Micromobility Made Easy: An Urban Transition Toolkit

MICROMOBI

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Part 1: Micromobility – What, why and how?

1.1 Introduction

As urban trips are on average just 5 km long, there is a lot of potential for shifting trips to micromobility: smaller and greener vehicles. Micromobility includes small human or electric-powered transport modes for short urban journeys, such as cycling, scooting and walking. However, to promote micromobility, there is the need for safe infrastructure and improved road safety: the number one concern for vulnerable road users using micromobility. This is particularly the case in cities and countries with a high car dependence, such as Malta, Cyprus and Sicily (Italy). Cities in these - and similar - countries can learn from positive examples, such as the sustainable mobility transition in Ljubljana (Slovenia). This was the premise of creating our MICROMOBI project: promoting micromobility in cities at the start of this transition to sustainable mobility.

In this Toolkit, we share practices from these cities who stand at the beginning of the micromobility transition, as well as those with more experience. In Part 1, we share more about what micromobility is, its benefits and barriers, and how to promote micromobility. These are highlighted by good and bad practices from cities across Europe to inspire positive change, to illustrate that the transition to micromobility and away from a car-centric culture is possible, and to learn from mistakes. In Part 2, we zoom in on the lessons learned from Ljubljana as a lighthouse example, to share ideas for the micromobility transition in other cities.

About the MICROMOBI project

The Erasmus+ MICROMOBI project, co-funded by the EU, brings together organisations from four European countries: Friends of the Earth Malta (Malta), Friends of the Earth Cyprus (Cyprus), Promimpresa (Palermo, Sicily, Italy), and Ljubljanska kolesarska mreža (Ljubljana Cycling Network - LKM) (Ljubljana, Slovenia), with the aim of developing skills and raising awareness on the topic of micromobility. Through this project we contribute to more environmentally friendly cities and the fight against climate change, while highlighting the importance of safe infrastructure in cities to promote micromobility.

Find out more about MICROMOBI on our online platform: www.micromobi.eu

1.2 What is micromobility?

Micromobility encompasses most small one-person vehicles that operate at low speeds and are not gas-powered, from active modes like walking and cycling to skateboards, electric bicycles, kick scooters, wheelchairs, and mobility scooters.

When we talk about micromobility we should consider that it is:

- **Powered by humans or electricity:** Micromobility can be electric and human-powered. Micromobility includes walking and cycling, as well as electric bicycles, cargo bikes, wheelchairs, kick scooters and more. Such small vehicles are considered micromobility when they have operating speeds below 25 km/h.
- **For passenger and goods transport:** Micromobility can be for passenger and goods transport. While we generally think of micromobility as transport for a single passenger, it also includes cargo bikes and other (electric) cargo solutions, to transport goods for deliveries, or to be used by families to carry their children.
- **Privately owned or shared publicly:** Micromobility can be private or public/rented vehicles. Certain micromobility modes are well established, such as walking and cycling, but the micromobility concept really picked up with the spread of public bicycle sharing systems in the 2010s and more recently with the emergence of shared electric kick scooters in cities around the world, which enabled short-term, one-way, shared use of these transport modes.
- **Connecting with public transport:** Micromobility is suitable for short urban trips and provides connections with (public) transport. Micromobility is key to providing intermodality (using multiple modes to complete a trip): to connect from home to the nearest bus or train station, ferry landing site or Park & Ride, and to complete your trip to your final destination: school, work, shop, etc.

1.3 What are the benefits of micromobility?

Micromobility is cool, fast and green!

The main benefits of these modes of transport are:

Fast and convenient

Micromobility is convenient. Because of their small size, micromobility modes of transport make it easy to pass through busy city streets, and there is no need to worry about finding a parking space; a bicycle or kick scooter can easily be stored inside a building or in a dedicated parking area.

Improving accessibility for all

Micromobility can improve accessibility for all, including people using wheelchairs, mobility scooters and parents with pushchairs. More attention and investment in human focused modes of transport creates the opportunity to improve our infrastructure, including wider footpaths, ramps for easy access and a connected network.

Good Practice

Paris, France – 15 minute city

- The 15 minute city is a concept adopted by the city of Paris and draws on the idea of 'timed cities', encouraging local travel on foot and by bicycle by ensuring that basic services are accessible within a 15 minute walk or cycle.
- Mayor Anne Hidalgo made the 15-minute city concept a main pillar of her campaign for a second term.
- There are now 746 miles of protected bike lanes, and more residents ride a bike than drive a car.

Healthier lifestyles

Micromobility is healthy, because it promotes physical activity and social interactions. When city streets are safe and comfortable to walk, cycle or scoot, people are more likely to meet the daily recommended 30 minutes of physical activity, and there is more chance for social interaction with other people, which has been proven to improve mental health and create a positive urban environment.

Good Practice

Bicibús - Bicycle buses in Barcelona

- A bicibús is a group of kids pedaling together from home to school, usually accompanied by adults. Like a bus a bike bus has a predefined itinerary with start and end points, and established schedules for its journey, and offers a sustainable way to get to school.
- There are now 15 bicibús routes in Barcelona, with an estimated 15,000 bicibús journeys made in a year.

Clean modes of transport

Micromobility is eco-friendly. It reduces noise and air pollution, and has a much smaller carbon footprint than private cars. Micromobility is a form of climate action, being part of the solution, instead of the pollution.

Good Practice

Malta – Micromobility welcome for free on Valletta ferry

- Valletta Ferry Service allows bicycles and scooters to be taken for free. The ferry passage is free for people with a Maltese 'Tallinja' public transport card (as is all public transport by bus on the Maltese Islands).
- The ferry service, reintroduced in the two harbours on either side of Valletta in 2012, has seen a steady increase in passengers, with the Marsamxett harbour ferry having close to 100,000 passengers per month in the peak summer season in 2017-2019.

Multimodal connectivity

Micromobility devices are suitable for short urban trips and are crucial to provide connections with public transport, to connect from home to the nearest bus or train station, or ferry landing site, and to complete your trip to reach your final destination. To enable such micromobility connections, there is a need for safe and comfortable pavements for walking, safe and shaded places to wait for public transport, safe and connected paths for the use of bicycles, scooters and other wheeled micromobility.

Good Practice

Stavanger, Norway – Mobility Hub

- A pilot mobility hub was implemented in Hillevåg square in Stavanger city. The idea is that residents have access to several means of transport in one place and an easier every-day journey.
- The mobility hub includes shared city bikes, shared electric scooters, extra parking space for bikes, a bus stop nearby, two electric shared cars, parcel machine, and a waste separation station.
- The pilot mobility hub was a success, and following it, a further 4 mobility hubs were planned in the city.

