



TRENDS
URBAN TRANSPORT

Beyond the mobility transition, cities are reorganizing the urban space for low-carbon mobility

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2022 does not (yet) mark the end of cars in cities. Nevertheless, municipalities are not only making their public transport fleets greener thanks to electric and hybrid buses, they are also striving to reduce the number of cars on the road. The car's place in urban mobility is shrinking, sometimes even disappearing from certain neighbourhoods, at certain times of day, depending on certain driving conditions. Active mobility is also gaining ground, with cycling and walking leading the way.



DATA OVERVIEW

From one continent to the next, different paths lead to the same goal: To make public transport greener

Relying on 97% fossil fuels, the transport sector is currently responsible for around a quarter of greenhouse gas (GHG) emissions related to energy.¹ From 2000 to 2019, emissions from transport around the world went up 17.2%. Forty percent of these emissions come from urban mobility.²

Local authorities, primarily cities, are therefore in a key position to implement policies to reduce emissions from urban mobility. Many have set ambitious targets to get there. Copenhagen is aiming at carbon neutrality for 2025, while Greater Manchester wants half of all journeys to be made by public transport, walking or cycling by 2040,³ and Buenos Aires is promoting “healthy” mobility by encouraging pedestrians and cyclists (**SEE BUENOS AIRES CASE STUDY**). Bogota has set up a climate plan that mostly relies on urban mobility to reach carbon neutrality by 2050, reducing the number of kilometres covered by vehicles by 10% in 2050.⁴ These actions fit in with a general trend in cities that are adopting carbon neutrality objectives – for example, 1,143 towns have joined the initiative Cities Race to Zero, with a commitment to reach “net zero emissions” by 2040 or earlier.⁵

In 2020 and 2021, the Covid-19 pandemic and the restrictions imposed on journeys had a considerable impact on urban transport: transport is in fact the only major sector for which

2021 emissions remained well below 2019 levels (about 600 Mt less), more as a result of reduced activity than efforts to decarbonize.⁶

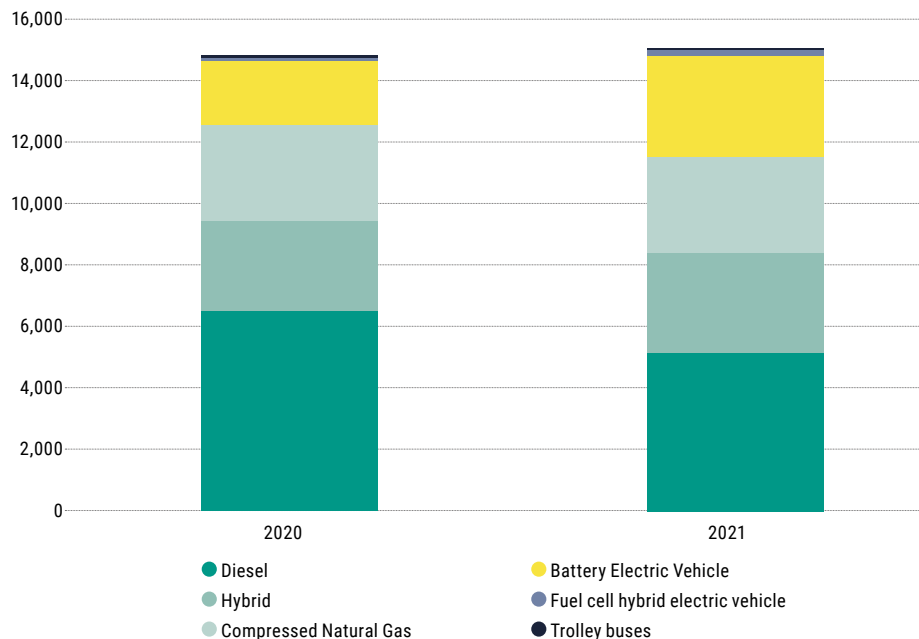
Nevertheless, initiatives are blossoming. One particular lever is being employed by towns that want to reduce their urban pollution and transport emissions, on all continents: the electrification of public transport vehicles. In fact, global sales of electric buses have shot up by 40%, bringing their number to about 4% of the total rolling stock.⁷ This increase is due to different factors depending on the continent: regulation in the European Union, subsidies in Asia, and funding programmes responding to high demand in South American cities.

