

TESTED AND EFFECTIVE Mobility solutions from CIVITAS Living Lab projects



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Since 2016, three CIVITAS Living Lab projects have tested 175 sustainable mobility measures in 16 cities across Europe.

Each of these measures has been evaluated and monitored to determine their impact, the drivers and barriers to their success, and recommendations for sustainable urban mobility in Europe moving forward.

These results are presented in this publication, accompanied by infographics and photographs that highlight the projects' impact.

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1 European Commission Foreword

When we ask our citizens about their mobility priorities, most start talking about local issues – congestion, connectivity, air pollution, noise and accessibility. Urban mobility matters to those living and working in towns and cities; it matters to all of us.

This is why our Sustainable and Smart Mobility Strategy makes clear that inter-urban and urban mobility must become more sustainable and smarter. It is also why we are working on a new EU urban mobility framework to support Member States, regions and cities as they develop safe, accessible, inclusive, smart, resilient and zero-emission urban mobility and connectivity.

Since its launch by the European Commission in 2002, the CIVITAS Initiative has supported cities as they apply and integrate new technologies and services for better and more efficient urban transport. City-led demonstration projects such as those presented in this publication have been at the heart of CIVITAS' work and they have been a joint success.

To date, CIVITAS has tested and implemented over 800 measures and urban mobility solutions in more than 80 cities Europe-wide. These measures have contributed to the attainment of national and European policy objectives. I therefore like to think that the Living Labs provide a glimpse of how our future mobility can look.

Of the three most recent Living Lab projects, **DESTINATIONS** has shown how sustainable tourism and mobility go hand in hand; **ECENTRIC** has brought sustainable mobility to people and places often forgotten in urban planning; and **PORTIS** has used clean transport to increase connectivity and social cohesion between city centres and ports.

Each project has helped its host cities drive through policy change, pilot new projects, and implement lasting and replicable solutions. Complementary sets of measures have helped people live and move around better in 16 diverse places. It is this impact on day-to-day living that sets these projects apart.

As we move towards a new era of safe, smart, and sustainable mobility, the European Commission remains dedicated to supporting cities as they innovate, test, and share green mobility solutions. I am looking forward to what CIVITAS 2030, the next phase of the Initiative, will bring with it; particularly its role in activating our EU urban mobility framework at the local level.

As all of us – cities, policymakers, practitioners and researchers – rethink how mobility works in our urban areas, the results and work captured in this publication provide all of us with a springboard into a sustainable, smart future. Enjoy this interesting publication and think together with us.



Henrik Hololei,
Director-General

European Commission's Directorate-General
for Mobility and Transport

2 Introduction

2.1 The three Living Lab projects

Over the past few years, CIVITAS DESTINATIONS, ECCENTRIC and PORTIS have continued the legacy of CIVITAS Living Lab projects, supporting cities to test an integrated package of mobility measures across key thematic areas. In this framework, cities operate as “Living Labs” – urban laboratories where solutions are tested, refined and showcased.

Although the three projects each have a unique focus, they all operate with the understanding that the measures they implement must be complementary: success comes from integrating measures into cohesive packages. Furthermore, across demonstration projects, CIVITAS cities learn to tailor solutions to specific city-, neighbourhood- or area-level contexts, and how to adapt measures that have been effective elsewhere to these local realities.

Concrete and replicable sustainable urban mobility measures form the backbone of all three projects and are the main driving forces behind their lasting impact.



2.2 Key impacts across the three projects

CIVITAS Living Lab projects have had far-reaching impacts. These can be examined at an individual measure level (as is done throughout [section 4](#)), or by examining integrated measures (see [section 5](#)).

Key impacts were also identified across projects, grouped by thematic area. Key impacts of measures, were tracked, and the most impactful results were noted as overarching 'key impacts' for a thematic area. This is roughly summarised in table 1 (below).

This exercise made clear firstly, that the impacts of CIVITAS Living Lab projects are extensive, and secondly, that certain impacts were pervasive enough to be considered overarching results of the projects.

For example, measures across nearly all thematic areas led to real modal shifts towards more sustainable and active mobility. Similarly, measures across most thematic areas improved awareness and acceptance of sustainable mobility interventions. These impacts are interrelated: increased awareness bolsters modal shifts.

Other key impacts were arguably less foreseeable. For example, sustainability narratives can sometimes (falsely) suggest that 'going green' is more expensive. However, cleaner vehicles and better urban freight logistics both led to substantial cost savings. Similarly, we are sometimes told that clean mobility is only for the youngest, healthiest and fittest in the community. However, good, integrated planning, which considers the safety of all residents can enable sustainable mobility solutions to in fact foster a more inclusive city for all.

Table 1: Key impacts for thematic areas

KEY IMPACT	THEMATIC AREA							
	Car-free lifestyles	Clean fuels & vehicles	Collective passenger transport	Demand management	Mobility management	Safety & security	Integrated planning & public involvement	Urban freight logistics
Awareness and acceptance	•		•		•		•	
Modal shift	•		•	•	•	•		
Energy savings	•	•						•
Better air quality	•	•	•	•				
Reduced emissions	•	•	•	•				•
Less traffic noise	•	•		•				•
Cost savings		•						•
Inclusivity for all			•			•	•	
Safety					•	•		
Better health	•					•		

3 EACH PROJECT AT A GLANCE

3.1 DESTINATIONS

Many municipalities across Europe rely on tourism to drive their local economies. But can sustainable mobility prosper in places with serious seasonal population swings? Can holiday-makers be tempted to travel sustainably? DESTINATIONS showed that both are possible.

Focusing on island locations, it tested innovative ways of encouraging tourists and residents alike to utilise more sustainable transport modes, while supporting cities to adapt their mobility systems to new tourism trends.

By proving how the tourism and transport sectors can work together and that sustainable mobility is a highly touristic service, it has forged a path for other holiday destinations to follow as they go green. In light of the unforeseen onset of the COVID-19 pandemic, DESTINATIONS has also supported touristic cities to rethink tourism in times of travel restrictions.

6 Islands

> 75 measures

Links forged

with Chinese counterparts

Elba (Italy)

Elba is a small island off the coast of mainland Tuscany. Part of a UNESCO Reserve and a National Park, it experiences large and concentrated tourist flows at certain times of the year. This means the number of people on the island fluctuates greatly between the off- and peak-season – posing unique mobility challenges.

Primary tourist sites on the island have not traditionally been accessible by public transportation or cycling, leading visitors to rely on private vehicles.

Through its work in DESTINATIONS, the island has focused on drafting a Sustainable Urban Mobility Plan (SUMP) and Sustainable Urban Logistics Plan (SULP); establishing a Sustainable Urban Mobility Agency to act as a complete mobility information point with a multifunction app; and, generally, to promote and bolster public transportation, walking, cycling and electric mobility in favour of private vehicle use. This resulted in, for example, local public transportation reaching 95% punctuality and 67% satisfaction among passengers.

Las Palmas de Gran Canaria (Spain)

Las Palmas de Gran Canaria (LPGC) is the capital city of one of the eight islands that makes up the autonomous community of the Canary Islands. The island hosts tourists all year, who arrive by boat, bus and plane.

As part of DESTINATIONS, LPGC is updating their modal split data; implementing a Bus Rap-id Transit system and supporting local partners to integrate tourist mobility needs into mobility planning. It has also made public transport greener and more user-friendly by substituting three diesel-fuelled buses for three hybrid buses, which is slated to prevent the emission of 29.8 additional tonnes of CO₂ per year and 10,369 additional litres of diesel per year. In addition, LPGC installed solar-powered, real-time information panels at bus stops.

The city's public bicycle sharing service Sitycleta has proven highly successful at getting more people in the saddle, helping the city reduce the percentage of trips taken by car from 67 to 58%.

Limassol (Cyprus)

The second-largest city in Cyprus, Limassol has grown quickly and over a wide area. As the city has spread out, residents have developed a high reliance on private vehicles – these constituted 92% of the modal split in 2016. The good news, however, is that there is strong local political support to make local mobility more sustainable.

Through DESTINATIONS, the municipality, the local tourism board, and an independent re-search and innovation company (Strategem Energy Ltd.) are all implementing actions to improve cycling and walking infrastructure; make sustainable mobility options accessible for those with disabilities; update the public transportation service; educate and engage stake-holders in sustainable mobility; expand bicycle-sharing; and more.

Madeira (Portugal)

The Autonomous Region of Madeira saw an increase in private vehicle use and a decrease in public transportation use through the early 2000s. The region swiftly identified the need to act on this challenge, joining an earlier CIVITAS project back in 2008. Their work with DESTINATIONS has built on earlier sustainable mobility successes.

With the support of DESTINATIONS, the Region achieved mobility behavioural change among residents, students and tourists. They put in place measures spanning awareness-raising, incentives and regulation to promote the use of public transport, leading to a 5% increase in ridership in 2019.

Significant accessibility improvements in public spaces, including pedestrianisation in the city centre, traffic calming measures, and more, all contributed to 36% of tourists using sustainable transport modes (walking or public transport) in 2019. The use of electric vehicles in the private and public sectors is also becoming more and more common, with 5 mini electric bus-es acquired by the Region, and the number of private electric vehicles increasing from 100 to 420, achieving significant energy and emissions savings.



Rethymno (Greece)

Located on the island of Crete, Rethymno is a medium-sized city with growing tourism and mobility sectors; the city draws over 1.5 million tourists annually. With a modal split of 60%, private vehicles are the preferred form of transport in the city.

DESTINATIONS has enabled the city to introduce measures focused on accessibility and changing people's attitudes. School visits informed over 4,500 young people about safe bicycle use and night-time road safety. More walking and cycling paths and other infrastructure solutions have increased sustainable mobility across groups, including older people and people with disabilities. For instance, cycling increased by nearly 45% from 2019 to 2020.

E-mobility has also received a boost. Rethymno installed the first free-of-charge electric vehicle charging points (EVCs) in the region, while e-vehicles have been integrated into the public transportation fleet. Additionally, the city's SUMP has been upgraded and a Sustainable Urban Logistics Plan (SULP) created.

Valletta Region (Malta)

Valletta, the capital city of Malta, is situated on the largest of the five islands that form the Maltese Archipelago. It receives nearly 3 million visitors annually that, together with the local population, are placing strain on existing infrastructure.

Congestion is an issue, with private vehicles the primary mode of transportation and average vehicle occupancy low (only 1.25 passengers per car including the driver). Built on steep streets and in between two natural harbours, the city is challenging to navigate without a car, particularly for those with mobility issues.

DESTINATIONS has integrated ferries into the public transport network with a new bus service connecting port and city, which increases overall transportation connectivity and accessibility. Usership of the new bus line nearly doubled between 2017 and 2019. A series of pilot projects informed by local stakeholders has seen the creation of a SUMP for the Valletta Region: it aims to improve the quality of life among residents and tourists from a mobility perspective.

KEY MATERIALS AT A GLANCE

 [Project video](#)

 [Final publication](#)

 [Platform of Followers](#)

 [Results podcast](#)



3.2 ECCENTRIC

In peripheral neighbourhoods of European cities, often criss-crossed by urban highways, we usually find a car-centred design with residual pedestrian spaces, poor cycling infrastructure and fewer public transport options than in the central city areas. But, most of the population of European cities live in these large and dense peripheral neighbourhoods.

To facilitate the necessary transition to sustainable mobility, solutions cannot be the same as those used in city centres. ECCENTRIC has strived to make it easier to move sustainably in such places, as well as to include these peripheral areas in urban sustainable planning, with specific attention paid to the needs of vulnerable groups and employing gender equity principles. In addition, the project focused on inner-city logistics and freight. Increased freight transport has severe impacts on urban areas, in terms of congestion, emissions, traffic and more. ECCENTRIC thus worked on integrating sustainable logistics and freight into urban and mobility planning.

The result of this work was clear: more accessible and liveable environments for people from all walks of life.

5 cities

> 50 measures

International group

of observer cities (see 6.1)

Madrid (Spain)

The dense Vallecas districts in Madrid (Puente de Vallecas and Villa de Vallecas) are challenged by high population density, limited public transport connections, and a reliance on personal vehicles. In both districts, the share of non-motorised trips is significantly lower (22% and 15%) than the city average (32%).

Through ECCENTRIC, the citizens of the Vallecas districts, especially children, teenagers and the elderly, have been actively involved in decision-making through a co-creation process focusing on active modes. Public space has been improved significantly to enable safe and inclusive active mobility for all, and public transport has been made cleaner through the introduction of electric and hybrid buses. Planning for safety, multimodality and better connections with the rest of the city have been advanced through integrated urban and mobility planning.

Munich (Germany)

Located in the south of Germany, Munich is known as a city of short distances, where most destinations are within 5km. The city boasts a widely accessible public transport infrastructure, and a network of bike paths totalling 942km (2017). Despite the density of the city and having a selection of sustainable transport modes to choose from, more than half of residents own a private vehicle.

