

Anja ILENIČ
 Alenka MAUKO PRANJIČ
 Darko KOKOT
 Ana MLADENVIČ
 Mateja KOŠIR

The EIT Urban Mobility Knowledge and Innovation Community: More pleasant and sustainable living in European cities through innovative mobility solutions

The demand for sustainable transport systems increases every year. Therefore, urban areas require targeted and strategically oriented action plans that will improve the accessibility, quality, and use of transport networks while simultaneously contributing to less congestion, fewer accidents, and less pollution in urban areas. EIT (European Institute of Innovation and Technology) Urban Mobility focuses its activities on the challenges of European mobility. It aims to strengthen and connect various stakeholders in the ecosystem, which will continue to have a positive impact on sustainable mobility, accessibility of urban services, more efficient urban logistics, waste reduction, a more integrated transport system, increased active mobility, and public transportation use, consequently resulting in less dependence on cars. The main objective of EIT Urban Mobility is to transform cities into greener and more environmentally friendly places to live.

People are at the heart of sustainable development. Global demographic trends, population growth, ageing, migration, and urbanization all have a significant impact on the transition to a more

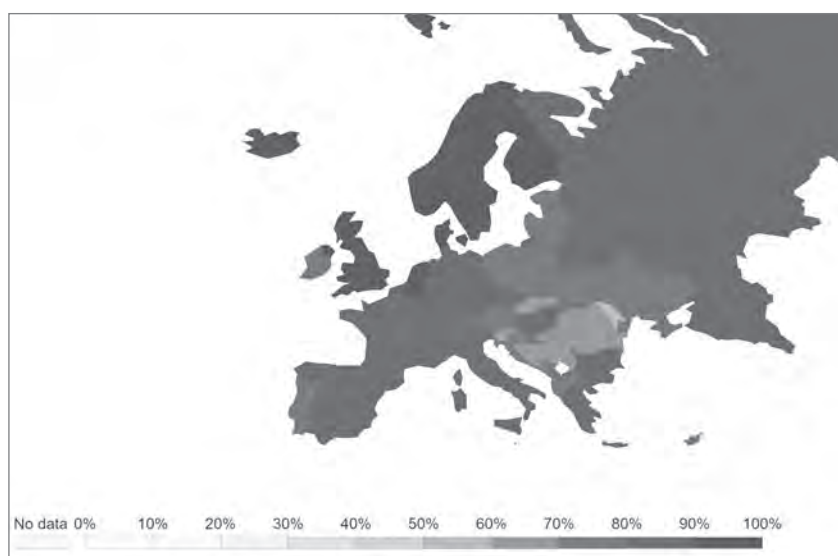


Figure 1: Urbanization forecast for 2050: percentage of the population that will live in urban areas (source: OWID, 2021 based on United Nations, 2019b).

sustainable society, environment, and economy, consistent with the principles of the circular economy (United Nations, 2019b). In 2019, the world population reached 7.7 billion, and

statistical trends show that this number will reach 9.7 billion in 2050 (Figure 1; OWID, 2021 based on United Nations, 2019b; United Nations, 2019a).

In addition to population growth itself, the number of people living in urban areas is also increasing. In 1950, about 30% of people lived in urban areas and in 2018 about 55%. The United Nations predicts that 68% of the world's population will live in cities by 2050, and in some parts more than 80% (UN-Habitat, 2011; United Nations, 2019b).

Population growth in urban areas can have extremely negative effects on the environment and society. Globally, cities (urban areas) occupy only 2% of the world's territory, but they contribute 70% of all greenhouse gases produced (Vandecasteele et al., 2019). In the European Union, the transport sector contributes to 27% of total greenhouse gas emissions (Eurostat, 2020). The challenges for people in urban areas include affordable housing, challenges related to (over)pollution of transport networks (air, water, and soil pollution from car exhaust, congestion, related longer travel times, etc.), accessibility of urban public services (e.g., public health and transport, and waste collection), ageing of the population, and climate change (Vandecasteele et al., 2019).

Despite the many challenges posed by urbanization, urban areas have many opportunities to reduce their impact on the environment and society, also due to a certain degree of autonomy and willingness to adapt to new technological advances. In urban areas, there is a need to make public and commercial urban services more sustainable and efficient in the future; for example, in ways that make them reusable, shareable, modular, and based on new ways of using data. Public spaces in urban areas occupy 2 to 15% of the total land. Therefore, well-designed public space policies with greener and more open spaces can have a significant impact on improved air quality, better microclimatic conditions in urban areas, increased safety, and better public health. Moreover, new technolo-

