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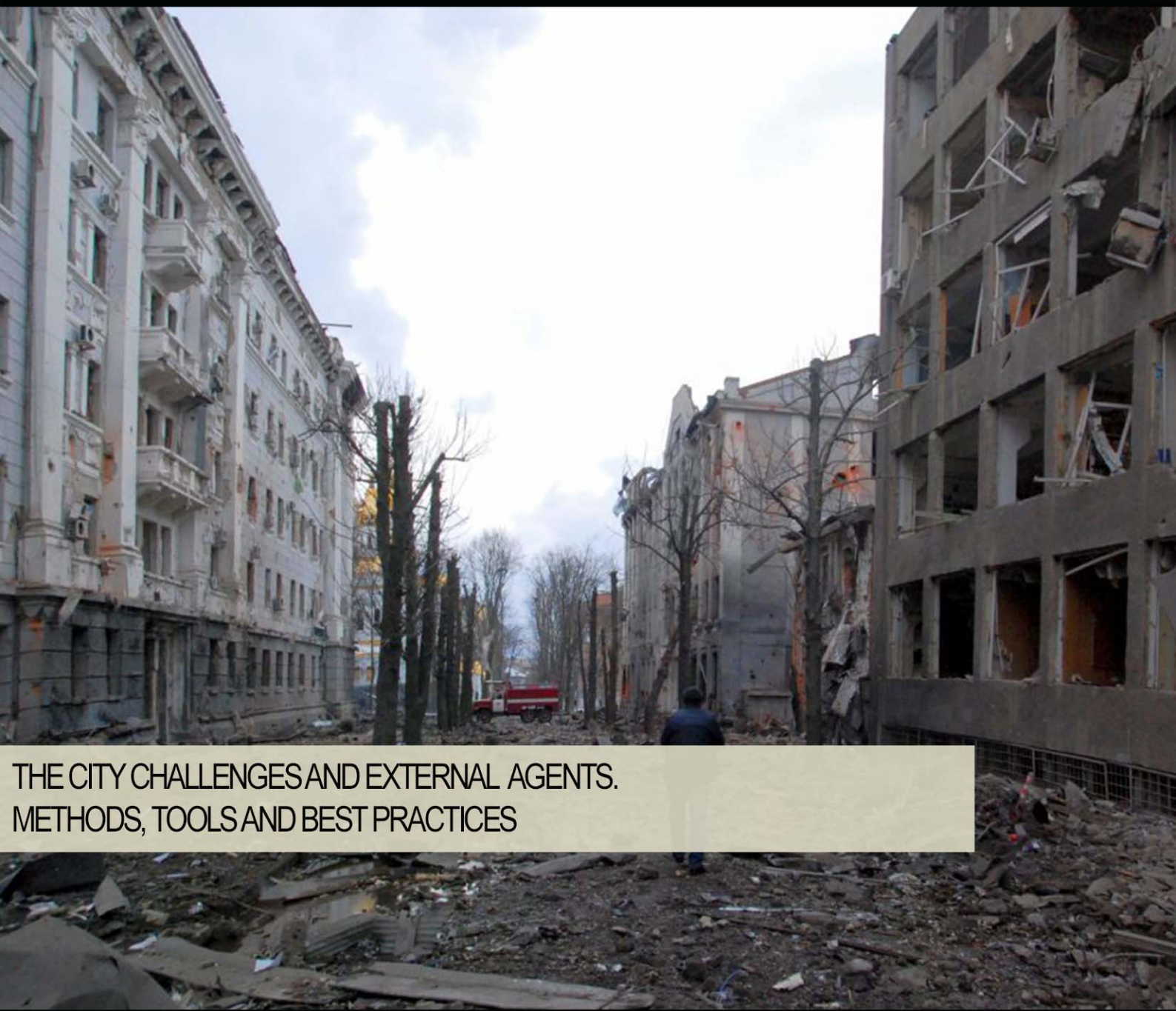## Journal of Land Use, Mobility and Environment

The climatic, social, economic and health phenomena that have increasingly affected our cities in recent years require the identification and implementation of adaptation actions to improve the resilience of urban systems. The three issues of the 16th volume will collect articles concerning the challenges that the complexity of the phenomena in progress imposes on cities through the adoption of mitigation measures and the commitment to transforming cities into resilient and competitive urban systems.

