslo has done it differently by distributing a total of 8000 vehicles across all four zones, leaving no zones without limitations. Not only are vehicles limited, but the number of licenses given out to micro-mobility operators are also limited in each of the cities. Oslo and Bergen have a total of 3 licenses, while Kristiansand only has 2 licenses. The duration of the licenses/permits varies in the three cities. A license in Oslo is only valid for a year, while in Bergen it is valid for 2 years, and Kristiansand for 3 years.

Nighttime Ban

One of the more debated aspects of e-scooter rental is whether they should be available for rent or not during night hours. All three cities have done something different when regulating the opening hours for the rental of e-scooters. In Oslo we can see that rental is closed between 23:00 and 05:00 every day of the week, while Bergen and Kristiansand allow rental during nights on certain days. Bergen has implemented closing hours between 01:00 and 05:00 on weekdays, and 23:00 and 05:00 on nights to Saturday and Sunday. Kristiansand has chosen to only implement a nighttime ban only on the nights to Saturday and Sunday, the ban lasts from 23:00 to 05:00.

Selection Criteria

All three cities have established a tender process for the licenses to rent out e-scooters. Each municipality are given the option to arrange a competition to select operators for the rental of e-scooters. When there are more applicants than there are licenses, the municipalities have established a set of selection criteria the operators will be evaluated on. Operators who score the highest gets offered a license. Oslo and Bergen have chosen three similar selection criteria; 1) Accessible public spaces, 2) Safe public spaces, 3) Climate- and environmentally friend operations. The three criteria are similar to the three aspects the legal framework is made to facilitate for, which is stated in §1 in the national legal framework; Accessible public space, Safe public space, and Climate friendly solutions and a good local environment. Kristiansand has done a different approach and have selected four selection criteria. Instead of making the selection based on similar criteria's as Oslo and Bergen, Kristiansand evaluates their applicants based on four criteria; 1) Quality of the vehicle, 2) Operators ability to ensure a clean city space, 3) How operators will ensure that e-scooters/e-bikes will not displace walking/bicycling, but replace less environmentally friendly transportation methods, 4) How operators will offer the best micro-mobility service in specific areas in zone 3.

Fees

The national legal framework makes it possible for the municipalities to implement fees that can be used to cover for the expenses related to the administration and planning for the rental of e-scooters, including expenses for supervision and control of rental operations. All three cities have different fees; Oslo has 1240 kr per vehicle and operators pay per vehicles, Bergen has a total fee of 6 500 000 kr that is proportionally distributed among the operators, Kristiansand has a set amount of 600 000 kr per license.

4.3 Interviews

In this section I will be presenting the results from interviewing the municipalities and asking questions to investigate the differences found in the three cities. The questions were created based off of the document analysis, and was meant to highlight the differences and to investigate how/why the municipalities decided to implement certain regulations. This section will be structured similarly to section 4.2 and go through the differences in the same order as they were presented in 4.2. The interviews gave me a better understanding of how the municipalities have interpreted the legal framework and how they have evaluated the different aspects that is possible to regulate through the legal framework. The people I interviewed had central roles in the development of regulations in the three cities. In Kristiansand I interviewed a person from AKT with a central role, delegated by the municipality of Kristiansand, of administrating the rental of e-scooters in Kristiansand. In Oslo and Bergen, I interviewed people from the Urban Environment Agency, an agency that both of the two municipalities have.

To start of the interviews, I began with asking what challenges they encountered during the development, design and, implementation of the regulations. Oslo stated that in 2021 they had to develop their first set of regulations in a hurry to deal with the situation of having 25 000 – 30 000 e-scooters within Ring 3 (commonly known as inner Oslo). The municipality reports the first set of regulations as premature, and the actors were able to work around the regulations. Like Oslo, Kristiansand reports challenges before the legal framework was established and made it possible for them to regulate. In the early days of e-scooter in Kristiansand there were only one operator, Ryde, who established themselves without an agreement with the municipality. During this time, according to AKT, there were challenges with complaints coming in, complaining about incorrectly parked e-scooter, especially within the city center (Kvadraturen). In terms of the delegation of responsibility of administrating the rental of e-scooters in Kristiansand, AKT wanted to be the one who was delegated the responsibility due them being a public transport company and therefor, according to themselves, are more “rigged” to be in this position than the municipality is. Since they are already in the transportation business they already have knowledge on how to follow up on customer complaints, suppliers, marketing, and etc. While the municipality has many other different tasks and other areas of focus, making it more challenging for them to deal with all the aspects of administrating the rental of e-scooters in the municipality, which the

municipality of Kristiansand agreed with and delegated AKT the responsibility. AKT works closely with the municipality, and they have established a working group including members from the administration in the municipality and the county. The decision of having a concession contract was made since AKT believes that this approach results in a reciprocal relationship between the operators and AKT, where AKT can set requirements to the operators on following rules and how they should behave based on the regulations. The legal framework that was created in 2021 was according to AKT a "golden opportunity" to clean the city space, while also offering a good service to the citizens of Kristiansand. Similar to Oslo, Kristiansand also had issues with their first set of regulations. The first set of regulations forced the operators to deploy e-scooters at a specific time during the morning at certain bus stops, which they discovered did not work, because people walk to the bus stop to take the bus and not an e-scooter. Additionally, no forced parking in zone 1 did not work out, resulting in many complaints. Bergen did not report any specific challenges.

Zoning

From the document analysis we learned that the three cities are split up in different zones. Kristiansand was split up in to three zones. From interviewing AKT I learned that AKT´s thought behind the three zones is that zone 1 is supposed to cover the city center, while zone 2 is the suburban areas around the city that is close enough for the citizens to take an e-scooter to the city rather than car/bus. The thought behind zone 3 is that the e-scoters should be used as a transportation method to take you to the bus station. Ideally in zone 3, according to AKT, the user should take the e-scooter from their home to a high-frequency bus line that can take them to their destination. Oslo and Bergen have split their cities into four different zones. In the interview with Oslo I learned that they split the city based on a set of natural boundary lines that is already known by the public, they used the local highway systems (Ring 1, 2, and 3) that surrounds the city as their boundary lines. Unfortunately, the person I interviewed in Bergen was not around when the zones was established. But, I was told that Bergen used data they collected from their pilot project to see where the demand was, and created zones based off of that and a few assumptions.

With the technology available today, the e-scooter companies can use geofencing technology to implement areas where parking is only allowed in designated parking spots. The tool of "forcing" people to park in designated parking spots has been implemented in Kristiansand and Bergen, but not in Oslo. AKT justified their implementation of forced parking with the number of complaints they received on e-scooters being parked wrongly. After the implementation of forced parking, AKT reports a significant decrease in the number of complaints. Interestingly, AKT stated that they have seen that Oslo have not implemented forced parking and that AKT might be too strict on this area of regulating the market. They also stated that they are actively trying to have a dialog with the operators, to prevent a situation where AKT is the only voice in the development of regulations.
Similar to Kristiansand, Bergen have also implemented forced parking in their zone 1. Bergen justified implementing forced parking with the reasoning that these are areas with the most conflict. To prevent conflicts and e-scooters from standing everywhere, Bergen decided to establish parking spots with good enough coverage. According to Bergen, the aesthetics of the city is important to many, and without forced parking in certain areas, the city will no longer be as aesthetically pleasing. The approach Bergen has to implementing parking areas is that they look for places where there is an accumulation of e-scooters, and then they establish a parking spot in this area. There are not enough accumulations in zone 2 and the other zones for it to be realistic to implement forced parking everywhere. Bergen have a challenge that the other cities do not have to deal with. The so called "fire hazard areas", areas within Bergen where most, if not all, houses are built with wood and the risk of fire spreading is very high. Additionally, to the forced parking in zone 1, the municipality have implemented no-parking areas around the "fire hazard area" in the city.

Oslo has gone a different route than Kristiansand and Bergen, deciding not to implement forced parking within their zone 1. Oslo explains their decision with the fact that it is challenging and time consuming to establish parking spots in the city of Oslo. The Urban Environment Agency in the municipality owns the roads, while square areas, recreational areas, sidewalks, etc., is under the control of the individual city districts. This means that if the Urban Environment Agency wants to establish a parking spot in Frogner in Oslo, it will have to be placed on the road similar to a car parking spot. If the parking spot is going on the sidewalk, the Urban Environment Agency has to coordinate and get permission from the District of Frogner. Throughout the past few years they have slowly made more and more parking spots around zone 1, and it was stated during the interview that they could implement

forced parking as of now with the increased number of parking spots. However, they do not see the point of implementing forced parking since they have not experienced too many parking related issues.

