UITP ADVANCING PUBLIC TRANSPORT

UCLG United Cities and Local Governments

POLICY BRIEF

PATHWAYS TO A MULTIMODAL LIFESTYLE:

REINFORCING PUBLIC TRANSPORT WITH ACTIVE AND MICROMOBILITY

OCTOBER | 2023

INTRODUCTION

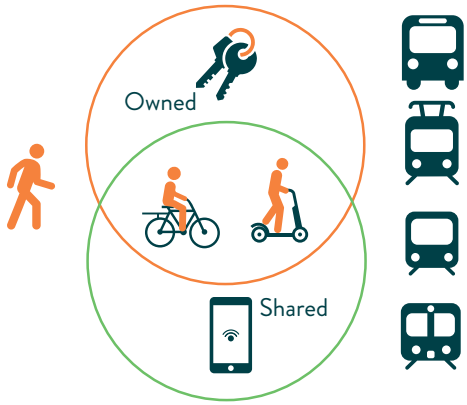
Multimodal mobility systems not only offer a strong alternative to individual car use, but also offer a range of benefits to society, the economy and the environment. Mobilising citizens through public transport, walking, cycling and shared services means greater choice and develops sustainable habits. However, fulfilling citizens' daily mobility requires complementarity between the various modes, to offer a seamless travel experience for all. Building this complementarity, and promoting a multimodal lifestyle, requires integrating all aspects of mobility; from governance and policy to physical and digital integration, education, marketing and communication.

Cities need to largely tackle prevalent car-based lifestyles. This Policy Brief identifies both pathways to a multimodal lifestyle that reinforces public transport systems and the tools needed to build the required complementarity between public transport, active and micromobility. It advances the case for cities to adopt multimodality into their sustainable urban mobility plans (SUMPs).

FROM INTERMODALITY TO MULTIMODALITY

In the scope of this Policy Brief, we consider walking and personal light travel options, human or electrically powered, owned or shared, which we can ride at limited speed and can be used in combination with public transport. Examples include bikes, e-bikes and e-scooters.

However, what does it mean to combine public transport with shared and active mobility options? This is where multimodality and intermodality play their part. Although they may overlap, these two concepts exhibit substantial differences.



INTERMODAL TRIP VS MULTIMODAL LIFESTYLE

Intermodality refers to a door-to-door trip – such as home to work - where different means of transport are combined. Smooth transitions between these means are ensured by both physical and digital integrations that support users' needs. For example, walking and cycling to a public transport station, parking a bike and traveling with different operators, thanks to available information, integrated ticketing and payment.

Multimodality refers more widely to the lifestyle of people over time, where different means and combinations of transport can be chosen to fulfil their requirements. These include the purpose of the trip, the time of the day and the year, weather conditions, their physical health state and the price.

To enable a multimodal lifestyle that can compete with individual car use, a comprehensive mobility system needs to be put in place. Within the sustainable mobility policy framework, which favours active modes and public transport and restricts private car use, each mode has its own standalone importance and also has intermodal combinations.

WHY IS MULTIMODALITY SO IMPORTANT?

Health and climate: Excessive motorised traffic in cities creates air and noise pollution, adversely impacting citizen health. In addition, car dependency reduces physical activity, adding to public health issues. These issues impact quality of life, healthcare costs, economic productivity and welfare. Shifting to a multimodal lifestyle helps reduce public health issues, improves quality of life and contributes to collective efforts to reduce of carbon emissions.

Urban space scarcity: Densely-populated cities create competition between modes of transport for access to adequate space to move efficiently. Individual car use demands more urban space than any other modes. Promoting active mobility and micromobility improves the flow of people and goods, ensuring better-quality public space[1].

Road danger: Each year, over 50 million people are injured worldwide on roads, with over 1.3 million fatalities. Moreover, over 50% of all road traffic deaths occur among vulnerable road users: pedestrians, cyclists and motorcyclists. This road danger is the direct consequence of the dominance of cars and poor street design. Reducing speed limits to 30km/h in selected areas reduces the number of accidents involving cars by 30%. In those cities with well-developed public transport systems, the number of deaths is half of that in cities where almost all journeys are made by car. If we want citizens to travel sustainably to public transport systems, we must prioritise safe and accessible streets and cycling lanes connected with public transport networks.

