



TREND
SOFT MOBILITY AND PUBLIC TRANSPORT

In Cities, the Effects of the Pandemic Reveal a Concentrated Low-Carbon Mobility Market

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The organization of urban mobility is a key jurisdiction of local governments and ideal for testing out climate policies. In 2020, the pandemic jeopardized some of these strategies by putting numerous public transport operators in untenable financial situations, yet it also accelerated the roll-out of cycling infrastructure, to the point that the global bicycle market is struggling to satisfy demand, entailing the longest delivery times on record. The urban mobility resurgence currently revolves around concentrated hubs of dominant players.



DATA OVERVIEW

The pandemic has shifted urban mobility practices

With a fossil fuel reliance of 97%, the transport sector is currently responsible for about one quarter of greenhouse gas emissions (GHG) related to energy.¹ Forty percent of these emissions come from private vehicles, mostly used to transport passengers.² From 2000 to 2019, global emissions from transport increased by 17.2%, with wide variations between regions and sectors. Nevertheless, in 2015, while 166 of the Nationally Determined Contributions (NDCs) under the Paris Agreement recognized transport as a source of emissions, only 8% of them included reduction targets specifically concerning transport.³

In recent years, increasing numbers of public policies have aimed at reversing this trend. In 2020, 44 countries had adopted a national urban mobility policy (NUMP) to guide the organization of transport in urban environments.¹ Globally, from 2017 to 2020, the number of Sustainable Urban Mobility Plans (SUMPs) adopted locally to plan and deploy low-carbon transport in cities went from 1,588 to 1,686 (+6%), most of them in Europe (68%), although the biggest increase was in Latin America, which now accounts for 16% of these plans.¹

In 2020, the Covid-19 pandemic drew this double trend to a halt. On one side, following measures to restrict movements in numerous countries to curb the spread of the virus, transport-related emissions dropped by 19.4% compared to the previous year according to SLOCAT,¹ mostly thanks to the massive adoption of remote working (almost 48% of the working population in the United States, the biggest emit-

ter of greenhouse gases related to transport, at the peak of lockdown²). Yet on the other side, most urban public transport systems were hit hard by the crisis. Data from the Moovit journey planner app shows a drop in public transport usage of 93% in Lima, 85% in Bogotá and 72% in Los Angeles (**fig. 1**).⁴

In China, the number of public transport users halved from December 2019 to February 2020. In Brazil, where transport operators' financial equilibrium is highly dependent on large numbers of users due to a lack of state aid, the losses endured by the members of the National Association of Transport Companies totalled up to 184 million dollars a day.² By the end of 2020, operators in Salvador and São Paulo were bankrupt.⁵ In numerous cities, public transport usage has still not returned to pre-crisis levels. Transport for London is expecting a deficit of about 8.9 billion dollars from 2020 to 2022. San Francisco recorded a drop in usage of 90% in April 2020, which was still 75% in October 2020,⁶ and is not expected to return to pre-crisis levels before the end of 2022, according to the director of the San Francisco Municipal Transportation Agency.⁷ These difficulties can be put down to high rates of remote working, lower normal public transport usage than in Europe and Asia (and already decreasing since 2014), and a more systematic shift towards cars.⁵

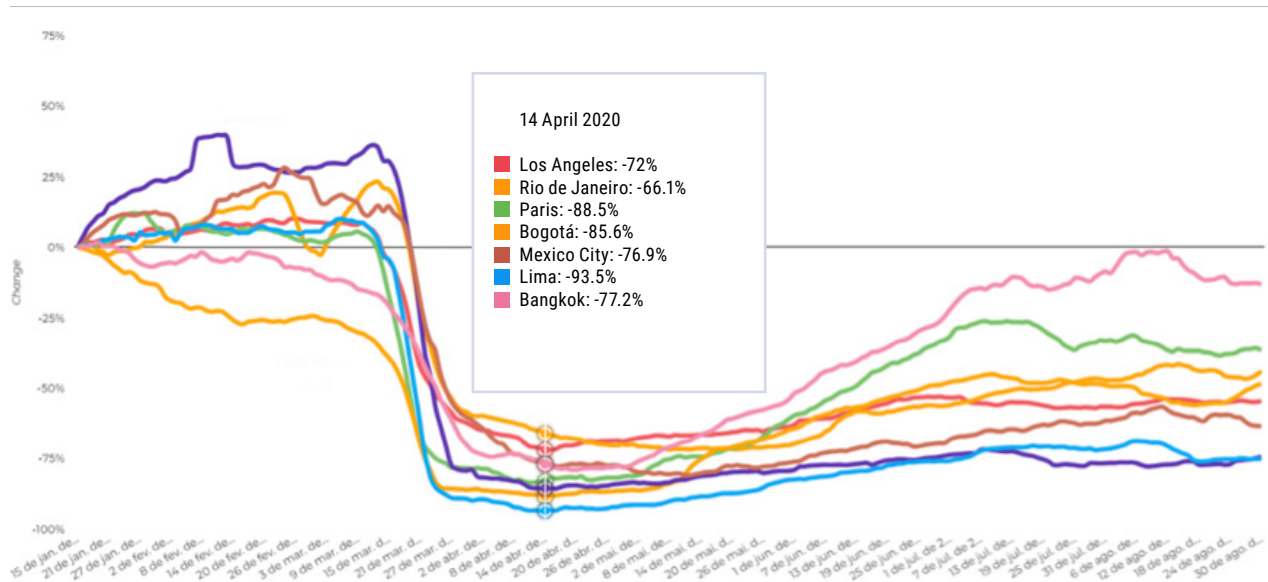
San Francisco is not the only place where cars have come out winners from the health crisis: in March 2020, at the end of the first lockdown, car traffic in China was higher than the 2019 average in Beijing, Shanghai and Guangzhou, and the number of subway users had dropped by 29% to 53% compared to pre-Covid figures.²