In Europe, in addition to greater availability of electric buses and a total cost of ownership (TCO) comparable to that of a diesel bus thanks to relatively low electricity prices, the recent boom in sales has mainly been driven by regulations. The revision of the EU Clean Vehicles Directive, adopted in 2019 and in force since August 2021, has established minimum proportions of “clean vehicles”^a and zero-emission heavy duty vehicles (electric or hydrogen) when renewing public fleets. These rates vary from one country to the next and one type of vehicle to another (cars, utility vehicles, buses, etc.). For example, from August 2021 to December 2025, thirteen Member States must incorporate 45% of clean buses in their public orders, half of which must be “zero emission”, while for Romania the target is 24%, and 27% for Croatia. As a result, the share of electric buses in new registrations in the EU has risen sharply, from 12% in 2019 and 15% in 2020 to reach 22% in 2021⁸ (**FIG. 1**). For the first time, in 2021 three countries bought more than 500 electric buses, which together make up almost half of the 3,282 electric buses purchased in Europe: Germany

^a The directive includes in this category vehicles running on gas, biofuels, electric batteries, hydrogen, and hybrid vehicles.

FIGURE 1
REGISTRATIONS OF BUSES IN 2020 AND 2021 ACCORDING TO PROPULSION TYPE

Source: UITP, based on data from Chatrou Solutions (data for the EU + UK + Iceland + Switzerland + Norway)



(555), United Kingdom (540), and France (512). The total fleet of electric buses in circulation on the continent comprised over 9,000 buses in late 2021, which is more than six times the 2017 figure. Some cities are way ahead, totalling 70% (Amsteland-Meerlanden, Netherlands), 65% (Osnabruck, Germany) and 62% (Jaworzno, Poland) electric vehicles in their fleet. The Clean Bus Europe Platform (CBEP)⁹ was created online to monitor the application of the directive and help cities, transport authorities, transport operators, manufacturers and finance organizations to exchange their expertise and good practices with the aim of accelerating the roll-out of “clean buses”.¹⁰

Nevertheless, the leading means of alternative propulsion for European buses is gas, because the necessary equipment is cheaper to buy and it can be easily substituted with biogas, which has a smaller carbon footprint. Compressed natural gas (CNG) for vehicles represents about two-thirds of the alternative fuel bus fleet listed by the European Alternative Fuels Observatory (EAFO),¹¹ although the trend slowed down slightly last year: in 2021 the EAFO recorded the lowest number of registered gas-fuelled buses since at least 2008. French cities are particularly keen on this source of energy: in 2021, 54% of the more than 3,000 new registrations around the world were recorded in France, where Iveco is the leading European manufacturer.¹²

In China and India, public subsidies act to stimulate local supply. In China, electric buses benefit from the government’s proactive policy aimed at electric mobility.¹³ The 378,000 electric buses in the country are manufactured by the two giants BYD and Yutong and represent 98% of the global fleet currently in service,¹⁴ and 17% of the domestic bus fleet. In India, government subsidies (FAME – Faster Adoption and Manufacturing of Electric Vehicles) enabled 6,265 electric buses to

be purchased in 2021.¹⁵ Other local subsidy programmes have also provided similar impetus, such as in the state of Kerala (50 electric buses) and the city of Pune (350 electric buses).¹⁶