Limitations on the number of vehicles and operators

Not only has the three cities implemented zones, but they have also implemented limitations on the number of vehicles allowed in the zones. Bergen and Kristiansand had a similar approach and implemented limitations on the number vehicles allowed only in a selected few zones. Meanwhile, Oslo have set a total fleet cap, and then distributed the limitation of vehicles between the four different zones. In my interviews with the cities, I asked them why they decided to implement the limitations they chose, and what factors was evaluated in this process. As mentioned earlier, in Kristiansand the local public transport company AKT is in charge of administrating the rental of e-scooters in Kristiansand. AKT justified their vehicle limitation in zone 1 with how many parking stations there are available, and the total capacity in those parking stations combined. The final number of allowed vehicles in zone 1 is calculated based off of this information. In zone 2, AKT took inspiration from previous years where each operator got 500 vehicles, but they have reduced the zone but kept the same limitation on vehicles per operator in this zone. However, AKT states that they are open to increase the limitation in zone 2, and they are not too strict on the supervision of zone 2 in the beginning of the season. AKT´s reasoning for choosing 2 operators was that the more operators, the less vehicles per operator. Additionally, they stated that only having one actor can be dangerous and the market needs competition. AKT also had dialogs with the different operator within the market.

Through my interview with Oslo I learned that the total fleet cap of 8 000 vehicles was a political decision that were outside of the control of the Urban Environment Agency. The current fleet cap in the different zones is not fully enforced, since the Urban Environment Agency wishes to let the operators prioritize zones as they see fit. This is done by making it possible for the operators to have more scooters in one zone and less in others. In terms of the operator cap, Oslo municipality had talks with the Norwegian Competition Authority, and it was clear that they needed more than one or two operators. One operator makes it a monopoly, and two makes it a duopoly, both are not ideal for the competition in the market. Similar to Kristiansand, Oslo also saw the correlation between the number of operators and

the number of vehicles. Oslo wanted to make sure that the number of vehicles per operator were feasible, operators needs to make money, which is why they landed on 3 operators.

Similar to Kristiansand, Bergen only has a fleet cap within zone 1 and 2. Their decision of implementing fleet caps in zone 1 and 2 was based off of their results of the pilot project they had in the beginning days of rental of e-scooters. The decision of implementing fleet cap in certain zones is also due to how the streets look, and how many parking spots are available. Bergen municipality´s reason for implementing an operator cap was to reduce the number of operators. The decision was between 3 or 4 operators, and the purpose of the reducing the numer of operators was to reduce the number of vehicles.

Nighttime Ban

One of the more datable elements of e-scooter rental is whether or not rental should be available during night hours. As we learned from the document analysis, all three cities have implemented nighttime bans differently. AKT stated that their choice of only banning rental on nights to Saturdays and Sundays was based off of feedback from the citizens of Kristiansand that works nights and are out doing activities later than 23:00. As an example are people who went to cinema and the movie was done after 23:00 and were not able to travel back home on a e-scooter. The availability of public transport, such as buses, are decreased during night hours on weekdays, making it more difficult to travel during night hours on week days. The reason for banning rental on nights to Saturdays and Sundays is due to the problems of people driving/"scooting" under the influence. AKT believes that in the future it will not be necessarily to regulate this due to the rapid technological development of GPS and other technology related to e-scooters and micro-mobility.

In Oslo, I learned that the decision of implementing a nighttime ban between 23:00 and 05:00 every night was politically decided. The reasoning for the political decision of implementing a nighttime ban was due to the high level of e-scooter related injuries that was being registered in the emergency rooms around Oslo. Since it was politically decided, the Urban Environment Agency did not have to propose it or provide a professional rationale. Similar to Oslo, the nighttime ban in Bergen was also politically decided. According to Bergen, one of the bigger challenges during the early stages of e-scooter rental in Bergen was that people were driving/riding under the influence. With the implementation of blood alcohol limit for using e-scooters, Bergen decided to ease up on the nighttime time. The closing time on nights to

weekdays, 01:00 to 05:00 was politically decided, and the closing from 23:00 to 05:00 night to Saturday and Sunday still remains active.

Selection Criteria

As presented in section 4.2 all three cities have a set of selection criteria that all operators are evaluated on. Based on how they do on this evaluation, they will be offered a license to operate/a contract. In my interview with AKT I learned that the municipality demanded to have the "Clean city space" criteria and intructured AKT to have this criteria weigh 50% of the total evaluation. The rest of the criteria and how they were going to be weighed was up to AKT. Their criteria on how micro-moblity are not supposed to replace walking/biking, but rather replace the less environmentally friendly transportation methods, is inspired by TØI (Transportøkonomisk institutt / Transport and Economic Institute) who says that e-scooters are replacing walking/biking. In this criterion, operators are mainly evaluated on if they have an unlocking fee on 10 kr or not. AKT believes that the 10 kroner fee of unlocking a scooter can prevent people from taking e-scooter for the smaller trips, such as a 300-meter trip down the street to the store.

Their next criteria, the quality of the vehicle, was implemented due to AKT experiencing a significant difference with the quality of the vehicles from the two previous actors (Bolt and VOI). AKT hires a person who runs a local bicycle shop to make the evaluation of the vehicles quality, since AKT has a lack of knowledge on e-scooters and e-bikes. The fourth and last criterion, how operators will offer the best possible micro-mobility service in specified locations in zone 3, was implemented since the municipality and the politicians was requesting more e-scooters. This criterion makes the operators focus on an area that would possibly be ignored if it isn't something the operators is evaluated on. The thought behind zone 3 and this criterion is that AKT can recommend areas to the operators, such as areas with bad bus connections, and the operators then deploy e-scooters in these areas. This gives AKT the opportunity to complement the bus services / public transport with e-scooters/e-bikes.

Oslo and Bergen have similar selection criteria. In my interview with Oslo, it was stated that the first two criterions is the core of what the legal framework is based on. In a simplistic way, one can say that the legal framework was made to prevent people from parking their e-scooters incorrectly. The third and last criterion was natural to include, considering the transportation method is an environmentally friendly. Similar to Oslo, Bergen also states that their selection criteria cover what the purpose of the law is.

Reported effects from the regulations

In the interviews I asked the three cities if they had observed any noticeable changes/effects after implementing the regulations, and if they were in line with their expectations.

Kristiansand reports that they have seen an decrease of complaints on incorrectly parked e-scooters after implementing the forced parking. In terms of the fleet cap, AKT meant that it was too early to say whether or not the fleet caps was going to be a success. What they have seen from the fleet cap regulations is that by not implementing a limit in zone 3, it makes the operators deploy more vehicles, increasing the use, making the regulations have a good effect on the market. AKT mentioned also how they learned from the previous season and decided to remove certain rules on when e-scooters have to be deployed and where they should be deployed. The issue in the previous season was that the municipality demanded the operators to place out e-scooters on bus stops. This was not as effective as they hoped, and they realized that people do not go to the bus stop to take an e-scooter. In terms of an overall effect, AKT reports that the city space has gotten tider with the new regulations, but they have not made any reports on this.

Oslo reports that they have seen effects from the regulations they have implemented. One of the more interesting points made by Oslo is how the public's perception of the e-scooter operators have changed from them being looked at as "cowboys" to now being taken more seriously. Oslo also reported that by implementing a limit of 3 operators, combined with the fleet cap and nighttime ban, Oslo have experienced a change in the parking culture. One of the ways Oslo enforces the parking regulations is by issuing parking tickets to people who have parked incorrectly. Through my interview I learned that Oslo has written out a large amount of parking tickets and according to Oslo municipality the parking tickets have a good effect on the users. The municipality has its own parking officers who drive around the city looking for incorrectly parked vehicles (not only e-scooters) and I was informed they have registered 27 000 incidents, which includes parking tickets/towing/moving vehicles, in a total of around 28 million trips. The limitation of the number of operators also makes is easier for the municipality to have a dialog with the operators. Previously it was 12 operators, and Oslo thought it challenging to have a good dialog with everyone, the reduction of operators made this easier.