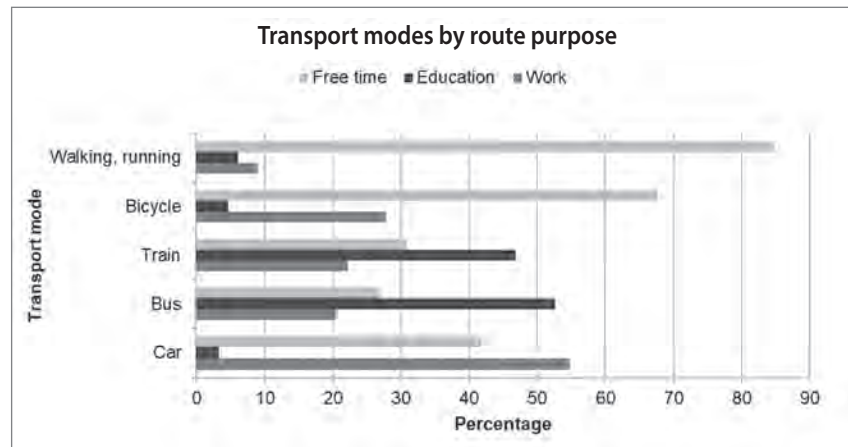


Figure 2: Share of passenger kilometres by mode of transport and route purpose (source: Statistical Office of the Republic of Slovenia, 2017).

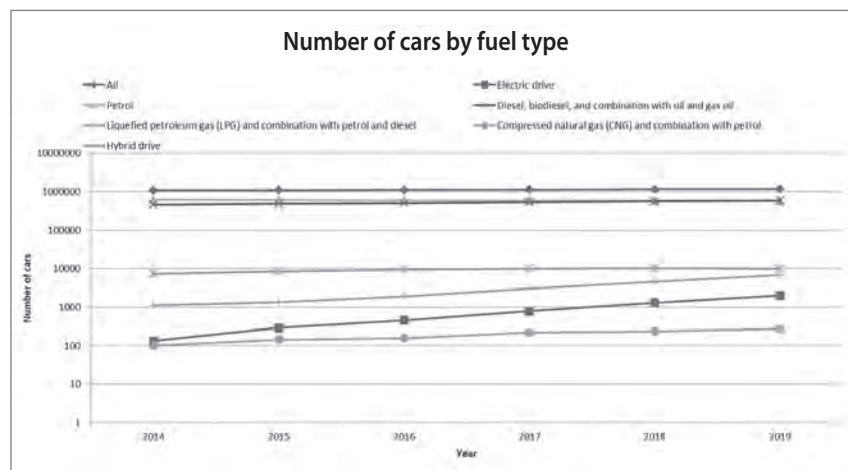


Figure 3: Number of cars by fuel type (source: Statistical Office of the Republic of Slovenia, 2020).

gies can contribute to better public services to solve sustainable and environmental challenges, and to improve the productivity of individuals and society as a whole (Vandecasteele et al., 2019).

Traffic congestion, and air and noise pollution are just some of the challenges facing European urban areas. In Slovenia, the predominant mode of transport is cars (Figure 2), in which people spend an average of fourteen days a year (Statistical Office of the Republic of Slovenia, 2017). Over the last decade, there has been a trend toward an increasing number of cars in transport, although there is an increasing trend of hybrid or electric cars (Figure 3).

Motorized traffic is one of the main sources of particulate matter in the air (e.g., PM_{10} and $PM_{2.5}$), along with fireplaces, industrial exhaust, construction sites, and other contributors (Thunis et al., 2017). In addition to the environmental impact, higher levels of PM particles can also have negative effects on human health: on the development of Alzheimer's disease, increased risk of heart failure, a tendency toward higher blood pressure, and so on (VFA Solutions, 2021). Over the last decade, PM_{10} and $PM_{2.5}$ levels in Slovenia have been continuously higher than the European average (Figure 4). The joint development of urban strategies and action plans in synergy with urban residents is therefore important for the preservation of urban areas and associated sys-

tematic progress (Vandecasteele et al., 2019). EIT Urban Mobility addresses urban issues and challenges.

In 2019, the EIT established EIT Urban Mobility as one of nine EIT Knowledge and Innovation Communities (Figure 5). One of the main objectives of the EIT is to increase the competitiveness of European companies, including by systematically accelerating the transfer of innovations and innovative solutions to the market. In addition to fostering competitiveness, particularly in the automotive industry, EIT Urban Mobility identified seven other major challenges: relieving congestion on transport networks in urban areas, promoting interdisciplinarity, transporting people and goods (including waste) in an environmentally efficient and safe way, new uses of data, creating a framework for changes in legislation and human behaviour, sustainable urban growth, and urban management.

In 2021, the community included more than eighty-five various city and government institutions, research and educational institutions, and industrial partners involved in mobility.

