Overview of e-micromobility related conditions and constraints
OUT02

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Author(s) and contributing partner(s) - if any

Name	Organisation	Contribution
Dr. Domokos Esztergár-Kiss, Attila Aba	Budapest University of Technology and Economics (BME)	Author
Dr. Nicola Fricke	Fraunhofer IML	Contributor
Yoram Shiftan, Ayelet Kogus	Technion, Israel Institute of Technology	Contributor
Laia Pages, Clement Lemardele	UPC Technology Center – CARNET	Contributor
Dr. Mireia Gilibert	SEAT, S.A.	Contributor
Ofir Cohen, Rami Reihan, Gabriel Trachtenberg, Fabio Scheinkman Shachar, Simona Leibovich, Alma Tsur-Revivo, Daniel Baron	Tel Aviv-Yafo Municipality	Contributor
Dr. Bernhard Kalkbrenner	Digital Hub Mobility / UnternehmerTUM	Contributor
Greger Henriksson, Győző Gidófalvi	KTH Royal Institute of Technology	Contributor
Antoni Broquetas	Technical University of Catalonia (UPC)	Contributor

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1. Executive Summary

European urban areas have different systems and practices for planning of transportation systems, decision-making of new regulations and cooperation between public and private operators. Therefore, in this deliverable the specific conditions and solutions in the field of e-micromobility were mapped. The analysis consisted of two parts, first the regulatory, planning, financial conditions for usage of these new transport modes were assessed, then the mobility related requirements including user needs and travel behaviour were discovered. The findings of this deliverable serve as input for the recommendations, for the pilot roadmaps, and for the implementation guideline.

In the first part the existing regulatory, planning, and financial conditions were assessed. An overview of the current framework related to e-micromobility and practices applied in different regions was provided. In this part general information about the mobility related vision, regulatory environment, financial support opportunities of the urban areas, and existing transport policies were described by analysing existing documents and available materials. Also, legal requirements for vehicles, restrictions for usage of e-micromobility in traffic and conditions for business models were explored.

In the second part the mobility related requirements including user needs and travel behaviour were discovered. The aim of this task was to collect direct and relevant information from target groups, who are involved in the urban mobility processes and have practical experience related to local characteristics. As a first step, stakeholder interviews were conducted, where experts from different fields shared their professional experience in the field of e-micromobility and its potential changes to travel behaviour. As a next step, an online survey was created, where specific target groups were asked about their needs and requirements regarding innovative transport modes.

2. Introduction

Climate change is one of the major pressuring issues of the present day. The transportation sector is a major source of polluting emissions. One strategy to reduce emissions is to fundamentally change the transportation systems. Appropriate solutions comprise reducing the use of private cars, offering the right mixture of transportation modes, improving accessibility, and promoting walking and cycling as preferable and comfortable transport methods. With less cars fewer parking spots are needed. In the long run, additional greening and social areas can make cities more liveable.

Sustainable and efficient transportation systems allow people to satisfy their desired mobility with great accessibility in their neighbourhoods and without harming the environment. This can imply the use of sustainable energy sources. Planners and engineers work together to understand and improve the transportation systems focusing on accessibility, sustainability as well as safe mobility. In recent years, the technological progress and innovations in transportation are leading to new ideas and mobility solutions.

From the USA to Germany, Japan to China and UK to Israel, citizens experience new forms of mobility like bike-sharing or – more recently – shared e-kickscooters.

New solutions and citizen-centric transportation systems with various solutions and means of transport are needed to change urban mobility for the better. Micromobility solutions such as electric kickscooters, (shared) bicycles, electric pedal assisted bicycles or cargo e-bikes as well as other types of micro-vehicles can be a building block with positive effects to a more sustainable urban transport and logistics system. Micromobility can create new opportunities for urban mobility as well as new business. Such solutions could replace (short) car rides and connect the start and end of commuting. These first and last mile trips are often considered a big obstacle for the success of public transportation. Hence, the latter could benefit from micromobility solutions available to citizens.