Another beneficiary of the "Covid effect" is walking. According to Moovit data, the average distance covered by foot

FIGURE 1

PUBLIC TRANSPORT USAGE FROM 15 JANUARY TO 30 AUGUST 2020 IN SELECTED CITIES

Source : [Moovit](#)



increased in numerous towns in 2019 and 2020, including in Curitiba (Brazil), Lima (Peru), Jakarta (Indonesia) and Istanbul (Turkey).⁸ In the United Kingdom, the number of regular walkers has gone up by 20% since the pandemic.⁹

Several exceptions are however worth noting. In Seoul, the disinfection of all buses and subway trains at the end of each journey, the rapid systematic adoption of facemasks, temperature checks of people accessing transport, and tracking of infected people proved effective in reassuring inhabitants and limiting the drop in public transport usage to 30% at the peak of the pandemic, before it rapidly picked up a few months later.⁵

Globally, local governments have put a large range of measures in place aimed at countering the rise of car use and maintaining the resilience of their public transport system: bus electrification, free public transport, renewed interest in Bus Rapid Transit (BRT) systems, etc. But the biggest winner to emerge from this period is undoubtedly the bicycle. All over the world, sales have soared and infrastructure has been put in place to accommodate high numbers of new cyclists, resulting in a market that is still struggling to keep up with the pace.

THE OBSERVATORY'S LENS

Local urban mobility strategies face a slowdown in global supply chains

Reduced use of public transport has not curbed the surge in new equipment

The electrification of buses for public transport has grown remarkably over the last few years. According to Bloom-

bergNEF, 39% of bus sales were of electric vehicles in 2020, compared to 1% of vans and trucks and 4% of cars.¹⁰ China, where electric buses represented 17% of the total bus fleet in 2017,¹¹ largely dominates the market, concentrating 97% of the 515,400 electric buses in service across the globe in 2020.¹²

On the other continents, the move to adopt electric buses is gaining ground. Despite the health crisis, global sales of electric buses went up significantly from 2019 to 2020 (+11.54%), while orders for the less-common plug-in hybrid (-20%) and fuel-cell models (-34 %) dropped dramatically.¹³ According to the European Alternative Fuels Observatory, around 6,000 electric or hybrid buses were operating in the European Union in 2020, which is almost three times as many as in 2018 (**fig. 2**). Electric buses represented 6% of new bus registrations in Europe in 2020 according to the European Automobile Manufacturers' Association.¹⁴ Denmark, Luxembourg and the Netherlands lead the way, with respectively 78%, 67% and 66% of their total bus fleet now running on electricity. Next come Sweden, Norway and Finland where 26%, 24% and 23% of buses, respectively, were electric in 2019.¹⁵ A study of the city of Trondheim (Norway) published in 2021 shows that the conversion of some of its fleet to biofuel or electricity led to a 37% reduction in the carbon footprint of the entire fleet.¹⁶ In Latin America, numerous cities have also embarked on electrifying their bus fleets: Bogotá purchased 406 electric buses in 2020 (**see Bogotá case study**), and Mexico bought 193.¹⁷ In the Caribbean, the island of Barbados (300,000 inhabitants) has put 33 electric buses into circulation in its capital, Bridgetown.¹⁴ In Africa, efforts to electrify bus fleets have been observed in South Africa,¹⁸ Uganda¹⁹ and Egypt.²⁰