In Latin America, international finance programmes give shape to the ambitious targets put forward by states and cities to purchase only “zero emission” buses (Chile and Colombia in 2035, Uruguay in 2040). Financed by the International Council on Clean Transportation (ICCT) and the C40 city network, the project ZEBRA (Zero Emission Bus Rapid deployment Accelerator) gathers cities, manufacturers and operators to accelerate the conversion of bus fleets in major cities on the continent (Mexico City, Medellin, Sao Paulo, Santiago de Chile, etc.). Bogota, the Latin American city with the biggest electric bus fleet totalling over 1,000 buses in 2021, officialized an order of over 400 new units from the French group Transdev in April 2022.¹⁷ In total, 2,564 electric battery buses were on the roads in Latin America in February 2022.¹⁸ This figure is set to rise in 2023 – for example, the Grand Santiago region in Chile will be doubling its current fleet of 800 buses with the acquisition of new electric buses that should be in operation for the start of the year.¹⁹

In parallel, the TUMI project, led by ICLEI, C40, SLOCAT, WRI and UN Habitat, supports electric mobility in cities in the Global South. As part of the TUMI E-bus Mission, launched in September 2019, Bogota, Mexico City, Kampala, Jakarta, Mumbai and four other Indian cities are part of the 20 “Deep Dive Cities” selected to receive support to develop and implement individual roadmaps for electric buses. More than 100 beneficiary cities should be ready for intensified deployment of electric buses by the end of 2022. The mission’s aim is to roll out 100,000 buses in 500 cities by 2025 and save up to 15 million tons of CO₂.^{20,21}



All of these efforts, coupled with the boom in electric lightweight vehicles (SEE “ROAD TRANSPORT” TREND) are having the effect of “greening” public fleets, but do nothing to alter the dominant trend: the car is still king of the road. In 2020, the observation made by the European Court of Auditors in its special report on urban mobility is striking: “Although cities have put in place a range of initiatives to expand the quality and quantity of public transport, overall, there has been no significant reduction in private car usage. Although some air quality indicators have slightly improved, there are still many cities exceeding EU minimum air quality standards. Greenhouse gas emissions due to road transport have been steadily increasing.”²² The irruption of Covid-19 did little to improve things. In France, for example, the increase in teleworking and fear of contamination led to a rise in the share of car transportation in 2021 for the first time in years.²³

To compound matters, the huge rise in e-commerce during Covid, which seems to have become an established feature, has undoubtedly increased urban traffic. The sector has in fact expanded considerably: 80% of people who answered a survey in Hanoi said that they now shopped online more than they did before Covid.²⁴ This type of shopping has also opened up to include new customers (e.g., an older demographic) and new products (groceries).²⁵

Therefore, faced with the difficulty of triggering a massive modal shift and reducing the place of the car in cities, working on the modes of propulsion of vehicles is necessary, but far from sufficient. Municipalities are therefore also trying to reorganize themselves spatially and geographically with the aim of giving more space to types of transport other than cars, creating quiet areas, and even reducing the mobility needs of their inhabitants.



THE OBSERVATORY'S LENS

Spatial organization as the new key to alleviate urban traffic

The way that urban space is allocated creates competition between different uses in a city: habitat, journeys, leisure, shopping, services, etc. In the 20th century the clear winner was the car, which gradually ate up the town, ultimately taking up over half of the public space in numerous cities. In the 21st century, the match is bound to be closer: cities are attempting to give space to other modes of transport, sometimes by restricting, even banning access for cars. Cities “are redistributing public space”,²⁶ both for environmental and social reasons,²⁷ by allocating more space to bicycle and pedestrian infrastructures. This trend, which was already in place but gained ground during the Covid-19 pandemic, has seen several cities, such as Paris,²⁸ Amsterdam,²⁹ and even Melbourne,³⁰ begin to eliminate parking spaces for cars and replace them with bike lanes, sidewalks, and sometimes green areas.

Cycling infrastructure: emergency measures now set to stay

The biking boom observed during the first lockdowns in numerous cities, encouraged by the rapid installation of new cycle lanes to avoid crowding and Covid-19 contamination in public transport, seems to be here for the long term.

