CLEAN CITIES

The development trends of low- and zero-emission zones in Europe

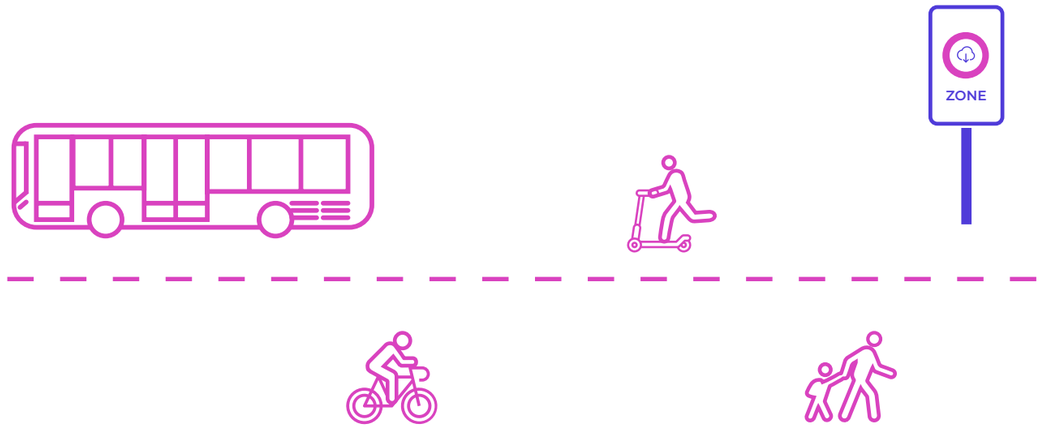
This briefing was written by the Clean Cities Campaign, a campaign hosted by Transport & Environment, using data purchased from Sadler Consultants Ltd.

Lead authors: Zachary Azdad, Barbara Stoll, Jens Müller
Design: Laura Yates, laurayates.co.uk

Acknowledgements

The Clean Cities Campaign would like to express their gratitude to all partner organisations that have contributed to this project and especially to Lucy Sadler from Sadler Consultants Europe GmbH for providing detailed data and expertise on low-and zero-emission zones, as well as to Sandra Wappelhorst from the International Council on Clean Transportation (ICCT) for her advice on zero-emission policies. The Clean Cities Campaign is solely responsible for the content of and the views expressed in this document.

Contents

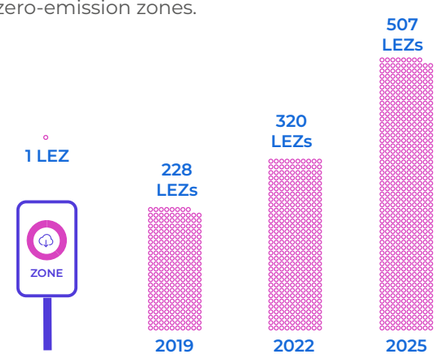


Executive Summary

Low-emission zones (LEZs) that regulate access to urban areas based on the emissions of motorised vehicles are one of the primary clean air measures in European cities. They have proven effective in curbing toxic air pollution and, for the strictest schemes as a secondary effect, can also reduce road traffic overall and boost the local economy. While the first such schemes were introduced two decades ago, low-emission zones saw a particularly strong uptake after the adoption of the EU's air quality directive in 2008, the Dieselgate scandal in 2015 and consequent court cases lodged by civil society.

A new analysis of the most comprehensive database of low-emission zones in the EU-27, the UK and Norway[1] shows that there is a sustained momentum and a new wave of low-emission zones underway:

- **Between 2019 and 2022**, the total number of **active LEZs** has increased **by 40%**, from **228 to 320**.
- **By 2025, 507 LEZs** will be in place in Europe (which means a **+58%** increase compared to June 2022), namely due to new national laws coming into force in France, Spain and Poland that mandate or support the adoption of such schemes.
- By 2025, at least **27 existing LEZs** will have been **expanded or tightened** (meaning progressively stricter restrictions of polluting vehicles), including in major cities such as London, Paris, Brussels and Berlin.
- Zero-emission zones (ZEZs), which will no longer allow the use of vehicles with internal combustion engines, are also emerging. Two small scale zero-emission schemes already exist in Oxford and parts of Central London, and there are plans for a total of **35 ZEZs to be implemented by 2030**, including 26 solely addressing delivery vehicles in the Netherlands.
- Among the 100 cities selected for the "EU Mission for Climate-Neutral and Smart Cities", only 45 currently operate low-emission zones and only 10 have any plans for the introduction of zero-emission zones.



According to the Clean Cities Campaign, the implications of these results are clear: Cities should immediately start introducing low-emission zones if no such measures are currently in place, and all LEZs should have a clear path towards becoming zero-emission zones by 2030 at the latest, in order to effectively and immediately tackle the double challenges of air pollution and climate change. Governments should provide a clear legal framework and sufficient resources. In addition, the EU should support cities with targeted funding that is conditional upon the adoption of "Sustainable Urban Mobility Plans" (SUMPs) that include effective clean air policies. Only by doing so will cities be able to effectively make steps to drastically reduce and eventually eliminate the pollution caused by road transport.

Introduction

Road traffic, air pollution and the need for low-emission zones

Photo: Jacek Dylag / Unsplash

Air pollution is "the biggest environmental risk to health" and "a public health emergency"[2] according to the World Health Organization (WHO), causing more than 300,000 premature deaths a year in the European Union alone.[3] It is also responsible for a wide range of illnesses that cause long-term suffering and cut lives short.[4] The scientific evidence clearly shows that there are no safe levels of air pollution and that urgent action is therefore required.[5] This is also reflected by the new air quality guidelines that the WHO published in 2021 that increased the sense of urgency and tightened the recommendations forming the basis for the EU's and the UK's clean air laws.[6]

> EU air quality limits are being breached in more than 100 cities across the continent

Cities are at the forefront of the clean air struggle as many are pollution hotspots, with EU air quality limits being breached in more than 100 of them across the continent.[7] The number of citizens at risk is also particularly high in urban areas, with cities accounting for only 4% of the EU's land area but 75% of its population.[8] Given almost a quarter of Europe's greenhouse gas emissions from transport come from cities[9], it is imperative that urgent action is taken in cities.