Through ECCENTRIC, measures were focused in and around the district of Domagkpark and Parkstadt Schwabing, located in the north of Munich and home to a rapidly growing population. Implemented measures focused on increasing awareness of mobility offers in the district through a Community Portal and via stakeholder-specific marketing campaigns centred around car-free lifestyles.

Community seminars meant to empower mobility choice among seniors were also hosted, where teenagers taught the elderly how to plan their trips using a Smartphone and mobility apps.

Ruse (Bulgaria)

The “Druzhiba” (Friendship) district is situated in the southern part of Ruse, which is Bulgaria’s largest city on the Danube River. Primarily constructed in the 1970s, the district is home to a fifth of the city’s population.

The district is challenged by its lack of pedestrian infrastructure – nearly 70% of public space is used for parking private vehicles. Combined with slow and unreliable transport links with the city centre, it has led to most people travelling using private vehicles or taxis.

Through ECCENTRIC, the district has increased safety for pedestrians and especially for people with disabilities through secure crossings, pavements and safety infrastructure. One important measure has been the introduction of a web portal and mobile app that integrates all public transport information. Local decision-makers have also gotten on board by encouraging the creation of a SUMP in Ruse and by joining the CIVITAS network. Together, this work has contributed to a 20% decrease in private car use, a 15% increase in the use of active mobility like cycling and walking, and a 15% increase in reliability of public transportation services.



Stockholm (Sweden)

Stockholm, the capital of Sweden and the largest city in the Nordic countries, is already recognised for its impressive cycle infrastructure and sustainable public transport. Yet the city still experiences relatively high private vehicle use, which impacts air quality and contributes to congestion.

Its work in ECCENTRIC focused on the districts of Årsta and Stockholm City Centre, and through the project, the city could address objectives contained within its Climate and Mobility Strategies, including helping Stockholm on its journey to becoming fossil-fuel free by 2040.

Its measures sought to reduce greenhouse gas emissions from both private and freight vehicles and lower private vehicle use, with an emphasis on e-mobility and car-sharing. It also sought to have more sustainable modes of transport. One result of these efforts includes a substantial reduction in private vehicle ownership, estimated to save about 6.7 million kilometres driven in private cars per year. Overall, public transport travel times have also reduced by 10%.

Turku (Finland)

The district of Kupittaa, located in the east of Turku, is home to diverse types of housing, a hospital, a train station, Finland's largest urban park, and multiple university campuses. It is a young district in a city with an established focus on sustainable mobility solutions, and it aims to be a model of the possibilities resulting from bold and agile experiments.

With a modal split favouring private vehicle use by 48% (2014), the city has focused on measures to shift mobility patterns towards sustainable modes.

Through ECCENTRIC, a focus on developing a Mobility as a Service (MaaS) ecosystem has seen the introduction of measures like increased maintenance services for advanced winter cycling and a harmonised public transportation ticketing system, where convenient combination tickets can be purchased (for example for an event and a public transport trip to get there). The city is now the first in Finland with a year-round bicycle sharing system, and 25% of people reporting using their car less thanks to the city bikes.

An expanded biogas ecosystem was also a key goal during the project, which saw the substitution of two diesel transport trucks with Liquefied Biogas (LBG).

KEY MATERIALS AT A GLANCE

[Project videos](#)

[Final publication](#)

[Results podcast](#)





3.3 PORTIS

Ports shape nearby cities' mobility, economics, workforce and more. Despite how inter-related they are, ports and cities are rarely governed by the same bodies, making joint mobility planning difficult. This is where CIVITAS PORTIS came in. By facilitating collaboration between port authorities and municipalities, it helped create the governance structures needed for coordinated mobility planning.

This acted as a springboard for PORTIS to implement solutions that enable people to commute and transport goods sustainably within, between and beyond these places. To facilitate this, it also worked to better integrate and connect transport infrastructure and mobility systems. Partially driven by a surfeit of behavioural change initiatives, PORTIS has achieved its goal of creating more sustainable and healthier city-port environments in the five cities it worked in.

5 cities

> 50 measures

Exchange

with follower city Ningbo (China)
(see 6.1)

Aberdeen (United Kingdom)

Located in north-east Scotland, and bordered to the east by the North Sea, lies the city of Aberdeen and the surrounding area of Aberdeenshire. Strong economic growth in the area over recent years due to the energy industry has led to rapid population growth and heavy demand for old transport infrastructure.

Before PORTIS began, private vehicle ownership was high in the city and region at 70% and 87%, respectively (2015). Public transport use was low (12% in the city, and 6% in the surrounding area in 2015), as was the popularity of cycling.

Through PORTIS, cycling and walking's popularity increased by more than 20%, thanks to the expanded and new infrastructure. Public transport use also increased by 15%, carpooling helped increase vehicle occupancy rates, and there has been a 6% reduction of car traffic along main city-port corridors during peak hours. Aberdeen's recent SUMP, developed through PORTIS, has been the bedrock of this sustainable mobility shift.

Antwerp (Belgium)

Antwerp sits on the River Scheldt in the Flanders region of Belgium. Linked to the North Sea, it is home to Europe's second-largest port. The city faces the challenge of managing freight and logistic transport with flows of commuters and visitors. It also must reconcile high household dependence on personal vehicles (87% in 2016), which are used daily by 40% of commuters.

The improved governance and enhanced cooperation between city and port facilitated by PORTIS have served as the basis for the city's mobility solutions. To drive behavioural change among various targets, the city launched the umbrella brand 'Smart Ways to Antwerp'. Its name sat behind awareness-raising campaigns, a smart multimodal route planner, and more.

PORTIS measures tailored to specific target users, like its Bike-Bus for port workers, led to a 167% increase in cycling and more public transport use in the port area. Building upon existing infrastructure and the aforementioned campaigns contributed to this notable shift.

Constanta (Romania)

With the largest port on the Black Sea, Constanta holds a strategic position on several marine routes. As of 2016, public transport in the city had the highest modal share at 37%, closely followed by private vehicles at 35%. Despite a well-functioning public transport, private vehicle ownership was increasing. Low public awareness of sustainable mobility and inadequate in-frastructure meant few people cycled.

With differing visions of sustainable development and governance models, the local and port authorities were divided in their efforts to create an integrated city mobility strategy. The creation of a single entity uniting city and port was central to Constanta's PORTIS involvement.

The formation of a Mobility Forum where citizens can provide input and city and port representatives can develop solutions has contributed to new cycling and walking infrastructure on major city boulevards in the city, and an increase of 36% in the modal share of cycling and walking.

Klaipėda (Lithuania)

Vehicles have dominated how people navigate the city, accounting for 48% of trips before PORTIS started. Most remaining trips were made using public transport, with walking and cycling attributed to less than 6%.

In its PORTIS work, Klaipėda focused on collecting transport and mobility-related data that would serve as the basis for developing an integrated transport infrastructure. The city aimed to redevelop its mobility system based on technological solutions, like smart traffic lights that give priority to public transport and collectively form a 'Green Corridor'. This new traffic management system was included in Klaipėda's newly launched SUMP.

Klaipėda also demonstrated adaptability. It amended one planned project measure – developing a bicycle sharing system – to create bicycle storage units. This boosted the overall attractiveness and security of cycling.



Photo by Odette Ion on unsplash.com

Trieste (Italy)

A historic city on the Mediterranean, Trieste has both a new and old port. At the beginning of PORTIS, 46% of trips were made using a private vehicle, over 20% by public transportation, and another 20% by active modes. In 2018, the city received nearly five times its population in tourists.

Through PORTIS, a task force carried out thousands of interviews, to involve 4% of residents in planning for its new SUMP. Fostering a change in mode choice towards collective and active transport is a primary goal for the city.

An increase in intermodal transport solutions, such as bringing bikes on buses, has made sustainable travel easier, as has a new bike-sharing system. Expanded pedestrian areas in the city centre have helped increase the modal share of walking from 19% to 23%. Additionally, a free walking and cycling guidebook has been developed for (cruise ship) tourists, whilst a related app is under development.

KEY MATERIALS AT A GLANCE

[Project video](#)

[Final publication](#)

[Smart mobility factsheet](#)

[Governance factsheet](#)

[Results podcast](#)





4

KEY RESULTS BY THEMATIC AREA

The work of the CIVITAS Initiative is grouped under eight thematic areas¹ in this publication, which can be used to cluster and better understand the diversity of measures pioneered by CIVITAS cities. Furthermore, these areas help cities to identify groups of measures that can be applied in an integrated way to achieve broader mobility goals.

The following sections dive into the individual thematic areas. But sustainable mobility is overarching, impacting every aspect of urban life. These thematic areas therefore do not operate independently. Rather, they each overlap and complement each other. Indeed, the full impact of a measure or set of measures can often only be entirely understood from this multi-thematic perspective.

With this context in mind, you are warmly invited to explore the stories below, which feature a selection of impactful measures implemented by CIVITAS cities across thematic areas.

1) Acknowledging the holistic and overarching nature of urban mobility, the exact wording and numbering of these thematic areas is ever evolving. As a result, readers may find slight differences between the classification used in this publication and those in other CIVITAS documents.



KEY RESULTS BY THEMATIC AREA

4.1 CAR-INDEPENDENT LIFESTYLES

Through CIVITAS, cities are – and have been – working to reduce dependency on private cars to ensure that cities are safer and healthier places to live and work, both today and in the future. Promoting independence from cars requires a suite of measures, spanning from those that make walking and cycling safer and more attractive, to those that make it easier for residents to carpool (multiple people riding in a car together, sharing a ‘ride’), and to share cars and bikes (multiple people having access to use the same one vehicle).

QUICK FACTS

66

TOTAL MEASURES IMPLEMENTED

across the three projects

Measures span:

walking, cycling, micro-mobility,
bike-sharing, place making

It can be easy to forget the huge role that place-making plays in promoting walking and cycling. For walking and cycling to be pleasant, easy, and safe, pavements and paths should snake through architecturally unique areas, be well lit and connected, clearly marked, and more. Being a pedestrian can be appealing and even ‘cool’ if mobility plans don’t neglect urban design.

Aberdeen’s “One Step at a Time” measure provides a great example of this. Aberdeen under-took studies to analyse how the city is planned for (or not for) pedestrians and cyclists, focusing on things like accessibility, and connectivity of public green spaces, parks and squares. They hosted public “One Step at a Time” workshops to share their research and used mapping techniques to engage the public in reimagining the city. They asked about the city’s unique selling points, where its “soul” lies, wherein the city centre people spend the most time, and how the city centre should look and feel. In response, they heard about the importance of adding more art and culture to the streets, being playful with city planning, supporting cafes that spill out into the streets, and separating cycling and footpaths.

Planning the best cycle and footpaths is only, however, the first step. These require maintenance to be useable all year round, which is particularly challenging in cold and icy climates. **Turku** consulted residents on winter mobility, researched best practices from other cities, and tendered for solutions to make cycling and walking feasible even in the winter. This led the city to adopt “sweep-salting” methods to make pedestrian and cycling paths useable despite wintry conditions.

PORTIS, UK

One Step at a Time

- Contributed to increase in the proportion who feel Aberdeen is ‘easy’ or ‘very easy’ to walk around by 5.8%
- Contributed to decrease in city centre traffic by 6%

➔ [Read on here](#)

This measure then made it possible for the city to put in place another CIVITAS measure: year-round bicycle sharing. The new sharing scheme is fully integrated into the public transportation system, bicycles are equipped with winter tires, and the sharing scheme even extends to neighbouring municipalities.

But what about those groups not inclined to cycling, such as individuals who are less physically fit or have physical disabilities? Ensuring accessibility for all is crucial to curb car dependence. **Las Palmas de Gran Canaria** took this into account from the earliest stages of development of Sitycleta, its bike-sharing system. Overall, the system has 40 bike stations and about 400 bikes, 35 solar-powered smart signs, bicycles adapted for people with a physical disability, e-bikes, and smart bikes with solar-powered, on-board computers. The inclusion of adapted bicycles and e-bikes ensures that those less often inclined to commute by bike can do so. Cooperation between the city and private sector organisations ensured that vulnerable groups were accounted for, while also securing funding for measure implementation.

DESTINATIONS, SPAIN

Sitycleta

- Contributed to reducing percentage of trips by car in LPGC from 67 to 58%
- Saved 329 tonnes of oil equivalents (TOE) and 184 litres of petrol

➔ [Read on here](#)

These represent merely a small selection of the measures implemented to engender car-independence. These measures are impressive, in no small part due to the real barriers to action. Across all three Living Lab projects and the 66 measures implemented in this thematic area, a selection of key drivers and barriers were identified (see Table 2, below). These help to put the selected good cases into a wider context and suggest things for cities to bear in mind when implementing their such measures.

