Deliverable Proof – Reports resulting from the finalisation of a project task, work package, project stage, project as a whole - EIT-BP2020

Name of KIC project the report results from that contributed to/ resulted in the deliverable	Sustainable Shared Mobility (SuSMo)
Name of report	Co-creation of transition guidance tools report
Summary/brief description of report	A report on the activities from AESS to research and develop transition guidance resources in order to develop transition guidance tools on policy regulation and procurement report
Date of report	31.12.2020

Supporting Documents: attached in pdf format

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1. Executive Summary

This report covers the development and co-creation process of a transition tool that serves to guide system innovation in Policy, Regulation and Procurement and ultimately promote sustainable urban shared mobility.

SuSMo was one of the projects selected by the innovative ecosystems Climate KIC funded MOTION project as means to develop an evaluation methodology at a project level. The overall goal of MOTION is to identify transformative elements and explore potential project-level evaluation methodologies and actions (MEL- Monitoring and Evaluation and Learning) in the context of systemic change.

In collaboration with the SuSMo team, MOTION has identified the transformative outcomes, processes that need to be activated to promote transformational change, with regards to Policy, Regulation and Procurement (figure 1).

These transformative outcomes reflect and review the activities, outputs, and inputs of an ongoing project within the context of Theory of Change. To increase the transformative potential and allow for a structural learning, it is necessary to examine and review the underlying convictions, theories and dominant models that apply. Reassessing the criteria against which an innovation is evaluated is an additional challenge towards achieving systemic change.

The application of the proposed transition tool will provide decision makers with a better understanding of how cities can facilitate systemic change to achieve quick and optimal integration of low carbon urban shared mobility into their existing public transport system.

Many new initiatives offering alternative and more sustainable solutions that meet societal needs are emerging. For this reason, the systemic innovation monitoring and social change need to go hand in hand to achieve a true transition to sustainable living.

Shared sustainable mobility has the potential to support the transition of the transport system towards decarbonisation. As part of the SuSMo project we will develop guidance and training materials that will support change agents in making the shift towards shared sustainable mobility in the following pathways:

- Behaviour change - how to make the use of cars less attractive.
- Collaboration between the private and public sectors.
- Policy regulation and procurement – development of strategic policy platforms.
- Using data to understand the social and environmental impacts.

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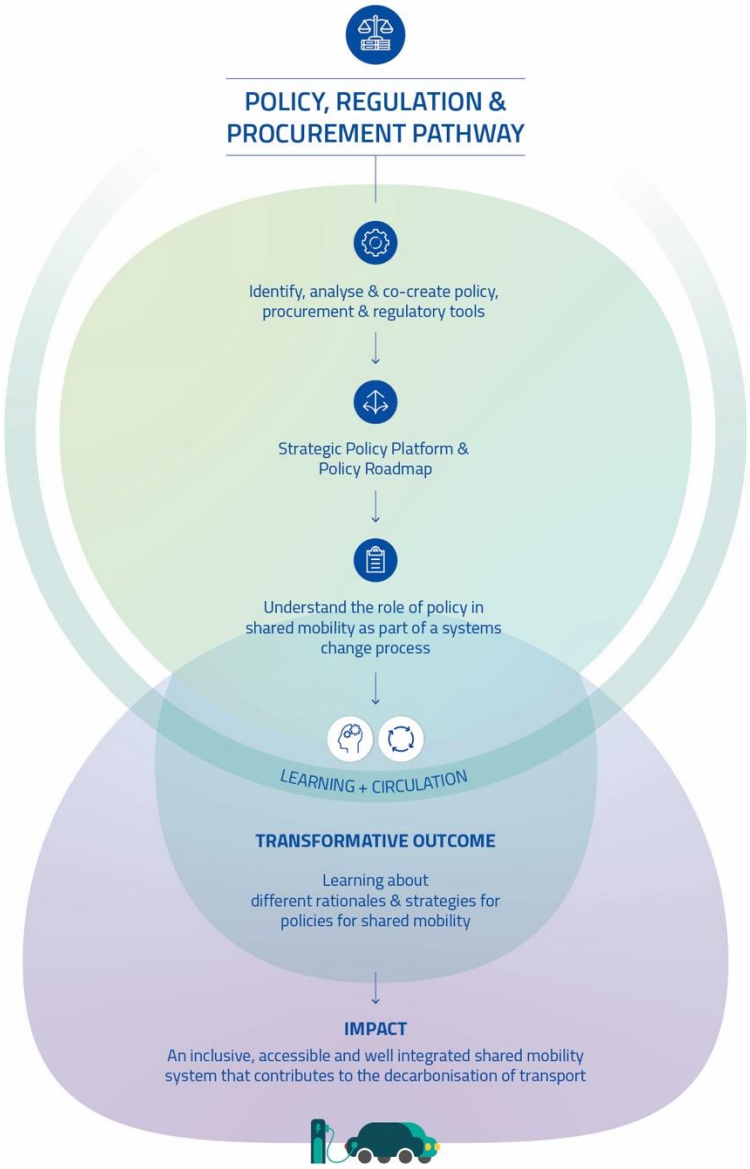

Figure 1 Theory of change – Policy, Regulation & Procurement Pathway for SuSMo

The transition to low carbon shared mobility calls for common understanding of the policy frameworks and should also involve policy-areas that are not part of the "traditional" mobility ecosystem. To achieve this, the project team was keen to acquire a deeper understanding of the two key instruments for regulating and procuring new shared mobility services. SuSMo engaged with relevant stakeholders, private shared mobility operators, and studied the outputs of previous tenders issued by the municipalities involved.

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This research identified the following key factors for planning, regulating and attracting new mobility services:

1. **Municipality and regional mobility carbon zero policy roadmap**
2. **National framework that allows to regulate in several field of actions**
3. **Clear business model and regulations in place at a local level**
4. **Clear plan for monitoring and reporting the evidence base results**

This report outlines the necessary steps for enabling procurement supported by a series of play cards for good, shared mobility procurement and regulation to define better, decarbonising and user centric services. Cities and operators should work to:

- **Develop a sustainable transport vision for the city**
- **Develop a procurement that works for both parties in the long term**

The workplan for year 3 of SuSMo (2021) focuses on dissemination of these outputs. It is important that this work is completed in order to maximise value for money for Climate-KIC and EIT by ensuring the SuSMo messages and outputs reach a wide audience. Without this dissemination taking place, the overall project objectives will not be fully achieved. Successful dissemination will lead to more cities adopting sustainable shared mobility, greater impacts in terms of carbon emissions reduced, and a growing ecosystem of engaged cities (municipalities, citizens and the private sector). In 2021 the SuSMo partners will also finalise and seek to implement the business model defined in the financial participation mechanism, which in turn will help meet Climate-KIC's and EIT's objectives around delivering value for money and financial sustainability.

2020 was the second year of SuSMo, which was scoped as a three-year project. The focus in year two was to develop the transition guidance tools, frameworks, and roadmaps to support a transition to sustainable shared mobility. These outputs were developed in response to the needs of the SuSMo cities, using the co-creation process, as well as being mindful of their application to cities across Europe in the future. The programme is therefore at a critical stage; partners have tested and refined the ecosystem approach which will be essential to maximise the pace of uptake of sustainable shared mobility. We also have a suite of research reports, tools, frameworks, roadmaps and workshop outputs which can help other cities achieve their decarbonisation objectives.

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2. Introduction

The SuSMo project aims to bring together leading cities from across Europe along with other experts in the transport sector to provide decision makers with the tools and knowledge to better manage the challenges of shared mobility solutions.

The new shared mobility disruptor requires a systemic change to the interaction between city transport planners, private operators and citizens in order to provide a coordinated, low carbon service.

The Shared Mobility project aims to work closely with our city partners (Stockholm, Bologna and Sofia), to change the way cities implement shared mobility systems across Europe

One of the main aspects SUSMO aims to tackle is empowering local policies to enable, verify and enhance the impact of shared mobility services ranging from transportation policy, planning, network operations, congestion mitigation, parking management, and compliance with air quality and climate action standards.