Numerous cities have decided or plan to make permanent these initially temporary bike lines: Bogota (which is currently setting up a self-service bike system), Paris, Sydney,³¹ Mexico City,³² Toronto,³³ etc. For some, these installations decided in a hurry have triggered planning policies for active mobility. After closing over 160 km of roads to cars during lockdowns (for the use of pedestrians, bicycles, and bar and restaurant terraces), the city of New York has set an objective of converting 25% of car traffic areas into spaces for pedestrians, cycling, green areas, or special bus lanes as part of its NYC 25x25 plan.³⁴ Also in the USA, Los Angeles wants to make permanent its “Slow Streets” programme set up during the pandemic.³⁵ The city of Minneapolis has also been applying itself to maintaining and improving cycling infrastructures, dating from even before the pandemic. Over 400 km of cycle lanes already exist in the city, and another 220 km are planned by 2050.³⁶ According to the country's biggest advocacy organization for the bicycle, the League of American Bicyclists, Boston, Chicago, Austin, Oakland and Missoula have all seen an exceptional rise in journeys by bike over the last decade due to better planning and the development of safer cycling infrastructures.³⁷

Given the now acknowledged importance of strong political support to accelerate uptake of the bicycle in numerous cities,³⁸ many subsidies and financial packages to support bike riding have been put in place to accompany and strengthen these new practices. The European Cyclists' Federation (ECF) lists about 300 tax incentives or purchasing aids in Europe set up by national, regional and local authorities, a figure that has “increased significantly” since 2019.³⁹ The market is growing fast on the continent: 13.5 million bikes were manufactured in the EU in 2021, which is 10% more than in 2020, and 11% more than in 2019,⁴⁰ and 22 million bikes were sold in Europe in 2021, the highest sales figure ever recorded.^{41, 42}

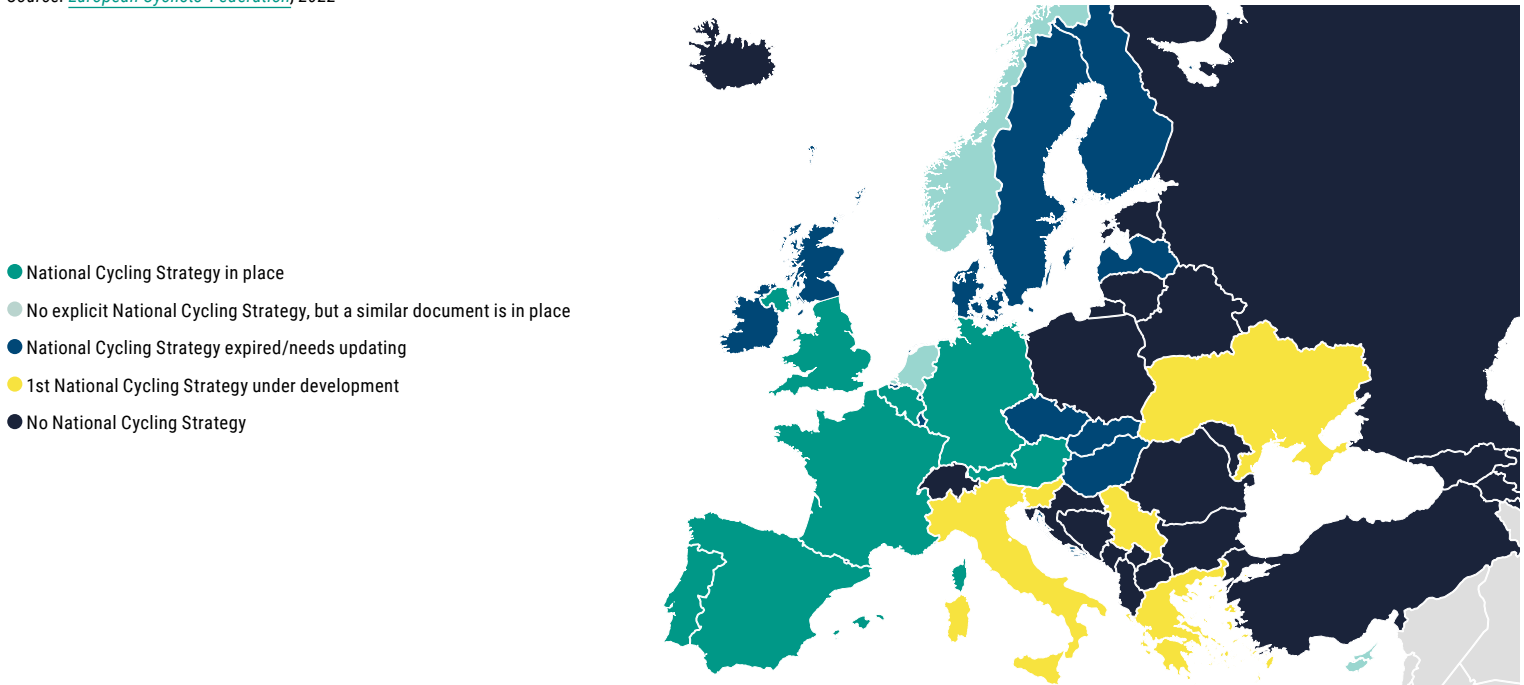
Despite this boom, the objective of doubling bicycle use adopted by around fifty European countries at the WHO pan-European conference in Vienna in 2021 may not be reached. In its report on national strategies to promote cycling,⁴³ the ECF observes that, since the pioneering adoption of a cycling strategy by the Netherlands in 1990, despite an increased number of countries with such strategies, more than half of European countries are still without one (FIG. 2). The vice president of the European Commission, Frans Timmermans, announced his plan to unveil a joint initiative between the European executive and European MPs in fall 2022 to strongly develop the bike in Europe, in terms of both usage and manufacturing.⁴⁴

