POLIS

CITIES AND REGIONS FOR TRANSPORT INNOVATION

Careful what you wish for...

Practical implications of rules & requirements for shared micromobility

March 2025

POLIS Governance & Integration Working Group

© Philippe Crist

Table of contents

Learning from the field

We rarely (if ever) find rules established for things that do not exist. Regulations are made to deal with things that have already been created, and sometimes even already introduced into the market.

That means regulation often follows innovation, not the other way around. This also means regulation may require trial and error, lots of learning, and the curiosity and humility which are indispensable for that learning to happen.

This has definitely been the case with shared micromobility. Soon after shared e-scooters and e-bikes suddenly started 'floating' in the streets of EU cities, public pressure started to mount for local authorities to regulate this new transport service.

During the following seven years, local and regional governments and transport authorities have been discussing and implementing several different rules and requirements, sometimes through regulations, sometimes through public tenders, and often through both.

It is fair to say this has been an intense learning process, particularly for the professionals in the field—both for those working for private operators, who have to comply with those rules and requirements, and for those who, on the public side, are tasked with verifying and enforcing them.

Rules and requirements are only useful and effective if they can be complied with, verified, and enforced. This implies, of course, that any discussion on regulation must consider the practical implications raised by each rule and requirement.

Professionals in the field are the first to understand these practical implications, and it is critical that we collect and put to good use the lessons they have been learning with their practice. That is the purpose of this report, developed as a contribution to a learning process still underway.

Karen Vancluysen
Secretary General
POLIS

1. Introduction

Rules are a building block of regulatory instruments. All regulations articulate a set of rules, with each rule forbidding a certain behaviour, or demanding the provision of something.

This applies to several types of instruments, from national laws to city ordinances, and to several domains, including, naturally, mobility.

Regulation of shared micromobility is an ongoing process. In most cities, rules were not ready when these innovative (and unexpected) new services started to deploy floating e-bikes and e-scooters.

To catch up fast, rules for shared micromobility have tried to address, at the same time, access to the market, operations and behaviour, vehicle characteristics, and data sharing.

A common process has been the use of these rules in public tenders, launched by cities to select a limited number of shared micromobility operators. In these tenders, rules are first stated as conditions and criteria for selection and subsequently become binding conditions for operation.

Whether they are developing city ordinances or public tenders, regulators of shared micromobility have to ponder several different rules.

Some of those rules are recurrently mentioned by public opinion, and while careful reflection may often stop actual adoption, they keep being 'put on the table', demanding consideration.

While the utility of some of these rules may seem 'obvious' on the surface, it is much harder (and rare) to consider their full practical implications. Specifically, the implications for those who will have to comply, i.e., the operators, and for those who will have to verify and eventually enforce compliance, i.e., the regulators (usually local authorities).

Not considering these practical implications may have negative effects on both parties, and lead to entropy or overall distortion of the operation and its benefits for the public interest.

To put it bluntly—it is easier to say what 'should' be regulated than to regulate properly. And rules that may seem 'obvious' can have unexpected (and undesirable) implications.

This report analyses some of those practical implications, by looking into six rules recurrently discussed for shared micromobility—speed limits, parking, helmets, user education, employment of local labour, and life-cycle assessment.

To explore the practical implications that each of these rules may have for the organisations and professionals who have to comply with them, or enforce them, we reached out and listened to the professionals in the field, i.e., to those who work for the operators providing shared e-scooters, bikes, cargo bikes and mopeds, or for the local authorities regulating those services.

It is important to clarify that the purpose of this report is not to take a side on each issue, nor to provide detailed recommendations on best practices. Instead, we aim to collect, aggregate, and articulate the practical implications as they are experienced and shared by the field professionals.

We hope this will help all the stakeholders concerned learn from practical experience —especially, those who, at higher levels, conceive them.

One of the key lessons that emerges from these experiences is to beware of apparent simplicity. Computer scientist Bjarne Stroustrup once said 'If you think it is simple, then you have misunderstood the problem', and that definitely seems to apply here, as we will see. So, before we dive into the details, three observations should be considered.

The first is that, from the interviews we conducted with professionals, a clear picture of a **very challenging operational landscape** emerged.

Shared micromobility operations are not easy. Having a digital app and vehicles ready to go is already challenging in itself, but not enough. *On top of that*, one has to design a 'tight operation', to contain costs and maximise revenues. *On top of that*, all locations require staff, staging facilities, vehicles for charging and redeployment, managing stakeholders, and understanding the local market—all the while trying to keep operations 'tight'. *On top of that*, one must comply with regulations and, often, additional requests from the authorities, some made explicit through a public tender, some expected as an act of 'goodwill'. *On top of that*, one has to survive and keep growing, as both the market and investors have no mercy for those who start to lag behind.

The second comment is that, while operations are not easy, neither is the role of **establishing and enforcing rules**.

Regulation can be quite a complex and non-linear process, to which both professional expertise, common sense, and public perceptions all actively contribute. National regulatory frameworks can make things easier or not, and the lack of strategic clarity has a way of making the whole process more ambiguous, complex and frustrating. Enforcing is not necessarily easier—effective enforcing requires clear rules and powers, enough staff with sufficient training, and a proper strategy with proper procedures in place. 'Political will' is not enough. In fact, it is far from enough.

The final comment is that local authorities and shared micromobility operators seem to have **very different perspectives on the same rules**.