Table 2 Primary barriers and drivers faced by CIVITAS cities implementing measures related to the theme of 'Car-independent lifestyles'; adapted from original table created by Transport & Mobility Leuven, Focus Report on Results from CIVITAS Measures, 2020

BARRIERS	DRIVERS
Lack of support from stakeholders and decision-makers	Communication and awareness-raising
Financial barriers – this includes limitations on the use of funds for infrastructural improvements (mitigated by unlocking private funds).	Stakeholder engagement through participatory and co-creation activities
Geographical constraints – hills and steep and narrow streets can all constrain the attractiveness of modes like cycling	Coordinated and detailed planning, with thorough quantitative and qualitative analysis and engagement of a broad range of stakeholders; this must include vulnerable and underrepresented groups.
Local cultural contexts may mean that residents in certain places are more resistant to behavioural change	

Turku's Winter Cycling Route; Turku (Finland); © City of Turku



ECCENTRIC, FINLAND

Cycling in Turku

- Contributed to 79% of those who cycle year-round being satisfied or very satisfied with winter route maintenance
- Winter cycling increase by 39%

➔ [Read on here](#) and [here](#)



KEY RESULTS BY THEMATIC AREA

4.2 CLEAN FUELS AND VEHICLES

There remain instances where we must rely on cars. In those cases, cleaner fuels and vehicles can nonetheless improve the sustainability of overall mobility systems. Pursuing cleaner mobility is a goal that encompasses a huge variety of sub-topics covering all aspects of urban mobility. Traditional vehicles which could be swapped out for cleaner alternatives are all over our cities, including in public transportation fleets, municipal fleets, used as delivery vehicles for stores and tradespeople, and owned by individual residents. Each of these requires different measures and approaches.

QUICK FACTS

51 **TOTAL MEASURES IMPLEMENTED**
across the projects

Measures span:
electric mobility, fuelling infrastructure, hybrid vehicles, biodiesel, bio-gas and compressed natural gas fuels, cleaner fleets, recharging & refuelling points, smart grids

Public transportation in **Las Palmas de Gran Canaria** serves not only residents but also a large number of visitors to the city. The ‘greening’ of buses proved to be one important way to ensure that mobility was made more sustainable for locals and the tourism industry alike. The city purchased hybrid and electric buses, and, through CIVITAS, tested them along all public transportation routes. These cleaner vehicles now run permanently along three lines. The tests were so successful that Las Palmas plans to purchase 26 more clean vehicles to add to its fleet.

Rethymno considered public transportation when purchasing the first e-vehicles for its public fleet. The city’s first e-bus was procured and operated in collaboration with the city’s public transportation operator; it is useable by all, has an inclusive design for passengers with disabilities, and connects key locations. Concurrently, the city added the first e-cars to its municipal fleet, thereby extending its impact.

For its part, **Stockholm** wanted to consider private car owners: how do you help private organisations and individuals move to cleaner vehicles? Their first measure focused on e-commerce. The city selected 15 companies through competition and worked with them to test out using electric vans for their e-commerce deliveries. Next, the city turned its sights on individual residents. They held an information campaign on home charging of electric vehicles, complete with seminars, guidelines and informational material with practical advice on installing home charging.

DESTINATIONS, SPAIN

Greening LPGC buses

- Diesel use and CO2 emissions reduced by 22% via substitution from diesel-fuelled to hybrid buses

➔ [Read on here](#)

Stockholm, Photo by Ana Borquez on unsplash.com



**DESTINATIONS,
GREECE**

**E-mobility in
Rethymno**

- Contributed to 15% noise reduction in area
- Over 6 tonnes of CO₂ emissions saved

➔ [Read on here](#)

In parallel, they developed a Master Plan to create ‘charging streets’ where individuals can charge their e-vehicles in the inner city.

Cities have gotten creative in supporting private sector organisations to switch to cleaner vehicles. With leading developers of hydrogen technology based in **Aberdeen**, the city decided to make use of this local expertise. They offered companies interested in piloting low-emission vehicles for deliveries the chance to visit a ‘refuelling station’. When there, they were able to talk through any concerns they may have with officers experienced in hydrogen technology. This led to four alternatively fuelled vehicles implemented in private sector fleets. Simultaneously, the city worked to ‘green’ its municipal fleet, showing that public and private sector activities can and should work in parallel.

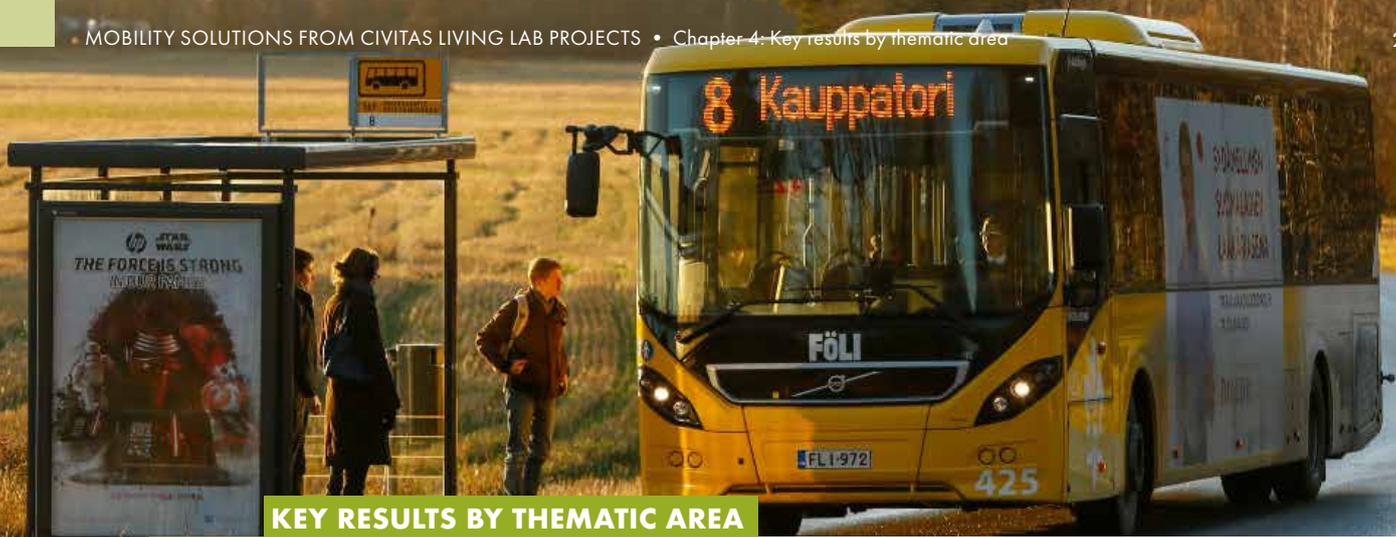


Rethymno's inclusive e-bus and e-car; Rethymno (Greece); © Rethymno Municipality

Clean fuels and vehicles are far-ranging and touch all sectors. Indeed, cities’ different infrastructural budgets and contexts will lead them to face varying barriers in implementing change in this area. Despite the variation posed by local context, a selection of key drivers and barriers were identified across all three Living Lab projects, and all 51 measures implemented in this thematic area (see Table 3 below).

Table 3 Primary barriers and drivers faced by CIVITAS cities implementing measures related to the theme of ‘Clean fuels and vehicles’; adapted from original table created by Transport & Mobility Leuven, Focus Report on Results from CIVITAS Measures, 2020

BARRIERS	DRIVERS
Investment costs – these are generally still much higher for e- than traditional vehicles, with relatively few financial incentives	Political support – municipalities can help overcome barriers when doing so is in line with a city strategy
Real limitations to e-vehicles’ range, with ‘range anxiety’ also hampering uptake	Positive acceptance among users, when demonstrated, can increase investor support
Existing regulatory frameworks related to tendering for PT, street and parking space do not yet consider e-vehicle charging	Detailed business models for e-vehicles in public fleets, including details on real costs and fleet distribution



KEY RESULTS BY THEMATIC AREA

4.3 COLLECTIVE PASSENGER TRANSPORT

Public transport (PT) has huge potential to make urban mobility easier, sustainable and more accessible for all. To reach this goal, cities must explore innovative ways to maximise public transportation's potential and ensure that it is a convenient alternative to the private car.

QUICK FACTS

75

**TOTAL MEASURES
IMPLEMENTED**

across the projects

Measures span:

PT accessibility, intermodality, service improvements, ticketing systems, innovative PT systems, fleet management, procurement schemes, ride-sharing systems, car-sharing, Mobility as a Service

Public transportation has the potential to connect neighbourhoods and improve commuting. But the island of **Elba** also sought to tap its potential to connect municipalities. Numerous municipalities joined forces to work collectively on coordinating PT improvements, such as launching new bus routes, shelters, information panels, and mobile ticketing services. At the same time, some of the bus fleets were renewed and select routes made free. By working across municipalities, the region maximised public transport's potential to move tourists, commuters and locals.

In light of newfound public health concerns, public transport has to be attractive and easily accessible for all. Teams on the island of **Madeira** worked with staff, users, and others to analyse and better understand and address user needs. They restyled sales points with larger and easier-to-follow maps and information, as well as more seating. Short videos and brochures, shared with tourists and locals both in person and on social media, increased awareness. Additional activities like a 'Bring a Friend' initiative, Christmas vouchers, and competitions for children further boosted impact. Overall, PT use increased by 5%.

DESTINATIONS, ITALY

Regional PT improvements in Elba

- Increase in PT user satisfaction from 60% to 80% of users being satisfied or very satisfied

➔ [Read on here](#)



Elba, Photo by Louis Morgner on unsplash.com

ECCENTRIC, BULGARIA
‘Good night’ trolleybus line

- 90% of the Ruse neighbourhood’s citizens satisfied with the ‘Good Night’ service.
- Contributed to a 33% decrease in CO₂ emissions in the area

➔ Read on [here](#)

As a city grows, its public transport networks must develop alongside it. A new peripheral neighbourhood in **Ruse** is now home to about 15% of the city’s population; however, as a new district, public transport routes did not run to or from the area after 21:00, causing residents to turn to private cars. To address this, the city launched and promoted a new ‘Good Night’ trolleybus line to safely move residents to and from the city centre at later times. This process included research, analysis, procurement, and promotion to ensure sustainability and success.

The new ‘Good night bus’ in Ruse (Bulgaria); © Ruse Municipality



Public transportation exists in some form in nearly all European municipalities. This provides an opportunity to consider replication of successes and challenges that can be best addressed through city-to-city exchange. One key step towards these points is mapping overarching drivers and barriers shared across contexts. Below (Table 4), find the drivers and barriers identified across the Living Lab projects, and all 75 measures implemented in this thematic area.

DESTINATIONS, PORTUGAL
Improving PT in Madeira

- Bus stops improvements increased accessibility for nearly 800 people per working day (200,169 per year)
- 74% said PT improvements were good or excellent

➔ Read on [here](#)

Table 4 Primary barriers and drivers faced by CIVITAS cities implementing measures related to the theme of ‘Collective passenger transport’; adapted from original table created by Transport & Mobility Leuven, Focus Report on Results from CIVITAS Measures, 2020

BARRIERS	DRIVERS
Lack of communication – PT spans such a variety of stakeholders that breakdowns in communication are hard to avoid and pose a significant barrier	Data and IT platforms help both with managing PT flows, as well with providing information to users
Lack of long-term financing for measures	Strong involvement and participation of key stakeholders, especially PT users
	Planning – allocate sufficient and ample time allocated to planning, learning from others, and conducting market analysis



4.4 DEMAND MANAGEMENT STRATEGIES

A variety of incentives, new technologies, and policies can encourage people to ‘demand’ more sustainable mobility solutions by, for example, making these options more convenient, affordable and accessible. Choosing the best strategy requires some experimentation to help illustrate their merits and drawbacks across contexts. Restricting access to certain areas, adding tolls for private cars in city centres, providing ‘mobility credits’ for those who reduce emissions, or simply using hubs to make sustainable alternatives convenient can all help curb demand for the most polluting mobility options.

QUICK FACTS

52

TOTAL MEASURES IMPLEMENTED

across the three projects

Measures span:

parking management and strategies, priority lanes, mobility credits, urban vehicle access regulations (UVARs)

As **Munich** grows, the city is aiming to ensure that residents in its new and expanding peripheral areas have incentives to use alternate and more sustainable mobility services. To support this shift, the city has moved away from the traditional ‘one parking spot per household’ regulations. Instead, it has created intermodal e-mobility stations, which host free-floating car-sharing and charging stations, bicycle-sharing docks and additional options for vehicle sharing. These provide real alternatives to private car ownership. This innovation was possible thanks to the German Car Sharing Act – which makes public space available for mobility sharing – demonstrating the potential of regulation to incentivise modal shifts.