Reduced traffic and improved use of public space

Micromobility reduces traffic congestion. It is an alternative to the private car for short trips. Most trips in urban areas are less than 5 kilometres, which takes less than 20 minutes by bicycle. Micromobility modes also require much less space than private cars, both for moving on the road and for parking spaces. Public spaces without cars improve the quality of life, offering benefits such as improved air quality and opportunities for economic, social, cultural and environmental development.

Good Practice

Limassol, Cyprus – Segregated cycle path along the seafront with significant tree cover

- Uninterrupted for 5km+ but mainly for recreation
- Adjacent to Molos park and Dasoudi national forest, both used daily by people from all backgrounds.
- Many different types of micromobility are being used, including bicycles, e-scooters, wheelchairs, and pedestrians
- Well connected with a bus line and a shared bicycle system (Nextbike)

Offering affordable transport options

Micromobility is cost effective. These modes of transport are generally more affordable than owning and maintaining a car, making them accessible to a wider range of people.

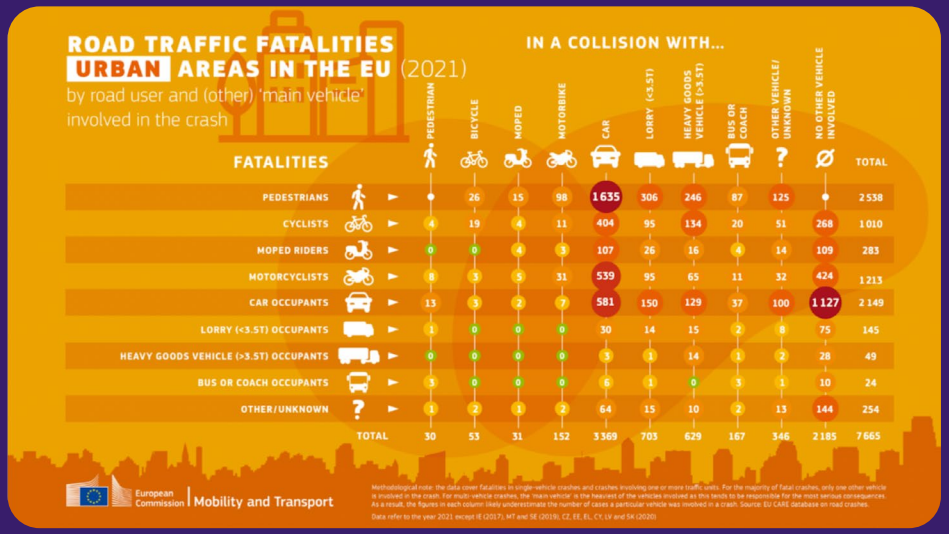
1.4 What are the barriers for micromobility?

Despite its positive benefits, micromobility is sometimes perceived as controversial in cities, as it is challenging the dominance of private cars in the transport system and contesting the use of public (road) space.

The main barriers for micromobility are:

Road safety concerns

Micromobility users are vulnerable road users. They are at disproportionate risk of injuries and casualties, particularly when sharing the road with motorised vehicles at high speeds. As a result, concern about road safety is the number one barrier for (prospective) micromobility users. However, micromobility modes can also be the cause of traffic crashes, with e-kick scooters being a particularly controversial feature in cities (Gössling, 2020), particularly when they are ridden or parked on pavements and in pedestrian zones. Night-time riding, double riding, drug or alcohol-impaired riding, riding in traffic lanes or on sidewalks and encountering poorly maintained road surfaces all contribute to elevated crash and injury risk (Yannis et al., 2024).



Source: European Commission, Road safety statistics 2022 in more detail (Figure 4): https://transport.ec.europa.eu/background/road-safety-statistics-2022-more-detail_en

Lack of infrastructure

In many cities, there is a lack of protected infrastructure for micromobility users and connectivity issues between common origins and destinations. Physical and architectural barriers can hinder the free movement of users (Henriksson et al., 2020). Lack of legibility of the route, difficult crossings, one-way street systems and lack of wayfinding signage can make it hard for micromobility to find the most safe and direct route. A lack of dedicated parking spaces for micromobility can cause issues with incorrect parking (e.g. on pavements, in front of entrances), as well as concerns around theft for micromobility users.

Bad Practice

Palermo, Italy – Ordinance prohibiting bicycles and scooters in the historical centre and pedestrian areas

- The Office of Sustainable Mobility issued a new ordinance on regulating the movement of velocipedes on Maqueda, Vittorio Emanuele and Ruggero Settimo streets, some of the main streets and pedestrian areas in the historical centre. Bikes can only enter from 05:00 am to 10:00 am.
- Now, people using bikes and scooters can't access the area, while public space continues to be taken up by cars, as well as by restaurants with tables on the street.

Lack of modal shift

Car culture dominates urban mobility in many cities, where private vehicles are prioritised over other modes of transport. This focus on cars has led to urban planning that often neglects micromobility options like bicycles and scooters, which offer more sustainable and efficient alternatives for short trips. Unfortunately, many cities lack effective policies to support the required modal shift to sustainable mobility, resulting in inadequate infrastructure and limited adoption of micromobility. The situation is perpetuated through inexistent or inefficient policies, such as the lack of dedicated walking and cycling policies, or the inadequate adoption or implementation of transport plans such as Sustainable Urban Mobility Plans (SUMP), which are mandatory for EU cities with at least 100.000 inhabitants.

Bad Practice

Limassol, Cyprus – SUMP 2019 hardly implemented, except for an upgraded bus fleet

- The main shopping street (Anexartisias street) is still open for cars with very narrow pavements.
- Many shop owners, residents and other stakeholders in the city lobby against traffic calming and pedestrianisation of this main street and the city centre in general.
- Five years on, the government is proposing fragmented projects (e.g. very short bus lanes without park & ride, unconnected cycle paths etc.) that are not part of a wider network
- SUMP is now outdated and needs reviewing.

Operators leaving or pushed out

Micromobility operators, such as e-scooter and bike sharing companies, are increasingly being pushed out or choosing to leave certain markets due to a combination of regulatory challenges and economic pressures. Many cities have implemented strict regulations to address issues around road safety and the use of public space, which limits the operating space for these companies and has increased their running costs. The lack of consistent and supportive policies, such as investment in safe, segregated infrastructure, has made it difficult for micromobility operators to provide these services.

