



## Review and evaluation of the latest CIVITAS achievements

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## Abstract

This publication presents a review and evaluation of CIVITAS achievements from ongoing or recently finished CIVITAS 2020 RIA projects and living labs, as well as projects from previous CIVITAS editions dating back to CIVITAS Plus II (2012-2016). In other words, it collects ten years of project achievements organised in five thematic clusters.

## Project Partners

Organisation	Country	Abbreviation
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Mobiel 21	BE	M21
ICLEI European Secretariat	DE	ICLEI
Breda University of Applied Sciences	NL	BUAS

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# 1 Executive summary

Deliverable 6.1 presents a review and evaluation of the latest CIVITAS achievements from ongoing or recently finished CIVITAS 2020 RIA projects and living labs, as well as projects from previous CIVITAS editions dating back to CIVITAS Plus II (2012-2016).

D6.1 consolidates and brings to the next level the substantial body of knowledge that the CIVITAS Initiative has accumulated over the past ten years, but which is too often dispersed and fragmented. Following a brief introduction, the core of the document summarises the achievements of 35 CIVITAS projects, divided into five thematic clusters. Focus is placed on overarching achievements in each thematic cluster, rather than the many individual achievements of each project. This publication lays out what CIVITAS projects in each thematic cluster have been able to accomplish over the course of several years. Results are compared across similar projects. They are also analysed to understand how they (results) and the thematic cluster have evolved over time. Furthermore, knowledge gaps are identified in each thematic cluster, which still need to be addressed.

The clusters are made up of the following projects:

- *Thematic cluster 1: “Supporting the development of Sustainable Urban Mobility Plans (SUMPs)”* covers the projects DYN@MO, 2MOVE2, PROSPERITY, DESTINATIONS, SUMP-UP, SUITS, Park4SUMP, Handshake, SUMP-PLUS and HARMONY.
- *Thematic cluster 2: “Co-creating liveable neighbourhoods”* covers Cities4People, MUV, SUNRISE and Metamorphosis.
- *Thematic cluster 3: “Boosting innovation and new technologies”* covers ELIPTIC, MOMENTUM, MEISTER, GreenCharge, SPROUT and ReVeAL.
- *Thematic cluster 4: “Tackling congestion”* covers CIPTEC, CREATE, EMPOWER, FLOW and TRACE.
- *Thematic cluster 5: “Improving freight management and goods distribution”* covers SUCCESS, CITYLAB, NOVELOG, U-TURN, ECCENTRIC, PORTIS, CityChangerCargoBike, LEAD, ULaaDS and SENATOR.

The review and evaluation presented is based on knowledge and material produced by projects. These outputs were used to create, first off, one **project fiche** for each project (see Annex I) that synthesise the outcomes of each project. Next, in June 2022, CIVITAS organised a series of **online thematic workshops**, attended by coordinators and representatives from the CIVITAS projects listed above, the outcomes of which also fed into the analysis presented in the body of this document. **Interviews** and bilateral meetings with project coordinators further complemented this evaluation work. All of these inputs, in addition to **key publications** from each project, informed the analysis presented in the chapters that follow. Finally, the achievements identified through this process were consolidated and validated using results from ongoing and on-demand evaluation tasks.

A concluding chapter provides a summary of the most significant results achieved from CIVITAS projects over the course of the years, and looks ahead.

## 2 Introduction

This is an ambitious and wide-reaching publication: it presents achievements arising from 35 ongoing or recently finished CIVITAS RIA projects, CIVITAS 2020 living lab projects, and living labs from previous CIVITAS editions. In order to draw impactful conclusions and insights, this publication organises the projects and their achievements into five thematic clusters.

The following chapters summarise the outputs of ten years of knowledge built by CIVITAS projects, grouped into the following five thematic clusters:

- **Thematic cluster 1: “Supporting the development of Sustainable Urban Mobility Plans (SUMPs)”:**

This cluster demonstrates how ten CIVITAS projects contributed to supporting cities and regions with the development and adoption of SUMPs. While each of these projects has had a different focus, all enabled cities to develop or improve a SUMP by, for example, supporting them in the preparation and planning phase, developing capacity for monitoring and evaluating SUMPs, etc.

*Projects:* DYN@MO, 2MOVE2, PROSPERITY, DESTINATIONS, SUMPs-Up, SUITS, Park4SUMP, Handshake, SUMP-PLUS and HARMONY

- **Thematic cluster 2: “Co-creating liveable neighbourhoods”:**

Four projects employed diverse, citizen-focused co-creation approaches to improve neighbourhood liveability among residents, as well as other relevant stakeholders, such as local businesses, academics, and policymakers.

*Projects:* Cities4People, MUV, SUNRISE and Metamorphosis

- **Thematic cluster 3: “Boosting innovation and new technologies”:**

CIVITAS projects have helped local authorities to develop, test and roll-out innovative measures and new technologies, contributing to behavioural and mindset change among both citizens and decision-makers.

*Projects:* ELIPTIC, MOMENTUM, MEISTER, GreenCharge, SPROUT and ReVeAL

- **Thematic cluster 4: “Tackling congestion”:**

Several CIVITAS projects have explored approaches to tackle congestion, ranging from push and pull solutions, to infrastructural measures, campaigns, and more. Each has had their own specific focus, target group and approach to limit or reduce congestion, while all stimulate a shift towards more sustainable modes of transport.

*Projects:* CIPTEC, CREATE, EMPOWER, FLOW and TRACE

- **Thematic cluster 5: “Improving freight management and goods distribution”:**

CIVITAS projects also aim to improve the efficiency and sustainability of urban freight, especially given the ongoing growth of e-commerce and the need to reduce urban emissions and noise. The projects enabled cities to test innovations in urban freight, and advised cities on how to best integrate freight management and goods distribution into SUMPs.

*Projects:* SUCCESS, CITYLAB, NOVELOG, U-TURN, ECCENTRIC, PORTIS, CityChangerCargoBike, LEAD, ULaaDS, SENATOR.

For each of these five thematic clusters, analysis was conducted that covers:

- 1 Main project achievements with respect to the cluster theme
- 2 Comparison and evolution across projects
- 3 Knowledge gaps and conclusions

Many projects cover multiple topics and could be assigned to several clusters. The above-mentioned clustering and assignment of projects is based on the CIVITAS ELEVATE Strategy for Evaluation and Advancing Knowledge, agreed upon at the beginning of CIVITAS ELEVATE.

Most of the CIVITAS projects included in this review have already ended. For these projects, it was possible to conduct a full review of their results and achievements. For ongoing projects, the publication focuses on explaining what they are doing, and how they are tackling the cluster theme.

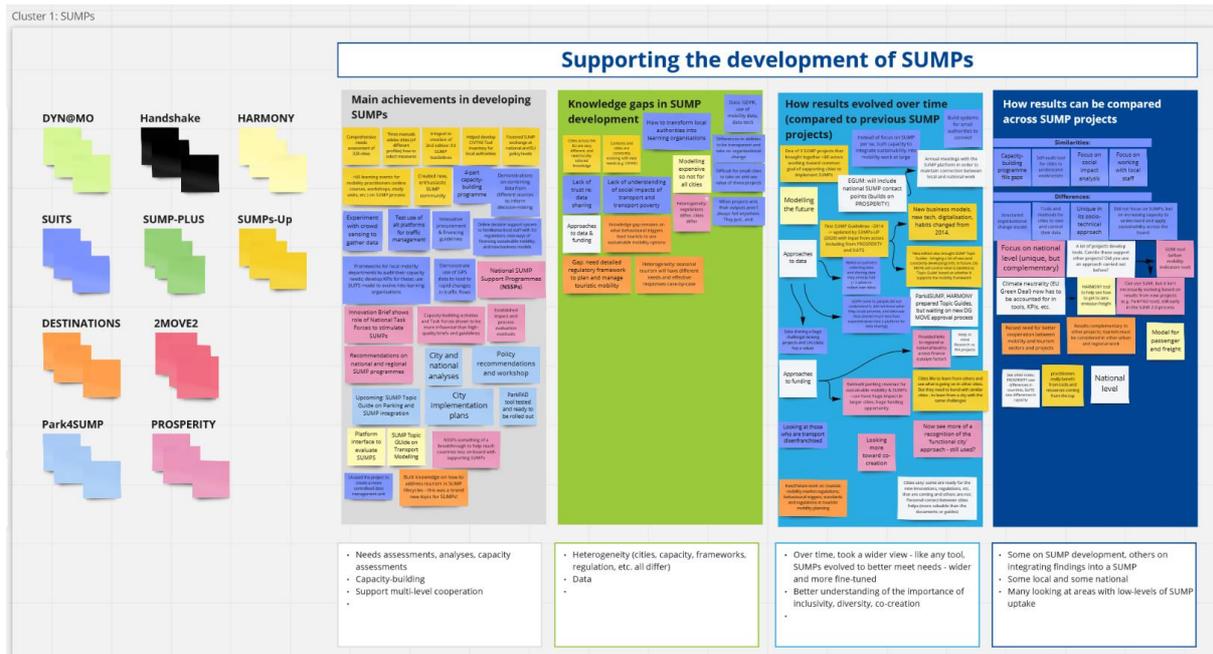
This publication also highlights the transferability of achievements by flagging key tools, guides and kits.

To better understand and collect CIVITAS projects' achievements, a review was conducted of each project's most relevant deliverables, publications, documents, etc. This led to the creation of CIVITAS project fiches (see Annex I). Interviews and bilateral meetings were also conducted with relevant project coordinators to fill gaps and gather further insights.

In addition, a series of online facilitated workshops were organised for the 35 CIVITAS projects in June 2022. These workshops, grouped by thematic cluster, were attended by project coordinators and representatives, and explored a series of core questions:

- What advice would you share for those working on this theme?
- What would you want from policy makers to make work on this theme more impactful or easier to carry-out?
- Did you use or develop any concrete tools in your project that you would recommend to others doing similar work?
- How did CIVITAS help with your project execution?
- If you were to do the same project again, what would you do differently?

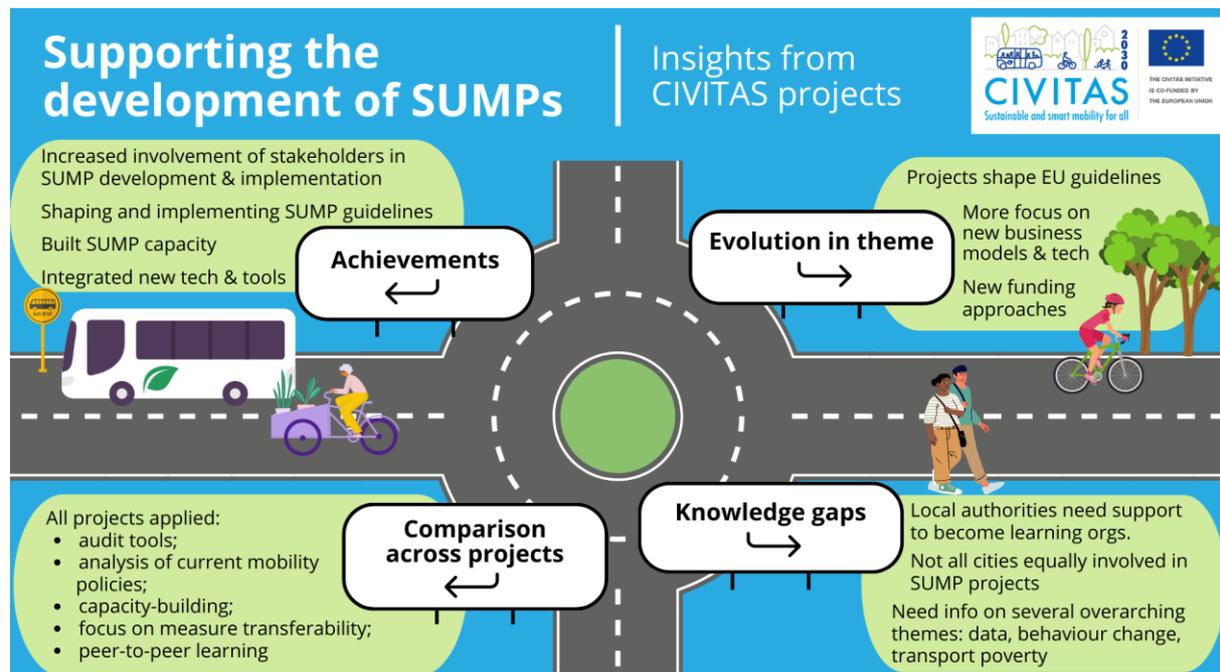
Workshops informed the evaluation presented in the chapters that follow.



**Figure 1:** Screenshot of the MIRO board used to capture insights from the facilitated workshop help with projects in Cluster 1 on “Supporting the Development of SUMPs”.

This document concludes by presenting a high-level overview of the most significant results that can be extracted from this publication and its analysis by thematic cluster.

### 3 Supporting the development of SUMP



**Figure 2:** Summary of the achievements, comparisons, evolution and knowledge gaps unearthed from evaluation of Cluster 1, as presented in this chapter.

Sustainable Urban Mobility Plans (SUMP) are the backbone of mobility in EU regions, cities and towns. These strategic plans are designed to improve quality of life, while better meeting the mobility needs of people and businesses at local, (peri-) urban, and rural levels. SUMP are a key element of the European Urban Mobility Framework, as they contribute to achieving EU targets, such as reducing greenhouse gas emissions by 55% by 2030, and becoming a climate-neutral continent by 2050. The EU supports the development of SUMP through guidance and dedicated funding in Member States.

A SUMP includes objectives to make transport more sustainable, safe, inclusive, healthier and smart. The concept builds on existing planning practices and takes into consideration integration, participation and evaluation principles. The development and implementation of a SUMP requires integrated planning and institutional cooperation. Public engagement is a key factor for the success of planning outcomes, as is conducting an objective and systematic assessment of ongoing or completed plans, policies or measures. This quality assurance helps local governments to develop a long-term strategy for future transport and mobility infrastructure and services, and facilitates implementation in the short-term.

Since the 2013 Urban Mobility Package defined the SUMP concept, emerging from a broad exchange between planning stakeholders across the European Union, the guidelines for developing and implementing a SUMP have been revised. New approaches towards mobility planning, new modes of transport and services (e.g. Mobility as a Service, e-commerce, shared transport, electric vehicles), and a constantly-evolving urban mobility dialogue, has led

to new core SUMP principles. The following revised core principles support transport practitioners to plan for more sustainable urban mobility:

- Plan for sustainable mobility in the entire ‘functional city’
- Define a long-term vision and a clear implementation plan
- Cooperate across institutional boundaries
- Develop all transport modes in an integrated manner
- Involve citizens and stakeholders
- Arrange for monitoring and evaluation
- Assess current and future performance
- Assure quality

### 3.1 Supporting the development of SUMP in CIVITAS

The EU supports regions, cities and towns in its 27 Member States to adopt a strategic and sustainable approach to addressing urban mobility issues. SUMP guidelines to promote active travel, shared mobility and multimodality are a key tool to support the development of more SUMPs in EU cities. EU support is also provided through information and awareness-raising, as exemplified by the work of the CIVITAS Initiative. Projects under the CIVITAS umbrella have advanced SUMP research and innovation, and enabled cities to develop and implement SUMPs of their own.

At least ten projects with a particular focus on supporting the development of SUMPs have been executed within the last ten years of the CIVITAS Initiative: DYN@MO, 2MOVE2, PROSPERITY, DESTINATIONS, SUMP-UP, SUITS, Park4SUMP, Handshake, SUMP-PLUS, and HARMONY. Each worked to improve the SUMP structure, its transferability in cities, or facilitated the implementation of SUMP processes in cities.

A short description of each project is outlined below; for more detailed information about these projects, see Annex I.

#### DYN@MO – sustainable mobility planning in dynamic European cities (12.2012–11.2016)

DYN@MO’s mission was to strengthen sustainable mobility by promoting non-polluting lifestyles, fostering social interaction and collaboration, applying integrated implementation of innovative transport services for active citizens of all ages, and deploying information communications technology (ICT) and Intelligent Transportation Systems (ITS). The project’s core strategic aim was to help cities develop “Mobility 2.0” systems and services that support sustainable urban mobility planning. This could, for example, advance existing SUMPs, or support the development of new SUMPs, and always extensively involved citizens and stakeholders. Ultimately, DYN@MO support the roll-out of clean and energy-efficient public transport, together with new technologies, which promoted new lifestyles and increased

acceptance for mobility without a private car. For example, ICT and ITS were used to improve public transportation service quality, which was seen as the backbone for a sustainable urban transport system.

## 2MOVE2 – new forms of sustainable urban transport and mobility (12.2012–11.2016)

2MOVE2 aimed to improve urban mobility by advancing or creating sustainable, energy-efficient urban transport systems for the benefit of all citizens, society and climate policy. A wide range of topics were addressed and defined in measure packages regarding clean, energy-efficient vehicles and transport systems; the deployment of ITS and ICT for traffic management; and sustainable urban transport planning that combines land-use with innovative transport systems and human-centred modes. A specific focus was placed on the development of SUMP, as well as on the ways that SUMP could be implemented or advanced through 2MOVE2 measure packages.

Throughout the project, strategic and political validation were seen as vital to improve measure quality, effectiveness and compliance with current policies in small and medium-sized cities and towns. Training workshops and educational activities on awareness- and consensus-building complemented the measure packages.

## PROSPERITY – prosperity through innovation and promotion of sustainable urban mobility plans (09.2016–08.2019)

PROSPERITY supported local and national authorities to improve the quality and uptake of SUMP, focusing on locations where SUMP adoption was initially low (southern, central-eastern and eastern Europe). The uptake of SUMP in cities was encouraged through national SUMP Task Forces, with national and regional authorities taking a leading role through specific SUMP support programmes. The project's main objectives were to create a shift in organisational culture of transport planning both at local and national level, and to provide mechanisms and insights regarding SUMP challenges in order to get more cities to develop SUMP, and to build capacity that reflects the EU SUMP guidelines. The project's approach was four-fold, spanning national programmes, living labs, guidelines, and capacity building.

## DESTINATIONS – the integration of sustainable tourism and mobility strategies through innovative mobility solutions (09.2016–05.2021)

DESTINATIONS aimed at changing the mind-sets of stakeholders in tourist cities to provide integrated, effective mobility and transport solutions, by focusing on well-established public-private collaboration schemes and business models. Uniform methodologies were used across the different locations, targeting mobility demands by residents and tourists by offering clean and green public transport services. Reducing tourism-derived pressure on transport systems was accomplished through the development of SUMP and SULPs (Sustainable Urban Logistics Plans); DESTINATIONS also created accessible and attractive public spaces, fostered behavioural change, and reallocated urban space to favour sustainable modes.

DESTINATIONS also supported touristic cities to rethink tourism in times of travel restrictions brought on unexpectedly with the onset of the COVID-19 pandemic.

### SUMPs-Up – European programme for accelerating the uptake of SUMPs (09.2016–02.2020)

The SUMPs-Up project aimed to overcome the barriers that prevent or make it difficult for cities to implement SUMPs, especially in European countries where SUMP uptake was low. SUMP resources were reviewed, strengthened and integrated, in order for the project to design a SUMP Tool Inventory, which serves as a support system to help cities develop high-quality SUMPs, and to assist mobility planners to make better-informed decisions regarding applying planning tools in their local contexts. Experiences from city partners who tested innovative SUMP preparation and implementation solutions were also considered. The SUMPs-Up Innovation Pilot Pool identified and validated the most effective concepts, and transferred knowledge, approaches and methodologies in practice through peer learning programmes. This resulted in the publication of second edition SUMP guidelines, which were transferred to guidance and training materials, face-to-face workshops, webinars and e-learning courses.

### SUITS – supporting urban integrated transport systems: transferable tools for authorities (12.2016–11.2020)

SUITS focused on more effective and resilient implementation of sustainable transport measures included in a SUMP. The main objective was to increase capacity building and knowledge transfer to smaller cities. A set of tools on planning, financing and implementing sustainable transport measures was provided to efficiently address urban mobility challenges in small cities' local contexts. The project delivered, among other things, a Decision Support Tool on innovative financing methods and business models, a Capacity Building Toolbox covering a wide range of mobility topics and relevant training materials, a Change Toolkit for the transformation of transport departments into learning and knowledge-sharing organisations, a Monitoring Tool to evaluate changes in capacity and capability on a policy level, and a SUITS capacity building manual.

### Park4SUMP – innovative parking management as a game changer for urban mobility (09.2018–08.2022)

Park4SUMP aimed to help cities integrate innovative parking management solutions into SUMPs to improve mobility and quality of life. The project demonstrated how innovative parking solutions are an integral part of cities' SUMPs. The main objectives were to move parking policy from an operational, reactive task to a more strategic policy process, to implement innovative and cost-effective parking solutions, to earmark parking revenues for sustainable mobility, to increase political and public acceptance and awareness, to free-up public space to improve quality of life in cities, and to create a modal shift as a result of parking management solutions. Through capacity building (trainings, webinars, high-level workshops), wide roll-out and transferability was achieved to stimulate further innovation in parking management policies among European cities. Analysis and assessment of cities' development

in terms of parking management was covered in the ParkPAD audit tool, which also serves to facilitate SUMP-integration, implementing measures, capacity building, and ensuring transferability of measures.

### Handshake – bringing together 13 of Europe’s top cycling cities to share and inspire excellence (09.2018–08.2022)

Handshake supported the effective uptake of integrated cycling solutions to deliver European cycling change. Assembling a state-of-the-art body of knowledge on cycling policies and solutions, sustaining transition processes, and motivating and supporting forms of mentorship are key to realise an effective, supportive and novel transfer cycle to other cities. Through a mentorship programme, the project aimed to create or refine holistic cycling visions; to inspire concrete transfer of approaches; to foster the adoption of a multidisciplinary planning culture; to consolidate future cycling policies and investments; to improve the cycling modal share and cycling safety; and to prove that cycling is a critical congestion relief tool, which improves public health and fosters economic growth.

### SUMP-PLUS – sustainable urban mobility planning: pathways and links to urban systems (09.2019–08.2022)

SUMP-PLUS built on the strengths of existing SUMPs and SULPs in cities to address new challenges, opportunities and needs regarding the new SUMP 2.0 guidelines; this was done through a co-created City Laboratories Approach. The main focus of the project was to create human-centred cities, based on stakeholder involvement and guidelines on practical and context-specific implementation of measures. Improved guidance on SUMP implementation was supported throughout the project by undertaking transferability actions from Co-created Laboratories Plans, knowledge development and mentoring programmes.

### HARMONY – enabling metropolitan authorities to lead a transition to a new mobility era using spatial and multimodal transport planning tools (06.2019–02.2023)

HARMONY’s mission is to develop a new generation of harmonised spatial and multimodal transport planning tools, which help lead authorities through a sustainable transition to a new low-carbon mobility era. The project’s harmonised “Model Suite” collects tools, training programmes and recommendations, targeting both passenger and freight transport, to help local authorities to update their SUMPs and SULPs. The multidimensional impacts of new mobility solutions, technologies and concept are assessed in cities and regions with different geographical characteristics, sizes, needs, policy frameworks, data availabilities, etc. to ensure the replicability of the project’s results.

## 3.2 Main project achievements

The ways in which DYN@MO, 2MOVE2, PROSPERITY, DESTINATIONS, SUMP-PLUS, SUITS, Park4SUMP, Handshake, SUMP-PLUS and HARMONY supported the development of SUMP-PLUS are outlined below. This is a high-level overview of the outcomes, differences, similarities and evolutions within this thematic cluster, which captures overarching progress and knowledge gaps.

The CIVITAS projects in this cluster addressed four policy levels in their efforts to support the uptake or continuation of SUMP-PLUS:

- *National and regional level:* high-level exchange in southern, eastern and central-eastern Europe (PROSPERITY), Europe-wide SUMP approach (SUMP-PLUS), metropolitan and regional authorities (HARMONY)
- *Inter-city level:* coordination among municipalities in dynamic European cities (DYN@MO), small and medium-sized towns (2MOVE2)
- *Intra-city level:* involving local representatives and site managers from across the city, such as politicians and local stakeholders (SUITS and HARMONY)
- *Topic-specific areas:* tourist destinations (DESTINATIONS), deployment of innovative solutions that serve SUMP-PLUS (SUITS), integrating parking management into SUMP-PLUS (Park4SUMP)

Key outcomes achieved by projects in this cluster span public involvement, shaping SUMP-PLUS guidelines, capacity-building, and integration of new technologies and tools.

### Public involvement: stakeholders and target groups

Involving citizens and stakeholders is a crucial component of CIVITAS projects. Public involvement provides insights into current mobility challenges, offers the opportunity for citizens (and others) to actively participate in the decision-making process, and it increases support for final outcomes. Projects in this cluster demonstrated that good stakeholder involvement can validate work, raise awareness, build capacity, and make new mobility concepts clearer for users.

2MOVE2 and PROSPERITY provided strategic and political validation through the involvement of national agencies, ministries, local representatives and site managers, which also served to raise awareness and to build consensus. Directions and advice regarding effectiveness, quality, and compliance with policies and recommendations were, for those two projects, a focus of stakeholder dialogues.

Public-private operators, like public transport providers, are also crucial stakeholders to any effort to better deal with demand-pressures on the transport system. Involving private operators from, for example, bike sharing systems or ride hailing schemes in city-led interventions can make interventions more successful. As demonstrated in SUITS, research and innovation can also build capacity among a diversity of stakeholders on a city level, like mobility consultants or department staff.

DESTINATIONS found that for specific target groups and locations – like tourist destinations – SUMP development should make use of well-established public-private collaboration schemes and established business models; if pre-established, these can easily be transferred to the SUMP-level.

HARMONY co-creation workshops with citizens also shed light on how people can gain insights into new mobility and spatial organisation concepts by, for example, involving residents in demonstrations that illustrate the impact drones and electric autonomous vehicles (AVs) can have on civil society.

## Shaping and implementing SUMP guidelines

The implementation of the SUMP guidelines at different policy levels can lead to various outcomes depending on the scope of the activities carried out. National programmes, living labs, tools, guidelines and capacity building programmes led by cities, expert trainers and SUMP Champion Cities are all possibilities to address local needs in a tailored way. Such programmes can consist of technical support, finance linked to guidance, national leadership on SUMP development, introducing legislation as catalyst factor, or building support networks.

PROSPERITY, SUITS and SUMP-UP directly referred to European SUMP guidelines and focused on areas with low SUMP adoption. PROSPERITY aimed to shift transport planning culture in favour of SUMPs; SUITS transferred learning to smaller cities; and SUMP-UP worked to develop high-quality SUMPs and the second edition SUMP guidelines. These projects engaged ministries and national agencies in SUMP development, via National Task Forces and regional SUMP Platforms.

Thanks to technical support, monitoring, evaluation and capacity building, strong SUMP research was carried out Europe-wide by CIVITAS projects. This work reviewed, strengthened and updated SUMP resources for local actors, based on SUMP 2.0 guidelines, the SUMP Self-Assessment Tool and advanced funding and finance options.

## Capacity building

SUITS addressed mobility planning knowledge gaps and misconceptions through capacity building programmes.

Additional peer-learning programmes helped to apply the SUMP concept, like the SUMP Learning Programme, training materials, face-to-face workshops, webinars, interviews, questionnaires and e-learning courses. Mentorship experiences from Handshake proved to be an effective transfer method, but only in the presence of knowledge, sustainable transition processes, motivation and support.

DYN@MO focused on measure implementation. The transferability of those measures across Europe was enhanced through mutual learning, facilitated by establishing Competence Centres on SUMPs and on e-mobility.

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## Integrating new technologies and support tools

The projects furthermore showed that a new generation of technologies and approaches must be considered for future SUMP development. HARMONY created spatial and multimodal transport planning tools, which comprehensively model the dynamics in the urban mobility sector, and led metropolitan authorities through the transition to a low carbon mobility era. The Model Suite integrates land-use models, activity-based models for people and freight, and multimodal network models.

Measure packages were presented in DYN@MO and 2MOVE2 to accelerate the integration of ICT and ITS in urban mobility planning via “Web 2.0” applications, thereby shifting planning cultures and advancing the development of SUMP. Support was provided to cities to prepare, discuss and update their sustainable urban mobility planning. The measure packages focused on human-centred transport modes and creating sustainable, energy-efficient urban transport systems, e-mobility and freight travel.

Data management platforms and insights into data collection and analysis are becoming more important in the context of smart mobility management policies. SUITS developed sample tools for route optimisations and demo tools for traffic data acquisition, thus facilitating the deployment of technology as innovative mobility measures.

Park4SUMP put a strong emphasis on the strategic role of parking management, and demonstrated that innovative parking policies can be integrated in existing or new SUMP. The project demonstrated the need to further stimulate innovation, transferability and roll-out on this topic.

Applied research also helped highlight barriers linked to SUMP planning and implementation, enabling mobility planners to make informed decisions regarding which tools to apply in which local contexts. The SUMP-Up SUMP Tool Inventory is one such example, which was enriched with cities’ experiences and by a series of publications regarding crucial SUMP topics. The SUMP-Up Innovation Pilot Pool and the Capacity Building Toolbox created a mechanism to easily identify and validate effective concepts, approaches and methodologies.

The SUMP-PLUS co-created City Laboratories Approach demonstrated the strengths of existing SUMP and SULPs across different EU cities to establish stronger links with other urban system components.

The ParkPAD tool clearly defines the level of development cities have regarding parking policies, whereas the audit tool also helps to align action plans on a city level to serve the local SUMP. For its part, Handshake’s Bike Assessment Tool combines innovative existing methods to boost the uptake of cycling in urban mobility planning.

### 3.3 Comparison and evolution across projects

All CIVITAS projects supporting the development of SUMPs showed that participating countries, regions, cities and towns can all benefit from working on sustainable mobility strategy development and implementation processes. Some projects focused on SUMP development as such (e.g. SUMP-PLUS, SUMP-UP), while others focused on integrating outcome-specific urban mobility themes into SUMP (e.g. Park4SUMP, Handshake).

Both at the local and national levels, SUMP roll-out has been characterised by a few key components, such as audit tools, and social impact analysis of current mobility policies to better understand current challenges, needs and weaknesses.