Those differences are arguably inevitable and generate some tension. While the local regulator regulates for a specific city, the operator has to run a consistent operation across dozens of different cities. While the former strives to be rigorous about a specific service, the latter wonders why the same level of rigour is not applied to the other modes of road transport as well.

It is in this context, that the six issues discussed below are to be considered.

2. Purpose and methodology

2.1. Purpose

POLIS is a network of local and regional authorities, and this report has been developed, first and foremost, to support the work of our members. The role of POLIS, however, is not to be an 'echo chamber' for cities, quite the contrary. Effective local governance requires cooperation with several stakeholders, including from the private sector.

Cooperation requires, in turn, a solid foundation, built through the joint exploration of shared challenges, the exchange of different perspectives, and an action-oriented dialogue.

Rules have practical implications. Ignoring those implications, or underestimating their importance, will inevitably reduce (and even obliterate) the effect of those rules, and of the underlying goals.

The *purpose of this report* is to provide a strategic perspective on the practical implications of some rules which are recurrently mentioned (though not always implemented) for shared micromobility.

2.2. Scope

For the purpose of this report, 'shared micromobility' includes the combination of services and vehicles necessary for the business of sharing (short-term renting) the following types of vehicles:

E-BIKES
(ELECTRIC BIKES, MAINLY ON A FLOATING BASIS)

E-SCOOTERS
(ALSO CALLED KICK-SCOOTERS OR STANDING SCOOTERS)

E-MOPEDS
(TO AVOID MISUNDERSTANDINGS, NOT MENTIONED AS SCOOTERS)

We are aware of the many differences between these three types of vehicles, from their shape to their operational characteristics, and from the type-approval categories and procedures that apply to some of them, to other regulatory implications arising from those categories.

We decided to address these three vehicles types together in this report because a growing number of public tenders launched by local authorities for shared micromobility (1) include two or more of these types of vehicles (even if in formally separate, but simultaneous tenders), (2) develop most of their rules and requirements with all of these types in mind, which in turn (3) raise mostly similar and simultaneous practical implications for compliance and enforcement, which (4) usually have to be dealt with by the same professionals on both the private and the public sides.

Also, for the purpose of this report, 'rules and requirements' designate formal obligations established via laws, regulations and ordinances, or via contractual agreements subsequent to public tenders, concessions or other legally binding instruments.

2.3. Method

The development of this report involved:

- a literature review;
- a series of focus group meetings;
- a small number of complementary interviews with experts;
- the discussion of preliminary results with members of the POLIS Working Group for Governance & Integration;
- the review of an advanced draft version of the report (in November 2024), by the professionals who participated in the focus group meetings and in the POLIS Working Group meeting.

Focus group participants matched one of two following profiles:

- professional working for a shared micromobility operator;
- professional working for a local authority on the regulation of shared micromobility, either the development of rules, their implementation through management, or their enforcement.

Focus group participants were recruited through individual email contact, or by responding to the publication on LinkedIn of a post seeking experts.

For those who contacted us after reading our post on social media, we verified their credentials before inviting them to participate in the focus groups.

The focus groups were conducted via online meetings on Teams, in March 2024, involving professionals from six local authorities and seven shared micromobility operators. All focus groups had a duration of between 60 and 75 minutes.

Each focus group was run by a team of two members of the POLIS staff, one acting as facilitator and the other as note-taker (the authors of the report), with both meeting for a debriefing immediately after each focus group.

A specific semi-structured focus group script, with eight key questions and additional follow-up questions, was conceived and adapted to the types of participants (i.e., questions were adjusted whether the respondents were working for public authorities or private operators).

At the start of each focus group meeting, participants were briefed about the topic and the method and informed that (1) they would serve as the main source for the report, (2) the focus was on their personal views and experience, (3) they were not expected to speak on behalf of the organisation that employed them, (4) they would only be quoted nominally if they specifically wished to, (5) the interviews would be recorded for analysis purposes, with the recordings deleted within a month.

3. Rules and requirements

3.1. Speed limits

Concerns about road safety have led many local authorities to set specific speed limits for shared e-scooters and e-bikes (rarely for mopeds, already covered by existing rules for motorised traffic).

These specific limits are usually *lower* than the limits set for motorised transport (e.g., cars, buses, motorcycles, etc), and they are *automatically imposed*, i.e., authorities require vehicles to be fitted with devices which act on the vehicle's electric engine to ensure automatic compliance.

These speed limits usually range between 20 and 25 km/h, but they can go lower, in so-called designated 'low speed zones', defined through geofencing [1]. When vehicles enter these zones they are automatically and gradually slowed down until they comply with the limit.

Professionals involved in compliance and enforcement shared the following implications:

- Reducing speed is an effective way to reduce road danger, but only if applied to all motorised traffic. Setting lower speed limits for e-bikes and e-scooters without imposing an equivalent limit on cars, vans, and buses, will only increase the **speed differential**, raising the risk for micromobility users.

- Some local authorities are setting quite low speed limits (e.g., 8 km/h) to reduce the risk of **conflict with people walking**. This may be a good solution for pedestrianised areas (e.g., public squares), but cannot be used on sidewalks alone, as geofencing technology doesn't have enough precision.

- In streets where e-scooters and e-bikes must **mix with motorised traffic**, imposing very low speed limits on micromobility will increase the speed differential in relation to motorised traffic, and that will, in turn, increase the risk perceived by the users, and 'push' them to drive on the sidewalk.

[1] Geofencing can be defined as the use of GPS or RFID technology to create a virtual geographic boundary, enabling software to trigger a response when a mobile device enters or leaves a particular area.