The island of **Elba** set up a mobility information platform called ‘The Elba Shared-Use Mobility Agency’ (SUMA). This works as a one-stop-shop for planning, managing and coordinating mobility information, support and services on the island. The SUMA web platform acts as the backbone of the measure, aggregating mobility data from different sources to make SUMA’s other functions possible. SUMA coordinates ‘car-scooter-bike-boat sharing’ operators; offers multimodal information and journey planning; and features user-friendly mobility apps including a ride-sharing app. The measure’s success is in part thanks to there being a dedicated organisation and structure for SUMA’s operation. By supporting and connecting collective passenger transport, ride-sharing and other sustainable mobility options, the Agency is curbing demand for private cars.

ECCENTRIC, GERMANY

Munich’s inter-modal stations

- **20.4% decrease in number of households with at least one car**
- **Percentage of households owning two cars halved (to 7.8%)**

➔ [Read on here](#)

DESTINATIONS, ITALY

Elba Shared Use Mobility Agency

- Provides 17 services in one app, spanning multimodal travel planning, real-time traffic information, a way to submit questions and suggestions, and more.

➔ Read on [here](#)

DESTINATIONS, ITALY

Demand management in Trieste

- 9,351 subscriptions for the new bike sharing system
- 80,251 bikes hired
- An increase in modal share of walking in the city from 19 to 23%

➔ Read on [here](#), [here](#) and [here](#)

Another popular tourism destination, **Trieste**, developed a suite of measures to curb visitors' demand for private car rental and use. First, the city's new SUMP includes the design of an intermodal node directly where cruise ships dock, thus providing tourists with convenient and easily accessible mobility options beyond car rental. Second, a new infomobility platform is being finalised to help visitors and residents navigate information about bicycles, pedestrian and public transport options for navigating the city. Third, a new bike-sharing system allows all to easily 'get in the saddle'. The infomobility platform is making people aware of the service and helping it grow swiftly, even in light of COVID-19 restrictions. Information about all these measures is summarised in a 'Cruise Passengers' application, which is accessible online and as a printed guidebook.



Bicycle sharing dock in Trieste; © Municipality of Trieste

Demand management strategies often rely on new technological innovations, like smart monitors and GPS-driven mobile applications. This poses a unique challenge: to plan for the integration of new technologies, which may have not yet been used in this way. Furthermore, this challenge extends past planning to also include procurement processes and making city-level strategies. Further details are explored in Table 5, below.

Table 5 Primary barriers and drivers faced by CIVITAS cities implementing measures related to the theme of 'Demand management strategies'; adapted from original table created by Transport & Mobility Leuven, Focus Report on Results from CIVITAS Measures, 2020

BARRIERS	DRIVERS
Technological problems in the design, implementation and maintenance of solutions that make use of new technologies	Availability of new technology to manage traffic, parking, and thus demand
Lack of a comprehensive strategy, which considers the knock-on impacts of demand management strategies (e.g. moving traffic from the city centre just to create congestion elsewhere)	Strong planning, which account for risks and unknowns associated with implementing new technologies, can mitigate the risk of technical mishaps
Procurement of new systems and technology	Active involvement of diverse stakeholders



4.5

KEY RESULTS BY THEMATIC AREA

INTEGRATED PLANNING AND PUBLIC INVOLVEMENT

Taking an integrated approach to mobility planning, which includes diverse stakeholders and considers all transport modes, lies at the heart of efforts to foster sustainable mobility. The European Commission's concept of a Sustainable Urban Mobility Plan (SUMP) encapsulates this planning culture and sets out a planning process that includes the public and regional planning authorities.

QUICK FACTS

64

**TOTAL MEASURES
IMPLEMENTED**

across the projects

Measures span:

land-use, housing, SUMPs, social policies, sustainable planning, environmental policies, data-driven planning, Functional Urban Area planning, place making, multi-stakeholder consultations, participatory processes, co-creation, citizen science

Involving local communities (for instance through co-creation) means that mobility planning not only fulfills their needs but also empowers them and helps them develop both a sense of ownership of results and a better understanding of the (urban mobility) vision and context. Inclusive planning increases buy-in and reduces opposition further down the line.

Public involvement is crucial for the successful implementation and impact of sustainable mobility activities. However, different groups require different approaches, and some are more vulnerable to be left behind in planning processes, so require extra attention. To this end, the City of **Madrid** developed a participatory process to involve children and older people in the design of and decision-making around mobility policies. As part of this measure, 45 events – including workshops, intergenerational activities, and cycling and walking events – engaged about 700 people, and led to several pilot projects. These spanned the co-design of Constitución Square to better meet older people's needs, the installation of real-time bus information boards at Elderly Community Centres, and an increase in walking and cycling among school children. Constitución Square is now more accessible, children are travelling in cars less, older people feel safer, and there has been a substantial reduction (36%) in CO₂ emissions in the area.

ECCENTRIC, SPAIN

Co-creating mobility solutions

- Increase in share of walking trips among the elderly in Madrid by 8.5 percentage points
- 36% reduction in CO₂ emissions compared to 'business as usual'

➔ [Read on here](#)

Although public involvement is crucial, it can also be complex. For instance, not all those who ought to be involved have the background knowledge to be comfortable contributing to participatory processes. **Klaipėda** thereby saw it as a crucial step to present the sustainable mobility experiences of other European cities to their residents and other interested bodies. These ‘network events’ bolstered public awareness and understanding of different mobility patterns and their impacts on sustainable mobility. Furthermore, these meetings were held while the city’s SUMP was being developed, and facilitated the collection of residents’ remarks and concerns in relation to this. This contributed to an increase in public awareness and acceptance for implementing sustainable urban mobility principles.

Participatory processes need not only engage the general public. In **Constanta**, for example, the City and Port had been developing mobility measures independently of one another. To overcome the plethora of challenges that this posed, a collaborative and multilevel governance body was put in place: the decision-support forum (also known as the Mobility Forum). This was tasked with defining a common city-port approach for developing integrated sustainable mobility solutions and acted as a place for stakeholders to meet periodically and feed into projects. Once baseline information about the city-port relationship had been assessed, a collaborative process determined the key stakeholders invited to join the Forum. In total, the Forum has convened over 40 meetings, workshops and in-depth discussions. These identified integrated urban mobility policies or actions, some of which have been approved and implemented by the local authority. This span the introduction of a new public transport line in the port area; changes to parking policies; new awareness-raising campaigns; the reallocation of street space in the city; and vehicle access restrictions in historic areas.



© Constanța’s Mobility Forum; Constanța (Romania); PORTIS

Facilitating collaboration between local authority departments, local and port authorities, residents’ groups, different governance levels and other relevant stakeholders ensures that a city’s mobility plans are integrated. In turn, this also prevents one measure, policy or action from having unexpected negative impacts on others. Several factors can aid or hamper efforts to ensure integrated and inclusive planning processes are used. These are covered in table 6, below.

Table 6 Primary barriers and drivers faced by CIVITAS cities implementing measures related to the theme of ‘Integrated Planning & Public Involvement’; adapted from original table created by Transport & Mobility Leuven, Focus Report on Results from CIVITAS Measures, 2020

BARRIERS	DRIVERS
Lack of efficiency of public debates – these can be animated, but with few concrete outcomes or conclusions	Stakeholder engagement – when meaningful, such as drawn up in a formal agreement, this helps ensure plans are holistic and empowers citizens to be champions of resulting activities
Data management – integrated planning requires considering data from across several areas, groups, modes of transport, etc.; this data is not always available or easily managed	Commitment of citizens – public involvement helps get residents committed to sustainable mobility
Mistrust of citizens – in some cities, citizens trust neither the transparency of decision-making processes nor the local government (including its efforts to engage them)	Technical planning – rigorous technical planning and benchmarking studies improve the impact and effectiveness of mobility plans; technical knowledge should also be shared with city council workers

PORTIS, LITHUANIA

Building resident capacity

- **Contributed to a decrease in transport CO₂ emissions in Klaipėda by 7.5%**
- **Contributed to increased sustainable mobility awareness and acceptance**

➔ [Read on here](#)

PORTIS, ROMANIA

Constanta decision-support forum

- **11 sustainable mobility policies or actions identified, approved and implemented**

➔ [Read on here](#)



KEY RESULTS BY THEMATIC AREA

4.6 MOBILITY MANAGEMENT

Even the best sustainable mobility solutions will only be effective if they are used. Mobility management refers to the ‘soft’ methods used to shift behaviour patterns, like information campaigns, education, travel planning, and awareness-raising. These measures do not necessarily require large financial investment, and yet can be highly impactful. Indeed, they often serve to increase the effectiveness of other solutions across the sustainable mobility spectrum.

QUICK FACTS

88

**TOTAL MEASURES
IMPLEMENTED**

across the three projects

Measures span:

marketing and communication, travel awareness, mobility education, travel plans, mobility info centres, behavioural change, gamification, pricing incentives, Mobility as a Service

Antwerp has adopted numerous measures to reduce car traffic in its port area and city centre. Experts from the mobility department at the City of Antwerp work with companies to first map the mobility behaviour of employees and highlight potential for more sustainable commuting, and then to set up an action plan with solutions to help staff commute more sustainably. These include training company mobility managers on how to help their staff create personal travel plans; providing employees with trial access to bicycle-sharing schemes and public transport tickets to try out commuting with these methods; leading workshops on sustainable working options; and offering employees discount schemes to help incentivise their use of more sustainable modes. Overall, 118 companies had participated by mid-2020, representing a total of 56,058 employees! This work falls under the city’s “Smart Ways to Antwerp” brand, which sits behind all of its mobility management work. Today, 89% of citizens are aware of the brand, whilst 56% say they are well informed about how to shift their mobility patterns.

Mobility is not, however, only relevant to commuting for work.

Limassol’s warm climate and a high number of tourists make it an ideal place to expand the use of sustainable mobility for leisure and tourism. To raise awareness of how to enjoy Limassol using bikes, e-vehicles, public transport, vehicle sharing and walking, the city made use of campaigns and competitions. Messages were circulated with outdoor banners, magazines, on the radio, at events, tourist information offices, and hotels. For example, one such event enabled 250 people to cycle along the Limassol seafront, while another provided tourists with a walking tour of the city centre during which they learned about sustainable mobility in the city. Once fully implemented,

PORTIS, BELGIUM

Employee travel planning

- Increase in Antwerp port staff who cycle from 19% to 32%
- Decrease in those commuting by car from 64% to only 43%

➔ [Read on here](#)

DESTINATIONS, MALTA

Green mobility hotel award

- Increased interest in cycling among tourists
- Substantially shifted rhetoric, bringing the concept of sustainable mobility to the local hotel industry

➔ Read on [here](#)

DESTINATIONS, CYPRUS

Clean mobility for leisure in Limassol

- CO₂ emissions (in tons) decreased from 38 to 16.26 tCO₂

➔ Read on [here](#)

awareness and acceptance of the programme shot up from 40 to 80%! In addition, the measure led to a clear reduction in CO2 emissions, traffic noise in the city centre, and energy consumption.

Malta took a similar approach, specifically targeted at hotels. In an area as touristic as Malta’s Valletta region, hotels need to distinguish themselves to be successful. Transport Malta and the Ministry for Tourism seized this opportunity to encourage more sustainable mobility among island visitors by granting Green Mobility labels to applicant hotels based on an audit of their sustainable mobility measures. All hotels with a Green Mobility Label were eligible to apply for the Green Mobility Award – the prize was a grant of up to €70,000 to implement a permanent mobility measure. Several workshops were held for hotels to explain the programme and support them in ‘going green’. Through these incentives, Malta encourages hotels to offer visitors sustainable mobility options, information and activities, thereby lessening the footprint of tourists and tourism.



Promoting sustainable mobility for leisure; © Romos Kotsonis

Mobility management solutions are themselves, drivers of change, amplifying the impact of other measures. There are nonetheless factors that can drive or hinder their success, as seen across CIVITAS cities and Living Lab projects. These are explored in Table 7 below.

Table 7 Primary barriers and drivers faced by CIVITAS cities implementing measures related to the theme of ‘Mobility management; adapted from original table created by Transport & Mobility Leuven, Focus Report on Results from CIVITAS Measures, 2020

BARRIERS	DRIVERS
Lack of involvement of diverse stakeholders, including private sector actors	Activities tailored to the specific target group and local conditions
Lack of political support from decision-makers	Availability of long-term financing – continuous, repeated efforts are required to achieve behaviour change, making long-term solutions the most effective
Lack of pre-existing networks and infrastructure to reach individuals effectively	Win-win partnerships between public and private sectors – helps ensure behaviour change that is beneficial to all

KEY RESULTS BY THEMATIC AREA

4.7 SAFETY AND SECURITY

Fostering sustainable urban mobility requires all people to feel safe and secure when using alternatives to private cars, like walking, cycling and public transport. Safety and security must therefore be core components of urban mobility, with particular attention paid to vulnerable road users. Improved safety and security support other measures as well, as it encourages behaviour change. Furthermore, measures in this field can be wide-reaching, touching on infrastructure, education, mobility planning, data gathering, enforcement and more.