Capacity-building programmes across projects all focused on ensuring the transferability of actions and measures. These mostly aimed to overcome knowledge gaps, address the heterogeneity of local contexts, and to bridge differences in capacity on a local and national level.

Peer-to-peer learning is a fundamental part of CIVITAS projects; leading and follower cities inspire each other and/or high-level exchange is a prerequisite. Stakeholder involvement is another key component across all projects, which can be applied using different methods and approaches, always ensuring the sustainability of decisions at each policy level.

There is a clear and direct impact of projects on the evolution of SUMP over time. The first SUMP guidelines were part of the 2013 Urban Mobility Package and were updated by SUMP-UP (2020) with input from other actors, including PROSPERITY and SUITS. A greater focus on new business models, new technologies, digitalisation, and new mobility patterns was integrated. To support the urban mobility framework, SUMP Topic Guides were introduced to bring new and constantly expanding expertise directed at mobility practitioners.

Over the years, data became far more important throughout CIVITAS projects, with requirements such as data sharing and GDPR. Cities had to develop capacity collecting, processing and protecting the information they gathered. Amongst projects and local actors, the value of data has become increasingly acknowledged as a pillar of local mobility policy.

New funding approaches, like earmarking revenues for sustainable mobility, as addressed within Park4SUMP, can have a huge impact on cities' finances. Using peer learning – learning from other cities with similar challenges – to address topics like linking to funding opportunities on a regional and national level has become more common and relevant. This can be seen in the work of SUMP-UP and SUITS; peer learning often provides inspiration and breakthroughs beyond project boundaries, as was the case in Park4SUMP and PROSPERITY.

### 3.4 Knowledge gaps and conclusions

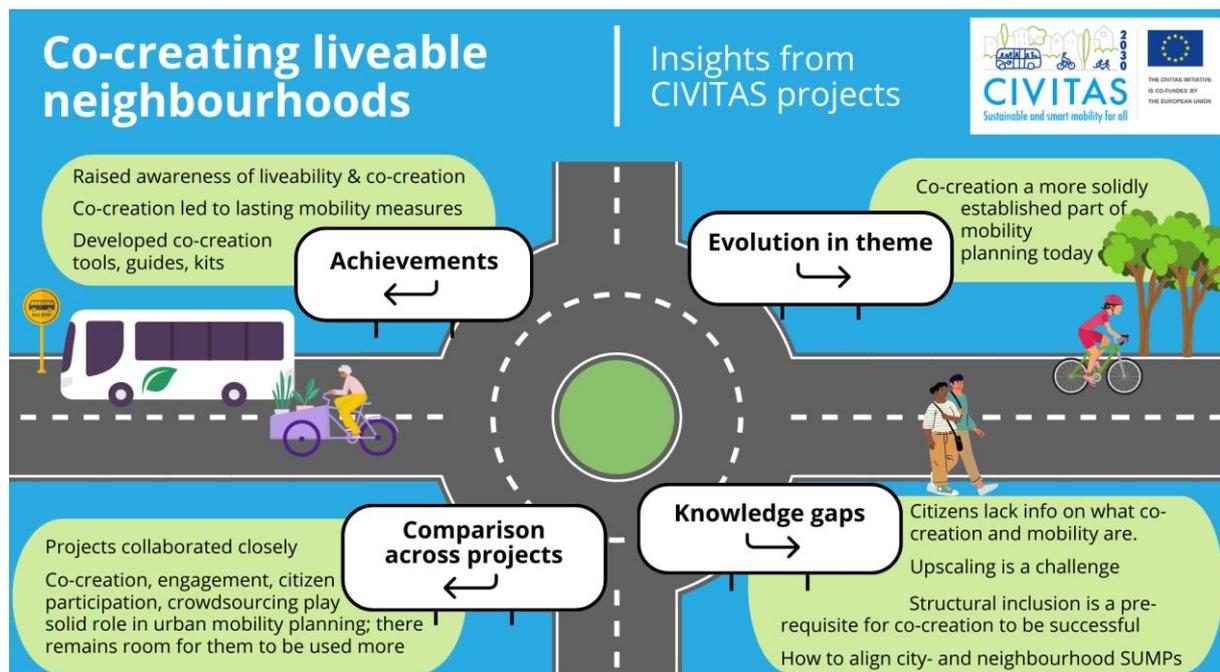
While support for SUMP development has evolved over the past decade, cities across the EU remain very different and in need of locally-tailored knowledge to address their urban mobility challenges. With local contexts constantly evolving (as exemplified by the COVID-19 pandemic), a SUMP should remain a (long-term) planning standard in which **flexibility** and ability to address (temporary) variations is possible.

The **transformation of local authorities into learning organisations** should be given further attention. Local actors still have different abilities to be transparent and to take on organisational change. Regulation and legislation certainly play a role in this, as does willingness to meaningfully integrate public involvement. The way cities plan, how they implement plans, how they consider the social impacts of measures, and how they involve citizens can all be further researched to fill knowledge gaps on the practical side of SUMP implementation.

An open challenge remains the **heterogeneity of cities** across the EU regarding their capacities, frameworks, regulations, and approaches. Whilst CIVITAS projects addressed the countries and regions where the SUMP uptake was initially low, the added value and trigger for small sized cities to participate was often not sufficient to bring them on board. It is furthermore necessary that those mobility practitioners who are keen to learn from projects are able to easily consult project outcomes and build on developed approaches, guides and insights even after projects end.

Finally, **overarching themes** such as data policy, behavioural change, the integration of new technologies, inclusiveness, transport poverty, and funding all continue to represent knowledge gaps for many cities, and are important matters to be considered in future work to support the development of SUMPs.

## 4 Co-creating liveable neighbourhoods



**Figure 3:** Summary of the achievements, comparisons, evolution and knowledge gaps unearthed from evaluation of Cluster 2, as presented in this chapter.

For millions of city-dwelling Europeans, everyday life unfolds in their urban neighbourhood. This particular part of the city functions as the extension of people’s private homes: it is where they meet neighbours, send their children to school, and shop for daily essentials. Often, the neighbourhood is where people spend a large share of their time.

Each urban neighbourhood has distinct characteristics that set it apart from other neighbourhoods in the same city, and from neighbourhoods in other cities, including with respect to liveability.

A ‘liveable’ neighbourhood can be defined, in simple terms, as a neighbourhood that is pleasant and people-centred. It typically includes, amongst other things, attractive public areas and parks; affordable housing; conveniently located schools, shops and other services; and a safe social environment. Sustainable mobility is a crucial aspect of liveable neighbourhoods, which contributes substantially to people’s quality of life. Generally, liveable neighbourhoods have low traffic speeds, volumes, and congestion levels; adequate walking and cycling infrastructure; as well as accessible and well-connected public transportation modes. Due to the importance of sustainable mobility, the EU aims to improve the liveability of urban neighbourhoods through the CIVITAS initiative.

To improve neighbourhood liveability and mobility, the concerns, wishes and preferences of neighbourhood residents need to be considered. Residents have expert knowledge on local realities, unique insight into suitable solutions, and a direct stake in planned or proposed innovations to improve neighbourhood liveability. Therefore, involving residents in these

innovation processes is vital. This can be best achieved through a process known as co-creation.

Co-creation refers to a collaborative process in which multiple stakeholders actively interact and cooperate to develop a solution to a problem, to plan a specific policy, to design a product or service, or to generate new ideas that lead to new opportunities. Through co-creation's balancing of different perspectives, stakeholders jointly arrive at mutually-valued outcomes and structural solutions to real-life challenges. In short, co-creation deepens stakeholder engagement in innovation processes, and makes these processes more inclusive compared to traditional top-down approaches.

Fittingly, neighbourhoods are conducive environments for co-creation. They are often characterised by a sense of community and by shared interests amongst residents. Co-creation is the ideal tool to exploit this social capital and empower residents to shape innovative mobility measures and policies in line with their neighbourhoods' needs. Co-creation also increases residents' senses of ownership over, and acceptance of, resulting measures and policies. Furthermore, co-creation is not limited to neighbourhood residents alone. Other relevant stakeholders that ought to be engaged in co-creating liveable neighbourhoods include local businesses, academics and, of course, local policymakers who are aware of the administrative, technical and legal procedures necessary to implement new measures or policies.

As co-creation has gained attention over the last decade or so, several recent CIVITAS projects have employed citizen-focused co-creation approaches to improve neighbourhood liveability.

## 4.1 Co-creating liveable neighbourhoods in CIVITAS

As a term, co-creation covers a lot of ground. Stakeholder participation in improving neighbourhood liveability and mobility can occur at different stages of the innovation process, to different degrees, and through a remarkably diverse range of methods and tools.

In recent years, four CIVITAS projects with a particular focus on using co-creation to improve neighbourhood liveability and mobility have been executed: Cities4People, MUV, SUNRISE and Metamorphosis. Despite being funded under the same Horizon2020 call, these four projects perfectly illustrate the diversity in co-creation approaches.

Here, a short description of each project is provided. For more detailed information about the projects listed below, see Annex I.

## Cities4People – new approaches for community-driven sustainable mobility innovations at neighbourhood and urban district level (06.2017–11.2020)

The Cities4People project aimed to implement sustainable mobility innovations developed ‘by people, for people’. The project saw sustainable and people-oriented transport as a solution to many mobility challenges faced by urban and peri-urban areas today. Cities4People tapped into participatory social innovation and neighbourhood governance practices. It built on three main pillars: citizen participation, community empowerment, and sustainable urban planning. The project employed a bottom-up approach to jointly identify mobility problems, co-create mobility solutions, and implement innovation pilots and prototypes within neighbourhoods in five European cities: Barton (UK), Budapest (HU), Hamburg (DE), Istanbul (TR) and Trikala (GR).

## MUV – Mobility Urban Values (06.2017–05.2020)

The MUV, or ‘Mobility Urban Values’, project sought to promote sustainable mobility choices by raising citizens’ awareness of the quality of their urban environment. Uniquely, the project combined co-creation and gamification to achieve its aims. MUV’s technological ecosystem integrated three components: a mobile and wearable app, a distributed network of environmental monitoring stations (co-designed with local maker communities), and a scalable cloud platform to collect, aggregate and analyse data. MUV’s approach supported sustainable mobility through a blend of methods: co-creation, awareness raising, gamification, reward systems, new forms of communication, artistic design, ICT and data science, additive manufacturing, and open governance. The six cities involved in MUV were: Amsterdam (NL), Barcelona (ES), Fundão (PT), Ghent (BE), Helsinki (FI) and Palermo (IT).

## SUNRISE – sustainable urban neighbourhood research and implementation support (05.2017–07.2021)

The SUNRISE project aimed to co-create a ‘Sustainable Neighbourhood Mobility Planning’ concept to complement city’s SUMP, and which can be replicated to address local mobility challenges across Europe. SUNRISE developed, implemented, assessed and facilitated co-learning about new, collaborative ways to address common urban mobility challenges at the urban district level through “neighbourhood mobility labs”. The project rested on four main pillars: utilisation of neighbourhood-specific opportunities; co-creation of solutions (e.g. through strategic civic-public alliances); consideration of the socio-technical nature of solutions, including through promoting combinations of services, social arrangements, rules, technologies, etc.; and the creation of new synergies between bottom-up and top-down approaches. The project included Bremen (DE), Budapest (HU), Jerusalem (IL), Malmo (SE), Southend on Sea (UK) and Thessaloniki (GR).

## Metamorphosis – transformation of neighbourhoods in a child-friendly way to increase quality of life for all citizens (06.2017–10.2020)

The ambition of the Metamorphosis project was to transform car-oriented neighbourhoods in a child-friendly way to increase quality of life for all citizens. The project focused on co-creation processes that enabled children to develop innovative pilots. Metamorphosis applied an innovative and participatory approach, which encompassed the direct involvement of children as crucial players in each phase of the project – from planning through implementation, evaluation, and dissemination. During each phase of Metamorphosis, children’s perspectives, suggestions, and ideas were highly valued as essential contributions to create more children-friendly cities. Metamorphosis included the following trial implementation cities: Alba Iulia (RO), Graz (AT), Meran (IT), Munich (DE), Southampton (UK), Tilburg (NL) and Zurich (CH).

### 4.2 Main project achievements

Cities4People, MUV, SUNRISE and Metamorphosis all contributed to advancing co-creating liveable neighbourhoods with respect to: raising awareness of neighbourhood liveability and co-creation as a tool to improve this liveability; implementing co-creation interventions and innovations on the ground; and developing co-creation tools, guides and kits that enable and foster replication in other neighbourhoods and cities.

#### Raising awareness about neighbourhood liveability and the value of co-creation

By engaging hundreds of citizens, local businesses, academics and local government representatives in co-creation processes within their neighbourhoods and cities, Cities4People, MUV, SUNRISE and Metamorphosis actively raised awareness about neighbourhood liveability and highlighted the value of co-creation processes in improving this liveability.

Most notably, the MUV project, which specifically set out to promote awareness about neighbourhood liveability through gamification, managed to engage over 5,000 citizens. Its game tracked over 260,000 kilometres sustainably travelled by game users in MUV pilot cities, associated cities, and other municipalities. This success contributed to the establishment of a new company in 2020, known as MUV B Corp, which seeks to turn sustainable urban mobility into a global movement, and to use the MUV game to roll-out ever more ambitious challenges for users.

In addition to raising awareness amongst citizens, the four projects have all, to varying degrees, brought about positive change in policymaker attitudes towards co-creation and participation in decision-making processes. In Hungary, for instance, elements of the SUNRISE methodology used in Budapest (such as thematic walks, pop-up information stands and voting tools) are now utilised in other mobility projects across the country. A number of local municipalities, including the city of Budapest itself, are planning to initiate new co-creation processes in the coming years to improve neighbourhood liveability and mobility. Similar trends can be observed in Germany, where cities beyond Bremen have indicated a strong interest in

the SUNRISE experience; and in Israel, where additional neighbourhoods of Jerusalem have already advanced initiatives based on SUNRISE's co-creation model.

## Improving neighbourhood liveability through co-created interventions, innovations, knowledge sharing

The diverse co-creation processes employed by the four projects across all general aimed at improving neighbourhood liveability by addressing mobility challenges. Citizens and other stakeholders were involved in all steps of the process: from problem identification, to the development, implementation and evaluation of solutions. A selection of specific solutions ("mobility measures") implemented on the ground are outlined below, all of which have had a tangible and/or permanent impact on the implementing neighbourhood even beyond the duration of the associated CIVITAS project.

Across the four projects, co-creation processes led to dozens of interventions and innovations. These vary greatly in scope and in the issues they address. It is important to keep in mind that all of the successes and measures described in this section were borne from co-creation processes: they were prompted by neighbourhood residents.

In Cities4People, for example, fifteen pilot prototypes were implemented ranging from: improving access for people living in peri-urban areas by installing extra transport services (Barton), to improving mobility for people with disabilities by providing wheelchair scooters (Trikala), improving walking infrastructure (Üsküdar), setting incentives for using sustainable modes of transport by offering last mile solutions in mobility points (Budapest), and to improving infrastructure for bikes and cargo bikes (Hamburg). One third of these pilot prototypes were scaled-up over the course of the project: one in each participating city. When the project finished, no less than nine interventions remained and became permanent, underlining the long-lasting impact of the project. Some permanent interventions include:

- In Hamburg's Altona neighbourhood, standard and cargo bike parking racks were installed and will remain free for public use.
- In the eleventh district of Budapest, a Mobility Point Network was established that will continue to offer public transport opportunities and sustainable shared mobility options to residents. A similar network was added in the sixth district of the city in 2021.
- In Trikala, free smart storage lockers and a free wheelchair scooter were implemented at the city's information point, and will remain available for online reservation
- Barton plans to build on its Cities4People pilot and provide small rural communities with demand-responsive transport service software (DRT) that the city can use to operate their own community-run DRT service.
- In Üsküdar, the free usage of two open electric cars in the public park of Nakkaştepe Millet Bahçesi remain. These electric cars, resembling large golf carts, help to connect public transportation stops on either end of the park.

Similarly, a number of SUNRISE interventions remained after the project ended. In Thessaloniki, for instance, smart bus stops and bus shelters, new bicycle racks, and new safety signage are still in use. In Bremen, 1600 metres of sidewalk became easily accessible

to pedestrians after re-organising car parking spaces. In Jerusalem's Baka neighbourhood, road safety on school walking routes was permanently improved and a pedestrian boulevard known as the 'Green Path' will be implemented.

Dozens of interventions were implemented as part of Metamorphosis. Most of these measures involved: temporary street closures, crystallisation points, and other interventions in public space; innovative educational tools; improvement of planning procedures; and empowerment for active mobility.

Finally, and despite MUV's focus on raising awareness rather than implementing interventions, it is worth mentioning that the project formulated recommendations for mobility interventions to be taken on by project cities, based on the data collected via the MUV game. In total, more than 60 new solutions and ideas to improve urban mobility at the neighbourhood level were triggered. Some of these interventions have already been implemented, while others are nurturing the public debate.

### Developing tools, guides, and kits to foster co-creation in other locales

In addition to improving liveability and mobility in the neighbourhoods and cities involved in the projects, Cities4People, MUV, SUNRISE and Metamorphosis also set out to create tools, guides and kits to disseminate co-creation lessons learnt and best practices, and to foster replication of successful processes in other neighbourhoods and cities.

Throughout the duration of the four projects, which ran almost simultaneously, joint activities and insightful project exchanges on co-creation were also organised. These led to the joint publication of a brochure bundling the main lessons about co-creation the projects learned over a period of several years, titled "[Big Messages: Lessons for co-creative mobility initiatives in neighbourhoods](#)". These lessons are presented as ten 'big messages', which include tips on a range of topics from citizen participation, to experimentation, and expectation management. The goal of these messages is twofold: they seek to provide advice to other cities and neighbourhood actors, while also enabling policymakers, funders and others to improve the context conditions for co-creation projects at the neighbourhood level.

All four projects also published tools, guides and kits independently from one another, which are now publicly available to citizens, businesses, academics, local governments, and other neighbourhood actors.

In Cities4People, a [Citizen Mobility Kit \(CMK\)](#) was developed. The CMK includes an online guide and toolbox with resources to support neighbourhood-level co-creation processes. The customised kit can be used by all cities to foster bottom-up initiatives in their neighbourhoods, facilitate collaborative activities, and to support citizens and communities in implementing successful mobility innovations. The CMK guides users through different stages of the co-creation process, from preparation to execution. It directs them to online and offline tools relevant to each stage – including those developed by Cities4People as well as pre-existing ones – and does so in a structured and easy-to-access manner.

Cities4People also published a tool specifically to support replication of the entire project setup: the [C4P Deployment Toolkit & Replication Guide](#). This guide supports cities in replicating the Cities4People project in other settings and helps them visualise and structure the project

process. It demonstrates the steps required to fulfil the project goals spanning project launch, implementing the first pilot interventions, and scaling-up actions and activities. The toolkit and guide also include policy recommendations that inform cities about the requirements for successfully setting up co-creation projects. All of this is complemented by a compilation of existing methods, tools and resources that can be used during a co-creation project, including communication and voting tools, resources for taking a people-oriented transport and mobility approach (POTM), best practices, as well as educational and inspirational materials.

The City of Rio de Janeiro (BR) has already flagged its interest in replicating the Cities4People project. Additionally, another project consortium has been set-up to lead a follow-up project to Cities4People, called [Decarbomile](#), which runs from September 2022 onwards. This follow-up project will apply approaches used in Cities4People and other projects to address logistics and last-mile delivery challenges.

Other tools developed within Cities4People include a Co-Creation Navigator, an online capacity-building tool that supports coordinators and/or initiators in setting up Citizen Mobility Labs; the C4P booklet, which provides a detailed overview of the prototyping processes undertaken in each of the Cities4People cities; and the C4P Assessment Framework, the first open evaluation standard in POTM research.

For its part, to support cities in replicating the MUV process in other settings, the project created the [MUVigator](#): an exhaustive and comprehensive online handbook that includes toolkits, best practices and guidelines on all aspects of the MUV game.

The combined experiences of SUNRISE's local action partners, city partners and various support partners were bundled in a [SUMP Topic Guide on Sustainable Neighbourhood Mobility Planning](#). The goal of this Topic Guide is to maximise synergies between city SUMP and neighbourhood-based planning. The Topic Guide pinpoints certain situations in which the alignment between citywide SUMP activities and neighbourhood-level activities makes most sense, and how such alignment can be achieved. If well-coordinated, SUMP activities can support actions at the neighbourhood level and ensure that local efforts are compatible with citywide goals and measures, while neighbourhood activities can test and introduce measures to be implemented in the entire city.

In addition to the Topic Guide, SUNRISE also developed other tools, kits and guides, including: the SUNRISE Pathfinder Tool, an online inventory of information that supports external parties with the setup of their own co-creation activities from the co-identification of problems and the co-validation of needs, to the co-development and co-selection of solutions, co-implementation of measures and co-evaluation of impacts; the SUNRISE eLearning Course, an interactive and self-paced e-course for policymakers and city administrations on how co-creation can be used to transform neighbourhoods; as well as the SUNRISE Communication Toolbox, a collection of co-creation tools, guidelines and methodologies to support co-creation event organisation and help co-creation stakeholders to analyse, articulate, reflect, learn and share.

### 4.3 Comparisons and evolution across projects

The four co-creation projects, referred to as ‘sister projects’ in this subsection, ran over the same period from 2017 to 2020 or 2021. The sister projects were able to cooperate closely from the start, and engaged in constructive exchanges of experiences throughout the project duration, despite each project dealing with a wide range of different mobility topics and themes. In addition, the MUV project identified a link with another European project discussed in this publication: EMPOWER (see chapter 6). MUV used insights from EMPOWER to learn more about the impact of various positive incentives on mobility behaviour.

Of course, Cities4People, MUV, SUNRISE and Metamorphosis all had their own unique co-creation approaches and ambitions. Likewise, every project involved different and dynamic local communities in neighbourhoods around Europe. Every project resulted in various sets of pilots, prototypes, and mobility measures. Whether or not these mobility measures became permanent depended on factors such as cost, impact and public acceptance. These factors were highly location- and context-dependent.

Yet, similarities can be found in the way they went about co-creating liveable neighbourhoods and in the takeaways they derived after project completion. Moreover, the sister projects jointly performed a series of activities. In terms of general communication, a specific Slack channel was set up to allow for fast and direct communication among the four projects. The projects organised common sessions during CIVITAS Forum events and, at the ‘Joint Neighbourhood Conference’, in October 2020, they joined forces to try to answer fundamental questions concerning ongoing and future mobility projects at the neighbourhood level. All of these joint project activities and exchanges led to the joint publication of a brochure mentioned above, entitled “Big Messages: Lessons for co-creative mobility initiatives in neighbourhoods”.

Most (if not all) of the four projects also observed that co-creation, citizen participation and crowdsourcing now solidly play a role in cities’ mobility planning. However, there is still plenty of room for co-creation approaches and methodologies to be used even more broadly and frequently.

### 4.4 Knowledge gaps and conclusions

In conclusion, Cities4People, MUV, SUNRISE, and METAMORPOSIS all contributed to co-creating liveable neighbourhoods by raising awareness about neighbourhood liveability and the value of co-creation, by implementing co-created mobility measures on the ground, and by disseminating co-creation best practices by developing tools, guides and kits that can be used by other cities and neighbourhoods across Europe.

Naturally, even after completion of the four projects mentioned in this chapter, some knowledge gaps regarding co-creating liveable neighbourhoods remain. These gaps are diverse. First, there are knowledge gaps on the part of citizens involved in co-creation. The term ‘mobility’, for example, is not always clearly defined and people have different views of what the term entails.

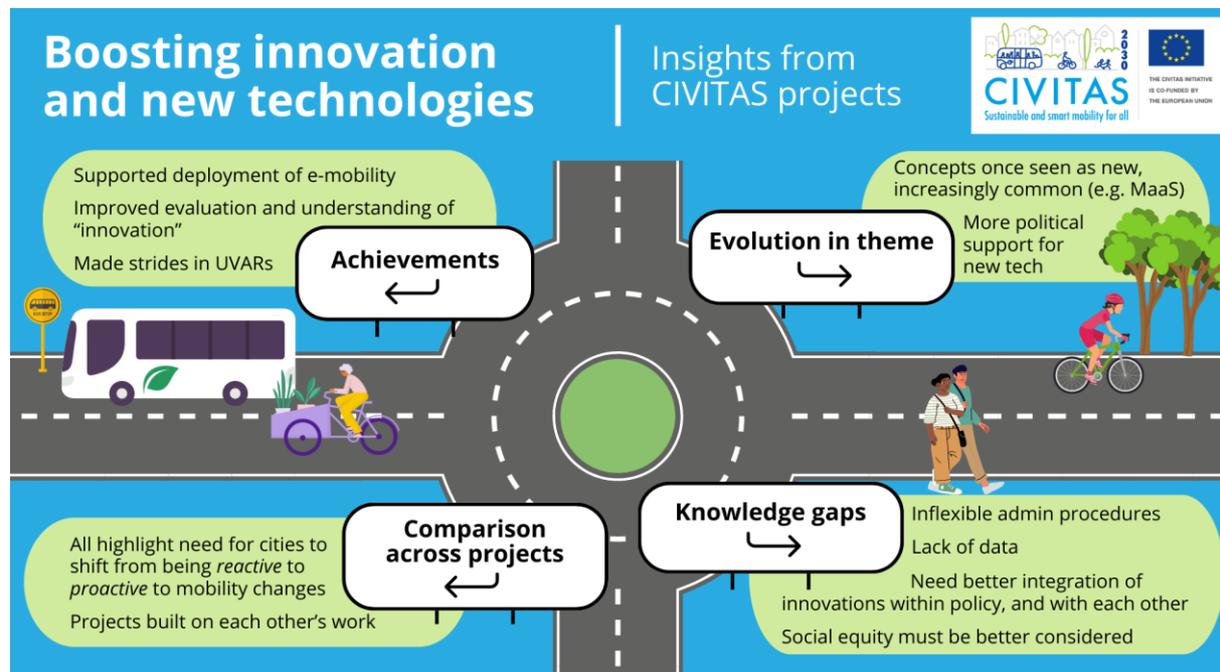
**Structural inclusion** is essential to keep co-creation processes running, especially in settings that do not have a tradition of public engagement, and in processes that also include co-implementation and co-evaluation.

**Upscaling** of pilots and prototypes is another challenge experienced by all four projects. Questions remain regarding how to understand why certain interventions were not successful or why certain outcomes did not materialise. In any case, it is almost impossible to significantly change mobility behaviour over the course of short-running co-creation projects, as the implementation of measures may not begin until years into the project.

For local governments, a gap remains between the outcomes of co-creation processes and the implementation of the co-created solutions. In particular when large data streams are involved, as in MUV, local governments do not always have the **expertise or resources to analyse and process all incoming data streams**, or they are bound by different regulatory regimes.

In addition, the presence of long-term SUMP's at the city level sometimes inhibits the implementation of neighbourhood-level interventions or innovations. A gap exists between these two levels, which should be better aligned. A SUMP Topic Guide on co-creation, which is not available today, might help in better achieving such alignment.

## 5 Boosting innovation and new technologies



**Figure 4:** Summary of the achievements, comparisons, evolution and knowledge gaps unearthed from evaluation of Cluster 3, as presented in this chapter.

Moving people in European cities is a continuous challenge – congestion, air quality, use of space, road safety and noise pollution are just a few of the many challenges that European cities are working to tackle. The recent pandemic and energy crisis have added to these. In this context, decision-makers and planners have to find smart and innovative ways to address challenges, while at the same time making access to mobility equal and affordable.

Many tools are now available to support cities faced with the above-mentioned challenges, including smart and connected mobility solutions, integrated mobility planning, clean vehicles, better public transport, new mobility services, urban vehicles access regulations, etc.

Cities are increasingly testing and implementing new mobility solutions. They have rapidly noticed that these innovative, new mobility answers can improve transportation options, while reducing their negative societal and environmental impacts. In other words, innovative mobility that applies technological advances to shift people’s travel patterns and behaviours, is an important tool to reduce energy consumption and to create sustainable transportation systems.

The CIVITAS Initiative has been shown to be a valuable instrument, helping cities in experimenting with innovative urban transport solutions. This led to interesting achievements and lessons learnt in boosting the roll-out and uptake of innovation and new technologies.

This chapter highlights the achievements and impacts of CIVITAS projects in the field of innovative urban transport solutions and new technologies. It considers the context of new EU strategies, such as the EU Urban Mobility Framework and the Smart and Sustainable Mobility Strategy. The achievements regarding innovative transport solutions and new technologies

mentioned below have been trialled in CIVITAS projects. They are inspiring and hopefully they will be continued in other projects and widely replicated in European cities.

## 5.1 Boosting innovation and new technologies in CIVITAS

The mobility landscape has fundamentally changed over the last ten years, certainly in terms of the potential for change resulting from the emergence of new enabling technologies (ICT, electric or driverless vehicles). Cities have also been growing, leading to more economic activity, but also to more congestion and pollution. While the situation facing urban planners has never been more challenging (with urbanisation, dominance of the private car, pollution, COVID-19, and now the energy crisis), there are, at the same time, real opportunities to push forward towards a new sustainable mobility landscape.

Conventional mobility solutions may have reached their limits, but innovation – including technological innovation – proposes new solutions and new ways to communicate with users, thereby optimising services. Across Europe, cities are becoming living laboratories that are developing and testing these new mobility solutions, ranging from soft mobility solutions to ride-hailing apps, hard infrastructure for self-charging vehicles, and much more.

Cities tend to agree that technological innovation should be at the service of a shift towards more sustainable modes of transport. Deploying and coordinating technological innovation remains a challenge though, and will certainly require new forms of policy processes, new governance mechanisms (including more public-private partnerships), and new forms of stakeholder collaboration.

This chapter presents the achievements and takeaways of six CIVITAS projects working on boosting innovation and uptake of new mobility technologies: ELIPTIC, MOMENTUM, MEISTER, GreenCharge, SPROUT and ReVeAL. The mobility challenges addressed by these six projects are representative of those of hundreds of cities across the continent. A detailed description of each project is provided in Annex I, while a summary is presented below.