THE CITY CHALLENGES AND EXTERNAL AGENTS.
METHODS, TOOLS AND BEST PRACTICES

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1 (2023)

The cover image shows the building of Kharkiv National University of Civil Engineering and Architecture, destroyed as a result of a missile and bomb attack. March 2022 (Source: STRINGER/Reuters/Forum. https://www.pism.pl/publications/sweden-on-the-russian-aggression-against-ukraine)

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REVIEW NOTES

REVIEW NOTES – Urban practices
European cities and e-scooters at the crossroad

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Abstract

Starting from the relationship between urban planning and mobility management, TeMA has gradually expanded the view of the covered topics, always following a rigorous scientific in-depth analysis. This section of the Journal, Review Notes, is the expression of a continuous updating of emerging topics concerning relationships among urban planning, mobility and environment, through a collection of short scientific papers. The Review Notes are made of four parts. Each section examines a specific aspect of the broader information storage within the main interests of TeMA Journal. In particular, the *Urban Practices* section aims at producing, analyzing and reporting data on recent and relevant policies in the urban domain.

The present note analyses the complex relationships between European cities and electric scooters and reports on the case study of Paris where, in a recent non-binding referendum, Parisians opted overwhelmingly to ban e-scooters in the French capital. In doing so, the note tracks the roots of the current e-scooters expansion and reports on the massive deployment of 500,000 free-floating electric vehicles on the European streets (and sidewalks) operated by few private mobility companies in less than three years. After this, the note provides a focus on Paris, the city that pioneered electric scooters in Europe and that will likely take them off the street as of September 2023. The note concludes that the relationship between e-scooters and European cities is at a turning point and provides some suggestions to move forward.

Keywords
E-scooter; Paris; Ban; Regulation; European cities; Micro mobility.

1. Introduction

Standing electric scooters (henceforth e-scooters) are electrically powered vehicles with a handlebar, deck, and two wheels. They are light (less than 35 kg), travel at a convenient speed (about 25 km/h) and have relatively low operating costs. As such they provide an alternative for short trips and are particularly suitable for solving the last-mile transit problem (Garcia et al., 2022). Although they have been present in urban areas for at least a century, their impact on urban mobility and quality of life has been negligible until recently, when the convergence of various sociotechnical and political-economic factors – such as the proliferation of smartphone-based mobility services, increments in traffic congestion in urban areas, and the amount of private financing available (Hodson & McMeekin, 2020) – made this form of transportation increasingly popular in many cities worldwide.

As a form of shared and dockless micro mobility service, e-scooter systems were first introduced in the United States in 2017 (Dowling, 2018). In Europe, they have been proliferating initially in France, with the arrival of the first provider in Paris in the summer of 2018 (ADEME, 2019). Since then, e-scooters fleets have been deployed in over 600 European cities and towns (EIT, 2023), with Oslo, Rome, Madrid, Zurich and Lisbon hosting the largest fleets of vehicles in Europe, as of October 2022 (O'Brien, 2022). This massive deployment of electric vehicles – operated by privately-owned mobility companies – has sharply transformed the mobility landscape of major European cities. According to Lime for instance, e-scooters exceeded 100 million rides in Europe in 2019, and in Madrid, Prague and Athens, more than 1 million rides using e-scooters were made in just one year of operation (Lime, 2019).

The rapid proliferation and adoption of e-scooters has brought about a number of welcome changes, from positive impacts on the environment and the economy, to better options for getting around more easily and inexpensively (Dias et al., 2021). However, a worrying number of injuries (Coelho et al., 2021), coupled with uncertain regulations (Orozco-Fontalvo et al., 2022) and concerns over data sharing and privacy (Li et al., 2021), generated, in the past few years, a heated debate about the long-term success and practicality of this form of transportation in urban areas.

