



Regulating Vehicle Access
for improved Livability



D2.2 Set of Categories of UVAR measures in ZEZ, Spatial Interventions and Pricing Measures

Ghent University

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Summary sheet

Deliverable No.	2.2
Deliverable name	Set of Categories of UVAR measures in ZEZ, Spatial Interventions and Pricing Measures
Project Acronym	ReVeAL
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ReVeAL partners

	Partner name	Abbreviation	Country
1	Stadt Bielefeld	Bielefeld	Germany
2	Comune di Padova	Padova	Italy
3	Università degli studi di Padova	UNIPD	Italy
4	Gemeente Helmond	Helmond	Netherlands
5	V-Tron BV	V-TRON	Netherlands
6	Municipality of Jerusalem	Jerusalem	Israel
7	City of London Corporation	CoL	UK
8	Transport for London	TfL	UK
9	Centro de Estudios Ambientales	CEA	Spain
10	Sadler Consultants Europe GmbH	Sadler	Germany
11	TRT Trasporti e Territorio SRL	TRT	Italy
12	WSP Sverige AB	WSP	Sweden
13	Polis	Polis	Belgium
14	Universiteit Gent	UGent	Belgium
15	Rupprecht Consult – Forschung und Beratung GmbH	Rupprecht	Germany

Document history

Version	Date	Organisation	Main area of changes	Comments
1.0	November 30, 2019	UGent	Construction of document	Previous versions were made in another layout
2.0	December 13, 2019	UGent	Revision of the document with regards to the delayed deadline for D2.1 and D2.2	New selection of (key) building blocks and provision of additional comments
2.1	December 18, 2019	UGent	Incorporation of comments and revisions by the MFLs and project coordinator	

List of acronyms

BB	Building Block
FO	Future Options
LEZ	Low-Emission Zone
LTZ	Limited Traffic Zone
MFA	Measure Field Area
MFL	Measure Field Leader
PM	Pricing Measures
PZEZ	Pathways to ZEZ
SI	Spatial Interventions
UK	The United Kingdom
USA	The United States of America
ZEZ	Zero-Emission Zone



ReVEAL overview

Smarter urban vehicle access regulations

Despite urgent calls for “smarter urban vehicle access regulations” in the Urban Mobility Package and other high-level political commitments, very few decision makers are keen on going public with the idea of restricting car access (in time or space) in urban areas. ReVeAL will help to add Urban Vehicle Access Regulations (UVAR) to the standard range of urban mobility transition approaches of cities across Europe. Toward this end, the ReVeAL consortium will combine conceptual work and case study research with hands-on UVAR implementation in six pilot cities and systematic stakeholder interaction and professional communication activities.

The ReVeAL approach works along three different dimensions when considering the implementation of new UVARs:

1. It looks at a range of UVAR measures, grouping them into *Measures Fields*.
2. It looks at all measures through the lens of four *Transition Areas*, which need to be taken into account in any local setting (Governance and Financing, Mobility Services and Concepts, System Design and Technology, User Needs and Acceptance)
3. It approaches all of these in the light of the stages of the change process, understanding that cities at different stages are capable of different levels of ambition.

These aspects are crucial to consider for the implementation of any kind of UVAR measure. ReVeAL will open and expand the UVAR toolbox through a dedicated work package (WP2 – UVAR Options and Scenarios), covering both established and cutting-edge approaches. The most important and new ones are Pathways to Zero-Emission Zones (ZEZ) as well as planning and design-related approaches for Spatial Interventions at district level such as superblocks. Also included is the broad array of Pricing Measures (e.g. dynamic road and curb space user charges, congestion charging, paid or regulated parking space) and radically novel approaches such as C-ITS-based strategies to control vehicle access through automated C2I communication or geo-fencing. ReVeAL includes world-leading experts in these four areas who can support the pilot cities during the design and implementation of their UVAR measures. Some of these approaches will be considered in more detail in scenario building activities which will take place in each of the Pilot Cities.

Overview of Deliverable 2.2: Set of Categories of UVAR measures in ZEZ, Spatial Interventions and Pricing Measures

This deliverable defines the observed measures according to a full and formal taxonomy; used to identify and categorise raw data. As such, a long list of UVAR building blocks are selected for three Measure Fields: Spatial Interventions, Pricing Measures and Pathways to ZEZ (formerly known as ZEZ)¹. In addition, the long list also contains various building blocks in the MFA Future Options. This deliverable will support the city support as described in WP3.

Describing urban vehicle access regulations

ReVeAL is gathering and structuring existing evidence, current trends and developments in the implementation of various UVAR measures in Europe and around the world. Evidence will be gathered in four ReVeAL Measure Fields, namely:

- Spatial Interventions
- Pricing Measures
- Pathways to ZEZ
- Future Options

The purpose is to construct a ReVeAL knowledge base that will serve as a basis for building UVAR-related scenarios for the six ReVeAL pilot cities as well as feed into the Process Advisor of the decision support tool for cities post-project.

¹ In D2.1, we refer to the MFAs Spatial Interventions (SI), Pricing Measures (PM), Future Options (FO) and Pathways to ZEZ (PZEZ). The last one was formerly known as Zero-Emissions Zones (ZEZ); however, in consultation with the Measure Field Leader, it was decided to change the title to “Pathways to ZEZ”. Spatial Interventions and Pricing Measures are methods, whereas ZEZ is a goal that can be reached through regulations, pricing or spatial interventions. Most of the regulations are the same mechanisms that can be extended into ZEZs. However, the title ZEZ can mislead cities into calling an UVAR a ZEZ when they actually mean a Low-Emission Zone (LEZ) or Limited Traffic Zone (LTZ). Therefore, a broader title was selected, indicating that several steps can be taken towards the end goal of a ZEZ. In addition, the project examines existing schemes, yet the few ZEZ that are currently in place are very recent. Therefore, it was decided to keep the theme but change the labelling. As such, the MFA Pathways to ZEZ covers a range of schemes including LEZ, LTZ, schemes regulating limited access to freight traffic to protect road safety of vulnerable road users (with, for example, a possible end goal of Vision Zero) or schemes aimed at reducing the number of cars entering an area to improve quality of life (e.g., air quality, noise levels, car-free public spaces, etc.). The MFA focuses on schemes that require a regulatory instrument (often called a ‘ban’). This overlaps in some cases with Spatial Interventions as, for larger car-free areas (such as in the pilot city Helmond), vehicle access for delivery and servicing is needed, and to be a ZEZ, these need to meet certain regulatory requirements.

The knowledge base is filled with best practices and experience of existing UVAR implementations and with observed processes in the pilot cities. Data will be collected and related to the three Measure Fields: Spatial Interventions, Pricing Measures and Pathways to ZEZ. Future Options are handled differently as, due to their nature, few known implementations exist.

Two types of UVAR activity will be collected:

- **City case studies**

A city case study is an extensive review of a city where implementation of measures in one or more Measure Fields has taken place (e.g., a ZEZ by design in Amsterdam, a pollution charge in London or the circulation plan in Ghent). Each case study examines the change processes through the lens of the four ReVeAL Transition Areas and gives a global and connected view of UVAR implementation. For deliverable D2.1, a short list of example UVAR strategies for 8 city case studies has been selected.

- **UVAR building blocks**

A measure in this context is a building block (e.g. a parklet) that moves in the direction of a larger implementation (e.g. superblock). Such measures may take the form of small or large-scale initiatives, or specific aspects of initiatives ranging across the different ReVeAL Transition Areas. These could include, for example, parklets, urban freight regulation, or successful methods to implement an aspect of a controversial LEZ (e.g. a logistics hub). For deliverable D2.1, a short list of example UVAR building blocks from 30 cities has been selected.

