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Micromobility policies for sustainable transport: Bogotá and Mexico City

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Micromobility Policies for Sustainable Transport

Bogotá and Mexico City

Discussion Paper

185

Roundtable

Karina Licea Viñas

Consultant, sustainable mobility and
urban development

Micromobility Policies for Sustainable Transport

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Discussion Paper

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What is happening in the micromobility ecosystem?

The Covid-19 pandemic has affected the way in which city dwellers move worldwide. A strong inclination towards substitution of collective transport with individual transport modes has been observed everywhere. The boom in the use of bicycles, e-bikes and e-scooters generated by micromobility companies in 2019, revealed that almost everybody derives benefit from cycling-type mobility when they enjoy access to this type of service. A bright future was projected, with more than 139 micromobility companies operating across the world. But increasingly restrictive regulatory processes and then Covid-19 lock-downs brought bankruptcies and extinction of micromobility services, with only 53 companies still in active operation in the world in June 2020 (Stubblefield, C. 2020).

The promotion of non-motorised individual transport, mainly bicycles, as a sustainable alternative to the car and under the Covid-19 crisis as a substitute for public transport has focused on cycling lanes. Covid-19 responses have included rapid implementation of temporary bicycle lanes and reallocation of space to cycling. In a second step, there is renewed interest in support for dockless micromobility sharing systems. How flexible administrations will be in regulating the sector in OECD countries is unclear but a more supportive framework is needed. Subsidies as well as revision of regulations need to be considered if micromobility is to make a durable contribution to sustainable mobility. This report assesses public policies and its results in two case studies: Bogotá and Mexico City. The object of the analysis is to better understand how to apply better regulations for the support of non-motorised mobility.

Bogotá and Mexico City micromobility context

Micromobility companies launched in both cities in the central core municipalities, in the case of Mexico City in Miguel Hidalgo with 353 534 inhabitants and Cuauhtemoc with 521 348 inhabitants, and in the case of Bogotá at Chapinero with 156 274 inhabitants.¹ In both cases, most of the trips are attracted to these areas for economic activities and services. The pre-existing modal split was focused on public transportation and cars, with a very low percentage of trips made on non-motorised vehicles. Nevertheless, use of the bicycle was growing because Mexico City has one of the biggest public bicycle sharing systems in the world and Bogotá has more cycling infrastructure than any other Latin American city, with over 550 km of cycle lanes.

Storytelling, legal framework and timelines

Bogotá

Bogotá has aimed to launch a public shared bicycle system since 2015 with various unsuccessful attempts. Bureaucratic Companies administration and bureaucratic delays in the face of the difficulty of constructing a good Public Private Partnership (PPP) means the initiatives have not so far succeeded.

At the beginning of 2017, Muvo was created to launch a public bicycle system in Bogotá. However, in the face of the complicated regulatory process, the Colombian company decided first to launch a dockless electric bicycle system in November 2017, with Bogotá Parking company as an associate. This enabled the service to launch in private parking lots, under a strategy to work with the city without requiring authorization to use public space, because it was illegal. Regulation is likely to be on hold until the operator seeks to relocate vehicles to better spots, such as public bicycle parking infrastructure

The government realized that micromobility companies would come eventually to the streets of Bogotá and issued District Decree 552 in September 2018, initiating a regulatory framework with a new legal status for micromobility companies. The main issue in Bogotá is that use of public space falls under national jurisdiction, as provided for by the article 82 of the Constitution of 1991. This reads, "It is the duty of the State to ensure the protection of the integrity of public space and its destination for common use, which prevails over private interest". At the same time, Law 9 of 1989, in its article 7 grants the municipalities the power to manage public space, it gives them the responsibility of designating space for use by vehicles of any type, the organization of public space, the payment of fees and therefore the grant of a permit. Likewise, this legislation speaks of the responsibilities of the Bogotá District Mobility Secretary. Despite this authority and the existence of Muvo, shared dockless micromobility systems are not yet regulated, because the government has not yet built a legal definition for this specific type of service.

