



CITY STREET⁴

STREETS FOR 2030

PROPOSING STREETS FOR INTEGRATED AND UNIVERSAL MOBILITY

LJUBLJANA 23.&24.9.2020



Wolfgang Fischer, Dr. Mag., University of Graz, A-8010 Graz, Heinrichstraße 36, wolfgang.fischer@uni-graz.at

E-SCOOTERS IN URBAN AREAS – A VIABLE INNOVATION OR SOURCE OF NEW CONFLICT POTENTIAL?

INTRODUCTION

- human mobility behavior changes fundamentally (the private transport sector increases in size dramatically, capacity of public (local) transport is going to be reached)
- urban spaces are cut out to be used by forms of micro-mobility (easy to handle means of transportation for people of all ages that appear to be cheap)
- concept of a sharing economy
- a relatively new form is the use of e-scooters both privately and rented, growing substantially, but lacking experience
- it is to question whether e-scooters will develop into being a useful form of urban mobility in the future or a potential source of new conflicts
- this research investigates the potential and value added by e-scooters in urban mobility development
- it outlines strengths and weaknesses of their use and supply with a focus on Vienna
- identifies and analyzes conflicts
- mixed-method approach was used (expert interviews based on guiding questions, structured interviews of e-scooter rental companies, users and other traffic participants, field tests)



“Cities tend to develop new forms of sustainable transportation”

- ➔ This presentation shows the potential of the current market, Austrian laws for electric scooter usage and the specific characteristics of Vienna as the major competitive market for shared devices in Austria.
- ➔ Electric scooters (e-scooters) have appeared in many cities since 2017.
- ➔ As a kind of micro-mobility, they are used by nearly all segments of society, even though they do not have clear use-cases or benefits.
- ➔ Present conflicts and processes are illustrated and analyzed with structured and semi-structured interviews.

CURRENT SITUATION AND DEVELOPMENT IN AUSTRIA

- e-scooters reach a medium range of 25 km (short distance vehicles), a maximum speed of 25 km/h and a maximum engine power of 600 Watts
- there is no compulsory registration and insurance (easy market entrance)
- since 2019 e-scooters are treated like bicycles (30./31. StVO Novelle), it is obligatory to use bike lanes
- there is no statistical differentiation, leading to incorrect and incomplete information about e-scooter usage
- first e-scooter rental companies established in 2018 in Vienna, characterized by using a free-floating system
- users of rental e-scooters must be at least 18 years old (private use is allowed from an age of 12 years on)
- users need to have a smartphone with internet access and GPS enabled (app provided by the rental company)
- payment is usually only possible by debit card or online payment
- problems are recklessness, illegal parking and conflicts with bicyclists and pedestrians

CURRENT SITUATION AND DEVELOPMENT IN AUSTRIA

Table 1: Comparison of E-Roller and E-Scooters in Austria (own illustration, adopted from BMDW 2019, Klima- und Energiefonds 2019 & ÖAMTC 2019)

(English term)	E-Roller (e-scooter)	E-Scooter (e-moped) 
traffic legislation	bicycle	moped (motor vehicle)
authorized to be operated on public streets	only when there is no bike lane	yes
driving license	no	yes
maximum speed	25 km/h	45 km/h
maximum engine power	600 W	600 W - 4 kW
requirement to wear a helmet	no	yes
compulsory registration and insurance	no	yes
age limit	12 years (younger children need to be accompanied by a person older than 16, or have a bicycle license)	15 years
alcohol limit (permille)	0,8	0,5
federal grant	no	up to 350 Euros

RESULTS – SUPPLY SIDE

- online survey: open questions, only **LIME** and **TIER** responded



- urban space is limited, and the number of people and vehicles is increasing while emissions must be reduced (protection of the environment and life quality)
- sustainable and attractive new forms of mobility become necessary: high urban potential of e-scooters
- current competitive market and profitability are challenging (going along with sustainability e.g. high life expectancy of the devices)
- other conditions are problematic
- basic charge of 1 or 2 Euros (depending on the number of trips) and additional 20 Cents per
- possibility of collecting and using the generated GPS data (the supply could be adapted to public interest and user behavior)

