

CLEAN CITIES

**The 7 steps to create effective
low-emission zones**



CleanCities



Contents

Executive summary	5
Preface: why cities implement low-emission zones	6
Introduction: the right formula for successful low-emission zones	7
A clear definition of objectives, area, scope and timeline	10
The right communication	12
The right enforcement	13
The right complementary measures	15
The right targeted support	16
<i>BOX 1: Securing public acceptance</i>	16
<i>BOX 2: Summary of equity measures</i>	17
The right monitoring	18
The right vision	19
Conclusion	20
Annex 1: A short overview of the frontrunner cities	21
Annex 2: A detailed overview of best practice examples	22
References	24

This briefing was written by the Clean Cities Campaign, a campaign hosted by Transport & Environment.

Lead authors: Zachary Azdad, Jens Müller, Barbara Stoll
Design: Doug Dawson
www.dougdawson.co.uk

© Text 2022 Clean Cities Campaign / Transport & Environment

Executive summary

Low-emission zones (LEZs) have been gaining momentum over the last years, spreading increasingly across Europe. According to the Clean Cities Campaign and based on Sadler Consultants' data, 228 LEZs were active in 2019, 320 are active in June 2022, and 507 will be in place in 2025. Their objectives, ambition levels, size, scope and timeline vary depending on the local and national context, which means there is no one-size-fits-all approach. But there are principles and approaches that can be applied to all LEZs in order to make them effective.

This briefing summarises the main elements that determine the success of a low-emission zone based on a literature review, best practice examples and guidance provided by expert groups such as C40 cities or EU-funded projects such as the ReVeAL project.

The 7 steps to create a successful LEZ are:

1. **Defining** clearly the objectives, area(s), scope, and timelines when designing a LEZ.
2. **Communicating** well in advance and involving citizens and businesses in the process.

3. **Ensuring** effective and fair **enforcement**.
4. **Putting in place complementary measures**, especially to promote alternatives such as active mobility as well public and shared transport.
5. **Providing targeted financial support** to the most vulnerable groups (e.g. low-income households) and, where necessary, certain local charities or businesses.
6. **Monitoring** the effects,
7. **Setting a binding and progressive calendar to fully transition to a zero-emission zone (ZEZ) by 2030** at the latest.

Based on **best practice examples** from all over Europe, **a well-designed LEZ should :**

- ▶ Be as **large, stringent**, and **well-enforced** as **London's ULEZ**,
- ▶ Be as **inclusive, well-communicated** and **forward-looking** as **Amsterdam's LEZ**,
- ▶ Provide at least as many **alternatives and support** measures as **Paris**,
- ▶ Combine it with a **general overhaul of traffic plans** like **Ghent**,
- ▶ Strike a **flexible balance** through capped daily passes like in **Brussels**.



Preface: why cities implement low-emission zones

The main reason why low-emission zones - i.e. areas where the most polluting vehicles are regulated¹ and can either not enter the area or have to pay more if they enter the zone² - have been adopted by cities across Europe is their effectiveness in tackling the adverse effects of road traffic. The following positive impacts have been observed:

Air quality improvements

The main objective of low-emission zones is to reduce air pollution. A 2019 literature review by Transport & Environment (T&E) found that many LEZs have delivered strong reductions of the principal pollutants, including nitrogen dioxide (NO₂) concentrations that mainly form from NO_x emissions³ and for 39% of which road transport is responsible.⁴ The French Agency for the Ecological Transition (ADEME) found that LEZs have accelerated the renewal of the vehicle fleet and thereby contributed to reducing air pollution.⁵

Climate benefits

LEZs can also benefit the climate. Greenhouse gas emissions have decreased in cities which have implemented the strictest LEZs: CO₂ emissions from transport in London are estimated to have decreased by 13% after the first 6 months of activity of its Ultra-Low Emission Zone (ULEZ), compared to a scenario without the measure.⁶ Smaller reductions have also been observed in other cities, including Amsterdam, Paris and Berlin.⁷

Reductions in traffic and car ownership

As a secondary effect, LEZs have also been found to reduce motorised traffic: the London ULEZ, for instance, has contributed to reducing traffic by between 3% and 9% from 2018 to 2019, depending on the time and location.⁸ The LEZ in Ghent, Belgium, helped reduce car ownership within the zone by 10% over a period of two years.⁹

Better quality of life and a stronger local economy

By reducing air pollution and car traffic, low-emission zones can also make cities more liveable. A 2021 Pan-European city survey commissioned by the Clean Cities Campaign showed that 71% of European city dwellers thought that their leaders should do more to protect them from air pollution.¹⁰ In December 2021, a Clean Cities study showed that LEZs and other 'urban vehicle access regulations' (UVARs) often benefit local businesses.¹¹ One of the main findings was that a decrease of retail vacancy (the number of empty shops) has been observed after space for cars was reduced and active mobility infrastructure improvements were made.