In November 2018, Grin Scooters Company hit the ground in Chapinero Municipality, without permission or agreement with the government. The presence of these vehicles was highly visible in public spaces and seen as a nuisance much of the local population. The government responded, and the former mayor of Chapinero, Hernando Quintero, impounded hundreds of vehicles. The operating companies then began to try to establish a dialogue sending letters to the government asking for temporary authorization to allow negotiation of the conditions for regulation, several meetings were made between all the participants. In December 2018, Circular 006 was issued, where for the first time recommendations were published in relation to road safety and circulation in traffic. Later in April 2019, resolution 036 was published, updating article 10 of District Decree 552 from 2018, recognizing the possibility to gain economic benefits by renting vehicles in the public space, definitively assigning their administration to the Bogotá District Mobility Ministry.

Table 1. Sustainable individual transport systems timeline for Bogotá

Bogotá			
Year	Month	Milestone	Story
2017	December	Arrival of an Electric Bicycle Sharing Operator	Muvo hits Bogotá to start operations with electric bicycles as a private service with private parking lots.
2018	February	The list of activities for the economic use of public space established in District Decree 552 of 2018 is updated	The economic use activities allowed in the public space and the loan or shared use for consideration or free of charge of bicycles or scooters located in stations or in elements of the public space are regulated.
2018	November	Arrival of Dockless Electric Scooters Sharing Operators	Grin scooters arrive without permission to Chapineros neighbourhood, Juan Pablo Bocarejo is the mobility minister
2018	December	Circular 006 First government notice	First recognition of electric scooters as a new micromobility option translated on recommendations about road safety, parking and on road circulation.
2019	April	Neighbour complaints and vehicle impounds	
2019	May	Resolution 209 protocol from the economic contribution	This resolution presents a methodology to calculate the economic retribution and the parking conditions for bicycles and electric scooter operators, it also begins to configure the requirements to operate on Bogotá streets.
2019	July	Resolution 336, for Requirements and conditions	The resolution 336 presents the requirements to obtain a permit and the methodology to calculate the limit in the number of vehicles and a monetary contribution to the government per year and per vehicle.
2019	August	Circular 011 invitation to present an application for a definitive permit	Establishing maximum number of units, polygon and parking areas.

Source: Secretaría Jurídica Distrital de la Alcaldía Mayor de Bogotá D.C.

When the Bogota District Mobility Secretary took control over scooters it released a Circular 011 as an invitation to present an application for a definitive permit for one year. The document delineates the area of permitted operations, established 86 defined parking areas, set 3 050 as a maximum number of units to be operated and established the format for submitting permit application.

Mexico City

Since 2010, the focus for micromobility in Mexico City has been implementation of a shared public bicycle system (SPBS) called Ecobici (ITDP, 2015). To introduce this new service in the city, the government modified internal operational regulations, generated an operating contract with a private third party and intensified efforts to raise awareness around the benefits of bicycle-based mobility. In 2014 Mexico City's first mobility law was enacted. This included establishing a mobility hierarchy where pedestrians and cyclists are given priority over motorised traffic. This integrated public bicycle systems into the mobility landscape and raised their profile in the consciousness of planners and transport operators. In 2017, observing a boom in dockless shared bicycle systems in Asia, Mexican and international startups began to take an interest in Mexico City as a very attractive market in itself and showcase for other markets in Latin

America. In February 2017, without a clear regulatory framework under the government of Mayor Miguel A. Mancera but with the agreement of some local municipalities, the first mechanical shared bikes were deployed in Mexico City. Operators included Mobike and Vbike, deployed in the wealthier central neighbourhoods of La Condesa, Roma Norte and Polanco. They launched with a large number of units. In July 2017, a smaller Mexican operator Dezba arrived with electric bicycles, offering a new way to move around the city. All of these companies began parallel talks as part of negotiations over the regulatory process to be adopted by the Mexico City Mobility Ministry.

As a legal framework for the regulation of shared mobility, the Mobility Law and specifically its article 15 was ambiguous, it simply established that everyone is free to park bicycles on the sidewalk. However, it was not clear if that applied to companies that obtain revenue from bikes stationed on the sidewalk. The lack of clarity triggered construction of a pilot programme focused on understanding the behaviour of the micromobility companies. Some restrictions were applied: a designated areas of operation for each company, operating hours, and a requirement for insurance to cover users and third parties. There were no limits on the number of bicycles to be operated. Results from this first pilot project were still incomplete when there was a change in government, interrupting the analysis.