Changing user travel habits: Following the COVID-19 pandemic, the relevance of commuter journeys - such as fast connections along a specific corridor during peak hours - has diminished with the boom of home-working activities. These journeys are more dispersed; trips are shorter and local and cover several activities in one go. Public transport systems must therefore adapt and move away from a commuter centric approach.

In addition, there is the challenge of encouraging a modal shift to more sustainable options in low-density areas, where people need to travel longer distances. For example, when analysing daily mobility in France in 2019, 90% of distances travelled overall were greater than 5km (corresponding to 45% of trips) and 77% were greater than 10km (28% of trips)[2]. This means that multimodal solutions need

1 Developing a hierarchy amongst modes, in order to prioritise their access to public space at various levels (neighbourhood, city, regional) can support an efficient mobility system. Read more in UITP's Policy Brief *'New mobility and urban space: How can cities adapt?'*.

2 French Ministry of Ecological Transition, French Statistics Institute (Insee), SDES – Enquête Mobilité des Personnes, 2018-2019, published in December 2021, with statistics available at *https://www.statistiques.developpement-durable.gouv.fr/resultats-detailles-de-lenquete-mobilite-des-personnes-de-2019.*

to be able to cover a range of distances. Therefore, it is important to find intermodal solutions with public transport at the centre to encourage a modal shift; otherwise the sector will never meet the basic needs of the majority of citizens.

Funding crisis: Public transport systems worldwide have inherited a funding crisis as a result of the pandemic, coupled with rising costs and labour shortages. Changing mobility behaviours and patterns are forcing public transport systems to rethink their business models. To remain high on the political agenda, public transport systems need to be innovative and be able to demonstrate that they contribute to urban life. In other words, systems that are not well-connected and integrated with other mobility and non-mobility services will face increasing difficulties in attracting customers, and in securing the diversified funding sources essential for building resilience against future crises.

Cooperation: Mass public transport systems are regularly required to improve their efficiency, reliability, affordability and innovation. They are also challenged by other mobility solutions that have entered the market in the last decade, which offer more flexible services and door-to-door mobility. Public transport systems need to cooperate with these modes rather than compete with them, if they are to remain efficient and attractive while providing a comprehensive transport offer that competes with individual car use and supports social inclusion.

In cities worldwide, there remains a lack of cooperation between public transport and micromobility providers on developing coordinated approaches for connected, active mobility. The various barriers preventing multimodality can be categorised as **cultural, institutional, organisational culture, physical and digital:**

- **Legal and Institutional:** A lack of clear governance and legal framework can happen, or a fragmentation between the bodies in charge of mobility, urban planning and public space management. This results in a lack of strategy and actions at the city and/or regional level, weak financial and regulatory frameworks, competition rather than cooperation between the various urban planning and mobility stakeholders.
- **Organisational culture and practice:** Siloed approaches within organisations restrict collaboration and progressive change.
- **Physical:** Without physical integration between the modes at the station or street level, the journey experience is not as seamless. Detached infrastructure and services impede users from first and last-mile solutions.
- **Digital:** Such as a lack of comprehensive data like bicycle-carrying capacity, as well as trusted data sharing policies and standards to enable the integration of information, booking, ticketing and payment .

The lack of empowered institutions and of adequate trust and cooperation between stakeholders - both (intra)public and private bodies - impedes the conditions for implementing effective mobility strategies. Intrainstitutional[3] capacity building and citizen engagement are key to this, with cross-sectoral thinking and integrating planning being intensified and supported. This can be achieved through raising awareness and showing the value of holistic solutions and by simply learning to do the job differently. To enable the conditions for building multimodality, the transport authority and operators should prioritise the physical and digital integration of modes.

The challenges outlined above are further developed with global data in the 'Better Urban Mobility Playbook', available on the UITP website.

WHY A MULTIMODAL LIFESTYLE REINFORCES PUBLIC TRANSPORT SYSTEMS

EXTENDS CATCHMENT AREAS AND ACCESS TO PUBLIC TRANSPORT

- Around 90% of people access public transport by walking. Attractive and safe walking environments can encourage people to walk more, and thus treble the amount of potential public transport users.

Catchment area trebles in size

- Attractive cycling conditions let public transport systems extend their catchment area further, allowing them to serve lower-density areas such as suburbs and rural areas.