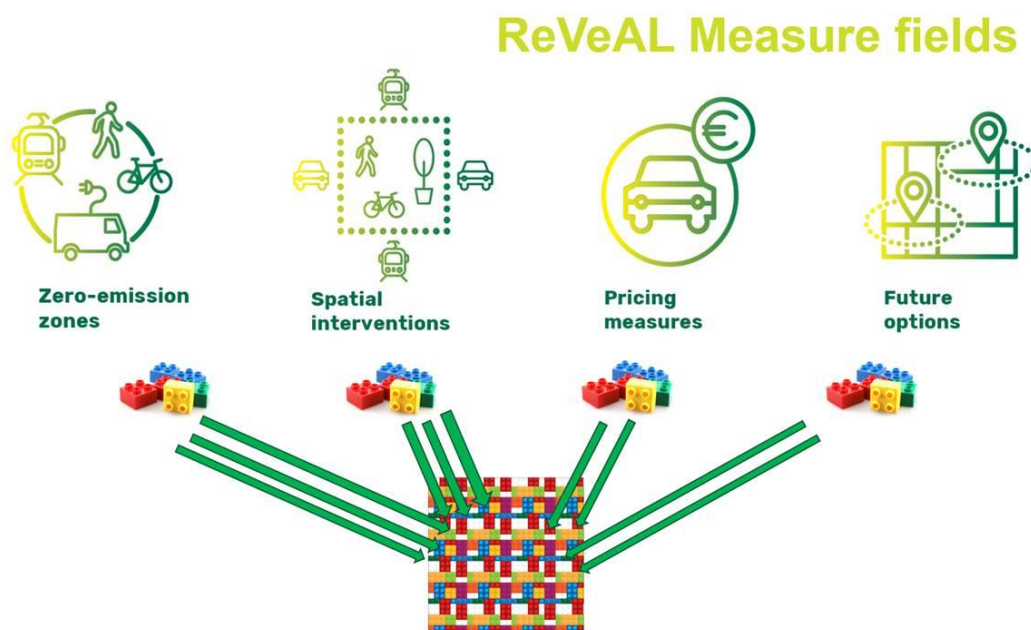


Figure 1. The aim of the inventory is to describe UVAR building blocks and strategies for the various MFAs. One or more building blocks from the different MFAs can constitute an UVAR strategy

An UVAR framework based on building blocks

An UVAR strategy consists of a combination of various UVAR building blocks (Figure 1) or a small or large-scale implementation of one UVAR building block (Figure 2). In specific cases, UVAR building blocks can also exist separately, without being part of a general UVAR strategy. For Task 2.3 (and deliverable D2.4), the city case studies will be described in detail by using the impact and process parameters as defined in Task 4.2 (Process Evaluation) and Task 4.3 (Impact Assessment).

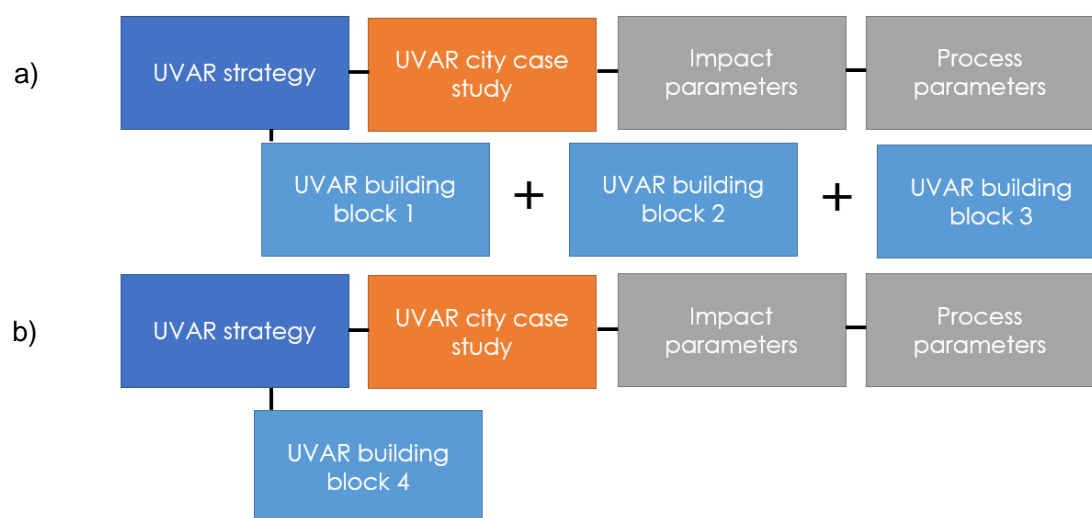


Figure 2. UVAR strategies and building block structure

There are clear links between the different MFAs. Spatial interventions, for example, are often also seen as complementary measures to other UVARs, such as regulations focused on charging or limiting motor vehicle traffic. And parking charges or the cost of permits could also be related to the implementation of an LTZ. The structure of the building blocks is addressed in this manner, leading to the possibility of selecting one or more relevant building block(s) for a specific UVAR strategy. In addition, it is important to note that strategies can gradually add other building blocks in the process of implementation.

For example, ‘superblock’ is an UVAR strategy/concept in the MFA Spatial Interventions. Various UVAR building blocks (from different MFAs) can constitute a superblock strategy, such as cycling streets, parking charges, traffic flow management, permit schemes with ZEV requirements, etc.

Ideally, the case study cities demonstrate a wide range of strategies that combine various building blocks (or implement specific building blocks in the context of a broader strategy), acting as case study examples of UVAR implementation. This results in a framework that should be generally applicable and should also be able to serve as an overall framework for cases outside the pilot cities (from the overall goal of providing an UVAR inventory within a European project).

The building blocks in the Set of Categories show the definition and characteristics of various UVAR categories and city examples for each MFA. If a building block has different implementation options, it is subdivided into different subcategories (Figure 2).

For example, ‘traffic filter’ is a building block in the MFA Spatial Interventions and consists of various subtypes, such as ‘road block’, ‘through traffic ban’ or ‘one-way street’.

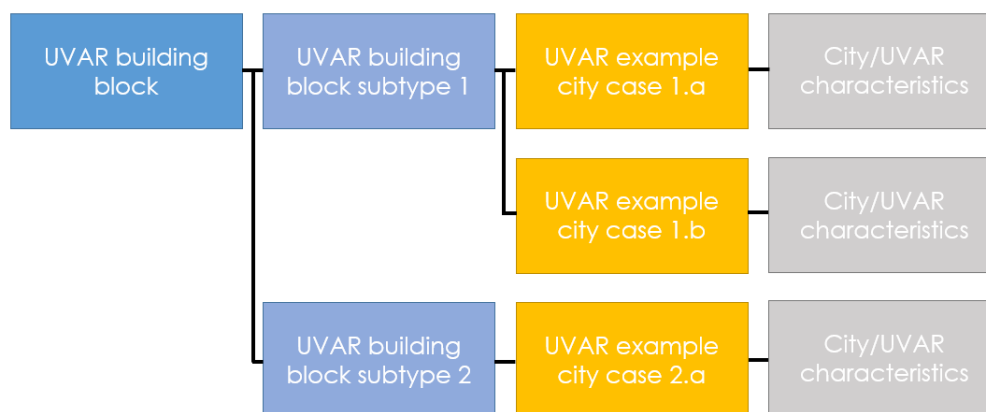


Figure 3. UVAR building block and building block subtypes

The long list of UVAR building blocks

The UVAR building blocks for the different MFAs can be found in the annex. In black are the key building blocks for each MFA (7-8 per MFA). This selection relates to the short list in deliverable D2.1. The greyed-out (subtypes of) building blocks show the long list of options, indicating that more variations on the short list selection are possible. The long list shows 96 building blocks and describes the characteristics of those building blocks (definition, city example, specific location, year of implementation and a reference). The cities were chosen in consultation with the Measure Field Leaders to have a wide geographical and contextual spread. The aim for the short list – a selection of 30 key building blocks – is to be able to encompass all strategies and, as such, construct the most general range of example UVAR measures as implemented in the city case studies. The building blocks not listed in the short list provide different adaptations and complexities to those in this short list. The building blocks in the different MFAs can have overlaps, as building blocks in a certain MFA might be implemented in strategies in another MFA. It is important to underline this cross fertilisation as it demonstrates the relationships between the different MFAs.