Oslo municipality was the only one out of the three cities that had some data available that is showing the development in usage, by presenting the number of vehicles and trips, per

operator, and average trip per vehicle per day. The data shows that the total number of vehicles stabilized at around 7 000 to 8 000 vehicles in total, from 2022 and onwards. In terms of number of trips due to seasonal variation there is more use in June/July/August. However, we also see that the usage peaked during the beginning of the pandemic with around 2 000 000 trips in the June, July, and in August of 2021. The usage has stabilized itself over the years and we can see that during the summer months, the number of trips stabilizes at around 1 000 000, and during winter months, the number of trips has stabilized at around 100 000 – 300 000 per month. In recent months, March and April 2024, show a very high level of consumption which is similar to the months during the pandemic. The data showing usage in Oslo has been added to the appendix (attachment 4). Unfortunately, Kristiansand and Bergen did not have similar data available.

Bergen reports that the effects from the regulations have been according to their expectations. The biggest change was the reduced number of operators, this made it possible for the municipality to get a better overview of the market and all the data. According to Bergen municipality, the reduction of operators and vehicles resulted in Bergen city becoming tider. They also stated that it is challenging to control the users, and that this will always be a challenge. Bergen also reports that a lot of users do not know, and are uneducated, about the rules and regulations, and that there is still issues with people parking incorrectly and reckless driving.

The future of micro-mobility

In all three interviews I asked how they looked at the future of micro-mobility and its future regulatory challenges.

AKT sees a bright future for micro-mobility, and they believe in the concept of "combination trips". They can see a future where people combine e-scooter and e-bike trips with bus trips or possibly car sharing solutions. Additionally, AKT have seen a positive change from the operators' side and their personalities, they have become more attentive and the environment for collaboration has gotten better over the years. It was mentioned during the interview that the municipality and AKT both realize that regulating the whole market is not the way to go. Less regulating and more collaborating, according to AKT. It was also briefly mentioned that AKT is paying attention to, and is in dialog with, Berlin and is looking at how they have chosen to approach the regulatory challenges linked to e-scooters and micro-mobility.

Bergen said that they can see an issue with the future of regulating micro-mobility and the possible new types of vehicles that can be developed in the future. An example that was mentioned during the interview was electric cargo bikes, this type of vehicle would not be under the same classification as e-bikes and e-scooters are now. It was also mentioned that Bergen is aware of the rapid development in the new industry, and they are currently asking questions about whether or not micro-mobility should be implemented with the other public transportation in the city. As of right now they are not going to do it, but they are following cities such as Kristiansand to see how this approach works out for them.
Lastly, Oslo hopes for a better spread of the micro-mobility service throughout the city, including outside of Ring 3. Similar to Bergen, Oslo is also looking at the possibilities of integrating micro-mobility with the rest of the public transportation system, but this has not been done yet. They can see an issue related to pricing, where an e-scooter trip from home to the bus station everyday adds around 30 kr for every time you travel. Oslo believes that by integrating micro-mobility with the rest of the public transportation system it will reduce car usage in the city. New regulations in Oslo is currently in the process of going through a political hearing.

5.0 Discussion

In this section I will be discussing the results from the document analysis and the interviews presented in the section above. We can identify two approaches in regulating shared e-scooter markets: an “emergency” approach, and a “future thinking” approach.

Namely, the large municipalities of Bergen and Oslo responded to the new and popular transportation method with an emergency minded approach, where they treat e-scooters as an issue that needs to be fixed as soon as possible to prevent further harm. It seems like Oslo and Bergen have looked at the introduction of e-scooters as a problem, rather than a possible solution to other problems. Both Bergen and Oslo decided to keep the responsibility of administrating the rental of e-scooters within the municipality rather than delegating it too somewhere else. One could argue the choice of keeping the authority and responsibility within the municipality, as them wanting to keep a certain level of control of the situation and market and the future development. In terms of zones and zoning regulations, we can see that the three cities have chosen different approaches. Bergen used its information gained from their pilot project and created zones based on that information. We have learned that aesthetics is important for the city and they wanted to regulate to maintain the aesthetics of the city since this is an important thing for the citizens. The forced parking was implemented due to conflicts they had previously experienced, and opposite to Kristiansand we have learned that Bergen will not be looking at the possibility of opening for free flow in their zone 1. Going back to the two approaches to regulating presented at the beginning of this section, this shows us that Bergen applies to the emergency approach. They saw a problem in zone 1 and fixed it, but they will not be looking at possible changes considering the positive development of different areas within the industry such as technology, the personality of the operators, the users behaving better, and more.

Oslo chose to split its city into zones based on natural boundaries, and not implement forced parking in zone 1 due to the bureaucracy they must go through to establish parking spots. What they have done instead, is using parking tickets as a tool to prevent people from parking incorrectly in zone 1, and the rest of the city. Oslo reported that they have enough parking spots in zone 1 for it being possible to implement forced parking, but they do not see the point since they do not have an issue with this now. Parking tickets might possibly be the solution to accumulation and incorrect parking of e-scooters, considering that Oslo have not had any issues since beginning to give out tickets. Oslo implemented, politically, an all-week

nighttime ban from 23:00 to 05:00 as a response to the high frequency of injuries. Meanwhile, Bergen who increased opening hours with 2 hours (01:00 – 05:00) on weekdays, did so to ease up regulations due to new laws setting a legal alcohol blood limit for riding e-scooters. Both Oslo and Bergen reacted to a problem and are not planning on removing the nighttime bans due to their previous experience during the problematic period. Showing signs of applying an emergency approach to regulating the shared e-scooter market.
In terms of selection criteria Oslo and Bergen having identical categories of selection criteria. When asked about their criteria they gave the reason that the criteria are based on the law and its purpose of preventing people from parking incorrectly. This is what Oslo and Bergen wants to accomplish with the selection criteria, solving the issue that the law was made to solve. Showing indications of taking an emergency approach to the introduction of micro-mobility.

One could argue that Kristiansand municipality have a "future thinking" approach to e-scooters and micro-mobility. By "future thinking" I mean an approach where the regulatory authority sees a future in micro-mobility and is using it to improve its city transportation system. One of the reasons I believe Kristiansand have a "future thinking" approach to regulating is their choice of delegating the responsibility of administrating the rental of shared e-scooters to the public transportation company AKT, with the reasoning that AKT is more "rigged" to be in control of such an operation than the municipality is.
Kristiansand gave the responsibility away to AKT and only demanded them to keep the city clean, by demanding that 50 % of the selection was going to be based on that criterion. We see a different approach to this element of regulation in Kristiansand, making the criterion be useful for improving the service, rather than just to solve an issue and leave it at that. Kristiansand municipality left room open for AKT to do as they please, only demanding a criterion on having a clean city space. AKT took this opportunity and tried their best at implementing criteria that they thought will help the e-scooter market in Kristiansand, by implementing criterion that possibly makes the service more available for people outside of the city. AKT sees micro-mobility as a solution to a transportation problem, by attempting to implement e-scooters/e-bikes with the rest of the public transportation system through specific regulatory measures such as the selection criterion making operators focus on areas they otherwise would not have focused on.
In terms of zoning, AKT explains its reasoning for making the zones the way they are with the thought of improving the overall public transport in Kristiansand, looking at e-scoters and

micro-mobility as a solution rather than a problem. AKT is using e-scooters as a tool to make it easier for the citizens to travel if they live within zone 3, showing us that they are actively looking for how e-scooter can be used as a tool to improve transportation within the an area, rather than limiting the possibilities for e-scooters. In terms of forced parking within zone 1, we have learned that AKT has seen a reduction in complaints and that they are thinking about removing the regulation on forced parking, partly because of how well they have seen it work in Oslo and because of the decrease in complaints. This shows a positive mindset towards the future of micro-mobility and the willingness of changing and removing regulations. One thing that Oslo does that Kristiansand and Bergen does not do, and can possibly be the reason as to why Oslo´s choice of not implementing forced parking is working, is that they give out parking tickets. This could be making the users more aware of how they park due to the fear of getting a ticket.
AKT´s decision leaving rental open during the rest of the week based on their own observations of not seeing the need, and with feedback from the community, shows us their positive mindset towards e-scooters and that they wish to find solutions for the areas of the market that are regulated. With AKT being the more lenient out of the three, with only implementing a nighttime ban on night to Saturdays and Sundays, leaving rest of the week open for rent. It shows that they are listening to the public and are open to showing leniency and trust in the people. Additionally, they show a positive sign with seeing a future where there is no need of regulating nighttime bans due to the technological development in the micro-mobility industry. This could be seen as a sign of AKT looking for solutions and possibilities for reducing regulation.