3 This refers to different departments working together within the same institution.

- Safe and comfortable cycling and micromobility parking at stations increases public transport attractiveness. In the Netherlands, pre-COVID-19, more than 40% of train passengers (1.2 million daily) travelled to railway stations by bicycle, supported by the 'Action Plan for Bicycle Parking at Stations'[4]. In contrast, in the Capital Region of Denmark since 2010, it has been free to take your bike on the regional rail system, with bike-carrying passengers constituting 10% of all travellers[5].

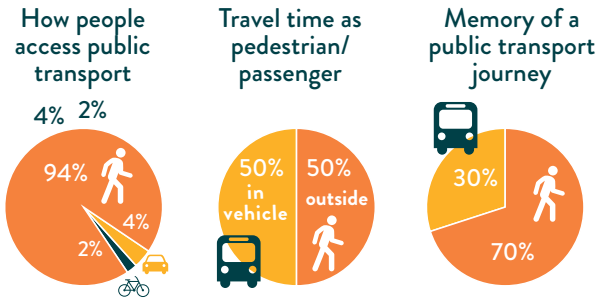
QUALITY OF SERVICE AND CUSTOMER EXPERIENCE

- Irrespective of whether they are shared or individually owned, citizens are increasingly using light vehicles on the streets. Looking at new business models such as long-term bike subscriptions[6] or cargo bike used for freight, we see that the mobility supply and demand is growing for further personal light travel options. This has an impact on customer expectations.
- A city that is well-designed for multimodality helps improve public transport service quality. For example, dedicated lanes, right of way at traffic lights and reducing illegal parking enables more-frequent and faster bus routes. Moreover, to achieve highercommercial speeds, it is possible to increase the distance between stops. The KiM Netherlands Institute for Transport Policy Analysis explains that frequent fastest routes are more attractive, as people are willing to walk and cycle more to the stops.[7]
- A human-centric design of mobility hubs and stations enhances the customer experience and make intermodal trips more appealing. For example, providing dedicated lanes and entrances from a micromobility parking area can encourage more cyclists to use the station, while also reducing conflict points between users at entrances[8].
- Attractive and consistent communication and wayfinding provide coherence and visibility for collective transport systems and reinforces a more powerful identity.
- Seamless multimodal integration reduces the friction in changing means of transport. This approach smooths the interfaces, for example in terms of travel information, payment, access and physical navigation in mobility hubs, via physical and digital supports.

GROWING NUMBERS OF (E)BIKES AND E-SCOOTERS WORLDWIDE

In 2022 worldwide, there were more than 1,900 bike-sharing schemes in almost 1,600 cities in more than 90 countries in all continents. Around 85% of overall active systems were located in Europe and Asia. According to NACTO, shared e-scooter trips jumped from 40 million (2018) to 86 million (2019) in one year alone in the US. During the same time period, ridership of station-based and dockless bike-share remained stable at 50 million. Meanwhile in France, sales of private e-scooters, while similar vehicles grew from around 100,000 in 2017 to over 900,000 in 2021[9]. In that same year, almost 700,000 e-bikes were sold, second in Europe only to the 2,000,000 e-bikes sold in Germany.

- Good walking conditions make for happy public transport customers, as the walking element of a public transport trip shapes 70% of the memories of the trip.



