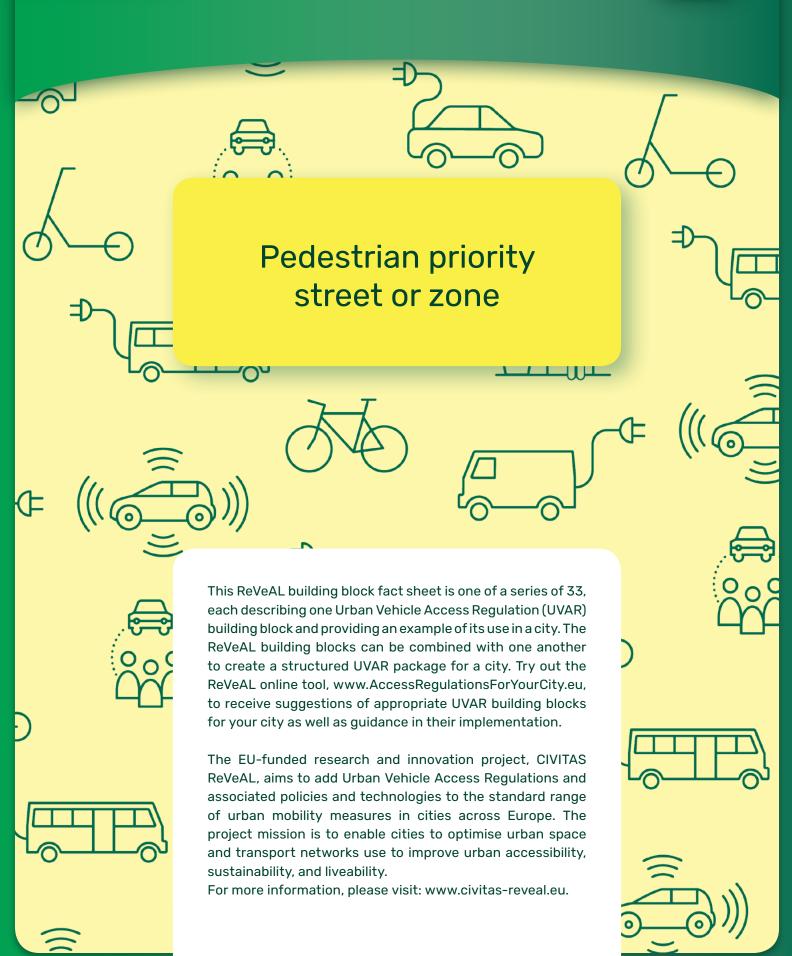


UVAR building blocks **Spatial Interventions**







Spatial Interventions

Spatial interventions are where the road layout has been altered to favor more sustainable mobility and prevent vehicles entering. Examples of these are removing road and parking space taken for vehicles and using the space for sustainable mobility or amenities (bus lanes, logistics hubs, parklets, restaurants and more)

Speed reduction

Traffic filter:

- · Recirculation of traffic
- Road block
- · Capacity restraint

Reallocating parking space:

- Parklet
- Drop-off zone shared mobility
- Logistics bay (mini-hub)
- Kiss & Ride (K&R)

Reallocating road space for pedestrians:

- Widen pavement
- Pedestrian priority street or zone

Reallocating road space for cycling:

- Cycle lane
- · Cycling street

Reallocating road space for public transport:

· Bus or tram priority lane

Pricing Aspects

Pricing aspects are when the entry to an area or to the entirety of the city is given a price tag to encourage more sustainable transport.

Pricing aspects also include the (differential) levels of penalty fees to encourage (and enforce) compliance.

Road charges / tolls:

- Charge applied to a perimeter or an area (congestion charge)
- Charge applied to specific points
- · Distance-based charge
- · Time-based charge
- Permit charge
- Charge based on emission standards (pollution charge)

Parking charge:

- Dynamic price (real time)
- · Fixed price
- Charge based on emission standards (pollution charge)
- Workplace levy
- From on-street to off-street parking

Regulatory Measures

Regulatory measures are those where there is a legal instrument that states who can and cannot enter an area.

They could often also be

They could often also be called "bans" and include Zero Emission Zones, Low Emission Zones, and Limited Traffic Zones.

Regulation by emissions:

- Euro standard
- Zero-emission vehicles

Regulation by vehicle type and dimensions:

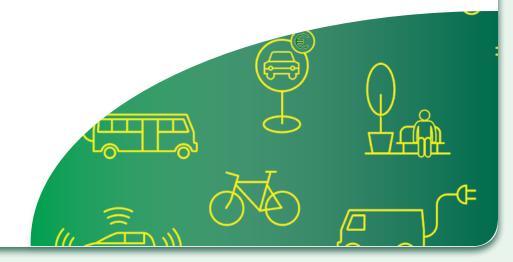
- · Vehicle type
- Dimensions

Regulation by trip purpose:

- Delivery and logistics
- · Through traffic ban

Regulation by permit:

- Permit to travel
- Parking permit
- Planning permit conditions





Definition of the building block

Road space is converted to a street or zone allocated and designed for pedestrians, allowing for mixed-use where pedestrians have right of way and other modes are allowed as guests, or where only resident (or other specific group) access by motor vehicle is allowed. Motor vehicle traffic is regulated through a required change in driving behaviour and/or by changes in the spatial road layout. Examples are school streets, pedestrian streets, home zones (woonerf) or play streets.

Timing, phasing, scaling and replication

It is often easier to start small and then upscale a pedestrian zone. Upscaling may be a good option when a first test/smaller implementation proves successful, and the surrounding also has potential for pedestrianisation. A city that already has a pedestrian area in its centre may be able to scale it up to a larger area. The time scale for expansion is context dependent, but is often related to a political mandate.