Introduction: the right formula for successful low-emission zones



Although low-emission zones have proven effective in curbing toxic air pollution, there are differences in how successful these policies have

been. As these measures are usually designed at the local level, they come in various shapes and sizes. But what makes these LEZs successful? This paper will seek to provide an answer, using the following examples as best practice.

A CLEAR DEFINITION OF OBJECTIVES, AREA, SCOPE AND TIMELINE

Define clear objectives

Define the area

Define which vehicles are concerned

Define the right timeline

Rally allies and build support



THE RIGHT VISION

Plan for gradual upgrades of the zone

Foresee the transition to zero-emission zones

THE RIGHT MONITORING

Ensure proper data collection

Make data available in regular reports on the effects of the LEZ

THE RIGHT COMMUNICATION

Communicate clearly and well in advance

Target all affected groups (residents and commuters)

THE RIGHT ENFORCEMENT

Include a grace/trial period

Use effective enforcement options

Use revenues from fines to fund alternatives

THE RIGHT COMPLEMENTARY MEASURES

Set up complementary UVAR measures

Ramp up alternatives to the private car

THE RIGHT TARGETED SUPPORT

Provide targeted support

Adapt the support to the different population groups (households, professionals, etc.)



A clear definition of objectives, area, scope and timeline

The right design of a LEZ should start with an analysis of the local context as recommended by the C40 Cities network. For example, the sources and location of major pollutants, the level of congestion in different areas, vulnerable parts of the population, etc. must be taken into account.¹² But despite the need for an adaptation to the local context, there are overarching design principles that should be followed in any city:

Define clear objectives

Is the primary aim to reduce air or noise pollution, congestion or traffic?

LEZs usually primarily aim at curbing air pollution, but as the preface of this briefing has shown, they also provide other benefits. If these additional objectives are to be pursued, they need to be included as early as possible in the design of the LEZ, as they might require special features or additional complementary measures. For instance, a city can use an LEZ to strengthen existing measures for modal shift, in addition to reducing air pollution. Low emission zones can be complementary to measures aiming at reducing the space for cars in the city or reorganising traffic flows.

The mobility plan of Ghent in Belgium for instance, was introduced in 2017 and has since been complemented by a low-emission zone. The inner city of Ghent is now divided into five sectors and the historic centre. The sectors have been designed in such a way that through-traffic has been redirected to the ring road.¹³ The low-emission

zone was put in place three years later and constitutes the next step in driving modal shift and decarbonising the remaining fleet.

In the mid-term, mitigating the climate crisis and providing air that is safe to breathe will require a full switch to zero-emission transport, including 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. Several large European cities like Amsterdam, Paris, London or Brussels have already adopted plans to introduce such zones. It is important that zero-emission goals be set and communicated as early as possible in order to provide sufficient lead in time to citizens and businesses (see details below).

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, both the European Parliament and the Council supported a phase-out by 2035.¹⁴

Define the area

Is it going to be a large scheme? Is it going to start with one part of the city and then expand?

As mentioned above, the area covered by an LEZ should be defined on the basis of local data on the locations and sources of air pollution as well as where the most affected groups can be found.¹⁵

Starting with an LEZ in the city centre or another specific part of the city can be a first step, as it will allow for a more focused approach initially, before expanding the zone step by step. This can allow for learning from first experiences and adapting the further roll-out of the measure, which could also increase acceptance. City centres, in particular, are usually more accessible by foot, bicycle, or public transport, meaning that alternatives are already available or can be provided more easily. Eventually, the goal should always be to provide clean air, zero-emission transport and a high quality of life to all residents and hence expand the LEZ to the whole urban area.

Define which vehicles are concerned

Which vehicles will be covered at what stage? Will there be exemptions, e.g. for residents or businesses?

Depending on the ambition and timeline of the LEZ, a gradual approach can be applied by only excluding a certain type of vehicles at first, before stepping up the ambition level. The city of Amsterdam, for instance, started by launching an LEZ for trucks in 2010, before widening the scope to other vehicles in 2017 and 2018.

It is also worth noting that first phasing out the most polluting vehicles can often yield rapid and disproportionate results.

Define the right timeline

How much lead time is needed? What is the pathway for the full transition to zero-emission transport?

Defining a precise timeline is essential for several reasons. Firstly, it sets a framework to make the objectives attainable as they are broken down into smaller steps. What is more, it gives visibility to the affected inhabitants and businesses, thus leaving enough lead time to prepare for a switch to other modes of transport and cleaner vehicles. The effect of announcing a plan well in advance also triggers so-called “pre-compliance”, i.e. citizens and businesses start making changes before the policy kicks in. This has been observed, inter alia, in London.¹⁶

Another interesting example is the Brussels LEZ that is clear and transparent regarding its timeline, with each step announced a few years in advance, in order to give time for citizens to adapt. The first steps taken to ban vehicles up to diesel Euro 5 were announced in 2018, with incremental restrictions coming into force in 2020, 2022 and 2025. The evolution of the share of Euro 4 diesel vehicles, for example, that are no longer allowed into the LEZ since January 2022, shows that since 2018 their share dropped from 21.2% of the fleet in July 2018 to 11.9% in April 2021. This shows that pre-compliance works, as citizens gradually drop their polluting cars ahead of new restrictions.¹⁷