2. European cities and e-scooters at a crossroad: how we got there?

European cities have become catalysts of the e-scooter services expansion, as extended bicycle networks, compact and walkable urban settlements, and pleasant city landscapes provided the perfect environment for the adoption of this type of mobility services in urban areas (Hosseinzadeh et al., 2021). The roots to the current expansion can be found in the years 2010s when the first wave of sustainable urban mobility plans – introduced and widely promoted by the European Commission since 2013 – fostered the expansion of bicycle infrastructures and the experimentation of alternatives to conventional forms of transportation (Cirialli et al., 2018). Later in the same decade, the smart mobility paradigm became a prominent concept in European transport planning (Battarra et al., 2018). As an approach mainly focused on electric vehicles, on demand ride services and the ubiquitous use of modern information and communication technologies (Angelidou, 2017), smart mobility planning provided further ground to the current wave of dockless bikes and scooters expansion. With sustainable and smart mobility becoming the mainstream agenda of many European cities, an increasing number of municipal e-bike-sharing programmes were introduced in Europe, while conventional bike-sharing services were rapidly replaced by e-bikes ones (Mátrai & Tóth,2016).

In 2017, free-floating e-bike sharing fleets were deployed in Europe, namely in the United Kingdom, Italy, Germany and Belgium. Unlike public bikes which were often housed at fixed docking stations, free-floating bikes were owned and run by private mobility companies and were easier to put into place, as they required no infrastructural installations. As such, free-floating e-bikes started flooding European cities' streets. In just two years, according to field data gathered by Zagorskas & Burinskienė (2020), free-floating e-bikes became

equally popular or even more popular than conventional bikes in many European cities, accounting up to 45–60% non-motorized vehicle trips in central Paris and Barcelona.

These privately-owned, dockless e-bike schemes however had a rough start in Europe with sidewalks being littered with bicycles and riders encroaching public spaces meant for pedestrians, thus causing significant safety concerns both for themselves and the pedestrian (Coelho et al., 2021). In a certain way, the massive deployment of e-bikes in urban areas anticipated most of the issues that emerged few years later with e-scooters. Yet, shared free-floating e-bikes systems, either public or private, have been incorporate in that years in several sustainable urban mobility plans as a measure to curb car dependency and increase the use of environmentally friendly transport (Mozos-Blanco et al., 2020, Angiello, 2022).

No one in Europe however anticipated the massive uptake of e-scooters and their disruptive effects on the urban environment (MC Kinsey,2022). At the end of 2018, shortly after the successful experiences in more than 90 US cities (citation), US e-scooters companies such as Lime and Bird started to look at European cities as the next market for e-scooter services expansion. Few months later (and after a banner 2019 of mega funding rounds for European e-scooter start-ups), European companies such as Dott, Tier, Wind and Voi, also entered the market and – in only three years – they implemented the fastest rollout in the history of mobility services.

Pushed by massive venture capital investments (Gössling, 2020), and in a context of increasing demand and scarce regulation, these companies harshly compete between themselves for customers. As rental rates tended to level off, coverage (and thus the number of vehicles deployed) became the ultimate strategy for winning the market, which ultimately lead to mobility companies rolling out larger and larger fleets of vehicles in shorter period of time. Compared with their predecessors (the e-bikes), e-scooters were thus deployed at a much faster rate and their level of adoption was estimated to be 2.5 higher than that e-bikes (MC Kinsey,2022). Challenges posed by e-scooters to the urban environment were consequentially much bigger.

In the years 2020 and 2021, the growing e-scooter trend (and that of micro-mobility in general) was further reinforced by the Covid-19 pandemic, where the need of keeping social distance and avoiding crowded public transport further boosted the usage of micro mobility services in Europe (Fazio et al., 2021). Shortly after, when the lock-down and other forms of restriction introduced by government to contain the spread of the virus were removed and European citizens started to come back to their pre-pandemic life, the challenges and the transformations to the urban environment brought by the e-scooters become evident (Zagorskas & Burinskienė, 2020) and European cities started to take diverging paths. From one side cities such as Milan, Paris decided to expand micro-mobility options as a form of recovery strategy aimed at promoting at the same time sustainability and resilience of the urban transport sector (Angiello, 2021). On the other side, cities like Stockholm and Riga started to introduce restrictive measures (EIT, 2023).

