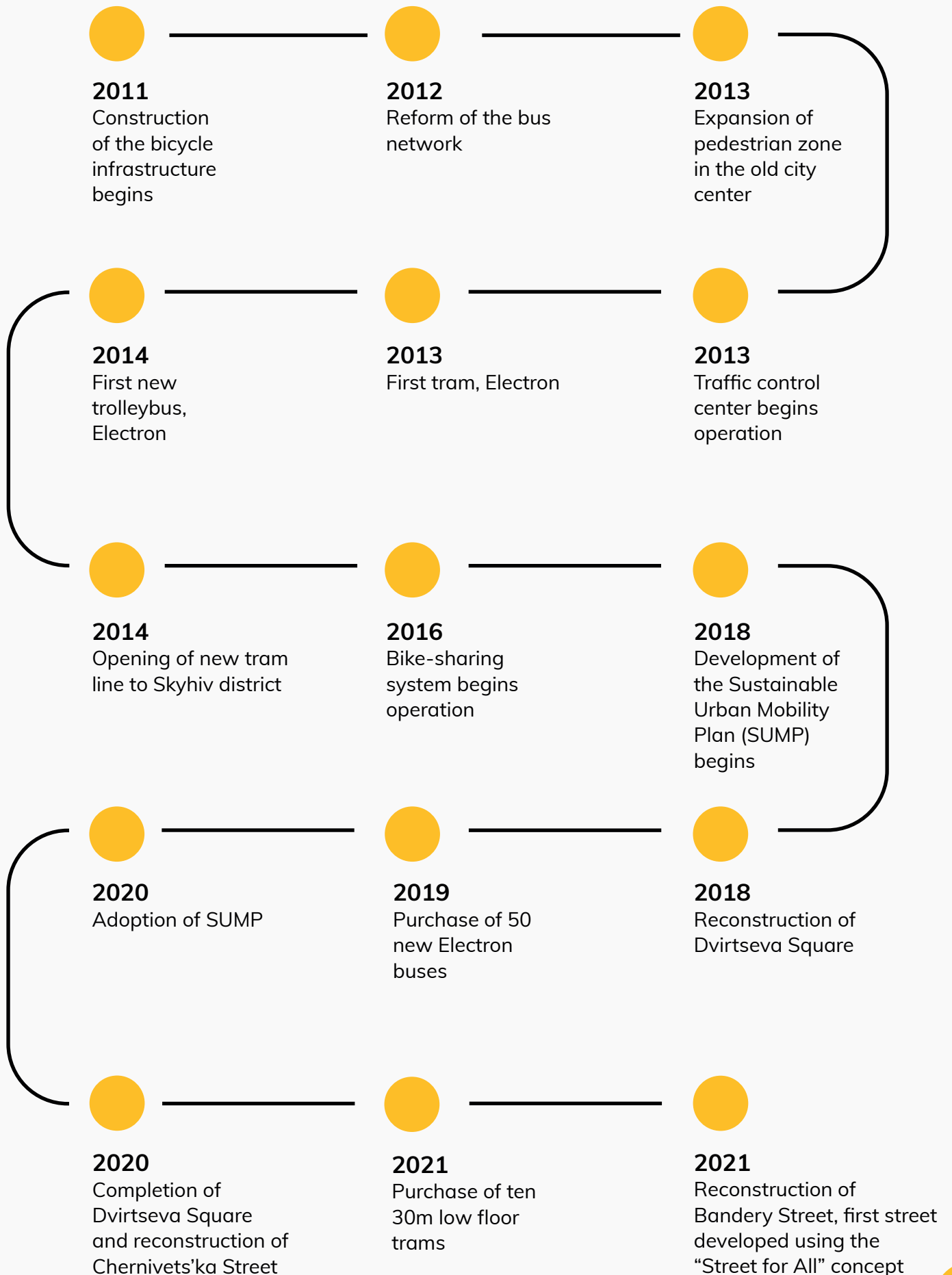


Lviv – From Streets for Cars to Streets for All



Timeline of Lviv's sustainable urban mobility transformation



1. Background



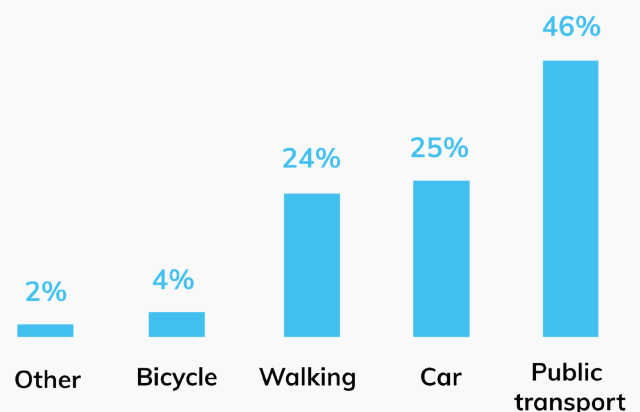
Older and less dense, and newer and more compact urban fabric spreading over the hills of Lviv. Source: Alexander Shutyuk.