All activities are designed to achieve three key social goals: 1) to mitigate and adapt to climate change, 2) to create better living conditions in urban areas, and 3) to create jobs and strengthen the European automotive sector (EIT Urban Mobility Strategic Agenda, 2021). The strategic objectives developed to achieve social and mobility impacts are creating liveable urban spaces; closing the knowledge gap; providing green, safe, and inclusive mobility solutions for people, goods, and waste; accelerating market opportunities; and promoting effective policies and behavioural change (EIT Urban Mobility Strategic Agenda, 2021).

Furthermore, all EIT Urban Mobility activities are in synergy with the 2030

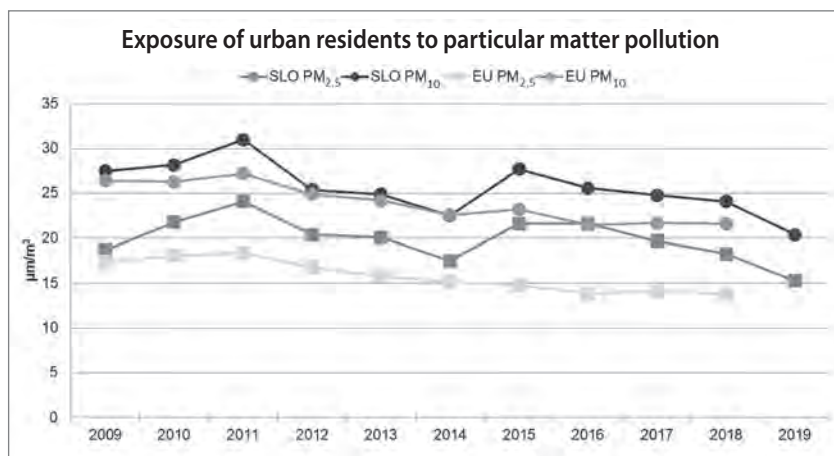


Figure 4: Average annual exposure of urban residents to particulate matter pollution in Slovenia and the EU (source: Eurostat, 2020).

Agenda for Sustainable Development, adopted by the United Nations in 2015. Great emphasis is placed on healthy lifestyles and promoting overall wellbeing at all stages of life, as well as reducing energy consumption and ensuring sustainable and economically accessible supply. Despite the noticeable downward trend, in 2019 3% of households in Slovenia still could not afford sufficient heating, and the share of energy obtained from renewable sources was only 21% in the same year (Statistical Office of the Republic of Slovenia, 2020). One of the objectives of the sustainable mobility indicators is to improve the quality of life in cities and towns, as well as to promote progress in developing more sustainable transport with less harmful effects on the environment, promote responsible use of primary resources, and create more sustainable cities and towns (Statistical Office of the Republic of Slovenia, 2020). EIT Urban Mobility introduces changes in all the eight challenge areas mentioned above through five different programmes: City Club, Academy, Business Creation, Innovation, and Factory.

City Club is a programme of activities in which European cities cooperate and exchange information on challenges, opportunities, and good practices. Information and experience from different European cities serve as a basis for



Figure 5: EIT Knowledge and Innovation Communities.

other programmes as well as annual calls in various thematic areas of innovation development, science, business creation, regional innovation schemes (RIS), factories, and citizen engagement. In the 2021 call, the challenge areas focused on possible transitions to active modes of transport (walking and cycling), addressing the negative impacts of transport in urban areas, improving urban logistics with a focus on the last mile, and so on.

The Academy programme includes master's and doctoral programmes, as well as other educational programmes, such as lifelong learning. The programme aims to close the knowledge gap in sustainable mobility in urban areas by collecting and analysing data on smart mobility, alternative forms of mobility, public space transformation, new trends

in urban logistics, challenges posed by autonomous vehicles, active mobility, and so on. Great emphasis is also placed on the development of critical abilities of the individual as well as the interdisciplinarity of all programmes.

The Business Creation and Innovation programmes are committed to accelerating the market introduction of innovative services and products, particularly in active mobility, intermodality, infrastructure, pollution reduction, sustainable urban logistics, creation of public spaces, future mobility, and energy. The Business Creation programme implements its activities in three sub-programmes:

- Accelerator targets start-ups, and micro and small enterprises that can receive grants, mentoring, access to living labs, testing fields, technology, and market verification options;
- ScaleTHENGlobal is an ongoing programme aimed at bringing innovative solutions to international markets; and
- Finance2Move is a programme under which companies can receive financial support to continue their entrepreneurial careers and a vast variety of networking opportunities.

The main focus of the Factory programme is to leverage solutions around the world. Its activities include matching relevant products to specific needs through a digital marketplace and physical matching activities, promoting good practices, and scouting relevant opportunities in order to support innovations.

In 2020, the Slovenian National Building and Civil Engineering Institute (ZAG) became the national contact point for the EIT Urban Mobility Knowledge and Innovation Community.