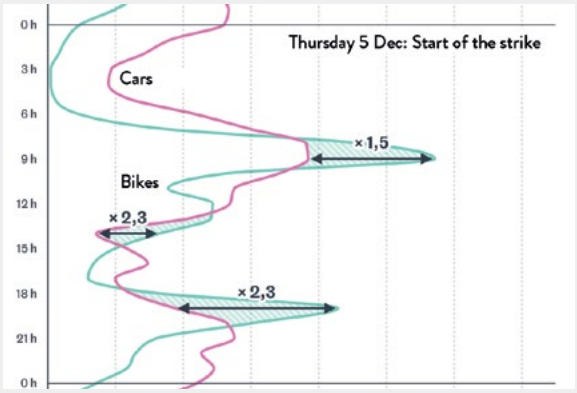
Source: Helge Hillnhütter, 2016

4 Ripa, 2019. How Dutch railway stations encourage multimodality. Eltis.
5 CIVITAS Handshake. Infrastructure and Services Integration of Cycling on All Transport Services.
6 According to BBC, one of the pioneers of long-term bike subscriptions is Dutch company 'Swapfiets', meaning 'swap bike'. Launched in 2014, it now has 280,000 active users in 60 European cities. including Amsterdam, Paris, Vienna and London. *https://www-bbc-com.cdn.ampproject.org/c/s/www.bbc.com/news/business-64371657.amp*
7 Watch the full video here: *https://english.kimnet.nl/publications/videos/2016/06/09/the-choice-of-the-passenger*
8 UITP, 2023. *How to make stations lively hubs for citizens and public transport users: Solutions.*
9 Le Monde, 2022. *France's electric scooter market continues to explode.*

RELIANCE ON PUBLIC TRANSPORT SYSTEMS VERSUS PRIVATE CARS

- Multimodal systems can complement public transport, either where public transport is not available or where the offer is not well-adapted to the user's requirements. Reliance on a multimodal system can reduce car dependence. A Mobility as a Service (MaaS) pilot by UbiGo in Gothenburg in 2014 showed that comprehensive mobility subscriptions can substantially increase use of both public transport and bikes while reducing the use of private cars.
- Multimodal systems can improve resilience of mobility and public transport systems. For example, in 2019 in Paris - despite public transport strikes - the shared micromobility services available saw huge increases in ridership for all types of vehicles. On Boulevard Voltaire during peak times, bikes transported 50% more people than private cars while using 40% less road space[10]. For the 3rd year, during the summer 2023 renovation works, RATP partnered with Zoov e-bike services. Subscribers to public transport cards (IDFM Navigo or Imagine R) benefited from 30 free minutes a day. On average, passengers used the service five times[11].

Transport strike: Twice more bikes than cars on Parisian streets. Source: Le Monde, 2019.



- Allocating a greater proportion of public space to walking, cycling and public transport is part of the same strategy of cities for reducing car dependence. It also helps create the best conditions for each mode to operate efficiently under a common vision and goal. Encouraging all stakeholders to share space and data is important for better management of the streetscape.

HOW TO BUILD COMPLEMENTARITY?

To enable a multimodal lifestyle, various actions are required on a range of levels by different actors. Here are the various tools and actions needed to make a difference:

PREPARE THE MOBILITY GOVERNANCE AND POLICY

The public transport authority/organisation in charge of mobility should have the overall responsibility and the necessary powers required to coordinate between the governing bodies involved at the local and regional levels.

Work with the different actors in charge of mobility: By identifying who the actors are and what their aims and needs are, can allow the development of a common vision, strategy and work processes to work towards commonly identified goals. This can be in the form of a structured dialogue between local and regional governments, public transport administrations (authorities or operators), mobility service providers, businesses, user associations and citizens. As a baseline for discussion, a clear, hierarchy should be agreed as to which modes to favour and where/when (based on the strategy) this should apply.

Tools: Various tools exists for establishing the strategy; these include Sustainable Urban Mobility Plans, local and regional land use planning tools and regulations, public space design guides, mobility planning as well as various forms of financial tools. It is also equally important to facilitate dialogue between local and regional governments and their national counterparts as well as between stakeholders. However, in order to favour and push for change, flexible and light cooperation mechanisms and regulatory tools are needed. Cities or transport authorities can encourage public transport

10 Breteau, 2019. Grève des transports : deux fois plus de vélos que de voitures sur un boulevard de Paris. Le Monde.
11 RATP, 2023. Travaux d'été du RER : La RATP s'associe à Fifteen afin d'encourager la pratique du vélo chez les clients usagers des transports franciliens.

operators to improve how active mobility is integrated into their services. It is important to understand that adopting multimodality may be hampered by certain types of contract where the financial risks are borne by the public transport operators. When revenue risks are borne by the authority (if compatible with the regulatory and contractual framework), it is easier to argue for sustainable combined mobility.

New entities and third parties: Sometimes, inputs from third parties – such as specialised providers to analyse and treat data from new mobility services - or the creation of new public entities are required to coordinate and enhance the overall capacity of the governing bodies. This was the case in Copenhagen, where close cooperation between the different municipalities at a regional scale was required to deliver on the city's announced ambition to reach, by 2023, 50% of commuting trips by bike. Thus the Office for Cycle Superhighways[12] was created in 2012 to facilitate collaboration between the Capital Region of Denmark and 29 municipalities. This led to the creation of a network of cycle superhighways with improved conditions for commuter cyclists across municipality borders. Each municipality is responsible for the planning, building and financing of the routes, according to an agreed strategy that defined the quality criteria and a vision for a fully built network by 2045[13].