Figure 1. Sevilla Metro Station in Mexico City plagued with Mobikes



Source: Strategic Access (n.d.).

Parallel to the launch of bicycles, at least three companies with electric scooters were on a waiting list to launch operations during the transition from the previous administration to the new government of the City under the MORENA party. A legal void arose in governance as the pilot operating permits expired before a definitive regulatory framework had been established. The scooter companies launched without permits or agreements and together with the large number of bicycles on the street, this generated pressure from residents to limit operations, directed especially at Mobike, which had introduced thousands of bicycles, flooding public space. The neighbourhood committees of Polanco, Condesa and Roma began to protest forcefully. As a result, the government restructured the pilot program, one of the main changes being a limitation on the number of units (see following chapter).

The new pilot on Sustainable Individual Transportation Systems (SiTIS) ran from 6 February to 25 March 2019, introducing several measures to standardise conditions for operating shared micromobility services

under temporary permits. A single operating area was designated for all of the companies and operators were required to report real time data on the location and usage of vehicles, providing a clear picture of how the services were being used.

Table 2. Sustainable Individual Transport Systems Timeline for Mexico City

Mexico City			
Year	Month	Milestone	Story
2018	March	First regulation release for Dockless Bicycle Sharing Systems	First call to regulate operators with a pilot program. At least four operators were on the streets.
2018	June	First pilot program permits assigned to Dockless Bicycle Sharing Operators	Mobike, Dezba and Vbike companies receive a temporary permit.
2018	July	Dockless Electric Scooters Sharing Systems arrival.	Grin company starts operations without a permit at Cuauhtémoc neighbourhood.
2018	September	Pilot program finishes	End of authorisations granted in June.
2018	October	First regulation release for Dockless Electric Scooter Sharing Systems	First call to regulate operators with a pilot program.
2018	November	First pilot program permits assigned to Dockless Electric Scooter Sharing Systems	Grin Scooters company Aquiles the first permit.
2018	December	New government arrival MORENA	Transition between PRD party to MORENA, during this time there was a lack of permits, companies operate without control launching more units invading public space, generating many complaints from the neighbours against government and micromobility companies.
2019	February	New government Pilot test.	Pilot test for 45 days to all companies. New requirements, like a limit in the number of units.
2019	March	Publication of operating guidelines for a permanent permit	In the construction of a legal certainty to companies interested in providing the service, new guidelines were published.
2019	May- June	Assignment	Assignment of vehicles to companies that got permits in the first phase, with a scheme of (3 500 Scooters and 4 800 bicycles total).
2019	July	Granting of Permits	Annual permits are issued to companies that comply with the provisions of the allocation process (Dezba, Jump, Grin and Bird).
2019	July	Report publication	Publication of the first report. Period "September to November 2019"

Source: Tianguis Digital.

The early evolution of shared micromobility in Bogotá and Mexico City, summarised by the milestones recorded in tables 1 and 2, is useful in understanding the policy assessments both governments made and the way they subsequently regulated micromobility companies.

Policy response, goals and details

The regulatory framework for shared micromobility in the two cities includes traffic codes and parking regulations that apply to all modes of transport, modified in some instances with tolerances for micromobility vehicles, safety regulation for vehicle design and economic regulation specific to shared micromobility businesses.

Parking use restrictions

Parking regulations restrict places that shared bikes and scooters can legally be parked to very limited areas. In Bogotá law 769 of 2002 (Codigo Nacional de Transito Terrestre) considers any wheeled appliance to be a vehicle, treating scooters in the same way as cars. Circular 006 specifically prohibits parking of micromobility vehicles in the following locations:

- Pedestrian areas, gardens and public space for pedestrians.
- Roads and highways.
- Primary roads or highways with limited access.
- Bridges, tunnels, vehicular underpasses, overpasses and access to this infrastructure
- General automobile parking areas reserved for public services or disabled people.
- Public Mass Transit lanes
- Cyclepaths and priority lanes for bicycles
- 30 cm away from the sidewalk
- On double row besides a car, in front of fire hydrants, garages, or disable people access and ramps
- Turns
- Where they might interfere with other parked vehicles
- Where transit officials forbid parking
- On train infrastructure, primary railroad, stations and secondary railroads

The Land Plan Ordinance from 2004 also stipulates that no vehicle can park on parallel streets, or in environmental control areas and gardens or on sidewalks. With all these requirements no space is available for parking shared micromobility vehicles outside a few designated spaces.