- Setting speed limits for e-bikes is not the same as setting them for e-scooters, because e-bikes are also **human-powered**, and can exceed a low speed limit.

- The speed limits set for shared e-bikes and e-scooters do not apply to individually-owned e-bikes and e-scooters, but the shared fleet may be setting the **standard** for acceptable behaviour.

- This is not a 'universal' solution: in Germany, current regulations do not allow local authorities to set their own reduced speed zones for traffic, e-scooters included.

- **Geofencing** is an intrinsic part of the issue of speed limits for shared micromobility—both for enabling its implementation, and for understanding its practical implications. And **GPS** [2] is a core component of geofencing—it is what allows the system to determine the position of the vehicle, and apply the rules set for that location (e.g., on speed, parking, etc.).

- **GPS can lack accuracy** in urban environments (e.g., due to obstruction by buildings) or lower quality equipment. GPS limitations in dense built-up areas may have been aggravated in the aftermath of the war in Ukraine, as more government buildings are now equipped with GPS jammers to prevent drone reconnaissance, leading to degraded signal reception in their vicinity.

- When local authorities use geofencing, operators must carry out **field tests**, bringing e-scooters into designated zones to check their performance and determine necessary buffer zones. Carrying out this testing in all zones requires significant time and resources.

- Some cities using geofencing are **creating numerous and small low speed zones**. Complicated zone designs, together with a lack of GPS accuracy, can cause e-scooters to slow down unexpectedly in the middle of traffic, ironically making a safety measure result in increased risk for users. Because of this, some cities are simplifying the design of their geofencing.

- The multiplication of low-speed zones results in a **poor user experience**, with some zones inadvertently encouraging e-scooter abandonment at inconvenient

[2] GPS (Global Positioning System) is a satellite navigation system that provides location anywhere on Earth where there is an unobstructed line of sight to four or more GPS satellites. We use the acronym 'GPS' in the body of the text because that was the term used by the focus group participants themselves – to be more precise, we should refer to 'satellite positioning technology' like 'GNSS', which includes the US GPS system, because most vehicles of today use a combination of systems (GPS, Galileo, Glonass, etc.).

locations (operators pointed out, for example, that when e-scooters are slowed down near pedestrian areas, users may abandon their e-scooters there and continue on foot, cluttering the area).

- Refining (and simplifying) the geofencing approach to consider whole areas or neighbourhoods for low-speed zones, rather than specific points, seems to effectively address GPS inaccuracies. This also implies that the design of **geofenced areas should be reviewed regularly**, so that improvements can be made on the basis of field experience.

> Policymakers need to take a broader view.
>
> It is difficult to defend low speeds for e-bikes and e-scooters while nothing is done regarding heavier and faster vehicles.

3.2. Parking

The proliferation of free-floating e-bikes, e-scooters and mopeds parked in the public-right-of-way can become a nuisance, when they clutter sidewalks, overflow from parking hotspots, and keep tipping over.

This multiplication of obstacles and tripping hazards degrades the safety, functionality, and comfort of the pedestrian network [3]. This affects everybody, and its negative impact is particularly aggravated for persons with disabilities or other temporary conditions, who may not be able to detect [4] or get around [5] these obstacles.

Parking of shared micromobility is a frequent concern, and seems to be quite a challenge for users, operators, and local authorities. Public opinion calls for action—but is everybody aware of all that is needed for parking to be done properly, all the time? And does 'proper parking' even mean the same thing to all?

[3] The pedestrian network here considered includes sidewalks, crosswalks, bus stops, and other pedestrian paths located in the public right-of-way.
[4] Detection of fallen e-scooters and e-bikes (low, irregular, and unexpected volumes) can be particularly difficult for persons with visual disabilities who use a cane to detect obstacles.
[5] An obstacle in the sidewalk that leaves insufficient passing width will force persons using a wheelchair to leave the sidewalk and roll in the area reserved for motorised traffic, effectively putting themselves in danger.

Broadly speaking, there are four options for parking shared micromobility vehicles:
A. Docking stations – fixed locations with special hardware to which vehicles are physically locked (commonly used by older public bike-sharing systems);
B. Free-floating systems – also called 'dockless', use remotely operated digital solutions to lock and unlock vehicles, allow for pick up and drop off at any location within a geofenced zone;
C. Hotspots [6] – as a combination of A and B, parking must occur in a designated area (the 'hotspot', often marked with paint and specific signs), but locking and unlocking is fully digital;
D. Shared Mobility Hubs – parking facilities at street level that bring together different shared transport options (e.g., shared e-bikes, cargo bikes, e-scooters, mopeds, and cars), at a dedicated, permanent, and recognisable location, strategically located in relation to or integrated with public transport stops and stations. [7]

In addition to these types of infrastructure, rules to ensure proper parking of shared micromobility vehicles may address geolocation precision, placement of vehicles, fast removal of incorrectly parked vehicles, and fines and other sanctions for failure to comply.

Professionals involved in compliance and enforcement shared the following implications:

- There is no widespread and explicit definition of what 'proper parking' means—where parking on sidewalks is allowed, keeping the **pedestrian path unobstructed**, and namely allowing for the passing of wheelchairs, seems to be a common rule.

- Ensuring accessibility for all goes beyond simply maintaining a minimum passage width. Tipped vehicles, for example, can create **tripping hazards** and pose a risk even in seemingly accessible areas.

- Placement of shared micromobility parking on sidewalks sends the **wrong message** (encouraging users to ride on the sidewalk) and can easily add obstacles to the pedestrian infrastructure.