Of the 23 strategies that have been adopted, most of them (12) are at their early stages at national level. Apart from Northern Ireland, which is planning its cycling policy over 25 years (2015-2040), all have a timespan of less than ten years.

FIGURE 2

STATE OF NATIONAL CYCLING STRATEGIES IN EUROPE

Source: [European Cyclists' Federation, 2022](#)



Almost all aim to promote the combined use of bikes and other means of transport, change road traffic rules to make cycling safer, extend the cycling infrastructure network, finance pilot projects to develop cycling, and facilitate the exchange of good practices between different stakeholders.⁴⁵ Eleven national strategies have also established concrete targets to increase the share of cycling in transportation, like Austria, which is aiming for at least 13% by 2025.⁴⁶

In China too, the demand for bicycles has shot up, both as an alternative to public transportation when Covid-19 was rife (the use of self-service bikes had more than doubled in Beijing by the end of the first lockdown)⁴⁷ and as a new sport for the middle classes, with over 20 million people cycling at national level according to the Chinese cyclists' association. This situation is also the result of Covid-19 lockdowns, when the authorities closed gyms. In 2021, the Chinese market was worth between 12 and 15 billion dollars.⁴⁸

The combination of other forms of transport with bikes, evoked in European strategies, also plays a key role to ensure the connectivity of the last mile in public transport, like in Singapore, or Jakarta, where the bike lanes that link the Harmoni BRT mean that five times more people can get to the centre in 15 minutes, than by walking.^{49,50}

Low-emission zones gaining ground over the use of internal combustion engines

As well as installing infrastructures to encourage the adoption of active mobility, towns are increasingly resorting to regulations to limit the circulation of the most polluting cars. In late 2021, REN21 listed 270 cities that had set up Low Emission Zones (LEZs):⁵¹ urban areas to which access is restricted and sometimes prohibited for vehicles that do not respect specific emissions standards (FIG. 3). This is 21 more cities than last year.

Most LEZs are located in Europe, led by Italy with 172. In the European Union, the United Kingdom, and Norway, the total number of LEZs rose 40% between 2019 and 2022, from 228 to 320, and is likely to increase by another 58% by 2025 (507 LEZs in total) thanks to laws voted in Spain, France and Poland.⁵²