IMPROVE PHYSICAL INTEGRATION IN PUBLIC SPACES

To shift to multimodal lifestyles, we need to understand what it is that people want. They desire to move from A to B, C and/or D as quickly, safely and comfortably as possible. They want services that are tailored to their needs. Some - particularly women - will focus on the safety aspect of the trip, while others are concerned by the physical accessibility of the modes or the cost.

Smarthubs project, funded by Innoviris

12 For more info see its website: https://supercykelstier.dk/english/
13 However, in reality, the routes are often co-financed by the state.

Abrupt end to cycling infrastructure

Some people will prefer a longer trip but take the chance to enjoy a sporting activity, stop at a local shop or simply feel more comfortable or safe on a bike than on public transport during peak hours. Furthermore everyone's needs change, depending on their day-to-day situation, or where they currently are in their lives, be they single, parent, employed or retired or many others.

To respond to these varying needs, we need to design cities where movements by active mobility and public transport are as easy and safe as possible. It is important that each mode is able to run at its optimum level, so it is desirable to avoid competition between sustainable modes of transport. This is something that is likely to prove counterproductive for multimodal lifestyle. Mixing bus and bikes in the same lanes, for example, may offer a solution where there are low levels of cycling and low-frequency bus lines. However, if the frequency of both modes is high, it becomes more problematic to preserve efficiency for buses and safety for cyclists. Separate lanes or modifying the traffic plan are the solutions; shared bus and bike lanes should be a last resort. Of course, improving the physical integration of the different modes will depend on the context of the city, such as how its public spaces are designed, its topography, its demography and the geometry of the street network. Understanding and knowing the demand and the context is necessary in order to adapt and respond to evolving needs and not to lock a city into inflexible solutions.

Cities are in a process of construction and adaptation. These ongoing works are an opportunity to physically change streets and road configurations, providing space for improved walking and cycling infrastructures. Enhancements to, and extensions of, public transport services can be accompanied by pavement enlargement, new paths, public seating, light vehicle parking and services that allow each mode to operate at its optimum level of efficiency and safely.

IMPROVE PHYSICAL INTEGRATION ON BOARD VEHICLES AND IN STATIONS

Integrating the various modes in the public space means also ensuring that they are as well integrated within and around transport hubs and stations. If we want to encourage multimodality, people need to be able to move easily from one mode to another. Mobility options should be available and visible where demand is high - and that is around public transport hubs. To ensure this visibility, good information and signage has to be available within station and in public spaces on where to find the services and where the mobility devices are to be stored. These should be visible digitally on travel apps, ideally with ticket integration, even showing the number of vehicles available and the locations of other hubs.

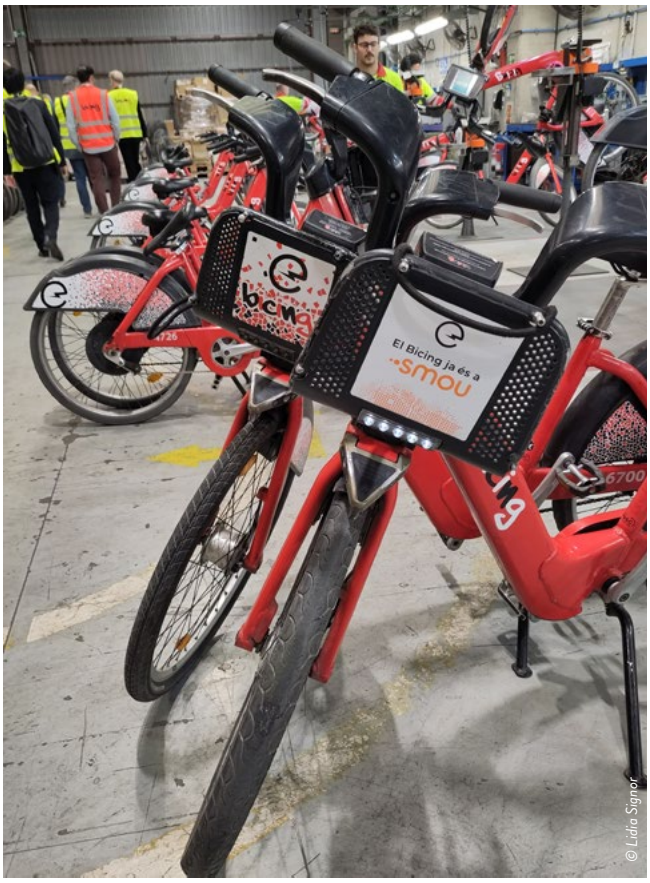
For more info on Mobility Hubs, please read UITP Policy Brief