For example, the superblock implementation in Vitoria-Gasteiz is considered as Spatial Intervention strategy although it will also consist of building blocks in the MFA Pricing Measures. At the same time, restriction by vehicle type in the Pathways to ZEZ MFA can be a relevant building block for the superblock strategy.

The final goal is to construct a searchable database of UVAR building blocks leading to a set of tools that both the project pilot cities and cities looking into UVAR strategies post project could consult. This should be considered a living document that can change in the course of the project and in interaction with the pilot cities. In the follow up of this deliverable, we should critically assess if the selection of the short list is sufficient to support the pilot cities in their UVAR implementation.



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Annex

UVAR set of categories - long list of building block descriptions

Annex 1: UVAR set of categories - long list of building block descriptions

Building Block/ Regulation by...	ID	U1a: Measure field	U2: UVAR building block subtype	U3: Definition
1 School street	SI1a	Spatial interventions	Car-free school area	Area around a school that is (partially or temporally) inaccessible to motorized vehicles.
School street	SI1a	Spatial interventions	Car-free school area	Area around a school that is (partially or temporally) inaccessible to motorized vehicles.
School street	SI1b	Spatial interventions	K&R	Area around a school where the time motorized vehicles can stop is limited (to the time needed to drop off children).
School street	SI1c	Spatial interventions	Speed regulated	Area around a school where (partially or temporally) speed for motorized vehicles is regulated.
2 Cycling street	SI2a	Spatial interventions	/	Non-segregated street with right of way for cyclists, who are the priority users. Cars are guests and can be forbidden or discouraged (depending on country specific traffic regulation) to overtake cyclists. Cycling streets are characterized by a custom red surface or road marking at the entrance of the street.
Cycling street	SI2a	Spatial interventions	/	Non-segregated street with right of way for cyclists, who are the priority users. Cars are guests and can be forbidden or discouraged (depending on country specific traffic regulation) to overtake cyclists. Cycling streets are characterized by a custom red surface or road marking at the entrance of the street.
Cycling street	SI2a	Spatial interventions	/	Non-segregated street with right of way for cyclists, who are the priority users. Cars are guests and can be forbidden or discouraged (depending on country specific traffic regulation) to overtake cyclists. Cycling streets are characterized by a custom red surface or road marking at the entrance of the street.
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Cycling street	SI2a	Spatial interventions	/	Non-segregated street with right of way for cyclists, who are the priority users. Cars are guests and can be forbidden or discouraged (depending on country specific traffic regulation) to overtake cyclists. Cycling streets are characterized by a custom red surface or road marking at the entrance of the street.

Annex 1: UVAR set of categories - long list of building block descriptions

3 Traffic filter	SI3a Spatial interventions	Road block	Physical barrier to disable motorized vehicle access.
Traffic filter	SI3a Spatial interventions	Road block	Physical barrier to disable motorized vehicle access.
Traffic filter	SI3b Spatial interventions	Capacity restraint - limiting volume	Physical barrier to limit the volume of (a certain type of) motorized vehicles passing through (and stopping in) the city (e.g., fixed poles or blocks, redesign of the streets, etc.).
Traffic filter	SI3c Spatial interventions	Visual Barrier	Visual barrier to limit the volume of motorized vehicles passing to (and stopping in) the city (e.g., road marks, traffic signs, etc.).
Traffic filter	SI3d Spatial interventions	Through traffic ban	A road traffic sign is required, whatever UVAR is implemented. Some regulations are implemented solely with a through traffic road sign on a single street, or a whole urban area. In the case of Gent, they have also enforced this with cameras.
Traffic filter	SI3e Spatial interventions	One-way street	Restriction to one-way right of passage to a street for motorized vehicles.
Traffic filter	SI3e Spatial interventions	One-way street	Restriction to one-way right of passage to a street for motorized vehicles.
Traffic filter	SI3e Spatial interventions	One-way street	Restriction to one-way right of passage to a street for motorized vehicles.
4 Removing parking or road space	SI4a Spatial interventions	Parklet	Small public space or green space created as a public amenity on or alongside a pavement, especially in a (or several) former roadside parking space(s).
Removing parking or road space	SI4a Spatial interventions	Parklet	Small public space or green space created as a public amenity on or alongside a pavement, especially in a (or several) former roadside parking space(s).

Annex 1: UVAR set of categories - long list of building block descriptions

Removing parking or road space	SI4a Spatial interventions	Parklet	Small public space or green space created as a public amenity on or alongside a pavement, especially in a (or several) former roadside parking space(s).
Removing parking or road space	SI4a Spatial interventions	Parklet	Small public space or green space created as a public amenity on or alongside a pavement, especially in a (or several) former roadside parking space(s).
Removing parking or road space	SI4b Spatial interventions	Widen pavement	The removal of parking space to allow for the widening of the pavement.
Removing parking or road space	SI4c Spatial interventions	Drop-off zone shared mobility	Parking space is converted to space for dropping of vehicles of (primarily free floating) shared mobility systems.
Removing parking or road space	SI4c Spatial interventions	Drop-off zone shared mobility	Parking space is converted to space for dropping of vehicles of (primarily free floating) shared mobility systems.
Removing parking or road space	SI4d Spatial interventions	Logistics bay (mini-hub)	Designated accessible parking spaces.
5 Cycle lane	SI5a Spatial interventions	Redistribution of road space	Reallocating and redesigning road space for cyclists.
Cycle lane	SI5b Spatial interventions	Conversion of parking lane	Reconversion of parking space for cyclists.
Cycle lane	SI5b Spatial interventions	Conversion of parking lane	Reconversion of parking space for cyclists.
6 Pedestrian street	SI6a Spatial interventions	Mixed used cycling-pedestrians	Streets allocated and designed for pedestrians, allowing for mixed-use where cyclists (and possibly other transport modes) are allowed as guests.
Pedestrian street	SI6a Spatial interventions	Mixed used cycling-pedestrians	Streets allocated and designed for pedestrians, allowing for mixed-use where cyclists (and possibly other transport modes) are allowed as guests.
Pedestrian street	SI6b Spatial interventions	Residents only vs other groups	Streets allocated and designed for pedestrians, only allowing resident (or an other specific group) access.
Pedestrian street	SI6c Spatial interventions	Temporal pedestrian street	Streets allocated and designed for pedestrians during a certain time period.