COVID outbreak has posed an incredible burden on transport sector: on one hand the reduction in personal mobility demand dropped any revenue expectations, from the other hand the cost related to assuring sanitation and social distancing was increased.

Despite their innovative approach in providing transport services on an as-need basis, shared mobility has been strongly affected by the overall demand reduction and the increased expenses for managing the services.

Public authorities rediscovered their role and responsibility toward decarbonization, are promoting cycling lanes and other green infrastructures and are also looking to integrate new digital technology.

Public administrators realized that shared mobility can provide solutions to the service gaps of public transport and leverage the last-minute, less-planned or unrecurring mobility needs. They also recognise that the introduction of MAAS can better integrate traditional mobility services with new shared ones.

The only pathway is to build a robust Public Private Partnership capable to lead this process of commodification of transportation services.

The SuSMo project works with public and private sector representatives to gain an understanding and change the perspective to facilitate shared mobility and help to better manage the expectations of public and private sector actors. The SuSMo outputs will enable the conditions for shared mobility to be well integrated into the transport system and result in decarbonisation.

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3. The Shared Mobility Services

3.1 Background

In EU it is nowadays commonly agreed that there is a need to set policies and regulate shared mobility services, as unregulated services may generate greater burdens for cities and have a negative to the users and other citizens. Meanwhile there is no common understanding on the need and level of financial support that this new innovative mobility operators might need, nor the minimum set of regulations and market barriers that will allow the collaboration to flourish and align to common goals and shared vision.

3.2 Methodology

The methodology to assess the study has been made by both by literature review (OECD, POLIS, Osservatorio Nazionale Sharing Mobility, Researchgate and mainstream website) and qualitative interviews with key stakeholders (mobility agencies, private sharing operators, municipalities officers, university researchers, project partners).

The first attempt aimed to define the beneficiaries of the toolkit that was identified in medium small cities experiencing some kind of FOMO (Fear of Missing Out) syndrome, willing to attract and launch new mobility services without a clear vision. In addition to small medium EU cities, another SUSMO beneficiary is represented by larger cities that have already undertaken a first experimentation phase and that are now aiming to expand or integrate new micromobility services.

This report is designed as a practical toolkit organized in 5 sections that define a roadmap to enable the procurement and its monitoring process. The report is supported by 5 play cards that were developed in MIRO (https://miro.com/app/board/o9J_khTp2io=/) and presented in the Sofia workshop to the municipalities involved in SuSMo. The play cards will be further refined in 2021.

1. SET THE GOALS and REGULATORY FRAMEWORK
2. PRIVATE VS PUBLIC MANAGEMENT STRATEGY
3. BUSINESS and TECHNICAL OFFER REQUEST
4. PROCUREMENT MODEL DEFINITION
5. SERVICE REGULATION and MONITORING

3.3 Set the goals and regulatory framework

When setting goals, it is required to be aware of the potential positive impact of each shared mobility service. The key benefits of carsharing are:

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- Offer a car to low-income neighbourhood
- Increase the offer of a new user centric mobility services
- Reduce the number of vehicles parked and decrease congestion
- Promote multimodality and active transit mode
- Reduce the transport emission and contribute to the decarbonization

The most important phase is to revise and assess in a holistic approach the existing sustainability and transport plans. For small municipalities (under 50.000 inhabitants) that have not yet developed their own SUMP (Sustainable Urban Mobility Plan), it is necessary to define clear goals for new shared mobility services when launching a sustainable mobility strategy. The basic principles are as follows:

- Plan for sustainable mobility in the urban area
- Cooperate across Institutional boundaries
- Involve citizen and stakeholders
- Assess current and future performance
- Define a long-term vision and a clear implementation plan
- Develop all transport modes in an integrated manner
- Arrange for monitoring and evaluation
- Assure quality

In the following section the main city/regional plans that define the planning framework are listed. The metropolitan SUMP of Bologna succeeds in its process to revise and frame a consistent and systemic approach.

SUMP: The Metropolitan City of Bologna and the Municipality of Bologna have prepared and approved by resolution of the Metropolitan Council (27 April 2016) and by resolution of the City Council (10 May 2016) the guidelines for the preparation of the Urban Sustainable Mobility Plan. The Guidelines were drawn up taking into account the reduction targets of polluting emissions set by the international community (at a global and community level) and implemented by the Emilia Romagna Region and were presented on 20 September 2017 on the occasion of the establishment of the Scientific Committee for the elaboration of the SUMP. All the phases of drafting the SUMP of the Metropolitan City of Bologna were characterized by a significant contribution from the participatory process. Stakeholders and citizens were involved both in the phase of defining the objectives and in the phase of operational choices. The participatory process also made use of the continuous and active interaction with the Metropolitan Forum for Sustainable Mobility, established on November 21, 2017, and was divided into several phases, which can be partly overlapped. The Urban Plan of Sustainable Mobility of Metropolitan Bologna, following its adoption on November 27, 2018 with the Act of the Metropolitan Mayor Virgilio Merola n. 248/2018, saw its publication for an interval of 60 days, formally between January and March 2019. On 20 September 2019, the Metropolitan Forum for Sustainable Mobility was again convened during the European Mobility Week. During the meeting, the main contents of the comments

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received from the adopted Sump were illustrated, as well as a focus on cycling and public transport for projects already underway, including the first tramway project.

BIKE PLAN Within the PUMS the cycling mobility Bikeplan was drafted with the aim to define an integrated cycle network extended to the entire metropolitan territory, classifying the network for daily mobility in strategic and integrative terms and also dedicating targeted attention to the development of the network cycle tourism. As for Bologna, the document that the SUMP intends to take as a reference is the Bikeplan of Bologna, both as a scheme for the network of the municipal area and for the planning of cycling connections proposed by the metropolitan Bikeplan between the urban area of the capital and the municipalities of the first belt.

OVERALL URBAN TRAFFIC MANAGEMENT PLAN: The PGTU represents a "framework plan", which coordinates and systematizes the operational management interventions of the system from mobility in general and the road network and integrates them with the other superordinate municipal planning tools (PSC, Municipal Energy Plan) supra-municipal (PTCP, PRIT, PAIR, Road Safety Manager Plan). The indications contained in the PGTU, in line with the legislation, must then be deepened and implemented through the more detailed planning levels (e.g. Detailed Traffic Plans and Executive Traffic Plans).

PARKING PLAN: The plan that state the tariff and coverage areas of public parking.

PRIT: The Emilia-Romagna regional law n. 30 of 1998 (General regulation of regional and local public transport) identifies the Prit (Integrated Regional Transport Plan) as the main planning tool with which the Region establishes guidelines and directives for regional policies on mobility and establishes the main interventions and priority actions to be pursued in the various areas of intervention.

PNIRE: The National plan of electric charging infrastructures defines the guidelines to guarantee the unitary development of the charging service for vehicles powered by electricity in the national territory. Provided by Law 134/2012, the Plan provides for the establishment of a vehicle recharging service, the introduction of procedures for managing the recharging service, the introduction of facilities for the modernization of the systems, the implementation of programs integrated technological adaptation of existing buildings, the promotion of technological research aimed at the creation of infrastructural networks for recharging.
Share mobility services include traditional type of time schedule transport system such as Mass Transit system and other on demand mobility such as Taxi and NCC services. These services are well regulated, monitored in their performance and subsidized while the new mobility sharing services sometimes find themselves in an absent of jurisdiction that might delay their experimentation and adoption (see scooter sharing report developed by CENEX).

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The Municipality is considered the owner of the urban road asset and therefore has the capacity to regulate the road traffic within the urban area. Despite that the new mobility shared services are not considered as local public services of common economic interest such as Taxi and mass transit system, they do not have to fulfil universality service targets but just contractual obligations. For this reason, including equity and accessibility targets in the scope of the contractual obligation is a good practice as universality of the service might not be compulsory.