Bad Practice

Malta – Ban on rental e-scooters

- Malta was the first EU country to completely ban rental scooters in March 2024.
- The decision by the Ministry of Transport was based on persistent inconvenience caused to pedestrians, including blockages and littering.
- The decision overlooks the potential designation of parking bays to mitigate parking issues (proposed by both the Ministry itself and e-scooter operators) and ignores the potential to shift trips away from private car use, with an 85% modal share at the national level.

1.5 How to promote micromobility?

To promote micromobility, the safety, convenience, and feasibility of micromobility needs to be increased, in combination with policies to reduce and restrict car use (Piatkowski et al., 2019). Achieving modal shift towards active and public transport, to transition to sustainable mobility in cities, only occurs when there is a combination of 'carrots', 'sticks' and 'sermons'.

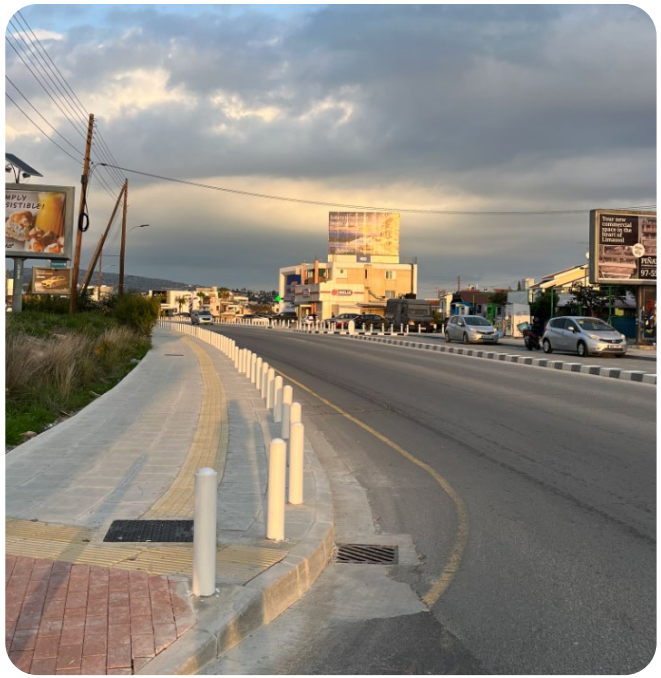
'Carrots'	'Sticks'	'Sermons'
Positive and negative incentives, such as: • Subsidies • Tax relief • Road taxes • Paid parking • Congestion charging	Rules & regulations, such as: • Land use planning • Infrastructure • Parking management • Low emission zones • Presumed liability	Education and information, such as: • Awareness campaigns • Service provision • Educational activities • Public events • Promotional activities

To promote micromobility, there is a need to:

Make it safe & direct:

- Create safe infrastructure: establish a dedicated and well-connected micromobility network, with segregated paths where vehicle speed is greater than 30 km/h or where the volume of motorised vehicles is high.

Bad Practice



Cyprus – Lack of a well planned walking and cycling network

- Pavements and bicycle lanes often have a high curb and concrete or metal bollards to prevent illegal car parking, but that makes them inaccessible and dangerous for micromobility users. Tree cover is insufficient whereas shade in a hot climate is essential for micromobility.
- The infrastructure for pedestrians and cyclists is often too narrow, unconnected or completely absent. Pedestrian crossings are poorly signposted and road markings are badly maintained. Bike lane intersections are poorly connected or at wrong locations.
- This is car-centric planning and policy that does not enable an active travel culture.

Make it safe & direct:

- Establish and enforce a micromobility parking policy and designate parking areas for micromobility.

Good Practice

Budapest, Hungary – Green Mobi Points - micromobility parking

- Over 300 dedicated parking areas for micromobility, such as bicycles and scooters, throughout the Pest city centre.
- Shared scooters can only be parked in the designated areas. Private scooters and bicycles can also make use of the parking areas. Mobi Points are only a couple of minutes' walk from each other, covering a dense network. The green circle signs are recognizable from afar.
- The Mobi Points are an initiative of the Budapest municipality and BKK public transport company in response to scooters littering the streets and pavements.

Good Practice

Las Palmas de Gran Canaria, Spain
Sítycleta & Sítyneta - e-scooter & bike sharing

- Public (e-)bike and e-scooter sharing network.
- Operated by Sagulpa, a public-private municipal company. Conscious decision to only allow one operator, a public-private company, to avoid oversaturation of the market.
- For e-scooters, speed limit of 25 km/h, with more limited speeds in pedestrian areas and sidewalks off-limit. Rental and return only possible in dedicated zones to limit littering.
- In the first six years of operation since 2017, the public bikeshare system has been used by 50,000 people who have cycled more than 7 million km.

Make it safe & direct:

- Reduce speeds: Implement a 30 km/h (or lower) speed limit in areas with high micromobility use and establish low speed limits for micromobility vehicles in pedestrian or shared zones, e.g. ~ 6-10 km/h. Implement traffic calming measures and create shared spaces where vulnerable road users are prioritised.

Good Practice

Amsterdam, the Netherlands – 30km/h speed limit in almost all of the city

- Following the example of Brussels, Paris and Madrid, the city of Amsterdam has reduced the maximum speed limit from 50 to just 30 km/h, rules that now apply to more than 80% of its entire road network, for cars, but also for bicycles and scooters.
- With the new speed limit, the city expects a 20-30% reduction in serious crashes. Traffic noise is expected to be halved, making the city a more pleasant place to live.

Make it safe & direct:

- Restrict private car access and reduce vehicle speeds; prioritise micromobility traffic flows through solutions such as ‘filtered permeability’ and ‘contraflows’.

Good Practice

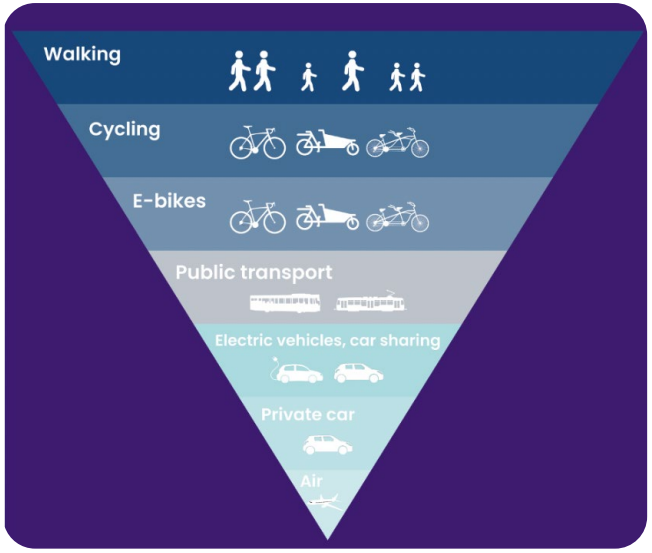
Nicosia, Cyprus – Contraflow lane in Gladstonos street in Nicosia

- A contraflow lane provides connectivity and access to cyclists traveling in both directions. It reduces dangerous practices such as wrong-way riding and sidewalk riding.
- Contraflow lanes decrease trip distance, the number of intersections encountered, and travel times for cyclists by eliminating out-of-direction travel, and allows cyclists to use safer, less trafficked streets.
- The street is part of a network of bicycle lanes connecting universities with the city center.