QUICK FACTS

45

TOTAL MEASURES IMPLEMENTED

across the three projects

Measures span:

traffic calming, secure school paths, accounting for vulnerable road users, accessibility, gender sensitive planning, safety enforcement, road safety data, Vision Zero

There are 'hard' and 'soft' solutions at play in ensuring safety and security. In **Madeira**, for example, a 'Pick Up & Ride' mobile app will help school-children and their guardians to coordinate to reduce traffic in front of schools. However, technological solutions like these are not enough; there must also be a culture of road safety and sustainability. In Rethymno, for example, a campaign in schools worked to instil such a culture among children, parents and educators.

Over 4,500 students and parents and staff from 70% of **Rethymno** schools were engaged in interactive labs, experiential road safety activities, a school competition, thematic events, and targeted workshops. These were complemented by an app showcasing the potential of sustainable travel, and promotional material distributed at events. This measure, in tandem with a complementary measure to make mobility safe and accessible for those with physical disabilities, led to a significant reduction in crashes close to schools and the university.

Rethymno is certainly not the only place to focus on improving safety and accessibility for people with disabilities. **Limassol** is working to increase accessibility for all, tourists and residents alike. They have installed a beach access point with safe crossing for visually impaired individuals, and new infrastructure at a key beach location (including a ramp and two floating wheelchairs) to enable people with disabilities to enter the sea. Step-free bus stops enable people to use public transport to navigate from the beach to the city centre; these are marked with appropriate signage.

DESTINATIONS, GREECE

Shaping safety culture in Rethymno

- Exceeded goal for number of students reached by over 22 times!
- 10% reduction in accidents close to schools

➔ [Read on here](#)

Shaping sustainability cultures; Rethymno (Greece);
© Technical University of Crete, ReSEL, DESTINATIONS

ECCENTRIC, BULGARIA

Safer roads in Ruse

- **Satisfaction with crossings increased from 22% to 95%!**
- **Contributed to a 23% decrease in crashes**
- ➔ **Read on [here](#) and [here](#)**

Satisfaction with the mobility system among people with disabilities increased from 30% to 50% in the high season and from 20% to 40% in the low season.

It is important to consider safety throughout a city, including the unique challenges faced in peripheral areas. In the new district of Druzhba in **Ruse**, for example, 73% of children and 95% of individuals with disabilities had indicated that they did not feel safe with the district’s crossings. It thus became a priority to put in place high-quality infrastructure for safer walking and cycling. The city began by conducting a comprehensive analysis of pedestrian infrastructure and residents’ behaviour in the district, including engaging with them through events, round tables, interviews, questionnaires, social media, and more.

This made clear the ideal locations for new crossings and further infrastructural needs, thereby making it possible to put in place the most effective solutions, including the new crossings, safer pavements, and safer cycling paths connecting the district to the city centre. Textured paving now separates pedestrian and car lanes, ensuring that the demarcation of lanes is clear even for those with visual impairments, and special LED lighting was put in place along the new pavements and bicycle path. These measures contributed to a 23% decrease in the number of crashes leading to injuries or fatalities in the area.



Photo by Mike Yukhtenko on unsplash.com

DESTINATIONS, CYPRUS

Accessibility in Limassol

- **Accessibility as rated by disabled people on a 1–5 scale increased from a baseline of 1 to 4.**
- ➔ **Read on [here](#)**

Safety and security are critical to sustainable urban mobility and, importantly, context-specific. Different cities and even neighbourhoods may have different concerns and needs. However, a close examination of the measures implemented in the area across the three CIVITAS projects illuminated a series of common drivers and barriers (Table 8, below).

Table 8 Primary barriers and drivers faced by CIVITAS cities implementing measures related to the theme of ‘Safety and Security’; adapted from original table created by Transport & Mobility Leuven, Focus Report on Results from CIVITAS Measures, 2020

BARRIERS	DRIVERS
Administrative obstacles – infrastructural changes often require long decision-making processes that slow down implementation	Involvement of key stakeholders at local and national levels
Limited funding – this includes restrictions related to use of funds for infrastructure improvements or implementation	Awareness-raising campaigns
Siloed planning – strong stakeholder involvement is crucial to success	Political support – measures aligned with broader strategic visions and plans are more likely to be continued long-term

KEY RESULTS BY THEMATIC AREA

4.8 URBAN FREIGHT LOGISTICS

A significant amount of traffic in cities is generated by the delivery of goods, and this trend shows no sign of slowing. Freight vehicles often take up more space than cars and require space to load and unload. CIVITAS cities are considering how to make freight transport in cities more sustainable for all through the use of strategic planning, clean delivery vehicles, public-private partnerships, and procurement. Not only is urban freight logistics a pillar of the ECCENTRIC project, but it is also addressed by cities spanning Living Lab projects, and is the focus of a CIVITAS Policy Note: “Making urban freight more sustainable”, which can be read [here](#).

QUICK FACTS

27

TOTAL MEASURES IMPLEMENTED

across the three projects

Measures span:

Sustainable Urban Logistic Planning, urban consolidation centres, distribution schemes, fleet management, cycle logistics, freight partnerships, urban freight transport plans, urban air logistics, rural/suburban logistics

Given its space requirements, urban freight would lead to far less congestion if deliveries could be made outside of peak hours. In partnership with freight owners, research institutes and haulage companies, **Stockholm** tested an innovative way to move urban deliveries to off-peak times: namely, using clean and quiet vehicles for night-time deliveries. The pilot made use of a hybrid electric-diesel truck, and a biogas fuelled truck to help ensure that these nocturnal deliveries would not be disruptive. Making use of these vehicles along three delivery routes at night proved to make urban freight more time- and energy-efficient and reduced emissions. Night deliveries took less time, were more often executed on time, and evidence from the measure indicates that night-time deliveries could result in a 40% decrease in CO2 emissions compared to using traditional vehicles. Drivers participating in the pilot were also positive about the experience, demonstrating its potential to be replicated and scaled-up.

ECCENTRIC, SWEDEN

Clean, silent night-time deliveries

- 95% of night deliveries in Stockholm on time
- Time needed for delivery at night about 30% than during the day

➔ Read on [here](#)

Stockholm's pilot would not have been possible without the involvement of the private companies that delivered and received goods. **Antwerp** also recognised the need to engage diverse private sector partners. Indeed, the city worked with the urban freight sector to create a marketplace for mobility logistics solutions. Through this marketplace, organisations, companies, retailers, the catering industry and small businesses can apply for financial support and/or advice from the City of Antwerp to develop more sustainable ways of moving their freight. So far, 14 projects have been selected via the marketplace, which has helped companies to better bundle goods, use eco-friendly inland waterway transport,



A silent, clean vehicle tested as part of this night-time delivery pilot; © Håvard Jorstad; Stockholm (Sweden)

© Sergio Fernández Balaguer
CIVITAS ECCENTRIC

avoid empty shipping containers on the city roads by using depots outside the city, and avoid traffic by opening urban delivery hubs outside the city. The programme has substantially reduced the number of freight trips conducted in the city.

Madrid also developed creative solutions to reduce freight traffic within the border of the inner-city 'ring-road'. By cooperating with a logistics operator, they put in place an urban consolidation centre for last-mile distribution with clean vehicles – this is now being used by numerous urban freight vehicles. Restricted areas, time windows for deliveries, and restrictions on certain vehicle types enhance effectiveness. This measure has contributed to substantial reductions in CO₂, nitrogen oxide and particulate matter emissions, as well as energy consumption. Plus, the consolidation centre has provided annual savings estimated at €10,000.



With online shopping increasing and deliveries in urban areas becoming more common as a result, the need for sustainable urban freight solutions is becoming more acute. Understanding the overarching factors that boost or hinder the impact of these solutions will be crucial to ensuring their replication and effectiveness.

Table 9 Primary barriers and drivers faced by CIVITAS cities implementing measures related to the theme of 'Urban Freight Logistics'; adapted from original table created by Transport & Mobility Leuven, Focus Report on Results from CIVITAS Measures, 2020

BARRIERS	DRIVERS
Lack of data – there can be a lack of data on city logistics, and companies may be reluctant to share commercially-sensitive data (e.g. delivery journey times)	Continuous stakeholder engagement – this should span from the concept development to implementation phases, and requires strong coordination with the private sector
Lack of public-private collaboration – reluctance to collaborate can be overcome by strong governmental support (see driver: support from regional policymakers)	Consistent and comprehensive data – accurate traffic information, pollutant emission levels, and live information about unplanned incidents on routes aids planning
	Support from regional policymakers – this in particular can help facilitate strong collaboration with the private sector

ECCENTRIC, SPAIN

Clean consolidation centre in Madrid

- 54% decrease in energy consumption
- 54% decrease in CO₂ emissions
- 94% decrease in nitrogen oxide emissions
- 63% decrease in particulate matter emissions

➔ [Read on here](#)

PORTIS, BELGIUM

Marketplace for logistics solutions

- Between 2,688–4,643 Antwerp trips avoided per month

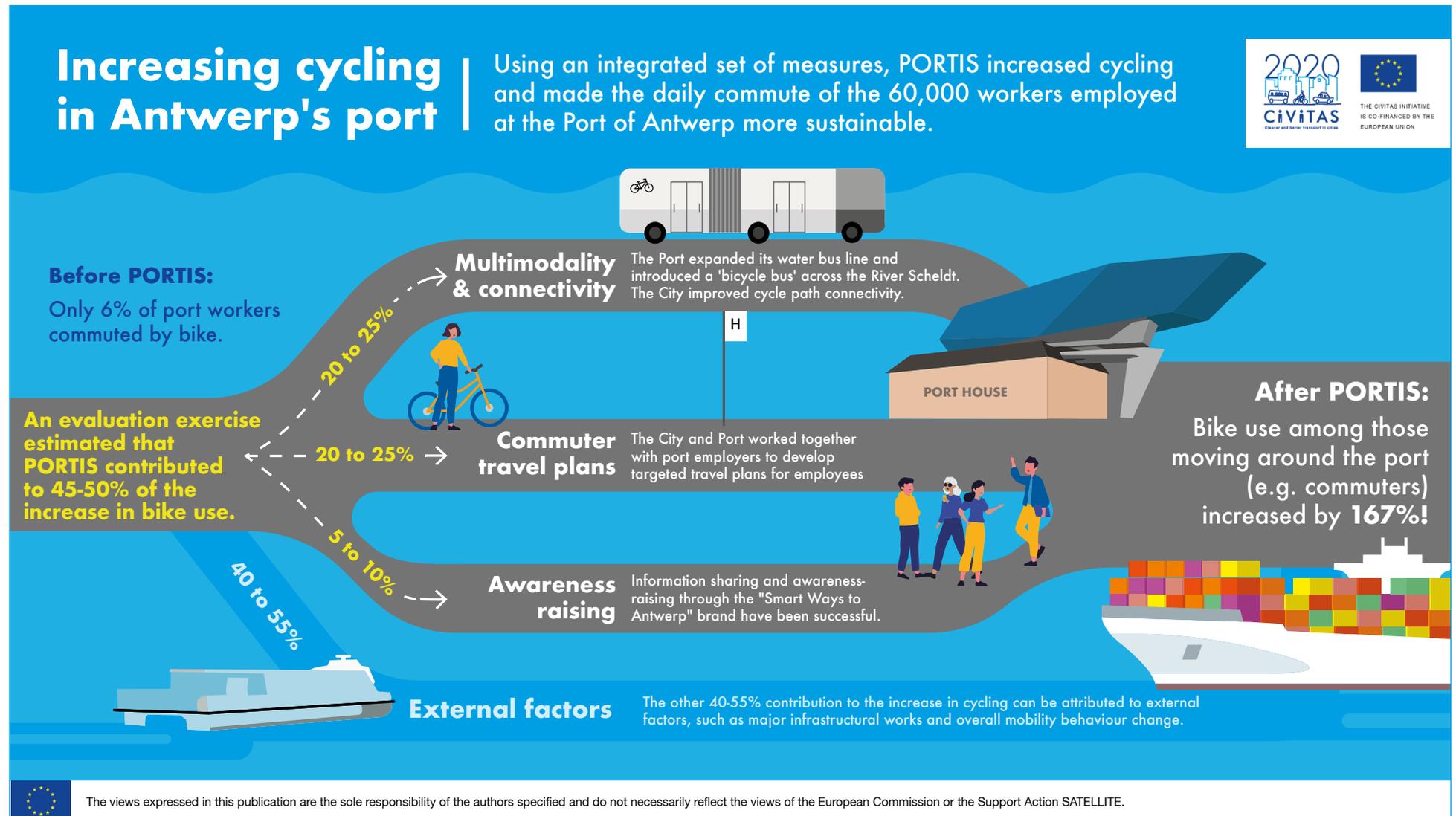
➔ [Read on here](#)