Even though that the Municipality manages road assets, it does not manage the different forms of mobility services, such as Peer to Peer or Company driven that are managed privately out of the Municipality framework.

MEMBERSHIP BASED SELF-SERVICE MODELS	PEER-TO-PEER SELF-SERVICE MODELS	NON-MEMBERSHIP SELF-SERVICE MODELS	FOR-HIRE SERVICE MODELS	MASS TRANSIT SYSTEMS
-Bike sharing -Car sharing -Car pooling -Van pooling -Scooter sharing -On demand ridesharing	-Bike sharing -Car sharing	-Bike sharing -Car sharing -Hitchhiking	-Taxi -Ridesourcing -E-hail	-Public transportation -Microtransit -Shuttle

Figure 2 Share Mobility modes

3.4 Private VS Public Governance

The shared mobility tender process is composed by several activities:

A. Planning of the service
B. Understanding who will be the assets owner that is capable to offer the fleet, the IT platform and infrastructure required for the service provision.
C. Management of the service
D. Monitoring and evaluation of the service

The local administration has always a central role in the phase A and D, while the other phased might be allocated to private stakeholders.

Based on the shared mobility service governance level selected: *Public asset and management, Private asset and management, Public/Private asset and management*, the

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municipality might opt for different administrative procedures for assigning the services. Most decisions are also linked to the management model and the technology required.

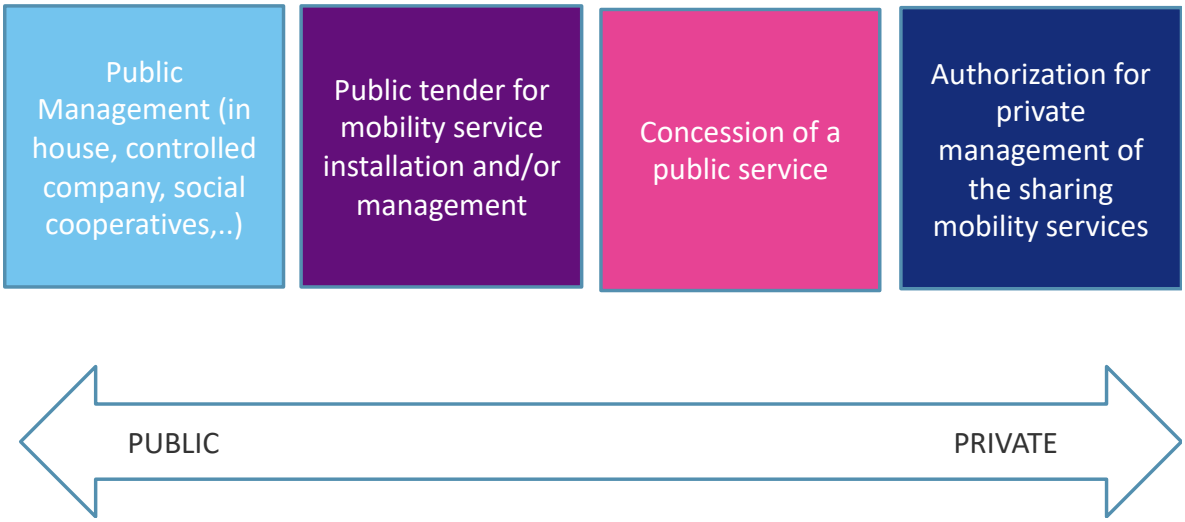

Figure 3 Definition of the procedure to assign the asset and manager owner of the service

In 2000 when station-based carsharing started becoming widespread in Italy, the most common governance was the one led by ***public asset and public managed***. This service was provided through the management by an in house or controlled company or selected by a Public/Private owned company selected by an open public tender. Typically, this car sharing is managed by the local transport company operator and might assure equity scope despite profitability. Most of the criticalities of this system that do not generate by the competition of the free market and the prompt adoption of the key innovations available.

Free floating mobility sharing services devoted B2C have started to be experimented in Italy in 2013 and were mostly driven by ***private asset and private managed***. In this case one or more companies are the owner of the asset and receive the authorization by the local municipality to manage the service according to a regulatory service framework or by subscribing a chart of conduct (described in the next paragraph). One of the main advantages is that this type of service especially for car-sharing and scooter sharing do not foresee any direct subsidies to the private operators and therefore offer the possibility to the public administration to dispose of a mobility sharing without dedicated resources, outsourcing any management risk. In this case, the concession of a service is the most common type of administrative procedure after the collection of an expression of interest by the private operators. One of the main risks associated to this model is the tension between the scope of the private operator looking to maximise its profitability and the scope of the administration that is to fulfil political and social targets. The operator will try to concentrate the service in the more profitable and urban dense area while the municipality might try to improve the accessibility and the extension of the coverage.

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A public/private mix asset and management has been seldom applied once the municipality is leading an experimentation granted project that allows to receive dedicated resources for the asset to support the launch of the service in those unprofitable contexts where the service is not able to reach enough revenue to recover the initial investment required. The key advantage is that the public administration might require some stronger regulation on tariff avoiding the day management activities. This scheme might require an open tender or in case the grant is received by an already established public private consortium, the service can be assigned to the project partner within the limitation of the duration of the experimentation phase. One of the main bottlenecks of this mix experimentation approach is that it is hard to assure the update of the technologies and assure new resources for the renew of the fleets.

3.5 Business and service management strategy

Despite the recent research study estimating the global Shared Mobility Market at USD 99.08 billion in 2019, expected to reach USD 238.03 billion by 2026, the global Shared Mobility Market is expected to grow at a compound annual growth rate (CAGR) of 15.42% from 2019 to 2026.

In the last years, however, we assisted to an incredible volatility of shared mobility providers with a reduction and aggregation of key players and a specialization in business segments. Despite this, the EU still supports a relatively open market that allows the participation of start-ups and newcomers in small towns, while the main capital is colonized by corporate finance quoted companies. One of the new segments that is incredibly increasing is led by company P2P car-pooling platform.

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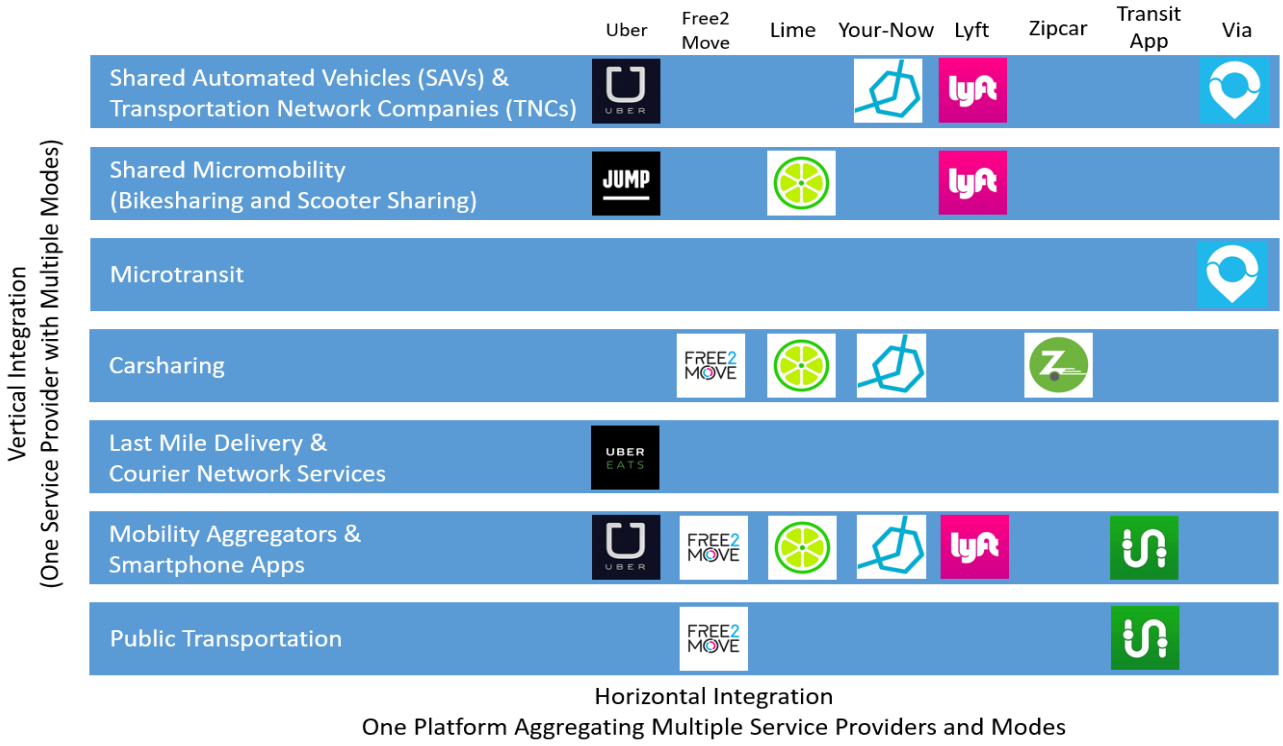