The transformation of Lviv’s public spaces and mobility systems came as a result of a decade-long process of retrofitting Lviv into a city of short distances that prioritizes people over cars. Its success relied on an administration that was willing to listen and understand different perspectives for how streets should work for everyone. It also engaged civil society advocates to be part of the change, and then worked to institutionalize that change in establishing positions, departments, standards, and plans.

Lviv, a city of 730,000 people in the western part of Ukraine, was founded in 1256; it known for its economic and cultural significance in Eastern Europe. Its historical city core remained intact after World War II, but then developed with a typical Soviet modernist approach with radial streets surrounding the old town as the city expanded. Since the 1990s and after the country’s independence, car ownership has skyrocketed in Lviv, resulting in heavy congestion and pollution in the city center. While over half of Lviv residents used public transport, the streets were still grid-locked, as they were not designed to handle such

an influx of passenger vehicles alongside public transport, which had become increasingly less efficient and slow around rush hour. Despite that, the city’s share of public transport users remained relatively high in part due to the economic constraints of users rather than the quality of the services (see Lviv’s urban mobility survey).

Lviv’s mode share in 2021 estimated through a public survey shows a high usage of walking and public transport modes. “Other” includes taxis, and micromobility devices like scooters. Adapted from: Mobility Lviv.



2. Starting point

Initial social movements in 2010 called for safer streets for cyclists. Source: City of Lviv.



Winning the bid to co-host the 2012 EuroCup in 2007 opened a new page for Lviv. With an influx of government investment, the city had three years to improve its infrastructure for the games and plans for street improvements were developed for the first time in 15 years. It was the first time that any streets had been reconstructed since the collapse of the Soviet Union. Given the short timeline for upgrades, these stayed true to the original street design and there was no consideration of allocating space for sustainable mobility. As a result, the first social movement for safe streets formed around cycling in 2010.

Mayor Andriy Sadovyi listened to the advocates and invited them to be part of the collaborative process that would yield an updated approach for the streets of Lviv. To understand their concerns, he brought Oleh Shmid, one of the main activists, as an advisor. Working together, they developed a cycling network plan that was adopted in 2011. In the first year, the city built 13 kilometers of cycling infrastructure with a grant from the German government.

In 2012, the social movement for increased pedestrian space began in response to the rise in car use and the success of the cycling movement. It was focused on freeing the sidewalks from illegally parked cars with a campaign to have bollards placed. Again, the mayor invited the activists to discuss and work towards solutions for safer streets for all. This catalyzed an on-street parking reform, which included integrating parking fees. From there, the city pedestrianized the central part of the city, allowing access to public transport like trams. Recognizing the importance of public space design for the pedestrian environment, the city helped institutionalize these changes by creating a bureau for municipal design called the Institute for Spatial Development. Finally, the city upgraded one of its most important public spaces that had been overtaken by cars — the Lviv Railway Station. The city turned what was once a parking lot into a square with space for public transport access, walking and cycling.

These initiatives have led to the formulation of a process codified in the Sustainable Urban Mobility Plan as well as the adoption of a municipal standard for street planning that also addresses climate change mitigation strategies like storm-water management and green infrastructure. Lviv is already experiencing the effects of climate change with heavy rains in the summer and heavy snows in the winter and adopting the adaptive design strategies will help the city systems stay resilient for longer periods of time. The city continues to move forward in the face of the pandemic despite budget cuts, focusing on tactical interventions that increase pedestrian safety and prioritize public transport.

Lviv's key wins in sustainable urban mobility



The Sustainable Urban Mobility Plan of Lviv adopted in 2019 is a 15-year vision that focuses on expanding public transport and creating a city of short distances, prioritizing walking and cycling and realizing vision zero.



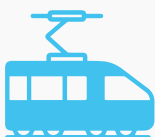
New street design featuring over 120 km of bicycle infrastructure and with pedestrian islands built to increase road safety.



Public transport services improved by construction of 10 new dedicated bus lanes of more than 12 km long each.



Expansion of public transport with 150 new buses, 50 new trolleybuses and 7 new trams, with plans for 10 more trams to be delivered in 2022.



Construction of 5.5 km of new tram line from the city center to Sykhiv (the largest residential district).