In both cities, fees for vehicle permits were used to establish parking stations for micromobility and other non-motorised vehicles. In Mexico City 75 lots were built and in Bogotá the number was 60.

These were the only spaces in which companies could place their vehicles. Many operators complained about the locations as their configuration was not aligned with demand for the origin and destination of trips, making accessibility for users very difficult.

In Mexico City, parking restrictions are similar to Bogotá, but the local government was a little bit more flexible with the use of public space use, allowing bike storage in places where they do not get in the way of pedestrians, such as recesses in sidewalks and in public gardens. Such locations provide good access for users.

Figure 2. Parking stations built by the government



Source: Muvo (n.d.).

Limits on vehicle supply

The Government of Mexico City used the results of monitoring user behaviour under its pilot scheme to intervene in the market for shared dockless micromobility to limit and rationalise operations for efficiency and to contain the impact on pedestrian street space. It introduced regulation through periodic concessions for operation in a designated area in the centre of the city with payments intended to cover the cost of using public space, mainly investments in reserved parking spaces. Limits were set on the number of shared bicycles and scooters Pilot scheme analysis suggested many operators were underutilising their units,² so little increase on the pilot scheme was made. The new limits established were 4 800 bicycles and 3 500 electric scooters, with requirements to distribute them across service areas to promote competition. The government auctioned these quotas, awarding concessions to (continue to) operate to the companies offering the highest fee per vehicle and the largest fleet. The resulting awards are summarised in table 3.

Permits were allocated for almost all of the 8 300 total vehicle quota, with 1 900 bicycle permits granted to Jump and 900 to Dezba, and 1 750 electric scooters for Grin and 1 750 for Lime respectively. The award to Mobike was cancelled as it was unable to pay the fee for the first year of operation. Part of its quota was redistributed to Dezba (400 units) with the remaining 2 000 bicycles made available for another

potential operator. The high permit bids (promising much more revenue than anticipated) proved unsustainable and, compounded by the impact of the Covid-19 pandemic, the market collapsed. Today only 900 bicycles are operational.

Table 3. Taxes on micromobility in CDMX by operator

Company	Units	Annual fee per unit	Total annual payment
Bikes			
Dezba (mechanic and electric)	500	MXN 1 800	MXN 900 000
Jump (electric)	1 900	MXN 1 300	MXN 2 470 000
Mobike	2 400	MXN 2 600	MXN 6 240 000
Total for three companies	4 800		MXN 9 610 000
Electric micro scooters			
Lime	1 750	MXN 7 200	MXN 12 600 000
Grin	1 750	MXN 14 000	MXN 24 500 000
Total for two companies	3 500		MXN 37 100 000

Source: SEMOVI (2019).

Bogotá's Mobility Ministry also developed a methodology for determining limits on the number of shared micromobility vehicles in operation. There was a distinction between parking in private space and parking in public space, but also there is a distinction between limits to vehicles parked and actually there was no restriction on vehicles in operation. The methodology was developed for a deployment area of Chapinero and Usaquén districts, and area of 21 208 m² and indicated a limit of 3,000 vehicles taking into account surface available for parking vehicles in each sector, land value, economic characteristics, population density, built area and period of operation. Ultimately a fleet of 3050 was established in the Circular 011. To date, however, no permits to operate shared micromobility were active and no vehicles operate in the streets, since the Covid situation the scenario has been very difficult for the companies.

Road safety

In Bogotá, under the District Plan for Road Safety (Decree 813 of 2017), Circular 006 published by City Hall, recommended the following safety measures for micromobility:

- A maximum speed limit of 20 kph;
- Mandatory helmet wearing;
- No use of cell phones while riding;
- Reflective elements to be attached to vehicles;
- Prohibition of use while drunk or under the influence of illegal substances.