Figure 4 Mayor share mobility players and distribution of the market service provision

To offer a reliable service and avoid rollback and bankruptcy it is of paramount importance that a business model is shared between the public and private sector, and that the maximum penetration and modal share gain for each management model is taken into consideration.

The main difference in the business model characterization relies on the service management model described below:

- Roundtrip - Vehicles are picked-up and returned to the same location.
- One-Way Station-Based - Vehicles can be dropped off at a different station from the pick- up point.
- One-Way Free-Floating - Vehicles can be returned anywhere within a specified geographic zone.

Focusing on the business model the main characteristics of the two models are:

Free-floating business models enable members to go from point A to point B, thereby enabling one-way trips and potentially cutting drivers' journey times (and rental costs) in half. As free-floating services are ideal for compact urban areas, they usually offer smaller cars for shorter trips, and charge based on the time travelled rather than the distance (Monitor Deloitte, 2017).

Roundtrip business models are more traditional as they require cars to be returned to

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the zone or station from which they started. For this reason, they are less flexible than their free-floating counterparts. Roundtrip business models tend to have longer on-average booking times lasting for several hours or a day, and they cater to trips of much longer distances, such as for leaving a city to visit the surrounding rural areas (Nehrke, 2018).

The **station based or one-way system** usually has an adoption level that does not exceed 1% of addressed users while the free floating might reach 10% or more, despite that the two systems follow quite different objectives and business models.

In the free-floating system, despite the higher number of pickups, the average distance travelled is lower and the system is normally used to respond to unrecurring type of trips in highly dense urban areas. The major associated costs in free-floating systems involve maintenance and repositioning along with insurance.

In station-based systems, that are usually adopted even in peri-urban areas, the service is better integrated with public transport and respond to recurring type of longer trips. In this second model there is a lower return of investment of the asset but minor management cost.

STATION BASED	FREE FLOATING
Adoption level: between 0,3 e 1% of addressed users; up to1,5% when a large fleet number is provided	Adoption level: variable from 10% up to 35 – 40% users.
Number of average monthly trip per subscriber: 0,5 -1	Number of average monthly trip per subscriber: 0,5 -1
Average distance: 25 - 35 km	Average distance: 6 - 9 km
Average pick duration: 5 - 6 hours	Average pick duration: 15 - 20 minutes
Car usage: 14 – 19%	Car usage: 5 – 8%
Pick up: 0,6 - 0,8	Pick up: 5 - 8 trip/day
Number of subscriber per vehicle: 25 - 40	Number of subscriber per vehicle: 150 - 300

Figure 5 Main differences between the two operational services: station-based VS free floating

There is a variety of available commercial solutions for shared mobility services (described below). The recent COVID crisis has also allowed the development of new B2B approaches fulfilling the increased demand of virtual journeys (e.g. In Paris Bird scooter sharing signed an agreement with Pharmecure for home drug delivery).

Business-to-Consumer (B2C) – In a B2C model, carsharing providers offer individual consumers access to a business-owned fleet of vehicles through memberships, subscriptions, user fees, or a combination of pricing models.

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Business-to-Business (B2B) – In a B2B model, carsharing providers sell business customers access to transportation services either through a fee-for-service or usage fees. The service is typically offered to employees to complete work-related trips. It is also common that B2B carsharing services are provided by B2C service providers.

Business-to-Government (B2G) – In a B2G model, carsharing providers offer transportation services to a public agency. Pricing may include a fee-for-service contract, per-transaction basis, or other pricing models. Typically, B2G carsharing services are provided by B2C service providers.

Peer-to-Peer (P2P) – In a P2P model (sometimes referred to as personal vehicle sharing), carsharing providers broker transactions among vehicle owners and guests by providing the organizational resources needed to make the exchange possible. Members access vehicles through a direct key transfer from the host (or owner) to the guest (or driver) or through operator-installed, in-vehicle technology that enables unattended access. Pricing and access terms for P2P carsharing services vary, as they are typically determined by vehicle hosts listing their vehicles. The P2P carsharing operator generally takes a portion of the P2P transaction amount in return for facilitating the exchange and providing third-party insurance.

As suggested by the SuSMo private sector report (D07) it is recommended that where municipalities want to guarantee a level of service beyond what may be profitable, they explore how they can support this. This could be financial subsidies, commitment to provide communications support or enforcement. The incentives that a Municipality dispose to allow the service to be more profitable are:

- *Reducing the cost of the service* (e.g. cancel any loan for disposing of parking and access to restricted areas, offering dedicated parking slot nearby central multimodal hubs, support the marketing campaign, increase the average speed allowing the use of dedicated bus lines)
- *Increase the revenue* (e.g. define a B2G that assure a demand by public employee and that support the behaviour change in front of the citizen, offer mobility coupon (e.g. in case of demolition of second family car) to its citizen to promote the utilization of the new service, limit the free competition and allow that only one or few service providers are allowed to offer the service, direct)
- For bike sharing services more often the municipality offers *direct funding or monetization of concession on advertisement area*, subsidizing bikes provided covering the funding gap.

The municipality might also decide to promote through dedicated policy measures and infrastructure investment the transition toward the reduction of private mode of transport, increasing the parking fees, reducing the parking slot, imposing a tax to second family cars, supporting bike to work campaigns or investing in new cycling infrastructure.

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3.6 Procurement model definition

In the EU, public procurement represents on average approximately 19% of GDP. With this procurement volume procurers can encourage shifts in the supply of goods and services that provide momentum to developing more circular business models. This is also the reason why public procurement is mentioned as an important driver for circular economy in the EU Commission's Circular Economy Package from December 2015. Circular procurement is about making agreements to ensure that the products or service that you procure for your organisation are produced in accordance with the principles of the circular economy and will be further processed after use. Such products are, for example, designed for durability, repairability and recycling and can at the end of their life cycle be broken down into components, materials or raw materials, which can then be used again in the production chain.

One of the main criticisms offered by shared micro mobility is the fact that there is no study up to date that examine the LCA cost of the services provided and circularity is not yet part of the procurement of new micro mobility services such as eScooters.