Road transport continues to be one of the main sources of toxic air pollution, and especially of nitrogen oxides (NOx).[10] Road vehicles emit 39% of the pollutant that was at the centre of the Dieselgate scandal.[11] Vehicles with internal combustion engines also emit a wide range of other toxic pollutants, many of which are currently not regulated in the European Union.[12] Even new generations of diesel cars have been found to emit toxic levels

of pollution.[13] Research by health experts showed that transport-related air pollution cost the average European city resident €1,276 per year, with lower income citizens and regions being disproportionately affected.[14]

Effective action is therefore urgently needed and low-emission zones are a proven tool to curb air pollution from road traffic. Low-emission zones (LEZs) are areas where the most polluting vehicles are regulated.[15] Usually this means that vehicles with higher emissions cannot enter the area. In some low-emission zones the more polluting vehicles have to pay more if they enter the zone, and the types of vehicles regulated (e.g. cars, vans or heavy-duty vehicles) vary across cities. A 2019 literature review by Transport & Environment (T&E) found that many LEZs delivered strong reductions of the principal pollutants, including nitrogen dioxide (NO2) that mainly forms from NOx emissions.[16] The French Ecological Transition Agency (ADEME) also found that LEZs have accelerated the renewal of the vehicle fleet and thereby contributed to reducing air pollution.[17]

As a secondary effect, low-emission zones with a sufficiently strict standard can also reduce motorised traffic and boost the local economy.[18] The (Euro 6/VI diesel, Euro 4 petrol) London Ultra Low-Emission Zone (ULEZ), for instance, has contributed to reducing traffic by 3% to 9%, depending on the time and the area.[19] The LEZ in the Belgian city of Ghent helped, together with its Limited Traffic Zone, Circulation Plan and scrappage schemes, to reduce residents' car ownership within the zone by 10% over a period of two years[20]. Finally, reductions in motorised traffic also help reduce fuel consumption, which is all the more important in the context of Europe's efforts to wean off Russian oil imports that fund the war in Ukraine.[21] [22]

Looking ahead, low-emission zones will have to become zero-emission zones if Europe is to achieve its climate protection and public health objectives. Mitigating the climate crisis and providing air that is safe to breathe will require cities to rapidly and fully switch to zero-emission transport, including focusing on walking, cycling, micro mobility, public transport and shared electric vehicles. The most important instrument in this regard are zero-emission zones (ZEZs) in which only the aforementioned forms of zero-emission transport are permitted. These ZEZs are the natural progressions of LEZs. As shown below, several large European cities like Amsterdam, Paris, London or Brussels have already adopted plans to introduce such zones. These local developments go hand in hand with the ongoing debate at the European level on a phase-out of the sales of new vehicles with internal combustion engines. In June 2021, the European Parliament voted in favour of a phase-out by 2035 and member states will soon define their position.[23]

Brussels. Photo: Quentin Guyot / Clean Cities Campaign

Low- and zero-emission zones are being promoted at all political levels in Europe

The need to act at city level has been acknowledged at all **political levels**, from the EU and UK government down to the local level.

At the city level, low-emission zones have become the most frequently used type of "urban vehicle access regulation" (UVAR)" in Europe. Their introduction has often been driven by EU and UK clean air laws, court cases initiated by civil society organisations as well as the public debate around the Dieselgate scandal. Several progressive cities have made additional pledges to transition to clean(er) transport. For instance, in 2018, C40 cities pledged for major areas to become zero emission by 2030.[24] There is also a growing number of European cities that have adopted or are preparing plans for zero-emission zones (see chapter 3).

At the national level, new ambitious frameworks on low-emission zones were adopted in France, Spain and Poland in 2021. In the case of the first two, LEZs are made mandatory in major cities, while the latter empowers cities to set up LEZs for the first time (see details in chapter 2). In 2018, the UK introduced a framework and directed several cities to create LEZs and there are other national frameworks emerging in Europe (as explained in chapter 3).

At the European level, several initiatives have been supporting the introduction of low-emission zones. Not only has the European Commission been funding a number of projects to map all existing "urban vehicle access regulations" (UVARs) including low-emission zones, but it has also funded the development of guidance documents and tools for cities.[25] Legislative work on low-emission zones has been boosted by the 2021 proposal for a new EU Urban Mobility Framework (UMF)[26], which replaces the previous 2013 EU Urban Mobility Package. The new proposal shows a step change in EU urban policies, with a clear focus on promoting active, shared and electric transport in cities. This includes provisions to require 424 urban nodes (almost all large cities with more than 100,000 inhabitants) to adopt Sustainable Urban Mobility Plans (SUMPs).

Photo: Damon Evans / Clean Cities Campaign

Since 2021, the EU's support for clean urban transport has also been taken to the next level with the "EU Mission for Climate-Neutral and Smart Cities". More than 350 European cities submitted plans to become climate-neutral by 2030, of which 100 have been selected in April 2022.[27] This mission is part of the EU Green Deal and requires cities to develop "Climate City Contracts", in return for technical, regulatory and financial assistance. In total, the EU will invest around €360 million in research and innovation linked to the Mission in the period 2021-23. If the EU and cities are serious about achieving the goal of climate-neutrality, the transition to zero-emission transport will be essential.

These developments show that the set up of low-emission zones and more ambitious regulations for motorised traffic are being promoted at all political levels, which is one of the main drivers of the strong momentum around these policies. These will be analysed in the following chapters of this briefing.

I. A new wave of low-emission zones is on its way

The growing momentum at all political levels has translated into an accelerated rollout of low-emission zones in Europe over the past years. In this chapter, the trends in the EU-27, the UK and Norway are analysed for the period between 2019 and 2025. The data collection process and methodology is explained in Box 1.

BOX 1: Methodology

Data on LEZs and ZEZs was taken from the "Urban Access Regulations Database" that is managed by Sadler Consultants and was originally funded by the European Commission, with Sadler Consultants forming the Steering Committee of the project.[28] It also continues to be used as a reference by the European Commission. In this briefing, all types of low-emission zones as defined in the introduction are considered.