The best example of a clear longer-term timeline is Amsterdam, which has a very clear timeline on how to transition fully to a ZEZ by 2030. The approach is similar to the one cited above, which is to gradually phase in the measures, vehicle type by vehicle type, as explained in detail in their Clean Air Action Plan.¹⁸

Rally allies and build support

Setting up low-emission zones can sometimes face administrative and financial obstacles, due to a lack of support for example. Where possible, it is essential to build cross-party alliances to set up and reinforce an LEZ over time.¹⁹ Otherwise, the project may be abandoned once there is a change in power. This was the case for the ‘Madrid Central’ LEZ, which has largely been reversed after a new mayor was elected.

Ecologistas en Acción underlined the need to build inter-institutional coordination, especially on management, budgets and rules, since building LEZs can involve the city level, but also the regional level, as well as different bodies within these administrations.²⁰ This requires a clear definition of the different responsibilities and a steering group taking care of the functioning of the LEZ and facilitating coordination.



The right communication

Communicate clearly and well in advance

Hold public consultations, make the information easily accessible through a dedicated platform or webpage, implement bespoke communication campaigns for specific groups such as businesses and truck drivers.

A majority of citizens support LEZs if the case for such measures is properly made, as shown by an IPSOS survey commissioned by Transport & Environment in 2018: 67% of people interviewed in nine European countries were either 'strongly' or 'somewhat' supporting the introduction of LEZs. Support was the highest in Hungary, Italy and Great Britain.²¹ A 2021 YouGov survey commissioned by the Clean Cities Campaign came to similar results, showing that 71% of European city dwellers think that their leaders should do more to protect them from air pollution. 59% of city dwellers were ready to go as far as only allowing emission-free cars into cities after 2030.²²

In a recent report, Spanish NGO "Ecologistas en acción" listed the different categories of people that should be included in the participation process.²³ Those range from groups going through the LEZ for personal travel (residents), for economic or professional reasons, as well as transport professionals such as taxis and logistics companies, to concerned citizens such as members of grassroots groups and organisations. In addition to improving public acceptance, such consultations will also ensure that user needs will be taken into consideration.²⁴ Citizen participation is key for

guaranteeing the LEZ success, as was shown in the conclusions of the workshops developed by ECODES in Spain.²⁵

How to communicate?

Experts from the EU-funded ReVeAL project recommend that as many communication channels as possible be used, especially when a measure can be controversial.²⁶ For example, impact assessments coupled with public consultations and meetings with affected people have proven to be an effective strategy in building support according to the C40 Cities network.²⁷ If residents are presented with local impact assessments showing how they benefit from the measure, public support will most likely be reinforced.

It is important that the communication does not only focus on health benefits, but also on livability improvements. Rather than focusing solely on the restriction of traffic, the opportunity for modal shift, more public space and increased livability should be put forward. Building a coalition of supporters with organisations and the public is also beneficial.²⁸

71%
of European city dwellers think that their leaders should do more to protect them from air pollution



The right enforcement

Include a grace/trial period:

Informing people about the measure without punishing them immediately usually helps make the measure more acceptable. This can be done through a grace period that can last several weeks or months. Paris and Brussels adopted this strategy in order to ease the introduction and gradual tightening of their LEZs. For instance, the Brussels Region - where Euro 4 diesel cars have been banned since January 2022 - will only start fining the drivers of these vehicles later in 2022. This also has the advantage of spreading the information about the scheme. As explained in a 2021 ReVeAL piece, drivers cannot be expected to comply with a measure they are not aware of.²⁹

Use effective enforcement options:

Effective enforcement is essential not only in order to achieve the objectives of the LEZ, but also to guarantee fairness towards those that have switched to cleaner modes of transport or vehicles. Several types of enforcement are currently used in Europe:



Licence plate video recognition:

Advantages: Monitoring is more effective and allows for better data collection, which ultimately simplifies the tracking of progress. For example, London is able to account for the number of non-compliant vehicles in circulation and track their evolution overtime, thus monitoring the effectiveness of the ULEZ.³⁰

Risks: Camera enforcement can give rise to privacy concerns, especially on data collection as it is the case in France or Germany. For example, the French agency in charge of the respect of citizens' online privacy (CNIL) issued a negative opinion on this technology.³¹ Initially planned for 2022, video enforcement will probably only be implemented with additional safeguards in Paris in 2023.³²

Effective enforcement is essential not only in order to achieve the objectives of the LEZ, but also to guarantee fairness towards those that have switched to cleaner modes of transport or vehicles.