The circular also restricted electric scooters to use only on cycle paths and in the right-hand lane of streets, forbidding use on highways and on sidewalks.

Government resolution 336 from 2019 requires micromobility mobility companies to hold an insurance policy that covers the user and third parties in case an accident-

Mexico City adopted similar measures, including the requirement for insurance covering users and third parties and a plan for assisting crash victims in the event of a claim.

Vehicle technical requirements

Regulation in both cities focused on avoiding bad quality vehicles in the interests of road safety. The following table summarises the main requirements in both cities. Procedures for verifying that vehicles meet the requirements are, however, unclear.

Table 4. Vehicle technical requirements

General characteristics	
a)	Maximum capacity for one person.
b)	"Have a geolocation device (GPS) that allows knowing the location of the unit in real time. without need to be connected or interfaced with the user's mobile device"
c)	Lock and unlock function, before and after use, respectively.
d)	Acoustic warning device (buzzer).
e)	White light fixture, while the unit is in motion, illuminates the road surface in front of the user and is visible from a preferred distance of 90 m to the front and from the sides of the unit.
f)	Red light device, continuous or intermittent, at the rear that is visible from a preferential distance of 150 m to the rear preferably.
g)	"Have a braking system (see specific criteria by type of unit). Foot support, stool, or kickstand that allows it to stand on its own; "
h)	Maximum speed governed at BOG at 20 kph and MEX at 25 kph, in the case of electric units or with electric assistance.
i)	All units must be in a visible place, in addition to the provisions of the SiTIS Operation guidelines, labels, marks, legends and holograms that demonstrate the certifications of compliance with the safety regulations of the unit and the battery requested by these guidelines.

Source: Mexico City and Bogotá Mobility Ministries.

Shared data

In Bogotá, resolution 336 of 2019 stipulated that operators have to share information with the government in real time using an application programming interface (API). Many companies aiming to operate in Bogotá did not collect disaggregated geographically localised data and were opposed to sharing information. In addition to the monthly written reports about the localisation of private parkings ended with the incidents being reported every four months with satisfaction indicators of the users.

In Mexico City the Mobility Ministry required monthly reporting under the first pilot scheme of the number of trips generated, origins and destinations and characteristics of users including age and sex. Most of the companies were not able to present disaggregated data, simply because they did not ask the users for much information. Therefore, the data collected was very basic. Another requirement was a connection of the companies' apps through their API to an app of the Digital Innovation Agency (Agencia Digital de Innovación Pública - ADIP), to verify company operations in real time. There was only partial conformity with this regulation as many of the local operators failed to get internal permissions for connection with ADIP from parent companies and stopped operating in Mexico City.

The information from the users and the reporting requirements have helped some operators to increase operations in certain areas. One very good example of a city planning project to make good use of micromobility was a pilot programme at Buenavista Station, outside of the authorised operating area. The pilot aimed for good integration with access to the metro, metrobús (BRT) and suburban train systems. The results of this pilot program have not been published but Jump and Dezba operators report that it was very successful. Dezba is now requesting more parking spaces at the station suggesting that demand is growing.

Data shared with the government under the second pilot in Mexico City, with real time data reporting, was used for some very interesting analysis (SEMOVI, 2020), useful for planning and regulatory purposes. Results include the following points:

- Most of the trips are correlated with working hours, peak use is focused between 18:00 and 19:00.
- Friday is the favourite day to use a micromobility vehicle
- Most electric scooter trips were made for social/recreational purposes
- Most bicycle trips are medium to long, but on an electric bicycle even longer and more often linked to public transit as part of a longer trip.
- The average number of trips per vehicle is 2.9 per day.
- Most of the companies operate in smaller areas than that covered by the permit
- There is no certainty over propensity of use by gender; around 10% of overall trips are made by women, 22% were unidentified, and the rest, 67% made by men. However, over the age of 35 the split is much more even.
- When there are more vehicles on the street, users tend to use micromobility more.