5 INTEGRATING MEASURES

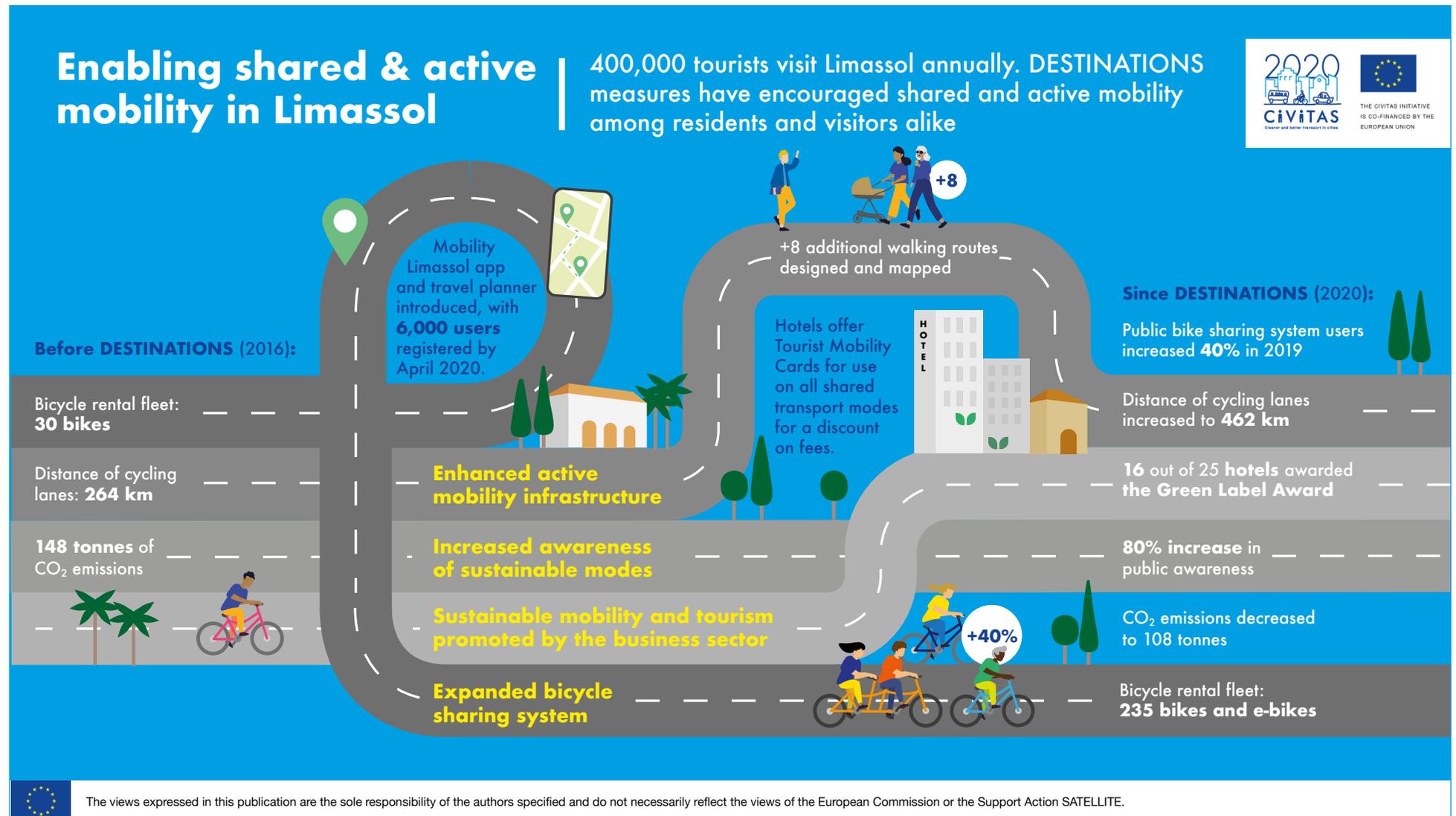
Although specific measures can have very positive effects, the CIVITAS Living Lab projects proved that a well-chosen combination of measures is the most effective approach to reach city-level objectives. This is just one reason for which CIVITAS cities implement a whole portfolio of integrated measures; for example, awareness-raising campaigns complement infrastructural and organisational improvements, and demand management measures align with improvements in the public transport and cycling systems.

Infographic 1: Increasing cycling in Antwerp's port



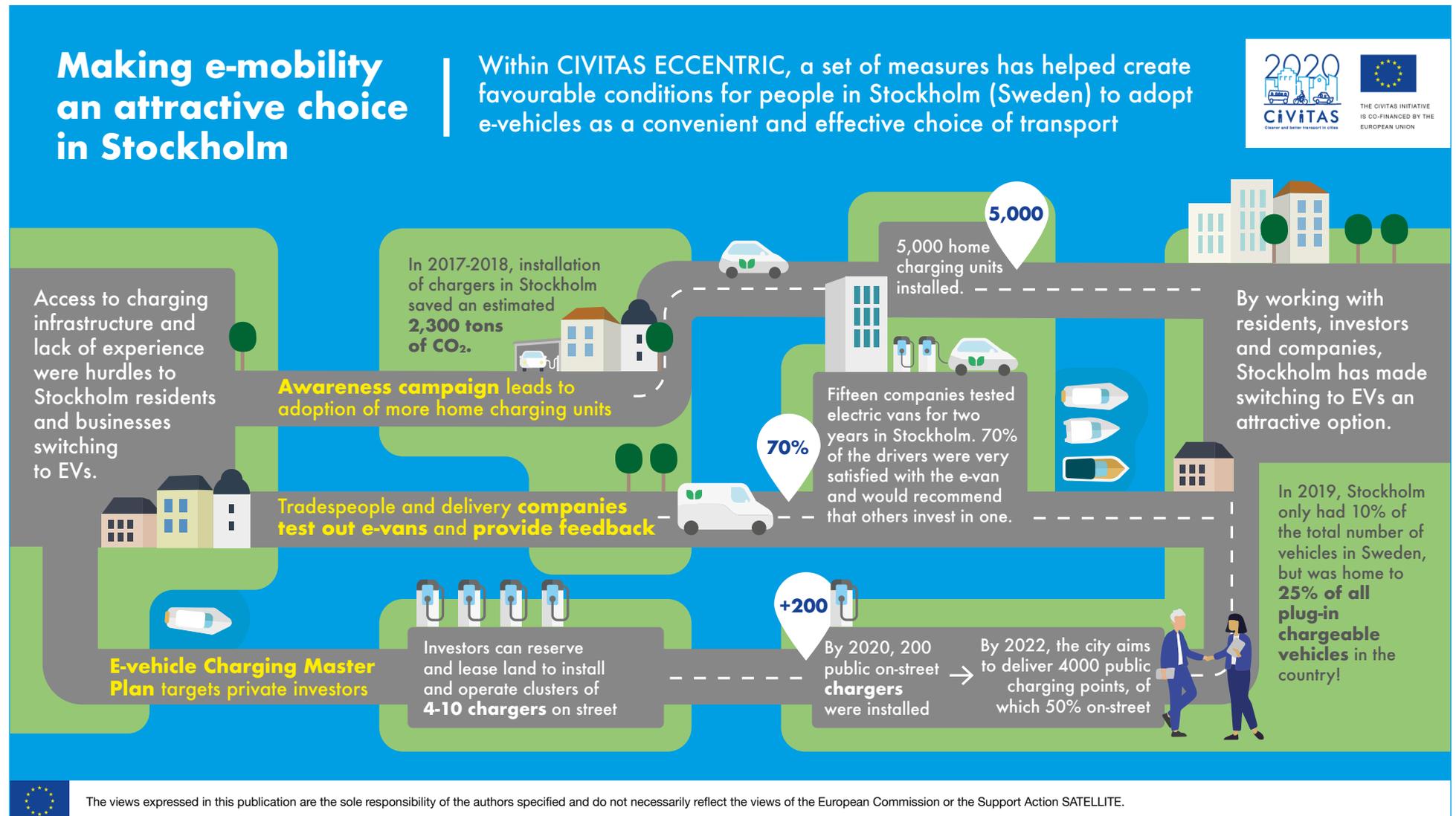
For example, from 2016–2019, Antwerp (Belgium) worked with CIVITAS PORTIS to put in place several measures that would together increase the share of cycling in its port area. These ranged from identifying and tackling barriers that stop workers from commuting by bike to working with companies to develop targeted mobility planning support to their employees and conducting awareness-raising campaigns. The results have been clear: from 2016 to 2019, the number of people moving around the port by bike nearly tripled!

Infographic 2: Enabling shared and active mobility in Limassol



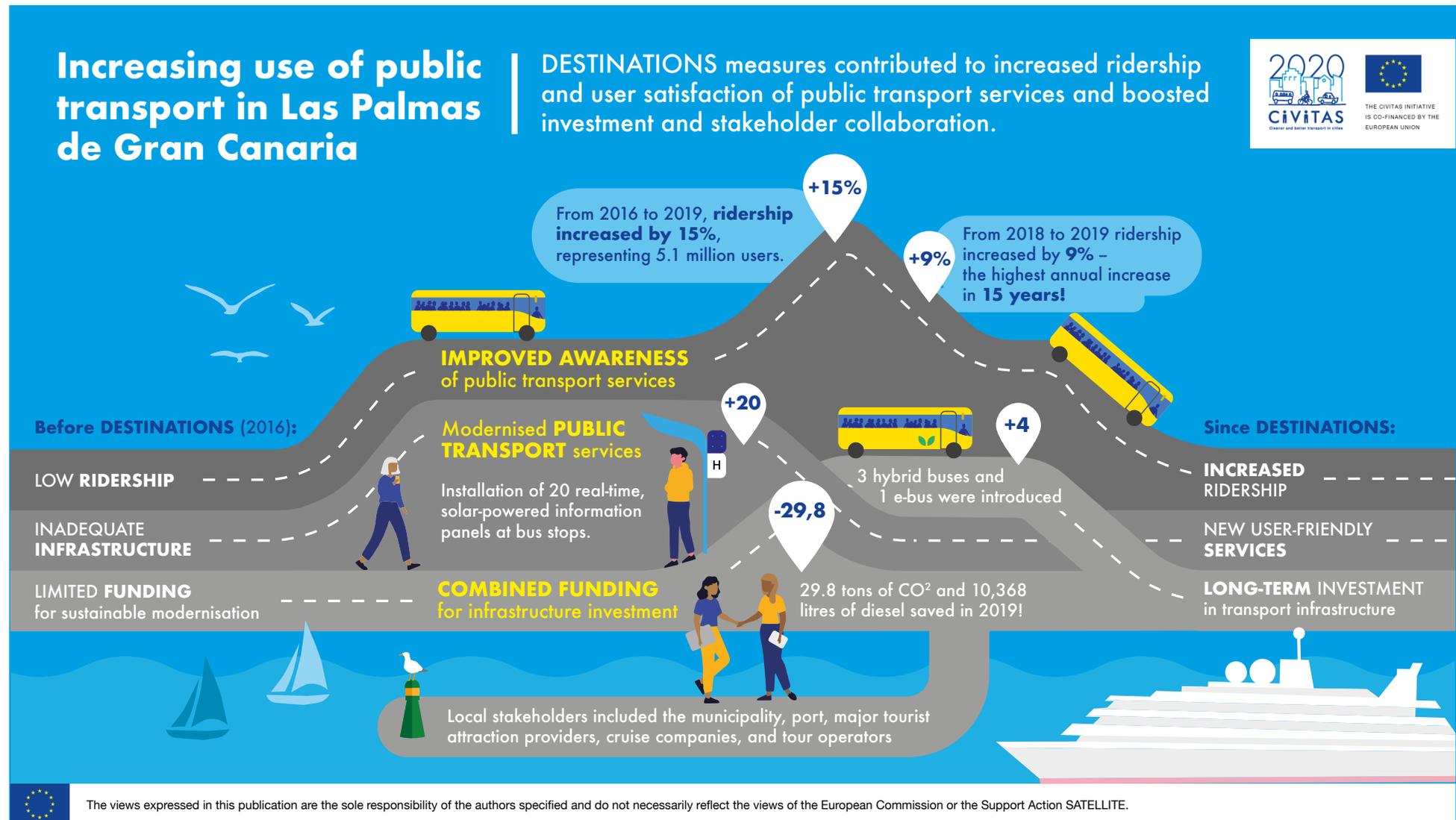
For its part, Limassol (Cyprus) has worked with CIVITAS DESTINATIONS since 2016 to put in place measures that increase shared and active transport modes. With limited infrastructure and low public awareness, residents and visitors were not previously empowered to choose car-free transport modes. A collection of measures spanning enhancing infrastructure, increasing awareness, working with the private sector, and more, have together led to greater interest in, and use of, shared and active transport modes among both residents and visitors in Limassol.