[6] Sometimes designated as parking spots or micromobility hubs. For clarity, and because this was an expression used by several focus group participants, in this report we refer to 'hotspots'.
[7] In this report, we separate the 'hotspots' from the 'shared mobility hubs', though some professionals consider hotspots to be the most elementary shared mobility hub. The purpose of this report is not to establish any definitive taxonomy of parking options—these four categories are mentioned here simply for the purpose of clarity, to help understand the points made by the professionals heard in the focus groups. For a useful scheme, cf. UITP (2023), 'Mobility hubs: Steering the shift towards integrated sustainable mobility'

- **Car parking is often a source of revenue for local authorities. Fear of loss of revenue** has often been an obstacle to the conversion of car parking spaces to shared micromobility parking.

- A question which seems to frequently come up is **who should pay for the creation** of the hotspots, the local authority or the operator(s). This is about building costs (e.g., paint, bollards, racks, vertical signs, etc.). If we look at on-street parking for cars and deliveries, we hardly find any examples of private users (including companies) paying for the construction of on-street parking, in the public domain, for public use. The common practice is to demand pay-for-use, not for construction. The recurrence of this question delays the creation of concrete solutions.

- Satisfying all stakeholders is very challenging—and right-down impossible if stakeholders harbour contradictory wishes within themselves, e.g., not wanting shared e-scooters parked on sidewalks, but also refusing to convert car parking spaces to e-scooter parking. In areas with high car parking demand, local elected officials fear **backlash**.

- Public (and political) pressure to 'put an end to the disorder' of shared micromobility parking can push local authorities into a purely **reactive approach**. This may provide a rapid response in the short term, but such a response will most probably turn out to be a limited mitigation (e.g., with insufficient distribution and dimension), which in the longer term may even end up blocking the development of better solutions.

- Hotspots are often being created with a **dual purpose**, i.e., for the parking of both shared e-bikes and e-scooters and individually-owned bikes. Turnover is very different (shared vehicles tend to move more often than individual ones), and that can create practical difficulties for the planning, management and use of these spots.

- In some cities, shared e-scooters and e-bikes are **banned** from using public bike racks on the grounds that they would take space away from cyclists with private bikes. This rule has pros and cons, which require careful consideration. For example, if the parking offer for shared micromobility is small or inexistent, this may prolong the problem. Also, artificial segregation between private and public vehicles, or between scooters and bikes, complicates use and reduces the efficiency of available parking.

- The creation of parking for shared micromobility is not a one-time affair: it

requires monitoring and, eventually, adjustments to design, distribution and dimensioning. Any infrastructure needs to **adapt to changes in use**, e.g., in this case, a growing number of users, growing fleets, changes in the surrounding context, etc.

- A **flexible approach** to hotspots based on actual demand, while desirable, raises additional practical issues. It requires regular assessments (taking into account both size and location), agreement of different stakeholders as to the changes to be made, and the execution of physical changes which may, in turn, require additional resources.

- Hotspots are rarely of generous dimensions, and those located in areas of high demand can easily **overflow onto the surrounding pedestrian area**.
- Dedicated parking spaces need to be **clearly demarcated**, preferably with a combination of vertical signs and pavement markings. Solutions can be tailored to each city.

- Paint is not enough to stop vehicles from falling over or spilling over into adjacent areas. Fixed vertical supports **(bike racks)** can be helpful, both to avoid vehicles being knocked over by the wind or a domino-effect and to indicate what is the proper level of occupancy of the hotspot. However, they require additional investment and maintenance, and cannot prevent spillover induced by high demand and undersized offers.

- Geofencing can hardly prevent the overflow of parked vehicles. Because GPS accuracy has limits, geofenced areas have **buffers** (i.e., a margin of error) which usually cover the overflowed area. Additionally, some public officials complained of the use, by operators, of GPS error as a default excuse for incorrect parking.

- Operators no longer rely on GPS alone, because of the problems often caused by its inaccuracy. A **complementary** measure is to request users to document their correct parking with a photo. Other solutions are also emerging, such as fixed docks or Bluetooth.

- Systems that use docking stations can communicate to their users in real-time how many parking slots are free in each station, and condition the parking of the bike to the availability of a **free slot**. The application of this principle to geofenced hotspots raises practical challenges. Two examples: it requires exclusive use by shared fleets, as individually-owned vehicles may not be equipped with the necessary technology; and it requires operators to share (among themselves or with a third party) data that is highly sensitive from a commercial perspective.

- Parking infrastructure must be intuitive and convenient. The location and density of the parking facility are very important—if its location is **not convenient for the user**, compliance will be lower, and so will the use of the service. Users seem to be, generally speaking, willing to walk approximately 50-150 metres to access or return a vehicle.

- Collaborative **engagement** with the community, including seeking the advice of both users and non-users, can enable more appropriate parking locations.

- A combination of technology, operational strategies and communication can be quite effective, but that efficacy depends on the availability of **actual parking spaces**.

- National parking laws can be ambiguous, especially for bicycles and e-scooters, as they are often excluded from traffic regulations designed primarily for cars. **Vague or generic rules** for parking pose significant operational challenges for operators and are difficult to implement in a systematic manner (making use, e.g., of digital capabilities). They also pose practical difficulties for those in charge of enforcing those rules—and while effective **enforcement** is necessary, strict enforcement of parking fines can drive an operator out of the market.