### ELIPTIC – electrification of public transport in cities (06.2015–05.2018)

ELIPTIC focused on using existing electric public transport systems to support electrification of multimodal mobility approaches in urban, sub-urban, and less urban contexts. The overall concept and main assumption underpinning ELIPTIC is that further uptake of electric vehicles can be supported cost-efficiently by making existing electric public transport infrastructure fit for multi-purpose use. The project supported the uptake and exploitation of results by developing guidelines and tools for upgrading and regenerating electric public transport systems. ELIPTIC showed how costs and energy can be saved by electrifying public transport, and by optimising the use of existing infrastructure and rolling stock through developing new and innovative use concepts and business cases.

## MOMENTUM – modelling emerging transport solutions for urban mobility (05.2019–04.2022)

MOMENTUM developed new data analysis methods, transport models and planning support tools to capture the impact of new transport options on urban mobility and to support cities in the task of designing the right policy mix to exploit the full potential of emerging mobility solutions. Such solutions included technologies such as Mobility as a Service (MaaS), connected automated vehicles (CAVs), shared mobility services, and demand-responsive transport (DRT). MOMENTUM demonstrated the potential of newly developed methods and tools by testing the impact of a variety of policies and innovative transport services in diverse European cities, namely Madrid (ES), Thessaloniki (GR), Leuven (BE), and Regensburg (DE).

## MEISTER – making mobility environmentally-friendly, integrated and economically sustainable through innovative recharging infrastructure and new business models (09.2018–02.2022)

MEISTER delivered a set of tools to foster large scale adoption of e-mobility by demonstrating innovative, sustainable business models to: lower installation and operation costs of charging infrastructure; optimise usage of infrastructure via the smart combination of charging and parking services; integrate electric vehicles (EV) within urban SUMPs, including the establishment of EV sharing; and the inclusion of EVs within MaaS schemes to reduce CO<sub>2</sub> emissions and optimise urban space usage. The project also provided interoperable platforms and services to users for convenient and barrier-free access to charging, billing and smart grid services. The project prompted an increase in the use of renewable energy systems (RES) and self-generation to power EVs. Overall, MEISTER created the conditions for smart e-mobility market uptake in cities, by developing integrated approaches, smart solutions and innovative, sustainable business models, which were tested and validated in three urban areas: Malaga (ES), Berlin (DE), and Gothenburg (SE).

## GreenCharge – innovative business models, technologies and guidelines for cost efficient and successful deployment and operation of charging infrastructure for EVs (09.2018–02.2022)

GreenCharge empowered cities and municipalities to make the transition to zero emissions and sustainable mobility with innovative business models, technologies and guidelines for cost-efficient and successful deployment and operation of charging infrastructure for EVs. Inspired by ideas from the sharing economy, its business models focused on enabling the mutualisation of excess capacity of private RES, private charging facilities, and parked EVs' batteries, thereby leveraging fair gain sharing to ensure sufficient incentives for all stakeholders to participate. To demonstrate and evaluate the project's approach, pilots were carried out in Barcelona (ES), Bremen (DE), and Oslo (NO); pilots' results were extended using simulations to explore more complex scenarios and assess scalability.

## SPROUT – sustainable policy responses to urban mobility transition (09.2019–08.2022)

SPROUT provided new, city-led, innovative, and data-driven policy responses to address the impacts of emerging mobility patterns, digitally-enabled operating and business models, and transport users' needs. The project defined the impacts of transitions in urban mobility on sustainability and on policy. It then harnessed these impacts by cultivating city-led, innovative policy responses. The aim was to build cities' capacity to use data to identify, track and deploy innovative urban mobility solutions to help navigate future policy. To achieve its goals, SPROUT created an Open Innovation Community on Urban Mobility Policy, and employed six city pilots accompanied by seven validation cities, all exploring real-life policy challenges faced as a result of urban mobility transition in both passenger and freight transport.

## ReVeAL – regulating vehicle access for improved liveability (06.2019–11.2022)

ReVeAL aims to add urban vehicle access regulations (UVARs) to the standard range of urban mobility transition approaches used by cities across Europe. To this end, ReVeAL applies conceptual work and case study research, alongside hands-on UVAR implementation in six pilot cities. The project furthermore encourages systematic stakeholder interaction and has organised professional communication activities. Through this process, ReVeAL continues to extract lessons learnt to support the wider roll-out of smart UVAR approaches across Europe. The overarching mission of the project is to enable cities to optimise urban space and transport network usage through new and integrated packages of urban vehicle access policies and technologies. Such policies can lead to fewer emissions, less noise and improved accessibility and quality of life, which especially benefits the people living in these cities.

## 5.2 Main projects achievements

The main achievements of the ELIPTIC, MOMENTUM, MEISTER, GreenCharge, SPROUT and ReVeAL projects are summarised below.

This chapter zooms on innovations implemented by the projects on the ground – innovations that have had an impact and may continue to do so beyond the duration of the CIVITAS project in question. It also lists the key innovative tools, guides and kits that were developed within the projects and are now publicly available (or soon to be available), thereby enabling and fostering replication in other European cities.

When examined all together, the achievements of CIVITAS projects in this thematic clusters span three main areas: deploying e-mobility; defining and evaluation innovation; and regulating vehicle access.

## Deploying e-mobility solutions

Several CIVITAS e-mobility projects developed best practices and tools to boost the deployment and uptake of e-mobility solutions in cities.

MEISTER developed and successfully tested a Smart Charging and Storage Platform, to be used by vehicle-sharing companies and e-fleet managers in order to optimise activities related to smart charging and discharging of the EVs, while responding to the flexibility required by the grid. The project also developed an [Intelligent Billing & Roaming Platform](#) for e-mobility providers that enables easy, non-discriminatory, convenient and barrier-free access to EV charging and billing for end users in urban areas. Smart Park & Charge services were demonstrated and are ready to be integrated in commercial mobility apps. Other cities could also benefit from the MEISTER Integrated Real-Time Information & Booking Services. MEISTER also created the [European eMobility Expertise Centre \(EeMEC\)](#) – a non-profit centre that facilitates the transfer of e-mobility best practices among cities (technical, legal and financial support centre).

MEISTER tested business models – for example, it demonstrated the viability of e-car sharing in Malaga’s municipal fleet, and the viability of e-car sharing as a housing service in Berlin. EV offers in pilot cities continue beyond the project, and learnings from the project are likely to be replicated in other city councils.

A key achievement of MEISTER is that it has provided evidence for setting environmental requirements in the procurement of private homecare services. Thanks to this new requirement, Stockholm anticipates a high-paced electrification of the municipal fleet – and of the transport sector in general – in the next few years.

The long-term impact of GreenCharge should be facilitating a substantial shift toward the use of e-mobility in a way that maximises use of green energy. GreenCharge provided user-friendly charging planning, booking and billing services, which reduced the need for grid investments to establish new charging stations, removed range anxiety, and enabled the sharing of existing dedicated charging facilities for EV fleets. To implement the technology, the project integrated and extended existing systems. Pilots tested the GreenCharge approach, and guidelines synthesise recommendations from pilots’ experiences and simulations into advice on localisation of charging points, grid investment reductions, and policy and public communication measures for accelerating uptake of electromobility.

MOMENTUM also developed new transport simulation and decision support tools for urban mobility planning, enabling local stakeholders to properly consider the impact of new transport technologies. It delivered a set of data-driven predictive models to assess the adoption and usage patterns of new mobility options, as a function of different socio-demographic and behavioural variables. These tools can support boosting roll-out of EVs.

Another key achievement in deploying e-mobility systems is ELIPTIC’s work demonstrating that further uptake of electric vehicles can be supported cost-efficiently by adapting existing electric public transport infrastructure for multi-purpose use. This was achieved by developing new and innovative use concepts and business cases across three thematic pillars: the safe integration of e-buses using existing electric public transport infrastructure; innovative energy storage systems for rail to increase operational efficiency; and multi-purpose use of electric public transport infrastructure. The project developed guidelines and tools for upgrading and

regenerating electric public transport systems, and advocated for an electric public transport sector at the political level, growing political support across Europe.

Results from the ELIPTIC use cases were incorporated into the E-Bus Decision Support Tool, which enables the comparison of ELIPTIC use cases to local circumstances. The tool allows interested public transport authorities and operators to compare their own local parameters (e.g. city size, (electric) fleet, infrastructure etc.) to 150 use cases from ELIPTIC and other EU projects. This should help public transport operators to find the best strategy options for their transition to a fully clean fleet, and to determine which technology is appropriate in their respective situation based on their operational profiles and specific city contexts.

Another main achievement of the ELIPTIC project was the so called ELIPTIC Factor 100 campaign. The campaign drew attention to the fact that the electrification of one public transport bus (articulated, 18m) has similar environmental impacts as the electrification of 100 cars. ELIPTIC partners Barcelona and Bremen were among the first cities in Europe to demonstrate 18m battery buses, providing valuable data and experiences for the electrification of high-capacity buses.

Results from the ELIPTIC project show that using the public transport grid as a source of electricity to charge other electric vehicles can be the most economic option – doing so is often significantly cheaper than using electricity from the public grid. Results also show that the multi-purpose use of public transport infrastructure is technically feasible and was even demonstrated successfully in several ELIPTIC cities. Automated wiring technology is promising, as it will make trolley-battery-hybrid bus systems even more flexible, being able to connect to the wires at any spot in the trolleybus network to enable charge-in-motion concepts. All public transport operators that have been involved in ELIPTIC have ambitious plans to continue on their way towards full electrification of their fleets.

## Defining and evaluating innovation

One of SPROUT's main achievements was crafting a new definition of an “innovative urban mobility ecosystem”, with private and public partners driving innovation. SPROUT also developed an Evaluation Framework to speed up policy definition when introducing new mobility solutions in a city. In addition, the project developed an innovation readiness index that indicates cities' strong and weak points. SPROUT also dynamically measured the impact of innovative policy response on the urban mobility system of cities using a so-called “system's dynamics” approach. To support urban planners and decision-makers in anticipating future urban mobility environment transformations, the project developed a data-driven approach to scanning for weak signals (early indicators) of emerging urban mobility changes. This acts as a triggering mechanism for cities to review their policies when changes in urban mobility are detected, and apply corrective medium- and long-term measures.

Finally, the SPROUT project established a new form of cooperation among stakeholders in pilot cities through the implementation of local innovation forums, which worked on answering the question: *what is innovation?*

To help cities to design policies that exploit the full potential of emerging mobility solutions like MaaS, CAVs, and DRT, MOMENTUM developed new transport simulation and decision support tools for urban mobility planning, able to properly consider the impact of new transport

technologies. The project also delivered new data analysis methods and transport models that capture the impact of new transport options on the urban mobility ecosystem. These tools and techniques were tested in Leuven, Madrid, Regensburg and Thessaloniki. MOMENTUM advanced the state-of-the-art in modelling new transport solutions, and in the analysis of travel behaviour. They did so by combining data fusion and machine learning techniques to extract mobility patterns from heterogeneous and sparse data sources, all in order to identify possible explanatory variables for the extracted mobility behaviours. Their new data collection methods, models, decision support tools and policy recommendations empower cities to formulate more flexible and resilient policies that perform well under a range of fast-changing, uncertain scenarios. User-friendly decision support tools help to facilitate impact assessment and comparison of the different alternative policies. To this end, the project produced a set of guidelines for the use of these solutions in the elaboration and implementation of SUMP.

The data collection and analysis techniques developed by MOMENTUM resulted in the availability of better mobility and travel demand information at a fraction of the cost required by traditional methods. The possibility to monitor mobility on a continuous basis in an affordable manner will enable the early detection of changes in mobility patterns and the update and recalibration of transport models on a more frequent basis, leading to more reactive, adaptive, efficient and resilient policies. This is of particular importance in light of the COVID-19 pandemic, throughout which exceptional policy measures, such as limiting mobility or banning certain transport modes, had to be put in place. Some of the main results produced by the project have also been integrated into the SUMP Topic Guide on Resilient Cities.

As for GreenCharge, it successfully led to the development of a Reference Architecture, setting a new standard in the domain of smart charging. The project also convincingly demonstrated the pros and cons of a variety of e-mobility scenarios, from technical, usability and business perspectives.

## Regulating vehicle access

Thanks to ReVeAL, six pilot cities started re-thinking the Urban Vehicle Access Regulation (UVAR) concept they wanted in their city. They found that analysing local the UVAR situation and expectations could lead to opening up new avenues for UVAR development. For instance, the final scheme developed by Vitoria-Gasteiz ended up being quite different from their original concept – and the new version has been the most successful UVAR implementation recorded in the city. ReVeAL pilots produced new, practice-based knowledge related to various forms of access regulations (e.g. Zero Emission Zones, superblocks, etc.) that are being studied with respect to governance, user needs, mobility concepts and technologies.

ReVeAL has also developed two decision support tools so far. The [ReVeAL Readiness Assessment Tool](#) identifies potential barriers and drivers for UVAR development through a questionnaire that captures key facts about the existing mobility culture, available transport services, IT and ITS legacy systems, and legal and regulatory frameworks. The [ReVeAL Process Advisor](#) supports the design of access regulation schemes based on envisaged objectives, impacts, and transition status as reported in the Readiness Assessment.

Thanks to CIVITAS and the ReVeAL project, knowledge has been improved on how current mobility transitions affect UVAR implementation. In addition, a global agenda for UVAR implementation has been launched.

### 5.3 Comparisons and evolution across projects

Over the past years, the mobility landscape has evolved rapidly. The terms “autonomous vehicles,” “self-driving cars,” “on-demand mobility,” “Mobility as a Service” and “shared mobility” recently began appearing in the media, driven by news from car makers, technology companies, industry partners, and government agencies. These have had major impacts on transport projects, including CIVITAS projects, which have embraced these new technologies. The pandemic also ushered in a period of great transition – which often leads to innovation.

CIVITAS has helped cities envision innovative mobility solutions and put them in motion. The Initiative and its projects have, furthermore, helped build political support for this work. ELIPTIC, for instance, advocated for an electric public transport sector at the political level and helped develop political support for the electrification of public transport across Europe.

In practice, all six projects highlighted in this chapter noted the need for cities to shift from being *reactive* to being *proactive* in the facing of mobility changes. Cities need to identify early indicators of change and develop a proactive stance towards new transitions. Fortunately, tools, transition frameworks, and resources developed by the six projects can help local authorities to do just that.

Projects within this cluster complement each other. The six projects shared many of their lessons with sister or similar projects. For example, MEISTER and GreenCharge exchanged insights on e-mobility, learning about new e-mobility app functionalities from each other. Newer e-mobility projects are now applying lessons from MEISTER, which recommended that new projects allow for more flexibility to add pricing mechanisms, integrate blockchain, logistics models, etc. ReVeAL also has a strong connection with the newer UVAR Box project; the ReVeAL transition framework could be applied to the next generation of UVAR projects.

### 5.4 Knowledge gaps and conclusions

During and after the completion of the six projects, some knowledge gaps were identified.

While introducing new innovations and/or technologies, some **city administrations were hindered by a lack of flexibility** in internal administrative procedures. This led to delays in the implementation process of their respective projects.

Involving the private sector, including transport operators, can help face this challenge, speeding up the implementation and deployment of new solutions. Private partnerships can facilitate the next wave of electrification in cities, as has been demonstrated, for example, within ELIPTIC.

A **lack of data** has been reported as a major knowledge gap by several CIVITAS projects. For SPROUT, available data was not sufficient to measure the impact of pilots. Project partners noted that it is important to secure the availability of data right at the beginning of the project, e.g. through agreements with private partners.

For ReVeAL and MEISTER, collecting data from cities and being able to provide evidence of impacts has also proven challenging. Specifically, it made it difficult to translate results into policy proposals for decision-makers. To increase data availability, impact assessment must be considered at the very beginning of the project, thereby ensuring that necessary data collection is built in as a key project component.

MEISTER also concluded that clearer upfront commitments from private stakeholders to share data is recommended – in their case, private logistics operators reluctant to share data had an impact on measure implementation. Involving private stakeholders as full project partners can significantly help with ensuring data can be collected, and impact can be measured.

SPROUT also noted the need to ensure data collection is made easy and user-friendly. The project realised that it designed questionnaires and surveys that were overly complicated and detailed. Keeping it simple should be the rule. Making more use of new methodologies and tools like the ones developed within MOMENTUM also has the potential to help cities assess mobility measures and support mobility planning.

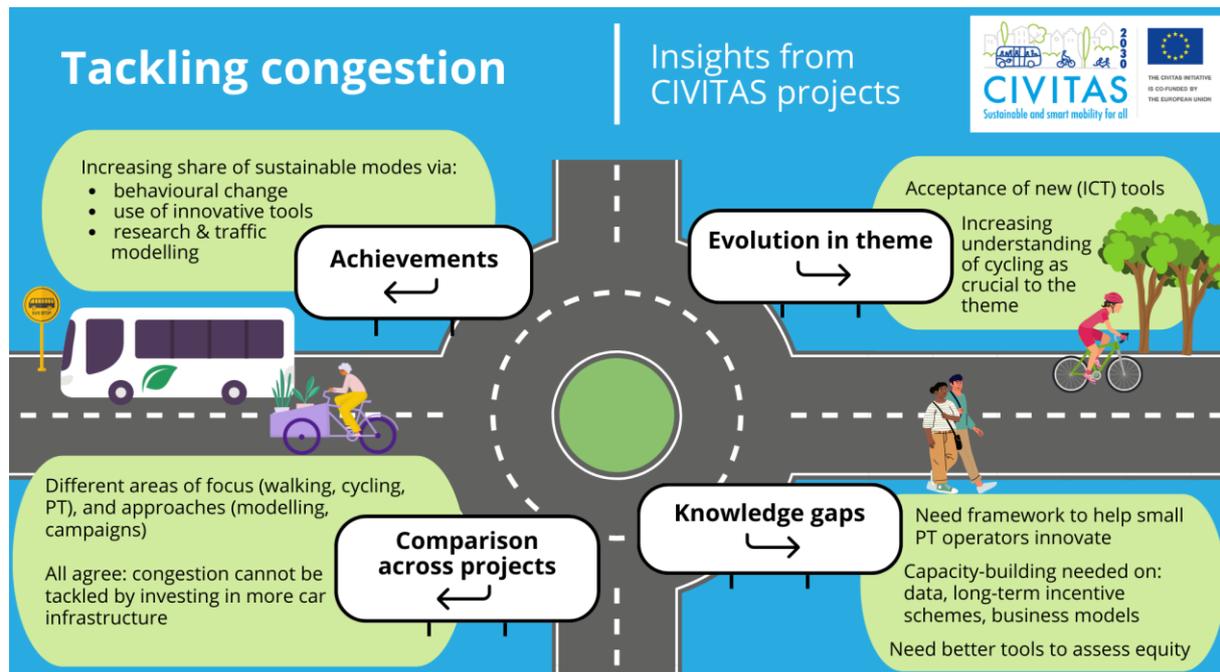
One of the central lessons of ELIPTIC is that **existing electric infrastructure** for public transport can facilitate the next wave of electrification, public and private, in cities. While it is likely that full electrification will require the integration of a variety of power networks, a necessary first step can be taken using the installed capacity already in place.

Several projects reported issues around the **integration** of innovations, e.g. integration into policy and into other technologies. In fact, not only did the projects find that innovations should be better integrated, but they also found that, in some cases, work could be better integrated within project consortia and among sister projects.

Having the city's **political commitment** is essential and helps overcome barriers. This has been the experience of many projects, including SPROUT – even in the face of the COVID-19 pandemic, cooperation with Chinese partners stayed strong thanks to political commitment from both European and Chinese political leaders. UVARs can be politically-sensitive measures, and thus ReVeAL also underlined the importance of high-level commitment from cities.

Finally, it proved important to take a holistic view of mobility projects and their work, including taking **equity** into account from the beginning of the project. The implementation of UVARs, for example, demands taking social inequities and realities into account. Avoiding or omitting to do so can open the door to (often highly justified!) public criticism.

## 6 Tackling congestion



**Figure 5:** Summary of the achievements, comparisons, evolution and knowledge gaps unearthed from evaluation of Cluster 4, as presented in this chapter.

Congestion is both a physical and relative phenomenon. Vehicles literally impede each other as limited road space approaches full capacity, and users experience road systems as underperforming relative to their expectations. This makes it difficult to come up with a clear definition of congestion, including an exhaustive list of actions to tackle congestion, and to propose a single or simple measure of congestion. The most common indicator of traffic congestion is the ratio between the average speed in free-flow conditions and those observed at different times of day, expressed as an increase in average travel time (in absolute terms or as a percentage).

Congestion is one of the major problems arising from the growing levels of car use – alongside air and noise pollution, traffic accidents, wasted time and overall quality of life in cities. Still, this does not show the whole picture. Congestion can also be regarded as a sign of successful economic development, and that scarce space has been rationed to allow users to reach desired goals in crowded urban areas.

Policies aim to address congestion by setting out to provide better modal alternatives to cars, and limiting car use. Attempts to reduce congestion by offering more road capacity actually tend to trigger *more* motorised transport (i.e. induced demand) and thereby generate further congestion. By contrast, “push measures” – like reducing road capacity – eventually lead to less congestion in the long run, by incentivising a modal shift towards walking, cycling and use of public transport (PT).

## 6.1 Tackling congestion in CIVITAS

As a term, tackling congestion covers a lot of ground and activities. It spans push and pull measures, infrastructural measures and campaigns.

Over the years, five projects with a particular focus on tackling congesting have been executed within the CIVITAS framework: CIPTEC, CREATE, EMPOWER, FLOW and TRACE. These five projects illustrate the diversity of approaches to tackling congestion – all have in common that they aim to increase the modal share of sustainable modes.

Here, a short description of each project is provided. For more detailed information about the projects listed below, see Annex I.

### CIPTEC – using collective innovation to improve public transport (05.2015–04.2018)

CIPTEC sought to increase the modal share of PT by better understanding and attracting new users at as low a cost as possible. It did so by developing and utilising modern marketing techniques and promoting creativity and innovation to encourage the desired modal shift. This was done with the support of market research of user groups and collective innovation. CIPTEC also examined PT from the supply perspective, shedding light on the challenges faced by PT providers. To tackle these, the CIPTEC Toolbox for Public Transport Innovation was produced. This helped operators and policymakers understand their situation, identify applicable solutions, and implement these.

### CREATE – reducing traffic to create place-based cities (06.2015–06.2018)

CREATE aimed to cut road congestion in cities by encouraging a switch from cars to sustainable modes of transport. The project studied how five cities in Western Europe – namely, Berlin (DE), Copenhagen (DK), London (UK), Paris (FR) and Vienna (AT) – have tackled growing car use and congestion over the past 50-60 years. The lessons learnt were then used to support five growing urban economies in the cities of Amman (JO), Adana (TR), Bucharest (RO), Skopje (MK), and Tallinn (EE). CREATE carried out quantitative analysis of trends in car use and influencing factors, along with qualitative studies of governance facilitators and constraints. It looked at scheme funding, modelling and appraisal issues. The project also identified future challenges and opportunities for urban mobility.

### EMPOWER – rewarding change in travel behaviour (05.2015–04.2018)

EMPOWER researched how positive incentives can encourage members of the public to reconsider their travel choices and reduce the extent to which they travel using conventionally fuelled vehicles (CFV). Living Labs utilised incentives such as information, points, discounts, rewards, community support and games to help attract new users to use sustainable modes of travel. The project investigated how to substantially reduce the use of CFV in cities by influencing mobility behaviour towards fundamental change. The project's goal was not only

to shift trips to more sustainable vehicle types, but also to promote sharing and self-organisation to reduce demand overall.

### FLOW – walking and cycling as tools to take on congestion (05.2015–04.2018)

FLOW aimed to put walking and cycling on an equal footing with motorised modes as a solution to tackle urban congestion. This was supported by developing a user-friendly methodology, involving traffic modelling, to assess the effectiveness of walking and cycling measures. The project took a trans-disciplinary approach to congestion reduction, and aimed to create and implement a new state-of-the-art by integrating the FLOW methodology and congestion assessment tools into current standard transport impact analysis processes.

### TRACE – using tracking tools to encourage active mobility (06.2015–05.2018)

The TRACE project assessed the potential of movement tracking services to better plan and promote walking and cycling in cities, and developed tracking tools to drive the uptake of walking and cycling measures. The project looked at measures to promote cycling and walking to work and school, for shopping, and for leisure. More specifically, TRACE assessed the potential of ICT-based tracking services to optimise the planning and implementation of such measures and enhance their attractiveness and potential impact. TRACE tested its tools in eight pilot sites. Their impact, the associated user benefits, and success factors were analysed in preparation of commercial exploitation.

## 6.2 Main project achievements

The main outcomes of the CIPTEC, CREATE, EMPOWER, FLOW and TRACE projects are summarised based on three common achievements: increasing the share of sustainable modes through behavioural change; increasing the share of sustainable modes through the use of innovative tools; and increasing the share of sustainable modes through research and traffic modelling.

This chapter will zoom in on achievements, actions and toolkits produced by the projects in these three areas.

### Increasing the share of sustainable modes through behavioural change

CIPTEC and TRACE increased the share of sustainable modes through behavioural change activities. These projects focused on behavioural change activities to increase the share of public transport (CIPTEC), and of cycling and walking (TRACE).

Behavioural insights obtained in the CIPTEC project were tested theoretically (attitudes, stated preferences), and in the field, thus taking into account that preferences and attitudes can often be poor predictors of behaviour. To this end, CIPTEC tested the potential of social labelling to increase people's actual use of the bus in two areas.

TRACE developed different types of innovative tracking tools to change behaviour towards sustainable modes of transport. To implement these tools, the project also assessed the potential of, and conditions for, use of (mobile phone) applications to incentivise behaviour change. Based on this work, a TRACE Toolkit and set of recommendations were developed on tracking walking and cycling for mobility planning and behaviour change initiatives.

### Increasing the share of sustainable modes through the use of innovative tools

CIPTEC, EMPOWER, and TRACE managed to increase the share of sustainable modes through the use of innovative tools. They developed and used innovative tools to increase the share of public transport (CIPTEC), cycling and walking (TRACE), or both (EMPOWER).

During the second half of the CIPTEC project, innovative concepts in the public transport sector were developed by collective intelligence, such as crowdsourcing campaigns and co-creation workshops, as well as via the implementation of advanced marketing research methods. Advanced marketing research was then used to rank the innovations and identify hidden groups of PT users. The top-scoring innovative concept [according to the CIPTEC ranking](#) was “Paperless Payment of Travel” (e-ticketing),

EMPOWER identified and explored so-called ‘success factors for social innovation implementation’, to identify success and failure factors when implementing socially innovative transport measures. The success and failure factors that were identified provide information and guidance for the design of future transport schemes.

This work informed an EMPOWER Toolkit to support industry, policy makers and employers to understand, choose and implement positive policy interventions. This Toolkit presents case studies, techniques and guidelines for positive interventions that are designed to reduce travellers’ CFV use and that encourage travellers to choose alternatives over CFVs. It synthesises evidence on positive interventions to make them easier to navigate, characterises necessary skills among transport stakeholders rolling-out socially innovative interventions, and presents ways to disseminate intervention information.

TRACE assessed the potential of ICT-based tracking services to optimise the planning and implementation of walking and cycling measures, and to enhance their attractiveness and potential impact. The project improved and delivered new applications that support changing incentives faced by travellers, and the need to provide sensible information for planners seeking to improve cycling and walking conditions.

More specifically, TRACE developed three innovative apps. First, the [Traffic Snake Game](#) encouraged primary school children to travel more sustainably to school – each day they did so, the children were invited to put a sticker on a snake banner. TRACE adapted this existing campaign to integrate a tracking element. Second, the [Positive Drive](#) app used gamification to give users direct feedback, rewarding sustainable transport choices, and enabling participants to share rewards via social media. Last, the [Biklio](#) app detected if users travelled to participating local businesses by bicycle. If they did, they received a reward for doing so; a map showed which businesses were participating and the incentives they offered.

These applications were launched among end-users in eight pilots that delivered knowledge on practical, real-world performance of the applications. Experience gathered in the roll-out of

TRACE apps and tools provided insights on potential business models for entities (e.g. SMEs) willing to exploit the market potential of these types of applications.

Ensuring these innovative applications and tools reached beyond those directly involved in the project required appropriate dissemination and exploitation efforts, supported by tailored communication activities. This tailor-made approach ensured that innovations reached and engaged stakeholders and target groups.

## Increasing the share of sustainable modes through research and traffic modelling

CIPTEC, CREATE, and FLOW developed and used research and traffic modelling to increase the share of public transport (CIPTEC), cycling and walking (FLOW), or both (CREATE).

During the first phase of the CIPTEC project, analysis was conducted of current market and social trends that might influence public transport. The project then investigated the specific needs of users and potential users of PT systems via a rigorous and in-depth review of literature on different PT customers groups. The analysis was complemented by mapping and profiling urban PT supply. Ultimately CIPTEC designed a Toolbox for Public Transport Innovation, and investigated the potential of social entrepreneurship in the PT sector through special workshops with experts in the field.

CREATE analysed congestion and network performance data provided by a statistics company and by five Western European cities. In addition, CREATE used detailed household travel data from repeat surveys in the five cities, which had been conducted since the 1970s or 1980s, as well as complementary data on network, economic and demographic conditions, and analysis of documents setting out historical policy development. Based on the above analysis, detailed guidance and training for the CREATE Central and Eastern European (CEE) cities was developed and delivered to an even larger set of cities. CREATE also invested in working with leading technology providers, businesses, and futurists, to explore what options exist to provide high quality mobility in cities facing increasing population and employment.

Ultimately, this work resulted in five main outputs or interventions. A framework was created to explore policy evolution and to conduct benchmarking for cities with respect to their dominant policy perspectives. A critical understanding of the strengths and weaknesses of different methods of measuring congestion and network performance was developed, as well as on how these can distort policy making, leading to fresh insights into better problem diagnosis and objective setting. Insights were provided to policy makers on the roles of policy, demography and economy on levels of car use, which helped policy makers to better understand the key role of legislation, administration and funding arrangements in delivering sustainable policies. Insights were collected on ways to fund and finance sustainable policies, alongside pointers on adapting forecasting and appraisal methods. Finally, guidelines were developed to assist cities in applying the CREATE principles.