Infographic 3: Making e-mobility an attractive choice in Stockholm



Through CIVITAS ECCENTRIC, Stockholm put in place an integrated set of measures that together create the right conditions for people in Stockholm to recognise e-vehicles as a convenient and effective choice of transport. Before ECCENTRIC, costs and other barriers proved to be hurdles to local residents and businesses switching to EVs. By working with residents, investors and companies, Stockholm has made switching to EVs an attractive option. This has been a great success – by 2019, Stockholm only had 10% of the total number of vehicles in Sweden, but was home to 25% of all plug-in chargeable vehicles in the country!

Infographic 4: Increasing use of public transport in Las Palmas de Gran Canaria



Las Palmas de Gran Canaria has worked to find the right combination of measures to increase public transportation use. This has led to greater awareness of the services offered, more modern and green public transportation, and, ultimately, an increase in public transportation’s modal share. This was made possible by unlocking public, private, and EU funding, which allowed the city to secure long-term investment in public transportation. The results are clear: from 2018–2019 alone, Las Palmas saw the highest annual increase in public transportation ridership in 15 years!

6 Other aspects of Living Lab projects

6.1 International cooperation³

Localities across the world are facing shared mobility challenges, and are looking to each other for guidance and replicable solutions. Keeping in mind how mobility solutions can – and should – cross borders, DESTINATIONS, ECCENTRIC and PORTIS have each engaged cities in China, with whom they have transferred best practices and new insights.

CIVITAS DESTINATIONS engaged in ‘cross-fertilisation activities’ with the cities of Beijing and Shenzhen; ECCENTRIC engaged an Observer Group including Tongji University and Shaoxing City; and PORTIS shared lessons with follower city Ningbo.

Cross-fertilisation activities brought DESTINATIONS partners to China in June 2018, to engage in a workshop and site visits, exploring challenges and solutions across five main areas: innovative unique mobility and transport planning solutions; alternative energy vehicles; mobility sharing; integrated mobile payment solutions and mobile apps; and SMART solutions. To facilitate mutual learning and exchange, a mission of Chinese partners then visited Lisbon, Funchal and Las Palmas in November 2019, during which time the group continued to explore these same five themes.

CIVITAS ECCENTRIC welcomed partners into its ‘Observer Group’. Although primarily made up of European cities, the group also notably included Shaoxing City and Tongji University (China), and the National University of Colombia. As observers, these international partners engaged closely with the 51 measures implemented in ECCENTRIC Living Lab cities. Through Study Visits, training webinars and workshops, observers were provided support identifying the measures most transferable to their local contexts.

For its part, CIVITAS PORTIS exchanged knowledge and experiences with Ningbo. This notably featured representatives from four PORTIS cities (Antwerp, Aberdeen, Constanta and Klaipeda) travelling to this Chinese port city in 2019. Through workshops and site visits, partners exchanged knowledge and good practices across a variety of themes, including city-port commuting, public transport, parking payment technology, inland freight transport, Sustainable Urban Mobility Plan development, travel behaviour, and encouraging cycling.

Exchange visits between China and Europe proved vital for representatives across the three CIVITAS projects to gather information and determine how measures are implemented, thereby making the transfer of solutions possible. Throughout exchanges, differences were noted in terms of culture, city dimensions and political constructs. It was certainly possible, however, to find common issues, challenges, and solutions.

Following the completion of the Living Lab projects, participants have expressed keen interest in continuing exchange missions and joint research in the CIVITAS thematic areas. They have proposed establishing annual or bi-annual conferences on sustainable urban mobility, hosted alternatively in the EU and China.



3) Adapted from an article published on the CIVITAS LinkedIn page in December 2020:

<https://www.linkedin.com/pulse/civitas-drives-international-urban-mobility-between-china-initiative/>

6.2 The CIVITAS approach to evaluation

Clear and structured evaluation of the implemented measures' impacts has been crucial to achieving CIVITAS' objectives. Conducting measure evaluation from the start of the projects enabled all partners to better understand measures' challenges, impacts and the implementation process itself. This not only made measure implementation successful, but also provide a breadth of knowledge to improve the effectiveness of future actions.

To this end, an evaluation framework was developed at the beginning of the three projects in 2016. The framework has ensured that, for each measure, a set of indicators was defined to monitor the measure's impact. The values of these indicators were measured before and after measure implementation, with the before and after situation then compared. Finally, conclusions were drawn on measure impact.

Several additional steps ensured that this process was effective. Qualitative and quantitative objectives and targets were defined, and additional information was recorded regarding the measure target group, the target zone (with respect to physical area and time), and other related activities that were expected to support the measure's success.

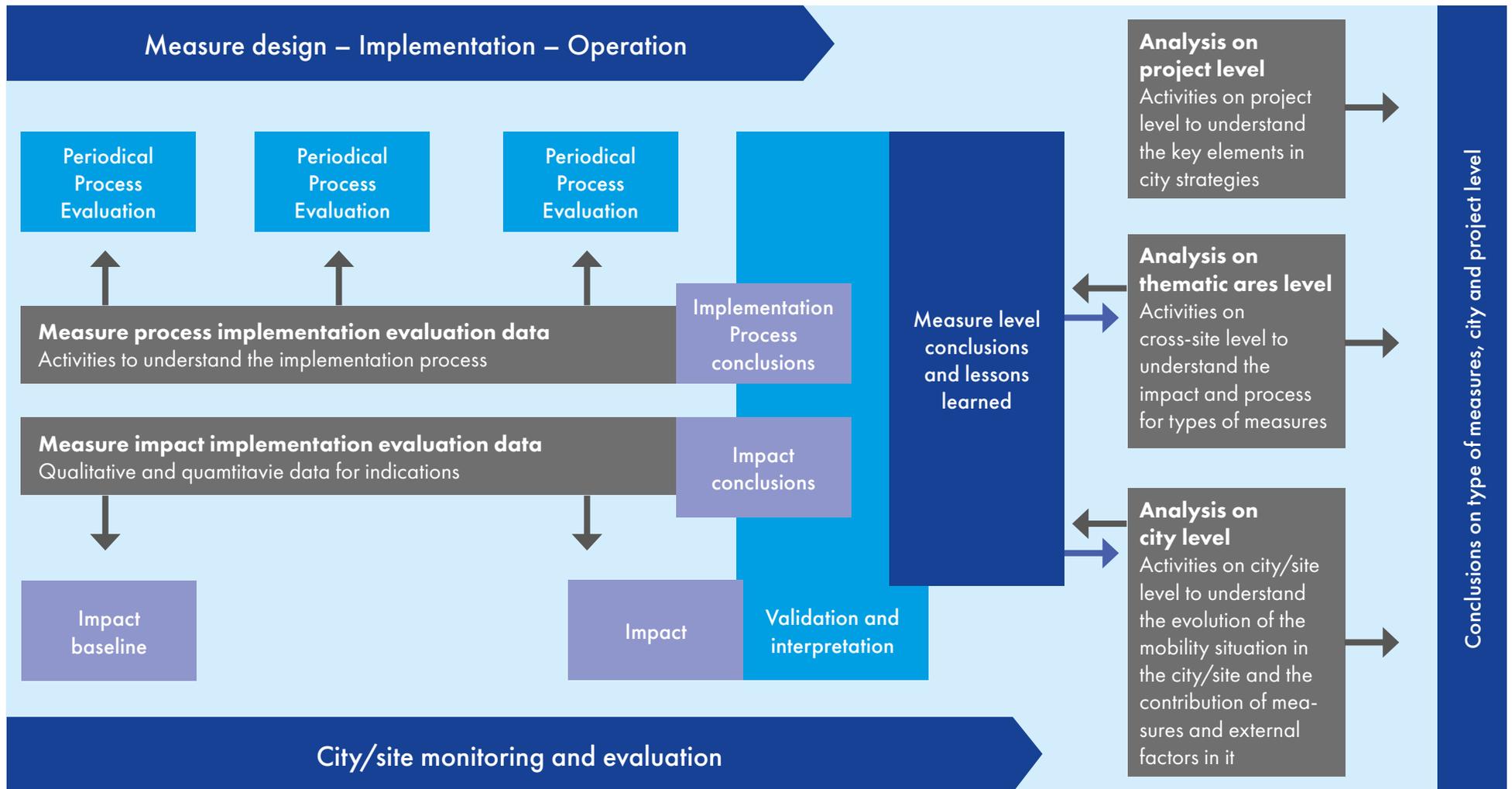
Indicator selection was done systematically to account for a wide range of measure impacts, such as environmental, economic, and governance-, energy-, society- and transport-related impacts. Indicators were selected based on their relevance, completeness, data availability, as well as their measurability, reliability, non-redundancy, independence, and familiarity (to ensure that indicators would be grasped easily). To ensure understanding of mobility measures, this process carefully considered the evolution of mobility in the city.

A CIVITAS Evaluation Manager coordinated all evaluation activities to ensure consistency and quality together with the Project Evaluation Managers, while Local Evaluation Managers and Measure Leaders led evaluation on the ground.

Ultimately, this evaluation framework guided the development of Measure Evaluation Reports (MERs) for each CIVITAS measure. These reports include a quantified assessment of measure impact; analysis and interpretation of results; general conclusions; and lessons learnt, including insights at the city-, project- and thematic area-levels. MER templates were provided to ensure a common reporting style, thereby enabling comparisons. By comparing different MERs, partners could spot city- and thematic area-level patterns and commonalities.

Bringing all evaluation findings together in a structured way was crucial to ensuring that CIVITAS work contributes to the mobility field's overall understanding of evidence-based solutions. By allocating significant efforts to do this, the added value of good evaluation work at the measure- and city-levels became clear, and the results of the evaluation will be able to support decision-making and the uptake of successful strategies.

Statistics throughout this publication were drawn directly from MERs, and from subsequent complementary analysis by the CIVITAS evaluation team.



7 Looking forward

7.1 Reflections from project coordinators

Project coordinators from PORTIS, DESTINATIONS and ECCENTRIC have each reflected on what they would do differently next time. These insights will not only shape CIVITAS efforts moving forward, but also provide advice to others looking to take on this work.

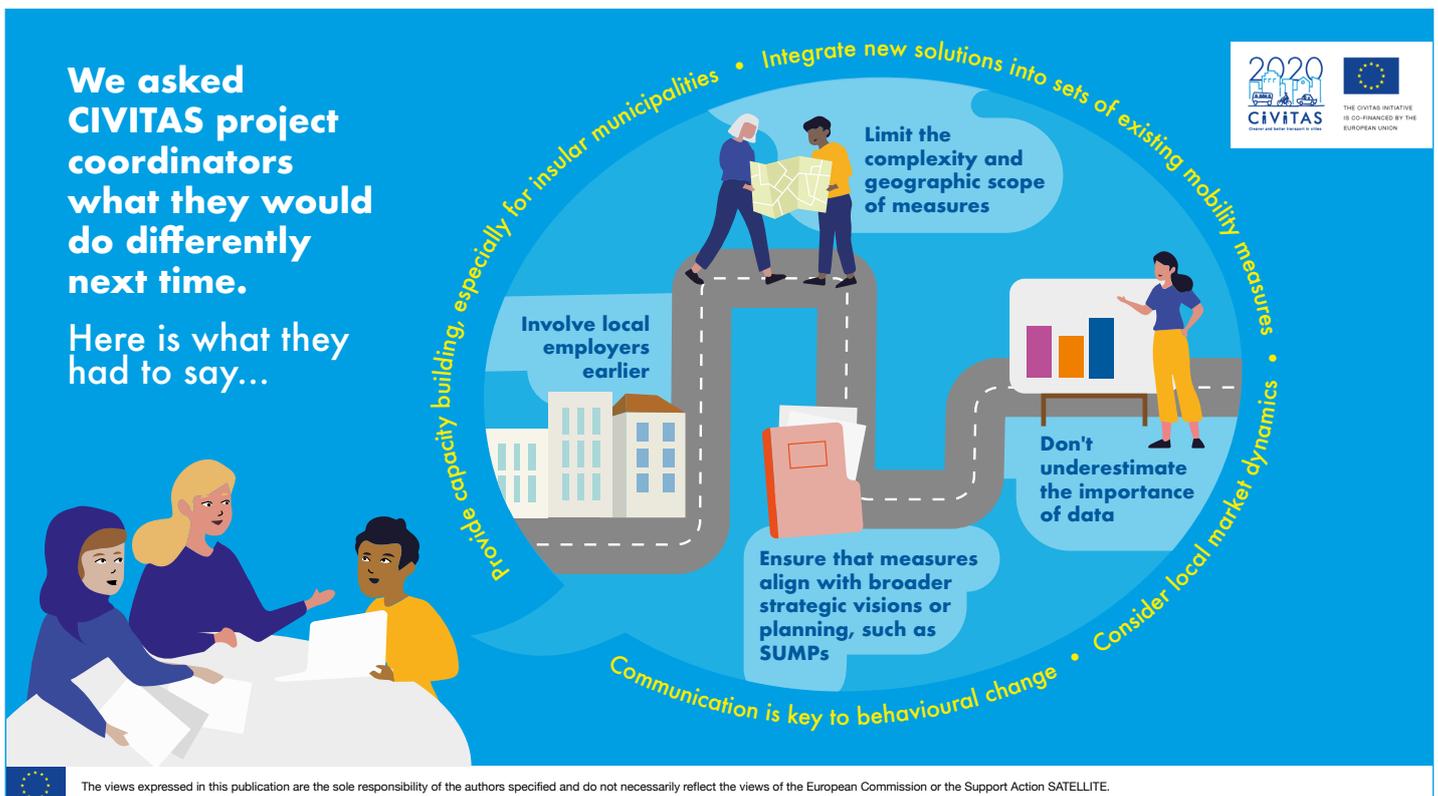
A few points, in particular, came up across projects and contexts. First, was the need for earlier involvement of and engagement with local employers. Whether construction companies, planning authorities, or businesses operating in the target area, cooperation with local employers serves only to improve measure implementation and impact, and even to encourage employees to take up new mobility behaviour. By engaging, for example, local construction companies, CIVITAS projects can better navigate unforeseen delays and hurdles.