- Certain regional authorities have issued **technical recommendations for parking zones**, and municipalities have been incentivised through grants to comply with those guidelines. Adherence to the design principles set out by regional authorities can result in subsidies for drop-off or parking zones, thereby encouraging the creation of proper parking.

- In London, **micromobility parking guidelines** have been developed for the e-scooter trial, outlining the principles and specifications for parking bays. During the trial, boroughs that comply with these guidelines are eligible to receive an annual revenue per bay, with the funds allocated directly to the borough.

- In Brussels, municipalities (which manage local parking) receive financial incentives to provide parking for shared micromobility. These incentives result from the **redistribution of the annual fees** paid by operators, which is done according to the number of parking spaces provided. The regional government also published guidelines for the design of parking facilities and provided pre-printed stickers and small signs that municipalities can use to reduce costs.

- In Berlin, the introduction of e-scooters in 2019 presented numerous challenges due to the high density of vehicles. To mitigate this, **mobility hubs** were created on the streets by repurposing car parking spaces. No-parking zones were created

around these hubs to effectively enforce proper parking.

> In our city, current policy prohibits parking micromobility vehicles on sidewalks.
>
> To provide parking for them, we must convert car parking spaces.
>
> This is challenging, because parking is an important source of revenue for us.

3.3. Helmet

The question of whether public authorities should require (or even encourage) the use of a helmet by persons using e-bikes or e-scooters has been the subject of lively debate. [8]

Helmet regulations vary not only between countries but also within countries. While several EU countries have made helmet use compulsory for minors, in almost all EU countries (with the exception of Finland), this remains a matter of personal choice for adults.

The fast growth and high visibility of people rolling in shared bikes and e-scooters, however, has repeatedly triggered the debate—not so much for mopeds (as helmet use is already mandatory for those vehicles), but particularly for shared e-scooters.

The purpose of this report is not to engage in the 'compulsory use debate', but to explore the practical implications of a specific rule on this matter—obliging shared e-bike and e-scooter operators to provide helmets, as a way of either encouraging or forcing their users to put them on while riding.

Professionals involved in compliance and enforcement shared the following implications:

[8] Cf., for example, the European Commission's position (The pedestrian network here considered includes sidewalks, crosswalks, bus stops, and other pedestrian paths located in the public right-of-way.)

- One of the possibilities is ad hoc distribution of free helmets by operators to their clients. Not being systematic, this measure has obvious limitations: its effects will dissipate over time (e.g., by not reaching new customers), and it cannot be enforced on a permanent basis.

- Requiring or encouraging operators to offer free helmets to their clients also raises a question of **fairness**, as no other mobility service providers are obliged to offer any equipment to their users.

- As part of the selection process, some cities have **asked operators to promote the voluntary use of helmets** and other personal protective equipment (requiring, e.g., that 50% of the marketing materials and communications within the bid should feature helmets to promote helmet use).

- While the compliance of marketing materials can be verified and enforced, its effective **impact** on actual user behaviour cannot.

- To make the helmet available on a systematic basis **in the vehicle**, the first question is how to store it on the vehicle, which presents logistical challenges, particularly for e-scooters.

- Helmet storage boxes and their operational mechanisms (e.g., remote-operated locks) represent an additional cost, and are susceptible to **vandalism** (with repairs further raising those costs).

- Implementing hardware solutions such as helmet boxes requires the development of specific **software** (e.g. to unlock helmet boxes when the user removes the helmet or puts it back inside).

- Ensuring helmets are always available (e.g., not stolen), clean, and well maintained (e.g., not broken or vandalised) **adds operational complexity** (for both remote and on-street teams).

- Some participants pointed out that, in regions where helmet use has been made compulsory, helmets have been **discarded and thrown away** by people who do not like to use them.

- Users have **hygiene concerns** with shared equipment (especially after COVID-19). For something you will wear on your head, how much is 'clean enough'? Checked and cleaned every five days? Three days? And what does that imply, in terms of operations and costs?

- To offer proper protection, a helmet must have the **correct size** for its user—in a massive operation, how can one ensure that the helmet size matches the user?

- While helmets can protect against falls, they offer **very limited protection against collisions with motorised vehicles travelling at 50 km/h or more**. Reducing the speed limits for motorised traffic to 30 km/h (or 20 mph), as a growing number of cities are doing, is the most effective way of reducing the number and severity of crashes. If that is not done, then mandatory helmet use simply shifts responsibility to the victim rather than addressing the underlying cause.

- The imposition of a 20 km/h speed limit on shared e-scooters and e-bikes tends to reduce the impact of **single vehicle crashes** [9], and may be more effective than making helmets mandatory. In any case, it must be pointed out that statistics about e-scooter crashes, particularly about serious injuries from falls, often fail to distinguish between shared or individually-owned vehicles, and that is a relevant detail, because the latter may not have automatic speed limitation.

- The practical issues above are related to making helmets available—**ensuring users actually have them** on before starting the trip would raise an additional (and arguably 'thicker') layer of technological difficulty and operational complexity.

> Ensuring standardised vehicles and equipment on a large scale is critical for effective control and maintenance.
>
> Implementing helmets uniformly across fleets in Europe would be one thing; investing in them for specific markets with different regulations becomes less feasible and poses challenges to consistent implementation.

[9] A type of road crash in which only one vehicle and no other road user is involved, e.g., run-off-road collisions, collisions with other parked vehicles, falls from skidding or tripping in the pavement, etc.