Remote sensing technology
 In addition to camera enforcement, so-called remote sensing technology can also be used. It measures pollution and noise levels of vehicles in real-time on the road, which also allows for spotting high-polluters and vehicles with defective exhaust after-treatment systems. When combined with licence-plate recognition, individual drivers can be informed about non-compliance or excessive emissions. The technology has already been used in several European cities,³³ and the EU is currently funding a research project to make its application easier and cheaper.³⁴

Manual enforcement:
 Manual enforcement is used in many cities but often lacks consistency and does not provide the same data quality to track the progress on an LEZ. Besides, it requires significant staff to enforce the LEZ. If enforcement is carried out manually, it can be combined with checks to enforce parking regulations as it is the case in Berlin.³⁵

Each enforcement method has advantages and shortcomings, and different implications for enforcement authorities. As this briefing only provides an overview, more detailed information can be found on the website of the EU-funded ReVeAL project.³⁶

Use revenues from fines to fund alternatives
 to (polluting) car use such as investing in public transport, space for active mobility, or scrappage schemes. This can improve the availability and quality of alternatives to private cars and hence enhance acceptability.



The right complementary measures

Set up complementary UVAR measures³⁷

to help reach the LEZ's objectives: if a city wants to tackle congestion, it should consider introducing road tolls or congestion charges to enter the LEZ, like it is the case in London. Parking regulations for cars, like the ones used in Oslo,³⁸ or alternative traffic plans like the one of Ghent, Belgium, can also be important complementary measures. In Brussels, the LEZ is coupled with access restrictions to cars in the city centre, thus making it a more livable area. These other measures will need to be accompanied by alternatives and financial support.

Ramp up alternatives to the private car:

The alternatives to private car use are only attractive if they are also convenient. Investments in alternatives such as walking, cycling, micro mobility as well as shared and public transport should therefore be made. A 2021 YouGov survey commissioned by the Clean Cities Campaign showed that European city dwellers mainly use their cars for long distance trips (56%) and grocery shopping (54%). To a lesser extent, it is also the case for urban trips in general (41%), and commuting (36%). Consequently, ramping up alternatives that could serve these purposes is an effective way to make the use of private cars obsolete.

The alternatives to private car use are only attractive if they are also convenient. Investments in alternatives such as walking, cycling, micromobility as well as shared and public transport should therefore be made.

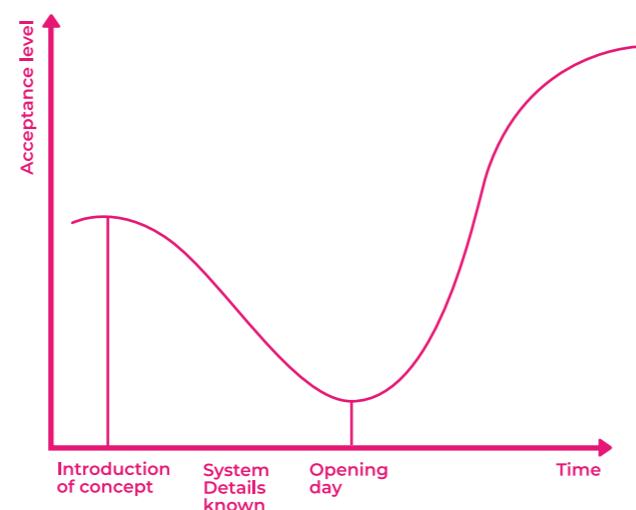


The right targeted support

BOX 1: SECURING PUBLIC ACCEPTANCE

Public resistance can result from a perceived lack of fairness. Complementary measures can therefore be as important as the LEZ itself. The fairer the transition, the better and the more widely accepted it will be.

- ▶ Business owners often first oppose the introduction/expansion of LEZs, fearing that this will negatively impact their activity. A recent CCC study literature review however showed that local business often benefit from measures that promote active and public transport.³⁹
- ▶ LEZs have proven to reduce air pollution overall and don't divert it to other neighbourhoods, as explained in the preface. What's more, they contribute to increasing social fairness, since, in many cities, lower-income people often live on busier and hence more polluted roads.⁴⁰ They also often don't own a car. As for the rest, it should be addressed by measures focusing on equity, as explained in Box 2.
- ▶ It is important to bear in mind that setting up a low-emission zone will likely face initial resistance, despite a clear plan and good communication. However, once the LEZ is launched and its benefits materialise, resistance usually fades as illustrated by the graph below.



source: ReVeAL, 2022

Targeted Exemptions

Consultation phases can lead to a high demand for exemptions. Although they might be necessary in a few cases, they should only be granted to very specific groups and for a limited time. Besides, too many exemptions can lead to additional administrative burden.⁴¹

Provide targeted support

for specific groups. The socio-economic impact of LEZs is of utmost importance as underlined by a recent guide on LEZs published by "Ecologistas en acción". A balance needs to be found in accompanying lower-income households who often have no cars or use on older ones.⁴² For instance, a study from Austria⁴³ has shown that only 44% of low-income households in the country own a car. In Paris, only 34% of all households own a car,⁴⁴ and less than half of them in Berlin.⁴⁵

Scrappage schemes can be set up in parallel in order to facilitate the switch to clean(er) vehicles, as it has been done in Greater Paris with the "Métropole Roule Propre" programme.⁴⁶ Similarly, the Brussels Capital Region recently updated its financial schemes⁴⁷ supporting the transition to electric vehicles for professionals, or the transition to cleaner mobility by making this scrappage scheme also available for the purchase of cargo bikes.