The database relies on data that has been confirmed by cities, therefore guaranteeing robust information on LEZs across Europe. Where there is more than one LEZ in a given city, this city is only counted once. Each national and local context being different, there are strong differences across cities and countries. This is especially true for Italian schemes, and - to a lesser extent - German ones. Besides, some LEZs that have been counted are to be included with caveats. Details about the methodology can be found in **Annex 1** of this briefing.
https://urbanaccessregulations.eu/

The main trends of low-emission zones are the following (see also **Table 1**):

- In **2019** there were **228 active, implemented LEZs** according to the database.
- This figure has risen to **320 active, implemented LEZs** by the time that this briefing has been finalised (June 2022)[29], which amounts to an increase of **+40% (+92 LEZs) in 3 years** despite the Covid-19 pandemic.
- This trend is set to accelerate. The number of LEZs will rise to ***at least* 332 in 2025**, not accounting for the LEZs that are legally required by new national frameworks in France and in Spain (as these schemes have in many cases not yet been confirmed by the cities, see details below). If including zones that national legislation sets out, the total number will rise to **507 (+58%)** between now and 2025 (**+187 LEZs**).
- Additional new LEZs will probably also be created as a consequence of the new Polish Act on Electromobility and Alternative Fuels[30], but no projection is yet available. Other cities, such as the Bulgarian capital of Sofia, have plans to adopt an LEZ. Although the final launch date depends on the result of an ongoing public consultation and an upcoming City Council vote at the end of July 2022.[31] The Sofia scheme is supposed to launch in November 2022. What is more, this scheme is required by a court ruling[32] and therefore has to be set up as soon as possible. Two additional Bulgarian cities will also have to set up an LEZ by 2025, as mandated by the National Plan for Recovery and Sustainability 2022-2026.[33]

Number of LEZs that were active in 2019	Number of currently active LEZs	Number of LEZs projected for 2025
228	320 (+40%)	507 (+58%)

Table 1: Active LEZs trend from 2019 to 2025. Source: Sadler Consultants

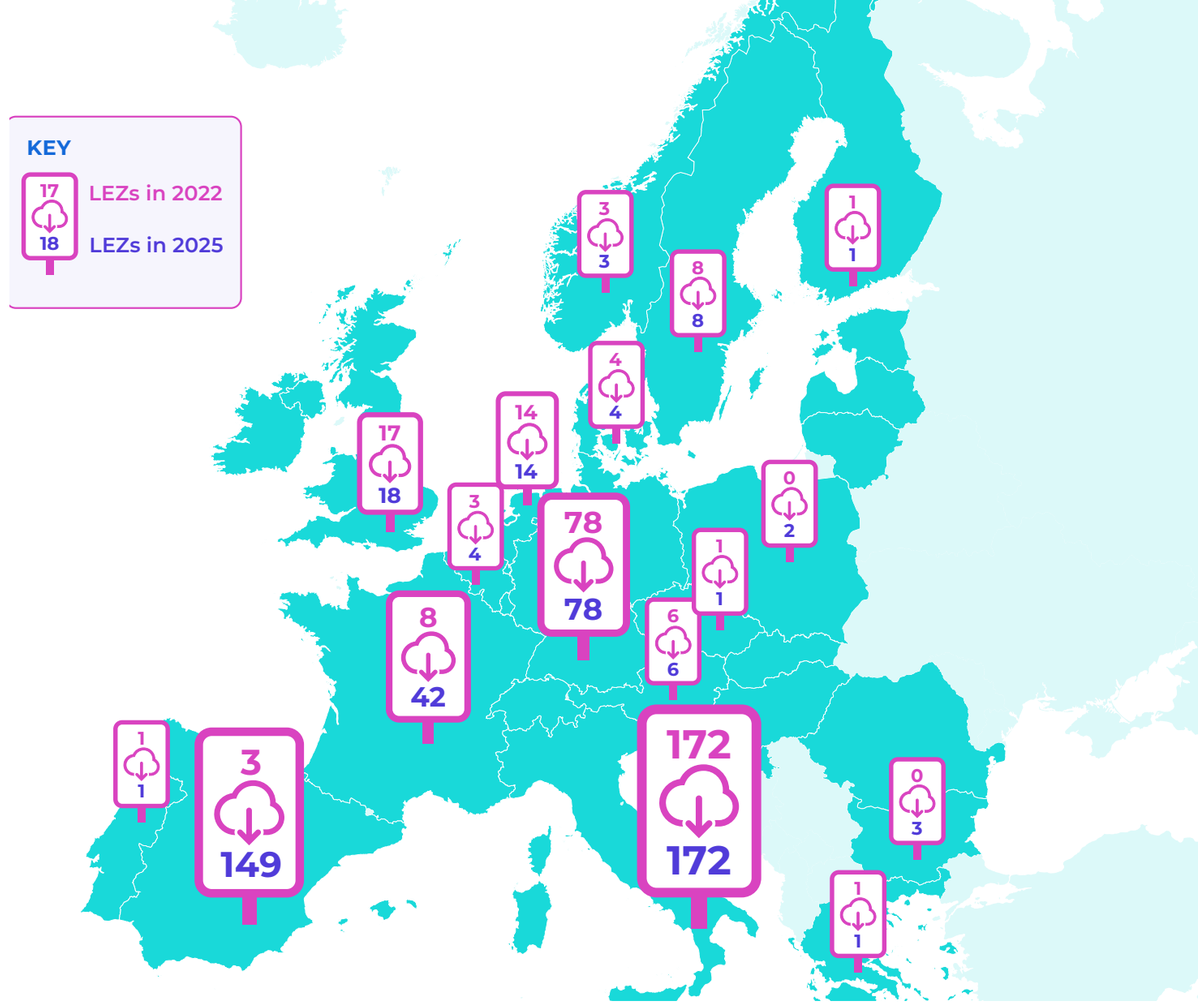


Figure 1: Trends and projections of low-emission zones in Europe

According to the available information, there are several reasons that explain this strong growth of LEZs:

- **New evidence on the health impact of air pollution** has triggered a wider debate on the need to curb air pollution from traffic.[34] For instance, a recent meta-study by the Health Effect Institute analysing 353 studies showed that the exposure to traffic related air pollution is associated with diseases such as lung cancer, or various heart conditions. This evidence has also fed into the update of the World Health Organization air quality guidelines.
- The **EU Ambient Air Quality Directive** was adopted in 2008 and requires member states, inter alia, to comply with legal limits. But certain provisions only kicked in over time, and most proceedings by the European Commission against non-compliant member states have only been initiated over the past few years.
- **Court cases lodged by civil society** and citizen science projects also had an impact. The policies adopted in response, including low-emission zones, have therefore often only been introduced with a time lag.
- In response to the aforementioned developments, several member states have adopted **new national laws** that encourage or oblige cities to adopt low-emission zones. These new legal frameworks are explained in more detail in the following chapter.