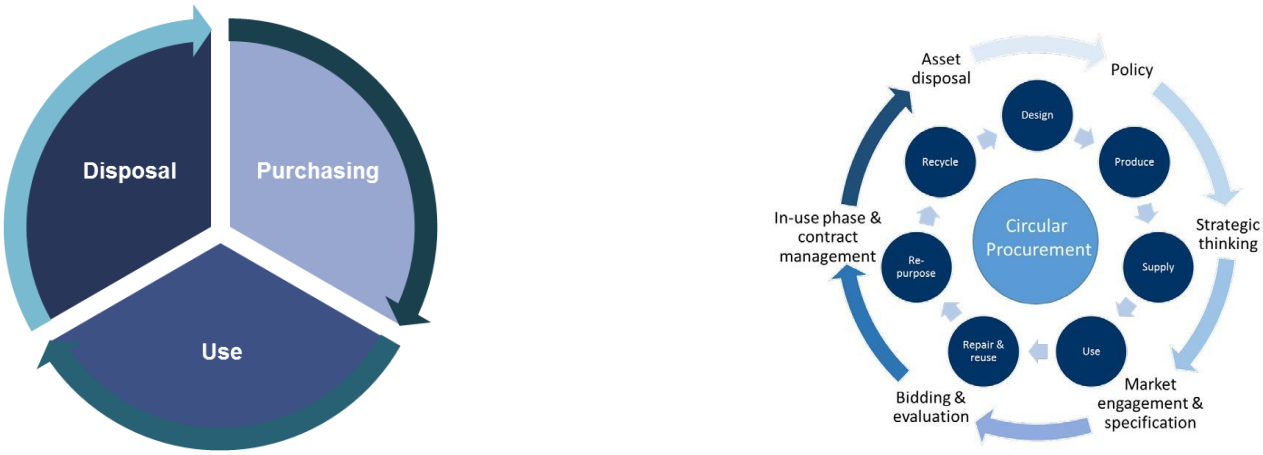

Figure 6: Circular procurement process and product flow

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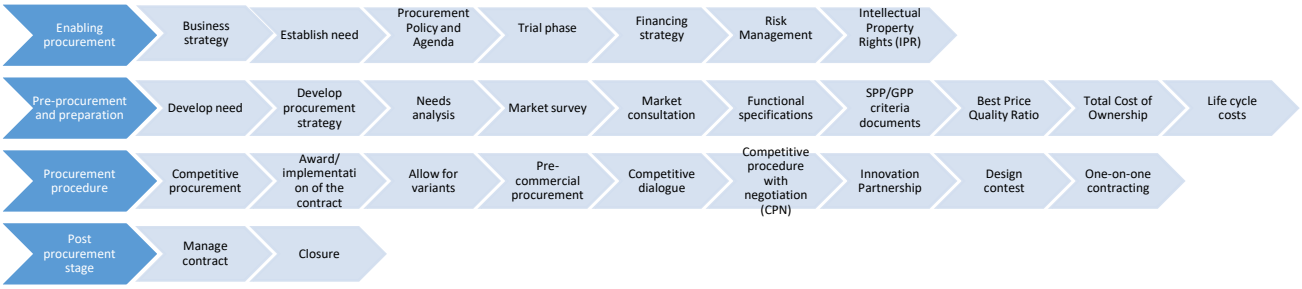

Figure 7: Procurement phases

Shared mobility services are strongly led by innovation both in terms of business models, digital platform and technology adopted. This level of uncertainty and the need to address those societal problems that public administration is not able to solve require to be regulated by a fair and equitable treatment during the procurement process that might offer the possibility to modify and adapt rules during time and at the same time that fulfil the general principle of public tendering rule and avoid too long lasting process.

At the present time the **main EU instruments applied to public tender** are:

COMPETITIVE DIALOGUE

Competitive dialogue is a way of tendering whereby contracting authorities enter into a structured dialogue with a number of selected and prequalified candidates to identify a common solution and its financing before that solution is put out to tender amongst the relevant candidates. Competition-sensitive information will remain confidential. After the structured dialogue process that usually requires significant investment from the participating parties, the contract is awarded to the preferred bidder.

COMPETITIVE PROCEDURE WITH NEGOTIATION

The Competitive procedure with negotiation (CPN) has been introduced into Directives 2014/24/EU and 2014/25/EU to replace the previous instrument of negotiated procedure with the publication of the prior information notice. CPN allows the contracting authorities to refine their requirements and purchase the products, services, works that are tailored to both their needs and budget.

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PRE-COMMERCIAL PROCUREMENT

If contracting authorities need something that does not yet exist, they can engage businesses to develop a prototype by awarding contracts for research & development (R&D) services. This gives them greater freedom than in common practice tenders. Pre-commercial procurement (PCP, developed by the European Commission) is a method to take advantage of such freedom, the basis for each of which is the same: you award several parties a contract to develop an innovative solution in competition with each other. There are various rounds which each involve the elimination of parties. After the final phase at least two prototypes are developed and tested.

INNOVATION PARTNERSHIP

A new procedure is introduced by the Directives 2014/24/ EU and 2014/25/EU. It is aiming at the development and purchase of new and innovative products, services and works provided that such innovative product or service or innovative works can be delivered to agreed performance levels and costs. The procedure applies elements of the competitive procedure with negotiation with the aim to establish a partnership with one or more suppliers. This instrument enables the contracting authority to procure from the beginning of R&D activities as well as it allows the acquisition of commercial scale.

Innovation Partnership offers the public buyers the chance to take advantage of new technologies and to apply the benefits of R&D activities.

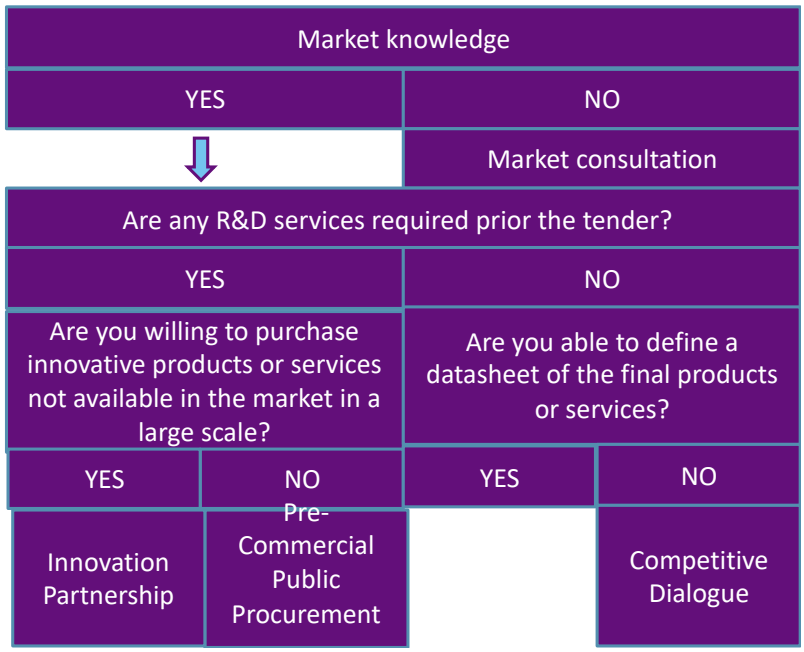

Figure 8: Process flow to determine the optimal procurement instrument

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DESIGN CONTEST

A design contest is a way of bringing new ideas or concepts onto the market. Contracting authorities formulate a challenge and award a prize to the parties that submit the best solutions. The ideas are assessed by an independent jury. A design contest is a form of tendering that offers a wide scope for creativity. The submitted designs can actually be implemented or can serve as inspiration (even if they are not actually implemented). A design contest is also a good way of generating a relatively large amount of publicity about a theme with modest expense. Although design contests are most used for architectural purposes the Directives 2014/24/EU and 2014/25/EU make it possible to use them for engineering and data processing purposes as well.

ONE-ON-ONE CONTRACT

One-on-one contract is the award of a contract to a supplier that does not have to compete with other suppliers for the contract. You can enter into such a contract if you know exactly what innovative product or service you wish to purchase and you know for certain that only one party can provide this. For one-on-one contracts you use a single private tendering process. There are various ways to do this. Which way you choose depends on the cost of the purchase.