Depending on user needs, people may wish to take their own bike or scooter onboard. This is particularly the case for people commuting to work and willing to have a door-to-door trip. Various options are possible, such as secure bike parking facilities at transport stations combined with shared mobility services, or allowing mobility devices onboard public transport systems such as for suburban and regional services and during certain hours of inner city lines. Some train and tram operators already provide these services – frequently during off peak-hours - while some buses provide bikes racks at the front of the vehicles. This is the case in San Francisco, New Jersey and Washington DC. However, operators and authorities need to address challenges such as space limitations and vehicle access (low floor access needed). In this case, the design aspect is important for allowing the smooth handling of bikes for ensuring user safety[14].

FOSTER DATA SHARING AND DIGITALISATION

How to harness the potential of digitalisation to foster a multimodal lifestyle based mainly on low-tech mobility options? Ticketing solutions such as smart cards, can enable users to pay for multimodal trips, unlock a bike from a docked stations or to access facilities such as bike parkings and platforms at train stations. This is the case in the Netherlands, where stations have a check-in/check-out ticketing system that simplifies cyclists' access via their public transport smart card or via a bicycle tag[15].

Intermodal journey planners and MaaS apps have the potential to gather data on intermodal practices and - for the user - to deliver useful information to plan trips that can encourage active mobility. However, MaaS apps, ticketing and data-sharing come with their own set of challenges.



Barcelona bike-sharing scheme 'Bicing' is integrated in the SMOU MaaS app, both provided by BSM, Barcelona municipal agency.

For more info, please read the UITP-STA report on 'Ticketing in MaaS'

In order for authorities to be able to set targets, track progress and make decisions, they need data on public transport, pedestrians, cyclists and new mobility to guide policies. In general, such data is not collected systematically, has limitations and lacks national and international standards. As walking and cycling connect people to all other modes, **the lack of pedestrian and cyclist data is a major drawback for efforts to reinforce public transport systems and encourage a multimodal lifestyle.**

In the case of **shared e-bikes and e-scooters,** public authorities should receive certain data from the operators, provided that certain protocols are in force. Such data can be useful to public authorities for enforcement as well as planning purposes (for example, parking policies) and coordination. Third-party companies should collect

14 For example, storing electric mobility devices in situations where batteries can pose a threat of fire on-board vehicles. Barcelona and London are two cities which have banned personal electric scooters - at least temporarily - in public transport, for this very reason.
15 See a description of the new bicycle tag system for making the bike - train trips seamless: https://nieuws.ns.nl/fietstag-zorgt-voor-snel-stallen-van-fiets/.

and aggregate data from different service providers, and use it to provide valuable insights to authorities where they lack the internal capacity.

Last, digital solutions can enable broader solutions. These can, for example, change the orientation of our streets and public spaces from car-centric to people-centric, with walking, cycling and public transport at the core. The design and priorities at pedestrian crossings can be adapted to provide longer crossing times and/or at a higher frequency for pedestrians. This will be particularly useful near public transport hubs. There can also be dedicated 'green waves' for bikes to make cycling safer, easier and more efficient.

ACTIVATE CHANGE IN MOBILITY BEHAVIOURS

All the measures listed above cannot be achieved if there is not a shared willingness among the public to change mobility behaviours. This starts by understanding the impact our mobility choices have on society and reflecting on our needs to move. We need to ask ourselves 'should I use my car for the purpose of my trip?' 'Do I have sustainable mobility options?' 'If yes, how can I change my habits and what do I need to change them?' The process of questioning ourselves starts by training children at school and employees within companies to navigate the network, demonstrate and test the different options. It also means ensuring that – from an early stage - schools, universities, jobs and residential areas can be reached by public transport or through good, safe, walking and cycling conditions. Fostering the use of sustainable modes of transport among companies can be encouraged by providing bike-parking facilities and comfortable changing spaces for those people who cycle or walk to work. Employers should find fresh and interesting forms of salary compensation benefits to stop people using company cars, particularly where other mobility options are possible for the same trip. From a wider perspective, this means understanding the key role that multi-level governance plays in fostering policy that takes into account the needs of communities, ensuring that local and regional governments are involved in decision-making processes related to public transport, climate and social goals.