II. This momentum will be reinforced by upcoming new LEZs and emerging national frameworks

Several new legal frameworks have been put in place at the national level since 2019. In the cases of France and Spain, these national frameworks go as far as making LEZs mandatory for certain cities. The most notable national frameworks are the following:

- Adopted in 2021, the French climate and resilience law ("**Loi Climat & Résilience**") makes LEZs compulsory for cities with more than 150,000 inhabitants (i.e about **42 cities**). According to the law, the entry into force of said LEZs should be completed by 2025 at the latest. This shows a rise in ambition compared to the 2019 mobility law ("Loi d'orientation et mobilités"), which made LEZs mandatory in French cities breaching European Air Quality Standards. Besides, Article 119 of the new law states that cities which regularly breach legal limits will have to have to ban **Crit'air 5 in 2023 (Euro 3); Crit'air 4 in 2024 (Euro 4); and Crit'air 3 in 2025 (diesel Euro 5a and petrol Euro 4)**. However there is no national timeline to pave the way toward the end of diesel and petrol vehicles in cities, despite a programmed national phase out of the sales of vehicles with internal combustion engines by 2040, as explained in **Annex 2**.
- **In Spain, the climate and energy transition law ("ley de cambio climático y transición energética")** that was also adopted in 2021 makes LEZs compulsory for cities with more than 50,000 inhabitants (i.e. **149 cities**), with an entry into force by 2023 at the latest. Article 5 of the draft Royal decree on low-emission zones published on 19 April[35] states that **these new LEZs will primarily affect diesel Euro 3 and older vehicles, as well as petrol Euro 2** and older vehicles, with a possibility to step up the stringency to diesel Euro 6 and petrol Euro 4, 5 and 6 in the future. A final version of this decree is expected towards the end of Q3 2022.
- Finally, **the new Act on Electromobility and Alternative Fuels in Poland** is giving competence to cities to set up low-emission zones, which allows cities, such as Warsaw or Krakow to introduce such new measures.[36] An upcoming study by the Polish Electric Vehicles Promotion Foundation (FPPE) shows that Krakow and Warsaw will launch a low-emission respectively by the end of 2022 and by the end of Q2 of 2023. Besides, several other cities have expressed interest in setting up LEZs in Poland, such as Lodz, Wroclaw, Zabrze, Gliwice, Rzeszow, Bydgoszc and Gdansk among others.
- The **Netherlands** recently signed an agreement[37] with cities, transport companies and stakeholders as part of its National Climate Agreement[38] that makes **Zero Emission Zones for logistics vehicles mandatory** in the largest cities by 2025. A similar agreement has been signed between big cities about the circulation of taxis, which should only be zero emission after 2025.[39] A more detailed explanation is included in the last part of this briefing.

It should be noted that most of the concerned cities do not have a precise plan and/or timeline for setting up their LEZs. The aforementioned national frameworks respectively affect about 42 cities in France, and 149 cities in Spain. Of the 42 affected cities in France, 8 already have an LEZ. The same can be said of 3 cities in Spain. Consequently, the full implementation of the new frameworks in those 2 countries would generate **146 new LEZs in Spain, and 34 new ones in France LEZs.**

III. Most low-emission zones will be tightened – and zero-emission zones are on the horizon

In addition to the introduction of new low-emission zones, 27 existing ones will be expanded or tightened. This is the case for major European cities with ambitious LEZs, such as:

- London's ULEZ was expanded on the 25th of October 2021 to cover an area that is now 6 times larger than before.
- The Brussels LEZ has been strengthened in terms of stringency, not allowing diesel vehicles older than Euro 5 since 1st January 2021.
- The Greater Paris LEZ will also be upgraded in a similar way in 2023, only allowing Crit'air 2 vehicles, meaning diesel Euro 5 and petrol Euro 4 cars. In 2024, only Crit'air 1 (i.e. Euro 6 vehicles) will be allowed in the Greater Paris area, before only allowing Crit'air 0 vehicles (zero-emission vehicles) after 2030, which will turn Greater Paris into a zero-emission zone.

No less than 35 ZEZs are confirmed as being introduced by 2030.

A first wave of (partial) ZEZs is underway

In addition to the expansion and tightening of LEZs, a first wave of zero-emission zones is underway. Data shows that no less than 35 ZEZs are confirmed as being introduced by 2030.[40] Even if most of them are (initially) planned as partial ZEZs, for example only applying to logistics transports, 9 of them are to apply to all types of vehicles (Amsterdam, Helmond, Eindhoven, Bergen, Central London, Greater Paris, Oxford, Copenhagen and Oslo).
In 2022, the first ZEZ of the United Kingdom was launched in Oxford, while the London boroughs of Islington and Hackney had already launched pilot schemes back in 2018. Furthermore, many cities that are part of the C40 network have also signed the "Green and Healthy Streets Declaration" to go zero emissions in a major area of their cities by 2030.[41] These cities include Paris, London, Copenhagen, Amsterdam, Barcelona, Berlin, Heidelberg, Milan, Oslo, Rome, Rotterdam, Warsaw, Birmingham, Liverpool, Oxford and Greater Manchester.

A number of these cities have also been preparing more detailed plans such as[42]:

- ICE vehicles will no longer be allowed to circulate in Greater Paris as of 2030.
- Copenhagen intends to become carbon neutral by 2025 and has set out to pilot car-free and zero-emission areas from 2023 onwards.[43]
- A strategy for zero emission transport by 2030 has been adopted in Amsterdam (including a ZEZ).
- Eindhoven plans to create a ZEZ by 2030.[44]
- Bergen, Norway, is also very ambitious and wants to become fossil-fuel free by 2030 notably through a ZEZ covering the entire downtown area, which should be phased in starting from 2023.
- The Brussels Capital Region plans to ban diesel and hybrid M1 and N1 vehicles in 2030, followed by petrol/hybrid/LPG/CNG in 2035.[45]
- Stockholm wants to start phasing-in its ZEZ in 2025 and its city centre will become fossil-fuel free by 2030.[46]

Several cities are also working on schemes to remove all motorised traffic from certain parts of the city, e.g. Oslo and Brussels.