The main objectives of EIT Urban Mobility RIS Hub Slovenia are:

- To connect different stakeholders into an integrated and multidisciplinary ecosystem (focused on the representatives of the Knowledge Triangle: education and research institutions, cities, decision- and policymakers, and industry partners in urban mobility);
- To increase the visibility of EIT Urban Mobility in Slovenia;
- To inform the general public about activities and upcoming calls for proposals;
- To actively support start-ups, students, and researchers in developing their innovative ideas; and
- To improve business creation conditions at the local level in general.

Therefore, EIT Urban Mobility RIS Hub Slovenia organized various activities in 2021. They were divided into six different segments: mandatory activities; communication and information activities; activities supporting the local innovation ecosystem; activities supporting local business creation; educational activities; and local community building, knowledge triangle integration, and strengthening the local innovation ecosystem.

In 2021, the international EIT Urban Mobility Conference was organized, focusing on strengthening the partnership community in Slovenia. In addition, various training sessions (project proposal writing, intellectual property rights, information on upcoming calls, and public and private funding) and a winter school for students were held to reduce the knowledge gap in this field. Part of the activities focused on start-ups and micro-enterprises, and others focused on the local community and improving active mobility. In cooperation with the Maribor Cycling Association (MKM), two cycling events were

held during the autumn months: a cycling treasure hunt and the two-month Strava cycling challenge "Cycle with me to the spa". As part of the challenge, people could borrow free PM_{2.5} sensors to assess air pollution levels on their cycling route.

EIT Urban Mobility Knowledge and Innovation Community is an ecosystem of sustainable mobility stakeholders that provides numerous opportunities for entrepreneurs and researchers to contribute to better living conditions in urban areas.

.....
Anja Ilenič
Slovenian National Building and Civil Engineering Institute, Ljubljana, Slovenia
E-mail: anja.ilenic@zag.si

Alenka Mauko Pranjič
Slovenian National Building and Civil Engineering Institute, Ljubljana, Slovenia
E-mail: alenka.mauko@zag.si

Darko Kokot
Slovenian National Building and Civil Engineering Institute, Ljubljana, Slovenia
E-mail: darko.kokot@zag.si

Ana Mladenovič
Slovenian National Building and Civil Engineering Institute, Ljubljana, Slovenia
E-mail: ana.mladenovic@zag.si

Mateja Košir
Slovenian National Building and Civil Engineering Institute, Ljubljana, Slovenia
E-mail: mateja.kosir@zag.si

Information about other project events:
<https://www.hubum.si>

References

EIT Urban Mobility (2021) *EIT urban mobility strategic agenda 2021–2027*. Barcelona.

Eurostat (2020) *Exposure to air pollution by particulate matter*. Available at: https://ec.europa.eu/eurostat/databrowser/view/sdg_11_50/default/table?lang=en (accessed 26 Sept. 2021).

OWID – Our World in Data (2021) *Share of the population living in urban areas, 2050*. Available at: <https://ourworldindata.org/grapher/urban-population-share-2050?region=Europe> (accessed 30 Sept. 2021).

Statistical Office of the Republic of Slovenia (2017) *Sustainable development goal indicators*. Available at: <https://www.stat.si/Pages/cilji/cilj-9.-zgraditi-vzdr%C5%BEljivo-infrastrukturo-spodbujati-vklju%C4%8Dujo%C4%8Do-in-trajnostno-industrializacijo-ter-pospe%C5%A1evati-inovacije/9-.8-dele%C5%BE-potni%C5%A1kih-kilometrov-po-prevoznem-sredstvu-in-namenu-poti-zaradi-dela-izobra%C5%BEvanja-in-proste-ga-%C4%8Dasa> (accessed 25 Sept. 2021).

Statistical Office of the Republic of Slovenia (2020) *Sustainable development goal indicators*. Ljubljana.

Thunis, P., Degraeuwe, B., Peduzzi, E., Pisoni, E., Trombetti, M., Vignati, E., et al. (2017) *Urban PM2.5 atlas: Air quality in European cities*. Luxembourg, Publications Office of the European Union.

United Nations, Department of Economic and Social Affairs, Population Division (2019a) *World population prospects 2019: Highlights*. New York, United Nations.

United Nations, Department of Economic and Social Affairs, Population Division (2019b) *World urbanization prospects: The 2018 revision*. New York, United Nations.

United Nations Human Settlements Programme (UN-Habitat) (2011) *Cities and climate change – Global report on human settlements 2011*. London, Earthscan Ltd.
DOI: 10.4324/9781849776936

Vandecasteele, I., Baranzelli, C., Siragusa, A., Aurambout, J.P., Alberti V., Alonso Raposo M., et al. (eds.) (2019) *The future of cities – Opportunities, challenges and the way forward. Executive summary*. Luxembourg, Publications Office of the European Union.

VFA Solutions (2021) *Indoor air quality*. Available at: <https://www.vfa-solutions.com/en/home/indoor-air-quality/> (accessed 23 Sept. 2021).