Another big difference between the three cities is the choice between a permit/license and a concession contract. AKT chose a contract since they believe that this creates a mutually committed relationship, additionally they are removing the risk of having no operators since they can leave when they want if they are on a permit/license. The issue of having no operators is not something the bigger cities such as Oslo and Bergen have to worry about, due to the attractiveness of the markets in those cities. This could potentially be a risk for the operators, considering they are under contract with someone who can control almost everything about their operations. The people at AKT seems to have a positive mindset towards the new transportation method and its future, so there have been no issues there. However, if the group of people were to be replaced, and the new people in charge of the

rental of e-scooters in Kristiansand are not as big of a fan of e-scooters, they can potentially begin restricting their space. This could be negative for the operators since they are locked to Kristiansand and AKT on a contract and cannot stop their operations and leave the city as easy as they could in cities with a permit/license solution. In a dramatic way one could say that the contract holds the operator's hostage, while having a permit/license solution, the operators are able to leave when they want. If AKT implements something that an operator is against, due to them losing money and/or customers, because of the new regulation, they are now stuck and cannot leave.

In terms of the effects of the regulations we have learned that the three cities are reporting different results and effects. In Kristiansand, AKT reported a decrease of complaints related to incorrect parking after implementing forced parking, and are now thinking about removing the forced parking due to Oslo´s success and the decrease of complaints. Additionally, we learned that AKT removed regulations that was making operators having to deploy e-scooters at bus stops in the morning, after realizing that it was not working as intended. This shows us that AKT is willing to remove regulations that are not working or are no longer needed due to technological reasons or reasons related citizens parking and riding behavior. They are actively looking for solutions and how to develop the future. Their views on the future of micro-mobility also shows us they are looking at micro-mobility as something that is here to stay, and that it could be used to improve rest of the transportation system in Kristiansand and solve other issues such as reducing car usage in the city.
Oslo also reported changes after implementing regulations, mainly the parking culture being the thing that changed the most. Similar to Oslo, Bergen also reports effects such as the city becoming more tidier, but they still observe issues with incorrect parking and reckless driving. All three cities are lacking reports investigating the effects of the regulations, Oslo was the only one who had some numbers available. This could be a sign that all three municipalities have been more interested in regulating and solving an issue, rather than regulating and assessing the effects of the regulations and possible changes that could be made to improve the effects. Just like anything else, we must learn from our mistakes. Having no reports can indicate that they are implementing regulations based on assumptions and observations made by themselves, and not based on actual data and reports. This does not mean that they are working blind. As an example, Kristiansand have listened to the public, and AKT removed nighttime bans on weekdays after receiving feedback from the public.

6.0 Conclusion

The goal of this thesis has been to increase our understanding on how the Norwegian e-scooter market is regulated and the impacts the regulations have had on the market. This has been attempted by looking at the Norwegian e-scooter market through three research questions. The result from this study suggests that municipalities reacted differently due to contextual conditions. In large municipalities – i.e., Bergen and Oslo – the rapid and unregulated growth of e-scooters providers during the pandemic led to complaints and problems that led to an emergency approach, which primarily aimed to regulate with the purpose of fixing these problems. In the municipality of Kristiansand – arguably because of its smaller population – there were not comparable problems, so that the regulation process was not captured by an emergency approach, and a more holistic approach emerged instead, that aimed to integrate e-scooters in the public transport system with a future-oriented outlook.

This project attempted to bring light to the regulations of the Norwegian e-scooter market, but future research is still needed to gain a better understanding of the regulation of e-scooter markets and its implication. To start of the section, let us look at the two approaches I mentioned in the discussion section, emergency approach and future thinking approach. Kristiansand applied the future thinking approach, trying to use e-scooters as a tool to improve the rest of the transportation system and they are actively working towards a future with combination trips of e-scooters and bus trips, while also actively evaluating its regulations and the possibility of removing regulations that are no longer needed due to technology development or other reasons. Meanwhile Oslo and Bergen are leaning more towards the emergency approach, considering aspects such as their thought behind having to implement regulations as soon as the law made it possible, and their reasoning, the criteria being the purpose of the law, in selection criteria also gives of the impression that they are using the law from 2021 to stop a problem rather than use a new piece of technology and transportation to improve the transportation system within the city. Kristiansand municipality left room for AKT to implement their own regulations, as long as they included the wish of the municipality and added a criterion on keeping the city space clean, and it resulted in AKT making completely different criteria than Oslo and Bergen. The selection criteria in Kristiansand shows signs of using e-scooters as a tool to improve transportation in the city. Meaning they are seeing a future with micro-mobility and wants to use it to solve other issues,

such as the thought of having people in zone 3 (where bus services are lacking) take an e-scooter to a high frequency bus line.

The first research question was aimed at looking at what has been regulated in the three cities. In the document analysis I went through publicly available documents that presents the regulations and the selection process of operators in each city. What I learned from investigating the regulations is that all three cities have somewhat regulated the same things, but differently. All three cities have nighttime bans, zones, fleet caps, operators caps, zoning regulations such as forced parking and limitation of the number of vehicles allowed in certain zone, but they have all done it differently. All three cities have zones and zoning regulations, but they are not the similar across the three cities. The main difference is the choice between having a permit/license period or using a concession contract. Oslo and Bergen both went with a permit period, while Kristiansand went with a concession contract. As stated in the discussion section, a contract can be problematic for operators if they no longer agree with the current regulations and wish to leave the city, since they are contractually obligated to offer their services in Kristiansand until 2027. While cities where they have chosen a permit period solution rather than a contract, the operators are able to leave the city if they no longer agree with the regulations, or other reasons for leaving such as economic reasons.
The second research question was meant to figure out why they differ from each other. The reasoning for the regulations being different from city to city are both due to local needs and due to the process of developing the regulations. As an example, in Oslo and Bergen they politically decided to implement nighttime bans during the whole week, and the Urban Environment Agency are not in a position to do anything about political decision, they have to go along with the political decision. Meanwhile, in Kristiansand they did not politically decide this, or any of the other regulations. Instead, AKT did not see the point of having nighttime bans after the introduction of blood alcohol limit for riding e-scooters and there was no political intervention. Therefore, one could say that certain regulations, such as nighttime bans are different from city to city, due to the process where politicians can vote and implement regulations, they see most fit. In Kristiansand, the municipality seems to be more open to leaving the regulations up to AKT. One of the bigger reasons as to why the regulations differ from city to city is the municipality´s choice of delegating the responsibility to the local public transport company. From looking through regulations and interviewing the cities, I learned that AKT and Kristiansand are regulating differently due to AKT being a public transport company and that the way they think are very different from the

municipalities. Oslo and Bergen both have shown indications of having an emergency approach behind their approach on regulating e-scooters, and they have not shown the same willingness of using e-scooter to the advantage of their citizens, yet. This might change in the future, considering that Oslo and Bergen both are looking at the possibility of maybe implementing micro-mobility with the rest of the public transport system.
The third and last research question investigates the implications the regulations have had on the market. Due to the municipalities lacking reports I was unable to find much data to answer this question. What I did find out was that all three cities have, due to the regulations, seen an decrease of the number of vehicles and the number of operators. Additionally, some of the municipalities are seeing a change in the personality of the operators, by them becoming more open for dialog and working together with the municipalities.