These diverging paths are still present today, with cities such London (which is currently running an e-scooter trial involving three private operators) that are embracing the opportunities brought by e-scooters and other such as Paris that are banning them from the streets (The Guardian, 2023). In the meanwhile, a heated and polarized debate is mounting in Europe, with enthusiastic users who consider electric micromobility vehicles "fun" and "easy to use" and recalcitrant public opinion wherein electric micromobility vehicles are deemed "unsafe" and "dangerous". With research on e-scooters impacts on mobility and quality of life in urban areas still in its infancy, lack of harmonized data on e-scooter operations across Europe (further aggravated by the tendency of mobility providers to not open their data, if not forced to) and fragmented regulation, the debate on the role of e-scooters in European cities is far from an ultimate conclusion.

The Paris' ban on e-Scooter

Paris is the capital and most populous city of France, with an estimated population of 2.1 million inhabitants. Spanning on a surface of 105 km2, it is the 9th denser city in the world (World Atlas, 2018). Its region, Île-de-France, concentrates 23% of the jobs in France, 31% of the growth domestic product (IAURIF, 2017), and is highly attractive to tourists (IAURIF, 2019). Consequently, mobility needs are high, with an estimate of 40 million daily trips made only by locals (DRIEA, 2013). The city is very well served by public transport with 16 metro lines, 5 suburban railway lines, 4 tramway lines, and over 65 bus lines (OMNIL, 2018), and can boast a long track record of shared mobility initiatives.

The city successful history of shared mobility in Paris started in 2007 with the implementation of the Vélib' scheme, a large-scale docking bike-sharing system equipped with smart card contactless technology. The system was lately enlarged to some 16,000 bicycles and 1,200 rental stations (roughly one station every 300 meters) making Vélib' the third-most-extensive system of its kind in the world in 2013 (citation). In 2018 the program (meanwhile rebranded as Vélib' Métropole) was further expanded to 64 surrounding municipalities while 40% of the fleet was converted in e-bikes. The trend toward shared mobility continued in the years 2011–2018 with the introduction of several free-floating electric cars schemes such as Free2Move, Car2Go and Zity, and free-floating electric motor scooters fleets, since 2016. The subsequent advent of free-floating e-bike services in 2017 and free-floating e-scooter services in 2018 appeared, at least at the beginning, a coherent prosecution of this trend.

Micro-mobility services landed in Paris during the first mandate of the mayor Anne Hidalgo of the France's Socialist party. During her first mandate, Paris went through a series of policies that banned the most polluting vehicles from entry to the city, freed the quayside of the Seine from cars, and regained the space of the streets for more trees, extended cycling infrastructures and pedestrian space (Pisano, 2020). Within this context, the first fleet of free-floating e-bikes was brought to the city by Lime in December 2017. Few months later, Dott, Zoov and Pony joined the race.

After the massive operation of shared bicycles in the city, in July 2018, Lime introduced its first fleet of 4,000 shared e-scooters. Since then and up to September 2019, Parisians rode Lime more than 12 million times, an average of over 32,000 daily trips, travelling over 20 million kilometers (Lime, 2020). As for other cities, the battle to win the market was however just at the beginning: it only took one year for the number of e-scooter to reach 20,000 units operated by 12 different companies that become 17 later in 2020 (citation). Overall, e-scooters become at the same time a popular mode of transportation in Paris, but also a controversial one, with supporters arguing that they provide a convenient and eco-friendly way to get around the city, while critics raise concerns about safety and the impact on pedestrians and the environment.

Pushed by negative headlines about vandalism, theft, occupation of public space and safety, the Paris City Council introduced in 2020 new regulations aimed at reducing the number of e-scooters on the streets and improving safety. These regulations required scooters' speeds to be capped at 20 km/hour and introduced stricter enforcement of rules around parking and on rider behaviors. Furthermore, the number of operators was reduced from 17 to three (Dott, Lime, and Tier) and a cap on the maximum number of e-scooters allowed in the city was set to 15,000, as each company was allowed to operate maximum 5,000 vehicles simultaneously. Paris Council signed with these companies a three-years trial contract (running until September of this year, 2023) that would have been reviewed annually.