Make it safe & direct:

- Implement and enforce road safety measures, such as limiting speed, providing training to road users, enforcing rules against impaired driving and riding, and protecting vulnerable road users through presumed liability, also makes micromobility use safer.

Good Practice



UK – New hierarchy of road users

- In the Highway Code review of 2021, the UK adopted a new hierarchy of road users prioritising sustainable modes of transport

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- Road users who are most at risk in the event of a collision are placed at the top of a hierarchy. New rules give priority for those walking and cycling at crossings and advise on safe passing distances.

- The new hierarchy means that drivers of a vehicle that can cause more harm, have a bigger responsibility to take care and reduce the danger they could pose to others.

Make it safe & direct:

- Recommend helmet use, particularly to young or inexperienced users, but do not make it mandatory by law, as this has been shown to discourage micromobility, and shared mobility in particular. Safe infrastructure makes micromobility safer for all.

Bad Practice

Cyprus – Mandatory helmet law

- A universal mandatory helmet law was introduced in Cyprus for cyclists and users of other micromobility devices. A €50 fine applies for riders of all ages.
- Statistically, cyclists have a similar level of fatality risk per distance travelled as pedestrians. The health benefits of riding a bicycle far outweigh the risks of injury. Helmets do help but only to a certain point; they do not protect from crashes with heavy motorised vehicles.
- What is required instead is implementation of proven measures that protect vulnerable road users (e.g. cyclists): safe and connected infrastructure, education, lower speeds and legal protection.

Make it attractive & cool:

- Exposure and experience are key to forming new mobility habits.

Good Practice

Bologna, Italy – Bella Mossa - gamification for sustainable mobility

- An app that rewards citizens who choose public transport and active mobility.
- 85 private entities offered vouchers or rewards, such as free beer and ice cream.
- Promoted and organized by SRM – Reti e Mobilità, the agency for local public transport of the Municipality and Metropolitan City of Bologna.
- In the first six months, 15,000 people reported 895,000 trips by alternative transportation methods.

Make it attractive & cool:

- Organise educational and promotional activities, such as ‘safe routes to school’, mobility challenges, ‘cycle/scoot to work’ schemes, cycling events, etc. Educate micromobility users about road safety rules and how to safely participate in traffic, other road users on how to behave around vulnerable road users and promote their safety, as well as (micro)mobility planners and policy-makers on how to prioritise road safety for vulnerable road users.

Good Practice

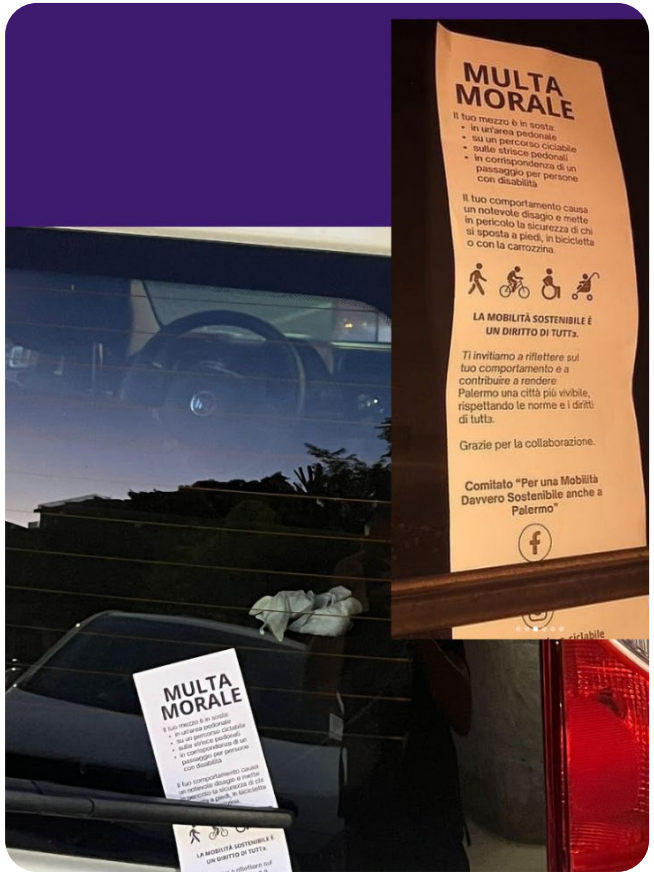
Faenza, Italy – Bike to Work

- An initiative promoted by the Emilia-Romagna Region to encourage sustainable mobility. It aims to encourage the use of 'two wheels' for employees of participating companies in commuting between home and work.
- Participants get paid 20c per km traveled by bicycle, up to 50 euro per month. Activity was monitored through the Wecity App, which can track the km traveled and CO_2 saved by each worker using the bicycle.
- In 2023, the number of businesses that joined the project were 127 with 1,134 users. In total, people who joined the project rode more than half a million km, making 174,876 'home-to-work' trips and vice versa. The balance of the savings CO_2 in the atmosphere was nearly 79 tons. More than 40,000 euros in incentives was paid to participants.

Make it attractive & cool:

- Create awareness raising campaigns on the benefits of sustainable mobility, green travel and the need to shift away from private car use.

Good Practice



Palermo, Italy – Morality ticket

- Initiative promoted by a citizens' assembly and supported by the Italian organisation RETAKE, to raise awareness about micromobility, sustainable mobility, and more simply personal responsibility and civic sense in relation to the urban common space. Morality tickets are given to all those who parked their cars in pedestrian areas, bike lanes, or double parked.

- The initiative was supported by different local stakeholder and private citizens such as: Palermo pedonale e Ciclabile, Fiab Bike and trek, and the committee for sustainable mobility in Palermo.

The message people receive is: MORAL FINE, your vehicle is parked:

- in a pedestrian area
- on a bicycle path
- on a pedestrian crossing
- on a ramp for people with disabilities.