3.4. User education

Wanting 'users to behave properly' is another common concern. Many cities require operators to invest in 'User Education', to encourage safe and civil behaviour (e.g. where and how to ride, where and how to park, use of helmet, etc.).

This has taken different forms, namely outdoor public campaigns, app-based training (i.e., the user has to 'swipe' through some messages displayed on the app before starting the trip), and (rarely) in-person classes to learn how to ride e-bikes and e-scooters.

Shared micromobility is, still, a rather recent type of transport service. Laws and ordinances already in place seldom (if ever) establish any type of obligation on this matter for operators (one wonders what the legal basis for such an obligation could be), much less prescribe any specific methods or KPIs.

What often happens is that, in the context of public tenders, the public authority rewards, in the evaluation of tender proposals, investment in user education.

Professionals involved in compliance and enforcement shared the following implications:

- There has been cooperation between some cities and micromobility operators to create **unified awareness campaigns**. These campaigns were delivered through the operators' apps, demonstrating a collective effort to educate users.

- In tenders, cities require operators to provide basic user training, emphasising that e-scooters cannot be ridden or parked on pavements and must be left in designated bays. Operators are scored on the additional training they offer, which is approved if their proposals are successful.

- **Is tendering the best moment** to conceive a user education strategy, before actual research in the specific market? Is this the best framework to evaluate the quality and effectiveness of such a strategy? Once the tender is awarded, how will the public authority actually verify and enforce the implementation and success of this strategy?

- **Several channels** are available, including email, social media and in-app messages. However, these methods can sometimes irritate rather than educate users.

- Proposals usually include an **initial app onboarding** process where users must

answer questions to ensure they understand the rules, balancing clarity with accessibility. Because going through these messages is a pre-condition to using the service, effective communication through the app plays a crucial role when it comes to informing users about the rules.

- Changing user behaviour is a complex and long-term process. Are user education initiatives **effective**? Some operators have tried to measure the effectiveness of such campaigns, including in-app messaging and outdoor marketing efforts, and report observing generally minimal impact. Users often bypass educational content in apps, such as instructional videos, which suggests these methods may not be effective in the long term.

- **Face-to-face training** is more challenging. Despite organising and promoting these events (e.g., scheduling a session on a Saturday at a designated location in the city to teach scooter operation and reinforce rules and recommendations), attendance is often low. While some people do attend, the majority show little interest, making it a less effective method for widespread user education.

- **Partnerships** with non-profit organisations, that already have practice and experience in teaching people how to cycle, can help design and implement more effective user education.

- Various service level agreements dictate the response time for improperly parked vehicles: within one hour for situations creating danger and eight hours for nuisance. A data platform monitors vehicle locations and starts a compliance clock when an out-of-bounds vehicle is flagged. Persistent non-compliance results in financial penalties and a reduction in the number of vehicles an operator can operate. Cities encourage operators to manage this independently but are considering formal measures, including **charges for users who park incorrectly** or fail to complete journeys properly.

- It is also important to **raise awareness among non-users**, who are often unaware of shared micromobility operations, including the presence of GPS tracking on devices. This lack of understanding can lead to perceptions of uncontrolled operations and concerns about safety in the city.

- Is it the responsibility of operators to educate the public about shared mobility rules and safety? Or should this be part of a broader societal education initiative, possibly starting at school level? This question is particularly relevant in light of changing mobility needs, especially among younger generations, as evidenced by the declining number of driving licences. This shift indicates the need for new

types of education to adapt to changing transport preferences.

> It is puzzling to have motorised vehicles on our streets while at the same time banning e-scooters—It just does not seem logical.
>
> If we are serious about meeting our climate change targets and embracing sustainable transport, we need to be more open to these modes.
>
> People also need to be more accepting of the fact that there may be instances of bad behaviour associated with them.

> To be honest, we have never really seen evidence that user education produces tangible results, and that's not surprising.
>
> If you are in a hurry to get somewhere, you open the app and immediately try to rent an e-scooter: the last thing you want to do is sit through a bunch of instructional videos about driving and parking.

3.5. Local employment

Some cities are trying to promote socially responsible employment practices by encouraging (and even requiring) operators to hire local workers, or to offer stable working conditions.

This concern about responsible and local employment is being pursued, namely, through criteria for the evaluation of tender proposals, such as disfavouring the resort to platform work, and favouring, e.g., the commitment to offering stable contracts (temporary or permanent), implementing diversity plans, and fostering the hiring of local jobseekers into the workforce.

This raises two important questions: what can cities and operators really do about this, and what could be the unforeseen implications for the business sustainability of the operators?

Professionals involved in compliance and enforcement shared the following implications:

- The baseline should be, of course, that operators comply with **national labour laws**. Can local authorities demand more than that? Should they? How much more can they demand? There is, first of all, a legal question to consider, as national legislation may (or may not) enable local authorities to create additional rules, even as tender criteria.

- Setting special requirements for stable employment relationships will, naturally, have financial and operational implications for businesses which, for the most part, were conceived as a **platform business model**.

- There are significant financial risks associated with employing all staff in-house, particularly given the **fluctuating nature of demand** throughout the year. It's difficult to maintain a full-time workforce for peak and off-peak periods.

- Granting operators **short-term licences** increases the risk for the employer, which in turn fosters more precarious employment arrangements. Losing tenders and having to lay people off, only to eventually re-hire them later, creates unnecessary stress and uncertainty for both the company and its employees.

- Some cities are adopting longer licenses, which provides **long-term stability** for operators and their employees. Moving to (for example) five-year agreements would provide greater certainty for both parties and facilitate better planning.