With its 'Smart Ways of Antwerp programme', the region of Antwerp in Belgium is collaborating with employers and mobility service providers to help build company mobility policies and encouraging the use of more-sustainable transport modes. Different mobility offers can be made available to employees, which will increase the overall mobility system quality.

GLOBAL CASE STUDIES

BREST BIKES ARE INTEGRATED INTO PUBLIC SERVICE CONTRACT

In Brest, France, the public transport authority is increasing cycling modal share from 1.4% to 4% over a four-year period. Brest metropolitan area has integrated bikes into the public services contracts with the service level requirement similar to other means of public transport, and supports the investments and the operations financially to propose the following services[16].

- Long-term electric bike rental (classic, folding and three types of cargo bikes) from one to 12 months
- Shared bikes
- Bikes on board trams during off-peak hours
- Secured lockers for personal bikes.

This integration process includes developing and integrating customer relations, digital systems, maintenance, communications and pricing, including long-term rental

16 For more information: *https://www.bibus.fr/services/velocibus.*

and public transport passes. Coordination by the local authority is needed to implement the measures and ensure that the different partners work together.

SINGAPORE'S 'WALK-CYCLE-RIDE' STRATEGY

Singapore's transport authority, the LTA, developed its 'Walk-Cycle-Ride' strategy via a public consultation to identify the diverse user needs. The findings were that commuters wanted convenient, well-connected and rapid land transport systems. It was also clear that Singaporeans wanted a variety of transport options to meet their everyday needs. The Land Transport Master Plan (LTMP) 2040 was launched in 2019, with a key objective of achieving, by 2040, a 20-minute town and a 45-minute city for all. For new towns such as Tengah and Bidadari, cycling paths have been incorporated upfront as part of the design and construction plans. For mature towns such as Tampines, constructing additional cycling paths required more-extensive works, such as reclaiming road and pavements or re-engineering open drains. In rolling out these plans, the LTA works closely with other agencies to assess the technical feasibility of the cycling path, as well as with local stakeholders to ensure that it meets the needs of residents. Localised pilots are also underway - such as the Seng Poh Road - to repurpose the road space for wider footpaths and green spaces, supported by traffic calming measures to enhance safety for pedestrians. The eventual changes to public spaces in each town will take into account the different layouts, space constraints and needs of residents.

INTEGRATING LONDON'S STATIONS

By 2024, the aim is for 80% of trips in London to be taken on foot, by bike or by using public transport and 20 minutes of active travel per day for all. This is part of Transport for London's 'Healthy Streets' Strategy. One way that they plan to achieve this is better integrating their stations with the local surroundings, improving accessibility and the use of space around the vicinity. The proposed design represents over 40 improved spaces outside of stations, including 20 new pedestrian crossings, 328 new trees and 1,335 new bike-parking spaces. Their recommendation for future projects. These include[17].

- Forming partnerships with local authorities, transport bodies and other local agencies as the basis for joint planning and joint funding
- Encouraging local authorities to draw up local land-use masterplans at an early stage, to act as the blueprint for station and urban realm planning
- Drawing up ambitious urban realm masterplans to act as a basis for fundraising
- Undertaking detailed designs for stations, over site/adjacent developments and the urban realm, together to ensure the designs work cohesively

BRUSSELS SUMP PRIORITISES SUSTAINABLE MOBILITY USERS

In Brussels, the 'Good Move Plan' - developed by Brussels Region - is improving streets and road infrastructures for active mobility while extending the public transport network. A study, carried out six months after the implementation of the plan, showed that prioritising trams and buses on roads and at crossings while providing more space to cyclists and pedestrians has led to 20% less traffic. Tram and bus efficiency has increased by 5km/h. Creating the conditions that allows public transport to run efficiently next to active and micromobility is the best way advance a multimodal lifestyle and reduce car dependency.