Annex 1: UVAR set of categories - long list of building block descriptions

7 Bus/tram priority lane	SI7a Spatial interventions	/	Lane designated for bus or tram movement, resulting in priority for public transport (and avoiding traffic delays having an impact on the PT circulation).
Bus/tram priority lane	SI7a Spatial interventions	/	Lane designated for bus or tram movement, resulting in priority for public transport (and avoiding traffic delays having an impact on the PT circulation).
8 Zone de rencontre/Begegnungszone/wo	SI8a Spatial interventions	/	Urban planning tool dedicated to regulating traffic and allowing different users (pedestrians, cars, bicycles, etc.) to cohabit in a non-segregated space with a maximum allowable speed of 20km per hour.
Zone de rencontre/Begegnungszone/wo	SI8a Spatial interventions	/	Urban planning tool dedicated to regulating traffic and allowing different users (pedestrians, cars, bicycles, etc.) to cohabit in a non-segregated space with a maximum allowable speed of 20km per hour.
Zone de rencontre/Begegnungszone/wo	SI8a Spatial interventions	/	Urban planning tool dedicated to regulating traffic and allowing different users (pedestrians, cars, bicycles, etc.) to cohabit in a non-segregated space with a maximum allowable speed of 20km per hour.
Zone de rencontre/Begegnungszone/wo	SI8a Spatial interventions	/	Urban planning tool dedicated to regulating traffic and allowing different users (pedestrians, cars, bicycles, etc.) to cohabit in a non-segregated space with a maximum allowable speed of 20km per hour.
9 Congestion charge	PM9a Pricing measures	Applied to a perimeter or an area	It is a daily charge to be paid for driving through a designated restriction boundary and/or within the restriction area. Cameras read the plate number as the vehicle drives through the perimeter and/or on enforced inner roads and check it against a database of registered vehicles.
Congestion charge	PM9a Pricing measures	Applied to a perimeter or an area	It is a daily charge to be paid for driving through a designated restriction boundary and/or within the restriction area. Cameras read the plate number as the vehicle drives through the perimeter and/or on enforced inner roads and check it against a database of registered vehicles.
Congestion charge	PM9a Pricing measures	Applied to a perimeter or an area	It is a daily charge to be paid for driving through a designated restriction boundary and/or within the restriction area. Cameras read the plate number as the vehicle drives through the perimeter and/or on enforced inner roads and check it against a database of registered vehicles.
Congestion charge	PM9a Pricing measures	Applied to a perimeter or an area	It is a daily charge to be paid for driving through a designated restriction boundary and/or within the restriction area. Cameras read the plate number as the vehicle drives through the perimeter and/or on enforced inner roads and check it against a database of registered vehicles.

Annex 1: UVAR set of categories - long list of building block descriptions

Congestion charge	PM9b Pricing measures	Applied to specific points	Vehicles are charged for travelling past a given location or series of locations on the road network.
Congestion charge	PM9b Pricing measures	Applied to specific points	Vehicles are charged for travelling past a given location or series of locations on the road network.
Congestion charge	PM9c Pricing measures	Distance-based charge	Tolls are proportional to the distance travelled, GPS installed inside the vehicle
10 Pollution charge	PM10aa Pricing measures	Applied to a perimeter or an area	Vehicles with high-polluting engines driving through a designated restriction boundary and/or within the restriction area are charged. Cameras read the plate number as the vehicle drives through the perimeter and/or on enforced inner roads and check it against a database of registered vehicles.
Pollution charge	PM10a Pricing measures	Applied to a perimeter or an area	Vehicles with high-polluting engines driving through a designated restriction boundary and/or within the restriction area are charged. Cameras read the plate number as the vehicle drives through the perimeter and/or on enforced inner roads and check it against a database of registered vehicles.
11 Parking charge	PM11a Pricing measures	Dynamic price (real time)	Pricing of parking spaces is updated periodically during the day to match demand levels.
Parking charge	PM11a Pricing measures	Dynamic price (real time)	Pricing of parking spaces is updated periodically during the day to match demand levels.
Parking charge	PM11b Pricing measures	Fixed price	Vehicles are charged to occupy parking spaces. Prices are fixed according areas of the city and/or time of the day.
Parking charge	PM11b Pricing measures	Fixed price	Vehicles are charged to occupy parking spaces. Prices are fixed according areas of the city and/or time of the day.
Parking charge	PM11c Pricing measures	From on-street to off-street parking	Vehicles are charged to occupy parking spaces. Prices are higher on-street than in parking infrastructure facilities to gradually reduce the presence of cars in the city and improve the quality of public spaces
12 Traffic flow management	PM12a Pricing measures	Time-based charge	Vehicle charges are based on the amount of time a vehicle is driven. The system calculates the time the vehicle remained inside the boundary and computes the fee due for access (and parking).
Traffic flow management	PM12b Pricing measures	Distance-based charge	Vehicle charges are based on the distance a vehicle does in a particular area.

Annex 1: UVAR set of categories - long list of building block descriptions

13 Urban logistic charge	PM13a Pricing measures	Mobility credits	This model establishes the total amount of “acceptable” emissions within a specific zone of a city and allocates them to economic operators. Operators can “purchase” freight transport services that are not subject to additional access charges or restrictions. Once credits have been used up, operators have the possibility to purchase more.
14 Regulation by emissions	ZEZ14a ZEZ	/	Restricting vehicles by their emissions. This is usually phased, and by vehicle type / trip. A low emission zone by fuel-dependent emissions standards.
Regulation by emissions	ZEZ14a ZEZ	/	Restricting vehicles by their emissions. This is usually phased, and by vehicle type / trip. A low emission zone with emission standards by fuel and vehicle type. This allows focusing on different vehicle types, depending on their contributions to emissions. It also gives a framework to ZEZ.
Regulation by emissions	ZEZ14a ZEZ	/	Restricting vehicles by their emissions. This is usually phased, and by vehicle type. A low emission zone with emission standards by fuel type, phasing in different vehicle types. An effective scheme, with very few exemptions, therefore one can pay the charge and enter. This scheme is covered by the charging MF
Regulation by emissions	ZEZ14a ZEZ	/	Restricting vehicles by their emissions. This is usually phased. A low emission zone with emission standards by fuel type. Novel and effective assessment measures have been used
Regulation by emissions	ZEZ14a ZEZ	/	Restricting vehicles by their emissions. A low emission zone with emission standards by fuel type. This was a very effective mixed scheme, including many different BBs.
Regulation by emissions	ZEZ14a ZEZ	/	Restricting vehicles by their emissions. This is usually phased, and by vehicle type / trip. National Polish law allows ZEZ rather than LEZs. As there are not (currently) many EVs in Poland, this becomes a banning of all vehicles, with special vehicles allowed in
15 Regulation by vehicle type and dimensions	ZEZ15a ZEZ	Vehicle type	Regulating by vehicle type. This can be by weight over a certain weight or size, or by the specific vehicle type (car, van, lorry, coach, minibus, special... A low emission zone with emission standards by fuel and vehicle type. This allows focusing on different vehicle types, depending on their contributions to emissions. It also gives a framework to ZEZ.

Annex 1: UVAR set of categories - long list of building block descriptions

Regulation by vehicle type and dimensions	ZEZ15a ZEZ	Vehicle type	Regulating by vehicle type. This can be by weight over a certain weight or size, or by the specific vehicle type (car, van, lorry, coach, minibuss, special... A combined scheme with emissions, time frame, trip purpose, phasing
Regulation by vehicle type and dimensions	ZEZ15b ZEZ	HDV / LDV	Regulating by vehicle type. This can be by weight over a certain weight or size, or by the specific vehicle type (car, van, lorry, coach, minibuss, special... A low emission zone phased in by vehicle type: first heavy duty then light duty
Regulation by vehicle type and dimensions	ZEZ15c ZEZ	Vehicle weight	Regulating by vehicle type. This can be by weight over a certain weight or size, or by the specific vehicle type (car, van, lorry, coach, minibuss, special... Vehicle weights are often limited in towns, perhaps due to what the infrastructure can cope with, sometimes simply with a road sign. Prague's weight restriction are in the shape of different permits that are required for vehicles over 3.5, 6 or 12 tonnes (these also have emissions aspects).
Regulation by vehicle type and dimensions	ZEZ15c ZEZ	Vehicle weight	Regulating by vehicle type. This can be by weight over a certain weight or size, or by the specific vehicle type (car, van, lorry, coach, minibuss, special... Vehicle weights are often limited in towns, perhaps due to what the infrastructure can cope with, sometimes simply with a road sign. Prague's weight restriction are in the shape of different permits that are required for vehicles over 3.5, 6 or 12 tonnes (these also have emissions aspects).
Regulation by vehicle type and dimensions	ZEZ15d ZEZ	Vehicle length	Regulating by vehicle type. This can be by weight over a certain weight or size, or by the specific vehicle type (car, van, lorry, coach, minibuss, special... Long vehicles are not always allowed in urban areas - often the infrastructure cannot accomodate them. Length and width, or other attributes can also be combined.
16 Regulation by trip purpose	ZEZ16a ZEZ	Delivery	Regulation of the trip type enables specification for (and inclusion or exclusion from the regulation), by for example deliveries, residents, through traffic. The permits can be time limited, or permemant. Careful consideration and definition of who is allowed into the zone can ensure that the scheme appropriately allows in (only) those it is aimed at. Deliveries are regulated, usually by a time window, but also other requirements can be added to give more (or less) freedom. A delivery regulation regulates by trip purpose and emissions. Requirements strengthened over time. Permits are required, and more flexibility is given to ZEV and cycling.