The electric bus market is largely dominated by Chinese manufacturers, and in particular BYD, one of the global leaders in lithium-ion batteries. The manufacturer produces most of the electric buses operating in developing countries, and occupies 20% of the European market.²¹ In August 2021, for

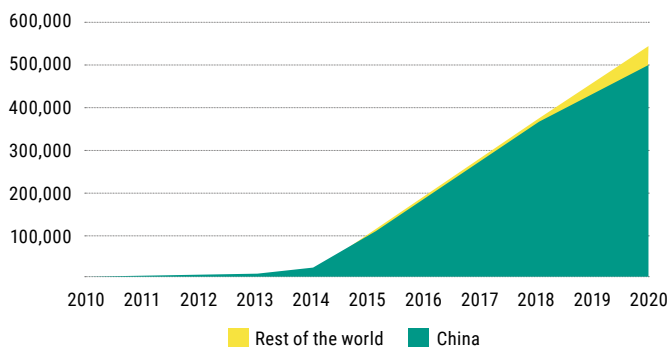


example, BYD delivered 76 new electric buses to the Finnish operator Nobina, fulfilling the biggest order in the country, for a total of 119 vehicles.²² The Chinese company also provided South Africa with its very first electric buses in the city of Cape Town.²³ In 2022, a protectionist law voted under the Trump administration in 2019 is due to come into force in the United States, prohibiting the use of federal funds to purchase buses, cars and trains from companies connected to a state. The measure in particular targets BYD and the Chinese locomotives manufacturer CRRC, both of which benefit from state aid to establish new battery production factories, according to a report by the American Congress, whose main conclusions are contested by BYD. While it is likely to give a boost to national manufacturers, like the Californian company Proterra, the measure could make it harder for the US to achieve its objective of electrifying 70,000 buses in the next eight years.²⁴

FIGURE 2

GLOBAL ELECTRIC BUS FLEET, 2010 TO 2020

Source : Data compiled by the author from the [Global EV Data Explorer](#), IEA, 2021



Lastly, after a peak in 2014 followed by a rapid decline, interest in Bus Rapid Transit (BRT) systems seems to have picked up since 2018. These bus lines can transport large numbers of passengers at high frequencies thanks to dedicated lines and infrastructure, coupled with specific amenities (e.g. priority systems at traffic lights and roundabouts). Nine new systems were put into service in 2019 and 2020, including in Salvador (Brazil), Fuzhou and Yongzhou (China), Peshawar (Pakistan) and Albuquerque and Oakland (USA). Some electric BRTs have been installed in France, in towns like Amiens and Bayonne.

Thus, the pandemic does not appear to have broken the trend of bus electrification, or discouraged municipalities from deploying BRT networks. In parallel, the crisis has considerably accelerated the development of individual mobilities other than public transport, and in particular the bicycle.

In the city, bikes have moved up a notch

At the start of the first lockdown measures to curb the pandemic, numerous cities put forward the bicycle as an ideal alternative to public transport, perceived as a potential hotbed for virus transmission.

From early 2020 and the start of the first anti-Covid measures, 1,800 cities in the world set up temporary infrastructure for

cyclists and walkers, closed roads, or established other measures to encourage people to move around by foot or bike.² The European Cyclists' Federation (ECF) reports announcements of 2,591 km of infrastructure suitable for cycling on the European continent since March 2020, 1,466 km of which have already been installed (**fig. 3**). Most of them (77%) are bike lanes, and the remainder are lanes with reduced traffic (18%), or prohibited to cars. For example, the city of Lyon (France) has announced investments of 320 million euros to develop soft mobility up to 2026, which includes creating over 1,700 km of cycle lanes, and lending 10,000 second-hand bicycles to young people aged 18 to 24.²⁵

In 2020, Zurich and Lisbon joined the CDF's Cities & Regions for Cyclists (CRC) network, the aim of which is to develop the use of bicycles in cities. These new memberships bring the total to 37 members from 19 countries, representing over 40 million inhabitants.²⁶ Bicycle infrastructure is starting to emerge on the African continent too, like in Nairobi (Kenya), which in 2015 committed to allocating 20% of its road infrastructure budget to non-motorized transportation,²⁷ a challenge undoubtedly facilitated by the nomination of a Bicycle Mayor responsible for developing cycling in the city. Following the election of Anne Luten in Amsterdam in 2016, this position now exists in 109 cities in the world, four of them in Africa (Nairobi, Gaborone, Cape Town and Kampala).²⁸ In 2019, Addis Ababa (Ethiopia) adopted a strategy to promote non-motorized transportation including the construction of 200 km of cycle paths.