All research projects have limitations, and this project is no exceptions. The main limitation is that it was not possible to retrieve sufficiently comparable data -such as on e-scooter usage – to examine implications of the regulations. The data on usage that was found only showed the usage in Oslo over the years, while Bergen and Kristiansand did not have any data available. There is a report about parking in Bergen, made by Nivel. However, I was unable to find the full report showing the data from all operators, the version I found online only showed data on Ryde and not the other operators.
What I could have done is gone to the operators who offers shared e-scooters in the three cities and asked for their data on usage. The problem there, however, is that certain operators who were in Oslo in 2022, are not operating in Oslo in 2023. The operators change from season to season, depending on who gets offered a permit/license or contract and the length of each permit period. It would be better if the municipalities stored data on usage and made some reports yearly that could be used for similar research purposes.
Future research could fill this gap by exploring the impact of regulations on several dimensions, such as usage of e-scooters, of other forms of public transportation, safety, private transportation – e.g., by comparing before and after regulation, across municipalities and regulation approaches. This information would be very useful for both municipalities and the operators, as well as contributing to the literature on regulatory models' implications. Later, the regulatory model that works best can be suggested to cities who are having issues regulating the e-scooter market. The operators are as interested in the effects of regulations as the local authorities are, since the income to the operators is dependent on the level of regulations. I believe there is a high potential in micro-mobility, and that cities and operators

should continue to work together and towards a future with less regulating and more collaborating.

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8.0 List of figures and tables

9.0 Appendix

Attachment 1: A list of regulations

This document was made during the document analysis. It shows all relevant regulations found on each of the document. It is structed into showing each document individually, and lists the different regulations. This was made so that it was easier to compare regulations. The titles in this document matches the titles of the documents from the table in the methodology sector, making it easier for the reader to see what document presents what regulation.

Regulation on Rental of Small Electric Vehicles on Public Ground, Kristiansand Municipality, Agder

Tender process

- An offer with license to operate is given to the contestants with the best score.
- Only two operators can receive licenses to operate.
- One period lasts for 3 seasons. A season goes from April 1st to March 32nd
- A competition will be held to decide who gets permission to rent out e-scooters. The competition will be held according to laws on tender processes.
    - The municipality can delegate the responsibility of arranging the tender process to AKT (the local transport company).

  The operators are obligated to have a set number of vehicles on the street available for rent.
- This law gives the municipality the ability to set requirements the operators has to follow

Rules/regulations

- Rental can only happen with the permission from the municipality.
- Fleet cap limits distributed across zones around the city (the operators are obligated to make sure the zones are not exceeding the fleet caps):
    - Zone 1: Kvadraturen, limit of 150 scooter for each operator
    - Zone 2: Tinnheia, Eg, Grim, Lund, limit of 350 scooter for each operator
    - Zone 3: The rest of the city all the way to the border of the municipality, no limit
        - The municipal director can increase fleet caps in the different zones. Fleet limit in zone 3 can not be less than 500 per operator. Changes can be made one or more times during the season. Changes must be informed in written form.
- During the season the municipality can establish temporary and permanent zones with regulations on;
    - Areas with no parking and other regulations on placement and parking
    - Ban the use of e-scooters
    - Speed limits
- Sharing real-time data and historic data
    - Operators are to share real-time data and history from all their vehicles with the municipality of Kristiansand and Agder Kollektivtrafikk AS (AKT)

- Limitation of rent
    - Operators are to remove vehicles from the streets when there are possibilities for snow and icy conditions.
    - Rental cannot happen between 00:00 – 05:00 all Saturdays and Sundays.
    - The municipal director can change the time rental is not allowed permanently or indefinitely.
- Alarm sounds
    - Operators are required to turn off annoying sounds from their vehicles between 22:00 and 07:00 all weekdays and between 22:00 and 09:00 during Saturdays, Sundays and Holy days.
- Environmentally friendly operations
    - Vehicles used to transport e-scooters are to be emission free vehicles
- Vehicle Identification
    - Operators are to have visible identification marks on all vehicles that are being rented out. Vehicles needs to be marked with operator name, contact information to the operator, ID that can be read manually and digitally for identification of vehicles.
- Parking/relocation
    - Operators are to, on their own initiative, remove, move and clean up their own vehicles in cases such as;
        - Impending general accessibility
        - Vehicles have tipped over, doesn't work, thrown into rivers and ocean, or in other ways littering the local environment
        - Vehicles needs to be removed due to road maintenance and other work where e-scooters/e-bikes can be obstructing.
        - In emergencies and other unforeseen events. I.e: Fires, water leakage, etc.
        - To comply with the fleet cap limits in the different zones.
- Insurance
    - All operators are required to have liability insurance.
- Integrating other transportation methods
    - All operators are required to incorporate their own systems with AKT (The public transport company in Agder)

- Fees
    - Operators are required to pay a fee that covers the municipality's expenses related to administration and facilitation. As well as expenses for supervision and control of rental activities.

Invitation to Tender – Micro-mobility Kristiansand Municipality and Vennesla Municipality 2024 – Procedural Rules

Contracting authority

- AKT, which stands for Agder Kollektivtrafikk AS, is the contracting authority for Kristiansand Municipality

Tender Process

- A total of 2 licenses, where each license gets permission to have 150 vehicles in zone 1 and 350 in zone 2, no fleet cap for zone 3
- If there a more than two applicants the selection will be done based off of four criteria's. (TK is short for selection criteria in Norwegian)
    - TK1: Quality of vehicles (Weighted 15%)
        - An evaluation of the vehicles characteristics will be done based off of two categories
            - User friendliness
                - Support when parking (i.e kickstand)
                - Comfort (I.e shock absorbers)
                - Use under different weather conditions (I.e fenders/mudgards)
            - Safety
                - Quality of breaks, gas quality
                - Performance under sharp turns
                - Size of frontwheels
                - Quality of wheels
    - TK2: Clearing of the city space (Weighted 50%)
        - This criteria is about the operator's ability to ensure a clean city space. The criteria is split up in four subsections:
            - How operators will limit their amount of vehicles available for use considering the demand throughout the year
            - What incentives operators will use to motivate customers to park the vehicles correctly
            - How operators operational plan will contribute towards a clean city space

- How operators operational plan will be during winter season to ensure that vehicles are removed in cases of snow and ice

- TK3: Sustainable modal shift (20%)
  - How operators will ensure the best possible distribution and an even spread of vehicles
  - What incentives operators will use to motivate customers to achieve this goal (i.e prices)
- TK4: How operators will offer the best possible micro-mobility service at specified locations in zone 3 (15%)
  - How operators ensures that vehicles that are palced and located within zone 3 will give zone 3 the best possible micro-mobility service. Applicants who include e-bikes will be awarded

Concession contract for micro-mobility between Kristiansand and Vennesla Municipality 2024 – Assignment Description

Parking zones and geofencing

- Zone 1: Station-based parking (Operators can only place vehicles parking stations)
- Zone 2 + 3: Free flow (can be implemented station-based parking in certain areas if needed)

Operations and maintenance

- Operators are required to have enough employees to perform operational and maintenance related tasks, as well as keeping the contracting authority informed
- Operators are required to perform service and maintenance so that vehicles placed out in the streets are without damage and in accordance with regulations.
    - Damage that potentially can cause harm for a person has to be fixed immediately
        - Damaged vehicles are to be removed, fixed, and placed back out again as soon as possible. Vehicles that cannot be fixed has to be replaced and disposed in an environmentally friendly manner.

DATA – statistics and reports

- Operators are required to give contracting authority access to data on demand and usage
- Operators are required to give access to data on use and accessibility of the vehicles, including location data

Fees

- Operators are required to pay a fee of 600 000 kr per operator/license to the municipality.