Annex 1: UVAR set of categories - long list of building block descriptions

Regulation by trip purpose	ZEZ16b ZEZ	Residents	Regulation of the trip type enables specification for (and inclusion or exclusion from the regulation), by for example deliveries, residents, through traffic. The permits can be time limited, or permemant. Careful consideration and definition of who is allowed into the zone can ensure that the scheme appropriately allows in (only) those it is aimed at. Residents are often given additional flexibility in schemes.
17 Scheme timescale	ZEZ17a ZEZ	Night time regulations	Time can be used in many ways. To have an UVAR only when the issue is accute (eg peak travel : congestion, night-time: noise, winter: pollution, summer: tourists) or to allow those in (with more inconvenience) that do not meet the standards, or when the pollution levels are/have been/are predicted to be high. Deliveries are generally not allowed during the night, to reduce noise to allow residents to sleep. However, if deliveries can be done (quietly) during the night, then this can reduce congestion, emissions and reduce driver stress.
Scheme timescale	ZEZ17b ZEZ	Time window	Time can be used in many ways. To have an UVAR only when the issue is accute (eg peak travel : congestion, night-time: noise, winter: pollution, summer: tourists) or to allow those in (with more inconvenience) that do not meet the standards, or when the pollution levels are/have been/are predicted to be high. A time window is given for entry, allowing entry when different requirements are met (and not met). This is often for delivery schemes (in and outside of pedestrian zones), and other requirements can be added to give more (or less) freedom. In the Madrid scheme many attributes are combined, including time when different vehicles are allowed in.
Scheme timescale	ZEZ17b ZEZ	Time window	Time can be used in many ways. To have an UVAR only when the issue is accute (eg peak travel : congestion, night-time: noise, winter: pollution, summer: tourists) or to allow those in (with more inconvenience) that do not meet the standards, or when the pollution levels are/have been/are predicted to be high. Deliveries are often regulated with a time window, but also other requirements can be added to give more (or less) freedom. A delivery regulation regulates by trip purpose and emissions. Requirements strengthened over time. Permits are required, and more flexibility is given to ZEV and cycling.
Scheme timescale	ZEZ17c ZEZ	season, winter pollution	Time can be used in many ways. To have an UVAR only when the issue is accute (eg peak travel : congestion, night-time: noise, winter: pollution, summer: tourists) or to allow those in (with more inconvenience) that do not meet the standards, or when the pollution levels are/have been/are predicted to be high. At times of higher pollution, tighter standards are applied

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Scheme timescale	ZEZ17d ZEZ	Season, summer tourists	Time can be used in many ways. To have an UVAR only when the issue is accute (eg peak travel : congestion, night-time: noise, winter: pollution, summer: tourists) or to allow those in (with more inconvenience) that do not meet the standards, or when the pollution levels are/have been/are predicted to be high. Some tourist areas limit vehicular access during the peak summer time to improve the quality of the experience for both locals and tourists.
Scheme timescale	ZEZ17e ZEZ	pollution	Time can be used in many ways. To have an UVAR only when the issue is accute (eg peak travel : congestion, night-time: noise, winter: pollution, summer: tourists) or to allow those in (with more inconvenience) that do not meet the standards, or when the pollution levels are/have been/are predicted to be high. Pollution "emergency schemes" restrictions during times when the pollution levels are/have been/are predicted to be high.
Scheme timescale	ZEZ17f ZEZ	peak times	Time can be used in many ways. To have an UVAR only when the issue is accute (eg peak travel : congestion, night-time: noise, winter: pollution, summer: tourists) or to allow those in (with more inconvenience) that do not meet the standards, or when the pollution levels are/have been/are predicted to be high. Reducing the number of (at certain times) lorries to reduce congestion at peak times / improve safety for school routes. The scheme was implemented as a trial.
Scheme timescale	ZEZ17g ZEZ	Introductory warning letters	Time can also be used to phase schemes in, both in telling people about the tightening scheme in advance, and giving people an introductory enforcement phase, where for the first section of time violators are sent a letter saying "you will be fined for this journey in the future, here is just a warning letter", as a way of raising knowledge of the scheme, and softening the start

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18 Regulation by permit	ZEZ18a ZEZ	Permit to travel	Permits can be an important way to implement an UVAR, both for travelling (and parking) permission to enable Limited Traffic Zones; but also in controlling aspects around (re-)building. A (non-planning) permit can be through a windscreen sticker and/or the vehicle registration plate being on a database. Where an UVAR is controlled with ANPR, there is effectively always by a permit (be that a specific "white list" (for allowed or exempted vehicles) or because the vehicle is registered with an allowed Euro standard on the (national) vehicle database). While Low Emission Zones can be regulated by eg an emissions sticker/national database entry, which is technically a permit, it is not specific permission to enter one single city area. It is, however, it is difficult to regulate (and importantly enforce) a LTZ without a specific permit to enter that city. Permits are most often used in Limited Traffic Zones, where vehicles are generally excluded, and certain vehicles allowed entry (eg residents, delivery, individual trips).
Regulation by permit	ZEZ18b ZEZ	Vehicle ownership	Permit to own a vehicle (with emissions requirements).
Regulation by permit	ZEZ18c ZEZ	Car park permit	Permit to park a vehicle (on or off street) within the area (or to drive to the car parking space).
Regulation by permit	ZEZ18d ZEZ	Permit (planning)	A condition of planning permission can be used to reduce the impact of vehicles. It can either be used in a number of ways. Planning permission can be used in a wider sense to reduce the need to travel. It can also be used to limit the number of car parking spaces allowed during development (or re-development / change of use). It can also be used to place requirements on the (on and off-road) vehicles that are used during the building phase, for example that clean vehicles (as well as other good and dust reducing construction practices) are used. The example used here is requiring the use of clean(er) construction vehicles (non-road mobile machinery) (as well as other good and dust reducing construction practices). This can be seen as a "LEZ for construction vehicles", and it can be phased in with larger construction sites and/or vehicles etc.
Regulation by permit	ZEZ18e ZEZ	Permit (planning)	Number of car parkings allowed in new-build.