Figure 2: zero-emission zones that are set to be introduced by 2030

ZEZs will also be driven by national frameworks

Similarly to low-emission zones, the development of zero-emission zones will also depend on the national context and legal frameworks.[47] A few such frameworks already exist in Europe:

- A **Dutch** law has been adopted making ZEZs mandatory primarily for freight by 2025 in the 30-40 largest cities (29 of which have already been confirmed).
- In **Denmark**, an agreement has been struck in September 2021 between national and local levels, which enables cities to tighten up the standards of LEZs in cities, and will allow them to transition to ZEZs.[48]
- In its 2021 Climate Plan for 2021-2030, **Norway** extended the scope of its Road Traffic Act, which will soon enable cities to prohibit the circulation of certain vehicles for climate purposes, meaning that some cities can soon legally set up pilot schemes ZEZs.[49]
- **France's** first national legal framework for LEZs and ZEZs dates from 2015 with the Energy Transition for Green Growth Law which made it possible for cities to implement traffic restrictions, and was followed by the Mobility Orientation Law from 2019 and more recently by the aforementioned Climate & Resilience Law from 2021.
- The **Transport Act 2000** enables **UK** local traffic authorities to adopt different urban access regulations schemes, thus also allowing for setting up ZEZs.

Other national pledges and strategies can also have an impact - such as end dates for the sales of vehicles with internal combustion engines - which will impact mobility in cities, too. These are listed in **Annex 2** of this briefing. At the European level, regulations are progressing in the same direction. On 8 June 2022, the European Parliament voted for a 2035 phase-out date for the sales of cars and vans with internal combustion engines.

Conclusions and policy recommendations

The above analysis has shown that low-emission zones are a widely used tool to curb emissions and air pollution from traffic in European cities and that a new wave of such schemes is currently on its way. Since 2019, the number of low-emission zones has risen from **228 to 320** active schemes (**+40%**). According to current plans and the requirements set by national laws, the total number of LEZs is set to reach **507** by 2025 (**+58%** compared to 2022). Furthermore, 27 existing low-emission zones will be expanded in size or tightened with regard to the applicable emission standards.

It is also clear that low-emission zones are only an intermediate step in the quest for healthy air and zero emission transport. In and of themselves they will not be enough to fulfil the EU's "zero pollution ambition" nor will they allow cities to attain their climate objectives. This is particularly true for the 100 cities that have successfully applied to the "EU Mission for Climate-Neutral and Smart Cities" that sets a 2030 deadline. Only zero emission transport will allow them to attain this goal, and zero-emission zones (ZEZs) are therefore needed.

Given that reducing vehicles also reduces emissions, limited traffic zones (LTZ) and large pedestrian zones, with or without zero-emission vehicle requirements, as well as changes in the road layout to remove road space or favour sustainable mobility over individual motorised traffic also play their part, and increased provision of sustainable mobility options, including for logistics.[50]

This research shows that a first wave of ZEZs is already underway, with three (partial) zero-emission zones currently in force in European cities. Current confirmed, published plans foresee the creation of a total of **35** ZEZs by 2030, nine of which will apply to all vehicles. Given the urgency of the climate crisis and the public health emergency, it is very likely that a much larger number of such zones will soon be prepared in cities across Europe.

In the view of the Clean Cities Campaign, the implications of these results are clear:

ZONE

Cities should

- immediately start to **introduce low-emission zones**, if no such measures are currently in place. These zones should be combined with the reallocation of public space to active, public and shared transport.
- Adopt a **clear path towards the establishment of zero-emission zones by 2030** at the latest. This is particularly important for the 100 cities that have been selected for the "EU Mission for Climate-Neutral and Smart Cities".

Governments should

- Support the introduction of low- and zero-emission zones, for example by adopting **national frameworks** that mandate or support the adoption of such policies,
- Give local authorities the **necessary legal powers** as well as the required resources in order to establish, enforce and develop low- and zero-emission zones.

The EU should

- Support cities by providing **targeted funding** and facilitating the exchange of best practice.
- **Make EU funding conditional** upon the adoption of "Sustainable Urban Mobility Plans" (SUMPs) that include effective clean air policies, e.g. in the framework of funding for the Transeuropean Transport Networks (TEN-T).

The Clean Cities Campaign calls on decision makers at all policy levels to make full use of the available tools for effective low- and zero-emission zones and will continue to facilitate the exchange of information and creation of a solid evidence base.

Time to step up your game: only a minority of the European cities that have pledged to go climate-neutral by 2030 have low-emission zones and plans for zero-emission zones

The map shows the 105 cities from the EU, the UK and Norway that have been selected for the EU Mission for Climate-Neutral and Smart Cities. Cities from other neighbouring countries are not shown here.

Annexes

Annex 1: Additional explanations on the methodology

The counting of LEZs is based on data extracted for the Clean Cities Campaign by Sadler Consultants from the urbanaccessregulation.eu database that was initially funded by the European Commission.

However, some caveats are to be considered for certain schemes:

- Winter low-emission zones (WLEZs) - i.e. LEZs that are only active during winter - and province schemes were merged with existing permanent LEZs in the same area where possible (for example, Nichelino has both a WLEZ and a LEZ, so it was only counted once).
- Although some cities like Amsterdam (which differentiates its 6 variant LEZs[51]) or Milan (LEZ CS + LEZ Area B + Winter LEZ + Province LEZ) registered several LEZ schemes within their boundaries (in separate areas and/or because different types of vehicles are affected), they ended up being counted as one single LEZ in this briefing, for the sake of clarity. Also, these different schemes will eventually merge into a single one (in the case of Amsterdam, for example).
- Similarly, overlapping schemes between Metropolitan and City levels (for example: Paris and Greater Paris; Florence and Greater Florence;...) were counted as a single scheme in this briefing.
- There is **uncertainty** on a few schemes: the **Barcelona low-emission zone** has recently been annulled by the Spanish Court[52], but the city appealed this decision, making the future of this scheme uncertain; **Lille's LEZ** was supposed to launch in 2022 but is being delayed possibly until 2025, similarly to the **Prague LEZ** for cars that is currently on hold according to available information.
- **German LEZs** share similar issues as Italian ones. In addition to enforcement issues, many of them are outdated as far as their stringency is concerned. Most of them have been set up between 2008 and 2013, and for the most part, the admission standards are Euro 2 for Petrol vehicles and Euro 4 for Diesel ones with no complementary measures (i.e. emergency schemes or congestion charges for example) and Euro 6 diesel LEZs in smaller areas of a few cities. While European cities are generally at least planning on moving forward with larger and more ambitious LEZs, the database has shown that not only do German cities not have any upgrades planned, but insight from partners have shown that some of them seem to question the usefulness of such schemes and consequently their existence. However, as stated in the introduction of this briefing, the WHO clearly stated that there is no safe level of air pollution.