Regulation on Rental of Small Electric Vehicles on Public Ground, Oslo Municipality, Oslo

- This regulation is meant to facilitate the rental of small electric vehicles on public ground in the Municipality of Oslo, ensuring accessible and sage public spaces, efficient administration, environmentally friendly solutions, and a god environment and local community

Requirement for a permit for the rental of small electric vehicles

- Rental of small electric vehicles in Oslo can only happen with a license given from the municipality of Oslo.
    - Oslo Municipality gives out 3 licenses. A license is valid for one year.
    - There is a fleet cap limit of 8 000 small electric vehicles in Oslo. These vehicles will be equally spread amongst the 3 chosen operators

- If more than 3 operators apply, the selection of which application gets the three licenses is done with a quality assessment based on the applicant's description of routines and tools they use:
    - To secure accessible public spaces
        - How does the applicant make sure that their users do not place the vehicles to hinderance or disadvantage for the accessibility
        - How does the applicant organize removal, moving, and cleaing of vehicles
    - To secure safe public spaces
        - How does the applicant promote legal and considerate behavior.
        - How does the applicant ensure the safety of third parties.
        - How does the applicant ensure the safety of the driver of their vehicle?
    - To achieve climate and environmentally friendly operations
        - Lifespan of their vehicles
        - Routines for dealing with waste, destroyed vehicles and components
- Operators who applies can not have the same owner and/or belong to the same corporation

Conditions for use of the license

- Operators vehicles are required to be distributed like this:
    - Zone 1: Within Ring 1 – 15 % of their total fleet
    - Zone 2: Between Ring 1 and 2, excluding Bygdøy – 40 % of total fleet
    - Zone 3: Between Ring 2 and 3 including Bygdøy – 30 % of total fleet
    - Zone 4: Outstide of Ringe 3 – 40 % of total fleet
        - The exact borders for each zone will be on a digital map that is attached to the announcement of new licenses.
        - Operators are required to comply with the fleet caps of each zone
- Operators are required to comply with the requirements regarding placing vehicles – this will be stated in the announcement
- During the license period the municipality can establish temporary and permanent digital zones (geofence), which the operators are required to implement. Zones can

apply for the whole or just parts of the day and/or only on specific days and weekdays.
    - Prohibition or other regulation of placements or parking
    - Prohibition of use
    - Speed limitations
- Operators are required to share real-time and historical data from all the vehicles with the municipality.
    - Operators needs to have the necessary technology to receive data about and for implementation of geofence. The municipality can give more details on what technology is required in the announcement.
- Renting can happen every day, the whole day, except between 23:00 and 05:00.
- Operators are required to prevent annoying sounds from their vehicles. Alarm functions with sound shall be turned off between 20:00 – 07:00 on nights during weekdays and between 20:00 – 09:00 on Saturday and Sunday nights, and on holidays.
- Vehicles that the operators use for their operations are required to be emission-free.
- All rentable vehicles shall be marked clearly with operator name and contact information, and ID that can be read manually or digitally to identify the vehicle.
- Operators are to, on their own initiative, remove, move and clean up their own vehicles in cases such as;
    - Impending general accessibility
    - Vehicles have tipped over, doesn't work, thrown into rivers and ocean, or in other ways littering the local environment
    - Vehicles needs to be removed due to road maintenance and other work where e-scooters/e-bikes can be obstructing.
    - In emergencies and other unforeseen events. I.e: Fires, water leakage, etc.
    - To comply with the fleet cap limits in the different zones.

Fees

- Operators are required to pay a fee that covers the municipality's expenses related to administration and facilitation. As well as expenses for supervision and control of rental activities.

Announcement of the permit period from April 1, 2024, to March 31, 2025, for the rental of small electric vehicles on public grounds in Oslo Municipality

- Zoning
    - Zone 1: Within Ring 1 – Max number of vehicles: 1 200 – 15% of operators total fleet
    - Zone 2: Between Ring 1 and 2 – Max number of vehicles: 3 200 – 40% of operators total fleet
    - Zone 3: Between Ring 2 and 3 – Max number of vehicles: 2 400 – 30% of operators total fleet
    - Zone 4: Outside of Ring 3 – Max number of vehicles 3 200 – 40% of operators total fleet
        - During the licensing period the municipality of Oslo are allowed to increase and decrease fleet cap limits within the different zones. All changes must be notified minimum a week prior to implementation.

- Deadlines for clearing/tidying
    - Operators are required to clean (relocate and move) vehicles. If the municipality contacts an operator regarding a vehicles that is placed wrong, the operator has a deadline for when the vehicles must have been moved.
        - 2 hours (Mon - Sat 07:00 – 20:00 and holidays including Sundays 10:00 – 20:00)
        - 4 hours (Mon – Sat 20:00 – 07:00 and holidays including Sundays 20:00 – 10:00)
    - The deadlines do not apply for when towing is needed (if the scooter is blocking general accessibility)

- Using, sharing and storing data
    - Operators are required to give access to historical location and real-time location data for each vehicles they rent out.
    - The municipality can compile and publish data such as; an overview over the total amount of vehicles, average trip per vehicle, total amount of trips

- Supervision of zone fleet caps
    - By sharing data the municipality will be able to see snapshots with 15 minutes intervals with information on number of vehicles per operator and zone.

- Operators placement of vehicles
    - Operators are required to place their vehicles on marked areas or in bike racks, if possible.
    - Additionally, the operator are required to make sure that their placement of vehicles are not in obstructing or in any other way being an inconvenience for other pedestrians/road users.
    - Operators are required to follow the minimum requirements for placing of small electric vehicles:
        - Minimum 2 meter free space on sidewalks

        - Placement of vehicles should not be in the way for natural walking paths
        - Minimum 2 meter from tactile grounding surface indicators (marking for visually impaired people)
        - Minimum 2 meters from Town Bicycle bike racks, making room for loading and unloading of town bikes.
        - Bike racks can be used for placing vehicles with permission from the municipality
    - When using marked parking areas or bike racks, only 50% of the area/rack can be filled with vehicles. Operators are required to leave room for a minimum of 4 vehicles.

- Information about parking to users
    - Operators are required to inform their users on what a good and considerate parking is. Operators should also encourage the use of marked parking areas and bike racks, and inform about other parking rules.

- Map of parking and geofencing
    - The municipality will continuously update the map and operators are required to update their maps at minimum on Tuesdays and Fridays at 12:00. Vehicles who end up in wrong areas, as a result of changing geofences, must be removed within 05:00 Wednesdays and Saturdays.

- Enforement of the permit
    - The Municipality of Oslo have the opportunity to remove and take vehicles into custody that are parked or in other ways violating the regulations.
    - Controlling of zone fleet caps and parking areas with no parking is done with the use of historical location data for each individual vehicle.
    - To control other aspects mentioned in the application
        - The Operator delivers a monthly report
        - The municipality gains access to operators systems for the purpose of conducting random controls.

- Operators expenses
    - Operators who are given a license are required to pay a fee to cover for the municipalities expenses related to; administration and planning, supervision and control.
    - The municipalities expenses for each vehicle has been calculated to cost 1 240 kr. Every operator has to pay for their vehicles.

- Operators who stops their service or loses their license
    - If an operator decides to end their operation or ther licenses is taken away, the municipality can request other applicants to step in. The municipality's ranking of the applicants will be taken into consideration when choosing a replacement.
    - If no one wishes to replace the former operator, the municipality can advertise a new competition for the vacant license.

Selection Criteria for operators (Oslo)

- Criteria A – Accessible public space (40%)
    - Applicants answers to this criteria will be evaluated according to the requirements stated in the….
    - Under this criteria applicants measures, routines, and technology used to ensure accessible public space for other traffic are weighted.
    - A. 1 – How applicants ensure that their users do not position vehicles as an obstacle or disadvantaged for other traffic
        - Applicants answers to the criteria's listed below:
            - A1-1: Describe the vehicle's digital and physical characteristics that ensures good parking and accessibility.
            - A1-2: Describe measures, routines and follow-up to ensure that users use the marked parking spaces and bike racks.
            - A1-3: Describe measures and routines made to ensure that users shows good parking manners.
            - A1-4: Describe the vehicles position accuracy and how this is used in context of parking
            - A1-5: Describe routines and measure used to ensure that their vehicles are not in the way of the municipality's operations.
            - A1-6: Describe routines and measure to avoid congestions of vehicles
    - A. 2 – How applicants will organize removal, moving and tidying up of vehicles
        - Applicants answers to the criteria's listed below:
            - A2-1: Describe routines and measures for identifying and dealing with vehicles that have tipped over or illegaly parked vehicles
            - A2-2: Describe routines and measure to prevent vehicles from being inactive and standing still over time
            - A2-3: Describe routines and measures for tidying up congested vehicles
            - A2-4: Decribe routines and state response time for inquires from both municipality and bystanders
                - Time from inquiry has been receive to answer has been sent.
                - Time from inquiry to case being solved.