Your behavior causes significant inconvenience and endangers the safety of people walking, biking, or riding in wheelchairs. Sustainable mobility is everyone's right. We invite you to reflect on your behavior and help make Palermo a more livable city by respecting the norms and rights of all.

Make it happen:

- Promote the creation, adoption and implementation of Sustainable Urban Mobility Plans (SUMP) by the city administration to create a clear transport vision for the city, improve accessibility, and provide high-quality and sustainable mobility to and within the urban area.

- Promote the creation, adoption and implementation of Green Travel Plans for local companies and organisations by encouraging sustainable mobility choices made by their staff and visitors, reducing private car usage, promoting public transport use, walking, cycling and other sustainable and healthier modes of transport instead as well as sustainable logistics such as the use of (electric) cargo bikes.

Good Practice

Rethymno, Greece – Winner of EU Road Safety Award

- The Greek city, located on the island of Crete, won the EU Road Safety Award in the EUROPEANMOBILITYWEEK Awards 2021.

- Rethymno was awarded for its inclusive approach to road safety, which targeted three main pillars: 1) upgrading the public transport system, 2) increasing and encouraging behavioural change through a variety of activities, and 3) establishing integrated cooperation with local stakeholders.

Good Practice

Pesaro, Fano and Rimini, Italy – URBICO - Urban Bike Courier

- Logistics company on wheels that believes in sustainable logistics and uses cargo bikes to deliver packages and documents in urban centres. They work as last-mile couriers to transport goods on behalf of companies and other couriers, even in areas inaccessible to motor vehicles.
- Urbico has 3 locations and 6 permanent collaborators have joined the 2 founding partners.
- Partnership with for the delivery with SDA – Poste Italiane and GLS. Partnership for the bikes with Riese & Müller.

Make it happen:

- Create coherence with existing urban and transport planning policies (e.g. SUMP documents), revising, aligning and implementing these, and coordinate between departments.
- Adopt a legal framework to protect vulnerable road users, e.g. presumed liability and the new transport hierarchy.

Good Practice

Malta – Active Travel Totems - Wayfinding signs

- A network of Active Travel Totems provide wayfinding information on the street, with direction, distance and duration for walking and cycling to nearby locations, as well as QR codes that lead micromobility users to a map with the suggested safest route.
- The network of totems is part of the Nudging Active Travel project of the University of Malta, in collaboration with several regional councils.
- The QR codes to access the routes were scanned by over 70,000 people between 2020 and 2023.

Make it happen:

- Adopt design standards and guidelines for infrastructure to ensure safety, quality and cohesion, including for traffic calming measures.
- Provide signage and information about sustainable transport options.
- Ensure there is real public participation, including the opportunity for users and potential users of micromobility to participate in discussions and decisions.

Part 2: Micromobility - Lessons from Ljubljana

2.1 Introduction to Ljubljana

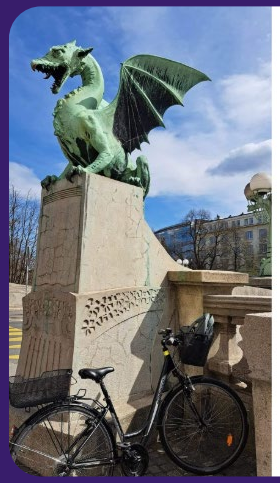
Ljubljana, the capital of Slovenia, has a population of nearly 300,000 inhabitants. In the past decades, the city has made a name for itself as a city promoting mobility on foot and by bicycle. Ljubljana is considered a cycling friendly city with a cycling network of more than 300 km and has one of the largest pedestrianised areas in Europe. The city was granted multiple awards, including the European Green Capital 2016, was the winner of European Mobility Week twice (2003 and 2013) and was awarded European Best Green Capital in 2021. The city won the bid to host Velo-city 2022, the annual world cycling summit.

To learn valuable lessons from Ljubljana, in June 2024 the MICROMOBI project partners travelled to Ljubljana to learn more about the city, its history of promoting active mobility and how the city approaches micromobility, and to learn from good and bad practices to bring home to their cities of the countries in the project: Malta, Cyprus, and Sicily (Italy). Workshops and site visit tours were held at the headquarters of Ljubljana's cyclists' association Ljubljanska kolesarska mreža (Ljubljana Cycling Network - LKM) and in the area of Ljubljana with the purpose of getting to know about both the concepts of urban micromobility as well as Ljubljana micromobility practices. Beside the project partner, also associate partners of the project, Rota, a cycling advocacy NGO from Malta, OPU, Organisation for Positive Urbanism, an NGO from Nicosia, Cyprus, and UIRS, the Urban Institute of the Republic of Slovenia, participated in the training programme.

About LKM - Ljubljana Cycling Network

LKM is a civil society association for the encouragement of cycling and sustainable transport, a non-profit organisation formally founded as an NGO in 2000. It started as an initiative of citizens and holds a granted status of an association operating in the public interest. The main mission of LKM is to improve system conditions for safe cycling and its main field of work is cycling advocacy, especially urban cycling, for the purpose of everyday mobility. For many years LKM has been co-creating the cycling climate and culture in the city and is committed to changing travel habits and creating sustainable mobility by increasing cycling and reducing motorised traffic.

LKM has influence on the improvement of micromobility infrastructure and conditions in Ljubljana and a role in promoting user participation through advocacy and responding with strategies, plans and proposals, both in direct dialogue with the city and by encouraging the public to criticise plans and make suggestions for the existing infrastructure. The results of their advocacy are manifold: improvement and decreasing of critical/dangerous points for cyclists, increased number of cycling lanes, surfaces and street equipment, more city streets with speed reduced/limited to 30 km/hour, high-quality and better located bicycle parking racks and lots, more contraflows for cyclists on one-way streets, the elimination of car parking lots on Sattnerjeva (school street) and improving the overall conditions for sustainable mobility in school districts and in the whole city in general, bicycle street improvements and more.



LJUBLJANSKA KOLESARSKA MREŽA

2.2 The (micro)mobility transition in Ljubljana

Ljubljana first imagined the idea of a car-free city centre in 2007 with the "Vision of Ljubljana 2025", a strategic document that laid out concrete measures to change people's travel behaviour. The actual transformation of Ljubljana city centre began that same year with the pedestrianisation of central streets and following the renovation of central squares, where the former parking spaces were redesigned into the central event and social areas. In 2015, one of the city's main traffic arteries connecting the city from north to south was closed to motorised traffic and became a shared space for cyclists, pedestrians, other forms of micromobility, and public transport. Other streets followed the same model. During that time Ljubljana also revitalised the riverbanks, completed an inner ring with the new bridge and improved access between the two banks of the river by renewing existing crossings and adding new pedestrian bridges. These projects were complemented by the creation of high-quality public spaces.