Reconstruction of the Dvirtseva Square in front of the main railway station to prioritize pedestrians and public transport users.

Sustainable Urban Mobility Plan of Lviv

The Sustainable Urban Mobility Plan of Lviv (SUMP) was approved in February 2020. The SUMP serves as a strategic document to guide city policy, as it sets out the framework, principles and goals for the city's sustainable urban mobility. Its passage demonstrates the will and leadership of the public administration to transform Lviv from a congested city to one that prioritizes people, sustainable mobility options and convenient access. The SUMP was developed jointly by the Lviv City Council and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH with participation of multiple municipal departments, transport operators as well as the residents. The SUMP details a 15-year vision divided into four-year strategic action plans. Making streets public places, not just roads, is one key principle within the SUMP. Additionally, the SUMP intends to focus on safety rather than travel speed, prioritizing human lives and health. Beyond pedestrian zones having priority in street planning, public transport networks are recognized as the backbone of the city's infrastructure in creating a more sustainable city. The strategic plans of the SUMP intend to address the issue of road safety by putting importance on public transport and preventing growth of car use. The SUMP has already made significant changes for mobility in Lviv, as a number of outstanding projects have been implemented.

3. Pedestrian improvement projects



Vernadsky Street improvements in Kyiv. Source: Alexander Shutyuk.

At some point in every journey, nearly all Lviv residents move around the city on foot. Yet, the city has long forgotten the needs of pedestrians as they favored cars. Lviv has been changing this approach over the last decade by improving and prioritizing public spaces, pedestrian alleys and pedestrian streets. Within the last five years, more than 40 pedestrian spaces have been improved or created throughout the city and implemented through different tactics.

Pedestrian access to stations

Ukraine has a much higher mortality rate from car accidents involving pedestrians than other European countries. To counter that, the city has been working to improve pedestrian safety by limiting driving speeds (under 50km per hour with some streets mandating 30km per hour speed limits), regulating traffic intersections more clearly through signage and lighting and facilitating road crossings. A number of pedestrian islands have been installed on multi-lane roads to allow safe and direct crossing especially for the slower moving users. Similarly, residential streets have

been rehabilitated to improve lighting and create opportunities for children to use public spaces more safely. The city has added lighting to more than 500 pedestrian crossings for the safety and comfort of pedestrians.

Street interventions

Lviv has been reallocating the street space to pedestrians and sustainable modes of travel using targeted interventions. For example, the city has recently opened Rudanskoho Street to people while completely removing the cars that previously dominated it, making it a more

attractive public space for walking and accessing commercial activities in the street frontage. Similar initiatives are happening on other streets across the city.

Before and after images of Rudanskoho Street. Source: Google Maps (left), TUMI (right).



Access for people with disabilities has also been a major focus of pedestrian interventions. At grade road crossings appeared around the city, and lower floor ramps were built at public

buildings and on sidewalks. The lighting has also been upgraded along many pathways and intersections making traveling at night safer and

Elevated ramps have been constructed throughout Lviv to improve access for all users. Source: Yuriy Ter-Aratunyan.

Tactile paving has been added to many sidewalks to prioritize pedestrian safety. Source: Yuriy Ter-Aratunyan.



Additionally, Lviv has opened several modern playgrounds, such as the one near St. George's Cathedral. These playgrounds are an effort to

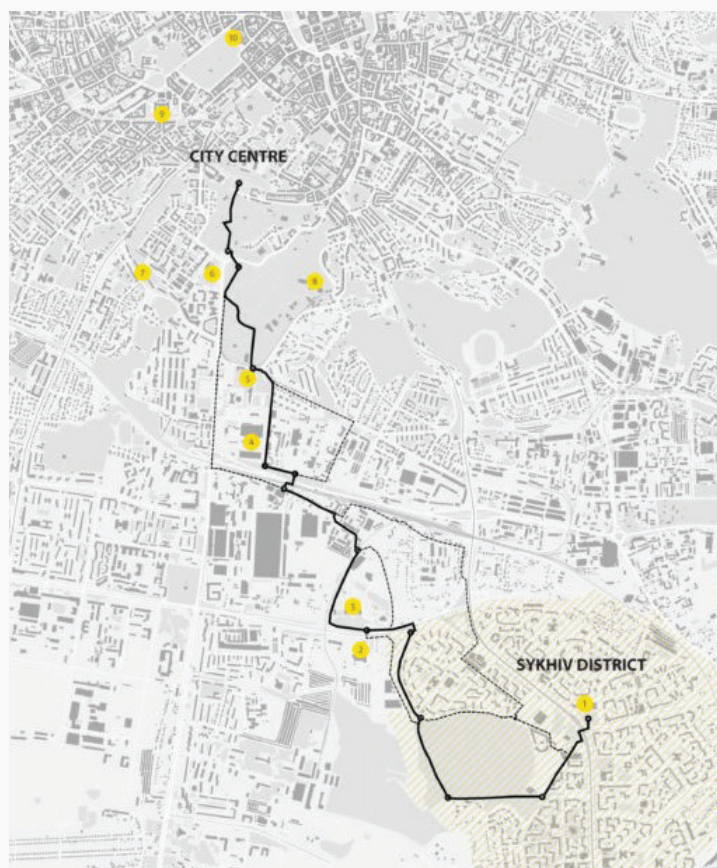
encourage families and children to spend more time using non-motorized transport and public spaces.