BOX 2: SUMMARY OF EQUITY MEASURES

Lower-income households are not more exposed only to air pollution but may also be more vulnerable to the potential economic implications of LEZs. The following measures have proven effective to address these equity concerns:

- ▶ Invest in clean alternatives: public transport, cycle lanes and pedestrian infrastructure, micro mobility and shared transport.
- ▶ Provide financial incentives to encourage the transition to cleaner mobility: e.g. discounts on public transport passes and subscriptions to public bike schemes and car sharing as well as scrappage schemes;
- ▶ Plan for exceptional exemptions, e.g. day passes for a small number of days per year. For example, the Brussels LEZ offers the possibility to buy a daily pass up to 8 times/year in case

of non-compliance (see Annex 2 for more details). This has limited effects on air quality but makes sure that citizens that use their cars very little in the concerned area do not need to replace their vehicle for a very small number of trips. For longer exemptions, they should be assessed case by case and not exceed a year.⁴⁸

- ▶ Put in place support measures for financing the transition to cleaner cars in areas where it is really necessary. These schemes best work when tailored to each category of persons (sole traders, households, business owners, etc.), hence the need to hold public consultations beforehand in order to grasp the needs of each category of citizens (see also the points above on communication).



The right monitoring

Ensure proper data collection:

In order to assess the progress and effects of the LEZ, the collection of high-quality and consistent data must be planned for. Indicators such as NO2 pollution levels, the number of vehicles and especially non-compliant ones, or congestion

indexes are a good start. Cities in the United Kingdom, for example, are particularly good at that. The same can be said for the Brussels LEZ, which has a website dedicated to it, making yearly reports on the LEZ publicly available.



The right vision

Foresee the transition to zero-emission zones:

An LEZ is not an end in itself, but rather a step in the wider transition to zero-emission mobility that protects the climate and public health. Any policy should therefore define a path towards a zero-emission zone (ZEZ). As for LEZs, the clearer the

path is and the sooner the communication takes place, the better. Amsterdam currently has set the clearest plan for the transition from an LEZ to a ZEZ, with a gradual tightening that will phase-in a complete ZEZ in all built-up areas by 2030.⁴⁹



Conclusions

This briefing has summarised the 7 most important steps to create a successful low-emission zone, from the design to the monitoring, enforcement and transition to a zero-emission zone. These are the following:

- ▶ **Defining** clearly the objectives, area(s), scope, and timelines when designing a LEZ.
- ▶ **Communicating** well in advance and involving citizens and businesses in the process.
- ▶ Ensuring effective and fair **enforcement**, while foreseeing some flexibility to guarantee fairness, e.g. by offering a limited number of (daily) exemptions where really necessary.
- ▶ Putting in place **complementary measures**, but most importantly for alternatives to private car use, mainly walking, cycling, micromobility, shared and public transport.
- ▶ **Providing targeted financial support** to the most vulnerable groups (e.g. low-income households) and, where necessary, certain local charities or businesses.

- ▶ **Monitoring** the effects, by collecting high-quality data.
- ▶ **Setting a binding timeline to fully transition to a zero-emission zone (ZEZ) by 2030** at the latest.

Based on **best practice examples** from all over Europe, **a well-designed LEZ should:**

- ▶ Be as **large, stringent**, and **well-enforced** as **London's ULEZ**,
- ▶ Be as **inclusive, well-communicated** and **forward-looking** as **Amsterdam's LEZ**,
- ▶ Provide at least as many **alternatives and support** measures as **Paris**,
- ▶ Be combined with a **general overhaul of traffic plans** like **Ghent**,
- ▶ Still strike a **flexible balance** through capped daily passes like in **Brussels**.



Annex 1: A short overview of frontrunner cities

Quick introduction of frontrunners⁵⁰: Why them?

- ▶ **Amsterdam:** The strength of Amsterdam's LEZ is its targeted approach for each type of vehicle, gradually increasing the zone's stringency over time. Moreover, the City of Amsterdam has the most detailed plan on how to transition from LEZ to ZEZ using an integrated approach.⁵¹
- ▶ **London:** The London Ultra Low Emission Zone (or ULEZ) has proven to be a successful scheme both in terms of emissions and traffic reductions, based on the "polluter pays" model. There are also proposals to set up a ZEZ in Central London by 2025, in inner London by 2040, and in the whole city by 2050 at the latest although they are yet to be defined in detail.⁵² Transport for London provides regular reports that track progress, thanks to its enforcement technology (fixed and mobile cameras reading vehicle licence plates) among other elements. The London ULEZ is coupled with a daily congestion charge, which includes an exemption for battery electric or hydrogen fuel cell vehicles until 2025.