Annex 2: National plans for the phase-out of sales of ICE vehicles

In addition to plans and policies at city level, some overarching ambitious measures are taken at national level. Although not directly linked to LEZs, plans on banning the sales of petrol and diesel vehicles are still relevant, as they will impact the output of air pollution. Annex 2 hereby summarises the main plans at the national level in Europe, based on information retrieved from Sadler Consultants and a 2021 ICCT Briefing on the matter[53]:

- In its National Transport Plan for 2018-2029, **Norway** pledged that new cars and light vans will be electric or hydrogen-fueled from 2025 onwards[54]
- In 2019, the **Dutch** Parliamentary coalition agreed that all new cars must be emission free by 2030.[55]
- **Denmark's** action plan on stop selling petrol and diesel cars by 2030
- Iceland pledged to ban new registration of gasoline and diesel cars from 2030 in its 2020 Climate Action Plan[56]
- In **Slovenia**, new cars registered after 2030 must emit less than 50g of CO2/km[57]
- A 2030 sales ban on fossil fuel passenger vehicles at national level was promised by the Government of **Ireland** in 2019[58], but no mention of it has been made in the 2020 and 2021 Climate Action Plans, which makes it less certain
- The **United Kingdom** pledged to end sales of diesel and petrol cars by 2030, though it will allow Plug In Hybrid Electric Vehicles and Mild Hybrid Electric Vehicles to be sold until 2035.
- **France** adopted the Mobility Law (LOM: Loi d'Orientations et Mobilités) in 2019, which contains a provision planning for the end of sales of new internal combustion engines passenger cars and light commercial vehicles by 2040.
- **Spain's** new law on climate change and energy transition mentioned in the core briefing also contains a similar provision for 2040 as well.

Annex 3: The Italian framework for low-emission zones

Establishing which measures and restrictions on polluting vehicles reflect the basic model of the low-emission zone is complicated for Italy for various
reasons :

1. the legislative stratification which has seen the addition, over the years, of numerous legal provisions, largely in application of European directives on the topic of air quality;
2. the imperfect redistribution of responsibilities and competences to regions, provinces and municipalities in the context of decentralisation that began with the reform of Title V of the Constitution;
3. the absence of a common framework that defines what a low-emission zone is in Italy;
4. the presence of multiple emergency interventions and variable-geometry measures that transform the reference administrative context into an intricate jungle of laws, framework agreements, memos and ordinances.
5. Defining the numbers of schemes, as in some regions there are several types of LEZ one that covers whole regions (and are classified as a single scheme, rather than naming each commune), and tighter schemes in the metropolitan areas.

The main legislative sources regarding the restriction on the circulation of polluting vehicles are:

- At the national level, the many laws, decrees of the Prime Minister and ministerial decrees which, starting with the first air quality standards established in the 1980s , have created the reference regulatory framework for regions, provinces and municipalities
  - For example, Ministerial Decree 163/1999 of the Ministry of the Environment determines the environmental criteria and health services on the basis of which mayors adopt measures to limit the circulation of polluting vehicles. In turn, the most recent Legislative Decree 155/2010 attributes to the regions and autonomous provinces the responsibility of preparing action plans in which short-term interventions are foreseen to be implemented in cases where the risk arises that the levels of pollutants exceed certain alarm thresholds
- At the regional level, the air quality plans (PRIA and PRQA), as well as the various interregional agreements, such as the Po Valley agreement for the improvement of air quality, stipulated between the Ministry of the Environment and the regions of Emilia-Romagna, Lombardy, Piedmont and Veneto. The latter lays down the legislative framework for the adoption of both LEZs, and what the Sadler / European Commission Urban Access Regulations Database[59] considers "winter LEZs" (i.e. LEZs only implemented in the winter), and 'emergency schemes' (i.e. the temporary restriction of the circulation of specific categories of vehicles pollutants in certain high pollution conditions (which have often lasted all winter).
- At the municipal or metropolitan city level, the mayor's ordinances and the resolutions of the municipal councils that set up traffic restriction schemes, such as for example the Milan Area B.
- In addition to active city-level -low-emission zones such as Area B in Milan or Area Verde in Parma, there are:
  - Winter LEZs cover areas are characterised by having a broad perimeter that corresponds to the totality of the territories of hundreds of municipalities (classified according to the size and average pollution levels), mild application mechanisms (for example simple random checks by the local police) and a duration often limited in time (usually corresponding to the duration of the winter season).
  - Emergency measures to restrict the circulation of polluting vehicles, adopted by the mayors on the basis of the aforementioned national and regional regulatory framework. These measures are characterised by being extremely limited in time and subject to the overcoming of certain alarm thresholds. These measures affect not only vehicular traffic, but also the heating of buildings and other sectors.
  - LEZs at city level or metropolitan that exist on paper, but which are not applied for varying reasons from city to city.

Finally, the absence of a single authority responsible for the application of or coordination of the traffic restriction schemes implies a lack of accountability on the part of each of the bodies involved as regards the development of support schemes and incentives for modal shift and purchase of non-polluting vehicles.