However, the introduction and usage of micromobility on the streets also creates new conflicts. New types of vehicles need time to be adopted. The interaction with other vehicles and road users as well as the overall acceptance of micromobility devices are found to be crucial – also among non-users. Proper regulation and specific problem-related awareness programs could help to reduce conflicts and make use of the potential of micromobility. Discussions around the use of public and traffic space show that a new thinking is needed. Current infrastructure and traffic areas are not designed for micromobility solutions. Hence, the interaction of micromobility devices with other road users can lead to conflicts. Users of e-micromobility often do not know the rules or do not behave according to them. In addition, car drivers and other road users are not used to e-kickscooters or other types of micromobility. Such conflicts can also arise with pedestrians or with cyclists – leading to a discussion on the use of space. In general, the parking of micromobiles is a challenge that arose in many cities when e-kickscooters were introduced.

More and more cities are feeling the effects of increasing numbers of e-kickscooters in cities. The increasing number of accidents involving e-kickscooters is giving rise to pressure legislation at both European and national level to regulate the impact of e-kickscooters on the existing transport systems. In the same way, space occupation due to inappropriate parking of vehicles and the inconsistent legal situations in individual countries are issues that need to be addressed.

More and more new categories of micromobiles for private users as well as for urban logistics will be developed – besides types like e-kickscooters which are nowadays seen in most large European cities. A key question around electrified micromobility is its influence on sustainable mobility. Can solutions like shared e-kickscooters help to improve mobility for the citizens by filling the first/last mile gap and by complementing public transport? Or will they have a negative impact on the environment and change the overall urban mobility to the worse, e.g. by cannibalizing public transport? This discussion also involves the question if such services replace active means of transport such as walking or cycling.

Various actors need to work together in order to create sustainable and intelligent transportation systems that offer micromobility solutions and improve the mobility of citizens. These key stakeholders are regulators, city and traffic planners, companies from the micromobility ecosystem such as operators, public transport operators and other mobility stakeholders.

3. Methodology

3.1. Framework analysis

In the framework analysis a structured literature review and desk research was conducted. The framework analysis was divided into two parts: a comprehensive description of the European market and use cases of the selected cities. In the first part an overview on e-micromobility was provided with definitions and comparative analysis of different regulations. The second part of use cases was further divided into metropolitan regions (München, Barcelona, Copenhagen, Tel-Aviv, and Stockholm) and small cities (Terrassa and Liege). To have a consistent use case description, every city was analysed with the following methodology.

- Planning conditions: In the first part of the study urban, regional, and national level strategic documents were collected (such as climate plans and mobility development plans) to examine the objectives and measures related to e-micromobility. Since e-micromobility is a relatively new paradigm in urban mobility, this research had a special focus on conventional cycling, too. Planning conditions were collected in order to see what kind of vision or strategy supports e-micromobility.
- Regulatory environments: In the second part regulatory or related documents were collected to analyse the current regulation and legislation about e-micromobility. The methodology was more focused on new elements of e-micromobility, such as e-kick-scooters. In this part not only official regulations were observed, but public information for end-users as well. The regulatory environment was analysed in order to see what the current rules of using and operating e-micromobility vehicles are.
- Administrative and financial opportunities: The third part focused on market opportunities and shared e-micromobility services. It was assessed, whether there is any support of e-micromobility, and what are the administrative obstacles or constraints to provide such a service. Administrative and financial opportunities were collected in order to see the current potentials in the e-micromobility market.

This framework analysis was done using publicly available documents, mainly official reports, and in case of missing official information, through trust-worthy media appearance. Furthermore, data collection was supplemented with hard-to-reach, but official information from the workshop participants. The results of the data collection were verified with city representatives.

3.2. Stakeholder workshop

This part focused on two groups of stakeholders: city representatives and manufacturers. The first group is represented by partner cities, the second is by a leading company in the field, SEAT. On the one-hand the stakeholder workshop supported the framework analysis, on the other hand city representatives could express their thoughts about the current framework. The results of the stakeholder workshop serve the framework description mostly with facts, and the stakeholder involvement mostly with opinions. In the stakeholder workshop a similar partitioning was applied as in framework analysis: planning conditions, regulatory environment, and administrative and financial opportunities with a couple of introductory questions. During the workshop participants could write about their own experience with their cities, but at the same time an open discussion was carried on about the key issues.