Newly constructed playground in Lviv. Source: TUMI.



The City of Lviv in partnership with German Society for International Cooperation is also implementing its “Green Line” project, which is a recreational pedestrian–bicycle connection from Sykhiv District to the city center. It passes through green spaces and industrial zones and links two campuses of the Ukrainian Catholic University. Once completed, it will become a crucial connector and enabler of faster trips by cycle and safer trips on foot. The Green Line project is 7 km long, with the first 1.3 km segment set for completion by the end of 2021. The design period for the route brought together many stakeholders who took into consideration major destinations along the route, and design approaches attractive for the users.

The proposed Green Line connecting the city center with the Sykhiv District, dotted with key destinations along the way. Source: GIZ, Mobility Lviv.



4. Cycling projects

120 km of cycling lanes have been gradually implemented throughout Lviv, and more are planned under the forthcoming updated bicycle plan. Source: Mobility Lviv.



Cycling has great potential as a viable mobility option in Lviv, due to the city's relatively compact form. Lviv approaches cycling from the perspective of safety, intermodality and integration. The city's approach includes building infrastructure for safe cycling, bike parking, a bike share system and public initiatives that promote cycling.

Cycling infrastructure

The first city-wide cycle plan was developed in 2011, with a vision for 263 km of cycle lanes to be laid out through 2020. The city is currently working on a new cycling network concept which will go into effect in 2022.

Lviv has continued developing its cycling infrastructure reaching more than 120 km of cycle lanes. New bicycle lanes are strategically being added to knit the cycling network together along Knyahyni Olhy Street and Chornovola Avenue, allowing the northern and southern regions to be linked together through the city center.

Development of cycle infrastructures in parallel with improving transportation infrastructure increases overall cycling usage. People tend to use cycling combined with other mobility types and

this in turn will promote public transport ridership and help decrease reliance on cars.

One of the new protected cycle tracks in Lviv. Source: TUMI.



Bikeshare

The relatively new concept of bike-sharing has changed the face of Lviv's streets, putting more cyclists on the road than ever before. Thanks to the city's new bike-sharing scheme by Nextbike, a growing number of residents are taking advantage of the scheme. As of 2019, 25 rental stations for the bikeshare were in operation. In 2021, a second bike-sharing company, BikeNow, launched a dockless-sharing scheme in Lviv.

Strategically locating these bikeshare stations was vital to the program's success. The city consulted with Lviv's Cycling Association and found that stations located near existing infrastructure, such as bike lanes, were far more popular. BikeNow, the dockless scheme, has made bike-sharing even more popular.

The sharing economy has also shifted the transport landscape with the addition of e-scooters. Since April 2020, shared e-scooters have gained popularity in Lviv, with more than 500 e-scooters on the streets. Electric scooters can be used with cycling infrastructure, providing opportunity for low impact travel to those unable to cycle and offering an additional option for sustainable travel.

Lviv's bikeshare system was the first to appear among the Ukrainian cities. Source: Mykola Ohorodnyk via Shutterstock.



5. Public Transport



Modern buses deployed in Lviv run on cleaner technology.
Source: Alexander Shutyuk.

Public transport is the predominant mode of mobility in Lviv with over 50% of residents using it for commuting purposes. The city has a well-developed public transport network made of 1505 km of bus lines, 133 km of trolleybus routes and 99 km of tram routes. The city is working on expanding and renovating routes as well as gradually replacing the fleet with low to zero-emission vehicles.