Economic contribution to the cities

In both cities, permits to operate shared micromobility services require payment to the Finance Secretary. In Bogota, resolution 209 of 2019 established a methodology and formula for calculating fees to private companies renting for-profit vehicles in public space (a sophisticated approach in comparison to the use of space by motorised vehicles). The formula weights the duration of service time, the number of vehicles authorized for the company, the socio-economic status of the area in which scooters will operate and the number of electric scooters that will be deployed, the surface area occupied by each parked vehicle,

occupation density, land value and negative or positive externalities that come from the use of scooters, summarised in the following formula.

Figure 3. Formula to establish fees for the use of public space

$$R_{e,t,z,v} = n_{e,t,z} * V_{p,t,z,v} + Ag_{e,t,z} + E_{t,v} + D_t$$

$$V_{p,t,z,v} = \frac{\sum_i n_{i,z} * A_p * V_{s,i,v} * T_{t,v}}{n_z}$$

Source: Bogotá Mobility Ministry (2019).

The government consulted with each operator in determining the rate, determining an average permit fee per vehicle of USD 35, which is much lower than the fee charged in Mexico City.

In Mexico City, the Mobility Ministry undertook a similar calculation to determine the baseline cost to the city of accommodating shared micromobility and used this as the floor price in an auction to award annual permits to operate in designated areas of the City.³ The minimum price for bicycles was set at USD 45 and for electric scooters at USD 60. The calculations were based on the cost of parking lots for motor vehicles and the number of micromobility vehicles that can be parked in a standard lot,⁴ construction costs for allocating dedicated space for parking shared bikes and scooters and the impact of these vehicles on the city. In the auction, companies could present up to 20 bids with different combinations of the number of vehicles to be operated and the payment they were prepared to make, at or above the floor price per vehicle. Proposals were submitted through software (developed by ADIP) to calculate their value, with permits awarded to the highest bids.

The process was designed to make the companies review their business models and optimise the number of vehicles to be operated in relation to how much they could pay. However, one participant (Federico Recke from Dezba) described the exercise as more like a cockfight, with the amounts bid for operating permits reaching an exorbitant level. Many activists (such as Areli Carreon) rather than a policy to promote sustainable motorised mobility the process became more of a tax collection mechanism. In the end the amount collected was USD 1 698 654, destined for a public fund for investment in infrastructure for cyclists and pedestrians (FONACIPE).

Advertising and sponsorships

In both cities the regulations forbid advertising of any kind other than use of the operator's brand. In Mexico City, the government made an exception to this rule for the acquisition of the city's Ecobici shared bicycle system by Clear Channel, under a contract awarding the company rights to use public spaces for advertising. The Ecobici system also receives a subsidy from the government but nevertheless still struggles financially.

Performance-based restrictions

There specific performance metrics to regulate the activity of the companies, nevertheless in both cities companies are required to present a fleet management plan in order to acquire a permit. The operator must report how many people work for the company and the infrastructure available to support the operational system of repair, maintenance and vehicle distribution.

Policy enforcement

In Mexico City, enforcement focussed on management of public space, and discussions with operators in pilots and in preparation for bidding for permits made it clear that units parked irregularly or out of operating areas had to be removed. The Mobility Ministry organised frequent meetings to get to know the operations of each company and verify compliance to each element of the regulations. Officials visited the workshops of the companies to get to know operating standards. However, after the auctioning of permits, some unsuccessful bidders that already had vehicles on the street continued to operate illegally. The government reacted by launching administrative procedures against these operators and impounding hundreds of vehicles. This was the case for Lime and Movo, which had to stop their operations in the city. Mobike continues operating today without a permit, demonstrating that the government does not have the capability to truly enforce the regulations. In Mexico, legal injunctions are available to contest administrative law through “Amparos”, designed to protect property rights from arbitrary expropriation. The procedure is over-used, with ordinary citizens using it for example to contest fines for traffic violations. New regulations are frequently challenged with amparos. Judges impose standards of proof of the soundness of regulation that authorities often find difficult to meet, creating uncertainty over enforcement and, for example, making fees paid for licences potentially reimbursable. Some of the shared micromobility operators issued amparos against the auction of operating permits, including some with successful bids. This may provide leverage for negotiating changes to the regulations in return for withdrawing amparos and has allowed some companies to keep operating even when violating the law.