References

1 Sadler Consultants. (2022). Retrieved from: https://urbanaccessregulations.eu/

2 World Health Organization. (2016). *Ambient air pollution: A global assessment of exposure and burden of disease*. Retrieved from https://www.who.int/publications/i/item/9789241511353

3 European Environmental Agency. (2021). *Health impacts of air pollution in Europe, 2021.* Retrieved from https://www.eea.europa.eu/publications/air-quality-in-europe-2021/health-impacts-of-air-pollution

4 These range from asthma to heart disease, cancer and strokes. New research is also pointing to mental illness such as dementia. An exhaustive list can be found at https://www.theguardian.com/environment/ng-interactive/2019/may/17/air-pollution-may-be-damaging-every-organ-and-cell-in-the-body-finds-global-review

5 World Health Organization. (2016). *Ambient air pollution: A global assessment of exposure and burden of disease*. Retrieved from https://www.who.int/publications/i/item/9789241511353

6 WHO Global Air Quality Guidelines. (2021, September 22). who.int. Retrieved from https://www.who.int/news-room/q-a-detail/who-global-air-quality-guidelines

7 European Commission. (2021). *EU Action Plan: 'Towards Zero Pollution for Air, Water and Soil'.* Retrieved February 1st, 2022, https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX-:52021DC0400&from=EN

8 European Commission. (2022). *EU mission: Climate-neutral and smart cities.* Retrieved from: https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/climate-neutral-and-smart-cities_en

9 European Commission. (2021). Sustainable transport - new urban mobility framework. Retrieved from: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12916-Sustainable-transport-new-urban-mobility-framework_en

10 European Environment Agency. (2020). *Air Quality in Europe - 2020 report.* Retrieved from https://www.eea.europa.eu/publications/air-quality-in-europe-2020-report

11 European Environment Agency. (2021). *Sources and emissions of air pollutants in Europe*. Retrieved from https://www.eea.europa.eu/publications/air-quality-in-europe-2021/sources-and-emissions-of-air

12 The International Council on Clean Transportation (2019).) *Beyond NOx: Emissions of unregulated pollutants from a modern gasoline car.* Retrieved from https://theicct.org/sites/default/files/publications/NOx_Pollutants_LDV_FV_20190503_0.pdf

13 Transport & Environment. (2020). *New diesels, new problems.* Retrieved from https://www.transportenvironment.org/discover/new-diesels-new-problems/

14 European Public Health Alliance. (2020). *Health costs of air pollution in European cities and the linkage with transport*. Retrieved from https://epha.org/online-discussion-health-costs-of-air-pollution-in-european-cities/

15 Sadler Consultants. (2022). *Low Emission Zones.* Retrieved from: https://urbanaccessregulations.eu/low-emission-zones-main

16 Transport & Environment. (2019). *Low-Emission Zones are a success – but they must now move to zero-emission mobility.* Retrieved from: https://www.transportenvironment.org/discover/low-emission-zones-are-success-they-must-now-move-zero-emission-mobility/#:~:text=September%2010%2C%202019-,Low%2DEmission%20Zones%20are%20a%20success%20%E2%80%93%20but%20they%20must%20now,%2DEmission%20Zones%20(LEZ).

17 ADEME. (2019). *Zones à faibles émissions à travers l'Europe.* Retrieved November 15, 2021, from https://www.ademe.fr/sites/default/files/assets/documents/rapport-zones-faibles-emissions-lez-europe-ademe-2018.pdf

18 Clean Cities Campaign. (2021). *Why fewer (polluting) cars in cities are good news for local shops.* Retrieved from: https://cleancitiescampaign.org/2021/12/09/why-fewer-polluting-cars-in-cities-are-good-news-for-local-shops-briefing/

19 The Mayor of London. (2020). *Central London Ultra Low Emission Zone - Ten Month Report*. Retrieved November 28th, 2021 from https://www.london.gov.uk/sites/default/files/ulez_ten_month_evaluation_report_23_april_2020.pdf

20 10 procent minder auto's in Gent en meer "schone" auto's dankzij lage-emissiezone. (2020, 22 September). vrt.be. Retrieved from https://www.vrt.be/vrtnws/nl/2020/09/22/gentenaar-schakelt-over-op-groene-auto-s-en-andere-vervoersmid/

21 Clean Cities Campaign. (2022).*Weaning Europe off oil: Where do cities come in?* Retrieved from: https://cleancitiescampaign.org/2022/04/13/weaning-europe-off-oil-where-do-cities-come-in/

22 Clean Cities Campaign. (2022). *Zooming in on cities' thirst for oil.* Retrieved from: https://cleancitiescampaign.org/2022/05/18/zooming-in-on-cities-thirst-for-oil/

23 Transport & Environment. (2022). *EU Parliament backs 2035 end date for combustion engine cars.* Retrieved from https://www.transportenvironment.org/discover/te-reaction-to-meps-vote-on-eu-clean-car-rules/

24 C40 Cities. 2017. *Green & Healthy Streets Declaration.* Retrieved from: https://www.c40.org/declarations/green-healthy-streets-declaration/

25 ReVeAL. (2021). *Notes of Guidance.* Retrieved from: https://civitas-reveal.eu/resources-overview/publications/guidance/

26 European Commission. (2021).*The New Urban Mobility Framework.* Retrieved from: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12916-Sustainable-transport-new-urban-mobility-framework_en

27 European Commission. (2022). *EU Cities Mission: Meet the Cities.* Retrieved from: https://ec.europa.eu/info/sites/default/files/research_and_innovation/funding/documents/ec_rtd_he-cities-mission-reveal-factsheet.pdf

28 Data extracted by Sadler Consultants from summaries of the data on: https://urbanaccessregulations.eu/

29 Data collection stopped on 16th June 2022. In 2021, the European Commission counted 328 LEZs being planned or confirmed in its 2021 Urban Mobility Framework, using the same source (urbanaccessregulations.eu). The difference may be due to either changes over the past months or a different way of counting the zones. For example, the Commission counted both active and confirmed upcoming LEZs.