17 More information is available here: https://learninglegacy.crossrail.co.uk/documents/places-and-spaces-crossrails-urban-integration-project/.

DESIGNING VEHICLES TO ALLOCATE BIKES AND MICRO MOBILITY IN MELBOURNE

In Melbourne Australia, the Monash University Design Lab is looking at accommodating bicycle and micromobility on metro trains in the city. As part of the PhD research[18], the recommendations included:

- A dedicated space with priority for bicycles; deploy explicit carriage interior and exterior signage to allow users and non-users to easily identify dedicated areas
- Clear signage and information on the rules of the space to help reduce conflict, and will help prevent bicycles from blocking aisles and doorways
- Considering limiting bikes onboard during peak-hour times
- Ease of securing and parking bicycles are important when considering holder designs

© Monash University Design Lab

MADRID'S UNDERGROUND MOBILITY HUB

© EMT Madrid

Opened in 2022, the **Canalejas 360 Hub** is a mobility hub in the heart of Madrid, developed by the public bus operator, EMT. The hub is a response to the growing demand for electric vehicle (EV) charging points. Through this type of infrastructure, the city seeks to encourage people to move more sustainably around the city centre. The main services provided by Canalejas 360 Hub are:

- EV charging station (12 chargers up to 400 KW)
- Parking for car sharing and shared scooters
- Battery-swap area for fleets
- Lockers
- Secure personal bike and scooter charging and parking points.

Through implementing this underground hub, the city has reclaimed public space that encourages walking, modernised urban spaces and has contributed to reducing noise levels and improving air quality.

18 Fu, 2020. Getting on board: Designing the user experience of bicycles on Melbourne's future metro trains. Monash University.

RECOMMENDATIONS

GOVERNANCE, POLICY AND REGULATION

- Responsibility for developing active and micromobility practices should be the responsibility of the public transport authority to coordinate.
- Create a clear vision and policy, through strategic plans such as SUMPs.
- Adapt financial and regulatory frameworks to enable multimodality and integration at local and regional levels.
- Engage with the different stakeholders to understand needs and constraints, encourage policy adoption, foster behavioural change and encourage private initiatives to strengthen policy impact. There should be special attention paid to vulnerable users. A importance grading for the various modes can be used as a basis for discussion.
- Adapt the design of public transport contracts to enable the integration of different modes. Measures should include multimodal mobility contracts, specific KPIs in tenders and better tender ratings for companies offering multimodality.

PHYSICAL INTEGRATION IN PUBLIC SPACES

- Reallocate space in favour of public transport, active and micromobility.
- Implement human-centred street designs with flexible infrastructure, including parking and hubs facilities and clear wayfinding. Test measures through pilot projects.

PHYSICAL INTEGRATION ON-BOARD AND IN STATIONS

- Transform every public transport stop - from central stations to neighbourhood hubs - into a mobility hub, in order to promote multimodal mobility options that strengthen the public transport system.
- Provide services in mobility hubs that support multimodal lifestyles (such as lockers, bike repair shops, shared micromobility services and charging points).
- Consider allowing mobility devices on board to smooth intermodal trips while ensuring comfort and safety for all passengers. Offer flexible open spaces with clear signage. Integrate spatial design into the fleet procurement process.

DATA AND DIGITALISATION

- Data governance and data strategies should allow for:
  - MaaS systems that enable multimodal journeys and serve public policy goals.
  - Data management on walking and private micromobility use
  - Data management with defined responsibilities for the availability and accuracy of data
  - Sufficient funding for data sourcing, aggregation and management
  - Qualitative studies for decision making and service improvements.

EDUCATION, PROMOTION, COMMUNICATION, RESEARCH

- Promote a multi-modal lifestyle for everyone and at all ages through promotional events, media and educational activities in schools, administrations and companies.
- Conduct educational campaigns and training, including road-safety awareness campaigns.
- Consider tailored organisational initiaitves at all levels -from top management to drivers - with dedicated training sessions.
- Help companies develop global mobility packages that integrate the various modes (as an alternative to company cars) as well all the necessary facilities: secure parking, lockers, showers and so forth.
- Use research to help multimodal lifestyles emerge by further investigating those aspects that can help decision makers, operators, businesses and civil society to address the various aspects.

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