For its part, FLOW helped cities better assess the transport impacts of walking and cycling measures, so that the congestion reduction benefits of such projects could be understood and conveyed. FLOW investigated the definition of congestion, technical methods for assessing transport network quality with respect to congestion, and the transport impact analysis process. FLOW developed methods to improve the ability of transport analysis tools to assess the

impacts of walking and cycling measures. Concretely, FLOW developed calculations for assessing different aspects of transport network quality, a comprehensive impact assessment tool, and improved existing transport modelling software.

In general, FLOW refined micro- and macro-transport modelling. It enhanced modelling of conflict zones between cars and pedestrians, behaviour parameters, new mobility patterns, the interaction between bikes and pedestrians and shared space (micro). And, FLOW improved path-level attributes in stochastic assignment of bicycles, created a modelling platform to combine two legs of a journey using different transport modes, and enhanced representation of mobility sharing in public transport assignment.

The FLOW Impact Assessment Tool was also developed to ensure that transport decision making considers environmental, societal and economic impacts of a proposed measure in addition to mobility impacts. The spreadsheet-based tool can be used to evaluate the impacts of a proposed transport measure by comparing data before and after implementation.

Overall though, one of the project's most important contributions has been simply highlighting the need to improve transport models to better consider walking and cycling.

### 6.3 Comparisons and evolution across projects

This cluster comprises a diversity of projects, all aimed at tackling congestion by increasing the share of sustainable modes. The projects' content ranges from a strong focus on a modal shift to walking, cycling or PT; to testing behavioural change methods; to research on congestion and tackling congestion; and to the development of adapted traffic models that consider the impact of measures to promote cycling and walking on congestion. The difference between the projects lies in their areas of focus, and in the approach employed – whether modelling, research or campaigns.

The common thread between the five projects is the shared idea that tackling the problem of congestion cannot be done by investing in additional car infrastructure. All projects are convinced that tackling the problem of traffic jams must be done by increasing the share of sustainable alternatives to the car (and thus reducing the share of the car). The achievements of the CIVITAS projects in tackling congestion are therefore all in this context and focus on increasing the use of sustainable modes.

Since the end of these projects, a greater degree of acceptance and understanding of ICT tools has been noted. Some approaches that were new at the time of the projects, are now much more mainstream.

Tackling congestion involves investigating and implementing PT and cycling measures. Today, the whole PT sector is undergoing a transformation more widely (e.g. micromobility, MaaS), which must be considered as part of congestion reduction. Plus, nowadays, cycling is much more accepted in the EU. When these CIVITAS projects were being rolled-out, around 2015–2018, cycling was still seen as 'nice to have' and not as a key component of tackling congestion. At the time, cities were not as often adequately considering active transport in this equation. This has changed and cycling is gaining importance.

## 6.4 Knowledge gaps and conclusions

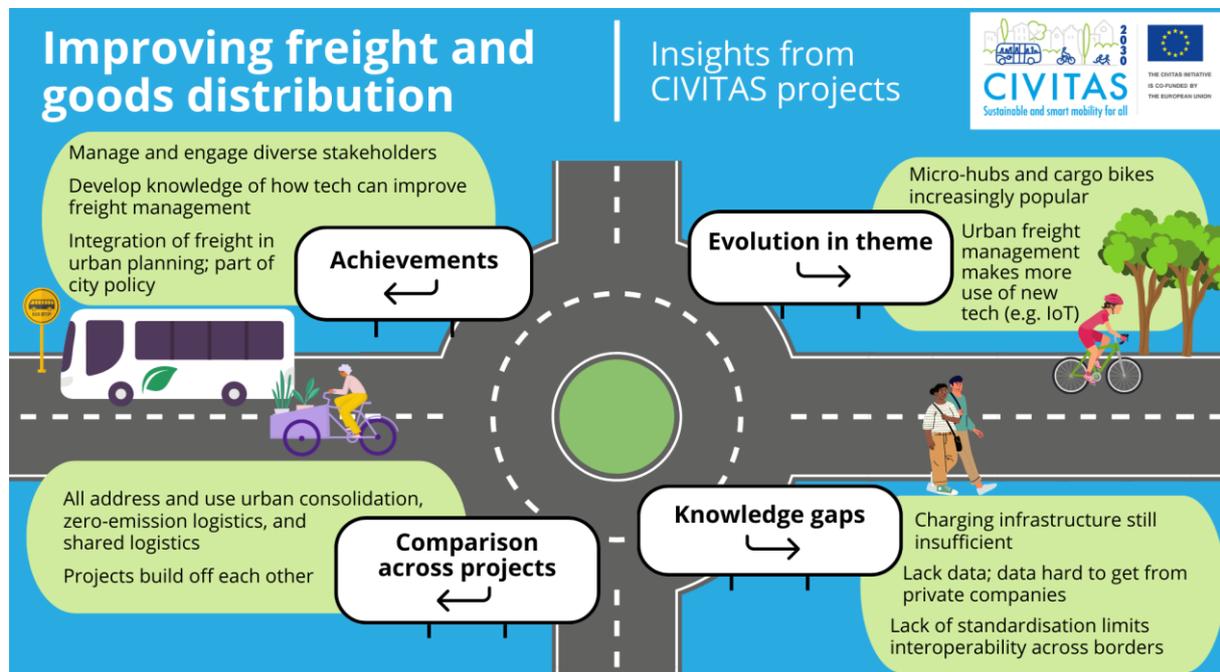
While there have been great advances in this field's evolution over the past few years, some knowledge gaps remain.

There remains a need for a **framework to help small and medium PT operators to innovate**. Furthermore, PT operators in the EU have very different capacities and mandates, which poses a challenge for project implementation and creation of generalisable tools.

This relates to an overarching gap – namely, challenges related to **staff knowledge and capacity**. For example, most cities lack the skills and capacity to use all the micro-data collected about congestion and urban mobility systems. And, there remains a lack of capacity to make incentive schemes long-term. Plus, staff need capacity building on how to understand business models and marketing methods to reduce congestion.

Questions remain regarding the ethics of influencing behaviour. Projects also expressed a need for more knowledge on defining vulnerable groups, assessing impacts of measures on these groups in particular, and assessing **equity** of congestion reduction measures.

# 7 Improving freight management and goods distribution



**Figure 6:** Summary of the achievements, comparisons, evolution and knowledge gaps unearthed from evaluation of Cluster 5, as presented in this chapter.

In the move towards creating more liveable cities, traditional urban logistics is often spot-lit as hindering liveability. This is mainly due to the size of vehicles used for urban freight, and to their pollution, traffic and noise levels. Additional trends such as urbanisation and e-commerce growth have led to increased logistics movements in cities, bringing attention to an area that tends to be neglected in mobility planning.

CIVITAS initiatives focusing on freight sought to test freight innovations and advise local authorities on how to best implement these innovations through the use of urban planning, living labs, as well as digital resources.

This chapter highlights CIVITAS projects' efforts to make urban freight sustainable, using towards zero-emission transport concepts, living labs, sharing concepts, as well as consolidation centres.

## 7.1 Improving freight management and distribution in CIVITAS

CIVITAS projects in the urban freight sector mitigate the risks involved with traditional urban logistics, promote the use of cleaner freight vehicles, seek ways to distribute goods more efficiently, and engage relevant stakeholders in decision making. This is done by testing freight management innovations and advising stakeholders, including local authorities, on how to best implement these innovations through the use of urban planning.

Ten freight management and good distribution projects are explored in this chapter. They are briefly described below; for more detailed information about the projects, see Annex I.

### **SUCCESS – sustainable logistics solutions in the construction industry (05.2015–04.2018)**

The SUCCESS project delved into construction consolidation centres and their impact on improving city logistics, waste movement, and service trips in EU cities. This was done by examining the feasibility of consolidating construction material deliveries and using zero emission vehicles for the delivery of construction materials in four labs across the EU. The project explored and tested green and efficient solutions covering various issues in the construction supply chain, and in material freight logistics in urban areas. SUCCESS developed simulation tools to play out several scenarios focusing on the implementation of Construction Consolidation Centres (CCCs) at four pilot sites.

### **CITYLAB – city logistics in living laboratories (05.2015–04.2018)**

The CITYLAB project developed knowledge and solutions that resulted in the roll-out, scaling up and further uptake of cost-effective strategies, measures and tools for zero-emission city logistics. In seven Living Labs, promising logistics concepts were implemented, tested and evaluated, and the potential for further roll-out and upscaling of the solutions was investigated. The focus of these living labs was to mitigate the harmful effects of discrete last-mile deliveries in city centres, as well as the inefficient execution of large deliveries, urban waste, return trips, recycling and logistics sprawl.

### **NOVELOG – new cooperative business models and guidance for sustainable city logistics (06.2015–05.2018)**

NOVELOG provided guidance to 12 cities on the creation of sustainable urban freight transportation and the implementation of effective and sustainable policies and measures. This guidance focused on the efficiency of goods vehicle routing, good governance and stakeholder cooperation, cost-effective measures, sustainable business models for urban logistics, and the development, field testing and transfer of best practices in governance and business models. NOVELOG focused on the targeted understanding of urban freight and service trips, field testing and implementation of city logistics measures, and the development of a modular, integrated evaluation framework for the assessment of these measures.

### **U-TURN – rethinking urban transportation through advanced tools and supply chain collaboration (06.2015–05.2018)**

The U-TURN project sought to tackle particular problems associated with urban food transportation, including congestion, increased use of convenience stores, and a rise in home deliveries of food ordered online. With shared logistics as its base operating principle, U-TURN sought to establish more efficient and sustainable distribution models for food by conducting

three pilot initiatives focusing on the use of urban consolidation centres, sharing logistics concepts, and micro-hubs for food delivery.

### **ECCENTRIC – innovative solutions for sustainable mobility of people in suburban city districts and emission-free freight logistics in urban centres (09.2016–11.2020)**

ECCENTRIC explored innovative freight logistics geared towards communities living in peripheral areas of cities. This was particularly done through the lens of inclusivity and stakeholder engagement in urban planning. ECCENTRIC resulted in the trial of consolidation centres on city outskirts, timed deliveries, and using electric vehicles to reduce traffic, energy consumption and emissions. ECCENTRIC demonstrated and tested the potential and replicability of integrated and inclusive urban planning approaches, innovative policies and emerging technologies to reach sustainable urban mobility objectives. The solutions were implemented in five living laboratory areas in outskirts that face high population growth and an increasing pressure on existing transport networks.

### **PORTIS – port cities integrating sustainability (09.2016–11.2020)**

Recognising the impacts that freight has on congestion in ports and port cities, PORTIS sought to optimise city-port logistic flows through the design, implementation and assessment of innovative mobility measures, including live optimised routing, timed access control, and clean vehicle technology. PORTIS worked with five major port cities located along the North Sea, Mediterranean Sea, Black Sea, and Baltic Sea. Thanks to the project, partner cities proved that more efficient and sustainable mobility is conducive to the establishment of vital and multi-modal hubs for urban, regional, national and international movements of passengers and goods. Partner cities established integrated living laboratories clustering local measures according to four major aspects of sustainable urban mobility: governance, people, transport systems, and goods.

### **CityChangerCargoBike (CCCB) – application of cargo bikes in urban areas (09.2018–07.2022)**

The CCCB project aimed to increase the uptake of cargo bikes by offering workshops for various stakeholders from the public and private sector in order to create awareness around the use of cargo bikes as a low-barrier-to-entry, zero-emission alternative to traditionally-fuelled delivery vehicles. Building on the success of previous projects, CCCB exploited the limitless potential of cargo bikes, promoting their usage amongst public, private, and commercial users. The project assessed best practices across Europe, raised awareness, and supported the uptake of cargo bikes and cargo bike initiatives. In doing so, and by consulting citizens, the project led to more sustainable logistics operations, improved public spaces, and reduction of traffic congestion.

## LEAD – low-emission, adaptive last mile logistics supporting the ‘on-demand economy’ through digital twins (06.2020–05.2023)

The LEAD project is designing “digital twins” – i.e. dynamic digital representations of real systems – to support urban logistics experimentation and decision making in public-private urban settings. The project’s long-term goal is to develop an open, physical, internet-inspired framework for smart city logistics. LEAD’s digital twins represent urban logistics networks in six cities along the TEN-T network; this enables testing on-demand economy concepts that will lead to the development of solutions for shared, connected, and low-emission logistics operations, empowered by an adaptive modelling approach. Innovative solutions for city logistics will be represented by a set of value case scenarios, which address requirements of the on-demand economy, while aligning competing interests and creating value for all different stakeholders.

## ULaaS – urban logistics as an on-demand service (09.2020–02.2024)

ULaaS supports the development of innovative, zero-emission, shared, on-demand logistics to help cities develop SUMP that integrate cooperative and sustainable urban logistics. This is accomplished via the development and implementation of five business models for clean last mile logistics. ULaaS uses a combination of innovative technological solutions (vehicles, equipment and infrastructure), new schemes for horizontal collaboration (driven by the sharing economy), policy measures, and interventions as catalysers of a systemic change in urban and peri-urban service infrastructure. The project will deliver a novel framework that aligns industry, market and government needs to support urban logistics, and will create favourable conditions for the private sector to adopt sustainable urban logistics principles. It should also enhance cities’ adaptive capacity to respond to rapidly changing needs.

## SENATOR – smart network operator platform enabling shared, integrated and more sustainable urban freight logistics (09.2020–08.2024)

The SENATOR project aims to provide governance schemes for four urban planning policies: user demand planning, transport planning, freight and logistics planning, and city infrastructure planning. These are merged onto a single platform called the Smart Network Operator, which serves to match demand for last mile services with resources such as vehicles and infrastructure, thus promoting more efficient use of these resources. This multi-level urban space management model will promote sustainability, shared-connected freight and delivery services in cities. Furthermore, it will optimise satisfaction of all stakeholders’ needs by empowering their decision-making capacity and prioritising an integrated approach to urban mobility. It should also ensure optimisation of operations through a fluent relationship between urban planners, urban freight logistics players, and citizens.

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## 7.2 Main project achievements

The CIVITAS projects were successful in creating tools and platforms, generating insights from stakeholders, hosting thriving living labs, and advancing knowledge. This section outlines their main achievements in the field of urban freight, divided into four areas: stakeholder management, technology, knowledge sharing, and integration of freight in urban planning, all in order to explore the collective achievements of CIVITAS Urban Freight projects.

### Stakeholder management

A prevalent theme throughout the projects is the presence of multiple actors and partners, all with varying involvement and levels of knowledge. Managing and engaging these stakeholders is quite a task, which requires a structured approach, visibility and good communication. Urban logistics involves widely diverse stakeholders, from local governments, to project teams, businesses, residents, and other interested parties. It is therefore crucial to develop frameworks that support stakeholder management.

CIVITAS urban freight projects have done very well bringing together these different parties. U-TURN, for example, created collaboration platforms to support the sharing of information among stakeholders. Collaborative business models have also been explored in the NOVELOG project, resulting in sharing concepts and tools to identify which stakeholders could take part in which logistics activities. Multi-stakeholder cooperation has been addressed in a ULaaDS report entitled, "[The implementation of a multi-stakeholder approach in urban logistics](#)". This is not unique to ULaaDS – all projects ensure that stakeholders remain informed of how to use tools by creating guidelines, roadmaps and manuals, which offer them information on the project and how to execute processes.

Clear guidance on processes is especially vital to ensure the continuity of efforts past the project tenure. This is the case in the SENATOR project, for instance, which endeavours to create sustainable governance scheme frameworks that will bring stakeholders together in urban freight logistics even long after the project's official close in 2024.

### Technology

CIVITAS projects have contributed greatly to knowledge development and dissemination in urban freight thanks to the implementation of various technologies that have supported stakeholders in executing projects.

An example of this comes from the PORTIS project, which implemented freight routing backed by smart technology in its five port cities. Sensors provide real-time tracking of vehicles and cargo in and around the port cities, allowing for more transparency across the urban freight landscape. This addresses a common challenge: cities tend to lack detailed information on commercial flows in city centres.

U-TURN also enhanced understanding of freight distribution in urban areas and suggested innovative shared logistics practices, including modelling tools. The project deployed shared logistics distribution models that suggest alternatives ways of sharing resources; a smart

matching tool that enables the identification of logistics sharing options among different stakeholders; a simulation tool that models and quantifies the impact of Urban Consolidation Centres as an alternative logistics sharing practice, and more.

CIVITAS projects in this cluster have made great strides in reducing emissions from freight, with NOVELOG, ECCENTRIC, CITYLAB, CCCB, LEAD, and ULaaDS all focusing specifically on initiatives like cargo bikes, city hubs, and electric vehicles, which aim to increase load efficiency, and thus decrease trips and emissions. These projects take a closer look at the implementation of logistics' innovations using living labs, which allow the uptake of the innovations to be monitored closely. Some of the concepts being tested in living labs are: urban consolidation and distribution centres (UCC and city hubs); zero emission logistics; route and load optimisation; shared logistics concepts; and freight quality partnerships

### Knowledge sharing

Research institutions support the implementation of urban living labs, who cooperate with each other, guaranteeing that knowledge is shared among labs involved in similar activities. In fact, CIVITAS projects have developed expertise in effective knowledge-sharing.

An example of the achievements in knowledge sharing relates to the replication packages developed within the ECCENTRIC project, in which experiences, lessons and recommendations are documented to guide others as they roll-out cleaner vehicles, more efficient supply chains, and urban planning and policy tools. Other projects have similarly developed models geared towards replication.

Guidelines, business/value cases and roadmaps were drawn by project teams to help stakeholders understand the process of establishing labs, data requirements and planning tools.

### Integration of freight in regulation and planning

Freight has been neglected for many years in urban planning, and local authorities often lack capacity and control over freight and logistics movements. However, this is changing, as authorities start to realise the impact that logistics have on their central business districts and on the environment.

Multiple CIVITAS projects have addressed this gap, developing planning platforms to help bring freight solidly under the umbrella of urban planning. U-TURN created one such platform for the food logistics sector, which integrates the requirements of different partners into a single platform.

The ULaaDS and PORTIS projects sought to integrate sustainable urban freight practices into SUMP by aligning the needs of the market with those of industry and governments. Whether directly or indirectly, many projects also addressed the subject of freight quality partnerships in the EU. These partnerships contribute to inclusive planning and the integration of logistics activities. In general, CIVITAS initiatives focusing on freight served to inform different stakeholders on how to best achieve synergies.

## 7.3 Comparisons and evolution across projects

The evolution of project results is not easy to assess, as the urban freight landscape is fast-changing, with daily transformations having only been accelerated by the pandemic. However, a few key points are clear. First, projects in this cluster have successfully built off each other, advancing one another's results. Second, micro-hubs and the use of zero-emission vehicles (like cargo bikes) in last-mile delivery are on the rise. Finally, shared logistics concepts are increasingly embracing new technologies (like the internet of things).

Consolidation and urban distribution centres are points where goods are delivered for consolidation and transport into the city centre, sometimes using specific (sustainable) modes of transport. This is often done in order to reduce logistical flows within a city centre, since goods can be grouped at consolidation centres according to the characteristics of the goods. Therefore, the number of vehicles entering the city can be controlled and planned. Micro-hubs are an example of a consolidation centre, and are also found in the hearts of cities since they are smaller and may serve a specific purpose or neighbourhood area.

The use of urban consolidation centres (UCCs) and micro-hubs are on the rise, including in unlikely sectors like construction. Construction within city centres is often synonymous with disruptions, such as congestion. The SUCCESS project addressed this by trialling construction consolidation hubs, reducing inner city emissions by a remarkable 35%. SUCCESS also created tools to help identify the location of construction centres, and developed business models, helping to mitigate the traditional lack of profitability of hubs and consolidation centres.

Within the CITYLAB project, UCCs were rolled-out in living labs, with the aim to create transferable concepts. The initial trials used boats as floating depots. However, this was unsuccessful due to customer requirements and costs. As a result, small underused shops in the city centre were transformed into micro-hubs from which bike delivery departed, which proved to be more successful.

Over the years, this concept has come to be quite popular with the development of 'dark kitchens' (restaurants that only offer delivery) and warehouses, which make use of cargo bikes for local deliveries. Overall, the topic of UCCs has garnered a lot of attention over a number of projects. Micro-hubs seem to be taking the lead though in terms of their popularity and development, as they generally involve fewer stakeholders and therefore require simpler business models.

Global warming is becoming an ever-looming threat, and entities are looking into how they can make their industries cleaner. This has resulted in cities implementing zero emission zones, and in a general move towards carbon neutrality in all aspects of business. In urban freight, that means reducing emissions via the use of clean vehicles. To date, cargo bikes are the most viable zero-emission option for small to medium enterprises delivering locally, thanks to their low-barrier-to-entry and cost-effectiveness compared to other last mile concepts.

The CityChangerCargoBike project accelerated the uptake of cargo bike initiatives for various types of deliveries. It sought to educate small businesses about the use of these bikes, and allowed small businesses to try them out. This followed in the footsteps of earlier CIVITAS projects like CITYLAB, which also explored cargo bike use as a mode of transport from urban consolidation centres and hubs.

For its part, the LEAD project launched a cargo bike programme that deviates from the usual 1m<sup>3</sup> cargo bike capacity to the less popular 75m<sup>3</sup> cargo bikes in an effort to broaden the use cases of cargo bikes to include construction applications. This also built on earlier CIVITAS results – namely on findings of the SUCCESS project on construction consolidation centres.

Electric vehicles, in particular, electric vans have been explored by CIVITAS urban freight projects as a zero-emission vehicle option at least since CITYLAB did so in 2015; electric vans remain one of the most explored concepts within urban freight projects. The use of electric vehicles is cementing itself further as cities across Europe are increasingly instating zero-emission zones, widely rolling-out charging infrastructure, and as e-vehicles are increasingly gaining popularity for private use.

A challenge to electrical vehicle uptake remains a lack of necessary infrastructure. However, projects like ULaaDS are addressing this challenge by supporting shared electrical vehicles. This promising solution may support e-vehicle uptake thanks to businesses not needing to own the vehicles, which tend to be expensive.

The first occurrences of sharing logistics within the CIVITAS urban freight projects were in CITYLAB and U-TURN. While CITYLAB focused on city hubs and related logistics options, U-TURN focused on food distribution models. Both ran in parallel from 2015 to 2018, and shared lessons and learnings.

Another sharing concept arose in the CityChangerCargoBike project, with a focus on shared-use cargo bikes. This proved very popular in Utrecht (NL), with tremendous uptake and support in throughout the project period. The success of cargo bike projects have led to an organic growth in their use, particularly due to an increase in food/grocery delivery platforms, as well as a growth in e-commerce and the postal and express sector.

New on-demand platforms are being built to facilitate sharing solutions, such as those developed by ULaaDS and SENATOR. The LEAD project's shared logistics solution highlights how these concepts have evolved over time. Their concept is embedded in a "physical internet" concept, which combines zero-emission initiatives, consolidation and distribution concepts, and is supported by sensors and the internet of things.

In conclusion, despite their specific focuses, timelines, and geographic scopes, the projects in this cluster point to the fact that CIVITAS projects can – and do! – work together and build off each other. Furthermore, there may be cause for optimism in this field, as micro-hubs, zero-emission vehicles, and new technology are becoming more and more prevalent.

## 7.4 Knowledge gaps and conclusions

**Insufficient data** was mentioned by most projects as a key challenge. Many cities lack data availability, leading to them to have little clarity regarding flows of commercial vehicles and use of public space. Projects tried to get an overview of urban freight activities via surveys. However, the percentage of completed surveys was low.

Data accessibility is also be limited when data is monetised and owned by private companies, when it is unclear which institutions hold what data, and when data collection is limited by

regulations. For instance, the introduction of General Data Protection Regulation (GDPR) limited the collection and access to personal and business data. The sharing of data is also strictly regulated, at times creating bottlenecks in information dissemination.

A **lack of standardisation** in city logistics was cited as another stumbling block by the U-TURN, LEAD, and NOVELOG projects. This lack of standardisation affects the interoperability of tools and platforms across country and city borders; and localised knowledge leads to knowledge gaps.

Changing and fragmented regulations may cause blind spots for projects. This is particularly true for living labs operated in different geographic locations; in this case, projects found that regulations differing across cities and countries hindered the transferability of some concepts. Streamlining – and possibly harmonising – processes could help address this gap.

CIVITAS projects have been very successful in exploring and implementing solutions for various logistics problems all over the EU. The **use of living labs** greatly supports this implementation, as the labs allow for the absorption of technology into the daily operation of the city even after a project ends, thus making what were once novel innovations a part of day to day life.

## 8 Conclusions

In the preceding chapters, this publication presented a summary of achievements from 35 CIVITAS projects, structured by thematic cluster. Achievements have been addressed in detail in chapters 3-7. A high-level overview of key outcomes per thematic cluster follows.

### *Thematic cluster 1: “Supporting the development of Sustainable Urban Mobility Plans (SUMP)”*

These projects provided support to local and national authorities with the goal to improve the quality and uptake of SUMP. Projects also raised awareness on existing SUMP tools, and developed transferability tools. They contributed to creating a cultural shift in transport planning and supported local authorities to transform further into learning and co-creating organisations. Projects have demonstrated that a SUMP should remain a long-term planning standard, in which flexibility and ability to address unforeseen changes (e.g. pandemics) is possible.

CIVITAS projects showed that ministries and national agencies play a leading role in SUMP development. National Task Forces and regional SUMP Platforms are key drivers to support SUMP programmes.

The projects successfully tested public-private collaboration and business models around SUMP. They trialled new technologies and approaches, such as transport modelling, and concluded that these are worth being considered for future SUMP development.

They helped to integrate cycling into SUMP and boosted cycling use in European cities. CIVITAS projects also integrated parking management into SUMP, moving parking management from an operational task to a more strategic one.

### *Thematic cluster 2: “Co-creating liveable neighbourhoods”*

The four projects in this cluster ran almost simultaneously. They managed to raise awareness of neighbourhood liveability and the value of co-creation to improve liveability. They made innovation processes more inclusive, boosting the acceptance of new measures and policies. They also led to a positive change in policy-makers’ perceptions of co-creation, and boosted citizen participation in decision-making processes.

The projects underlined the importance of involving a wide group of stakeholders, including local businesses, academics and decision-makers.

Co-creation models (e.g. thematic walks, pop-up information stands, voting tools, etc.) were not only tested by the projects, but also transferred to other mobility projects in Europe. Some project measures became permanent – underlining the long-lasting impact of co-creation.

All the projects also observed that co-creation, citizen participation and crowdsourcing now have a solid role in cities’ mobility planning, but that there is plenty of room for these approaches and methodologies to be used more broadly, meaningfully, and frequently. Questions remain about how to formalise stakeholder inclusion in local urban development, and how to find the funds to do so.

### *Thematic cluster 3: “Boosting innovation and new technologies”*

The CIVITAS Initiative has been a valuable instrument to help cities in this cluster to experiment with innovative urban transport solutions. This contributed to a change in behaviours and mindsets in European cities, both among citizens and decision-makers.

Key outcomes of this cluster are, for instance, the application of an environmental requirement for municipal fleet procurement; the development of a reference architecture, which acts as the starting point for a standard for smart charging; the testing of business models to use excess capacity from private renewable energy systems; and the creation of the European eMobility Expertise Centre. It was also demonstrated that the multi-purpose use of public transport infrastructure is technically feasible in cities.

This cluster also defined and evaluated innovative urban mobility ecosystems using, for example, data-driven and classical approaches to capture mobility patterns associated with new mobility options and their impact on the whole mobility ecosystem. Thanks to CIVITAS, knowledge has also been improved regarding how current mobility transitions affect UVAR implementation, and a global agenda on this topic has been launched.

Cities need to further evolve from being reactive to being proactive to changes and new innovations, for instance by identifying early indicators of change. Having political support is crucial to be proactive and nimble, overcome implementation barriers, and to adopt politically-sensitive measures, such as UVARs.

#### *Thematic cluster 4: “Tackling congestion”*

All projects of this cluster share the common goal of increasing the modal share of sustainable modes in order to reduce car congestion in cities. They worked toward this aim using behavioural change methods, innovative tools and research, and traffic modelling. They produced detailed research and best practices on how to increase the share of public transport, cycling and walking.

Behavioural insights were tested within lab and field environments. Different types of innovative tracking tools were developed, including ICT-based tracking services, with the aim to optimise the planning, implementation and impact of mobility measures. Transport models were improved to better consider walking and cycling, with, for example, new multimodal transport analysis calculation methods.

Other effective actions consisted of crowdsourcing campaigns and co-creation workshops, and the implementation of advanced marketing research methods, which made it possible to identify hidden groups of users of sustainable modes.

In most projects, it was noted that local governments need to further develop expertise and/or resources to analyse and process all incoming data streams.

#### *Thematic cluster 5: “Improving freight management and goods distribution”*

CIVITAS projects focusing on urban freight and logistics improved the efficiency of goods distribution and promoted the use of cleaner freight vehicles. This was done by testing innovations, engaging stakeholders, and ultimately advising freight providers, including local authorities, on how to best integrate these innovations into SUMP.

The 10 projects in this cluster successfully deepened cities’ knowledge around urban consolidation and distribution centres, zero emission logistics, and shared logistics concepts.

They created tools and platforms (planning platforms, living labs), which helped to generate and collect expert knowledge from stakeholders.

CIVITAS urban freight projects developed collaborative governance frameworks and business models and contributed greatly to knowledge development and sharing regarding new technologies. Some projects in this cluster also found ways to decrease trips and emissions linked to urban freight by increasing load efficiency.

A lack of data availability, accessibility and standardisation in city logistics were cited by some as obstacles to the deployment of city logistics innovations.

Overall, CIVITAS projects have been very successful in exploring and implementing solutions that improve urban mobility all over the EU. They have contributed – and continue to contribute – to rich knowledge sharing, best practice exchange, and the creation of synergies. The use of living labs has supported projects' implementation by helping to absorb innovations into the daily operation of cities, even beyond the end of projects.