- ▶ **Paris:** The city underwent significant change over the past few years, trying to clean its air while promoting alternatives to private car use such as cycling. Besides, the Paris LEZ has been steadily expanding and improving, and a ZEZ is foreseen for 2030 with intermediary steps. Financial incentives have also been ramped up as part of the "Métropole Roule Propre" programme, in an effort to make the transition fair;
- ▶ **Brussels:** Similarly to Paris, the Brussels LEZ has been expanding and becoming more stringent over the years, driving a change in mobility overall. Although more efforts need to be made in promoting zero-emission alternatives, the Brussels LEZ is an ambitious scheme, effectively monitored while offering financial support schemes and incentives making the measure fair. The coherence of the measure and its step by step approach, makes it a good example to follow.
- ▶ **Ghent:** Although the Belgian city of Ghent is smaller, it is probably the most accomplished example of how to combine a LEZ and alternative traffic plans that can reduce car ownership.⁵³ The city has also successfully promoted active mobility.

Annex 2: A detailed overview of best practice examples

City	Hours of activity	Current standards*	Exemptions	Enforcement type	Upgrade planned	Complementary UVAR measure	Alternative mobility options
Amsterdam	Permanent	Cars: Diesel Euro 4 Vary depending on vehicle type	Daily allowance can be bought	Video licence plate reader	ZEZ by 2030 with detailed plan	Access Restriction in certain zones	Good cycling infrastructure and public transport are affordable
Brussels Capital Region	Permanent	Cars: Diesel Euro 5 and Petrol Euro 2 Vary depending on vehicle type	Some vehicles are exempt. Possibility to buy a pass 8 times/year in case of non-compliance	Video licence plate reader	2025: petrol: Euro 3 diesel: Euro 6 Diesel Phase out in 2030 ZEZ 2035	Access Restrictions and Pedestrian Zones	Existing walking and cycling infrastructure that needs to be further improved, similarly to access to public transport
London	ULEZ is permanent, Congestion Charge is active from Monday to Friday, from 7 am to 6 pm and on weekends from 12 to 6 pm	Cars: Petrol Euro 4: Diesel Euro 6 Vary depending on vehicle type	Non-compliant vehicles pay a daily fee to enter the ULEZ (15£) Some vehicles are eligible for permanent exemptions.	Video licence plate reader	ZEZ by 2040, by 2025 in Central London (through a gradual phasing with test neighbourhoods)	Congestion Charge	Lack of infrastructure for walking and cycling, and public transport is expensive although accessible
Paris (Greater Paris)	Monday to Friday from 8 am to 8 pm	Cars: Diesel Euro 4 (Crit'air 2) and Petrol Euro 2 Vary depending on vehicle type	Some local exemptions (delivery, public service)	Manual enforcement (Video enforcement has been delayed several times)	July 2022: Diesel Euro 5 (Crit'air 1) ZEZ by 2030	Emergency Scheme, Access Restrictions in some areas	Public transports are accessible and affordable, but efforts to be made for walking and cycling infrastructure
Ghent	Permanent	Cars: Diesel Euro 5; Petrol Euro 2	Day passes for 35 EUR can be bought up to 8 times a year (Diesel Euro 3 vehicles); and temporary permits for Diesel Euro 4 vehicles Other fees can be applied depending on the time period and type of vehicle	Video licence plate reader	January 2025: Petrol Euro 3 and Diesel Euro 6 January 2028: Petrol Euro 4 and Diesel Euro 6d (RDE).	The LEZ complements a new traffic plan that directs through-traffic to the ring road and makes large parts of the city centre almost car-free.	Good cycling infrastructure, and affordable public transports. Efforts to be made in making them more accessible and developing walking infrastructure

*All vehicles are affected by each LEZ, although the standards vary depending on the type of vehicle.

References:

- Sadler Consultants. (2022). Low Emission Zones. Retrieved from: <https://urbanaccessregulations.eu/low-emission-zones-main>
- Sadler Consultants. (2022). Low Emission Zones. Retrieved from: <https://urbanaccessregulations.eu/low-emission-zones-main>
- 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/>
- 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>
- 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>
- Mayor of London. (2019). Central London ULEZ - Six Month Report. Retrieved from: <https://www.london.gov.uk/WHAT-WE-DO/environment/environment-publications/central-london-ulez-six-month-report>
- Tomtom Traffic Index. (2022). Do low emission zones work? TomTom Traffic Index has the answer. Retrieved from: <https://www.tomtom.com/blog/traffic-and-travel-information/do-low-emission-zones-work/>
- 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
- 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/>
- Clean Cities Campaign. (2021). What European city-dwellers want from their mayors post-Covid – Survey. Retrieved from: <https://cleancitiescampaign.org/2021/05/04/what-city-dwellers-want-from-their-mayors-post-covid/>
- Clean Cities Campaign. (2021). Why fewer (polluting) cars in cities are good for local shops. Retrieved from: https://cleancitiescampaign.org/wp-content/uploads/2021/12/Clean-Cities-briefing_-_Why-fewer-polluting-cars-in-cities-are-good-news-for-local-shops_1.pdf
- C40 Cities. (2019). How to design and implement a clean air or low emission zone. Retrieved from: https://www.c40knowledgehub.org/s/article/How-to-design-and-implement-a-clean-air-or-low-emission-zone?language=en_US
- City of Ghent. (2017). The Circulation Plan. <https://stad.gent/en/mobility-ghent/circulation-plan>
- Transport & Environment. (2022). EU governments take historic decision to end sale of polluting cars. Retrieved from <https://www.transportenvironment.org/discover/eu-governments-take-historic-decision-to-end-sale-of-polluting-cars/>
- C40 Cities. (2019). How to design and implement a clean air or low emission zone. https://www.c40knowledgehub.org/s/article/How-to-design-and-implement-a-clean-air-or-low-emission-zone?language=en_US
- Mayor of London. (2021). Central London ultra low emission zone report 2020. Retrieved from: https://www.london.gov.uk/sites/default/files/ulez_evaluation_report_2020-v8_finalfinal.pdf
- Bruxelles Environnement. (2021). Évaluation de la zone de basses émissions - rapport 2020. Retrieved from: <https://www.lez.brussels/medias/RAPP-2020-LEZ-FR-FINAL.pdf?context=bWFzdGVyfHBkZnwyMjkwMDg4fGFWcGx-pY2F0aW9uL3BkZnXoZDlvaGNILzG4NDIzMjg4MDEzM-TAVUkFQUF8yMDIwX0xFWI9GUl9GSU5BTC5wZGZ8MDk2ZjdmZjRhODFmNzFYTUxMGEwYTgwNDQlOWIzOIGY3OGFkNj-c2YVWjODQ0YjIiYTY3NTAINTMzYzlyZDNIINA>
- The City of Amsterdam. (2019). Clean Air Action Plan. Retrieved from: <https://www.amsterdam.nl/en/policy/sustainability/clean-air/>
- C40 Cities. (2019). How to design and implement a clean air or low emission zone. Retrieved from: https://www.c40knowledgehub.org/s/article/How-to-design-and-implement-a-clean-air-or-low-emission-zone?language=en_US
- Ecologistas en acción. (2022). Las Zonas de Bajas Emisiones Guía para su aplicación con criterios climáticos y de calidad del aire en ciudades medias. Retrieved from <https://www.ecologistasenaccion.org/189172/guia-para-poner-en-marcha-zonas-de-bajas-emisiones-ambiciosas-y-eficaces/>
- Transport & Environment. (2018). City bans are spreading in Europe. Retrieved from: https://www.transportenvironment.org/wp-content/uploads/2021/07/City%20bans%20are%20spreading%20in%20Europe_Report.PDF
- Clean Cities Campaign. (2021). What European city-dwellers want from their mayors post-Covid – Survey. Retrieved from: <https://cleancitiescampaign.org/2021/05/04/what-city-dwellers-want-from-their-mayors-post-covid/>
- Ecologistas en acción. (2022). Las Zonas de Bajas Emisiones Guía para su aplicación con criterios climáticos y de calidad del aire en ciudades medias. Retrieved from <https://www.ecologistasenaccion.org/189172/guia-para-poner-en-marcha-zonas-de-bajas-emisiones-ambiciosas-y-eficaces/>
- ReVeAL. (2021). UVAR Guidance User Needs and Public Acceptance. Retrieved from: <https://civitas-reveal.eu/wp-content/uploads/2021/06/ReVeAL-UVAR-Guidance-User-Needs-and-Public-Acceptance-2021.pdf>
- Ecodes. (2022). Governance and transformation of urban mobility. Retrieved from: https://ecodes.org/images/que-hacemos/01_Cambio_Climatico/Incidencia_politicas/Clean_Cities_Campaign/ECODES_GyUrbana_VolIII_ExecutiveSummary.pdf
- ReVeAL. (2021). UVAR Guide: Ensuring Compliance. Retrieved from: <https://civitas-reveal.eu/wp-content/uploads/2021/06/ReVeAL-UVAR-Guidance-Ensuring-Compliance-2021.pdf>
- C40 Cities. (2019). How to design and implement a clean air or low emission zone. Retrieved from: https://www.c40knowledgehub.org/s/article/How-to-design-and-implement-a-clean-air-or-low-emission-zone?language=en_US