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19 Regulation by other	ZEZ19a ZEZ	Load factor	There are many other aspects that can be regulated. Some of the key aspects are collated here. 2 hours additional entry to the ZTL are given in Parma for those that meet emissions and load-factor requirements.
	ZEZ19b ZEZ	Vehicle Safety features	There are many other aspects that can be regulated. Some of the key aspects are collated here. Additional safety features are required for lorries to improve safety for sustainable mobility modes such as cycling and walking.
	ZEZ19c ZEZ	Company size	There are many other aspects that can be regulated. Some of the key aspects are collated here. Phased requirement on the largest 30 firms, which have a better capacity to change than single van operators.
	ZEZ19d ZEZ	Removing road space	Car-free areas (together with logistics regulation) can be a key way to implement a ZEZ - and one with the most impact. This is taken forward within spatial intervention. Conversely, car free areas may need to allow access for delivery and servicing, which needs to be regulated.
20 Geofencing	FO20a Future options - enabler	Enabler for fuel restrictions	Specification of geographic areas in a digital map where certain rules apply for vehicles' attributes and behaviours. E.g. force electric propulsion in the powertrain control. Requires connected vehicles, legal adjustments and adapted vehicle control.
Geofencing	FO20b Future options - enabler	Enabler for access restrictions	Specification of geographic areas in a digital map where certain rules apply for vehicles' attributes and behaviours. E.g. blocking of unauthorised vehicles. Requires connected vehicles, legal adjustments and adapted vehicle control.
Geofencing	FO20c Future options - enabler	Enabler for speed restrictions	Specification of geographic areas in a digital map where certain rules apply for vehicles' attributes and behaviours. E.g. limitation of speeds . Requires connected vehicles, legal adjustments and adapted vehicle control.
Geofencing	FO20d Future options - enabler	Other	Specification of geographic areas in a digital map where certain rules apply for vehicles' attributes and behaviours. Requires connected vehicles, legal adjustments and adapted vehicle control.
21 Connected vehicles and	FO21a Future options - / enabler		Broad category of measures that will enable e.g. geofencing, advanced time-and distance-based access charging, dynamic routing of autonomous vehicles, ...
22 Autonomous vehicles	FO22a Future options - / enabler		Vehicles operating without a human driver. Access restrictions will be an integral part, especially if vehicles are also connected

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23 Digital twins/data sharing platforms/standards/systems	FO23a Future options - / enabler		A virtual system which is fed with real time data from the traffic and infrastructure in an area/a city. Solutions can be tested using simulations. Real time information sharing enables better decision-making.
24 Dynamic traffic signalling/management/ITS/rer	FO24a Future options - / indirect UVAR		Central traffic management system that controls traffic lights, information signs, etc. and communicates the signalling in a dynamic way to the users.
25 Dynamic Curb Side Management, Dynamic Curb Side Management,	FO25a Future options - indirect UVAR	Parking management	Dynamic regulation of use of the curb side. By restricting or redirecting parking, deliveries, pick-up/drop-off of passengers, access to the area is restricted in an indirect way
	FO25b Future options - indirect UVAR	Deliveries & drop-off/pick-up restrictions	Dynamic regulation of use of the curb side. By restricting or redirecting parking, deliveries, pick-up/drop-off of passengers, access to the area is restricted in an indirect way
26 Sharing/mobility hub/MaaS/rented micro-Sharing/mobility hub/MaaS/rented micro-Sharing/mobility hub/MaaS/rented micro-Sharing/mobility hub/MaaS/rented micro-mobility/...	FO26a Future options - promote alternatives	MaaS system	The city offers attractive, easy to use, economic alternatives for mobility and transport in the area, to lower demand for private vehicle access
	FO26b Future options - promote alternatives	Mobility hub	The city offers attractive, easy to use, economic alternatives for mobility and transport in the area, to lower demand for private vehicle access
	FO26c Future options - promote alternatives	Easy access micro-mob renting	The city offers attractive, easy to use, economic alternatives for mobility and transport in the area, to lower demand for private vehicle access
	FO26d Future options - promote alternatives	Transit, waterways, freight consolidation center...	The city offers attractive, easy to use, economic alternatives for mobility and transport in the area, to lower demand for private vehicle access

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U4: Applicable in strategy	U5a:Example case city	U5b: Specific intervention address and year	U6: Reference (link)	U7: comments
Pedestrian zone, traffic regulation plan, ...	London (UK)	City wide	School street initiative - http://schoolstreets.org.uk	Nation-wide examples available.
Pedestrian zone, traffic regulation plan, ...	Parma (IT)	Strada Saffi, Viale Maria Luigia, Via Toscana	https://www.comune.parma.it/mobilita/Pedonalizzazione-scuole-1.aspx	
Pedestrian zone, traffic regulation plan, ...	Mol (BE)	Millekemol School	http://millekemol.be/images/documenten/SCHOOLBROCHURE_2018-2019_eigen.pdf	Applied in many interventions (also non-UVAR related).
Pedestrian zone, traffic regulation plan, ...	Vlaanderen (BE)	Region wide	Octopusplan - https://www.octopusplan.info	Nation-wide examples available.
Superblock, pedestrian zone, cycling zone, traffic regulation plan, ...	Ghent (BE)	Visserij, Tweebruggen (both in Ghent), 2011	https://stad.gent/mobiliteit-openbare-werken/mobiliteit/met-de-fiets/wat-een-fietsstraat	First implementation in Belgium.
Superblock, pedestrian zone, cycling zone, traffic regulation plan, ...	Sevilla (SP)	Network of 80km segregated bike lanes.	https://www.uci.org/news/2019/seville%27s-ambitious-bike-network-plan-a-success-and-growing	
Superblock, pedestrian zone, cycling zone, traffic regulation plan, ...	Mechelen (BE)	179 streets in the inner city	https://www.mechelen.be/fietszone	Part of cycling zone.
Superblock, pedestrian zone, cycling zone, traffic regulation plan, ...	Cologne (GE)	Ring road	https://www.stadt-koeln.de/mediaasset/content/pdf66/koeln-mobil-2025.pdf	
Superblock, pedestrian zone, cycling zone, traffic regulation plan, ...	Copenhagen (DE)	City-wide implementation	https://www.eltis.org/sites/default/files/case-studies/documents/copenhagens_cycling_strategy.pdf + https://urbandevelopmentcph.kk.dk/artikel/city-cyclists	

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Superblock, pedestrian zone, cycling zone, traffic regulation plan, ...	Barcelona	Superblocks	https://www.vox.com/energy-and-environment/2019/4/9/18300797/barcelona-spain-superblocks-urban-plan	The building block of traffic filter is strongly related to the other measure fields, as a traffic filter can be linked to charging measures or can
Superblock, pedestrian zone, cycling zone, traffic regulation plan, ...	Ghent (BE)	Historic city center (inner ring road), 2017	https://stad.gent/en/mobility-ghent/circulation-plan	
Superblock, pedestrian zone, cycling zone, traffic regulation plan, ...	London (UK)	London Congestion Charge on the charge zone covering the largest part of	https://tfl.gov.uk/modes/driving/congestion-charge/congestion-charge-zone	Link with charging.
Superblock, pedestrian zone, cycling zone, traffic regulation plan, ...	Groningen (NE)	Inner city	https://gemeente.groningen.nl/ontheffing-binnenstad-en-autovrije-gebieden-aanvragen	
Superblock, pedestrian zone, cycling zone, traffic regulation plan, ...	Ghent (BE)	Ottogracht, 2018	https://stad.gent/mobiliteit-openbare-werken/mobiliteit/plannen-projecten-subsidies-cijfers-scholenwerking/het-circulatieplan/wat-een-knip	Just one of the examples of through traffic ban. Related to road block.
Superblock, pedestrian zone, cycling zone, traffic regulation plan, ...	Cracow (PO)	City-wide examples	https://ztm.kielce.pl/pdf/PLAN%20MOBILNOŚCI.pdf	
Superblock, pedestrian zone, cycling zone, traffic regulation plan, ...	Ghent (BE)	City-wide examples	https://stad.gent/en/mobility-ghent/circulation-plan	
Superblock, pedestrian zone, cycling zone, traffic regulation plan, ...	Siena (IT)	City-wide examples	https://www.comune.siena.it/La-Citta/Territorio/Direzione-Urbanistica/Servizio-Urbanistica/I-servizi-on-line-del-Servizio-Urbanistica/Piano-Urbano-della-Mobilita-Sostenibile-PUMS-attivita-di-formazione	
Superblock, ...	Paris (FR)	Rue de la Bourse - more to be implemented throughout the city	https://www.paris.fr/pages/le-parklet-le-mobilier-urbain-qui-s-insere-sur-les-places-de-stationnement-7067	Specific point-wise interventions of reconversion.
Superblock, ...	Leefstraat - Ghent (BE)	City-wide implementation - street by street	https://www.leefstraat.be/the-ghent-pioneering/	