Ljubljana is one of the smallest yet one of the forward-thinking capitals in Europe when it comes to creating livable spaces for people. The city centre has a pedestrian area of which 102,504 m^2 is completely free of motor vehicles and another 66,784 m^2 is restricted to local traffic. In a total of 12 hectares, motorised traffic is restricted and micromobility is allowed (delivery vehicles are allowed between 6am and 10am - for vehicles with permits). Since 2007, the pedestrian zone in the city centre has increased by 620%. The change has been well accepted among citizens and has brought significant improvements.

Good Practice

Ljubljana, Slovenia – Pedestrian zone in the centre of Ljubljana

- Pedestrian zones cover a total of 12 hectares. Motorised traffic is restricted and micromobility is allowed.
- Since 2007 the pedestrian zone in the city centre has been increased by 620%. The change to the city centre has been well accepted among citizens and brought significant improvements. The main success factors were political support and continuity, communication with inhabitants and stakeholders, and learning from experiences from EU projects, and civil society engagement.
- The co-existence of cyclists and pedestrians is based on mutual acceptance and consideration and is considered to work well. Signposting at critical points reminds cyclists to consider the safety of pedestrians, which goes for other micromobility users as well.

The coexistence of cyclists and pedestrians (and other micromobility users) is based on mutual acceptance and consideration and is considered to work well. Signposting at critical points reminds cyclists to consider pedestrians' safety. Cyclists are allowed to ride in the pedestrian zone in the city centre, where they have to give the right of way to pedestrians and should not put them in danger when cycling.

Three main streets now have a shared space for pedestrians, cyclists, and public transport (buses). It is sometimes challenging for different road users to coexist and give each other space, but overall, it is considered to work well.

Good Practice

Ljubljana, Slovenia – Shared traffic space - Slovenska Street

- Slovenska cesta, a street that until 2013 did not even have a bike lane, is now known as "Ljubljana's living room" and has become a shared space for cyclists, pedestrians and other forms of micromobility, and public transport since 2015.
- After the redesign, the area was partially opened to non-motorised traffic to test the functionality of the new space. A patterned pavement with trees lining it are the most distinctive elements of the street redesign.
- The traffic flow change on the rearranged street was one of the most visible key measures of the transport policy for the creation of a high-quality public space. and is considered to work well. Signposting at critical points reminds cyclists to consider the safety of pedestrians, which goes for other micromobility users as well.

The city has a long tradition of cycling and is considered a cycling friendly city with a cycling network of more than 300 km. The latest analysis of Ljubljana's cyclists' association LKM, made in 2024, estimates that Ljubljana has 317 km of cycling network. Apart from cycling infrastructure along urban roads, Ljubljana also boasts four thematic cycling routes that connect the city with its surrounding suburbs and countryside. They form part of the cycling network and offer connectivity to and from the city. While some of these are more recreational routes,others are used for commuting extensively, too.

Good Practice

Ljubljana, Slovenia – Ljubljana cycling network and tradition of cycling

- The city has a long tradition of cycling, dating before the 2nd World War and it is considered a cycling friendly city with a cycling network of more than 300 km.
- Ljubljana is flat and compact enough to enable movement around the city easily by bicycle.
- In 2015, Ljubljana first made it onto the list of top 20 bicycle friendly cities in the world taking the 13th place, and in 2017 it improved its ranking. It made it as high as the 8th place on the Copenhagenize Bicycle Friendly Cities Index 2017.

Good Practice

Ljubljana, Slovenia – 4 Thematic Cycling Paths around Ljubljana

- The aim of thematic cycling paths is to set up attractive cycling paths between different parts of Ljubljana on less congested streets for daily journeys made by bicycles. At the same time these paths represent an extension of what Ljubljana has to offer to its visitors who can go on a bike-ride to experience Plečnik's architecture, the beauty of the Ljubljanica River or the green parts of the city.
- The four thematic paths are: Waterside (12km), Plečnik Path (14 km), Forest Path (7 km), and the Path of Remembrance and Comradeship (32 km)

The city has established contraflows, where cycling is possible in the opposite direction of motorised traffic, on 123 one-way streets, covering a length of almost 28 km. There are shared carriageways for motor vehicles and cyclists on more than 20 streets, totalling approximately 8 km. These streets with sharrows - arrows that indicate shared lanes for motorised traffic and cyclists - are only used and recommended where there is a 30 km/h speed limit.

Good Practice

Ljubljana, Slovenia – 123 Contraflows for cyclists in Ljubljana

- Contraflow cycling, in the opposite direction of motorised traffic, is possible on 123 one-way streets in Ljubljana.
- Provides connectivity and access to cyclists traveling in both directions, reduces dangerous wrong-way riding and decreases sidewalk riding.
- Contraflows decrease trip distance, the number of intersections encountered, and travel times for cyclists by eliminating out-of-direction travel and allows cyclists to use safer, less trafficked streets.

Ljubljana has two "Cycling Streets" (Fietsstraat - originates from the Dutch cycling infrastructure) since 2022 and 2023, where cyclists have priority and cars are guests and since then, the bicycle street is a new category of bicycle infrastructure surface. Motorised vehicles are not allowed to overtake cyclists and cycling side by side is allowed (which is not allowed anywhere else). While the introduction of the cycling streets is good, the implementation lacks effective traffic calming measures that actually slow down cars and give visual cues to moderate driving behaviour. Traffic calming design features such as kerb bulbouts, chicanes, raised tables and the use of trees and shrubs can aid in slowing down motorised vehicles and create safer spaces for micromobility users.

Good Practice

Ljubljana, Slovenia – Cycling streets in Ljubljana (Kolesarska ulica)

- Two 'Cycling Streets' (from the Dutch 'Fietsstraat') were created in Ljubljana in 2022 and 2023, where cyclists have priority and cars are guests. Since then, the bicycle street is a new category of bicycle infrastructure surface.
- Motorised vehicles are not allowed to overtake cyclists and cycling side by side is allowed (which is not allowed anywhere else). All of that has increased the number of cyclists a great deal on both cycling streets.
- Cycling streets makes cycling comfortable and safer, and a separate lane is created for pedestrians on the cycling street.

Traffic light intervals often prioritise motorised traffic. Despite some good practices, such as a 3-second green pre-phase for cyclists on some intersections and the inclusion of such measures in the Ljubljana Transport Strategy, there are still many intersections where micromobility users have much longer waiting times than motorised traffic.