3.3. User survey

The purpose of the survey was to assess user needs and requirements regarding e-micromobility and its respective services in cities, such as Munich, Barcelona, Copenhagen, Tel Aviv, and Stockholm. The following survey was prepared for individuals of the above-mentioned cities:

- Part 1 (Background Information): The survey collects basic socio-economic and demographics information about respondents such as age, gender, income ranges, and current travel information.
- Part 2 (Pros and Cons): The survey gathered information about respondents' view towards e-micromobility. Subjective information about the benefits, concerns, purpose, and potential use of the vehicles. For example, the respondents were to provide answers on how they would use e-micromobility vehicles for trips.
- Part 3 (Practical Usage): The survey collected information about possible current usage of e-micromobility vehicles.
- Part 4 (Current services): respondents were to give information about the availability of e-micromobility service in their city, the current status of subscription, if any and current vehicle usage.
- Part 5 (Safety): The survey collected safety information when using e-micromobility vehicles.
- Part 6 (General Conditions): Respondents were to give information about the regulatory environment that they are aware of (e.g. do respondents know of specific laws regarding the use of e-micromobility vehicles).

4. Outcomes

4.1. Framework analysis

Cities typically have relevant mobility plans, which are focusing on sustainable modes of transportation. These mobility plans typically have dedicated objectives, goals or actions related to cycling, and with this some general micromobility goals and actions are addressed in these documents as well. However, new mobility forms rarely appear in these documents. This can be due to the lack of experience, and generally the low effect on the whole mobility system. The importance of e-micromobility is a trend of discussions in professional circles, and in some cases urban mobility strategic planning has a dedicated attention to this field. The main stakeholders involved in the planning processes are transport authorities (local and/or national), transport operators (mainly public transport operators), universities and organizations representing citizens. In the meantime, regulation seeks to keep pace with services on the market.

There is no EU-wide approval available for electric kickscooters. Due to this lack of distinctive legislative regulations on e-kickscooters at European level, national regulations in particular are required to address this discrepancy. The landscape of national legislation in the European Union is extremely heterogeneous. There are different regulations in the individual countries, so that the use of e-kickscooters is regulated by national regulations or in some exceptional cases, no national legal basis has yet been established at all. Germany, for example, has published its own ordinance on the regulation of small electric vehicles, which sets out specific aspects of road traffic law as well as specific requirements regarding vehicle registration. While in Germany this has created national law, in Spain, for example, municipal statutes form the basis for the use of e-kickscooters. Here, the municipal actors are required to create their own municipal regulations. On the one hand, this allows for flexible and demand-oriented adaptation to local requirements, but on the other hand, it represents a major administrative and processing effort, which can be a considerable burden, especially for smaller municipalities. Even though most of the countries studied have national regulations in place that allow the registration and use of e-kickscooters, there are still numerous differences.

Cooperation in cities with e-kickscooter service providers are formally and informally on-going, a low level of data exchange is already set up (covering typically basic information, such as number of devices). A higher-level data exchange is desirable. In some cities, there is a restriction on the number of e-kickscooter that can be different in the various urban areas. For example, the downtown has a limitation, although the edge of the controlled area is overrepresented by devices. Operators typically check their users via app, and only occasionally test the drivers on-the-go. Some operators offer voluntary safety trainings. With the best current understanding, trips with e-micromobiles replace walking and public transport usage, with marginal effect on private car usage. To seize the opportunities of e-micromobility, stronger service integration is expected with public transport. To reach this goal, stakeholders should demand more data from service providers, such as origin-destination data of usage, user behaviour and patterns, time of day choice, daily-monthly-annual fluctuation, most used routes.

4.2. Stakeholder workshop

A stakeholder workshop was conducted on 30th of January 2020. This workshop was organized to collect facts about the current situation of e-micromobility and opinions of the local experts on how they see the current status and future trends in this field. Several topics were included, from very basic questions about the definition of e-micromobility to more complex questions on the role and requirements of e-micromobility. Results were also collected via a survey for questions which were not covered by the workshop, and for respondents, who could not be present on the workshop.