Despite COVID-19 challenging some projects' implementation and impact measurement, CIVITAS projects nonetheless succeeded in addressing urban mobility needs and offering cities a wider view of the sustainable urban mobility policies they can implement.

Each thematic cluster has faced changes. The applicability and uptake of SUMP as a planning standard across Europe has evolved, with more focus on inclusivity, data, funding, diversity and co-creation. Co-creation activities turned out to be avenues to further explore across thematic clusters in order to tackle the climate crisis at local level. And, technological changes are impacting all urban mobility work.

Looking ahead, projects should embrace the potential of co-creation to make the difference and initiate a mind-set shift towards a more environmentally-conscious culture. In that context, SUMP should be further tailored to reflect the European Green Deal targets and contribute to achieving them.

Across projects, partners observed that citizens often question the use, or usefulness, of technological solutions. Future projects should therefore investigate which, or at least be conscious of why, low-key and low-tech solutions might be more acceptable to the public.

CIVITAS projects leave a legacy of many tools, guides and kits for future uptake of innovative mobility measures. This rich legacy should be further disseminated at the local and EU levels, and insights should, for instance, feed into the development of SUMP indicators.

One of the biggest achievements of the CIVITAS projects common to all projects has been the ability to bring stakeholders together. The inclusive nature of stakeholder engagement contributed to the success of the projects. As CIVITAS celebrates its 20<sup>th</sup> anniversary, this key achievement, as well as all of the progress that CIVITAS projects have made across Europe, must be celebrated and continued as CIVITAS looks forward to its next 20 years of mobility projects.

# Annex I – CIVITAS Project Fiches

## Current (ongoing or just terminated) CIVITAS 2020 projects

HARMONY	
Project duration	06/2019 – ongoing (02/2023)
What is about?	Holistic Approach for Providing Spatial & Transport Planning Tools and Evidence to Metropolitan and Regional Authorities to Lead a Sustainable Transition to a New Mobility Era
Thematic area	Integrated and inclusive planning
Website	<a href="https://civitas.eu/projects/harmony">https://civitas.eu/projects/harmony</a> - <a href="https://harmony-h2020.eu/">https://harmony-h2020.eu/</a>
Who is involved (pilots)	Rotterdam (NL), Oxfordshire (UK), Turin (IT), Athens (GR), Trikala (GR), Upper Silesian-Zaglebie Metropolis (PL)
Project coordinator	University College London
Project overview	<p>HARMONY is developing a new generation of harmonised spatial and multimodal transport planning tools which comprehensively model the dynamics of the changing transport sector and spatial organisation, enabling metropolitan area authorities to lead the transition to a low carbon new mobility era in a sustainable manner. Co-creation labs are established in order for citizens, authorities and industry to design together new mobility and spatial organisation concepts. At the same time, demonstrations with electric AVs and drones take place to understand in real-life their requirements. Market surveys are organised to elicit people and freight actors' preferences and reactions towards the co-created concepts and the demonstrated new mobility technologies.</p> <p>The HARMONY model suite is designed to assess the multidimensional impacts of the new mobility concepts and technologies. The model suite integrates: 1. land-use models (strategic/long-term), 2. people and freight activity-based models (tactical/mid-term), and 3. multimodal network (operational/short-term) models allowing for vertical planning. This integrated approach is necessary for authorities to understand if policies are sustainable, while also contribute to meeting COP22 targets, social equality and wellbeing. The HARMONY model suite is also linked to an EU-wide model to further identify the impact of the concepts and technologies on the TEN-T level.</p> <p>HARMONY's concepts and the model suite are applied and validated on six EU metropolitan areas on six TEN-T corridors: 1. Rotterdam (NL), 2. Oxfordshire (UK), 3. Turin (IT), 4. Athens (GR), 5. Trikala (GR), 6. Upper Silesian-Zaglebie Metropolis (PL). By having six different areas as pilots, the project should be able to propose to authorities, spatial and transport planners, concepts and technologies for different types of areas/cities</p>
Implementation and outcomes	The implementation of the project is still ongoing. Here is the latest state of play:

	<p>Thorough reviews and analyses have been conducted for i) new forms of mobility, ii) SUMP, iii) project appraisal techniques and iv) spatial and transport planning tools for new mobility concepts. Collection of stakeholders' spatial and transport planning requirements for urban air and autonomous mobility was achieved.</p> <p>The main actors and their requirements from the HARMONY Member States (MS) have been identified. The initial MS level-to-level and module-to-module input/output interactions have been identified. Event-based communication architectures has been adopted for the HARMONY MS, while certain considerations have been made for enabling software-agnostic implementations.</p> <p>The required survey tools for collecting primary data have been designed and implemented. These include the design of questionnaires, the preparation and customisation of the smartphone-based travel survey tool for collecting primary data, the design of the survey participants support interfaces (helpdesks), as well as development of the sampling strategies to be used in each pilot area. The 1st Prototype of the HARMONY Transport and Spatial Data Warehouse has been successfully delivered</p> <p>The Strategic Level simulator's architecture and I/O requirements have been defined, including the modelling framework of each sub-component. The regional economic model has been applied for the Turin pilot, while other use cases for HARMONY pilots have been designed.</p> <p>A first version of the Tactical Freight Simulator (TFS) has already been developed. The TFS is an advanced activity-based model that first generates a set of shipments and parcels (shipment and parcel synthesizers respectively) and then schedules them to tours (parcel and shipment scheduling modules). The first version of the TFS has already been tested for a zero-emission zone scenario.</p> <p>The main activities performed include: i) initial development and updating of network models for the Oxfordshire, Rotterdam, Turin and Athens pilot sites, ii) specifications and initial design for an air traffic controller, iii) specifications, detailed design and early prototyping of the passenger and freight service controllers including an application for a toy city network, iv) evaluation and adoption of vehicle performance and noise models for the purposes of HARMONY MS.</p>
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LEAD	
Project duration	06/2020 – ongoing (05/2023)
What is about?	Strategies for shared-connected and low-emission logistics operations
Thematic area	Urban Freight Logistics
Website	<a href="https://civitas.eu/projects/lead">https://civitas.eu/projects/lead</a> - <a href="https://www.leadproject.eu/">https://www.leadproject.eu/</a>
Who was involved (pilots)	Budapest (HU), Lyon (FR), Madrid (ES), Oslo (NO), Porto (PT), the Hague (NL)
Project coordinator	EMT Madrid
Project overview	<p>The EU-funded LEAD project is designing digital twins of urban logistics to support experimentation and decision making in public–private urban settings. Specifically, the project’s long-term goal is to develop an open physical internet-inspired framework for smart city logistics. Headed by a large consortium, the project will test its solutions in six cities.</p> <p>LEAD will create Digital Twins of urban logistics networks in six cities, to support experimentation and decision making with on-demand logistics operations in a public-private urban setting. Innovative solutions for city logistics will be represented by a set of value case scenarios, that address the requirements of the on-demand economy while aligning competing interests and creating value for all different stakeholders. Each value case will combine a number of measures (LEAD Strategies):</p> <ul style="list-style-type: none"> <li>• innovative business models,</li> <li>• agile urban freight storage and last-mile distribution schemes,</li> <li>• low emission, automated, electric or hybrid delivery vehicles, and</li> <li>• smart logistics solutions.</li> </ul>
Implementation and outcomes	<p>Scenarios will incorporate opportunities for shared, connected and low-emission logistics operations by considering four innovation drivers: Sustainability - Zero Emission Logistics, the Sharing Economy, Technology Advancements and the emerging Physical Internet (PI) paradigm.</p> <p>Also, cost, environmental and operational efficiencies for value cases will be measured in 6 Living Labs.</p> <p>Evidence-proven value cases and associated logistics solutions will be delivered in the form of exploitable Digital Twins (TRL-7), incorporating the models that support adaptation to different contexts and that provide incentives for PPPs. The long-term vision of LEAD is to design an Open PI-inspired framework for Smart City Logistics that incorporates the Digital Twins created in the project, thus setting the foundations for the development of large-scale city Digital Twins.</p>

<b>MOMENTUM</b>	
Project duration	05/2019 – 04/2022
What is about?	Modelling Emerging Transport Solutions for Urban Mobility
Thematic area	Behavioural change and mobility management
Website	<a href="https://civitas.eu/projects/momentum">https://civitas.eu/projects/momentum</a> - <a href="https://h2020-momentum.eu/">https://h2020-momentum.eu/</a>
Who was involved (pilots)	Leuven (BE), Madrid (ES), Regensburg (DE) and Thessaloniki (GR)
Project coordinator	EMPRESA MUNICIPAL DE TRANSPORTES DE MADRID SA
Project overview	<p>MOMENTUM develops new data analysis methods, transport models and planning support tools to help cities to design policies that exploit the full potential of emerging mobility solutions.</p> <p>Disruptive technologies and emerging mobility solutions, such as MaaS (Mobility as a Service), CAVs (Connected Automated Vehicles), shared mobility services and DRT (demand responsive transport), are bringing radical changes to urban mobility. The overall goal of MOMENTUM is to develop a set of new data analysis methods, transport models and planning support tools to capture the impact of these new transport options on the urban mobility ecosystem, in order to support cities in the task of designing the right policy mix to exploit the full potential of these emerging mobility solutions. The tools and techniques developed will be tested in a set of case studies across Europe, in the cities of Leuven, Madrid, Regensburg and Thessaloniki.</p>
Implementation and outcomes	<ul style="list-style-type: none"> <li>• The project is to deliver the following outcomes: A set of future scenarios, each associated with a probability of occurrence, to be considered in the planning and design of urban mobility policies in Europe.</li> <li>• A detailed analysis of the activity-travel patterns of different population groups, according to their sociodemographic characteristics, with particular focus on their use of new mobility services.</li> <li>• A set of data-driven predictive models for the adoption and usage patterns of new mobility options, as a function of different sociodemographic and behavioural variables.</li> <li>• New transport simulation and decision support tools for urban mobility planning able to properly consider the impact of new transport technologies.</li> <li>• A prototype of the newly developed tools implemented in the cities of Madrid, Thessaloniki, Leuven and Regensburg.</li> <li>• A set of guidelines for the use of the solutions developed by the project in the elaboration and implementation of SUMP.</li> </ul>

	<p>MOMENTUM will advance the state of the art in: (i) the analysis of travel behaviour, by combining data fusion and machine learning techniques to extract mobility patterns from heterogeneous and sparse data sources and to identify possible explanatory variables for the extracted mobility behaviours; and (ii) the modelling of new transport solutions. MOMENTUM will combine data-driven and classical approaches to capture the mobility patterns associated to new mobility options and their impact on the whole mobility ecosystem. MOMENTUM will also evolve transport simulation software to represent demand in more disaggregated and heterogeneous terms and include supply and demand of emerging transport options.</p> <p>MOMENTUM will also advance the state of the art of policy instruments for mobility planning. The new data collection methods, models, decision support tools and policy recommendations will empower cities to formulate more flexible and resilient policies that perform well under a range of fast changing uncertain scenarios. User-friendly decision support tools will facilitate the impact assessment and comparison of the different alternative policies.</p> <p>Finally, the data collection and analysis techniques developed by MOMENTUM will result in the availability of better mobility and travel demand information at a fraction of the cost required by traditional methods. The possibility to monitor mobility on a continuous basis in an affordable manner will enable the early detection of changes in mobility patterns and the update and recalibration of transport models on a more frequent basis, leading to more reactive, adaptive, efficient and resilient policies. This is of particular importance in the current COVID-19 crisis situation, where exceptional policy measures, such as limiting mobility or banning certain transport modes, had to be put in place in a short period of time in different cities around the world. The continuous monitoring of mobility enables transport authorities to perform dynamic assessments of such measures.</p> <p>Some of the main results produced by the project during first reporting period have already been integrated into the SUMP Topic Guide on Resilient Cities.</p>
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REVEAL	
Project duration	06/2019 – ongoing (11/2022)
What is about?	Regulating Vehicle Access for improved Liveability
Thematic area	Impacts of new technologies and changes on policy making
Website	<a href="https://civitas-REVEAL.eu/">https://civitas-REVEAL.eu/</a> - <a href="https://civitas-ReVeAL.eu/">https://civitas-ReVeAL.eu/</a>
Who was involved (pilots)	Bielefeld (DE), London (UK), Helmond (NL), Jerusalem (IL), Padova (IT), Vitoria-Gasteiz (ES)
Project coordinator	Stadt Bielefeld
Project overview	<p>Restricting car access in urban areas is a heated topic for Europe’s decision makers. The EU-funded ReVeAL project aims to add urban vehicle access regulations (UVAR) to the standard range of urban mobility transition approaches of cities across Europe. Towards this end, the ReVeAL consortium combines conceptual work and case study research with hands-on UVAR implementation in six pilot cities, in addition to encouraging systematic stakeholder interaction and organising professional communication activities. Through this process, ReVeAL systematically extracted lessons learned and therefore supported the wider roll-out of smart UVAR approaches across Europe.</p> <p>The overarching mission of the project is to enable cities to optimise urban space and transport network usage through new and integrated packages of urban vehicle access policies and technologies. Such policies can lead to fewer emissions, less noise and improved accessibility and quality of life, which especially benefits the people living in these cities. These policies can also encourage more sustainable transport choices, enabling cities to become more liveable, ultimately healthier and more attractive for every member of society.</p> <p>ReVeAL overall objectives include:</p> <ul style="list-style-type: none"> <li>• Planning for UVAR as a change in direction for a city (how to manage the transition?)</li> <li>• Understanding what has worked and what made it successful (both process and content)</li> <li>• Supporting and executing UVARs and learning from the process</li> <li>• Documenting, monitoring, assessing and evaluating the process and impacts</li> <li>• Extracting, synthesising and generalising the lessons learned to support other cities in UVAR implementation</li> <li>• Engaging stakeholders and effectively communicating about the processes and results</li> </ul>
Implementation and outcomes	ReVeAL will deliver an innovation agenda for access regulations for local authorities, thus increasing the efficiency at local level of the integrated

	<p>urban mobility plan. The pilots in combination with systematic desk-research and surveying will be the basis of two decision support tools:</p> <ul style="list-style-type: none"> <li>• The ReVeAL Readiness Assessment Tool to identify potential barriers and drivers for access regulation through a questionnaire capturing key facts about the existing mobility culture, available transport services (alternatives to private car use or truck deliveries), IT and ITS legacy systems and legal and regulatory framework.</li> <li>• The ReVeAL Process Advisor to support the design of access regulation schemes based on the envisaged objectives, impacts transition status as reported in the Readiness Assessment.</li> </ul> <p>The six pilots will deliver new practice-based knowledge related to various forms of access regulations (e.g. ZEZ, Superblock etc.) that will be studied in view of four Transition Areas: governance, user needs, mobility concepts and technologies.</p> <p>ReVeAL will be able to draw conclusions on the feasibility, effectiveness and efficiency of different access regulation solutions in different phases of transition. Through its evaluation and monitoring activities, ReVeAL will be able to draw lessons from the comparison of local contexts and applied solutions.</p> <p>The project will develop an overview of local investments and planned schemes (detailing technological and design prospects) in order to create visibility for future projects and increase innovation in their actual implementation.</p> <p>The expected impacts of the project include:</p> <ul style="list-style-type: none"> <li>• Improved knowledge on how current mobility transitions affect UVAR implementation</li> <li>• Better informed and involved UVAR stakeholders and decision-makers</li> <li>• Improved and measurable performance of UVAR schemes</li> <li>• Inclusion of UVARs into SUMP and the urban mobility policy toolbox</li> <li>• Future-proof UVAR design approaches</li> <li>• Regulatory fitness of national UVAR frameworks</li> <li>• Translation of ReVeAL findings into EU policy recommendations</li> <li>• Creation of global agenda for UVAR implementation</li> </ul>
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<b>SENATOR</b>	
Project duration	09/2020 – ongoing (08/2024)
What is about?	Smart Network Operator Platform enabling Shared, Integrated and more Sustainable Urban Freight Logistics
Thematic area	Urban Freight Logistics
Website	<a href="https://civitas.eu/projects/senator">https://civitas.eu/projects/senator</a> - <a href="https://www.senatorproject.eu/">https://www.senatorproject.eu/</a>
Who was involved (pilots)	Zaragoza (ES), Dublin (IR)
Project coordinator	Correos Madrid
Project overview	<p>The main objective of the SENATOR (Smart Network Operator Platform enabling Shared, Integrated and more Sustainable Urban Freight Logistics) project is to provide governance schemes for four urban planning policies: User demand planning, Transport planning, Freight and Logistics planning and City infrastructure.</p> <p>SENATOR proposes a solution that integrates these four layers into one platform, which resembles a “control tower”, also known as the smart network operator. It aims to aggregate existing demand regarding urban last-mile logistic services and matching it with available resources (e.g. vehicles) and infrastructure (e.g. parking places) in order to satisfy all existing needs in a sustainable way.</p> <p>This multi-level urban space management model will promote sustainability, shared-connected freight and delivery services in cities, and optimise the satisfaction of all stakeholders’ needs by empowering their decision-making capacity and prioritising urban mobility via an integrated approach. It will also ensure an optimisation of operations through a fluent relationship between urban planners, urban freight logistics players and citizens.</p> <p>To test its effectiveness, Senator will be validated in a real environment in 2 Living Labs: in Zaragoza (Spain) and Dublin (Ireland), led by Correos (State Postal and Telegraph Society).</p>
Implementation and outcomes	<p>SENATOR project’s platform will work as a support tool for decision making, integration and planning of all logistics operations. In consequence, it will minimize the negative impacts that this distribution causes in the cities and will constitute an effective means of collaboration between agents (operators, transporters and administrations, as responsible for urban planning). To develop it, the project will take into account all the possibilities that the digitalisation of information and the integration of the Internet of things in transport provides, as well as the trends in connected and even autonomous vehicles.</p>

SPROUT	
Project duration	09/2019 – 08/2022
What is about?	Sustainable Policy RespOnse to Urban mobility Transition
Thematic areas	Integrated and inclusive planning; public participation and co-creation
Website	<a href="https://civitas.eu/projects/sprout">https://civitas.eu/projects/sprout</a> – <a href="https://sprout-civitas.eu">https://sprout-civitas.eu</a>
Who was involved (pilots)	Pilot cities: Valencia (ES), Padua (IT), Kalisz (PL), Budapest (HU), Tel Aviv (IL), and Ningbo (China) Validation cities: Hertogenbosch (NL), Ioannina (GR), Gothenburg (SE), Arad (RO), Mechelen (BE), Ile-de-France (FR), West Midlands (UK), Almada (PT), Minneapolis (US).
Project coordinator	FUNDACION ZARAGOZA LOGISTICS CENTER
Project overview	<p>SPROUT provides a new city-led innovative and data-driven policy response to address the impacts of emerging mobility patterns, digitally-enabled operating &amp; business models, and transport users' needs. Starting from an understanding of the transition in urban mobility, the project will define the impacts on the sustainability and policy level. It will also harness these through a city-led innovative policy response. The aim is to build cities' data-driven capacity to identify, track and deploy innovative urban mobility solutions. The findings will help navigate future policy.</p> <p>To achieve its goals, SPROUT is creating an Open Innovation Community on Urban Mobility Policy and will employ 6 city pilots and 7 validation cities with real-life policy challenges faced as a result of urban mobility transition in both passenger and freight transport.</p> <ul style="list-style-type: none"> <li>• To achieve its aim, the project will pursue the following project objectives:</li> <li>• Understand the transition in European urban mobility (passenger and freight), by quantifying the current status, and defining the transition drivers to the future.</li> <li>• Foresee and determine the impact of urban mobility drivers on urban policy.</li> <li>• Formulate a city-led innovative policy response, that is widely applicable to European cities, to navigate urban mobility in transition.</li> <li>• Provide tools to contribute to an evidence-based policy making and enhance local policy making capacity.</li> <li>• Navigate future policy by channelling project results into future EU policy initiatives.</li> </ul>

<p>Implementation and outcomes</p>	<p>SPROUT progressed in its main aim of providing a city-led innovative policy response able to harness the impacts of new mobility solutions as follows:</p> <ul style="list-style-type: none"> <li>• Understanding transition in urban mobility (WP2). SROUT has developed an inventory of the factors that are used by each of the SPROUT cities as a common framework to collect and integrate data. This allowed the project to get an overview of the urban mobility situation in the 1st and 2nd -layer SPROUT cities, and overview of the urban mobility transition drivers and their level of importance, and an overview of the locally relevant stakeholders.</li> <li>• Determining the impacts of emerging urban mobility environments (WP3). In order to come to appropriate city-led policy responses in the later stages of the project, SPROUT developed city-specific ‘do-nothing’ scenarios for 2030 that describe the possible development of the urban mobility system in the 1st-layer cities if no new policies are introduced to harness transition. The five future city-specific scenarios were co-created following a cross-impact balance analysis and participatory approaches. Their sustainability and policy impacts were also assessed. Scenarios are an important intermediate result, providing a holistic, systemic and participatory analysis of the future mobility landscape. They form a base to better understand the impacts of policy making in the pilot cities and are the basis of the setup of the pilot use cases.</li> <li>• A pilots’ evaluation framework has been developed in order to assess the impacts of 9 innovative urban mobility solutions implemented in 5 SPROUT pilot cities (WP4).</li> </ul> <p>Until the end of the project, SPROUT will:</p> <ul style="list-style-type: none"> <li>• Define a minimum set of data to drive evidence-based urban mobility policy making, customised to the data capabilities of both rich- and poor data environments.</li> <li>• Offer currently missing evidence on the sustainability and policy impacts of a number of urban mobility innovations based on an overarching evaluation, monitoring, and data collection framework and new data sources to enable evidence-based policy making.</li> <li>• SPROUT will also deliver an Urban Policy Toolbox to be used for building capacity on recognising the benefits and appropriate use of tools.</li> <li>• Offer a methodology to formulate city-led innovative policy response by analysing the underlying urban policy model to understand how policies impact the urban mobility environment through a systems dynamics model and by looking beyond urban mobility, at factors that drive urban mobility from other domains.</li> </ul>
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<b>SUMP-PLUS</b>	
Project duration	09/2019 – 08/2022
What is about?	Sustainable Urban Mobility Planning: Pathways and Links to Urban Systems
Thematic area	Integrated and inclusive planning
Website	<a href="https://civitas.eu/projects/sump-plus">https://civitas.eu/projects/sump-plus</a> - <a href="https://sump-plus.eu/">https://sump-plus.eu/</a>
Who was involved (pilots)	Antwerp (BE), Alba Iulia (RO), Greater Manchester (UK), Klaipeda (Lithuania), Lucca (IT), and Platania (GR)
Project coordinator	City of Antwerp
Project overview	<p>A comprehensive approach to sustainable urban mobility planning and delivery is crucial to maximising the mobility services and wider benefits for European citizens. The European Commission has recognised these challenges by encouraging cities to implement SUMP and SULP and have recently updated the associated guidelines through the 'SUMP 2.0' initiative. SUMP-PLUS is a three-year Research and Innovation Action designed to address these challenges and exploit these new opportunities, by developing a strong, rigorous evidence base through co-created City Laboratories approach, that will be demonstrated in different EU cities, building on the strengths of the existing SUMP and SULPs.</p> <p>SUMP-PLUS will develop and apply transition pathways towards more sustainable cities, taking into account the need to establish stronger links with other urban system components. SUMP-PLUS will deliver a methodology and supporting analytics demonstrating how to customize the pathway to cities with different characteristics, capabilities, availability of data/resources and aspirations and will produce associated practical guidance tools and training programme (City-Consult, "Train the Trainer") that are targeted to the needs of cities at different stages in their mobility development.</p> <p>The key policy objectives are to develop and apply a set of context-specific mobility transformation pathways, to demonstrate how cities can develop stronger links with other urban system components, to identify new solutions and to identify and demonstrate new partnerships and business models. These policy objectives will be met and demonstrated through a programme of trials and comprehensive evaluation, in six co-created City Laboratories (CL) Antwerp (BE), Alba Iulia (RO), Greater Manchester (UK), Klaipeda (Lithuania), Lucca (IT), and Platania (GR).</p>
Implementation and outcomes	Research activities setting the conceptual frameworks required to develop a strong, rigorous evidence base through the project Co-created city Laboratories (CLs) have been carried out in WP1 (Implementation Strategy/Transition Pathway and supporting analytical tools), WP3 (governance coordination and capacity building) and WP4 (stakeholders and citizens engagement). The innovative concepts and tools

	<p>developed/consolidated at research level, on the basis of the review of available literature/research and former relevant projects, have been adapted to the CLs context on the basis of the analysis of local needs, objectives and ambitions; finally the concepts have been introduced in the City Labs for supporting/facilitating the SUMP implementation in the involved cities, through the specification of the Co-created Laboratory Plans (CLPs) which identify the activities to be carried out level at CL level, the intermediate/final outputs and the timeline.</p> <p>The Evaluation methodology and the Evaluation Plan have been released as a general framework for the development of project evaluation activities (WP5). According to the activities implemented in the CLs and the expected outputs, the evaluation methodology is based on qualitative approach and assessment of co-created processes taking place at CL level: process evaluation has been customized and specified for the specific purposes of SUMP-PLUS and CLs activities.</p> <p>The most crucial outputs and outcomes of SUMP-PLUS are as follows:</p> <ul style="list-style-type: none"> <li>• Resilient, place-centred cities that put citizens and their needs first;</li> <li>• Practical and context-specific implementation pathways that make general guidelines realisable;</li> <li>• A simplified tool that allows for accessibility planning in small urban areas (with limited resources);</li> <li>• Improved cross-sector links that mean mobility requirements are considered in public service delivery models;</li> <li>• Governance, administrative, legislative and funding arrangements, and incentive structures needed to follow a development pathway and/or build cross-sector links;</li> <li>• The implementation of cutting-edge solutions for more efficient and sustainable freight and passenger transport;</li> <li>• Innovative stakeholder engagement strategies for enabling more advanced cooperation schemes among the actors inside and outside the mobility sector;</li> <li>• Public-private partnerships that use data-driven planning to meet collective mobility objectives cost-effectively;</li> <li>• A City Consult Agency that ensures a continuing process of SUMP skills and knowledge development, mentoring, and replication beyond the project; and,</li> <li>• Improved guidance for developing SUMP implementation.</li> </ul>
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ULAADS	
Project duration	09/2020 – ongoing (02/2024)
What is about?	Urban Logistics as an on-Demand Service
Thematic area	Urban Freight Logistics
Website	<a href="https://civitas.eu/projects/ULaaDS">https://civitas.eu/projects/ULaaDS</a> - <a href="https://ULAADS.eu/">https://ULAADS.eu/</a>
Who was involved (pilots)	Bremen (DE), Groningen (NL), Mechelen (BE), Alba Iulia (RO), Bergen (NO), Edinburgh (UK), Rome (IT).
Project coordinator	Freie Hansestadt Bremen
Project overview	<p>The EU-funded ULaaDS project sets out to offer a new approach to system innovation in urban logistics. Its vision is to develop sustainable and liveable cities through re-localisation of logistics activities and re-configuration of freight flows at different scales. Specifically, ULaaDS will use a combination of innovative technology solutions (vehicles, equipment and infrastructure), new schemes for horizontal collaboration (driven by the sharing economy) and policy measures and interventions as catalysers of a systemic change in urban and peri-urban service infrastructure. This aims to support cities in the path of integrating sustainable and cooperative logistics systems into their sustainable urban mobility plans (SUMP). ULaaDS will deliver a novel framework to support urban logistics planning aligning industry, market and government needs, following an intensive multi-stakeholder collaboration process. This will create favourable conditions for the private sector to adopt sustainable principles for urban logistics, while enhancing cities' adaptive capacity to respond to rapidly changing needs. The project findings will be translated into open decision support tools and guidelines.</p> <p>ULaaDS project will work on 3 key focus pillars:</p> <ul style="list-style-type: none"> <li>• co-creation process to model future on-demand scenarios for urban logistics and definition of relevant ULaaDS delivery solutions through novel toolkit;</li> <li>• deployment of 2 ULaaDS solutions co-created (combining new delivery vehicles and novel horizontal collaboration models) through a total of 6 multi-stakeholder research trials in the 3 pilot cities;</li> <li>• assessment of feasible value cases towards urban planning integration (SUMP/SULP).</li> </ul>
Implementation and outcomes	<p>3 pilot cities (Bremen, Mechelen, Groningen) propose 2 preliminary ULaaDS solutions to be further concretised through the first project pillar:</p> <ul style="list-style-type: none"> <li>• Modular innovative cargo bikes operated by crowdsourced couriers to enhance logistics efficiency and multimodality in city centres;</li> </ul>

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	<ul style="list-style-type: none"><li>• Integration of urban dual transport services (high on-demand distribution requirements of small goods with on-demand shared personal transport - eVans offering pooling for cargo, semi-AGVs, public transport)</li></ul> <p>Also, ULaaDS also involves 4 other satellite cities (Rome, Edinburgh, L'Hospitalet, Bergen) which will also apply the novel toolkit created in ULaaDS as well as the overall project methodology to co-create additional ULaaDS solutions relevant to their cities as well as outlines for potential research trials.</p>
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## Recent CIVITAS 2020 research projects

CITIES4PEOPLE	
Project duration	06/2017 – 11/2020
What is about?	New approaches for community-driven sustainable mobility innovations at neighbourhood and urban district level
Thematic area	Innovation in neighbourhoods
Website	<a href="https://CITIES4PEOPLE.eu/">https://CITIES4PEOPLE.eu/</a>
Who was involved (pilots)	Oxfordshire (UK), Hamburg (DE), Istanbul (TR), Budapest (HU), Trikala (GR)
Project coordinator	Copenhagen Business School
Project overview	<p>Cities-4-People is a H2020 project revolving around sustainable and people-oriented transport as a solution to the many challenges linked to mobility and faced by urban and peri-urban areas today.</p> <p>Aiming to implement mobility solutions developed by people for people, Cities-4-People taps into participatory practices of social innovation and neighbourhood governance and builds on three main pillars: citizen participation, community empowerment, and sustainable urban planning.</p>
Implementation and outcomes	<p>Cities-4-People promotes a people-oriented transport and mobility (POTM) approach, which provides new ways to deliver innovative, sustainable and targeted solutions that address the needs of the public. As the name suggests, POTM is a form of transport and mobility that takes the needs and wishes of people into account with the goal of improving transportation and increasing urban sustainability. POTM has high potential to lead to interventions that are required and accepted by the people they eventually affect.</p> <p>Some of the features that characterise the project's approach include:</p> <ul style="list-style-type: none"> <li>• Citizens at the core. The project follows procedures that are truly participatory and build on strong local knowledge to understand specific conditions, problems and cultural elements. The people, with their views, needs and desires, are the primary reference point. The term 'people' embraces all types of stakeholders of the urban mobility supply chain: these are the leading actors in the entire innovation process, working together in local communities.</li> <li>• Community empowerment. To empower mobility communities to interact and collaborate with mobility experts, policy makers and other urban mobility stakeholders, the project engaged citizens in local Mobility Labs, offering, an open-to-all, bottom-up and community-based model to support participation in local mobility developments. The project also created and deployed pilot-specific Citizen Mobility Kits, which are suites of offline and online tools</li> </ul>