CONCESSION and LICENSE:

Concessions are partnerships between the public sector and mostly private companies, where the latter exclusively operate, maintain and carry out the development of infrastructure (ports, water distribution, parking garages, toll roads) or provide services of general economic interest (energy, water distribution and waste disposal for example). Concessions are the most common form of Public Private Partnership (PPP)

Unlike public contracts, which are regulated by Directives 2004/17/EC and 2004/18/EC and public works concessions, which are partially covered in Directive 2004/18/EC (as modified by the present reform), the award of service concessions is not subject to any clear and unambiguous provisions, being guided only by the general principles of transparency and equal treatment of the Treaty on the Functioning of the EU. This loophole gives rise to serious distortions of the Single Market such as direct awards of contracts without any transparency or competition (with associated risks of national favouritism, fraud and corruption) and generates considerable economic inefficiencies.

Concessions have specific features compared to public contracts which justify a special and more flexible set of rules for their award. Concessions are typically high-value, complex and long-term contracts which require appropriate flexibility during the award procedure to ensure the best possible outcome.

Concessions involving private partners are a particular form of Public Private Partnership (PPP). Although PPPs have never been defined in EU Public Procurement legislation, they

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are usually understood to be cooperation between a public authority and a private partner, where the latter bears risks that are traditionally borne by the public sector and often contributes to financing of the project. Some PPPs are structured as public contracts, but are based on estimations by the Commission services, over 60% of all PPP contracts would qualify as concessions.

Other instruments that do not foresee a public tender but allow the company to obtain an authorization to operate is the:

CHARTER OF GOOD CONDUCT: regulatory framework; engagement in terms of road safety and security, respect of all users, flee deployment; relationship with the City; sustainable development approach; data sharing supported by a letter of interest.

There is a need that the regulation and the policy speed up to be implemented and are aligned with the new technologies that allow to provide always more customer centric services and allow to fulfil the circular approach that the new tendering should focus. Great effort has been posed by the EU commission to improve the LCA of batteries and this might represent a critical task to assure that services such as scooter sharing might be more sustainable in the long term. Cenex on this regard has also produced a set of shared mobility roadmaps that can aid cities to understand where technology is going and how the sector is developing. More information on this can be found in the annex 1.

3.7 Service regulation and monitoring

The content of the service regulation is key part of the business model and should be discussed with the operators. Most of the time the municipality take inspiration from other city regulation and readapt it to the local context before revisioning it during the competitive dialogue. The regulation usually contains:

- Coverage of the area, business duration and service operational mode.
- Limits on number of registered operators per city and minimum and maximum fleet size number per operator.
- Quality and specification of bikes as well as immediate disposal of damaged rental bikes.
- Restrictions on parking locations and number of bikes per parking zone.
- Penalty fees for breaches of any kind.
- Monitoring and notice procedure (such as operational stakeholder meetings, warning letter, impounding, revocation of operating permit).
- Requirement to install tracking devices on rental bikes. Smart data analytics & API Multimodal integration provision.
- Service provider technical curriculum and financial sustainability statement.

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The municipality might provide additional request to fulfil socio-economic targets, requesting special programmes or fleets for promoting social inclusion of low-income neighbourhoods, low density area as well as dedicated vehicles for vulnerable people or family.

GDPR fulfilment and provision of aggregated data are required to allow the mobility agency to monitor the performance and to assure the integration with local public transport. Meanwhile more rarely operators are keen to share customer profiling and other sensible information that represent a market competitive advantage. This represent a challenge especially when a service operator gets out from the market and is not dispose to transfer the knowledge and user preferences.

Service minimum standard	Service operator committments
Working reliability and continuity of the service	Fee per vehicle
Duration min and max	Aggregated utilization data and monitor report
Operational model	Customer satisfaction analysis
Booking platform	Service kick off date
Area coverage/outreach	Insurance and speed limitation
Min-max vehicle per area	Warranty deposit
Dedicated parking slots and charging grid	Interoperability and availability to be integrated in MAAS platform
Fleet requirement	Data Policy & DPM
Beneficiaries accessibility with some limitation to	Removal or repositioning
Cost and fares	Vehicle maintance
Customer call Center	Non Discrimination of user with disabilities/language
Insurance coverage	Data specification

Figure 9 Detail description of the service operator commitment requested by a car sharing regulation

Not much is being discussed about the monitoring of the policy objective and the data format to allow it. On this regards the request of month report of the activities and the definition of Key Performance Indicators allow the private operator to be aligned with the policy goals of the public authority. KPIs to be fulfilled should be based on realistic requests for data and its potential knowledge. The work that TU Delft have undertaken as part of the SuSMo project has highlighted the lack of a unified framework for impact evaluation. They are developing a tool to aid cities to understand how best to measure the impacts of shared mobility. Further information on the tool will be available to cities in 2021.

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4. Conclusions and Recommendations

This report attempts to design a practical toolkit to define a roadmap to enable the procurement of a shared mobility service and to allow the municipality to monitor its results. The report is supported by 5 play cards attempting to represent the basis for a co-design approach with local authorities. The suggestion provided need to be adapted according to the technological progress and the advent of new services such as autonomous driving and MAAS. The SuSMo project also recommends that there is a continued need to disseminate the benefits and best practices of shared mobility. Therefore, here are listed the 10 best practices identified by the shared mobility principles for liveable cities:

1. We plan our cities and their mobility together.
2. We prioritize people over vehicles.
3. We support the shared and efficient use of vehicles, lanes, curbs, and land.
4. We engage with stakeholders.
5. We promote equity.
6. We lead the transition towards a zero-emission future and renewable energy.
7. We support fair user fees across all modes.
8. We aim for public benefits via open data.
9. We work towards integration and seamless connectivity.
10. We support that autonomous vehicles (AVs) in dense urban areas should be operated only in shared fleets

This report has leverage by the results obtained by the STAR- H2020 project. SuSMo invited the STAR coordinator and project partners to present their results during one of the webinar organized in June 2020.

The main shared recommendations are:

Include car sharing in more policy areas. In order to create an optimal policy framework, car sharing itself should be included in other policy areas, as it covers different topics such as mobility, public space, new housing developments and even social cohesion and work. Integration of car sharing in all these fields avoids conflicting legislation. A best practice is represented by the Loi d'orientation des mobilitités- approved by the French government on Dec. 24th,2019 that define the key national objective and give the mandate over wider policy area. https://www.vie-publique.fr/loi/20809-loi-du-24-decembre-2019-dorientation-des-mobilites-lom

Support car sharing as a sustainable solution to be integrated into SUMPs. An action plan for car sharing services to be effective is for them to be included in SUMPs as a component of the overall transport system. To maximise its social, environmental, and economic benefits SUMPs should involve best practices such as: the integration of car sharing in new households, development of mobility hubs, monitoring of the used space as KPI.

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Integrate car sharing in your parking management plan the integration of car sharing in parking policy and spatial planning enables cities and project developers to reduce the number of parking places in certain areas, resulting in financial profits and more open space.

Ensure an EU legal framework for car sharing. The framework should clearly define indicators to be recognised as a car sharing operator with "room for innovation". This framework will ensure a level playfield and a concept lead by socioeconomic impacts prior to revenue maximisation.

Invest in effective public transport, safe walking and cycling infrastructures Future investments in public facilities, for example in "mobility hubs" (physical locations combining different sustainable mobility modes), should be thinking from a pedestrian or cyclist point of view.

Adopt a mix of suitable car sharing models. Aiming for a suitable mixture of car sharing models is key to start new services with a dedicated fleet in areas which are not yet on the radar of car sharing providers: for instance, in less urbanized regions or the countryside.

Tell citizens and stakeholders the benefits of car sharing. The transition from car ownership to the use of shared vehicles takes time. It is a mental shift which is not easy to make, but once people learn and/or experience themselves, they tend to adopt it quickly. Therefore, governments and local authorities could inform and communicate on the advantages of car sharing for improving the quality of life for inhabitants.

Rethink fiscal systems to create a mobility budget VAT rates for car sharing are fluctuating around 20% in all European countries, similar or same levels with those for car rental. Since car sharing has a proven positive effect on public space, modal shift and livability of neighborhoods, VAT rates for car sharing could be reconsidered. In addition, current fiscal incentives for company and salary vehicles must be reformed as they are one of the biggest thresholds for further growth of car sharing. Fiscal stimuli for a mobility budget should be also considered.