RESULTS – DEMAND SIDE

- **five random users** (using rented and private devices) in the first district of Vienna were individually and situationally questioned
 - advantages concerning commute time, ease of handling, and the ability to take them along in other means of (public) transport
 - complained about the lack of comfort and inconvenient locking
 - no blinkers: giving a hand signal while driving one-handed is dangerous and impractical
 - driving at night feels uncomfortable too.
 - users ask for expanded riding paths in order to be safely separated from cars

separate **self-test** results:

- minimum speed is necessary to activate the e-motor.
- driving on streets, or making a turn, considering traffic and traffic rules turned out to be
- missing basket or luggage rack

RESULTS – THIRD PARTIES

- **Mobilitätsagentur Wien** (Vienna Mobility Agency)
 - complaints about incorrect parking
 - usage insecurity, too less experience
 - upcoming infrastructural challenges and limits
 - they support active forms of mobility and see e-scooters as a means of connection to public transport and rents, and as part of a sharing-strategy
 - doubt whether e-scooters effectively reduce car traffic
- **traffic participants** (N=9) like pedestrians, cyclists and car drivers
 - offering opinions (some react sympathetic, others complain about recklessness and violation of traffic rules, vandalism and incorrect parking especially on footpaths)
 - **national lobby of cyclists** wants the infrastructure for bikes to be extended in Austrian cities and that pedestrians should not have to share their space with vehicles like e-scooters
 - **blind people (Blinden- und Sehbehindertinnenverband Wien, Niederösterreich und Burgenland (BSV-WNB))** are hardly able to notice e-scooters

RESULTS – THIRD PARTIES

- **Austrian Institute of Technology (AIT)**
 - focus on how e-scooters can perform as a shuttle to other means of mobility and public transport
 - e-scooters might be used by all age groups and different social classes
 - e-scooters are used predominantly for short distances resulting in a rising pressure on the bicycle infrastructure
 - AIT calls on more public awareness and underlines the lack of knowledge about proper behavior rules

- **suppliers of public transport**

transportation of e-scooters in public vehicles

Wiener Linien (Vienna's public transport operator) count e-scooters as hand luggage (transportation is free, but they must be folded)

ÖBB (Austrian Federal Railways) specify a maximum size of 90 cm x 60 cm x 40 cm (ÖBB

FURTHER ISSUES

Effects on the environment

- short life span and high attrition (also due to vandalism) – demanding the use of more resilient materials
- relatively high CO₂-emissions per kilometer (regarding the whole value chain)
- collecting rented e-scooters when they are parked incorrectly or when it is necessary to charge them often happens with the use of fossil-fueled powered vehicles
- exchangeable batteries could be installed so that charging becomes redundant
- frequent charging must be reduced
- debatable how batteries should be disposed and recycled

Accidents (Austria)

- need for a differentiation between accidents of (e-)bicycles or e-scooters (rising number of accidents, injured people and traffic deaths in that category)
- it is not possible to find out whether a rising number of e-scooters contributes to that
- accidents might be ascribed to driving on pathways and the fact that only about 2 % (users of rental e-scooters) to 10 % (private users) are wearing a helmet

INTERPRETATION

- limited response both on supply and demand side
- the legal basis for e-scooter usage seems to be quite liberal (Austria)
- the e-scooter market shows a tendency to grow, and a consolidation is to be expected (however, some have already given up or withdrawn from the market due to pandemic reasons in early 2020).
- high acceptancy of e-scooters given a high market competition and a high density of rental devices in the inner-city parts of Vienna
- missing compulsory insurance, which leads to less costs and sanctions
- renting an e-scooter may serve as an opportunity to test them in order to decide on a private purchase
- the high number of suppliers may at first seem beneficial, but requires an individual app, account, payment service etc. for each (no cooperation between suppliers)
- e-scooter rental systems have the character of a sharing economy based on free-floating
- regulations concerning restricted parking zones and speed limits have been discussed and implemented
- theft-proof equipment for parking
- the benefits and risks of the use of e-scooters are underestimated and more public awareness must be raised