In Bogotá regulation is enforced through verification of operation reports and shared data. As in the Mexican case, officials also visited workshops and storage units, and cross-checked the vehicles available in the app versus the vehicles appearing in the shared platform.

In both cities, shared information from operations is analysed by the government and recommendations are made in regular meetings for the improvement of operations. In Bogotá vehicles are impounded if the operator does not comply with recommendations. However, even since the issue of Circular 006, the regulatory framework is ambiguous, and it is uncertain if the government has granted legal permits to the companies.

The impounding procedures that government officials applied to the companies in the case of Bogotá at a very early stage and in Mexico City after the granting of permits, have impacted directly on the business models of the operators. Many of them never thought they would lose so many units and the administrative procedure to get the vehicles back is complicated. Many companies have had to stop operations as a result.

Is the policy meeting the goals it set for itself?

Policies should always be reviewed to determine if they are meeting the goals set. In both cities, the main goal was to establish order and control of public space, and the regulations applied did this. Nevertheless, the price was high, as today there are no shared micromobility vehicles in the streets of Bogotá in a city that lacks a public shared bicycle service. In Mexico City, only Dezba continues to operate legally, with 900

mechanical bicycles and ebikes; most of the companies started to fail before the Covid-19 quarantine compromised business. The biggest problem of all has been theft. Grin Scooters reported losing an average of 150 vehicles per day in December 2019 in Mexico City.

Lessons learned and how to improve micromobility regulations

- Legal framework: companies need stability in the legal provisions and permit system that makes up the regulatory framework, in order to provide certainty for investment.
- Business model: almost all the government agencies interviewed mentioned that they never had faith in the economic sustainability and permanency of the business models adopted by shared micromobility companies. And lamentably there were right. A combination of poor business model and administration with over-constraining regulation extinguished most of the companies. Permitting should be related in future to competency, indicated by experience acquired operating relevant services and financial plans.
- Advertising and sponsorship: additional funding streams such as in-app advertising should be authorised to support shared micromobility and public revenues from public contracts for advertising space might be linked to shared micromobility in the way support is provided to some public bicycle share systems. Examples include Citi Bike in Manhattan, the new system for Bogotá and the sponsorship recently agreed for Ecobici in Mexico City.
- Vehicle requirements: inadequate vehicle tracking systems have in some cases increased regulatory infringements and made vehicles more susceptible to robberies.
- Infrastructure: Cities need to develop a road safety plan to generate more micromobility users, build more infrastructure, including protected cycleways, 30 kph areas, traffic calming interventions, and the geometrical redesign of unsafe streets and avenues.
- Limits on vehicle supply: the number of units allowed must be sufficient to allow rotation in vehicle use. Mexico City made a very good exercise during the pilot analysis showing that some vehicles were underutilised but limits are often set below what is needed. Cities should build KPIs to incentivise good vehicle utilisation rates but reflect demand and allow for system growth.
- Tax contribution: Public policies towards extracting revenue from the sector need to be aligned with promoting sustainability. It is contradictory for governments to doubt the economic sustainability of the companies' business model but at the same time treat micromobility as a very profitable business from which it is possible to extract high rents. This leads many stakeholders to interpret the regulatory framework as directed to tax collection rather than part of policy to promote sustainable mobility.
- Economic contribution: fundamentally, it is preposterous that a bicycle pays a bigger direct contribution to its impact on public space than a taxi or other motorised modes of transportation. An auction applied to permitting micromobility services will inevitably be unsustainable if, as the public authorities believed, an unproven business model is unprofitable. Grin's scooters paid USD 336 per vehicle in Mexico City, almost the cost of one unit. There are better ways to allocate permits than award to the highest bidder. In both cities many companies failed as a result of inappropriate regulation rather than inherent unsustainability. Sustainable mobility is a very hard business environment in which to be profitable, as large scale public transport operations demonstrate. Regulation should be based on a better analysis of private costs and externalities.

It is better to construct policies to incentivise use of more environmentally sustainable modes and consider subsidising rather than taxing them.