Decreasing the maximum authorized speed not only makes public areas less frenetic and reduces the risk of fatal accidents, it also creates a more suitable environment for bike riding. In Spain, measures to limit car speeds established in Bilbao and Barcelona a few years ago, and Madrid, Valencia and Seville more recently, along with petitions by several municipalities and the Federación Española de Municipios y Provincias (FEMP) aimed at reducing road deaths, have encouraged the government to legislate in the same direction. Since 11 May 2021, 70% to 80% of Spanish roads have been limited to 30km/h. Starting from 30 August 2021, most streets Paris are now also limited to 30 km/h,²⁹ along with 250 towns in France.³⁰

All of these measures helped encourage the bike boom when the first lockdowns came to an end. Bicycle sales increased by 25% in France in 2020, 45% in the United Kingdom, and 65% in the United States.³¹ Measures like the "coup de pouce" program in France offering a 50 euro government voucher to repair a bike have also encouraged users to get their old bicycles out of the shed. Sales of electric bikes have shot up too. In 2020, they went up by 29 % in France³² and by as much as 145% in the United States.³³ Purchase support programs set up by cities like [Paris](#), [Vienna](#), [Guernsey](#) and [Madrid](#) have certainly fuelled the trend. Electric bicycles are also increasingly used to deliver merchandise: 100,000 "cargo bikes" have been sold each year since 2018 in Europe, 11,000 of them in France in 2020 (+354% in a year).³⁴

In addition, bicycles are riding on the micromobility wave that was further accelerated by the pandemic: the market included about 20 million vehicles in 2020, and is set to increase



by another 10% per year until 2025.³⁵ The sector is largely dominated by bicycles (98% of the fleet of shared vehicles in circulation), either organized into depot stations (often via cities) or free-floating (no stations). The *bikesharingblog* lists 1,882 bike-sharing systems (with and without stations) in the world, mostly concentrated in Europe, East Asia and North America.³⁶ In China, stiff competition between different market players keen to get on the bike-sharing bandwagon in the last few years has led to numerous bankruptcies, and seen thousands of bicycles abandoned at gigantic dumps.³⁷

As observed last year, the concentration of the free-floating bike-share market between the hands of a few players has extended to motorcycles, triggering for example the recent bankruptcy of the American pioneer Skip, and Unicorn, as well as buyouts of Spin by Ford and Boosted by Lime.³⁸ At the same time, Bird,³⁹ the market leader, and Helbiz⁴⁰ have gone public with the aim of upscaling. In the face of this rapid proliferation, numerous cities have had to put rapid security measures in place, like in Paris, where the maximum speed limit for electric scooters is due to drop to 10 km/h in some areas.⁴¹ Globally, short life cycles (under 30 days on average for an electric scooter⁴²) and modal shifts that benefit soft and public urban mobilities less than cars raise serious doubts about the benefits of this equipment for the climate and the environment. A study carried out in the summer of 2019 in Paris showed that only 7% of kilometres covered by a scooter replaced a car, compared to two-thirds for public transport and one quarter for cycling and walking.⁴³

Coupled with decreased production caused by lockdowns, this hike in bicycle sales and usage has resulted in shortages of parts and longer delivery times. Like all players in the sector, Accell, the biggest European bicycle group, has seen demand soar for every type of bike (road, racing, electric, etc.), leading to tensions in supply chains for all parts. As a result, delivery times have become longer, ranging from a few weeks to several months. In September 2021, delays for some parts were still as long as 540 days.⁴⁴ The sector is particularly dependent on a few groups that hold a tight monopoly on some parts, most of them with production units in Asia. Delivery is therefore dependent on the successive availability and lack of availability of parts (frames, forks, brakes, derailleurs, tires, wheel rims, etc.) and the main suppliers (Shimano, Tektro, SRAM, Fox, Suntour, etc.), periodically interrupted by waves of lockdowns and closures of Asian factories. The new restrictions imposed in Southeast Asia in August 2021 herald new complications in the following months.