Invest in on and offline MaaS. Smart technology helps to improve user friendliness of car sharing, making it easier to book, access and use sharing mobility services.

Be a car sharing user too. Local governmental cars do not travel more than 10 000 km per year, why not replace them with shared cars, promoting car sharing at the same time and optimise fleet costs?

2020 was the second year of SuSMo, which was scoped as a three-year project. The focus in year two was to develop the transition guidance tools, frameworks, and roadmaps to support a transition to sustainable shared mobility. These outputs were developed in response to the needs of the SuSMo cities, using the co-creation process, as well as being mindful of their application to cities across Europe in the future. The programme is therefore at a critical stage;

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partners have tested and refined the ecosystem approach which will be essential to maximise the pace of uptake of sustainable shared mobility. We also have a suite of research reports, tools, frameworks, roadmaps and workshop outputs which can help other cities achieve their decarbonisation objectives.

The workplan for year 3 of SuSMo (2021) focuses on dissemination of these outputs. It is important that this work is completed in order to maximise value for money for Climate-KIC and EIT by ensuring the SuSMo messages and outputs reach a wide audience. Without this dissemination taking place, the overall project objectives will not be fully achieved. Successful dissemination will lead to more cities adopting sustainable shared mobility, greater impacts in terms of carbon emissions reduced, and a growing ecosystem of engaged cities (municipalities, citizens and the private sector). In 2021 the SuSMo partners will also finalise and seek to implement the business model defined in the financial participation mechanism, which in turn will help meet Climate-KIC's and EIT's objectives around delivering value for money and financial sustainability.

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Annex I – Shared Mobility RoadMap

Maximising the benefits of e-scooter deployment in cities - Report

What: This paper informs cities how to manage and implement e-scooters to best serve their citizens as well as achieve decarbonisation targets. It details key areas that should be considered to create a safe and sustainable environment for e-scooters and the environmental impact of such services.

Why: This paper will inform policy and regulation as well as provide evidence to support future resource use by cities to support the uptake of e-scooters.

Who: This paper was primarily written for local authority transport decision makers in continental Europe and the UK, as well as regional and national policymakers.

Outcome: This paper was released in August 2020. It has since been quoted and referenced in many different journals, magazines, and reports:

- Original paper release on the Cenex website: https://www.cenex.co.uk/app/uploads/2020/08/Maximising-the-benefits-of-e-scooter-deployment-in-cities.pdf
- https://fncdn.blob.core.windows.net/web/1/root/m-fle-nov-2020.pdf
- https://data.angel.digital/pdf/p1-60%20TaaS%20Winter%202020.pdf
- https://airqualitynews.com/2020/08/17/local-authorities-must-take-an-active-role-to-encourage-e-scooters/
- https://www.peterboroughtoday.co.uk/news/transport/peterborough-city-council-review-e-bikes-and-e-scooters-plans-following-publication-report-2964354
- https://greenfleet.net/news/18082020/local-policy-essential-maximise-e-scooter-benefits
- https://www.businessgreen.com/news-analysis/4019032/scooters-fine-balance-ensure-green-benefits-research
- https://highways-news.com/the-benefits-of-e-scooters-will-only-be-realised-if-councils-take-an-active-role-in-their-development-says-new-report/
- https://www.cittimagazine.co.uk/news/micromobility/councils-key-to-realising-e-scooter-benefits-report-says.html
  https://www.iklimhaber.org/e-scooterlar-cevre-icin-iyi-mi-kotu-mu/

Shared Mobility Technology and Policy Roadmaps

What: These roadmaps inform cities of upcoming technology developments, from 2020 through to 2030, in the shared mobility transport sector as well as the likely policy and strategy decisions cities need to take in order to accelerate the low carbon shared mobility agenda. The technologies covered are e-scooters, e-bikes, and car clubs/car sharing.

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Why: These roadmaps will aid in cities understanding the future trends of shared mobility and where the industry is going. This will act as a source of evidence to support future resource and funding of shared mobility and what to expect from operators of shared mobility in the future.

Who: This paper was primarily written for local authority transport decision makers in continental Europe and the UK, as well as regional and national policymakers.

Outcome: The roadmaps were first disseminated in October 2020 in an online workshop with Sofia municipality workers. Following this the roadmaps were again disseminated in the SuSMo workshop series hosted by Cleantech Bulgaria in November. These were presented and feedback gathered from those attending the online webinar. See Appendix for images of the roadmaps produced.

Sofia Municipality workshop

What: This workshop was held on the 30th of October 2020 where Cenex presented findings from the e-scooter report and shared mobility roadmaps to Sofia municipality workers. A review of Sofia's Sustainable Urban Mobility Plan (SUMP) was also performed prior to the workshop. This review looked at the role that shared mobility had in the SUMP and what improvements needed to be made in order to ensure that shared mobility was appropriately considered and resourced in the future. Once this information was presented an open discussion was had surrounding how this information should be applied to Sofia. This included using Miro Boards to understand where on the roadmaps Sofia felt they were performing well and where they weren't, with some key takeaways established for Sofia to look at in their next steps.

Why: So that Sofia could understand whether they are ahead or behind the general EU trend enabling them to establish what areas of shared mobility they need to work on. It also allowed the participants to understand what the future holds for shared mobility and what action the city needs to take now in order to be ready.

Who: This workshop was for the municipality workers in the transport and green departments in Sofia.

Outcome: The workshop was a productive session that highlighted for Sofia the positive start they have made with implementing shred mobility and where the focus should lie in order to build on the work already performed. A review of the Sofia SUMP has prompted the municipality to re-look at the targets to be set out for shared mobility in the future.

Review of Sofia's E-scooter Data

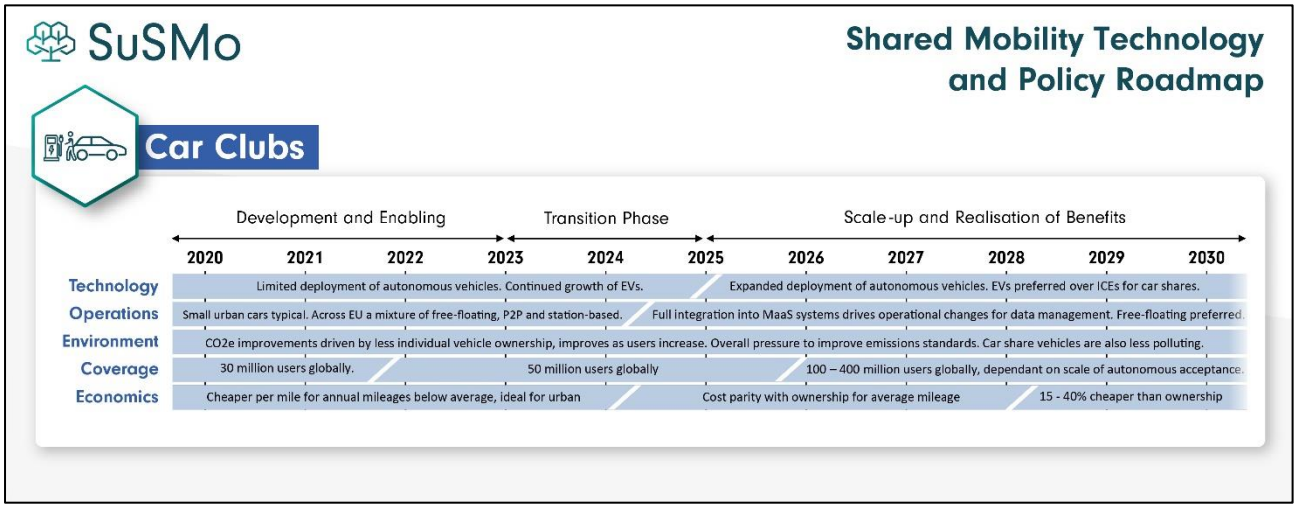
What: A modal analysis was performed to help the municipality improve its planning of shared mobility deployment, and specifically e-scooters. An e-scooter operator provided a