	<p>aiming at enhancing collaborative activities and at supporting local mobility communities in envisioning and realising ways to innovate.</p> <ul style="list-style-type: none"> <li>• Urban sustainability. Cities-4-People had a holistic and inclusive approach to urban sustainability, which takes into account climate change and environmental issues, socio-economic and socio-cultural aspects, as well as the relevance of citizen participation in urban planning. In this context, social determinants and health inequality factors (e.g. health hazards, access to health services, access to employment, etc.) were seen as key elements influencing the sustainability of urban developments, while shared-economy mobility solutions were presented as a way to facilitate the emergence of citizen-led, sustainable urbanism. Its five pilot areas showcase new opportunities for sustainable urban development, suited to meet local needs and tackle serious urban challenges in cost-efficient ways. Thus, they contribute to a new vision for sustainable urbanisation, in which collaborative technologies and social innovation foster engagement in neighbourhood governance and increase the involvement of citizens in participatory urban planning.</li> </ul> <p>Experiences with citizens involvement led to the following key learnings:</p> <ul style="list-style-type: none"> <li>• Understanding the local context and specific needs is of high importance.</li> <li>• Identifying key informants (neighbourhood committees, local authorities, artists, etc.) is critical. Consider: who can advocate for your purpose and interventions in the initial prototype phase? How do you engage them and what is your offer to them?</li> <li>• By focusing a prototype on the neighbourhood level, you can use a realistic scope to iterate your intervention in a given period and build a strong community around it.</li> <li>• Ensuring transparency and public input through co-creation processes ensures higher viability of the project.</li> <li>• Confronting “taboo topics” – like parking spaces and car use – pays off and attracts people’s attention.</li> <li>• Using external expertise from outside the local community is very valuable.</li> <li>• Engaging citizens to identify and address urban mobility challenges has proven its worth. Citizens can then participate in urban developments that have a direct impact on their lives, and authorities are able to identify and nurture their citizens’ skills and interests.</li> </ul>
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<b>CITYCHANGERCARGOBIKE</b>	
Project duration	09/2018 – 07/2022
What is about?	Application of cargo bikes in urban areas
Thematic area	Innovative Solutions
Website	<a href="https://cyclelogistics.eu/">https://cyclelogistics.eu/</a>
Who was involved (pilots)	20 cities
Project coordinator	Gemeente Utrecht
Project overview	<p>The large-scale introduction and application of cargo bikes in urban areas has shown to be a game changer for cities: the image of cycling improves; general levels of cycling increase (both for freight and passengers); urban space is used more efficiently; air quality, safety levels as well as quality of life improve. However, this innovative solution is present in only a few cities and at best in the starting phase in other European cities. Its full potential has not been achieved in any European city.</p> <p>CityChangerCargoBike (CCCB) aims to change this and increase and accelerate take-up. CCCB will take the very best cargo bike implementation examples, contexts and expertise in Europe and profit and learn from them in order to transfer these on a large scale and in the best way possible to new cities and contexts - in CCCB's forerunner cities, in the follower cities and beyond.</p> <p>Further, cargo bikes bring with them a whole new bicycle culture: new fashionable multi-purpose cargo bike designs, cargo bike shops, new logistics concepts. Stationary cargo bikes can quickly be transformed to mobile street furniture and then even fulfil a place maker function.</p> <p>Building on the success of these previous projects, CCCB exploits the limitless potential of cargo bikes promoting their usage amongst public, private, and commercial users. Assessing best practices across Europe, CCCB will raise awareness and support the uptake of cargo bikes and cargo bike initiatives. In doing so, the project will foster exciting developments that - among other things - offer more sustainable logistics operations, improve public spaces, engage citizens, and reduce traffic congestion.</p> <p>CCCB has the following objectives:</p> <ul style="list-style-type: none"> <li>• Raise awareness among the relevant stakeholders: public, private and commercial sector.</li> <li>• Utilise innovative tools for the take-up and scale-up and transfer between forerunner and follower cities: e.g. peer-to-peer exchange.</li> <li>• Establish favourable framework conditions for cargo bike use.</li> </ul>

	<ul style="list-style-type: none"> <li>• Achieve wide roll-out and transferability through Forerunner cities, Follower cities (within the consortium) and External follower cities.</li> <li>• Reduce congestion, emissions; increase safety; increase public space and improve public space usage.</li> </ul>
Implementation and outcomes	<p>To achieve the project’s objectives, CCCB deployed a variety of methods:</p> <ul style="list-style-type: none"> <li>• Training and workshops for a broad variety of target groups including city authorities, the commercial sector, the private sector, and NGOs</li> <li>• Educating and supporting a variety of ‘multipliers’ such as mayors, users and so-called “local heroes’ who can spread the message about cargo bikes and CCCB</li> <li>• Using the cargo bike as a medium through media bikes adapted to do TV and radio interviews as well as place maker bikes used as urban furniture in public spaces</li> <li>• Innovative funding and financing: to address the high price of cargo bikes, which may act as a barrier towards its scale-up, CCCB offer low-priced try-out and sharing schemes and develop entirely new and self-perpetuating, sustainable financing schemes for cargo bike businesses</li> <li>• By directly addressing mayors, financial institutions, and the bicycle industry as well as utilizing several national and international networks available to the project partners, CCCB will involve major stakeholders.</li> </ul>

<b>GREENCHARGE</b>	
Project duration	09/2018 – 02/2022
What is about?	Smart electric mobility in cities
Thematic area	Clean and energy-efficient vehicles
Website	<a href="https://www.GREENCHARGE2020.eu/">https://www.GREENCHARGE2020.eu/</a>
Who was involved (pilots)	Bremen (DE), Barcelona (ES), Oslo (NO)
Project coordinator	SINTEF AS. Research organisation, Norway.
Project overview	<p>The aim of GreenCharge is to empower cities and municipalities to make the transition to zero emission/sustainable mobility with innovative business models, technologies and guidelines for cost efficient and successful deployment and operation of charging infrastructure for EVs.</p> <p>Inspired by ideas from sharing economy, the business models focus on enabling the mutualisation of excess capacity of private renewable energy systems (RES), private charging facilities and the batteries of parked EVs, leveraging fair gain sharing to ensure sufficient incentives for all stakeholders to participate.</p> <p>The enabling technology coordinates the power demand of charging with other local demand and availability of local RES, leveraging load flexibility and storage capacity of local stationary batteries and parked EVs. Furthermore, it provides user-friendly charge planning, booking and billing services for EV users. This reduces the need for grid investments to establish new charging stations, removes range anxiety and enables the sharing of already existing dedicated charging facilities for EV fleets. To implement the technology the project integrates and extends existing systems.</p> <p>Pilots is carried out in Barcelona, Bremen and Oslo to demonstrate and evaluate the proposed approach. The pilots are extended with simulations for exploring more complex scenarios not possible to test in the pilots and to assess scalability.</p> <p>The guidelines synthesize the experience from the pilots and simulations and advice on localisation of charging points, grid investment reductions, and policy and public communication measures for accelerating uptake of electromobility, and align with Sustainable Urban Mobility Plan (SUMP) processes.</p> <p>The consortium includes commercial companies (also SMEs) with experience in commercialisation, and ambitious municipalities with significant experience in deploying innovative solutions.</p>
Implementation and outcomes	Here is an overview of the projects' implemented measures and outcomes:

	<ul style="list-style-type: none"><li>• Introduce new business models supporting Energy Smart Neighbourhoods, and other innovative combinations of stakeholders in e-mobility solutions</li><li>• Enable charging of cars in a private parking garages in a way that staggers charging to meet individual needs while at the same time being energy efficient</li><li>• Simplify booking of charging</li><li>• Provide systems that reduce the peak load on the public grid, thus reducing the upper capacity needed - and therefore costs for infrastructure installation</li><li>• Provide a Reference Architecture, acting as the start of a standard in the domain of smart charging</li><li>• Convincingly demonstrate the pros and cons (from technical, usability and business perspectives) of a variety of e-mobility scenarios</li><li>• Synthesise lessons learned from all of the above into recommendations for policy makers and technologists</li><li>• Provide a set of technologies supporting these innovations, in some cases as commercial products</li></ul> <p>The long-term impact of GreenCharge should facilitate a substantial shift to use of e-mobility in a way that maximises use of green energy. That will ultimately lead to reductions in CO2 emissions.</p>
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HANDSHAKE	
Project duration	09/2018 – 08/2022
What is about?	Bringing together 13 of Europe’s top cycling cities to share and inspire excellence
Thematic area	Innovative solutions
Website	<a href="https://Handshakecycling.eu/">https://Handshakecycling.eu/</a>
Who was involved (pilots)	Amsterdam (NL), Copenhagen (DK), Munich (DE), Bordeaux (FR), Bruges (BE), Cadiz (ES), Dublin (IE), Manchester (UK), Helsinki (FI), Krakow (PL), Riga (LV), Rome (IT), Turin (IT).
Project coordinator	Isinnova
Project overview	<p>Handshake supports the effective take up of the integrated cycling solutions successfully developed by Amsterdam, Copenhagen and Munich, the Cycling Capitals and world-renowned cycling front runners, to 10 highly committed Future Cycling Capitals, Bordeaux Metropole, Bruges, Cadiz, Dublin, Helsinki, Krakow, Greater Manchester, Riga, Rome and Turin.</p> <p>Partner cities are combined in a composite working environment in which diverse geographical contexts, socio-economic conditions and planning cultures work toward the same goals, that is, delivering the desired cycling change. The project believes that effective transfer can happen only in the presence of: i) state-of-art body of knowledge on cycling policy and solutions; ii) sustaining transition processes; iii) motivating and supporting forms of mentorship.</p> <p>In Handshake, this is ensured by the presence of 3 cycling planning champions, the employment of highly innovative methods brought together into a supportive and novel transfer cycle (including Bikenomics, Immersive Study Tours and Transition Management), and a mentorship programme that takes by the hand each participating city.</p> <p>The project’s strategic objectives include:</p> <ul style="list-style-type: none"> <li>• Inspire the creation or refinement of holistic cycling visions and concrete transfer approaches;</li> <li>• Foster the adoption of a multidisciplinary planning culture to empower the project process and consolidate future cycling policies and investments;</li> <li>• allow cycling to become a key element of urban transport;</li> <li>• Improve cycling modal share and safety;</li> <li>• Leverage the potential of cycling as a critical congestion relief tool;</li> <li>• Leverage cycling to improve public health; vii)</li> <li>• Foster economic growth.</li> </ul>

<p>Implementation and outcomes</p>	<p>As cycling is a powerful way to address these challenges and steer cities towards being more sustainable, equitable and economically prosperous places for citizens. Handshake helps cities of all types become more liveable places, improving conditions for cycling as an everyday mode of transport.</p> <p>Handshake achieved this by improving the quality of both cycling infrastructure and communications through identifying innovation in areas such as intelligent transport systems, bike sharing, modelling, bike parking, socio-economic assessment and governance and decision-making.</p> <p>Handshake developed the manifold streams of project activity, identifying the cycling status baseline in each city and structuring the supporting mechanism to sustain the knowledge transfer and the cycling solutions implementation.</p> <p>The project worked synergistically to define the benchmarking cycling state-of-affair in each city, and an analysis and precise definition of the cycling solutions to be transferred from CCs to FCCs, identifying the areas in which inspiration and capacity building are most needed.</p> <p>The consortium set up the knowledge exchange mechanisms that accompany the project and sustain the cycling solutions transfer:</p> <ul style="list-style-type: none"> <li>• An inspirational, motivational and empowering programme of mentorship.</li> <li>• A concatenation of highly innovative methods brought together into an original and structured pathway, which includes bikenomics, immersive study tours and symposia, transition management, ethics and equity guidelines.</li> </ul> <p>By fall 2020, the project was successfully able to hold online a number of critical knowledge share and transfer events, some of which newly designed, including thematic workshops gathering the technical staffs of the cycling capital cities.</p> <p>Policy and scientific-relevant insights have been collected to boost the effective take-up of cycling in urban mobility planning. In particular, a self-assessment tool to assess cities' capacity for cycling solution development has been designed in a city-driven and highly participatory manner. Finally, Handshake kept promoting attractive, easy-to-digest formats the interesting and valuable information generated by the specialised and motivational exchange among world-renowned cycling front runner organisations and highly committed cities.</p>
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<b>MEISTER</b>	
Project duration	09/2018 – 02/2022
What is about?	Mobility Environmentally-friendly, Integrated and economically Sustainable Through innovative Electromobility Recharging infrastructure and new business models
Thematic area	Clean and energy-efficient vehicles
Website	<a href="https://meisterproject.eu/">https://meisterproject.eu/</a>
Who was involved (pilots)	Berlin (DE), Malaga (ES), Stockholm (SE)
Project coordinator	ETRA INVESTIGACION Y DESARROLLO SA, Spain
Project overview	<p>MEISTER aims to deliver a set of tools to foster e-mobility large scale adoption by (1) demonstrating innovative, sustainable business models to lower installation and operation costs of charging infrastructure, (2) optimizing usage of infrastructure by the smart combination of charging and parking services, (3) integrating EV within urban SUMPs, including the establishment of EV sharing and the inclusion of EV within MaaS schemas to reduce CO2 emissions and optimize urban space usage, (4) providing interoperable platforms and services to users for an easy, convenient and barrier-free access to charging, billing and smart grid services, including an increase of the use of RES and self-generation to power EVs.</p> <p>Thus, MEISTER aims at creating the conditions for smart e-mobility market take up in cities, by means of developing integrated approaches, smart solutions and innovative, sustainable business models, which are tested and validated in three urban areas in Southern, Central and Northern Europe: Malaga (Spain), Berlin (Germany), and Gothenburg (Sweden). These 3 sites are EU leaders in the field of e-mobility, have complementary contexts and share a common vision on EV deployment. The three MEISTER pilots involve 51,500 users, 1,000 EV and 660 charging points.</p> <p>The specific focus areas for the MEISTER project are described in the objectives below:</p> <ul style="list-style-type: none"> <li>• Establishment of innovative, sustainable business models for smart e-mobility</li> <li>• Deployment of an e-mobility interoperability platform</li> <li>• Integration of e-mobility in the cities' sumps and city planning process</li> <li>• Integration with smart grid services</li> </ul>
Implementation and outcomes	MEISTER solutions are packaged in the form of 5 products/results (P):

	<ul style="list-style-type: none"><li>• P1: MEISTER Replication, Market Uptake and Deployment Handbook: key outcomes of the project which any city willing to boost the large-scale deployment of electromobility should use.</li><li>• P2: MEISTER Intelligent Billing &amp; Roaming Platform: operator and service provider independent platform for e-mobility providers that enables an easy, non-discriminatory, convenient and barrier-free access to end users for EV charging billing features in urban areas.</li><li>• P3: MEISTER Integrated Real-Time Information &amp; Booking Services: with five components: (i) the backend (integrated services), three frontends namely (ii) smart phone app for individual EV drivers, (iii) mobility display for housing services, (iv) application for urban logistics companies, and (v) the smart e-mobility dashboard for the city management.</li><li>• P4: MEISTER European eMobility Expertise Centre (EeMEC) and eSUMPS knowledge base: technical, legal and financial support centre to facilitate the transferability of best practices from the three MEISTER pilot cities –and other cities leading eMobility in Europe- to other European local governments.</li><li>• P5: MEISTER Smart Charging and Storage Platform: tool to be used by vehicle-sharing companies and e-fleet managers, in order to optimize the activities related with the smart charging and discharging of the EVs, responding to the flexibility requests of the grid.</li></ul> <p>Thereby, MEISTER develops integrated approaches, smart solutions and profitable BMs to achieve the objectives and outcomes previously explained.</p>
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<b>METAMORPHOSIS</b>	
Project duration	06/2017 – 05/2020
What is about?	Transformation of neighbourhoods in a child-friendly way to increase the quality of life for all citizens.
Thematic area	Innovation in neighbourhoods
Website	<a href="http://www.Metamorphosis-project.eu/">http://www.Metamorphosis-project.eu/</a>
Who was involved (pilots)	Alba Iulia (RO), Graz (AT), Meran (IT), Munich (DE), Southampton (UK), Tilburg (NL), Zurich (CH)
Project coordinator	Forschungsgesellschaft Mobilitaet - Austrian Mobility Research FGM – AMOR Gemeinnutzige GMBH
Project overview	<p>The aim of the Metamorphosis project is to transform car-oriented neighbourhoods into child-friendly places to increase quality of life for all. Indeed, the core value of the project relies on the premise that the presence of children in urban public space is a major indicator of a people-oriented and sustainable neighbourhood.</p> <p>The project applies an innovative and participatory approach, which encompasses the direct involvement of children as crucial players in each phase of the project – from planning through implementation, evaluation, and dissemination. During each phase of Metamorphosis, children's perspectives, suggestions, and ideas are highly valued as essential contributions to create more children-friendly cities.</p> <p>The objectives of Metamorphosis are:</p> <ul style="list-style-type: none"> <li>• transforming car-oriented into children-friendly neighbourhoods, leading to behavioural change and increasing citizen quality of life</li> <li>• implementing the vision-building process needed for such transformation</li> <li>• achieving creative breakthrough innovations for streets, squares and other public spaces in neighbourhoods and urban districts, such as in development, design, governance and planning procedures</li> <li>• developing and implementing children-friendly mobility solutions</li> <li>• evaluating take-up, involvement, process and impacts using innovative evaluation methodologies</li> <li>• using new instruments to facilitate the transfer of know-how acquired, from city to city and country to country, also beyond the duration of the project</li> </ul> <p>Metamorphosis seeks to address new ways of supporting development and implementation of neighbourhood-level and urban-district level transport innovations, while at the same time helping to improve quality of life for residents in these communities, by recognising the needs and rights</p>

	<p>of children in public space and implementing processes, measures, and activities which will benefit them.</p> <p>Metamorphosis includes seven trial implementation cities representing a wide mix of neighbourhoods and demographic characteristics.</p>
Implementation and outcomes	<p>The project followed the following steps:</p> <ul style="list-style-type: none"> <li>• a definition of child-friendly neighbourhoods, i.e., the potential scope of the project, including typical attributes and characteristics of such a public space</li> <li>• a summary of children’s needs and abilities at different ages through childhood, including potential issues and strategies for the activation of children as essential stakeholders and participants</li> <li>• suggested approaches to the planning of implementation trials, including methods for engaging children in the visioning, design and evaluation of intervention measures and activities</li> <li>• prospective implementation options, including further concepts, tools and methods for developing child-friendly neighbourhoods, as well as an initial summary of innovative and best practice interventions which will be considered by the cities in developing their implementation plans and trials</li> <li>• advice for monitoring and evaluation in each city, including goal setting and target indicators based on the best practice experience gained from other EU projects.</li> </ul> <p>The involvement of children during all project stages was unique to the project and will trigger changes in the respective neighbourhoods that go far beyond existing practices. With this methodology, it is possible to include emotional social and educational elements in addition to usual technical planning approaches.</p>

<b>MUV – Mobility Urban Values</b>	
Project duration	01/2017 – 05/2020
What is about?	Sustainable and active mobility
Thematic area	Innovation in neighbourhoods
Website	<a href="https://www.muv2020.eu/">https://www.muv2020.eu/</a>
Who was involved (pilots)	Amsterdam (NL), Barcelona (ES), Fundao (PT), Ghent (BE), Helsinki (FI), Palermo (IT)
Project coordinator	Palermo Urban Solutions HUB
Project overview	<p>MUV levers behaviour change in local communities using a novel approach to reducing urban traffic. Rather than focus on infrastructure, it raises citizens awareness on the quality of the urban environment to promote a shift towards more sustainable and healthy mobility choices. Its technological ecosystem integrated three components:</p> <ul style="list-style-type: none"> <li>• a mobile and wearable app used as the interface with end-users to (i) explain MUV’s philosophy, (ii) anonymously track users’ mobility choices, (iii) provide visual feedback and statistics about sustainable mobility improvements, and (iv) let users challenge friends, redeem trophies and even physical rewards and discounts made available by sponsors.</li> <li>• a distributed network of environmental monitoring stations (co-designed with ‘FabLabs’ and local makers) aimed at collecting useful data and interacting actively with citizens;</li> <li>• a web dashboard providing recommendations to local supporting organizations, mobility managers and decision makers.</li> </ul> <p>The project has the following objectives:</p> <ul style="list-style-type: none"> <li>• understanding the neighbourhoods’ peculiarities and emerging values to define an effective behaviour change strategy;</li> <li>• co-designing site-specific solutions for better and more liveable urban environments;</li> <li>• developing scalable digital solutions and technologies to improve the experience of urban mobility;</li> <li>• raising awareness among citizens on the importance of sustainable and healthy mobility choices</li> <li>• analysing, visualising and sharing mobility and environmental data to build an effective decision support system for multiple stakeholders;</li> <li>• integrating new co-created mobility solutions into urban policy-making and planning processes at the neighbourhood level;</li> </ul>

	<ul style="list-style-type: none"> <li>• bringing the whole experiment to market through an innovative business model to improve urban transportation</li> </ul>
Implementation and outcomes	<p>The methods used within MUV project include:</p> <ul style="list-style-type: none"> <li>• gamification, ICT and data science to translate people’s needs into new sustainable mobility solutions;</li> <li>• added-value services (e.g. trip planning), artistic design, awareness raising techniques, co-creation to maximise the involvement of end-users and prevent the risk of low uptake;</li> <li>• geo-referenced digital marketing and direct marketing techniques to improve local businesses’ selling performances</li> <li>• data visualisation to simplify complex information about urban mobility and support decision making;</li> <li>• real-world piloting in diverse urban neighbourhoods, to ensure the relevance of the lessons learnt and maximise replicability</li> </ul> <p>MUV co-creation activities have generated mobility policies targeted to each pilot area:</p> <ul style="list-style-type: none"> <li>• Amsterdam pilots are focused on the question of data governance. How can MUV data be best organised, used, and governed?</li> <li>• The Barcelona pilot aims to develop a co-creative method for analysing data, and then to co-create policy recommendations based on that data. Pilot coordinators use co-creation sessions to expand their network of stakeholders.</li> <li>• Pilot coordinators in Fundao aim to reactivate the local mobility community. With the help of citizen ‘project ambassadors’, the pilot looks to strengthen existing local ties, while also expanding to new community members.</li> <li>• Ghent focuses on safety and raised awareness about their existing campaigns on safe routes through neighbourhoods.</li> <li>• Helsinki ’s focus is on how to make use of community-gathered data to develop novel strategies for working with traffic data. They developed a mobility panel of MUVers; combining qualitative and quantitative data in traffic planning; and developing a system to allow and promote feedback and dialogue</li> <li>• Pilot coordinators in Palermo aimed to continue developing dialogue on mobility with the local community and to select high-quality and feasible concepts stemming from MUV evidence.</li> </ul>

<b>PARK4SUMP</b>	
Project duration	09//2018 – 08/2022
What is about?	Transformation of neighbourhoods in a child-friendly way to increase the quality of life for all citizens.
Thematic area	Innovative solutions
Website	<a href="https://PARK4SUMP.eu/">https://PARK4SUMP.eu/</a>
Who was involved (pilots)	Freiburg (DE), Gdansk (PL), Krakow (PL), La Rochelle (FR), Lisboa (PT), Reggio Emilia (IT), Rotterdam (NL), Shkodra (AL), Sint-Niklaas (BE), Slatina (RO), Sofia (BG), Tallinn (EE), Trondheim (NO), Umea (SE), Vitoria-Gasteiz (ES), Zadar (HR)
Project coordinator	Mobiel 21
Project overview	<p>Park4SUMP is an EU-funded Horizon 2020 project dedicated to showing how cities can adapt parking management policies and deploy effective and innovative solutions as part of their Sustainable Urban Mobility Plans (SUMPs).</p> <p>In spite of the fact that effective parking management has proven to be beneficial in delivering sustainable urban mobility in our cities, it is still one of the most underdeveloped elements within Sustainable Urban Mobility Planning (SUMP) policies. In fact, good parking management can help free up valuable public space, making our cities more attractive; support local economy; reduce vehicle traffic; improve congestion, road safety and air pollution; and moreover, generate revenues to invest in sustainable mobility and urban improvements.</p> <p>Park4SUMP is demonstrating how Innovative parking solutions become an integral part of cities' Sustainable Urban Mobility Plans (SUMP) to achieve their vision and objectives.</p> <p>Park4SUMP is learning cities how to:</p> <ul style="list-style-type: none"> <li>• Move from an operational and reactive parking policy to a more strategic one</li> <li>• Implement innovative and cost-effective parking solutions</li> <li>• Ring fence parking revenues for sustainable mobility purposes</li> <li>• Increase political and public acceptance of parking management solutions</li> <li>• Free public space from parking pressure to improve the quality of life in your city</li> <li>• Reduce car travel, as a result of parking management solutions, to make their transport system more sustainable</li> </ul> <p>The overall objectives of Park4SUMP are:</p> <ul style="list-style-type: none"> <li>• to achieve wide roll-out and transferability</li> <li>• to stimulate further innovation in parking management</li> </ul>

	<ul style="list-style-type: none"> <li>• to raise awareness and gain acceptance among relevant stakeholders on how parking policies can help cities</li> <li>• to build capacity, particular among cities that have difficulties in implementing such policies</li> <li>• to improve quality of life in society and cities</li> </ul>
Implementation and outcomes	<p>Park4SUMP outcomes included:</p> <ul style="list-style-type: none"> <li>• a city analysis and assessment of their level of development in terms of parking management, SUMP development and the integration of both aspects. Additionally, national and regional framework conditions (laws and regulations) were collected and analysed to understand possible barriers when (later) transferring success-proven practice measures in policy transfer-, capacity building and SUMP-integration programmes mainly in the second period of the project. The assessment process with interviews and questionnaires also formed the basis for development of the ParkPAD audit tool.</li> <li>• the conceptualisation of cities' (policy oriented) action- and (practical) implementation plans with measure selection for the Park4SUMP life time</li> <li>• a survey distributed among the Park4SUMP city representatives the framework addressing concepts and typologies of innovation in parking policies.</li> <li>• a capacity building programme ensured that representatives of all Park4SUMP cities build their capacity in a way that aligns their parking management activities with SUMP, their action plans and also with the project objectives.</li> <li>• Cities started the implementation of parking measures and their integration into SUMP supported by the capacity building insights.</li> <li>• The development of a monitoring and evaluation methodology and a city by city evaluation plan.</li> <li>• the care for ethics requirements in the project.</li> <li>• risk management and contingency actions due to the COVID-19 outbreak. This include several work packages - especially capacity building, dissemination, implementation of Parking Management measures and Evaluation</li> <li>• The evaluation of the ParkPAD test phase in 16 cities and preparation of the institutionalisation of ParkPAD tool</li> </ul>

PROSPERITY	
Project duration	09/2016 – 08/2019
What is about?	Prosperity through innovation and promotion of Sustainable Urban Mobility Plans
Thematic area	SUMPs
Website	<a href="http://sump-network.eu/">http://sump-network.eu/</a>
Who was involved (pilots)	Koprivnica (HR), Dubrovnik (HR), Fagaras (RO), Hradec Kralove (CZ), Jonava (LT), Kassel (DE), Katowice (PL), Limassol (CY), Lisbon (PT), Ljutomer (SL), Szeged (HU), Varna (BG)
Project coordinator	FGM-AMOR
Project overview	<p>CIVITAS PROSPERITY aims to enable and create a culture shift in government agencies and local authorities to support Sustainable Urban Mobility Plans (SUMPs). The project focuses on promoting and supporting the broad take-up of SUMPs especially in countries, regions and cities where take-up is currently low. It aims to achieve this by providing mechanisms and tools for national and regional agencies to take a leading role in the development of SUMPs, and by building professional capacity through peer-to-peer exchange programmes and tailor-made training programmes on various aspects of SUMPs and/or innovative approaches in sustainable urban mobility.</p> <p>The core concept of PROSPERITY is bringing ministries into the project, which significantly enhances the visibility of the project at the national level and therefore increases the number of cities active in SUMPs. Thus, PROSPERITY ensured that more cities commit to SUMPs that are in line with the EU SUMP guidelines and that include a broad range of innovative measures. This generates a high potential for replication by neighbouring cities, especially in regions where take-up is low and the impacts from transport are severe – for this reason, the majority of PROSPERITY activities took place in southern, central-eastern and eastern Europe.</p>
Implementation and outcomes	<p>CIVITAS PROSPERITY followed the SUMP philosophy. The main aim is to support local and national authorities to improve the quality and uptake of SUMPs.</p> <p>This was achieved through the involvement and interaction of national level administrations, while acknowledging gaps between the needs and demands of cities developing SUMPs and those of higher administrative institutions who prepare the groundwork and programmes to encourage cities to do so.</p> <p>The objectives of CIVITAS PROSPERITY have been to:</p> <ul style="list-style-type: none"> <li>• Produce a shift in the organisational culture of transport planning.</li> <li>• Get ministries and national agencies to play a leading role in SUMP development.</li> </ul>