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Superblock, ...	Flanders (BE)	Region-wide implementation - individual projects, 2019	Temporary project 'Week van de mobiliteit' - https://www.duurzame-mobiliteit.be/week-van-de-mobiliteit/zoek-acties	
Superblock, ...	Madrid (IT)	Pop-up park, 2017		
Superblock, pedestrian zone, ...	Ghent (BE)	Ottogracht, 2017	https://stad.gent/en/mobility-ghent/circulation-plan	Linked to through traffic ban.
Superblock, ...	Paris (FR)			
Superblock, ...	Lisbon (Po)			
Traffic regulation plan, ...				Not a regulation, but an enabler. Other possible enablers could be bike racks, bus stop, ... Both
Pedestrian zone, traffic regulation plan, ...	Oslo (NO)	Historic city center, 2019	https://www.citylab.com/transportation/2018/05/oslos-race-to-become-a-major-bike-haven/559358/	Redistribution from other, less sustainable transport modes.
Pedestrian zone, traffic regulation plan, ...	Amsterdam (NE)	City-wide, 2017	https://issuu.com/gemeenteamsterdam/docs/03_mjp_fiets_aug17_tablet_def	
Pedestrian zone, traffic regulation plan, ...	Toronto (CA)	Bloor Street, 2017	From temporary to permanent bike lanes - https://www.blogto.com/city/2017/11/toronto-just-voted-make-bloor-bike-lanes-permanent/	
Pedestrian zone, traffic regulation plan, ...	Ljubljana (SL)	Inner city, 2016	https://www.citylab.com/design/2016/02/how-ljubljana-turned-itself-into-europes-green-capital/458934/	
Pedestrian zone, traffic regulation plan, ...	Oslo (NO)	Historic city center, 2019	https://www.citylab.com/transportation/2018/05/oslos-race-to-become-a-major-bike-haven/559358/	
Pedestrian zone, traffic regulation plan, ...	Ghent (BE)	Historic city center (inner ring road), 2017	https://stad.gent/en/mobility-ghent/circulation-plan	
Pedestrian zone, traffic regulation plan, ...	Ghent (BE)	Historic city center, 2017	https://stad.gent/en/mobility-ghent/circulation-plan	Certain roads inaccessible for cycling during specific time periods.

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Pedestrian zone, traffic regulation plan, ...	Freiburg (GE)		https://www.freiburg.de/pb/877948.html	
Pedestrian zone, traffic regulation plan, ...	Bordeaux (FR)	TBM's 80 network	https://www.infotbm.com/en/bus-network-structured-efficient-and-close.html	
Traffic regulation plan, ...	Sibiu (RO)	Strada Nicolae Balcescu, 2007	https://www.sibiu.ro/index.php/primaria/mobilitate	Only one shopping street designated as Zone de Rencontre. Due to the status of the city as European Cultural Capital in 2007.
Traffic regulation plan, ...	Avignon (FR)	Historic city center, 2016	http://www.avignon.fr/fileadmin/Documents/pdf/ma-ville/environnement/plan_mode_doux.pdf	Nation-wide examples
Traffic regulation plan, ...	Germany	Town centers, 2008	https://markus-buechler.de/die-begegnungszone-modell-fuer-deutschland/	Nation-wide examples
Traffic regulation plan, ...	Switzerland	Town centers	https://begegnungszonen.ch	Nation-wide examples
	Milan (IT)	Area C, Cerchia dei Bastioni (City centre), 2012	https://www.comune.milano.it/aree-tematiche/mobilita/area-c	
	Stockholm (SE)	City centre 8,2 km ² (4,5% of the municipality surface), 2007	https://urbanaccessregulations.eu/countries-mainmenu-147/sweden-mainmenu-248/stockholm	
	Gothenburg (SE)	2013	https://urbanaccessregulations.eu/countries-mainmenu-147/sweden-mainmenu-248/goeteborg-charging-scheme	
	London (UK)	Area inside London's Inner Ring Road (21Sq Km), 2017	https://tfl.gov.uk/modes/driving/congestion-charge	

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Oslo (NO)	At the outermost ring, you are only charged on your way into the city. At the	https://www.eltis.org/discover/case-studies/oslo-toll-ring-system	The cost of the road toll is dependent on the Euro standard and fuel type, as well as time and distance.
Singapore	In all main streets (Electronic Road Pricing - ERP), 1998	https://www.lta.gov.sg/content/ltaweb/en/roads-and-motoring/managing-traffic-and-congestion/electronic-road-pricing-erp.html	
Singapore	From 2020		Will replace EPR from 2020
London (UK)	Most of Greater London, 2008	https://tfl.gov.uk/modes/driving/low-emission-zone	
Milan (IT)	Ecopass area, Cerchia dei Bastioni (City centre), 2008-2011		Replaced by congestion charge "Area C" in 2012
San Francisco (US)	Expanded to the entire city's 28,000 parking	https://www.sfmta.com/demand-responsive-parking-pricing	
Seattle (US)	Downtown and university district, 2010	http://www.seattle.gov/transportation/projects-and-programs/programs/parking-program	
Amsterdam (NL)	Almost everywhere inside the ring (the A10), last	https://www.amsterdam.nl/en/parking/on-street-parking/	
Treviso (IT)	city center, from 2010	https://www.ztltreviso.it/it/parcheggi-treviso/	
Rotterdam (NL)	Urban area	https://park4sump.eu/resources-tools/videos/on-street-to-off-street-parking	
Valletta (MT)	Entire area of Valletta, 2007	https://secure.cva.gov.mt/	
The Netherlands			In 2009 the Dutch government considered charging a per-kilometer fee for motor vehicle use and abolishing the motor vehicle

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	Genoa (IT)	City center, 2009	https://civitas.eu/sites/default/files/c-2-c-goods_april_2010_0.pdf	Not active anymore
LEZ, LTZ, Delivery, ZEZ	Brussels	Lage-emissiezone, 1.1.2018	http://urbanaccessregulations.eu/countries-mainmenu-147/belgium/bruxelles-brussel-brussels	Pathway to ZEZ: tightening the standards until only ZEV are allowed
LEZ, LTZ, Delivery, ZEZ	Paris	Zone à faibles émissions (ZFE); 1.1.2017	http://urbanaccessregulations.eu/countries-mainmenu-147/france/paris	This is by emissions and vehicle type, see vehicle type BB. Pathway to ZEZ: tightening the standards until only ZEV are allowed (for certain vehicles)
LEZ, Charging MFA	London (UK)	Low Emisison Zone, Ultra Low Emission Zone; 2008, 2018	http://urbanaccessregulations.eu/countries-mainmenu-147/germany-mainmenu-61/berlin	This is by emissions and vehicle type, see vehicle type BB. Pathway to ZEZ: tightening the standards until only ZEV are allowed (for certain vehicles)
LEZ	Berlin	Umweltzone; 2008	http://urbanaccessregulations.eu/countries-mainmenu-147/united-kingdom-mainmenu-205/london	This scheme is a low emission zone implemented by charging, and is covered by the Charging MFA
LEZ, LTZ, Delivery, ZEZ	Madrid	Madrid Central; 2018	https://urbanaccessregulations.eu/countries-mainmenu-147/spain/madrid-access-restriction	This was a partial ZEZ, and a very successful scheme. It was implemented late in the electoral period, and unfortunately the new Mayor will
LEZ, ZEZ	Krakow	strefy czystego transport (clean transport zone); 5.1.2019	https://urbanaccessregulations.eu/countries-mainmenu-147/poland/krakow-cracow	
LEZ, LTZ, Delivery, ZEZ	Paris	Zone à faibles émissions (ZFE); 1.1.2017	http://urbanaccessregulations.eu/countries-mainmenu-147/france/paris	This is also an emissions scheme, by vehicle type. Pathway to ZEZ: tightening the standards until only ZEV are allowed (for certain vehicles)