- Criteria B – Safe public spaces (40%)
    - B. 1 – How applicants promote legal and considerate behavior in traffic
        - Applicants answers to the criteria's listed below:
            - B1-1: Describe measure to prevent users from driving under the influence
            - B1-2: Describe traffic safety measures and routines linked to training and information on traffic safety
            - B1-3: Describe other measures and routines made to ensure that users exercises legal and considerate behavior
            -

- B. 2 – How applicants ensure the safety of third party
  - Applicants answers to the criteria´s listed below:
    - B2-1: Describe routines for identifying areas with need of special measures and the exection of these measures
    - B2-2: Describe how the vehicle detects different geofence-zones and how fast they are detected
    - B2-3: Describe measures to ensure considerate overtaking of pedestrians on sidewalks and walking areas
- B. 3 – How applicants ensure the safety of the user
  - Applicants answers to the criteria's listed below:
    - B3-1: Describe available equipment and characteristics of the vehicle that ensure the safety of its user
    - B3-2: Routines, equipment, and technology that ensure fast reasons in cases of accidents
    - B3-3: Routines for inspection, repair and maintenance of vehicles
    - B3-4: Design and measures to prevent vandalism on vehicles
    - B3-5: Measures for when external conditions, such as ice and snow, that challenges the traffic safety, included routines and processes tied to general winter operations

- Criteria C – Climate and environmentally friendly operations (20%)
  - Under this criteria applicants routines and means to achieve a climate- and environmentally friendly operation
  - C. 1 – The lifetime of the vehicles
    - The municipality will prioritize fleets that can document low environmental impact throughout the entire lifecycle of the vehicle, including production and transportation.
      - Applicants are required to answer the criteria's below:
        - C1-1: State IP levels for frame, IoT unit and battery
        - C1-2: Relevant third party certifications that applicants can show to
        - C1-3: Describe lifecycle for a vehicle, including number of kilometers before switching the vehicle out
  - C. 2 – Routines for dealing with waste, defect vehicles and component

Regulation on Rental of Small Electric Vehicles on Public Ground, Bergen Municipality, Vestland

Zones

- Zone 1: Inner centrum
- Zone 2: Bygatesone, including Møhlenpris, Nygårdshøyden, Nordnes and parts of Sandviken
- Zone 3: Outer urban zone: the rest of Bergenhus and Årstad bydel
- Zone 4: Areas outside of zone 1-3
    - Zones are illustrated on map

Requirement of permission for renting out small electric vehicles

- Rental of small electric vehicles in Bergen can only happen with the permission from the municipality of Bergen.
- Bergen Municipality gives out permission/licenses to three operators. A license lasts for 2 years.

Announcement of new licenses

- The municipality of Bergen announces new licenses every 2nd year. The annoucenemnt gives futher information on where and how the applications is going to be sent in, what information the application should contain, and a deadline for the municipality to process the applications.

Requirement to the applications and selection criteria

- An application should at least contain:
    - Applicant name (the name of the operator), address, organization number, e-mail, phone number and contact person.
    - Confirmation of registration in Registry of Entities
    - Documentation showing that the applicant can fulfill the requirement of two-way data sharing
    - Documentation showing that the vehicles that are going to be rented out in Bergen will respond to the regulations and geozones.
- If there are more than 3 applicants that fulfill the minimum requirements, the selection should be based on the following criteria (% shows how much each criteria weighs):
    - Quality of the operators' routines and tools to achieve good parking practice for its customers, and the operators plan on organizing removal, moving, and tidying of vehicles. (40 %)
    - Quality of operators routines and tools to secure safe public spaces (30%)
        - How the operator promotes legal and considerate behavior
        - How does the operator ensure the safety of third parties.
        - How does the operator ensure the safety of the driver of their vehicle?
    - Climate and environmentally friendly operation (30%)
        - Vehicle lifespan
        - Handling of waste, broken vehicles, defective components

Conditions for use of the permit/license

- Limitations in number of vehicles

    - Zone 1 has a cap on 900 vehicles
    - Zone 2 has a cap of 1500 vehicles
    - No limitation on Zone 3 and 4. However, the municipality can establish a limit in zone 3 and 4 during the season, if the municipality considers it necessary due to safety and accessibility.

- Regulating zones and areas
    - The regulation of zones and areas shall be flexible and controlled through a shared dataset. Operators are required to have the necessary technology for this shared dataset. These regulations consists of:
        - Areas where it is not allowed to place or park a small electric vehicle.
        - Zones and areas where it is only allowed to place or park small electric vehicles on areas dedicated for this (dedicated parking spots for e-scooters). These areas will be marked physically and through geozones.
        - Areas with speed limits or prohibition of use
        - Times when the service can be available for special events

- Times for when the service can be available
    - The service can be open for use all days, the whole day, except 23:00 – 05:00 on night to Saturday and to Sunday, and between 01:00 – 05:00 on nights to weekdays.

- Sharing of data
    - Operators are required to share real-time data and historical data from all their vehicles, with the municipality of Bergen.

- Marking/Identification of vehicles
    - All small electric vehicles are required to be marked clearly with; operator name, ID that can be read manually and digitally to identify the vehicle.

- Operation and maintenance
    - Operators are to, on their own initiative, remove, move and clean up their own vehicles in cases such as;
        - Impending general accessibility
        - Vehicles that are located in areas where it they are not allowed to be parked/placed
        - Vehicles have tipped over, doesn't work, thrown into rivers and ocean, or in other ways littering the local environment
        - Vehicles needs to be removed due to road maintenance and other work where e-scooters can be obstructing.
        - In emergencies and other unforeseen events. I.e: Fires, water leakage, etc.

- Security
    - Operators are required to have technology that secures the vehicles after 5 minutes of inactivity

- The use of sound and lights
    - Operators are required to prevent annoying sounds and lights from their small electric vehicles
    - Alarms with sounds are required to be shut off between 23:00-07:00 on nights to weekdays, and between 20:00 – 09:00 on nights to Saturdays, Sundays, and holidays.
    - Any statuslights on vehicles is required to shine consistently with a brightness that is not bothersome.

- Environmental requirements
    - All operators are required to use emission-free vehicles for their operations

Fees

Operators are required to pay a fee that covers the municipality's expenses related to administration and facilitation. As well as expenses for supervision and control of rental activities.

Announcement of the permit period for the rental of small electric vehicles on public grounds in Bergen Municipality

- Zoning
    - Zone 1: Inner Centrum – Vehicle limit: 900
    - Zone 2: Bygatasone, included Møhlenpris, Nygårdshøyden, Nordnes and parts of Sandviken – Vehicle limit: 1 500
    - Zone 3: Outer urban zone: Rest of Bergenhus and Årstad – No vehicle limit
    - Zone 4: Areas outside of zone 1-3 – No vehicle limit

    - Fleet cap limit is distributed between the operators who gets licenses

- Sharing, using, and storing data
    - Operators are required to share data with the municipality.
    - Operators are to share real-time data and historical data. The purpose of this data sharing is to control if operators comply with the regulations.

- Placement of vehicles
    - In areas with controlled parking, it is only allowed to parked in marked parking areas defined by the municipality. In areas with no specific parking instructions, the municipality urges operators and users to place vehicles in dedicated parking areas if possible.
    - When using dedicated marked parking areas, only 50% of the marked area can be used to plave vehicels. Leaving room for other vehicles.

- Wrong parking app
    - The municipality of Bergen utilizes an app made by Nivel AS. The app makes it possible for people to anonymously report scooters that are parked wrong, no matter what operator the scooter belongs to. The report can include; different categories of wrong parkings, pictures, operator name, vehicle-ID, time and place.
    - The operators and municipality gets access to an overview of all incoming messages, their status and other statistics.

- Time for when the service can be available
    - Rental of small electric vehicles can happen all days, the whole day, EXCEPT between 23:00 – 05:00 night to Saturdays and Sundays, and between 01:00 – 05:00 night to weekdays. The municipality can change and remove closing hours temporary and permanently.
        - As of now, the municipality has decided to let the service stay open on nights to weekdays. The requirements for operators to be allowed to offer rental during night hours are:
            - Night open rental is only for weekdays. It is not allowed to offer rental on night to holidays, even though the holiday is on a weekday.

- To unlock a scooter during the night, a sobriety test has to be completed.
    - The test can not be bypassed.
    - Operators can not open for rental during nights without approval of the sobriety test.

- Ending operations
    - If an operator ends their operations during the season, the operator loses their license. Operators are not allowed to transfer licenses between each other
    - In cases where operators ends their operations, the municipality can consider to offer the license to the applicant who was ranked 4th during the application process, or they can choose to distribute the fleet cap of zone 1 and 2 from the 3rd operator to the 1st and 2nd operator.