- C40 Cities. (2019). How to design and implement a clean air or low emission zone. Retrieved from: https://www.c40knowledgehub.org/s/article/How-to-design-and-implement-a-clean-air-or-low-emission-zone?language=en_US
- ReVeAL. (2021). UVAR Guidance Ensuring Compliance. Retrieved from: <https://civitas-reveal.eu/wp-content/uploads/2021/06/ReVeAL-UVAR-Guidance-Ensuring-Compliance-2021.pdf>
- 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
- CNIL. (2020). Verbalisation par lecture automatisée des plaques d'immatriculation (LAPI): la CNIL met en garde contre les mauvaises pratiques. Retrieved from: <https://www.cnil.fr/fr/verbalisation-par-lecture-automatisee-des-plaques-dimmatriculation-lapi-la-cnil-met-en-garde#:~:text=La%20CNIL%20rap-pelle%20qu'en,et%20la%20constatation%20d'infractions.>
- Autoplus.fr. (2021). ZFE: la vidéo-verbalisation à Paris reportée en 2023. Retrieved from: <https://www.autoplus.fr/actualite/zfe-video-verbalisation-a-paris-reportee-2023-55196.htm-#item=1>
- The Real Urban Emissions Initiative (TRUE). (undated). About TRUE. Retrieved from Link
- Noise and Emissions Monitoring (NEMO). (not dated). Noise and Emissions Monitoring and Radical Mitigation. Retrieved from Link
- Senatsverwaltung für Umwelt, Mobilität, Verbraucher- und Klimaschutz. (not dated). Fahrzeug und Plakette. Retrieved from <https://www.berlin.de/sen/uvk/umwelt/luft/luftreinhaltung/umweltzone/fahrzeug-plakette/>
- ReVeAL. (2021). Notes of Guidance. Retrieved from: <https://civitas-reveal.eu/resources-overview/publications/guidance/>
- C40 Cities. (2019). How to design and implement a clean air or low emission zone. Retrieved from: https://www.c40knowledgehub.org/s/article/How-to-design-and-implement-a-clean-air-or-low-emission-zone?language=en_US
- Eltis (2021). Oslo – Promoting Active Transport Modes. Retrieved from: <https://www.eltis.org/resources/case-studies/oslo-promoting-active-transport-modes>
- Clean Cities Campaign. (2021). Why fewer (polluting) cars in cities are good for local shops. Retrieved from: https://cleancitiescampaign.org/wp-content/uploads/2021/12/Clean-Cities-briefing_-_Why-fewer-polluting-cars-in-cities-are-good-news-for-local-shops_1.pdf
- UNEP. (2019). Air pollution hurts the poorest most. Retrieved from <https://www.unep.org/news-and-stories/story/air-pollution-hurts-poorest-most>
- ReVeAL. (2021). Notes on exemptions and permits for LEZs and LTZs. Retrieved from: https://civitas-reveal.eu/wp-content/uploads/2021/03/ReVeAL-LEZ-LTZ_Exemptions_Permits-guidance-15-final.pdf
- Ecologistas en acción. (2022). Las Zonas de Bajas Emisiones Guía para su aplicación con criterios climáticos y de calidad del aire en ciudades medias. Retrieved from <https://www.ecologistasenaccion.org/189172/guia-para-poner-en-marcha-zonas-de-bajas-emisiones-ambiciosas-y-eficaces/>
- VCÖ. (2018). Mobilitätsarmut nachhaltig verringern. Retrieved from <https://www.vcoe.at/files/vcoe/uploads/News/VCoe-Factsheets/2018/2018-02%20Mobilitaetsarmut%20nachhaltig%20verringern/VCo%CC%88-Factsheet%20Mobilita%CC%88t%20als%20soziale%20Frage%20.pdf>
- Le Parisien. (2019). Les français toujours aussi accros à la voiture. Retrieved from: <https://www.leparisien.fr/economie/les-français-toujours-aussi-accros-a-la-voiture-13-07-2019-8115909.php>
- Statistik Berlin Brandenburg. (2018). Basic data. Retrieved from: <https://www.statistik-berlin-brandenburg.de/einkommen-und-konsum>
- Métropole du Grand Paris. (2021). "Métropole Roule Propre!". Retrieved from: <https://www.metropolegrandparis.fr/fr/metropoleroulepropre>
- Low Emission Zone Brussels. (2022). Quelles sont les offres de mobilité alternatives proposées par la Région bruxelloise?. Retrieved from: <https://www.lez.brussels/mytax/fr/alternatives?tab=Primes#>
- ReVeAL. (2021). Notes on exemptions and permits for LEZs and LTZs. Retrieved from: https://civitas-reveal.eu/wp-content/uploads/2021/03/ReVeAL-LEZ-LTZ_Exemptions_Permits-guidance-15-final.pdf
- City of Amsterdam. (2019). Clean Air Action Plan. Retrieved from: <https://www.amsterdam.nl/en/policy/sustainability/clean-air/>
- Data on Low-Emission Zones from urbanaccessregulations.eu
- The City of Amsterdam. (2019). Clean Air Action Plan. Retrieved from: <https://www.amsterdam.nl/en/policy/sustainability/clean-air/>
- Mayor of London. (2018). Mayor's Transport Strategy 2018. Retrieved from: <https://www.london.gov.uk/what-we-do/transport/our-vision-transport/mayors-transport-strategy-2018>
- 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/>



Photo: Ivan Put for Filter Café Filtré

Contact

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

About the Clean Cities Campaign

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