Time windows

- Allowing vehicle access at particular times of day
- Allowing vehicle access on given days of the week (e.g. weekends)
- Allowing seasonal vehicle access
- Having no time differentiated vehicle access

Enforcement options

- Cameras with Automated number plate recognition (ANPR)
- Manual enforcement through visual inspection
- · Road sign

Gender and equity

Pedestrian priority streets or zones are especially beneficial to caregivers with children but they may reduce access for people with disabilities and for the elderly. This will require complementary measures to ensure their continued access.

Future considerations

In a future with geofencing or Intelligent Speed Adaptation (ISA), it may be possible to limit the maximum speed of delivery or other vehicles that have access to pedestrian zones, not allowing them to exceed the speed limit.

Further guidance

- · How to communicate the scheme
- Fairness and equity
- · Enforcement options



Complementary measures

Exemptions

The types of exemptions will be different depending on the scheme type, but some examples are:

- Key exemptions for police, fire department, waste collection, etc.
- User needs exemptions, e.g. for people with disabilities with forced car dependency, taxis, classic car owners, residents, deliveries
- Exemptions for adapted vehicles (e.g., retrofitted or converted electric or hybrid vehicles)
- Limited numbers of purchased exemptions for entry (e.g., per day/ month/year) to a specific zone
- Specified maximum amount of kilometre "credits" allocated to individuals or businesses

Increased mobility options

The types of increased mobility options will be different depending on the scheme type, but some examples are:

- · Creation of mobility hubs
- Increasing/improving walking or cycling facilities
- · Increasing/improving public transport
- Facilitating vehicle hire and/or car sharing
- Providing parking spaces in alternative locations (e.g., Park & Ride)

Consider combining with:

Spatial Interventions

Speed reduction

Traffic filter:

- · Recirculation of traffic
- Road block
- Capacity restraint

Reallocating parking space:

- Parklet
- Drop-off zone shared mobility

Reallocating road space for pedestrians: Widen pavement

Pricing Aspects

Road charges/tolls:

- Charge applied to a perimeter or an area (congestion charge)
- · Time-based charge
- · Permit charge

Parking charges: From on-street to off-street parking

Regulatory Measures

Regulation by trip purpose: Through traffic ban

Regulation by permit: Permit to travel





Example: City centre, Ljubljana, Slovenia

Description

The city of Ljubljana, Slovenia, started the gradual conversion of the city centre into a pedestrian area in 2007. This was one of the measures to limit motorised transport and promote sustainable mobility delineated by the city vision called "Ljubljana 2025".

In 2012 the entire old city centre was closed to traffic and the city adopted its SUMP.

In 2015, the main artery of Slovenska Street was refurbished, with car traffic banned and only buses and taxis allowed, speed limited to 30 km/h and the number of vehicle lanes reduced to allow more space for people walking and cycling.

Ljubljana's pedestrian zone has increased by 620% since 2007. Today, people walking and cycling have more than 10 hectares of dedicated surface in the city centre, resulting in less emissions and noise.

Enforcement methods

Cameras

Time windows

- · Vehicle access is regulated at all times.
- Delivery vehicles have access from 6.00 to 10.00.

Phasing and upscaling

- 2007. Renovation of Wolfova Street and Prešeren Square, and pedestrianisation of the Triple Bridge
- 2011. Pedestrianisation of Kongresni Market
- 2015. Slovenska Street redesign

Other building blocks put in place

Spatial Interventions

Speed reduction

Traffic filter: Recirculation of traffic

Reallocating road space for cyclists: Cycle lane

Complementary measures

Increased mobility options

- Free shuttle service, called "Kavalir", for people with reduced mobility
- · Electric tourist train
- · Bike sharing





City centre, Ljubljana, Slovenia



Above, Tromostovje (Triple Bridge) after its pedestrianisation in 2007, Ljubljana (Sopotnik, 2019). Below, the shuttle called "Kavalir" is an on-demand service that transports people through the pedestrian zone. (Doric Kordic, City of Ljubljana, 2022)



References

- City of Ljubljana. (2022). Walking. Retrieved April 20, 2022, from https://www.ljubljana.si/en/ljubljana-for-you/transport-in-ljubljana/transport-around-the-pedestrian-zone-of-the-old-town/
- CIVITAS. (2019). *Ljubljana*. Retrieved April 20, 2022, from https://civitas.eu/cities/ljubljana
- European Bank for Reconstruction and Development (EBRD). (n.d.). Pedestrianisation and car-free zones: Ljubljana, Slovenia. Retrieved April 20, 2022, from https://www.ebrdgreencities.com/policy-tool/pedestrianisation-and-car-free-zones-ljubljana-slovenia-2/
- Köllinger, C. (2020, January 2). Pedestrianisation of Ljubljana city centre. Eltis. https://www.eltis.org/resources/case-studies/pedestrianisation-ljubljana-city-centre
- Kotler, A. (2019). CIVITAS Cities Success Stories. ICLEI Europe. https://civitas. eu/resources/civitas-cities-success-stories
- Sadler Consultants Europe GmbH (2022).

 Ljubljana. https://urbanaccessregulations.eu/countries-mainmenu-147/
 slovenia/ljubljana-ar
- Sopotnik, M. (2019). "Ljubljana-from green vision to international recognition" City of Ljubljana. https://ec.europa.eu/regional_policy/sources/conferences/udn_osijek/b2_sopotnik.pdf

Additional information

The two main success factors for Ljubljana's Mobility Plan are political will and a communication strategy. The mayor implemented the car ban within his first year in office, meaning that residents and critics could experience the benefits of that and other measures before the next elections. Ljubljana twice organised European Mobility Week activities; these are designed to encourage cities to introduce sustainable transport policies.