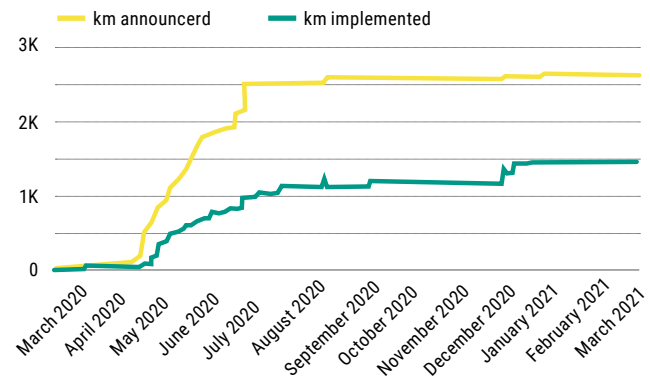
In particular, the Japanese company Shimano concentrates 65% of the global market for sprockets, cogs and brakes. Faced with demand up to 40% higher than in previous years,⁴⁵ the company is subject to a bottleneck along the entire chain, requiring up to 400 days to deliver some parts⁴⁶. Anticipating that this high demand will persist, Shimano has invested 180 million dollars in extending its production capacities in Singapore.⁴⁷ Some market players are nevertheless concerned that the boom will quickly dry up and undermine a market that has organized itself to hike up production.⁴² Consumers' frustration at having to wait up to several months to obtain

parts could also dampen their enthusiasm. However, the durability of cycling infrastructure and investments in equipment could have the effect of sustaining these new user practices over time.

FIGURE 3

NUMBER OF KILOMETRES OF CYCLE LANES ANNOUNCED (YELLOW) AND INSTALLED (BLUE) IN EUROPE SINCE MARCH 2020

Source : [European Cyclists' Federation](#)



Imbalanced public investments in bicycles could accentuate two-tiered mobility

The bicycle is often described as a democratic, socially just means of transport. This is because it is one of the cheapest transport modes, both for municipalities and households, and is used more by the poorest households.⁴⁸ Promoting cycling could therefore be a way to reduce inequalities.

Yet public investments in the bicycle tend to concern town centres, inhabited by the wealthy, bringing the risk of accentuating social inequalities. In the United States, the urban geographer John Stehlin has shown that the development of cycling in Detroit, Philadelphia and San Francisco has gone hand in hand with gentrification, and deepened space, gender and race divisions.⁴⁹ In France, figures published by the national statistics institute (INSEE) show that some bicycle usages are correlated with the level of education: to get to work, PhD holders are one and a half times more likely to use a bike than holders of a Master's degree, and three times more than those with only a high-school diploma⁵⁰ (however, they are more likely to work from home⁵¹). Often, the emerging trend for cycling among the upper classes is coupled with that of a more precarious population that sees the bike as a cheaper means of transport.

Similar criticisms have been made about measures to make public transport free of charge. In the United States, for example, numerous municipalities made their public transport systems free during the pandemic, and pilot programs are due to start in New York, Chicago and Los Angeles to sustain this measure.⁵² In France, 35 cities, four of them with more than 100,000 inhabitants, have established free public transport.⁵³ For example, in Dunkerque, the free transport initiated in 2018



has allowed at least 50% of users to take the bus more often, and 5% of them have even stopped using their cars, or decided not to buy a second one.⁵⁴ Estonia became the first country to make all public transport free in 2018, and Luxembourg followed suit in March 2020. But this free transport tends to benefit people living in town centres, who are generally better off and have easier access to public transport. It also requires considerable financial resources, which are diverted from other issues just as important for users (punctuality, access for people living on the outskirts of cities, etc.).⁴⁷

Lastly, in general, men use bikes more than women. In Bogotá, only 24% of cyclists are women, and the proportion is similar if not worse in other cities in Colombia.⁵⁵ One of the main reasons is serious security problems on the road, where motorized vehicles still constitute a threat, street harassment is common, and the risk of theft is high. Bogotá has committed to attain gender parity for bicycle usage.

Setting up cycling infrastructure can be a way of counterbalancing these inequalities. The city of Los Angeles has invested in a number of cycling infrastructures, leading to a 22% increase in bike use since 2017. While women only represent 16% of bicycle users in the city, the number of female users of bicycle doubles in streets with cycle lanes.⁵⁶ In New Delhi, public transport was made free of charge for about one million women in 2019.¹



KEY TAKEAWAYS

Two years after the start of the Covid-19 pandemic, the impacts of lockdowns are still putting pressure on the organization of urban transportation and mobility, while benefitting established companies. With the drop in their revenues, transport operators have had to adapt to a slow rebound in usage. Nevertheless, the electrification of buses continues and, having conquered China, is entering new markets in Europe and Latin America, led by the omnipresent manufacturer BYD. As the key measure marking the resilience of urban mobility, the bicycle is starting to pay the price of its success generated by soaring demand and municipal investments in cycling infrastructure. All around the world, bicycle users and sellers are having to cope with long delivery times and shortages of spare parts, in a market with only a few manufacturers. This market concentration can also be observed among emerging companies in the free-floating sector, dominated by a handful of players that are moving into a growing number of urban areas and absorbing their smallest competitors.

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[RETURN TO PREVIOUS PAGE](#)

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