	<ul style="list-style-type: none"> <li>• To provide mechanisms and tools for ministries to take on this lead role.</li> <li>• Analyse problems with the take-up of SUMPs, understand challenges as expressed directly by cities, and then help cities to address these barriers.</li> <li>• Get more cities to create SUMPs.</li> <li>• Ensure that these SUMPs will lead to implementation of more innovative transport measures.</li> <li>• Build capacity that reflects the spirit of the EU SUMP guidelines, shifting local cultures that view them merely as mandatory documents written to fulfil a requirement.</li> <li>• Deliver a measurable impact.</li> </ul> <p>These objectives were achieved in 12 Member States and across a broad and active network of partner cities by means of a four-pronged approach:</p> <ul style="list-style-type: none"> <li>• National programmes – activating cities through strong involvement of the national level;</li> <li>• Living Labs – creating a support system for PROSPERITY partner cities;</li> <li>• Tools and guidelines – improving SUMP tools and guidelines to provide support to cities</li> <li>• Capacity Building – supporting innovative capacity-building, led as much by cities as by expert trainers, informed by the experiences and participation of ‘Champion SUMP cities’ and tailored to the needs and contexts of each locality.</li> </ul>
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SUITS	
Project duration	12/2016 – 11/2020
What is about?	Supporting Urban Integrated Transport Systems: Transferable tools for authorities
Thematic area	SUMPs
Website	<a href="https://www.suits-project.eu/">https://www.suits-project.eu/</a>
Who was involved (pilots)	Alba Iulia (RO), Coventry (UK), Stuttgart (DE), Kalamaria (GR), Palanga (LI), Rome (IT), Turin (IT), Valencia (ES),
Project coordinator	Coventry University
Project overview	<p>The SUITS project is a four-year research and innovation action, intending to increase the capacity building of Local Authorities and transport stakeholders and to transfer learning to smaller sized cities, making them more effective and resilient to change in the judicious implementation of sustainable transport measures. SUITS is one of the three projects of the EU's CIVITAS 2020 initiative focusing on sustainable urban mobility plans.</p> <p>The project produced and provided small and medium-sized cities with a set of tools on planning, financing and implementing sustainable transport measures and will support the enhancement of the capacity of nine cities in seven EU countries to efficiently address the new challenges of urban mobility and to foster investments in sustainable transport.</p> <p>The SUITS objective is to increase the capacity of local authorities to develop and implement sustainable, inclusive, integrated, and accessible transport strategies, policies, technologies, practices, procedures, tools, measures, and intelligent transport systems that recognise the end-to-end travel experiences of all users and freight.</p>
Implementation and outcomes	<p>SUITS developed a suite of learning material for decision makers and planners to address knowledge gaps and misconceptions related to urban planning measures and to the deployment of innovative mobility solutions and technologies.</p> <p>The project made available tools, manuals, resources to enhance the capacity to design and implement sustainable transport measures. These include:</p> <ul style="list-style-type: none"> <li>• An extensive assessment of capacity and resources of the nine pilot cities</li> <li>• A demo tool for data collection and analysis, which includes a tool for traffic data acquisition and a tool for freight data acquisition</li> <li>• Sample tools for route optimisation and online surveys</li> <li>• A data management platform for the Urban Transport Management Tool</li> </ul>

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	<ul style="list-style-type: none"><li>• A Decision Support Tool, integrating a suite of tools on innovative financing methods, procurement of transport products and services, and on business-models for transport</li><li>• Capacity Building Toolbox that integrates a set of different modules covering a wide range of topics related to urban mobility and relevant training materials.</li><li>• A change toolkit to be used for the transformation of the transport departments of small- and medium-sized cities into learning- and knowledge-sharing organisations</li><li>• A monitoring tool to evaluate any changes in capacity and capability of local authorities to implement sustainable mobility measures</li><li>• The SUITS capacity building manual, which will explain the implementation of the SUITS capacity building programme in full scale</li></ul>
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<b>SUMPS-UP</b>	
Project duration	09/2016 – 02/2020
What is about?	European Programme for Accelerating the Take up of Sustainable Urban Mobility Plans
Thematic area	SUMPs
Website	<a href="https://sumps-up.eu/">https://sumps-up.eu/</a>
Who was involved (pilots)	Birmingham (UK), Budapest (HU), Malmo (SE), San Sebastian (ES), Sofia (BG), Thessaloniki (GR), Turin (IT)
Project coordinator	ICLEI European Secretariat GMBH
Project overview	<p>The SUMPs-Up project assists planning authorities to overcome the barriers that prevent or make it difficult to implement SUMPs by enabling them to embrace SUMP as the European-wide strategic planning approach, especially in countries where take-up is low and the negative effects of transport are severe. To achieve this, the project combined comprehensive SUMP research, tailored capacity-building, strong mechanisms for technical support, as well as constant SUMP monitoring and evaluation.</p> <p>SUMPs-Up reviewed, strengthened, and integrated existing SUMP resources, designing a support system to assist cities to develop high quality SUMPs. A SUMP Tool Inventory helped mobility planners make better informed decisions about which planning tools to apply in their local contexts. This was enriched with experiences from city partners, who tested innovative solutions in SUMP preparation and implementation.</p> <p>The SUMPs-Up Innovation Pilot Pool created a mechanism that allows identifying and validating the most effective concepts, approaches and methodologies in SUMP practice for different framework conditions and different types of cities, complemented by a peer learning programme to leverage resources and enable more cities to apply the SUMP concept. At the Member State level, SUMPs-Up fostered exchange to improve national SUMP frameworks.</p>
Implementation and outcomes	<p>A comprehensive evidence-base on the barriers to SUMP preparation and implementation was created through applied research at the early stages of SUMPs-Up. Based on these findings, the project compiled the most effective planning tools and methods and provided guidance on various mobility policy areas. Based on the research and experiences, SUMPs-Up created innovative products and insightful reports and made these widely available, thereby ensuring the longevity of project impacts on SUMP development. A series of publications provide planners with expert guidance on crucial SUMP topics. An important update to the first edition from 2013, the second edition of the SUMP guidelines was launched at the CIVITAS Forum 2019 as one of project's key activities. In addition, SUMPs-Up has contributed practical and replicable tools and methods to</p>

	<p>support SUMP preparation, including guidance and training materials that are applicable to a large target audience.</p> <p>Throughout its lifetime, SUMP-Us worked closely with its city partners to implement and monitor the progress of several good practice measures and procedures.</p> <p>Among the most prized endeavours of SUMP-Us is the SLP (SUMP Learning Programme), which stimulated and helped to accelerate SUMP take-up by engaging planning authorities in a series of participant-driven learning activities. In addition to allowing for the testing of SUMP-Us tool and guidance, the SLPs equipped local planning authorities and mobility practitioners with the knowledge and skills needed to develop and implement SUMP.</p> <p>To enable a wider group of mobility experts and practitioners to benefit from project results and knowledge, a variety of learning opportunities were offered through the project, including face-to-face workshops, webinars, and a series of e-learning courses. The theme of some of these activities included the updated SUMP guidelines, SUMP Self-Assessment Tool, and financing and funding options for sustainable urban mobility.</p> <p>SUMP-Us activities contributed to a deeper understanding of barriers to SUMP development and cities' SUMP needs, and they have – and will continue to – improve the quality of SUMP planning processes and enhance EU level and member state dialogue concerning SUMP.</p>
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<b>SUNRISE</b>	
Project duration	05/2017 – 07/2021
What is about?	Sustainable urban neighbourhoods, research and implementation support in Europe.
Thematic area	Innovation in neighbourhoods
Website	<a href="https://civitas-sunrise.eu/">https://civitas-sunrise.eu/</a>
Who was involved (pilots)	Bremen (DE), Budapest (HU), Jerusalem (IL), Malmo (S), Southend on Sea (UK), Thessaloniki (GR)
Project coordinator	Rupprecht Consult
Project overview	<p>The SUNRISE mission is to develop, implement, assess and facilitate co-learning about new, collaborative ways to address common urban mobility challenges at the urban district level through “neighbourhood mobility labs”, and thus to lay the foundation for a Sustainable Neighbourhood Mobility Planning concept.</p> <p>SUNRISE rests on four main pillars:</p> <ul style="list-style-type: none"> <li>• Utilisation of neighbourhood-specific opportunities.</li> <li>• Co-creation of solutions, i.e. through strategic civic-public alliances</li> <li>• Consideration of the socio-technical nature of solutions, including through promoting combinations of services, social arrangements, rules, technologies, etc</li> <li>• Creation of new synergies between bottom-up and top-down approaches.</li> </ul> <p>The research entails promoting the use of “co-creative” activities along the entire innovation chain: identification of mobility problems, devising solutions to them, overseeing the implementation of measures and their evaluation, learning and knowledge transfer, and sharing. The project involves people representing different parts of society, as well as businesses, NGOs, local authorities, and academic institutions. Local activities aim to be inclusive of often under-represented groups in society such as migrants, women, older and younger people. SUNRISE will lay the foundation for a Sustainable Neighbourhood Mobility Planning concept to complement existing SUMP</p>
Implementation and outcomes	<p>SUNRISE used several methods based on different strategies for mobilisation and participation:</p> <ul style="list-style-type: none"> <li>• Quantitative and qualitative methods of co-collecting and co-analysing information.</li> <li>• Action research – researchers and consultants are not restricted to analysis but they take part in processes of change.</li> </ul>

	<ul style="list-style-type: none"> <li>• Transdisciplinary involvement of urban and regional stakeholders spanning politics, administration and private, organised and non-organised citizens.</li> <li>• Deployment of “citizen science” – specific forms of the involvement of organised and non-organised citizens in urban development and mobility behavioural change</li> <li>• The use of the internet as a tool for interactive, more inclusive and more transparent participation processes, as well as to mobilise “crowd wisdom”, collective intelligence and creativity</li> </ul> <p>SUNRISE’s impact inspired, supported, and informed European cities and neighbourhoods about new, neighbourhood-focused processes towards novel types of transport innovations. SUNRISE is making significant contributions to improving knowledge on:</p> <ul style="list-style-type: none"> <li>• New innovation processes: SUNRISE embraces the principle of co-creation, i.e. the involvement of citizens, stakeholders, and users in the identification of problems, the development of new measures and their implementation and evaluation, applying participation to all phases of the innovation circle.</li> <li>• New organisational and governance concepts and planning processes: SUNRISE examines existing governance and planning systems and develops and tests new arrangements to inform its recommendations. SUNRISE aims to develop a new, district-level governance approach to mobility, known as Sustainable Neighbourhood Mobility Planning.</li> <li>• New forms of urban mobility solutions: Working at the neighbourhood or district level: over 50% of the local budget is reserved for the development and implementation of resident- and stakeholder-driven solutions, including technological and low-tech solutions.</li> <li>• Impact assessment and evaluation: SUNRISE assesses its impacts at the neighbourhood and project levels, including direct effects on resident quality of life, on businesses and on the environment. SUNRISE also evaluates the degree to which various participation techniques and tools managed to meaningfully involve all sections of the population and which governance strategies fostered or hindered co-creation.</li> <li>• Implementing a strategy to create scale, visibility, co-learning and uptake: The SUNRISE Take-Up Cities group has been established as a primary target group for upscaling and transfer.</li> </ul>
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## CIVITAS 2020 Living Labs

DESTINATIONS	
Project duration	09/2016 – 05/2021
What is about?	CIVITAS DESTINATIONS seeks to integrate sustainable tourism and mobility strategies through the development of mobility solutions in six European island locations: Elba in Italy, the Portuguese island of Madeira (and its capital Funchal), Limassol in Cyprus, Rethymno on the Greek island of Crete, Las Palmas de Gran Canaria in Spain, and the Valletta Region of Malta.
Thematic area	Integrated and inclusive planning
Website	<a href="https://civitas.eu/projects/destinations">https://civitas.eu/projects/destinations</a>
Who was involved (pilots)	Madeira (PT), Limassol (CY), Rethymno (GR), Valletta (MT); Elba (IT) and Las Palmas de Gran Canaria (ES)
Project coordinator	HORARIOS DO FUNCHAL-TRANSPORTES PUBLICOS SA, Portugal
Project overview	<p>CIVITAS DESTINATIONS aimed to change the mind-sets of all stakeholders involved in providing effective mobility and transport solutions in an integrated way. The need to integrate conventional Public Transport (PT) with flexible and tailored services is particularly challenging in tourist destinations. Such towns are often too small and lack the resources to provide adequate sustainable mobility options for both residents and tourists - with fluctuating demand - especially during peak season. In these tourist destinations, mobility is often car dependent, leading to congestion and other harmful impacts which can harm the urban experience for the local and visiting population. This generates exceptional demands and trade-offs by local administrations, who are tasked with accommodating the needs of many different road users. The lack of well-established private-public collaboration schemes and business models also prevent the provision of seamless mobility services in many touristic destinations.</p> <p>To show how to address this challenge, DESTINATIONS implemented integrated innovative mobility solutions in: Madeira, Limassol, Rethymno, Valletta (Malta); Elba; and Las Palmas de Gran Canaria; targeting the resident and tourist mobility demand with an integrated approach, delivering sustainable mobility tools and strategies.</p>
Implementation and outcomes	<p>CIVITAS DESTINATIONS sought to integrate sustainable tourism and mobility strategies through the development of mobility solutions in six European island locations: Elba in Italy, the Portuguese island of Madeira (and its capital Funchal), Limassol in Cyprus, Rethymno on the Greek island of Crete, Las Palmas de Gran Canaria in Spain, and the Valletta Region of Malta.</p> <p>The six locations applied a set of uniform methodologies in order to develop and implement sustainable mobility measures and actions, with a view to offering clean and green transport. For close to five years, 28</p>

	<p>partners from nine Member States - with the strong support of local politicians - worked together on designing, developing, and implementing more than 75 measures and actions.</p> <p>As part of their solutions, the DESTINATIONS cities:</p> <ul style="list-style-type: none"><li>• developed Sustainable Urban Mobility and Logistics Plans (SUMPs and SULPS);</li><li>• created attractive and accessible public spaces;</li><li>• fostered behavioural change towards shared mobility and e-mobility (including by providing new infrastructure);</li><li>• managed mobility demand and re-allocated urban space in favour of sustainable modes;</li><li>• raised awareness on the worth of sustainable mobility; and,</li><li>• fostered attractive, efficient and accessible public transport.</li></ul> <p>Taken together, these measures have helped reduce the tourism-derived pressure on transport systems across the DESTINATIONS project sites and saw broad groups of stakeholders unite to drive a shift towards more sustainable modes.</p> <p>Ultimately, DESTINATIONS proved that the tourism and transport sectors can work together and that sustainable mobility is a highly touristic service - forging a path for other holiday destinations to follow as they attempt to go green. Following the onset of the COVID-19 pandemic, DESTINATIONS also supported touristic cities to rethink tourism in times of travel restrictions.</p>
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<b>ECCENTRIC</b>	
Project duration	09/2016 – 11/2020
What is about?	Innovative solutions for sustainable mobility of people in suburban city districts and emission free freight logistics in urban centres.
Thematic area	Urban logistics; Integrated and inclusive planning
Website	<a href="https://civitas.eu/projects/eccentric">https://civitas.eu/projects/eccentric</a>
Who was involved (pilots)	Madrid (ES), Stockholm (SE), Munich (DE), Turku (FI) and Ruse (BG)
Project coordinator	City of Madrid
Project overview	<p>The cities of Madrid, Stockholm, Munich, Turku and Ruse have formed the CIVITAS ECCENTRIC consortium to tackle the challenges of mobility in suburban districts and clean, silent and CO2 free city logistics. In many cities, these two important areas have received less attention in urban mobility policies.</p> <p>Though European cities have made significant steps forward in making city centres attractive and liveable urban nodes, there is a remaining conflict between providing high quality public space and meeting the accessibility requirements for freight deliveries. The suburban areas have remained largely unaddressed with a much higher car usage as a consequence. Recent or expected urban growth processes are posing additional pressure to peri-central areas, which face the specific challenges of:</p> <ul style="list-style-type: none"> <li>• Becoming sufficiently appealing to avoid an unnecessary traffic flow towards to the city centre;</li> <li>• Providing sustainable and high-quality mobility options to enable and encourage car independent lifestyles; and</li> <li>• Planning the urban future according to carbon neutral mobility principles</li> </ul> <p>ECCENTRIC demonstrated and tested the potential and replicability of integrated and inclusive urban planning approaches, innovative policies and emerging technologies to reach sustainable urban mobility objectives. The solutions will be implemented in 5 living laboratory areas in the outskirts that face high population growth and an increasing pressure on the existing transport networks.</p> <p>As highlighted in the SUMP of the ECCENTRIC cities, this action on a wider geographical scale than the city centre is needed in order to meet the targets of the Transport White Paper in terms of air quality, energy use and CO2 emissions, road casualties and wide uptake of clean vehicles.</p> <p>To reach CO2 free city logistics by 2030, ECCENTRIC will test clean vehicles and fuels, formulate new regulations and services and develop consolidation solutions in close partnerships with the private sector.</p>

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Implementation and outcomes	<p>The project has prepared a large collection of dissemination and replication materials, mostly in short audio-visual formats to enhance the discussion and further development as a legacy of the work done within the financed period.</p> <p>The expectations are that the inclusive and innovative approach and results of the work done may have a deep influence in the further knowledge-basis for the long term necessary sustainable urban mobility shift and new urban models.</p> <p>Some innovative approach has been directly replicated or analysed for replication in other cities, i.e. the E-mobility nodes (from Stockholm to Turku and Madrid), the maintenance of cycling and walking itineraries in cold weather (from Munich and Stockholm to Turku), the dialogue marketing for MM from Munich to Turku; the parking management from Stockholm to Amsterdam, the pop up or tactic strategy for testing a change from Stockholm and Madrid to Turku. The replication has been object of detailed study through an academic research linked to ECCENTRIC, through articles and master thesis that are going to be continued in next months.</p>
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PORTIS	
Project duration	09/2016 – 11/2020
What is about?	Provide more and better mobility of goods and services; better design and functionality of urban spaces and transport network in port cities.
Thematic areas	Demand and urban space management; urban logistics.
Website	<a href="https://civitas.eu/projects/PORTIS">https://civitas.eu/projects/PORTIS</a>
Who was involved (pilots)	Aberdeen, (UK), Antwerp (Belgium), Constanta (Romania), Klaipeda (Lithuania), and Trieste (Italy)
Project coordinator	City of Antwerp
Project overview	<p>Port Cities can be seen as multidimensional laboratories where challenges connected with urban mobility are more complex due to the dual system of gravity centre: the city, the port, not to mention their shared hinterland. These peculiarities are at once a challenge and an opportunity, as they provide scope for planning, researching and implementing integrated mobility solutions in distinctively complex urban contexts. Civitas PORTIS designed, demonstrated and evaluated integrated sets of sustainable mobility measures in 5 major port cities located on the North Sea (Aberdeen and Antwerp), the Mediterranean Sea (Trieste), the Black Sea (Constanta), and Baltic Sea (Klaipeda). The project also involved a major international follower port city on the East China Sea (Ningbo). Thanks to the project, the partner cities proved that more efficient and sustainable mobility is conducive to the establishment of vital and multi-modal hubs for urban, regional, national and International movements of passengers and goods. To do this, they established integrated living laboratories clustering local measures according to four major aspects of sustainable urban mobility:</p> <ul style="list-style-type: none"> <li>• Governance: to increase port-city collaborative planning and participation, leading to enhanced forms of SUMP.</li> <li>• People: to foster less car-dependent mobility styles, leading to modal shift in favour of collective and more active transport.</li> <li>• Transport system: to strengthen the efficiency of road traffic management to/from the port and through the city, and foster the use of clean vehicles.</li> <li>• Goods: to enhance logistics and freight transport, improving the efficiency and coordination of city, port and regional freight movements.</li> </ul> <p>Working with port cities, Civitas PORTIS will generate a strong and twofold replication potential: 1) specifically to other port cities, and 2) more generally to cities presenting major transport nodes and attractors for the benefit of the whole CIVITAS Initiative.</p>

<p>Implementation and outcomes</p>	<p>All five cities have finalised their local measures in the living laboratories. The governance initiatives led to the approval of the SUMP in Aberdeen, Trieste and Klaipeda, and to the upgrade of the SUMP to a regional level in Antwerp. Constanta and Klaipeda established a structured dialogue with citizens and stakeholders, never before seen in Romania and Lithuania, while Trieste has set up a project office to redevelop the Old Port area together with citizens and other stakeholders (WP1).</p> <p>In addition, the five cities have taken steps to improve public transport and encourage cycling, thereby providing mobility apps and guides to facilitate getting around the city/port area for citizens and tourists. Reallocation of road space to pedestrians, cycling and PT has been implemented in Antwerp and Constanta, supported by awareness-raising campaigns, which was a core activity in all cities (WP2).</p> <p>The cities have also implemented solutions to manage traffic flows and parking, improved signage and boosted the uptake of e-mobility, finding innovative ways to reduce pollution and make transport more efficient. A new system for the prioritisation of public transport has been developed in Klaipeda and an access control system is now in use in Trieste based on camera and sensor technology while Antwerp move to the NXTMobility, a data-driven mobility policy (WP3).</p> <p>Given the importance of freight transport in port cities, improvement of interconnectivity and traffic flows in order to reduce environmental impacts has been pursued. Freight routing backed by smart technology and cooperation with industry has been developed in Aberdeen, while real-time tracking of vehicles and cargoes to and inside the port has been developed in Trieste. A market place for logistic solutions is active in Antwerp, with continuous calls for projects (WP4). The project has also devised the CIVITAS PORTIS Innovation Process, created electronic innovation brochures, and established the Thematic Innovation Platform (WP5).</p> <p>Moreover, evaluation activities have been carried out to evaluate the effectiveness of the PORTIS measures in terms of impacts and process (WP6).</p> <p>Actions to understand the potential market for CIVITAS PORTIS innovations have been finalised and the transferability potential of local measures has been assessed and disseminated for the benefit of port cities across Europe and beyond. Exchanges with EU cities, China and third countries have been enhanced via webinars, training sessions and workshops (WP7).</p>
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## Older CIVITAS 2020 research projects

CIPTEC	
Project duration	05/2015 – 04/2018
What is about?	Using collective innovation to improve public transport
Thematic area	Collective passenger transport
Website	<a href="http://cipotec.eu/">http://cipotec.eu/</a>
Who was involved (pilots)	Frankfurt (DE), Rotterdam (NL), Southern Tuscany (IT), Thessaloniki (GR)
Project coordinator	Aristotelio Panepistimio Thessalonikis
Project overview	<p>CIPTEC sought to increase the modal share of public transport (PT) by being able to better understand and attract new users at as low a cost as possible. It sought to do so by developing and utilising modern marketing techniques and promoting creativity and innovation to encourage the desired modal shift.</p> <p>Two main processes sat behind this:</p> <ul style="list-style-type: none"> <li>• Market research of user groups</li> <li>• Collective innovation</li> </ul> <p>CIPTEC also examined PT from the supply perspective, shedding light on the challenges faced by PT providers. To tackle these, it produced the CIPTEC Toolbox for Public Transport Innovation. This helped operators and policymakers understand their situation, identify applicable solutions, and implement these.</p> <p>CIPTEC's objectives were:</p> <ul style="list-style-type: none"> <li>• To gather and analyse customer intelligence improving the understanding of urban public transport demand</li> <li>• Collect market intelligence to allow the demystifying of the urban public transport supply</li> <li>• Advanced motivational insights undergoing transport related behaviour</li> <li>• Mapping and identification of promising innovative approaches and co-creation of novel integrated solutions and business models for urban PT</li> <li>• Translation validation and capitalization of results through an extended platform of motivated stakeholders for PT innovation</li> </ul>
Implementation and outcomes	<p>During the first phase of the CIPTEC project, an analysis of current market and social trends that might influence public transport within the next years has been conducted. CIPTEC investigated the specific needs of users and potential users of Public Transport systems. This analysis was performed</p>

	<p>by means of a rigorous and in-depth review of the literature on different types of Public Transport customers groups and their needs. The analysis was complemented by the mapping and profiling of urban public transport supply.</p> <p>The main goal of the second phase was the development of innovative concepts in the public transport sector by means of collective intelligence, such as crowdsourcing campaigns and co-creation workshops, as well as the implementation of advanced marketing research methods. The second phase was concluded with the advanced marketing research methods that were used for ranking the innovations and identifying hidden groups of PT users.</p> <p>Additionally, behavioural insights have been tested both in lab and field environment, by taking into account the fact that preferences and attitudes can often be poor predictors of behaviour. In short, CIPTEC tested the potential of social labelling to increase people's actual use of the bus in two areas</p> <p>During the third phase of the project, the Toolbox for Public Transport Innovation has been designed and the potential of social entrepreneurship in the Public Transport sector was investigated through special workshops with experts on the field.</p>
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CITYLAB	
Project duration	05/2015 – 04/2018
What is about?	Incubating zero-emission logistics in living laboratories
Thematic area	Urban freight logistics
Website	<a href="http://www.citylab-project.eu">www.citylab-project.eu</a>
Who was involved (pilots)	Rotterdam (NL), Amsterdam (NL), Brussels (BE), London (UK), Oslo (NO), Paris (FR), Rome (IT), Southampton (UK)
Project coordinator	Transportøkonomisk Institutt
Project overview	<p>The objective of the CITYLAB project was to develop knowledge and solutions that result in the roll-out, scaling up and further uptake of cost-effective strategies, measures and tools for zero-emission city logistics.</p> <p>In a set of seven Living Laboratories (“Living Labs”), promising logistics concepts were implemented, tested and evaluated, and the potential for further roll-out and upscaling of the solutions investigated and explained.</p> <p>CITYLAB focused on four areas requiring intervention: highly fragmented last-mile deliveries in city centres; inefficient deliveries to regular recipients of large deliveries (e.g., businesses) and public administrations; urban waste, return trips and recycling; and logistics sprawl.</p> <p>CITYLAB worked on three pillars:</p> <ul style="list-style-type: none"> <li>• Improvement of basic knowledge and understanding on areas of freight distribution and service trips in urban areas that have received too little attention;</li> <li>• test and implementation of 7 innovative solutions that are promising in terms of impact on traffic, externalities and business profitability and have a high potential for future growth;</li> <li>• Provision of a platform for replication and spreading supported solutions.</li> </ul>
Implementation and outcomes	<p>The project’s participating city each implemented one or more freight measures during the project:</p> <ul style="list-style-type: none"> <li>• Amsterdam: City centre micro-hubs and cycle freight deliveries.</li> <li>• Brussels: Increasing vehicle loading by utilising spare capacity.</li> <li>• London: Growth of consolidation and electric vehicle use.</li> <li>• Oslo: Common logistics functions for shopping centres.</li> <li>• Paris: Logistics hotels to counter logistics sprawl.</li> <li>• Rome: Integration of direct and reverse logistics flows.</li> <li>• Southampton: Joint procurement and consolidation for large public institutions.</li> </ul>

	<p>The creation of living labs in city logistics provided a new way to develop and address different trends and challenges. It supports an action driven cooperation form fostering innovation deployment and improving communication and cooperation between stakeholders. Development of a shared vision, aligning individual interests to common goals and active involvement of the end-users as well as other competencies in the co-creation process helps to develop innovative solutions that are more user-friendly, more financially sustainable and adapted/tested within a real-world environment. CITYLAB has developed a handbook with guidance on how to get started for those wanting to develop future city logistics living labs.</p> <p>Also, CITYLAB supported seven implementations aiming at reducing the negative impacts of freight and service trips. Data have been collected and the implementations have been evaluated.</p> <p>The project contributed to synthesising and generating urban freight knowledge. This includes an Observatory of Strategic Developments Impacting Urban Logistics. The project also contributed to identifying the challenges that need to be addressed and overcome by the private and public sectors by the private and public sectors in ensuring the successful uptake and outcome of urban freight initiatives, and have increased the understanding of expected effects of measures.</p> <p>The knowledge and solutions generated in CITYLAB are expected to increase efficiency and load factors of freight trips in urban areas, and to reduce the negative impacts of freight activities in combination with achieving more sustainable business models for urban freight operations.</p> <p>The collaborative environment achieved from planning, implementing and evaluating the real-life CITYLAB implementations is a major leap forward from the traditional city logistics initiatives, where demonstrations aim to “prove” the functionality of a solution within a limited and temporary organisation. Because the Living Lab approach focus more on the city environment, CITYLAB achieves more than demonstrating the feasibility of a short-term test pilot, it also allows absorption by the city.</p>
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CREATE	
Project duration	06/2015 – 06/2018
What is about?	Reducing traffic to create place-based cities
Thematic area	Integrated Planning
Website	<a href="http://www.create-mobility.eu">www.create-mobility.eu</a>
Who was involved (pilots)	Berlin (DE), London (UK), Paris (FR), Copenhagen (DK), Vienna (AT), Adana (TR), Amman (JO), Bucharest (RO), Skopje (BG), Tallin (EE)
Project coordinator	University College London
Project overview	<p>CREATE (Congestion Reduction in Europe: Advancing Transport Efficiency) studied how five cities in Western Europe tackled growing car use and congestion over 50-60 years. The lessons they learned were then used to support five cities in Eastern Europe and around the Mediterranean to reduce congestion and car use, and move towards the use of sustainable transport modes.</p> <p>CREATE explored historical patterns of urban road traffic and car use, identify success factors in encouraging modal shift and lessons learnt in Western European capital cities, and work with Eastern Europe and Euro-med city partners to assist them in developing sustainable strategies.</p> <p>The main objectives of CREATE are to:</p> <ul style="list-style-type: none"> <li>• Improve our understanding and measurement of congestion and road network performance</li> <li>• Identify factors that have encouraged an evolution from Car-oriented, (Stage 1), through Sustainable mobility (Stage 2) to City as places (Stage 3)</li> <li>• Explore future mobility pressures faced by cities with growing populations</li> <li>• Develop guidelines and training materials for cities</li> </ul>
Implementation and outcomes	<p>CREATE's objectives have been reached thorough:</p> <ul style="list-style-type: none"> <li>• Analysing congestion and network performance data provided by INRIX and WE cities.</li> <li>• Using detailed household travel data from repeat surveys in WE cities since the 1970s/1980s and complementary data on network, economic and demographic conditions; and documents setting out historical policy development.</li> <li>• Preparing detailed guidance and training for our CEE cities, which will then be delivered to a much larger set of cities.</li> <li>• Working with leading technology providers, businesses and futurists, to explore what options there might be to provide high</li> </ul>