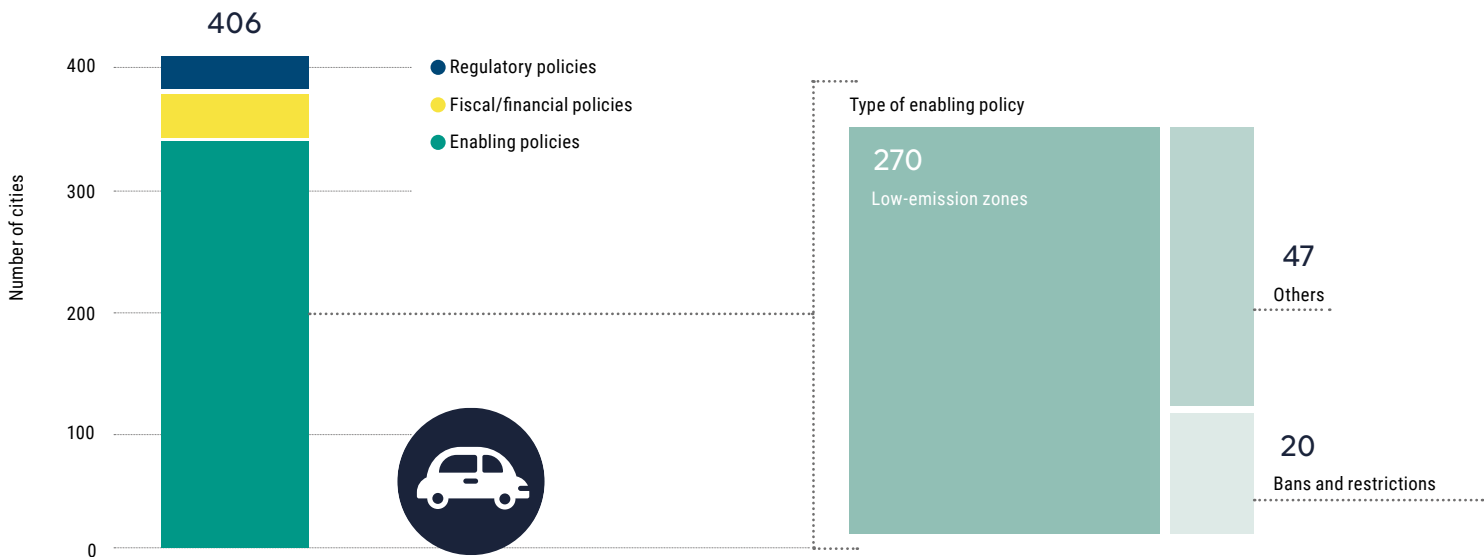
The impact of an LEZ is strongly dependent on the system decided by the municipality. Even when a national government establishes an obligation to create LEZs, cities can decide which vehicles are concerned, fix the thresholds, determine the area, and set up specific traffic controls, all of which influence the impact of the initiative.

The creation of these zones can generate tensions with those living and working in the area. Criticisms include a lack of clarity surrounding restrictions, such as in Italy, where numerous laws at different decision-making levels apply to these measures in the absence of a clear national framework.⁵³ LEZs can also bring a risk of widening inequalities in an area, both because the poorest people find themselves unable to access certain zones, and because they tend to live far from the city centres in which LEZs are located, and do not therefore benefit from the resulting better air quality.⁵⁴ In New York, an urban toll that could charge drivers 23 dollars to enter the heart of Manhattan in order to reduce traffic and finance public transport has proved controversial.⁵⁵ London is the first city to have created an Ultra Low Emission Zone (ULEZ), with stricter emissions thresholds, that covers a quarter of the city. The UK capital has also created Low Traffic Neighbourhoods to encourage active mobility. Yet the creation of these neighbourhoods has generated considerable protests and public demonstrations gathering thousands, reflecting the opposition of numerous residents angry about having to deal with longer journey times and more complicated deliveries.⁵⁶

FIGURE 3

NUMBER OF CITIES HAVING ONE OR MORE TRANSPORT-SPECIFIC POLICIES IN PLACE

Source: [REN21, 2022](#)



LEZs are therefore generally tools to improve air quality rather than designed to limit greenhouse gas emissions, but they nevertheless generate numerous joint benefits: studies evaluating the impact of these zones generally indicate decreased CO₂ emissions along with lower concentrations of atmospheric pollution.⁵⁷