30 Internetowy System Aktów Prawnych (ISAP). (2021). *Ustawa z dnia 2 grudnia 2021 r. o zmianie ustawy o elektromobilności i paliwach alternatywnych oraz niektórych innych ustaw.* Retrieved from: https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20210002269

31 City of Sofia. (2022). Retrieved from: https://www.sofia.bg/en/web/guest/ordinance-of-zones-with-low-emissions-in-the-atmosphere

32 Sofia City Court. (2021). Retrieved from: https://legalacts.justice.bg/Search/GetActContentByActId?actId=TsmKsL1O7fU%3D

33 Ministry of Finance - Republic of Bulgaria. (2022). *Recovery and Sustainability Plan.* Retrieved from: https://www.minfin.bg/bg/1562

34 Boogaard et al. (2022). *Long-Term Exposure to Traffic-Related Air Pollution and Selected Health Outcomes: A Systematic Review and Meta-Analysis.* Retrieved from: https://www.sciencedirect.com/science/article/pii/S0160412022001888X#f0005

35 Ministerio para y la transicion ecologica y el reto demografico. (2022). *Proyecto de real decreto por el que se regulan las zonas de bajas emisiones.* Retrieved from: https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/participacion-publica/proyectorealdecretozonasdebajasemisiones_tcm30-539525.pdf

36 Krakow tried to set up a zero-emission zone in 2019 but eventually suspended the measure.

37 Government of Netherlands. (2021). *New agreements on urban deliveries without CO2 emission.* Retrieved from: https://www.government.nl/latest/news/2021/02/11/new-agreements-on-urban-deliveries-without-co2-emission

38 Government of Netherlands. (2019). *Climate Agreement - The Netherlands.* Retrieved from: https://www.klimaatakkoord.nl/documenten/publicaties/2019/06/28/national-climate-agreement-the-netherlands

39 Eltis. (2021). *Taxis and rental cars in cities in The Netherlands to be zero-emission by 2025.* Retrieved from: https://www.eltis.org/in-brief/news/taxis-and-rental-cars-cities-netherlands-be-zero-emission-2025

40 4 additional ones could soon be added, as Denmark recently adopted a law empowering 5 cities to implement a zero-emission zone as explained in the next section

41 C40 Cities. 2017. *Green and Healthy Streets Declaration.* Retrieved from: https://www.c40.org/declarations/green-healthy-streets-declaration/

42 Information provided by Sadler Consultants.

43 It has to be noted that vehicles powered by biofuels would probably still be allowed in these zones.

44 City of Eindhoven. (2020). *Towards a zero-emission zone.* Retrieved from: https://www.eindhoven.nl/projecten/nul-emissiezone/op-weg-naar-een-nul-emissiezone

45 *En pratique : Pour tout savoir sur le fonctionnement de la LEZ de la Région bruxelloise.* (2022). Lez.brussels. Retrieved from: https://lez.brussels/mytax/fr/practical?tab=Agenda#

46 Information retrieved by Sadler Consultants. The city of Stockholm however promotes certain types of biofuels as an alternative to petrol and diesel cars.

47 International Council on Clean Transportation (ICCT). (2021). *A global overview of zero-emission zones in cities and their development progress.* Retrieved from: https://theicct.org/wp-content/uploads/2021/12/global-cities-zez-dev-EN-aug21.pdf

48 Government of Denmark. (2021). *Aftale mellem regeringen, Socialistisk Folkeparti, Radikale Venstre og Enhedslisten om: Miljøinitiativer i grønne byer og en hovedstad i udvikling.* Retrieved from https://mst.dk/luft-stoej/luft/miljoezoner/skaerpede-miljoezonekrav-for-dieselpersonbiler-og-undtagelsesmuligheder/

49 International Council on Clean Transportation (ICCT). (2021). *A global overview of zero-emission zones in cities and their development progress.* Retrieved from: https://theicct.org/wp-content/uploads/2021/12/global-cities-zez-dev-EN-aug21.pdf

50 ReVeAL. (2022). *Low Emission Zones and other Access Regulations: What and Why.* Retrieved from: https://urbanaccess-regulations.eu/images/stories/Reveal/Lucy_Sadler_ReVeAL_conference_updated.pdf

51 City of Amsterdam. (2019). *Policy: Clean Air.* Retrieved from: https://www.amsterdam.nl/en/policy/sustainability/clean-air/

52 El País. 2022. *La justicia anula el veto a los coches contaminantes en Barcelona "por excesivo".* Retrieved from: https://elpais.com/espana/catalunya/2022-03-21/la-justicia-anula-el-veto-a-los-coches-contaminantes-en-barcelona-por-excesivo.html

53 International Council on Clean Transportation (ICCT), (2021), Update on government targets for phasing out new sales of internal combustion engine passenger cars, retrieved from: https://theicct.org/sites/default/files/publications/update-govt-targets-ice-phaseouts-jun2021_0.pdf

54 Government of Norway. (2021). *Norway is electric.* Retrieved from: https://www.regjeringen.no/no/tema/transport-og-kommunikasjon/veg_og_vegtrafikk/faktaartikler-vei-og-ts/norge-er-elektrisk/id2677481/

55 Netherlands Enterprise Agency. (2019). *Mission Zero - Powered by Holland.* Retrieved from: https://www.rvo.nl/sites/default/files/2019/06/Misson%20Zero%20Powered%20by%20Holland.pdf

56 Government of Iceland, (2020) *"Aðgerðaáætlun í loftslagsmálum [Climate Change Action Plan],"* https://www.stjornarradid.is/library/02-Rit--skyrslur-og-skrar/Adgerdaaetlun%20i%20loftslagsmalum%20onnur%20utgafa.pdf

57 Republika Slovenija, (2017) *"Strategija na področju razvoja trga za vzpostavitev ustrezne infrastrukture v zvezi z alternativnimi gorivi v prometnem sektorju v Republiki Sloveniji [Market Development Strategy for the Establishment of Adequate Alternative Fuel Infrastructure in the Transport Sector in the Republic of Slovenia],"* https://e-uprava.gov.si/.download/edemokracija/datotekaVsebina/298735?disposition=inline

58 Government of Ireland. (2019). *Climate Action Bill.* Retrieved from: https://assets.gov.ie/25419/c97cdecddf8c49ab976e-773d4e11e515.pdf

59 See Sadler Consultants. (2022). *Low Emission Zones.* Retrieved from: https://urbanaccessregulations.eu/low-emission-zones-main

Contacts

Barbara Stoll
Director, Clean Cities Campaign
barbara.stoll@cleancitiescampaign.org
+44 (0)7985 637 173

Jens Müller
Research & Policy Lead, Clean Cities Campaign
jens.mueller@cleancitiescampaign.org
+32 (0)488 367 353

Find out more

The Clean Cities Campaign is a European coalition of organisations hosted by Transport & Environment. Together, we aim to encourage cities to transition to zero-emission mobility by 2030, encouraging European cities to become champions of active, shared and electric mobility for a more liveable and sustainable urban future.

www.cleancitiescampaign.org
info@cleancitiescampaign.org

CleanCities