	<p>quality mobility in cities facing increasing population and employment.</p> <p>The main CREATE outcomes include:</p> <ul style="list-style-type: none"> <li>• A framework for exploring policy evolution and a basis for benchmarking cities worldwide in terms of their dominant policy perspective</li> <li>• A critical understanding of the strengths and weaknesses of different methods of measuring congestion and network performance, and how they can distort policy making – leading to fresh insights into better problem diagnosis and objective setting</li> <li>• Provision of policy makers with insights into the respective roles of policy, demography and economy in affecting levels of car use and helping policy makers to better understand the key role of legislation, administration and funding arrangements in delivering sustainable/liveable policies</li> <li>• Insights into ways of funding and financing sustainable/liveable policies and pointers to ways in which forecasting and appraisal methods need to be adapted</li> <li>• Guidelines to assist cities in applying CREATE principles</li> </ul> <p>Recommendations for tackling congestion and planning the cities of the future included:</p> <ul style="list-style-type: none"> <li>• Broaden the debate about congestion</li> <li>• Use wider indicators of urban mobility and city liveability</li> <li>• Develop a wider city vision, in which sustainable transport plays a key role to encourage place-based thinking</li> <li>• City shaping depends on a full integration of transport and land use planning at the metropolitan level</li> <li>• Foster cross-sector multi-level governance for more effective policy making and delivery</li> <li>• Invest in institutional capacity: broader skills base, better enforcement, delivery capability, etc.</li> </ul>
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<b>EMPOWER</b>	
Project duration	05/2015 – 04/2018
What is about?	Rewarding change in travel behaviour
Thematic area	Car-independent lifestyle
Website	<a href="http://www.empowerproject.eu">www.empowerproject.eu</a>
Who was involved (pilots)	Leading cities: Enschede (NL), Gothenburg (SE), Helsinki (FI), Milton Keynes (UK) Take Up Cities: Antwerp (BE), Budapest (HU), Milan (IT), Newcastle (UK), Odense (DK), Reading (UK), Bologna (IT)
Project coordinator	University of Leeds
Project overview	<p>EMPOWER researched how positive incentives can encourage members of the public to reconsider their travel choices and reduce the extent to which they travel using conventionally fuelled vehicles (CFV).</p> <p>They utilised incentives such as information, points, discounts, rewards, community support and games to help attract new users to use sustainable modes. Aside from implementation, EMPOWER also examined business cases for the creation and methodologies for the evaluation of such schemes.</p> <p>The main objective of EMPOWER was to investigate how to substantially reduce the use of CFV in cities by influencing the mobility behaviour of CFV drivers and users towards fundamental change. The EMPOWER approach is to reduce the use of CFV by: shifting trips to other modes/other vehicle types and promoting sharing and self-organisation to reduce demand overall. Undesirable impacts from CFV use will be reduced by: shifting CFV use to outside peak times and diversions to avoid particular areas/routes.</p>
Implementation and outcomes	<p>The innovation outputs of EMPOWER included an EMPOWER Toolkit to support industry, policy makers and employers to understand, choose and implement positive policy interventions.</p> <p>The Toolkit included: new mobility services to provide innovative positive policy measures, new evidence on behavioural responses and impacts from positive incentives, improved organisational models for successful implementation of positive policy measures and innovation in the evaluation methodology for new mobility services.</p> <p>Also, EMPOWER elaborated the so-called ‘Success factors for Social Innovation Implementations’, whose goal is to identify the success and failure factors in social innovation-based implementations in the transport sector. The results have Identified a set of factors attributed to the success or failure of social innovation schemes in the transport sector. These factors should provide information and guidance for the design of future transport schemes using social innovation.</p>

	<p>The main focus of the project’s living lab is here summarized:</p> <ul style="list-style-type: none"> <li>• Enschede focused on a reduction of car usage by stimulating a substitution of car trips with bicycle trips. Using a series of challenges, users could earn points which could be converted to reward vouchers at local retailers, supported by the already implemented SMART-app.</li> <li>• In Gothenburg the Living Lab focused on substituting longer commute car trips by Public Transport in two local communities. The SMART-app was tuned for the local situation to support this, using an equal reward system as in Enschede.</li> <li>• In Milton Keynes the Living Lab focused on the whole city and included schemes to encourage cycling and to encourage use of the electric bus on Route 7. Using the Love to Ride and *zwitch app, to schemes were implemented where voucher for local shops was the reward presented to users.</li> <li>• The Living Lab in Scotland focused on longer term decision-making around private vehicle purchasing decisions and a change to Ultra-Low Emission Vehicles (ULEVs). Information and financial incentives were provided to participants using several dedicated web tools. This approach used employers as a proxy-organisation between the Living Lab Operator and the end-user.</li> <li>• In Helsinki, the focus was strongly on the structures and processes need to enable innovative collaboration with local stakeholders, more in particular employers. We focused on investigating existing collaborative relations and the obstacles that would need to be overcome in order for implementation to take place in practice. The experimental work involved a series of small-scale test with two employers</li> </ul> <p>The project provided recommendations for future positive incentive schemes on the following aspects:</p> <ul style="list-style-type: none"> <li>• The design of mobility services</li> <li>• The use of social networks for the enrolment of new users</li> <li>• The embedding in existing organisations</li> <li>• The factors influencing the uptake</li> <li>• The most effective and efficient incentives</li> </ul>
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<b>FLOW</b>	
Project duration	05/2015 – 04/2018
What is about?	Walking and cycling as tools to take on congestion
Thematic area	Car-independent lifestyles
Website	<a href="http://h2020-flow.eu/">http://h2020-flow.eu/</a>
Who was involved (pilots)	Budapest (HU), Dublin (IE), Gdynia (PL), Lisbon (PT), Munich (DE), Sofia (BG)
Project coordinator	Rupprecht Consult
Project overview	<p>Furthering Less Congestion by Creating Opportunities for More Walking and Cycling or "FLOW" is a project that aims to put walking and cycling on an equal footing with motorised modes as a solution to tackle urban congestion, by developing a user-friendly methodology, involving traffic modelling, to assess the effectiveness of walking and cycling measures.</p> <p>The project took a trans-disciplinary approach to congestion reduction, and aimed to create and implement a new state-of-the-art by integrating the FLOW methodology and congestion assessment tools into the current standard transport impact analysis process.</p> <p>FLOW mission is to place non-motorised transport on an equal footing with motorised modes with regard to urban road congestion. It will achieve this by developing a methodology and tools to assess the ability of walking and cycling measures to reduce congestion in European cities.</p> <p>FLOW's objectives were:</p> <ul style="list-style-type: none"> <li>• To define the role of walking and (safe) cycling in congestion reduction;</li> <li>• To develop and apply tools for assessing the congestion-busting impacts of various walking and cycling measures;</li> <li>• To demonstrate and assess the congestion reduction impact of various walking and cycling measures;</li> <li>• To actively support take-up of congestion reducing measures by public administration;</li> <li>• To increase awareness of the congestion reduction potential of walking and cycling;</li> <li>• To foster the market for new walking and cycling products and services for congestion reduction;</li> <li>• To communicate congestion reduction facts of walking and cycling.</li> </ul>
Implementation and outcomes	The project addressed the challenge of helping cities to better assess the transport impacts of walking and cycling measures so that the benefits of such projects in reducing congestion could be understood and conveyed.

	<p>FLOW began by investigating the definition of congestion, technical methods for assessing transport network quality (specifically congestion), and the transport impact analysis process.</p> <p>Next, FLOW developed methods to improve the ability of transport analysis tools to assess the impacts of walking and cycling measures. Concretely, FLOW developed calculations for assessing different aspects of transport network quality, a comprehensive impact assessment tool and improvements to existing transport modelling software.</p> <p>The FLOW multimodal transport analysis calculation methods were developed to improve the ability to assess the transport impacts of walking and cycling. Existing techniques can evaluate the transport impacts of walking and cycling measures, but they only provide mode-specific results. They cannot help deciding whether it is better to add a cycle lane or a car lane in a given situation.</p> <p>The FLOW Impact Assessment Tool was developed to ensure that transport decision making considers environmental, societal and economic impacts of a proposed measure in addition to mobility impacts. The spreadsheet-based tool can be used to evaluate the impacts of a proposed transport measure by comparing data from before and after implementation.</p> <p>Finally, FLOW contributed through the following refinements to transport modelling:</p> <ul style="list-style-type: none"> <li>• Micro modelling – Enhanced modelling of conflict zones between cars and pedestrians, behaviour parameters, new mobility patterns, the interaction between bikes and pedestrians and shared space;</li> <li>• Macro modelling – Path-level attributes in stochastic assignment of bicycles, a modelling platform for combining two legs of a journey using different transport modes (here, shared bikes and public transport) and an enhanced representation of mobility sharing in public transport assignment</li> </ul> <p>One of the project’s most important contributions has been highlighting the need to improve transport models to better consider walking and cycling.</p>
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NOVELOG	
Project duration	06/2015 – 05/2018
What is about?	Four steps for sustainable urban freight
Thematic area	Urban freight logistics
Website	
Who was involved (pilots)	Athens (GR), Barcelona (ES), Graz (AT), Mechelen (BE), Rome (IT)
Project coordinator	CERTH
Project overview	<p>The innovative NOVELOG project provided guidance to cities and regions on how to implement sustainable urban freight transportation (UFT). Known as 'New Cooperative Business Models and Guidance for Sustainable City Logistics', NOVELOG means that cities can now put sustainable policies and measures in place via four simple steps:</p> <ul style="list-style-type: none"> <li>• Understand the UFT environment;</li> <li>• Focus on the most suitable measures and policies;</li> <li>• Assess these measures; and,</li> <li>• Guide stakeholders for effective implementation.</li> </ul> <p>The specific objectives of the project were:</p> <ul style="list-style-type: none"> <li>• cost-effective, eco-friendly measures and business models;</li> <li>• increased load factors and reduced vehicle movements;</li> <li>• optimised governance and stakeholder co-operation in urban distribution; and,</li> <li>• strengthened capacity of local authorities and public and private stakeholders for sustainable policy-making and mobility planning</li> </ul> <p>Project's pilots focused on:</p> <ul style="list-style-type: none"> <li>• Athens – an integrated rail-road system and cargo consolidation for last mile transportation</li> <li>• Barcelona – the operation of micro-blocks and e-tricycles for urban freight distribution, together with the use of the AreaDUM app for smart urban freight parking management in the city;</li> <li>• Graz – the extension of an existing e-bike B2C home delivery service and the introduction of an eco B2B delivery system;</li> <li>• Mechelen – a smart locker system and bike services for last mile distribution of goods;</li> <li>• Rome – the design and development of a 'decision support system' for freight distribution planning and monitoring;</li> </ul>

	<ul style="list-style-type: none"> <li>• Turin – the flexible use of bus lanes by freight vehicles and parking management in limited traffic zones.</li> </ul>
Implementation and outcomes	<p>The project's objectives have been achieved through:</p> <ul style="list-style-type: none"> <li>• the targeted understanding of urban freight and service trips, fostered by data collection on city logistics,</li> <li>• field testing and implementation of representative city logistics measures,</li> <li>• the development and application of a modular, integrated, evaluation framework for the assessment of these measures</li> <li>• the development of a typology between cities and potential city logistics components</li> <li>• the provision of guidance to cities, shaping consistent implementation channels for successful solutions, all according to the local needs and constraints.</li> </ul> <p>These activities have been accompanied by the production of the tools that are expected to support the take-up impact to wider international city and industrial networks:</p> <ul style="list-style-type: none"> <li>• The NOVELOG Understanding the cities tool: This tool aims to provide a starting point for the various stakeholders, to realize interrelations beyond their own environment; identify the key influencing factors of UFT demand &amp; supply and their expected impact on the UFT characteristics, through a stakeholder participation approach; serve as an ongoing platform at the city level, for building a common view among stakeholders on the UFT environment and reaching consensus on critical issues</li> <li>• The NOVELOG Toolkit: This tool aims to enable a city to identify measures, typology and impacts, in an accessible and repeatable fashion. The tool uses the findings of the previous work of NOVELOG to provide suitable measures and interventions to cities</li> <li>• NOVELOG Evaluation Tool: This tool was designed to help NOVELOG cities to assess measures that are designed to provide sustainable urban freight distribution. The Evaluation Tool enables the comparison of implemented measures or/and planned measures by using data that are obtained by observation of modelling</li> <li>• NOVELOG Impact assessment Guidance Tool. This tool can be used by cities to develop business models for UFT solutions, as well as to integrate it with their existing SUMP.</li> </ul>

SUCCESS	
Project duration	05/2015 – 04/2018
What is about?	Sustainable logistics solutions in the construction industry
Thematic area	Urban freight logistics
Website	<a href="http://www.success-urbanlogistics.eu">www.success-urbanlogistics.eu</a>
Who was involved (pilots)	Neudorf (CH), Paris (FR), Valencia (ES), Verona (IT)
Project coordinator	Luxembourg Institute of Science and Technology
Project overview	<p>SUCCESS (Sustainable Urban Consolidation CentrES for conStruction Projects) focused on the construction industry and its relationship with logistics. It saw potential to improve the efficiency of goods and waste movement and service trips in EU cities.</p> <p>The project aimed to explore and test green and efficient solutions covering various issues in the construction supply chain and material freight logistics in urban areas.</p> <p>To test those solutions, SUCCESS developed simulation tools to play out several scenarios focusing on the implementation of Construction Consolidation Centres (CCCs) at four pilot sites. Pilots studies have demonstrated reduced transportation impacts, positive effects on transportation efficiency and construction site productivity.</p> <p>Specifically, the project aimed to:</p> <ul style="list-style-type: none"> <li>• Decrease the nuisances caused by urban freight transport, so to improve the overall quality of life in urban zones.</li> <li>• Improve the use of the existing transport infrastructures and diminish their degradation, so to decrease building and renovating costs and impacts on urban environment.</li> <li>• Increase the level of cooperation and coordination among all the stakeholders of the supply chain and the policy makers.</li> <li>• Develop reusable methods and tools which can be adopted for the optimisation of the supply chain of future construction projects and help the implementation of CCCs, with clear indications of their impact, suggestions on where to optimally locate them, and a Cost-Benefit Analysis</li> </ul>
Implementation and outcomes	<p>The project followed the following steps:</p> <ul style="list-style-type: none"> <li>• Analysing the current situation by collecting information and data on the four pilot sites to detect problems, inefficiencies and potential improvements to the Construction Supply Chain.</li> <li>• Offering solutions and optimisation tools for the Construction Supply Chain (e.g. RFID and GIS technologies, e-collaboration tools, process mapping, business models, etc.).</li> </ul>

	<ul style="list-style-type: none"> <li>• Establishing numerical scenarios and simulations with and without CCCs for several cases using the data from the pilot sites (e.g. single / multiple suppliers, single / multiple site, etc.) and assessing potential solutions to be applied.</li> <li>• Implementing and testing different scenarios directly on pilot sites.</li> <li>• Developing a “Business model” based on construction sites’ results in order to ensure replicability of the solutions developed, especially in other European cities.</li> </ul> <p>The project produced three tools:</p> <ul style="list-style-type: none"> <li>• The SUCCESSFUL–Action plan tool to assess the logistics complexity of a given set of projects in a given city and identify the most appropriate optimisation measures.</li> <li>• The SUCCESSFUL–CBA4CCC tool to assess the costs and the benefits that the CCC implementation would bring for a given set of projects in a given city.</li> <li>• The SUCCESSFUL–CCC Locator tool to identify the best location of a CCC for a given set of projects in a given city.</li> </ul> <p>The core impact of SUCCESS is its contribution to the reduction of the negative externalities and costs of freight deliveries and service trips generated by the construction supply chain in urban areas. It delivered the first comprehensive data collection effort focussing on the analysis of construction supply chain across four heterogeneous pilot sites and clear, unbiased scientific knowledge on the viability of consolidation centres that can lead to larger adoption with benefits for the affected urban areas and the other stakeholders. The same applies to a number of other policy improvements (e.g. limitations on size, class, mode, delivery windows etc.).</p> <p>The project's results have been transferred during the project to twelve non-partner cities and translated in a set of freely available software tools that urban decision makers, transport &amp; logistics and construction companies will be able to use to assess the impact of these measures on their future projects and receive helpful advice on how to practically implement them.</p>
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<b>TRACE</b>	
Project duration	06/2015 – 05/2018
What is about?	Using tracking tools to encourage active mobility
Thematic area	Car-independent lifestyles
Website	<a href="http://h2020-trace.eu/">http://h2020-trace.eu/</a>
Who was involved (pilots)	Agueda (PT), Belgrade (RS), Breda (NL), Esch (NL), Flanders (BE), Plovdiv (BG), Southend-on-Sea (UK)
Project coordinator	INESC ID
Project overview	<p>The TRACE project assessed the potential of movement tracking services to better plan and promote walking and cycling in cities, and developed tracking tools to drive the uptake of walking and cycling measures.</p> <p>The project looked at measures to promote cycling and walking to the workplace and school, for shopping purposes, and simply for leisure. More specifically, TRACE assessed the potential of ICT-based tracking services to optimise the planning and implementation of such measures and enhance their attractiveness and potential impact.</p> <p>TRACE objectives included:</p> <ul style="list-style-type: none"> <li>• To assess the potential of the use of tracking data</li> <li>• To deepen and deliver the knowledge on how to apply cycling and walking tracking technology for behaviour change initiatives</li> <li>• To study how cycling and walking tracking data may be used to improve urban mobility planning</li> <li>• To tackle the related ICT challenges for the development of tracking services</li> <li>• To develop, implement, and test tracking-based tools</li> <li>• To provide guidance and tools to disseminate them</li> </ul>
Implementation and outcomes	<p>TRACE improved and delivered new applications that support the need to change the culture and incentives faced by travellers and the need to provide sensible information for planners seeking to improve the conditions for cycling and walking.</p> <p>To fully exploit the huge potential of walking and cycling as congestion busting measures, TRACE unlocked the possibilities offered by quickly developing ICT tracking technologies. By expanding the knowledge and leveraging the potential of cycling and walking tracking, TRACE triggered innovative cycling and walking promotion initiatives and planning practices.</p> <p>These applications were launched among final users in pilots on 8 test sites. These experiments delivered knowledge on practical, real-world</p>

	<p>performance of the applications developed in the project. The experience gathered in the roll-out of the TRACE apps and tools will prove to be beneficial to develop even more successful applications and R&amp;I initiatives. Moreover, it provided insights on potential business models for entities (e.g. SMEs) willing to exploit the market potential of this type of applications.</p> <p>Introducing and implementing such an innovative approach beyond the parties directly involved in the project required appropriate dissemination and exploitation efforts supported with tailored communication activities. This helped to make sure that these innovations reached and engaged the envisaged stakeholders and target groups and thus the project's take-up potential was exploited to the fullest.</p> <p>TRACE developed different types of tracking tools, according to the final objective they pursue: i) behaviour change and ii) mobility planning.</p> <p>Traffic Snake Game (TSG) – The campaign encourages primary school children to travel more sustainably to school, for instance walking, cycling, or with public transport. Each day they do so, the children put a sticker on a snake banner. TRACE adapted the already existing campaign to integrate a tracking element.</p> <p>Positive Drive (PD) – This app utilises gamification and gives users direct feedback. Based on “doing and rewarding the right transport choice”, participants receive rewards if they show the “right behaviour”, e.g.; using a bike instead of a car. These can then be shared through social media. PD uses only positive nudges.</p> <p>Biklio (Cycle2Shop – C2S) – The app detects if customers travel to (local) businesses by bicycle. If they do, they receive a reward for doing so. Users can see on a map which businesses are participating in Biklio and the incentives they offer.</p>
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U-TURN	
Project duration	06/2015 – 05/2018
What is about?	New models for urban food transportation
Thematic area	Urban freight logistics
Website	<a href="https://civitas.eu/projects/u-turn">https://civitas.eu/projects/u-turn</a>
Who was involved (pilots)	Athens (GR), Milan (IT), London (UK)
Project coordinator	Intrasoft
Project overview	<p>In urban areas, tackling economic and environmental sustainability challenges increasingly calls for horizontal collaboration in logistics.</p> <p>In this context, the U-TURN project sought to tackle particular problems associated with urban food transportation, including congestion, increased use of convenience stores, and a rise in home deliveries of food ordered online.</p> <p>With shared logistics as its base operating principle, U-TURN sought to establish more efficient and sustainable distribution models for food by conducting three pilot initiatives.</p> <p>The project enhanced our understanding of freight distribution in urban areas and suggests innovative shared logistics practices, together with tools achieving more efficient operations.</p>
Implementation and outcomes	<p>In an effort to cover the key requirements and main trends of food distribution in urban areas, three different pilots were conducted:</p> <ul style="list-style-type: none"> <li>• Pilot 1: The distribution of packaged goods from food manufacturers to retail outlets located in urban areas in Athens (Greece). This used two different practices: sharing a common vehicle for deliveries and an Urban Consolidation Centre (UCC) for collaborative 'last-mile' goods distribution.</li> <li>• Pilot 2: The distribution of fresh food from local producers and online retailers to consumers in urban areas in Milan (Italy).</li> <li>• Pilot 3: Food delivery from online retailers to consumers in urban areas in London (United Kingdom). Three different supply chain structures were identified, with a micro hub playing a different role in each case</li> </ul> <p>The three pilots address different flow-consolidation settings in various market contexts. More specifically, the U-TURN project initially analysed the existing and anticipated transportation flows of food products in urban areas and it then equipped market stakeholders with a set of tools that will enable the quick assessment and uptake of shared logistics practices.</p> <p>The following models and tools have been deployed:</p>

	<ul style="list-style-type: none"> <li>• a series for shared logistics distribution models that suggest alternatives ways of sharing resources,</li> <li>• a smart matching tool that enables the identification of logistics sharing matches among different stakeholders,</li> <li>• a simulation tool that models and quantifies the impact of Urban Consolidation Centres as an alternative logistics sharing practice</li> <li>• an economic and comparative assessment model that evaluates the operational and economic impact of various shared logistics models</li> <li>• a collaboration platform that supports information sharing, the identification of synergies by utilizing the smart matching logic and the creation of appropriate partnerships.</li> </ul> <p>Through the application of the above toolset in various real pilot settings by using actual data, the U-TURN project have identified opportunities for consolidating transportation flows and have evaluated the alternative shared logistics distribution models by providing evidences about their benefits and their implementation challenges.</p> <p>Considering the results obtained in the project, U-TURN project contributed to better understanding of the impact of food logistics in urban areas and provides qualitative and quantitative assessment of innovative, cost-effective and environmentally-friendly strategies in this context. Measurable outcomes and specific KPIs in each pilot by using real and simulated data from various markets across Europe and field studies reflect the impact of collaborative transport practices from the UK, the Italian and the Greek markets.</p> <p>The main project achievements, which advance existing distribution processes and technologies and go beyond the state of the art, are related to the following aspects:</p> <ul style="list-style-type: none"> <li>• The formulation of innovative shared logistics distribution models proposed within each pilot context and the insights gathered about their potential benefits and feasibility through close interaction with the industry</li> <li>• The utilization of the smart matching approach for addressing the needs of collaborative urban transportation</li> <li>• The integration of supply chain network simulation with a collaborative route planning algorithm for the last mile</li> <li>• The implementation of a shared logistics planning platform that supports the collaboration among various partners and the identification of synergies by using the smart matching approach.</li> </ul>
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## Older CIVITAS Living Labs (CIVITAS Plus II, 2012-2016)

DYN@MO	
Project duration	12/2012 – 11/2016
What is about?	Sustainable mobility planning in dynamic European cities.
Thematic area	SUMPs
Website	<a href="https://civitas.eu/projects/dynmo">https://civitas.eu/projects/dynmo</a>
Who was involved (pilots)	Aachen (DE), Gdynia (PL), Palma de Mallorca (ES), Koprivnica (HR)
Project coordinator	Stadt Aachen
Project overview	<p>CIVITAS-DYN@MO was an ambitious project with strategic importance to sustainable mobility planning in four dynamic European cities.</p> <p>DYN@MO worked in two leading cities, Aachen in Germany and Gdynia in Poland, as well as two learning cities, Palma de Mallorca in Spain and Koprivnica in Croatia. The mission of the project cities was to strengthen sustainable mobility by promoting non-polluting lifestyles, fostering social interaction and collaboration on the basis of the new media, and implementing integrated implementation of innovative transport services for active citizens of all ages.</p> <p>The strategic aims of project were to develop 'Mobility 2.0' systems and services by applying web 2.0 technologies, implementing city and citizen-friendly, electric mobility solutions, using new electric and hybrid vehicles and engaging in a dynamic citizen dialogue for mobility planning and service improvement. The specific objectives of the project covered four levels:</p> <ul style="list-style-type: none"> <li>• Strategic level: to create a culture for interactive mobility planning in which citizens and other stakeholders can actively participate in planning through innovative dynamic processes.</li> <li>• Technical level: to use clean, energy efficient, especially electric vehicles, and advanced ICT and ITS Systems as the basis of innovative transport services.</li> <li>• Service level: expose citizens and travellers in the cities to innovation hotspots with exciting new mobility services.</li> <li>• European level: to enable politicians and technical decision makers from the project cities to actively contribute to European exchange and learning through summer schools and trainings by developing competence centres for Sustainable Urban Mobility Planning and electromobility.</li> </ul>
Implementation and outcomes	DYN@MO cities implemented altogether 30 innovative measures to strengthen sustainable mobility.

	<p>Sustainable Urban Mobility Plans (SUMP) were at the core of the project and represented a sound basis for mobility planning. The two leading cities Aachen and Gdynia advanced their planning culture and existing SUMP, while Koprivnica and Palma set out to develop ambitious SUMP, all involving extensively citizens and stakeholders via Web 2.0 applications.</p> <p>Clean public transport remains the backbone of urban transport systems, while the cities have strong commitment to enhance the environmental performance and energy efficiency of their fleets within the project.</p> <p>Alternative fuels, such as Compressed Natural Gas (CNG) and hybrid buses, as well as the increased use of electromobility in public transport and car sharing schemes, will help to accelerate the introduction of clean vehicles in the European market. Venturing into new technology and mobility options in addition to promoting new life styles will increase the people's acceptance for mobility without a private car.</p> <p>Information and communication technologies (ICT) together with intelligent transport systems (ITS) were used throughout the project to improve service quality of public transport such as communication and maintenance of transport systems. This also provided support for preparing, discussing and updating sustainable urban mobility plans, involving stakeholders and citizens in related processes.</p> <p>The four cities implemented measures with a high degree of transferability across Europe and enhanced mutual learning by establishing Competence Centres on Sustainable Urban Mobility Planning and electromobility.</p>
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2MOVE2	
Project duration	12/2012 – 11/2016
What is about?	New forms of sustainable urban transport and mobility
Thematic area	SUMPs
Website	<a href="https://civitas.eu/projects/2move2">https://civitas.eu/projects/2move2</a>
Who was involved (pilots)	Brno (CZ), Malaga (ES), Stuttgart (DE), Tel-Aviv (IL)
Project coordinator	Landeshauptstadt Stuttgart
Project overview	<p>Mobility for each citizen as well as the transport of goods must be ensured in combination with a free choice of transport modes. However, actions of mobility management should be strengthened to raise people's awareness towards sustainable mobility.</p> <p>Due to changing conditions (e. g demographic development, rising energy costs, new ecological standards) new quality standards for an attractive pedestrian, bicycle, and public transport infrastructure are on the urban agenda in many cities.</p> <p>2MOVE2's main objective was to improve urban mobility by advancing or creating sustainable, energy-efficient urban transport systems in the participating European cities for the benefit of all citizens, society and climate policy, respecting environment and natural resources.</p> <p>The project consortium consisted of eight partners in the four participating cities. The coordinating City of Stuttgart was supported by SSP Consult which handles technical coordination and project evaluation, as well as the University of Stuttgart which coordinates a Sustainable Urban Mobility Plan (SUMP) working group and site. The City of Brno was supported by its public transport company DPMB, while the City of Tel Aviv-Yafo was supported by the Technion Institute.</p> <p>Based on the idea to develop and implement similar measures and initiatives in the partner cities, the 2MOVE2 partners defined measure packages in all four cities involving:</p> <ul style="list-style-type: none"> <li>• Innovative, clean, energy efficient vehicles and integrated transport systems for personal, collective and freight applications.</li> <li>• Deployment of ICT and ITS for traffic management, vehicle guidance, accident avoidance, passenger information and travel planning, road pricing and smart payment systems.</li> <li>• Sustainable urban transport planning that combines land-use with innovative transport systems and 'human' transport modes of cycling and walking.</li> </ul>
Implementation and outcomes	Following the idea of defining and implementing similar measures and initiatives in the partner cities, 2MOVE2 partners developed 23 measures

	<p>in total. The development and implementation of similar projects and initiatives in the four cities allowed evaluation and comparison of the results and impacts in the different contexts within the leading and learning cities. In addition, the measures were selected to allow transfer and applicability to other small and medium-sized towns.</p> <p>Specific emphasis was given in 2MOVE2 to the measures of e-mobility, freight and ITS-based traffic management. Linking the proposed measures with SUMP's and urban development plans was also being stressed. Other important topics addressed in the measures were the promotion of non-motorised mobility and public transport, as well as the enhancement of mobility information services for companies and citizens.</p> <p>The main goal of the participation in 2MOVE2 was to implement new measures which support and enable the establishment of more sustainable transport systems. This required that the measures demonstrated in the framework of this project are not isolated, but are part of a comprehensive system combining measures in all thematic areas of CIVITAS.</p> <p>Therefore, special importance was given to the issue of SUMP's. All four cities wanted to implement or advance these. The 2MOVE2 Working Group on SUMP's provided strategic and political validation and advice to the project. It was composed of site managers and local representatives such as politicians or relevant stakeholders. The working group provided directions to improve the project's effectiveness, quality and compliance with policies, in addition to providing conclusions and recommendations resulting from the project.</p> <p>The measures were complemented by major awareness and consensus building efforts among others through training workshops and educational activities.</p>
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