CONCLUSIONS

- Are e-scooters a viable innovation or a source of new conflict potential? A controversial topic
 - very young and dynamical field, yet improvable
 - legislation (Austria) is structured quite simply
 - lack of missing data concerning accidents or traffic offence caused by e-scooters
 - criticism by users is mainly about technical features
 - need for better infrastructure, since there is an expected overuse of bike lanes (expansion or even the need for newly built constructions?)
 - greater awareness and sticking to traffic rules is important
 - questionable whether e-scooters lead to a reduction of motorized vehicles (they are rather an addition to the existing mobility supply)
- parking restrictions must be avoided to ensure the system of free-floating

In **conclusion**, more adaptations must be made to enhance the use of e-scooters and the situation for other traffic participants. Nevertheless, as part of being a **trend**, e-scooters contribute to the ongoing debate about **multimodal mobility** and distribution of certain traffic and living spaces not only in Vienna but also in other cities of comparable size and setting.



**Thank you very much
for paying attention!**

REFERENCES

Saalmann, R. D. (2020). E-Roller im urbanen Raum – eine praktikable Innovation oder Quelle eines neuen Konfliktpotenzials? Masterarbeit, Institut für Geographie und Raumforschung, Karl-Franzens-Universität Graz.

Books:

Klima- und Energiefonds (2019). Leitfaden Elektro-Zweiräder, Elektro-Fahrräder sowie Transporträder. Jahresprogramm 2019.

Magistrat der Stadt Wien, MA 65 (2019). Verordnung des Magistrats der Stadt Wien, mit der die Verordnung des Magistrats der Stadt Wien betreffend stationslose Mietfahrräder, Amtsblatt der Stadt Wien Nr. 26/2018, geändert wird. Amtsblatt der Stadt Wien Nr. 26/2019.

Internet sources:

BMDW (Bundesministerium für Digitalisierung und Wirtschaftsstandort). (2019, October 10). Elektro-Scooter, Quads & Co. Ministerien-übergreifende Informationswebsite. Retrieved from https://www.oesterreich.gv.at/themen/freizeit_und_strassen-verkehr/Elektro-Scooter,-Quads-und-Co.html

Hollingsworth, J., Copeland, B. & Johnson, J. X. (2019, November 11). Are e-scooters polluters? The environmental impacts of shared dockless electric scooters. Retrieved from <https://iopscience.iop.org/article/10.1088/1748-9326/ab2da8/pdf>

KFV (Kuratorium für Verkehrssicherheit). (2019, December 16). E-Scooter: Neue KFV-Analyse zeigt hohe Unfallzahlen und großen Aufklärungsbedarf. Retrieved from <https://www.kfv.at/escooter2019/>

ORF (Österreichischer Rundfunk). (2019a, November 25). „Konstruktives“ Treffen zu E-Scootern. Retrieved from <https://wien.orf.at/stories/3018715/>

ORF (Österreichischer Rundfunk). (2019b, December 08). E-Scooter-Entsorgung oft problematisch. Beitrag. Retrieved from <https://wien.orf.at/stories/3023412/>

Österreichischer Automobil-, Motorrad und Touringclub). (2019, November 14). Kleinfahrzeuge & Trendsportgeräte im Strassenverkehr. Retrieved from <https://www.oeamtc.at/thema/kindersicherheit/kleinfahrzeuge-im-strassenverkehr/>

Österreichische Bundesbahnen (ÖBB) (2019, December 16). Handbuch für Reisen mit den ÖBB in Österreich. Tarifbestimmungen mit den Geschäftsbedingungen. A.4., Mitführen von Gepäck, Gegenständen und Tieren. Retrieved from https://www.oebb.at/static/tarife/de/handbuch_fuer_reisen_mit_der_oebb_in_oesterreich/index.html

Radlobby (2019, November 14). E-Scooter: rechtlich wie Fahrräder benutzbar. Retrieved from <https://www.radlobby.at/e-scooter>