Bad Practice

Ljubljana, Slovenia – Long waiting times at traffic lights

- The traffic light intervals are most often made in such a way that they offer much more time to motorised traffic, leading to longer waiting times for micromobility users.
- Examples of good practice appeared years ago, such as a 3-second green pre-phases for cyclists to be the first to cross the intersection, for example at the intersection of Roška and Poljanska streets. However, the City of Ljubljana did not continue with the introduction of such solutions, despite the measures being included in the Transport Strategy.

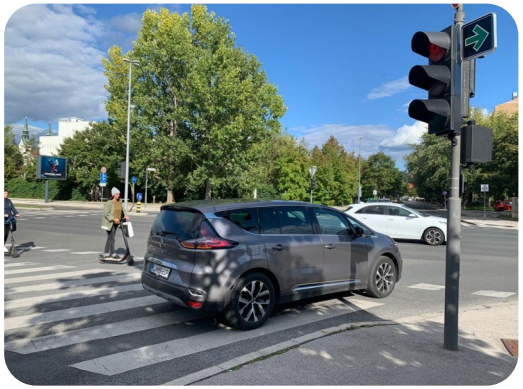
Positioning cycling infrastructure in shared spaces with pedestrians or on the street is a common practice to quickly provide space for cyclists, but can cause conflicts and dangers for different road users. Practices such as bicycle lanes or sharrows right next to parked cars, cycling lanes on a pavement shared with pedestrians, and conflicts or confusion over right of way can create dangerous situations for micromobility users.

Bad Practice

Ljubljana, Slovenia – Cycling lanes beside parked cars

- Positioning a bicycle lane or sharrows directly next to car parking spaces is a dangerous practice, as visibility is not good and there are risks of crashes.

Bad Practice



Ljubljana, Slovenia – Green arrows for motorised vehicles at intersections

- In 2022, the City of Ljubljana started introducing the dangerous practice of green arrows, which allow motorised vehicle drivers to turn right at a red light. These green arrows can even be found in a school street, with many children and other vulnerable road users present.
- This practice presents a danger to people crossing on foot, by bicycle and other micromobility.

Curbs or edges that do not allow smooth riding, excessive or steep ramps and sharp turns are disturbing, and can be dangerous. The use of metal bollards or bumps to separate cyclists from pedestrians can also present dangers of crashing or slipping, especially in wet weather conditions. Sudden network interruptions, such as a bicycle lane just ending without a safe connecting alternative are also a challenge, and the network still needs further improvement to be fully connected.

Bad Practice

Ljubljana, Slovenia – Uncomfortable / dangerous cycling surfaces

- Several streets have curbs or edges that do not allow smooth riding, or designs with steep ramps and sharp turns, which is very dangerous as it increases the chances of a fall or crash.
- Safety and comfort is also impeded by the installation of metal bollards or bumps to separate cyclists from pedestrians, which can create unexpected barriers or slippery surface.

Bike sharing proved key to normalising a cycling culture in Ljubljana. The city's public bike sharing system, BicikeLJ, was introduced in 2011. Since then, BicikeLJ has progressed towards becoming one of Europe's most successful bike sharing programmes with 17% of Ljubljana's residents having an annual subscription.

Good Practice

Ljubljana, Slovenia – Bicycle public bike sharing system - BicikeLJ

- Introduced in 2011 with 300 bicycles at 30 stations. The system is very popular: there are now 840 bicycles at 84 stations.
- A public-private partnership between City of Ljubljana and Europlakat d.o.o. The first hour of use is free of charge, which has been very well received among users since 98 percent of all users journeys are free. The yearly subscription costs only 3€, the weekly subscription is 1€.
- BicikeLJ is one of Europe's most successful bike sharing programmes with 17% of Ljubljana's residents having an annual subscription. At the end of April 2022, BicikeLJ bikes had been rented more than 9.1 million times since its launch in May 2011. The average rental time was 16 minutes with each bike being used an average of 8 times a day.

As of 2022 the city also has an e-bike sharing system and as of 2023, multiple e-kickscooter sharing systems, offered by private operators. E-kick scooters are allowed to be driven on the bicycle lanes at maximum speed of 25km/h. Children from 14 years onwards and with a cycling exam, are officially allowed to ride them. A helmet is obligatory up to 18 years of age. Shared micromobility options are offered at key locations of the city, including Park & Ride (P&R) facilities to allow for multimodal transport.

Good Practice

Ljubljana, Slovenia – P+R in Ljubljana

- The P+R (Park and Ride) system is a combination of private and public transportation, which allows users to reach the main points on the city outskirts or the radial roads with their cars and continue their journey to the city by bus or a bicycle from the BicikeLJ bike-sharing system. E-kick scooters rentals and e bike sharing is also included in some of the P+R facilities in Ljubljana.
- By paying one regular parking fee, the P+R system users are entitled to two bus rides until midnight on the same day.
- In Ljubljana, there are six P+R facilities that operate within the P+R system. This way, the number of cars in the city centre is reduced.

In 2009, Ljubljana introduced the Urbana, a contactless card for the payment of fares on Ljubljanski potniški promet buses that allows riding and transfers within a 90-minute period. Urbana was first introduced on lines within the city and later also on integrated and intercity lines. With Urbana, users can now also pay for on-demand rides with EURBAN, the funicular to Ljubljana Castle, parking fees at public parking spaces and P+R facilities, Ljubljana City Library services, as well as use it for renting bicycles in the BicikeLJ bike-sharing system.

Good Practice

Ljubljana, Slovenia – Appropriate parking racks in Ljubljana

- In 2021 and 2022, the Slovenian capital installed 286 bicycle racks to provide safe parking facilities for about 600 bicycles, adding to the already available 10,000 bicycle parking spaces.
- These type of parking racks (called 'U' or 'Sheffield' racks) are found in the guidelines and are considered most appropriate.
- Together with safe infrastructure, parking facilities are crucial for the encouragement of cycling and micromobility.

The city continues to invest in parking facilities, an essential supportive service for micromobility, to ensure safe and accessible parking at the start and end of journeys. In 2021 and 2022, the Slovenian capital installed 286 bicycle racks to provide safe parking facilities for about 600 bicycles, adding to the already available 10,000 bicycle parking spaces. In 2022, the first underground public bicycle garage was opened under Kongress square. There is a bicycle lane leading into the underground garage and in the opposite direction when cycling uphill to go outside, there is a bike box for cyclists to stop, but overall the entrance is not easily accessible and is shared with cars, so it is not very bicycle friendly. The only provision is a written sign that says "beware of the bicycle".