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LEZ, LTZ, Delivery, ZEZ	Madrid	Madrid Central, 30 November 2018	http://urbanaccessregulations.eu/countries-mainmenu-147/spain/madrid-access-restriction	
LEZ, LTZ, Delivery, ZEZ	Utrecht	Milieuzone; 2010, 1.1.2015		Pathway to ZEZ: tightening the standards until only ZEV are allowed
LEZ, LTZ, Delivery, ZEZ	Antwerp	Access restriction in residential areas in the city center, 9.2018	https://www.polisnetwork.eu/wp-content/uploads/2019/11/4C-Laura-Tavernier.pdf	Restriction in weight (+3,5t) and restriction in time and not applicable for emergencies, busses and sweeper trucks (no exceptions for city services; some exceptions for construction works). A pilot project was instigated before actual implementation. Related to road safety (and school street and pedestrian zone).
LEZ, LTZ, Delivery, ZEZ	Prague	Zóny s dopravním omezením pro nákladní automobily a autobusy (Zones with traffic restrictions for trucks and buses), 2010	https://urbanaccessregulations.eu/countries-mainmenu-147/czech-republic-mainmenu-448/praha-prague-permit	
LEZ, LTZ, Delivery, ZEZ	Milan	Area C, January 2012	http://urbanaccessregulations.eu/countries-mainmenu-147/italy-mainmenu-81/milan-area-c-charging-scheme	
LTZ, Delivery, ZEZ, LEZ	Strasbourg	Règles de livraison au centre-ville, 1 September 2018	http://urbanaccessregulations.eu/countries-mainmenu-147/france/toulouse	This is also in particular a time window example, but also including emissions and other aspects. Pathway to ZEZ: the requirements are tightened to be only ZEV, starting with additional flexibility for ZEVs

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LEZ, LTZ, Delivery, ZEZ	Milan	Area C, January 2012	http://urbanaccessregulations.eu/countries-mainmenu-147/italy-mainmenu-81/milan-area-c-charging-scheme	
Delivery, ZEZ	Stockholm	Stockholm nighttime heavy vehicle regulation	https://urbanaccessregulations.eu/countries-mainmenu-147/sweden-mainmenu-248/night-time-lorry-ban-stockholm	This is also a delivery scheme. Pathway to ZEZ: allowing only ZEV to driver at night (with appropriate other noise reduction mechanisms)
LEZ, LTZ, Delivery, ZEZ	Madrid	Madrid Central, 30 November 2018	http://urbanaccessregulations.eu/countries-mainmenu-147/spain/madrid-access-restriction	A time window is also used for delivery schemes (see other BB). Pathway to ZEZ: reducing the time windows for non-ZEV to zero
LTZ, Delivery, ZEZ, LEZ	Strasbourg	Règles de livraison au centre-ville, 1 September 2018	http://urbanaccessregulations.eu/countries-mainmenu-147/france/toulouse	Covered also in Deliveries. Pathway to ZEZ: the requirements are tightened to be only ZEV, starting with additional flexibility for ZEVs
LEZ	Winter north Italian LEZs	Bollettino Liberiamolara / ZTL Ambiente; 2006	https://urbanaccessregulations.eu/countries-mainmenu-147/italy-mainmenu-81/emilia-romagna/emergency-winter-measures-in-emilia-romagna	

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ZTL	Maiori	Zona a Traffico Limitato (ZTL), limited traffic zone	https://urbanaccessregulations.eu/countries-mainmenu-147/italy-mainmenu-81/campania-region/maiori-ar	
LEZ	Oslo emergency scheme	Dieselforbud og datokjøring (Diesel Ban); 1.10.2017	https://urbanaccessregulations.eu/countries-mainmenu-147/norway-mainmenu-197/oslo-emergency-scheme	This is used when air quality standards are not met, to reduce the daily peaks. They come in many forms, from temporary or tightened LEZs to speed restrictions etc. Pathway to ZEZ: Allowing only EV in during pollution schemes (however, re-suspended road dust doesn't reduce with an electric engine)
Safety, LTZ	Antwerp	Toegangsbeperking voor vrachtwagens +3,5 ton (Access regulation for trucks >3.5 tonnes); 3.11.2018		The scheme quoted here is linked to school streets, or to congestion (and by extension pollution) reducing schemes
LTZ, Delivery, ZEZ, LEZ	London	London Low Emission Zone, 17.02.2003	http://urbanaccessregulations.eu/countries-mainmenu-147/united-kingdom-mainmenu-205/london	This can help improve communication and also reduce the political resistance to the scheme. Pathway to ZEZ: tightening the standard, phasing in by machine type, requiring EV unless it is not available

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LTZ, Delivery, ZEZ (LEZ)	Siena	Zona a traffico limitato (ZTL); 04.07.1962	https://urbanaccessregulations.eu/countries-mainmenu-147/italy-mainmenu-81/toscana-tuscany/siena-ar	Permits can be used to restrict those who can have access to the urban area, with various different requirements. Pathway to ZEZ: allowing giving only ZEV (for some vehicle types) (new) permits
LTZ, LEZ, ZEZ	Beijing	Licence plat quota, 2011	http://www.ebeijing.gov.cn/Home/News/t1576644.htm	
LTZ, LEZ, ZEZ	London, Westminster	Residents Parking Permit	https://www.westminster.gov.uk/electric-vehicles	
LEZ, ZEZ	London	The Control of Dust and Emissions during construction and demolition, Supplementary Planning Guidance to the London Plan 2011; July 2014	https://nrmm.london	The example here is one example of what can be put onto planning conditions for construction vehicles. There are many more requirements possible, such as implementing/cooperating with combined logistics schemes, number of car parking spaces, funding other measures, provision of Spatial Interventions, which vehicles are able to be used/parked.... Pathway to ZEZ: the requirements are tightened to be only ZEV (unless vehicles of that type are not available)
LTZ, LEZ, ZEZ	Freiburg	Vauban, 1098	https://www.freiburg.de/pb/208736.html	Freiburg Vauban is a car limited area rather than car-free area. There are strict limits to the numbers and placing of vehicles. Some households are registered as car-free. Car free

Annex 1: UVAR set of categories - long list of building block descriptions

LTZ, delivery.	Parma	Ecologistics, 2004	https://www.eltis.org/discover/case-studies/ecologistics-parmas-integrated-and-systemic-green-urban-delivery-scheme-italy	The concept of load factor is difficult to communicate and enforce, and has not (yet) been used widely.
Safety	London	Direct Vision Standard and HGV Safety Permit, 26 October 2020 comes into force	https://urbanaccessregulations.eu/countries-mainmenu-147/united-kingdom-mainmenu-205/london-dvs-and-hgv-safety-permit-scheme	
LEZ, ZEZ	Israel	Pollution Reduction Plan, 2015	http://www.sviva.gov.il/English/env_topics/AirQuality/PollutionFromTransportation/GovtMeasures/Pages/Reducing-Pollution-from-Heavy-Vehicle-Fleets.aspx#GovXParagraphTitle2	Pathway to ZEZ: extending the requirements
ZEZ, SI, car-free areas	Oslo	Bilfritt byliv, Car-free city life; 2019	https://www.oslo.kommune.no/politikk-og-administrasjon/slik-bygger-vi-oslo/bilfritt-byliv/	Pathway to ZEZ: removing road space to be car-free