The integration level of the e-micromobility services with conventional modes of transport was not considered as a dominant experience, although there are some examples on the market. Planning processes should change a lot regarding to e-micromobility. The following areas have to be a part of future mobility planning:

- Harmonization between regulations and strategic planning, which is not yet reached, and sometimes actors work in parallel.
- Ordered data exchange policies between cities and service providers, which can support future mobility planning processes.
- Integration with public transport should be done in a planned way instead of ad-hoc cooperation.
- Parking issues, which is on the one hand a key market regulation question, and on the other hand it is defining the cityscape. Public space planning for standby micromobiles – should be accessible for users, should not be an obstacle for any other citizen. As an example, Tel-Aviv is prohibiting parking these (motorized) micromobiles within 50 meters of schools and community centers.
- Handling issues of bike lanes with mixed traffic: e-micromobility users create more traffic on bike lanes, a more extensive and continuous network development is demanded.
- Insurance and responsibility of the users and service providers (which is the current case in Munich and in Tel Aviv).

Stakeholders believe that clearer regulation and legislation along with an effective law enforcement will improve the market. Also, a better user experience can be provided with integration with other modes. One of the reported technical backlog by Tel Aviv representatives is the reliability and punctuality of GPS signs. This has an effect on what regulations can be introduced and how it can be enforced (e.g. bike line usage or parking of the devices). Other technological developments are required by city representatives on battery (increasing lifespan and/or range) and charging infrastructure (avoiding collection of vehicles on a daily basis).

Most participants expressed an efficient number of service providers to be around 2-3. As a prognosis, a market consolidation is expected with the same number of devices of current penetration. Experts from Munich and Stockholm are assuming their cities as saturated in terms of e-micromobile providers.

4.3. User survey

The usage of e-micromobility in the 5 assessed locations is rather popular, especially in Barcelona, Tel Aviv, and Munich. These three cities have shown a major interest in this new mobility option, but still e-micromobility has yet to reach the point where it is used on a regular basis. Results however, have shown that e-micromobiles have potential to be used once or twice a week. We also realized that e-micromobility, when utilized, is typically for trips of at most of 3 km, for leisure and tourism purposes. The latter is true specifically for Copenhagen, Munich, and Stockholm, whereas, in Barcelona and Tel Aviv, e-micromobiles have more potential for work or school trips. Furthermore, e-micromobiles may also be utilized for longer trips (more than 3 km), as it shows popularity when combining it with other modes, such as public transport. In addition, responses suggest that the majority of individuals are aware of the availability of an e-micromobility service in their city however, this does not reflect directly on the amount of subscriptions of the service. Being subscribed to such service is more typical in locations, such as Tel Aviv and Munich.

This new mobility service shows strengths in its technological aspects, but service providers must focus on making its use more suitable for the general public, especially in terms of the fees and prices. Evidence also suggest that service providers and local authorities must implement this new mobility form in their sustainable urban plans and should focus on making strict regulations with regards to the usage and the parking of such vehicles. In addition, in locations where this new mobility form has shown more interest, its implementation can affect positively sustainable travel, for example as a practical extension to the transport network. However, in Scandinavia, responses are more skeptical as it is thought, e-micromobiles will affect the city by causing more accidents.

Overall, the survey results helped us comprehending the acceptability of this new mobility service in several areas, and we realized that there is more potential in cities like Barcelona and Tel Aviv, but less interest is shown in Copenhagen and Stockholm. Munich results differ in some aspects but responses tend to coincide with the Scandinavians. Importantly, all responses from these different locations are similar regarding concerns and improvements, such as service-related lacks or needs. Evidence shows that such service must be specifically regulated in terms of usage and parking with strict policies. In addition, users prefer riding e-micromobiles on an unshared infrastructure, as its use is safer on bike lanes or separate lanes. All these aspects must be taken into consideration by the local authorities and also by the service providers to support a seamless realization of this new mobility service. The results seem promising as they may potentially be used as a support for long-term policy making and with right integration for the extension of the city transport networks.