Good Practice

Ljubljana, Slovenia – Bike parks and bike service stations

- Bike parks are recreational areas to cycle on different surfaces and practice the skill. Within the park, there is a self-service bike shop, where users can inflate tires, change a tire with the keys provided, and perform smaller service works on their bikes with other tools in order to improve mobility and safety.
- There are 6 "Kolopark" - bike parks in Ljubljana
- They serve to promote and encourage cycling and self repair.

The city's investment in pedestrianised and cycling friendly infrastructure is also supported by other services, to ensure everyone can move around the city. Public transport is free of charge for residents of Ljubljana over 65 years of age. Small electric vehicles called 'Kavalir' are operating in the city centre and are available on demand for shorter trips, free of charge for both residents and visitors. An increasing number of public areas, and also city buses, are adapted for persons with reduced mobility. For better mobility options, they can access the Ljubljana by Wheelchair mobile App. Unfortunately, at the train stations access for micromobility is not yet implemented well, with limited accessibility for bicycles and other wheeled transport modes.

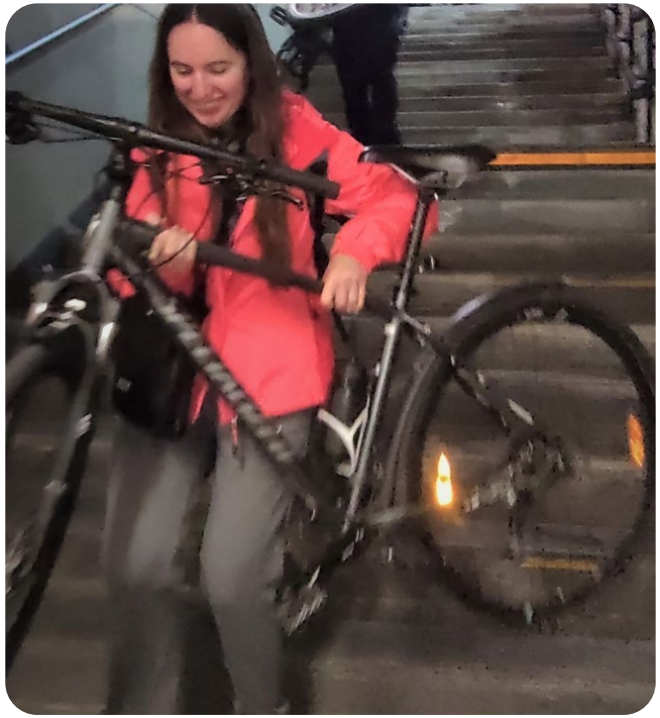
Good Practice

Ljubljana, Slovenia – Free of charge electric vehicle 'Kavalir'

- The Kavalir are small electric vehicles operating in the city centre upon immediate request, for shorter trips, free of charge throughout the year, for both residents and visitors. The service was introduced in order to help residents with reduced mobility face the challenges of the large-scale pedestrianisation of the inner city.
- The public company Ljubljanski potniški promet introduced the first two vehicles in 2009, operating on-demand according to the passengers' request.
- In 2017, there was a total of eight such vehicles. Up to five passengers at once can use a free ride. By the end of 2017, the Kavalir vehicles had transported more than 1.2 million passengers.

Bad Practice

Ljubljana, Slovenia – Intermodal connections with the public transport network



- The bicycle works perfectly in combination with the train, as it allows short urban trips to connect with longer intercity travel.
- However, many railway stations in Ljubljana are not very accessible by bicycle. In this area, further improvements are expected within the framework of the Ljubljana Passenger Centre project and related improvements to the ring roads.

2.3 Lessons learned from Ljubljana

Ljubljana's city centre is the largest car free zone in Slovenia and one of the largest in Europe, and has been internationally recognized as a best practice in terms of sustainable mobility, urban planning, space reallocation, and environmental protection. The changes have brought significant improvements to air quality and noise reduction and have improved the quality of life for both local residents and visitors. Local black carbon pollution in this area has decreased by 70% and noise has decreased by 6dB compared to before the establishment of the eco-zone. All of the measures improved the quality of life for the inhabitants of Ljubljana. According to the SUMP mobility survey, 95% of inhabitants see the changes as positive.

With the use of other micromobility devices, especially e-kick scooters in recent years and the growth in the number of cyclists in the city, which was sparked by the coronavirus pandemic, the statistics on accidents and deaths of vulnerable road users are rising. Thus, there is a need for more education and training of vulnerable road users also in Ljubljana on safe movement, the road codes and safety rules, as well as a growing need to educate other drivers, journalists, public officials and the general public.

The lessons learned from the transition to micromobility in Ljubljana, both good and bad practices, are summarised here in four key lessons:

Lesson 1: Create safe and direct infrastructure

Safe and direct infrastructure is key to promoting micromobility, as it dedicates space for walking, cycling and wheeling, and improves road safety, the number one concern for vulnerable road users. The experience from Ljubljana shows the importance of connectivity and cohesion in the network, combining different types of pedestrian and bicycle infrastructure: pedestrian streets, shared spaces, sharrows in low-speed streets, and bicycle lanes of course. It is good to keep in mind the five design principles for cycling networks when designing for micromobility: cohesion, directness, safety, comfort, and attractiveness (CROW Design Guidelines, 2016).

Lesson 2: Provide supportive and inclusive services

Micromobility infrastructure and services need to be designed with people from young ages to the elderly in mind. Examples from Ljubljana include a large pedestrian area, shared spaces and cycling streets that enable children from young ages to move around independently, but also services such as Kavalir, to ensure elderly persons and those with reduced mobility can still have access to the pedestrianised city centre.

Lesson 3: Integrate with other modes of transport

As micromobility goes hand in hand with public transport, and can provide the connectivity to bus and train stations, there needs to be adequate thought to the integration of different modes of transport, in terms of parking facilities and access, as well as payment integration such as with a public transport card like the Urbana card in Ljubljana, which also includes access to the public bikesharing system BicikeLJ.

Lesson 4: Build a movement

The main success factors for the sustainable mobility transition in Ljubljana were political support and continuity, communication with inhabitants and stakeholders, and learning from and implementing actions in the framework of EU projects, as well as a lively civic society engaged in the improvement of public space in Ljubljana (EU Commission, 2020).

For more detailed information, photos and maps, have a look at the highly detailed case study of Ljubljana on the Micromobi online platform
www.micromobi.eu

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