Despite this, complaints did not subside. In 2021, 24 people died in e-scooter-related accidents in France, including one in Paris. The year after, Paris registered 459 accidents with e-scooters and similar vehicles, including three fatal ones (citation). In an effort to rewin the public, operators offered further regulations, including checking users were over 18, fixing license plates so police could identify traffic offenders and limiting the use of e-scooters to one passenger. But as the city reviewed the program late last year, it became clear that Mayor Anne Hidalgo was leaning toward ending the trial. Rather than killing it outright, Hidalgo eventually announced a referendum.

The companies operating the scooters feared the referendum as its result could potentially lead their profitable businesses to an end. As such, among other initiatives, they decided to recruit paid influencers to help promote the pro-scooter vote online to younger voters who make up the core of their market. Lime – which cites Paris as one of the cities with the highest usages of its services in the world (Lime, 2020) – even offered free rides to users who register to vote. "Prove you're registered to vote and get a free 10-minute ride, on us" said the text of the email that the company sent to thousands of Parisian users. Despite these efforts, on the 16th of April 2023, 89% of referendum's voters voted in favor of ending the program that allowed the three electric scooter companies to offer their services. However, only about 100,000 voters casted a ballot, about 7.5 of all registered voters in the city.

Technically, the referendum is advisory and therefore non-binding. However, in a post-election speech, the mayor Hidalgo praised voters and said she intended to honor the outcome. "Thank you to the more than 100,000 Parisians who spoke, it's a great victory for local democracy," she said on Twitter. "Once again, Paris has been able to innovate! Parisians have overwhelmingly spoken out against self-service scooters; we will put an end to it by September 1st.".

3. European cities and e-scooters at a crossroad: how we got there?

Electric scooters provide a convenient and easy way to navigate a city. Beside their convenience, e-scooters can play an important role in the transition toward sustainable and smart transportation in cities (citation). E-

scooters indeed are powered by electricity and emit fewer greenhouse gases compared to gas-powered vehicles. Furthermore, e-scooters take up less space on the road and can move through traffic more efficiently, reducing congestion and travel time. Empirical research on their impacts on modal share remain relatively scarce. In Hamburg for instance researchers have identified that people use shared e-scooters in place of cars at substantial rates (citation). Other research in Paris however noted that e-scooters have replaced waling and public transport trips, the latter provides better environmental performances when the full lifecycle of the service is considered (citation). Yet, despite their potential contribution to urban sustainability, e-scooters creates a host of problems that cities must navigate.

While some commentors have seen in the Paris' ban the end of "a love affair" between e-scooters and European cities (citation), it is most likely that e-scooters will continue to ride European streets in the future. Yet, the Paris' ban certainly marked an emblematic turning point: the city that pioneered electric scooters will likely take them off the street in the next few months.

What will happen after this event it is hard to predict. Certainly, the Paris' ban – together with other regulating initiatives introduced across Europe – can be helpful in identifying how we can move forward, and a number of lessons can be learned from Paris and other international case studies [refine after]:

— First, the diverging path to e-scooters by major cities in Europe reflects the technology's chaotic rollout over the last few years and an inability for cities to keep up with sufficient regulations. It's also illustrative of how the path to sustainable and smart transportation won't look the same everywhere.

— Second, proper regulations and the inclusion of additional measures can be a game changer: ensuring that operators take responsibility for improperly parked vehicles, limiting vehicle fleets' size, strengthening law enforcement in sensitive areas are some examples of measures that can provide valuable contribution in addressing the problems caused by the massive and fast-paced deployment of e-scooters in urban areas.

— Third, to address the negative impact and opinions currently associated with e-scooter use, it is fundamental that private mobility companies become more transparent on the performances of their fleets and operations in terms of safety and sustainability, as well as their contribution to modal shift. To this aim it is extremely important that e-scooters operators provide open access to their operational data. This will further support research on e-scooters and their impacts on mobility and quality of life in the cities, an emerging research field where lack of open and harmonized data represents still one of the main challenges.

— Finally, it is extremely important for local authorities to set clear rules and establish positive collaborations with mobility companies in order to develop shared solutions that benefit all parties involved. Furthermore, local authorities should govern and regulate these services in an integrated manner, framing micro mobility services planning in the broad context of smart and sustainable multimodal transport planning and in connection with land use planning and urban design.

Image Sources

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