Service improvements

Over the last few years, Lviv worked on improving its public transport service by modernizing the bus and tram fleets, adding trolleybuses, introducing monthly transit passes, and implementing an electronic fare payment system. 50 new trolleybuses and 150 new regular buses have been purchased. This allows for an extension of the public transport services and an improvement in CO₂ emissions as the buses are equipped with more efficient technology. To decrease travel times in public transport further, 30 dedicated bus lanes have been created allowing bus services to become faster than private cars when congestion is high. The tramline to Sykhiv has full priority on 70% of the route. With these improvements, travel times have decreased significantly. Additionally, the bus routes have been shifted and adapted to respond

to different neighborhood demands based on the approach of creating a “city of short distances.” Medium size buses replaced some of the private service “minibuses” on key routes increasing passenger capacity and encouraging easier transfers to other forms of public transport.

Lviv's modern tram by Electron. Source: Mobility Lviv.



Upgrading Dvirtseva Square

One of the most notable improvements in public transport can be seen in the renovation of Dvirtseva Square, located in front of the central station; it now provides improved access to multiple forms of transportation. Lviv's main railway station is a multimodal hub giving access to trams, suburban and city buses; there is a pedestrian passage between the station and the city center, cabs, cars and Kiss and Ride facilities.

The square and Chernivetska Street leading to the square have been completely redesigned. Travelers can now access public transit directly in front of the station faster than any other mode of transportation and can enjoy added shading and street furniture. The square has also become safer for pedestrians and cyclists by separating motorized and non-motorized traffic more clearly.

Dvirtseva Square in front of the Lviv Central Station. Source: Oleksandr Shutyuk.



6. Lessons Learned



Stakeholders map out the route of the Green Line at a design charrette. Source: Mobility Lviv.

Lviv's transformation to a more sustainable city functions as a baseline and inspiration for many Ukrainian and East European cities developed under Soviet urban planning principles. As of 2021, 20 Ukrainian cities have followed Lviv's example and are developing and implementing strategies for improved urban mobility. The widespread movement towards redistributing space and prioritizing sustainable modes of transportation is an excellent means to demonstrate how any city can take steps toward achieving its sustainability vision without having to implement large-scale new construction projects.

During the transformation process in Lviv, however, several obstacles have been identified.

Linking plans to budgets and establishing priorities

Particularly considering the city's economic framework, it was vital to have specially planned budget lines for the prompt implementation of various infrastructure measures. The City of Lviv accomplished this by creating

a government position entirely responsible for cycling infrastructure and by adopting a cycling infrastructure development plan that specified project sites, cost calculations and implementation procedures. This plan allowed smaller interventions to be built within larger projects, with individual projects advocated for by the city's active civil society.

Informing planning and priorities through consistent data

Lviv creatively used qualitative data from surveys along with information from experts and advocates to create its plans for priority intervention areas. Still, having real city-wide counts and origin-destination data for all modes, especially cycling, is critical to understanding mobility needs in a city. Having before and after data especially for pilot programs and tactical interventions can illustrate and measure progress and build confidence in and support for those interventions. Only with regular statistical monitoring and comparison can deficits be identified, and success rates of individual projects and phases determined.

Integrated planning for a city of short distances

Lviv has seen new streets built without considering bicycle infrastructure and isolated improvements to public spaces. The city-wide perspective developed by the SUMP and described in the Urban Development Concept for Lviv provides for a coherent and holistic development of all urban areas. Creating and developing neighborhoods that are self-sufficient would reduce the need for mobility and enhance short-distance travel. With investments in real-estate development that focuses on more dense areas, a “compact city” can coordinate residential development with not only the public transport network, but also short distance travel that can be done on foot or by bike. Intentional compact planning would in turn reduce car usage.

The idea of a city of short distances has influenced the development of transport networks connecting the city center to the outlying suburbs and villages. Growing sharing schemes allow multi-modal transit, while new bus routes have been planned to improve last-mile connectivity in the suburbs. It is now possible to travel from many neighborhoods to the city center in 15 minutes. This is vital to transport comfort and efficiency, as more than 150,000 people commute in and out of the city each day.

Combining efficient transit planning with compact development reduces harms such as traffic, scarce parking, long wait-times and overcrowding on buses, and it will improve health, safety, and environmental conditions — thus improving quality of life for commuters and travelers within Lviv.

Integrating civil society into city administration

A significant number of active members of civil society (activists from NGOs, members of academia, active heads of residential associations etc.) are currently implementing their projects and ideas while working as a part of the municipal administration. Many projects launched by NGOs are also currently being implemented by city administration across multiple areas: sorting of waste, upgrading lighting at pedestrian crossings, adding bollards preventing illegal parking, greening the city, etc. All of these activities started by small groups of enthusiastic people and were scaled up by the city. For example, the city’s more than 500 pedestrian crossings began with the first crossing being built in 2013 through crowdfunding. Civil society participation has been a major driver in changing Lviv’s transportation environment.

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