Selection Criteria for operators and documentation requirements (Bergen)

- Criteria A – Accessible public space (40%)
    - This criteria is mainly about the quality of routines and strategies related to achieving good parking practice, including a plan on how the operator is organizing removal, moving, and tidying up of vehicles.
    - A. 1 – Quality of operators' routines and strategies to achieve good parking practice.
        - Applicants should describe:
            - Routines on securing good placement of vehicles
            - The vehicles position (GPS) accuracy
            - Other aspects of the vehicles that ensures good parking and accessibility
            - How other physical and digital technology used to ensure parking is not obstructing the public space
            - Routines and measures to ensure that users practices good parking etiquette.
                - Forwarding parking tickets to users
                - Point system or similar

    - A. 2 – Plan on how operators are organizing removal, moving and tidying up of vehicles

        - This criteria is aimed at how operators plan on dealing with vehicles that are parked wrong or is in some way blocking for general accessibility. Operators are evaluated based on how good they describe routines related to this and how well this can be documented. Applicants are given examples on what can be included in this section;
            - Routines on identifying and following up vehicles that has been incorrectly parked, or vehicles that needs to be removed due to other reasons
            - Response time on incorrectly parked vehicles
                - I.e response time on messages reported through the Wrong parking app and other systems.
                - Response time can be dependent on the time of day and the municipality recognizes that the response time during the night is not as critical as the response time during the day
            - Routines for tidying up vehicles that have congested
            - Show how and when citizens can contact the applicant.
                - This includes how easy it is to find contact information and reaching out.
                    - Phone numbers to customer service on operators website, including opening hours
                    - Contact information on vehicles
                - Routines to prevent disturbance during night hours
                    - Sounds from operational work
                    - Lights and sounds coming from the vehicles

- Criteria B – Safe public space (30%)
    - This criteria is mainly about the quality of the operators routines and strategies on how they ensure safe public space. Applicants are asked to describe measures they think are significant and effective to secure safe space.

- B. 1 – How operators promotes legal and considerate traffic/considerate
    - The municipality will focus on how the applicants influence its users towards legal and considerate traffic behvaior. Applicants should describe routines to uphold this for both existing and new customers.
    - Examples on things applicants can include:
        - Educating and following up users
        - Measures to prevent driving while intoxicated
        - Measure to prevent tandem kjøring
        - Measures on how to secure that user are of legal age
- B. 2 – How operators ensure the users security and third persons
    - Examples on measures operators can include for this section
        - Use of geozones and technology for limiting speed
        - How vehicles detect geozones
        - How overtaking pedestrians can be done in a considerate way
        - Equipment and characteristics of the vehicle that takes care of the safety of the driver and other pedestrians when the vehicle is in use.
            - Indicators, bell, relefctive markers, etc
            - Size of wheels, quality of breaks, camera technology, etc
        - Routines for checking vehicles, repairing, and maintenance of vehicles, including batteries.
        - Design and measures for preventing vandalism on vehicles
        - Routines and measures for when external conditions, such as snow and ice, makes it challenging for safe travels

- Criteria C – Climate and envorinemtally friendly operations (30%)
    - This criteria is regarding the operators climate and environmentally friendly operations.
    - C. 1 - Environmental Management System

        - Applicant are required to document goals, routines and action plans that describes how applicant are ensuring environmentally friendly operations.
        - This section should include description of applicant's environmental management system, and how applicants are working on reducing the effect it has on the environment
        - Documentation on third part certification
    - C. 2 – Emission from vehicle production
        - Applicants are required to state emissions related to the production of its vehicles and components.
        - Applicants should include:
            - Emission based on four levels; extraction of raw material, transport of raw material and semi-finished products, production, transport of produced components and vehicles to Bergen
    - C. 3 – Vehicle lifespan
        - Applicants are required to state its vehicles lifespan, in total driven kilometers
        - The calculation of a vehicle's lifespan has to be documented and attached to the application.
    - C. 4 – Routines for recycling and handling of defect vehicles and components
        - This will be evaluated based on how defect and scrapped vehicles, and components, are handled with regard to the environment.

Attachment 2: Interview questions

Interview questions

- What challenges did the municipality encounter during the design and implementation of the regulations, and how were they addressed?
- Why was the decision made to grant licenses/permissions to only X operators? What factors led to the choice of implementing a cap of X operators?
- I noticed a difference in the selection criteria when analyzing the three cities and were wondering, how did you come up with the criteria?
- How did the municipality determine the various zones created? What factors were considered in this process?
- I noticed that the cities have different regulations in centrum on forced parking, what factors were considered when deciding to have/not to have forced parking?
- How did the municipality determine the overall limit on the number of vehicles in the city?
- Operators are required to share real-time and historical data, what is this data used for?
- Has the municipality observed any noticeable changes/effect following the implementation of the regulations? Has it aligned with the initial expectations?
- Do you have any reports or information that shows the effects of the regulations?
- How do you see the future of micro-mobility and the future regulatory challenges?

Attachment 3: Approval from SIKT

Sikt

Vurdering av behandling av personopplysnin

Referansenummer
544169

Vurderingstype
Automatisk

Tittel
Masteroppgave - Regulering av el-sparkesykkel markedet, et studie av det norske el-sparkesykkel mar

Behandlingsansvarlig institusjon
Universitetet i Agder / Fakultet for samfunnsvitenskap / Institutt for statsvitenskap og ledelsesfag

Prosjektansvarlig
Marco Seeber

Student
Ole August Kjærvik

Prosjektperiode
06.02.2024 - 01.09.2024

Kategorier personopplysninger
Alminnelige

Lovlig grunnlag
Samtykke (Personvernforordningen art. 6 nr. 1 bokstav a)

Behandlingen av personopplysningene er lovlig så fremt den gjennomføres som oppgitt i meldeskjema gjelder til 01.09.2024.

Meldeskjema

Grunnlag for automatisk vurdering
Meldeskjemaet har fått en automatisk vurdering. Det vil si at vurderingen er foretatt maskinelt, basert p inn i meldeskjemaet. Kun behandling av personopplysninger med lav personvernulempe og risiko får au kriterier er:

- De registrerte er over 15 år
- Behandlingen omfatter ikke særlige kategorier personopplysninger;
  - Rasemessig eller etnisk opprinnelse
  - Politisk, religiøs eller filosofisk overbevisning
  - Fagforeningsmedlemskap

Attachment 4: Data on usage in Oslo

	År	Januar	Februar	Mars	April	Mai	Juni	Juli
Antall turer	2020 *)	73 658	93 817	77 659	125 322	297 443	547 406	934 063
Antall kjøretøy	2020 *)	1 179	1 526	2 088	3 731	3 877	5 428	10 163
Snitt antall turer pr dag	2020 *)	2,0	2,1	1,2	1,1	2,5	3,4	3,0
Antall turer	2021 *)	168 962	159 523	404 641	803 756	1 146 462	1 977 636	2 046 121
Antall kjøretøy	2021 *)	8 592	7 272	11 002	13 247	14 269	18 192	18 998
Snitt antall turer pr dag	2021 *)	0,6	0,8	1,2	2,0	2,6	3,6	3,5
Antall turer	2022	148 474	227 165	542 857	656 337	936 054	1 145 416	925 254
Antall kjøretøy	2022	4 761	6 306	6 851	7 351	7 836	7 849	7 822
Snitt antall turer pr dag	2022	1,0	1,3	2,6	3,0	3,9	4,9	3,8
Antall turer	2023	95 484	173 658	227 057	492 207	920 982	1 125 616	823 758
Antall kjøretøy	2023	2 713	3 719	7 753	6 104	7 340	7 672	7 603
Snitt antall turer pr dag	2023	1,1	1,7	0,9	2,7	4,0	4,9	3,5
Antall turer	2024 **)	32 332	127 642	411 758	804 859			
Antall kjøretøy	2024 **)	1 855	3 016	4 995	7 617			
Snitt antall turer pr dag	2024 **)	0,6	1,5	2,7	3,5			

*) Utleieakørene ble ble først medio september 2021 pålagt å dele data. Før dette var det frivillig og ulike tid
**) Lime hadde ikke kjøretøy ute i perioden januar tom. mars 2024

	År	Januar	Februar	Mars	April	Mai	Juni	Juli
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*) Utleieakørene ble ble først medio september 2021 pålagt å dele data. Før dette var det frivillig og ulike tid
**) Lime hadde ikke kjøretøy ute i perioden januar tom. mars 2024