- While favouring stable employment, longer licenses require, on the other hand, very clear agreements on **Key Performance Indicators (KPIs)** between operators and cities, to ensure that operators stay sharp and maintain high service levels throughout the service, and not just before a new tender is expected.

- **Third-party companies** often work with multiple customers, and thus can more easily absorb the loss of an operator as a customer, as they are often able to secure one or more new customers to maintain their business. This can help operators manage the risk, by providing flexibility and acting as a buffer during fluctuations.

- While operators prioritise in-house maintenance of their vehicles, tasks such as battery swaps, deployments and rebalancing are often **outsourced**. Insisting on full-time, in-house employment can disrupt existing relationships with third-party companies.

- Some operators point out that maintaining **a flexible arrangement** with employees helps to keep their interest and commitment to the job, arguing that permanent contracts for unskilled workers can lead to a decline in performance over time, whereas a flexible arrangement encourages continued engagement. This opinion raises several questions: (1) regardless of its accuracy, it must be noted as a concern that influences management attitudes, expectations, and decisions; (2) this concern could extend to skilled workers or any type of worker, for that matter; (3) research shows that unstable employment relations undermine, rather than improve, both individual and collective performance; and finally, (4) workers' rights are protected by law and need to be upheld and enforced.

- Several cities have **reduced the number of operators**. While this consolidation has led to job losses, there is an expectation that proper regulation of the sector will ensure long-term viability, with surviving providers emerging stronger, and longer-term partnerships with cities.

- In Lyon, the city provides a long-term contract for two operators for a total of 4,000 vehicles. The tender stipulates that all employees **must have** a long-term contract (CDI), which promotes the quality of employment. This approach is feasible due to the highly profitable structure (limited to two operators) combined with the long duration of the contract.

- Encouraging operators to **establish local offices** for easier contact and regular meetings can improve communication and collaboration with local authorities and customers. This would require local employees.

- When considering the establishment of local offices, it's important to balance this requirement with the **size of the city**. Requiring a local office in small towns would add a very high cost to the service—and, for example, a local office in a larger city can also serve several smaller towns in its vicinity.

- Due to **limited regulatory scope**, local government cannot tell companies how to run their business or manage their employment practices. However, cities can support companies with equality or gender plans and demonstrate social responsibility by supporting initiatives that align with broader societal goals.

> About a year ago, we lost a tender and had to lay off about 10-15 people.
>
> A year later, we won the tender again and were able to rehire these people.
>
> This situation does not make sense, it just creates instability and stress for the people affected, and a sense of insecurity within the organisation.

> At one point, there were nine operators offering shared micromobility services at the same time. That was a lot, and we have now reduced that number to four.
>
> Hopefully, the operators that survive and make it through the next few years will become stronger, so that they can become long-term partners with cities.

3.6. Life-cycle assessment

Cities are increasingly interested in understanding the environmental impacts of shared micromobility and how these impacts vary between operators. To evaluate micromobility operators, cities can use the results of life-cycle assessments (LCAs).

Life-cycle assessments analyse the environmental impacts of the full life cycle of a vehicle, covering the production, use, and end-of-life of an e-scooter. This includes the material component, but also the energy intensity of the processes used, from the extraction of raw materials to the production of the vehicle, as well as maintenance, collection/distribution processes and the use of electricity.

There are different ways (and scopes) for conducting these assessments (cf., for a good example, this guide prepared by the New Urban Mobility Alliance [10]). Use of standardized and transparent methods is indispensable for these assessments to be trustworthy and comparable.

Professionals involved in compliance and enforcement shared the following implications:

- Conducting an LCA is relatively straightforward, and essential for measuring emissions. Currently, lower emissions figures are often perceived as better, but without standardised LCA calculation rules, some aspects of the assessment can be selectively omitted, leading to a **distorted picture**. This has turned LCAs into a race to report the lowest numbers, sometimes at the expense of completeness.

- Several critical questions arise when looking at LCAs: Do they include spare parts and operational activities? Are green operations included? What is the energy mix of the city? For example, Germany's energy mix is heavily reliant on coal, while Norway's is predominantly hydroelectric. These factors need to be demonstrated through actual city operations, highlighting the importance of **context-specific assessments**.

- There are **different ways of assessing** emissions and environmental impact. Which to follow? An LCA is a product-specific tool, (e.g., the LCA of a vehicle), and there are wider approaches, which cover a wider scope of emissions.

- With vehicles lasting longer (or being required to last longer), there must be a greater focus on **refurbishment** [11], which implies, in turn, specific procedures for quality and safety assurance and enforcement. Local authorities may, for example, need to require documentation and clear steps to ensure that shared mobility vehicles can be refurbished for as long as possible, and will remain safe to use throughout their longer life span.

[10] NUMO (2023), 'Assessing the Environmental Impact of Shared Micromobility Services: A Guide for Cities'
[11] For clarity: 'refurbishment' is the renovation of something that remains in use (in the case of an e-scooter, that can involve, e.g., new pieces), to be distinguished from 'recycling', which follows disposal (i.e., end of use of something), and is the action or process of converting waste into reusable material.

- Recycling can also present several challenges. Operators, when establishing in a new market, often struggle to **find a suitable local recycling partner**. Sometimes this takes months, and in the meantime, parts are stored in the operator's warehouse—that poses specific risks, because while some parts are relatively harmless, others, like batteries, can lead to safety hazards.

- Cities are introducing stricter conditions for the fleets used for logistical support: for example, requiring **service vehicles** used to collect and redeploy e-scooters to be electric.