Some cities are even going as far as to experiment the creation of “zero emission” zones (ZEs) that prohibit the circulation of combustion-powered vehicles. After several pioneering examples, such as in the United Kingdom, Europe could still take the lead: 35 ZEs are planned for 2030, mostly for urban logistics, such as in the Netherlands, where this type of zone could be commonplace for urban freight in most cities by 2025⁵⁸. Similar measures have been adopted or are planned for urban freight in Shenzhen, Foshan and Luoyang in China.⁵⁹

Areas reserved for soft mobility

Lastly, as well as creating infrastructures for soft and active types of transport that often take up space previously dominated by cars, and restricting the circulation of the most polluting vehicles in certain areas, numerous cities now prohibit the circulation of cars in some of their neighbourhoods in order to make way for other ways of getting around, especially walking.

Pedestrian neighbourhoods are now a familiar feature of many cities around the world, and European towns were the frontrunners in creating pedestrian areas.⁶⁰ In France, since the first pedestrian street was created in Rouen in 1971, walkers have been steadily gaining ground. Most recently, Nantes, Toulouse, and Strasbourg have blocked off streets to traffic

during the summer, or only in the evenings to limit the impact on drivers.⁶¹ Paris also features a number of pedestrian streets, which are however accused of fostering gentrification because they push up rental prices in the surrounding areas and attract more tourists.⁶² Cities like Ghent and Nuremberg have also been pioneers in developing pedestrian areas, and Nuremberg still possesses the biggest zone for pedestrians in Europe.⁶³

In Brussels, the “Good Move” plan, which is the 2020-2030 mobility strategy for the Brussels-Capital region, was designed based on a “specialization” approach to the public space: each street has been attributed with a different role depending on its area and context. Some will soon only be open to cyclists, or public transportation, or cars. Since 2016, the city of Oslo has been implementing its “Car-free Livability” programme, which effectively makes the city centre free from cars, while progressively improving pedestrian facilities. During the life of the programme, the number of pedestrians in these zones has increased by 14%, and the number of people spending time in the different urban areas has shot up by 43%. The share of bicycles and public transport used has also increased.⁶⁴

In Barcelona, the municipality has taken advantage of the configuration of its Cerda plan to establish “superblocks” of buildings and green belts of streets connecting squares, therefore creating exclusive zones for soft mobility (**SEE BARCELONA CASE STUDY**).

The movement is gathering speed, in particular on the American continent. In Buenos Aires, the local government has improved the pedestrian infrastructure and created several



transitory pedestrian areas in the city, which are closed to traffic on weekends and public holidays (SEE BUENOS AIRES CASE STUDY). In the United States, where the car reigns supreme, highly populated cities like New York and Philadelphia have made their streets pedestrian, especially since the pandemic.⁶⁵



KEY TAKEAWAYS

A strong move to decarbonize urban modes of transport is underway with the energy transition of motorized vehicles. Along with light-duty vehicles (SEE "ROAD TRANSPORT" TREND), buses are making a clear shift towards electrification, driven by different approaches depending on the continent: regulation in the European Union, state subsidies in India and China, strong municipal ambitions and international funding programmes in South America. Nevertheless, the volumes involved are still too small to compete with combustion engines; additionally, the accumulation of vehicles does not help the decarbonisation of the sector.

At the same time, other levers, i.e., the modal shift and sufficiency, continue to take a back seat in the process. To stimulate these levers of transformation, many cities are making efforts to rethink the urban space to give more room to infrastructures for active mobility, and restrict or even prohibit the use of cars. Bicycles, which became extremely popular during the pandemic, continue to gain ground: once-temporary measures are now established features in towns. Cities are also rethinking the way that they organize the public space with the creation of different zones – low-emission (or zero-emission) zones, pedestrian areas, and similar measures. These actions are motivated by both environmental reasons, such as reducing emissions and improving air quality, and social issues, to allow the mobility of every citizen without having to depend on individual internal combustion vehicles and fossil fuels.

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