- Social equity: policies to improve social equity are important to the Mobility Ministries in both cities but this has been neglected in the regulation of micromobility. Mexico City would like to see shared systems launched in marginalised areas of the city. Nevertheless, no authorisations have been issued to operate in such areas and no incentives provided, including to prevent theft. Pilot programmes in which governments subsidize operation in these areas, or expanded service provision areas should be introduced. At a very minimum, operation should be authorised.

Conclusion

The regulation of micromobility in Latin America is not so different from other OECD member countries. Deficiencies have been more pronounced, but are shared with other countries, simply the consequences of inappropriate regulation have been revealed more rapidly and both Bogota and Mexico City are marked by rigidity in the concept of regulation. Deficiencies include low caps on the number of vehicles, restriction to small determined areas of operation, rigid enforcement mechanisms with complicated administrative procedures to release impounded vehicles, and unsustainably high taxation. Each of these elements undermined the viability of the services and the contribution to non-motorised mobility that they could make. Combined they drove micromobility services almost into the ground.

From the data collected by Mexico City's Mobility Ministry and from the impact of regulation in both cities it is clear that:

- There is no need to establish a restricted service area. Operators contain the size of operating areas themselves for security reasons, and if a city wants to promote equity in the provision of services it should not limit service areas.
- Electric dockless bicycles represent an opportunity to substitute for car trips on longer rides, typical of commuting and work activities, and have been successfully linked with public transportation.
- Electric scooters have a different profile since most, although not all of the trips are made for shopping and recreational purposes.
- Micromobility could be a very good business, but not if there are only 2.9 trips per vehicle per day. Operators naturally seek higher utilisation and can be encouraged further through the design of the regulatory framework.
- There is a role for the public authorities to encourage use with provision of more protected infrastructure.

Looking to the future:

- More sensitive and flexible regulation is required for Covid-19 Pandemic times. Most of the companies have seen a reduction in demand of between 70% and 80%. In Bogotá there is more

flexibility on the regulation of vehicles now. There is no longer a limit on the number of vehicles or on service areas. Fees for permits have also been suspended until March 2021. However, after the pandemic everything remains uncertain.

- Mexico City announced in September 2020 that more concessions will be allocated. The new requirements, for 2021, are very similar to the last round but the minimum fees per vehicle will be lowered, with at least a 21% discount for bicycles and 41% for electric scooters. The Dezba bicycle company has received a free extension of its permit for one year, reflecting growing interest in from the government in the polyvalence of micromobility options.

Regulation needs to be based on good indicators that reflect the goals of mobility policy. Such indicators, including vehicle usage rates, require data. Micromobility companies and governments must develop better systems for sharing information and collecting data. Despite the adverse circumstances of the pandemic and the regulatory challenges, some micromobility operators continue to deliver services in Latin American cities and micromobility companies will continue to find ways to transform our cities.

Notes

- 1 Bogotá and Mexico City are metropolitan areas but the first one Bogotá has a population of almost 9 million people and Mexico City is a megapopulation with 21 million inhabitants.
- 2 The number of the rotation per bicycle doubled by passing from 6 to 11.1 in the case of Mobike company (SEMOVI, 2019).
- 3 The economic contribution did not contemplate that the vehicles used for micro mobility do not generate the same type of externalities, therefore the value of the occupation of a parking space is not the same.
- 4 Is the first time for a micromobility regulation where an auction is used to establish the economic contribution and the number of vehicles for a company. In transportation it is pretty common to apply an auction algorithm to solve assignment problems and is even better to make the bidding process more competitive (Bertsekas, D. and Castanon, D, 1989).

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Micromobility Policies for Sustainable Transport

This paper analyses regulations that support non-motorised mobility in Bogotá and Mexico City. It reviews the promotion of bicycles as a sustainable alternative to cars and the rapid implementation of cycling lanes as a substitute for public transport under the Covid-19 crisis. It also discusses the renewed interest in support for dockless micromobility sharing systems. It focuses on subsidies and revision of regulations as avenues to ensure that micromobility will make a durable contribution to sustainable mobility in these cities.

All resources from the Roundtable on Micromobility, Equity and Sustainability are available at:
www.itf-oecd.org/micromobility-equity-sustainability-roundtable