- In addition, some cities are requiring that operators use **green electricity** to charge batteries, further reducing the environmental impact of their operations.

- Transitioning to **station-based systems**, with designated hubs rather than free-floating models, can reduce emissions. Drivers are likely to make shorter trips, and service vehicles can follow designated routes, eliminating the need to collect e-scooters from dispersed locations, thereby reducing operational emissions.

- Cities require operators to establish a **carbon baseline** and **develop an improvement plan**. This involves establishing a baseline for carbon emissions, reporting on both life cycle and operational carbon emissions, and outlining steps to reduce the carbon footprint of their operations. The initiative encourages adherence to circular economy principles, promoting the reuse and recycling of vehicle components.

- The use of LCA results relies heavily on **trust**, as cities must take operators at their word about their efforts. Operators provide documentation based on these standards, but the capacity to verify the validity of the results remains limited. One way forward can be for a third party to carry out the LCA.

- There is a **need for more training of regulators**, as very few people can effectively read, understand, and verify the information in the LCA.

- Some cities are adding, in **contracts** with operators, a clause establishing that, if an operator would fail to accurately report its carbon emissions or would falsify life cycle assessment data, that would constitute a breach of contract.

- It is striking that companies, or even entire industries, that have made demonstrably significant efforts to decarbonise their services—in line with both their own missions and those of their impact investors—are often distrusted more than traditional industries that have made far less effort but have more established political networks.

- Regulators may also need to consider the nature of a company's investors when assessing its credibility and mission alignment. There are important differences between a short-term hedge fund or an oligarch-backed investment fund, and, for example, a Norwegian or Dutch sovereign wealth fund. These differences directly reflect on the company's mission, culture and long-term commitment to sustainability.

> There is a noticeable trend in cities where there is a demand for the latest fleets with the latest technology.
>
> However, this desire contradicts the push for sustainability and reduced emissions, as introducing new vehicles every year would send the carbon footprint soaring.

4. Conclusions

What conclusions can we draw from these discussions with the professionals involved in compliance and enforcement of rules for shared micromobility? Several. Here is what POLIS, as a network of local and regional governments and transport authorities, considers most important:

I. Rules do have practical implications

The effectiveness of a rule requires compliance and enforcement. These, in turn, require the execution of several activities, both by operators who must comply, and by local authorities who must verify and (when necessary) impose corrections and penalties. Several practical necessities emerge from these activities, and not all of them can be easily addressed.

II. 'Obvious' does not mean right

Often there is no simple match between a problem and a rule to fix it. One should neither complicate what is simple, nor simplify what is complex. What is at stake with a rule is not only the principle it sets, but the conditions that exist (or not) for complying with it, and for enforcing it. And those conditions aren't so evident. As Voltaire said, 'Common sense is not so common'.

III. Beware of rules 'by public request'

Regulations have often been developed in a reactive way—in response to problems, with the complaints of non-users being much louder than the needs of users. However, this is beginning to change. As the regulation and enforcement of certain rules has progressed, particularly in relation to parking, user complaints about the lack of sufficient parking or facilities for these services are becoming more prominent.

IV. Regulation is not easy

Cities are well aware of the needs and expectations of micromobility operators —they often have similar concerns, but must still work within a regulatory framework and with different entities (districts, municipalities, etc.) who may have different interests (e.g., for some authorities, on-street parking is an

important source of revenue, and that may block or delay the creation of parking for shared micromobility).

V. Rules need enforcement, and enforcement needs capacity

Some cities do not have the capacity to monitor and check that operators and users are complying with all the regulations. This does not, necessarily, work to the benefit of operators, because lack of capacity to enforce can fuel lack of trust, which ends up leading to more (not fewer) rules.

VI. Can shared fleets educate individual vehicles?

Most rules conceived for shared micromobility services do not apply to private micromobility vehicles. As the popularity and sales of private micromobility vehicles continue to grow, cities face new challenges and questions about how to integrate and regulate them. Shared mobility services can play a key role in educating users and establishing norms that influence the private use of micromobility vehicles.

Acknowledgements

'Careful what you wish for: Practical implications of rules & requirements for shared micromobility' is a report elaborated by POLIS.

POLIS is the leading network of European cities and regions advancing transport innovation. We are committed, specifically, to innovations that can make urban, suburban, and rural mobility more sustainable, safe, and equitable.

POLIS draws its expertise from a valuable network of decision makers, field practitioners, and researchers, who are working for local and regional governments and transport authorities, public research organisations, and private non-profit and for-profit organisations, from advocacy to mobility service providers.

We build on the results of EU-funded projects and on the input of thematic Working Groups that address key transport challenges, to link innovation and public policy guidance on urban and regional mobility with European policy development.

This report has been written by POLIS' Governance & Integration Working Group, which is managed by Pedro Homem de Gouveia. The issues addressed in this report have been discussed with member cities and region, as well as operators, within the frame of the above-mentioned Working Group.

For more information on the Governance & Integration Working Group, click here.
For more information on POLIS, click here.

AUTHORS:
Fanny Boccioli, POLIS
Pedro Homem de Gouveia, POLIS

LAYOUT:
Alessia Giorgiutti, POLIS

POLIS
Rue du Trône 98, B-1050
Brussels, Belgium
Tel +32 (0)2 500 56 70
polis@polisnetwork.eu
www.polisnetwork.eu

Pedro Homem de Gouveia
pgouveia@polisnetwork.eu