Second, projects found great value in limiting the complexity and geographic scope of measures. Taking a more focused approach allows for the collection of more targeted evaluation metrics, more precise identification of measure impact, and the development of locally-tailored solutions.

Third, several projects attested to how important it is to ensure that supportive long term strategic planning documents (such as SUMP, City Master Plans and Strategic Reviews) exist or are being developed.

Fourth, project coordinators agreed that moving forward, they will not underestimate the importance of data. Reliable, regular and accurate data are critical for effective implementation, long-term monitoring, to influence decision making, and to convince unlikely stakeholders to join partnerships toward sustainable mobility.

Infographic 5: What to do differently next time



Additional reflections from project coordinators point to the following recommendations for what could be done differently next time:

- Effectively integrate all relevant stakeholders who are involved; this broad approach is needed to achieve successful measure implementation and results.
- Emphasise the role of good communication to achieve behavioural change; encouraging a modal shift is not only about physical infrastructure, but also about engagement with the local population, the involvement of local stakeholders, and tailored communication messages.
- When selecting Living Labs, consider local acceptance and market dynamics.
- Consider flexible evaluation frameworks that reflect local circumstances and evaluate both what is most relevant in each local context, and how the methods used could be transferable to other contexts.
- Integrate existing mobility measures into new solutions. For example, strategically introducing sustainable mobility solutions to relevant private sector actors (e.g. in the tourism industry) can generate win-win situations that benefit the industry partner and increase awareness and acceptance of these existing solutions.
- Combine measures that span different fields and sectors to effectively shift mobility behaviour.
- Put in place capacity building, particularly for small, remote, or insular municipalities, for which the greatest barrier to sustainable mobility is often a lack of know-how, resources, networks, or access to technological solutions.

7.2 Policy recommendations

As part of evaluation throughout the CIVITAS Living Lab projects, insights from the various measures and projects were analysed alongside one another to discern overarching policy recommendations. These have been identified at the city-, regional-, national-, and European-level.

7.2.1 Local level

Experiences across the CIVITAS Living Lab projects made several local-level policy recommendations clear. Of particular note is to:

- Establish strong organisational frameworks for sustainable mobility development;
- Build a sustainable multimodal mobility system;
- Bring budgets in line with sustainability priorities; and,
- Transfer knowledge between cities.

Create strong organisational frameworks

To make the implementation of innovative and sustainable mobility solutions possible, a strong organisational framework must be in place that integrates all city activities and a variety of perspectives. In this way, it can remove implementation barriers and drive sustainable change.

Such a framework must involve diverse stakeholders and forge cross-sector partnerships. It should put forth a consistent and integrated planning approach, which supports and fosters the development of a SUMP that encompasses all mobility challenges in the city.

This framework should also feature integrated data platforms that bring all types of mobility data together and make this available to public and private stakeholders to manage, inform, operate, evaluate and plan multimodal mobility systems.

Finally, the local organisational framework must consider an overarching approach to behavioural change: this begins with a solid understanding of residents' needs and views and creates awareness of and acceptance for sustainable mobility.

Make your mobility system multimodal and safe

Across CIVITAS Living Lab projects, partners stress that complementarity among measures is crucial. Building a sustainable multimodal local mobility system must be the goal. Walking and cycling must be prioritised to meet sustainability goals, and this requires that safety be at the centre of local policies and planning.

Cities must be active in road safety. They should do this through a range of focused actions including effective data collection and analysis; building safe infrastructure; pursuing safety regulations such as speed limits; focused enforcement; and awareness and training campaigns.

To complement active modes, public transport must be clean, safe and efficient, reach peripheral areas, and be accessible to all. The overall transport system should be also be built in a way that enables users to combine modes easily during trips (e.g. cycling, walking, public transport, shared mobility). In a nutshell, make it multimodal!

Routing freight away from residential areas and incentivising the uptake of clean freight vehicles will further increase the uptake and safety of active modes and improve the liveability of our urban areas. Finally, managing vehicle traffic can help the private car fulfil a supporting role in the multimodal system.

Find and prioritise financing for sustainable strategies

Many of these interventions require funding. Local governments have an opportunity to strategically find and prioritise financial resources that support sustainable strategies. Cities should ensure all budgets are in line with sustainability priorities and set aside long-term financing for communication and awareness-raising measures.

Furthermore, CIVITAS cities demonstrated that additional resources can be made available through creative partnerships with private stakeholders. Effective and detailed business plans to achieve a modal shift through investments in, for example, safe infrastructure and introducing electric vehicles to the public fleet can be instrumental to convince stakeholders that investing in sustainable mobility is the best choice.

Sharing is caring: spread mobility best practice

Local governments have an important role to play in transferring knowledge and best practices among cities and regions. Cities should promote sustainable mobility measures with other politicians during policy-related events or conferences. Exchanging experiences can convince other policymakers and technicians to pursue sustainable mobility and support the proliferation of tried and tested solutions.

7.2.2 Regional and/or national level

Mobility systems connect places across city limits. For this reason, there are several ways that policies at regional and national levels can drive change, including through road safety measures, regional infrastructure, financial support, support for integrated planning, and the development of smart platforms.

Make road safety a priority

Regional and national governments are encouraged to keep road safety at the top of their agendas, supporting cities with data collection, putting in place supportive regulations (e.g. speed control), awareness campaigns and more.

Strategically install sustainable infrastructure

National policies can also serve to prioritise sustainability in public tenders and support the construction of sustainable infrastructure in strategic locations. This is essential to promote cleaner vehicles in public transportation and freight, in particular, by establishing an environment conducive to fleet renewal.

Create national financial instruments

Investment costs for many sustainable mobility solutions remain high, especially in more remote areas like islands. A lack of technical assistance and high energy costs are key barriers to, for example, the uptake of clean vehicles. National financial instruments can overcome these barriers and enable cities to create the baseline infrastructure necessary to change.

Support SUMP via national and regional programmes

Clearly, sustainable mobility goals can only be reached with integrated planning and governance. The intensification of National SUMP Supporting Programmes, with activities implemented at national or regional levels to incentivise the implementation of SUMP, are a great help. They can increase the prevalence of SUMP, encourage cross-sector collaboration, and engage sectors and actors not previously involved in local mobility planning. This can also guide smaller municipalities that lack capacity.

Collect and manage mobility data at all levels

As mobility flows are not limited to city boundaries, mobility data must be collected at regional and national levels and must be made readily available. This can be guided by national harmonisation of data platforms, and national support to define standards and regulations for safe and secure data collection and sharing.

7.2.3 European level

From unlocking funds to providing data standardisation and engaging with big corporate players, there are several policy or regulatory measures that the EU can – and does – pursue to support sustainable mobility at the local level.

Offer financial support for sustainable mobility

EU funding can provide support for the development of sustainable mobility infrastructure. Funding from the European Regional Development Fund, for example, has been successfully used by CIVITAS Living Labs to not only fund e-charging stations and cycling infrastructure, but also to unlock national and regional funding to further accelerate the shift to sustainable mobility. The EU is also uniquely suited to fund collaboration and knowledge exchange among cities – as is done via the CIVITAS Initiative. Such interactions stimulate the exchange of knowledge and support the uptake of innovative solutions across Europe.

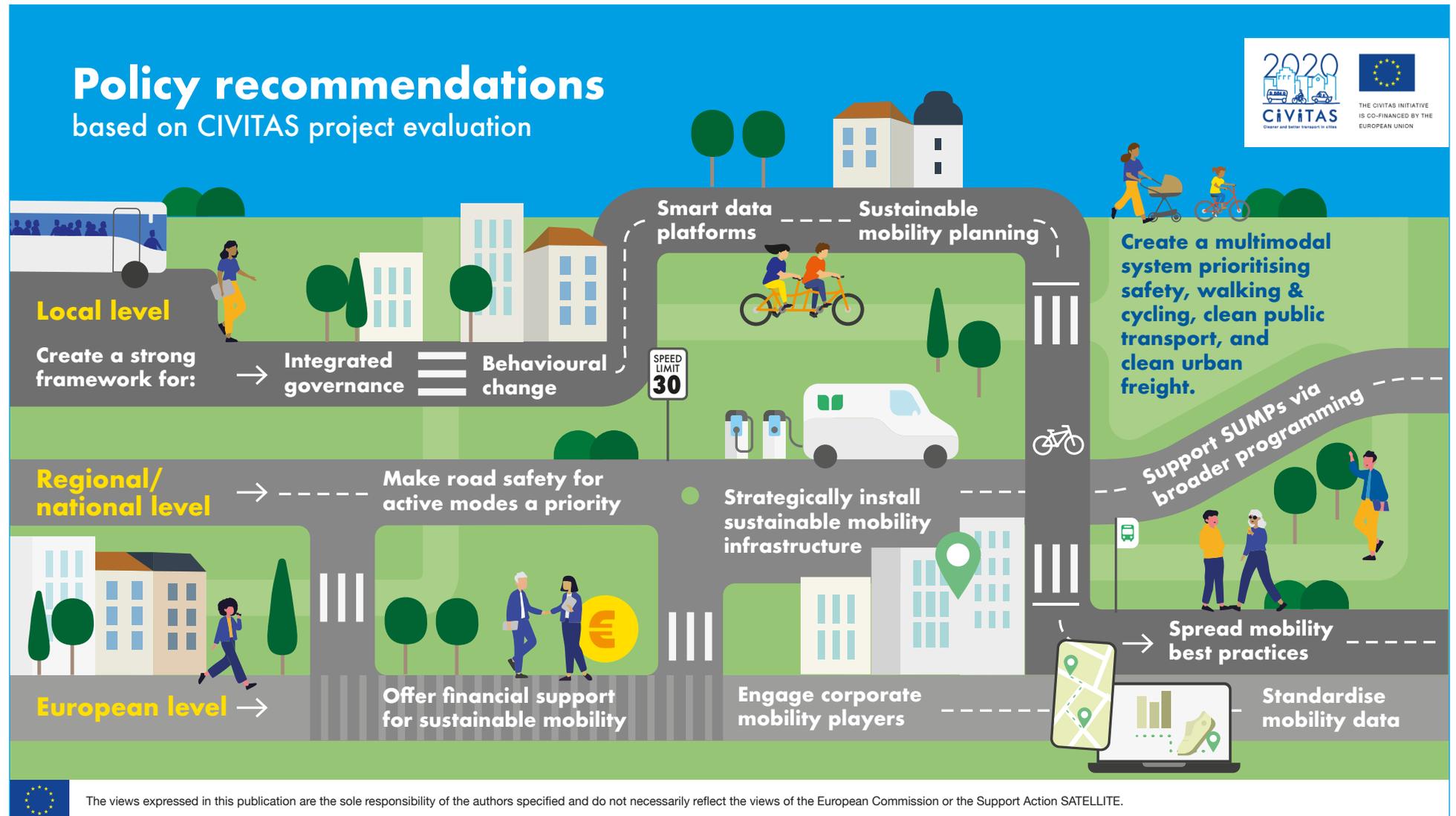
Standardise mobility data

European-level standardisation of mobility data, complemented by reporting obligations, would provide invaluable support at the local level.

Engage large, corporate mobility players

Finally, the EU can engage with larger corporate players in mobility data and programmes (e.g. Google Maps) whose products do not always align with European sustainable mobility visions. Furthermore, such products can overwhelm more local solutions (e.g. Antwerp's sustainable route planner). Engagement with these big corporate players is crucial to support widespread shifts in sustainable mobility and the way mobility is perceived by the European population.

Infographic 6: Policy recommendations





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