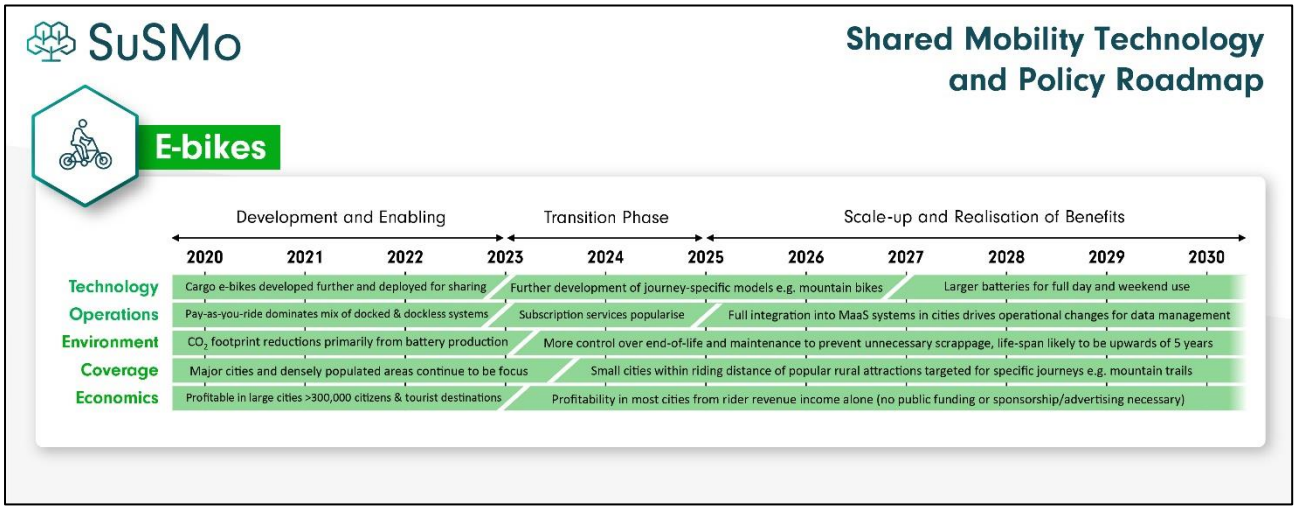
top level output for hot spots for e-scooter usage Cenex used this information, along with Google's routing algorithm, to analyse several modes of transport. Google's algorithm utilises historic and real time routing to estimate journey distances and times for different modes, and therefore was considered an acceptable substitute for primary journey data.

Why: Modal analysis allows a municipality to gauge the effectiveness of each mode, to understand how it may interact with others currently in place, and therefore maximise the overall municipal transport strategy.

Who: The review was on behalf of the city of Sofia using data provided by an e-scooter provider in the city.

Outcome: The results show that replacing walking by e scooters in multi modal journeys significantly increases transit speed. Improvement is greater for journeys using the metro than on buses, as the metro system has fewer accessibility points, and therefore is distributed over greater distances covering these distances faster results in a vastly improved transit time. The data analysis was sent over to Sofia which they are currently reviewing.





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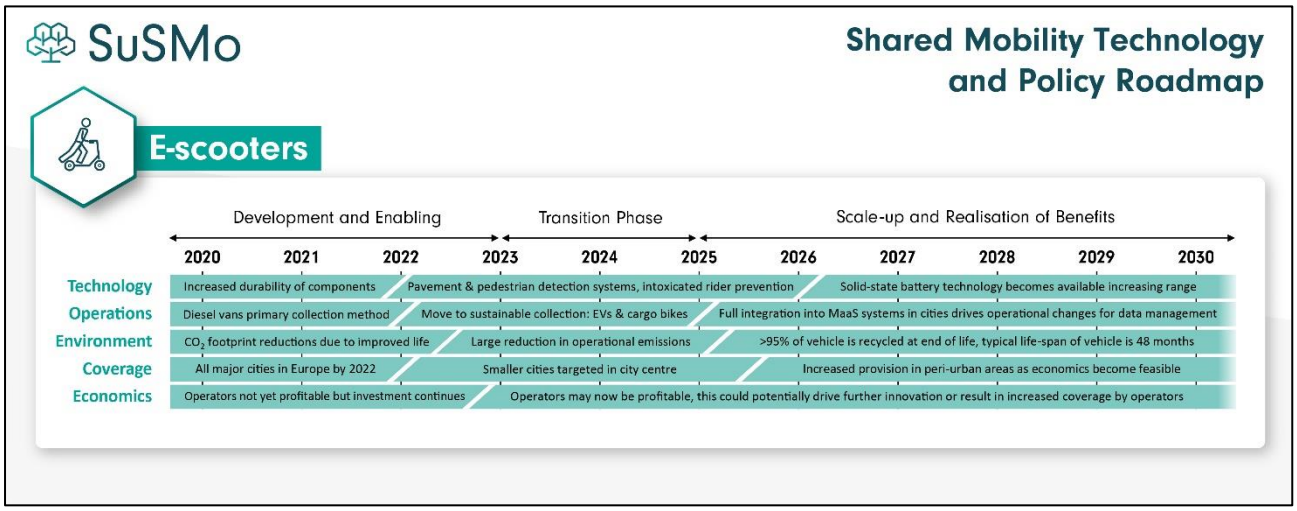

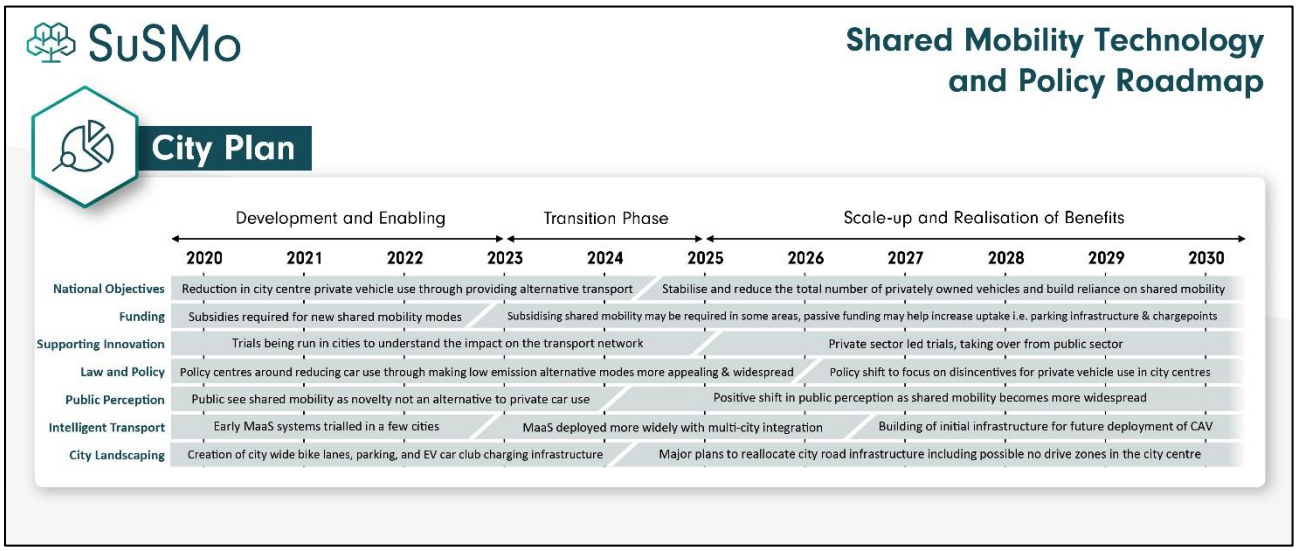

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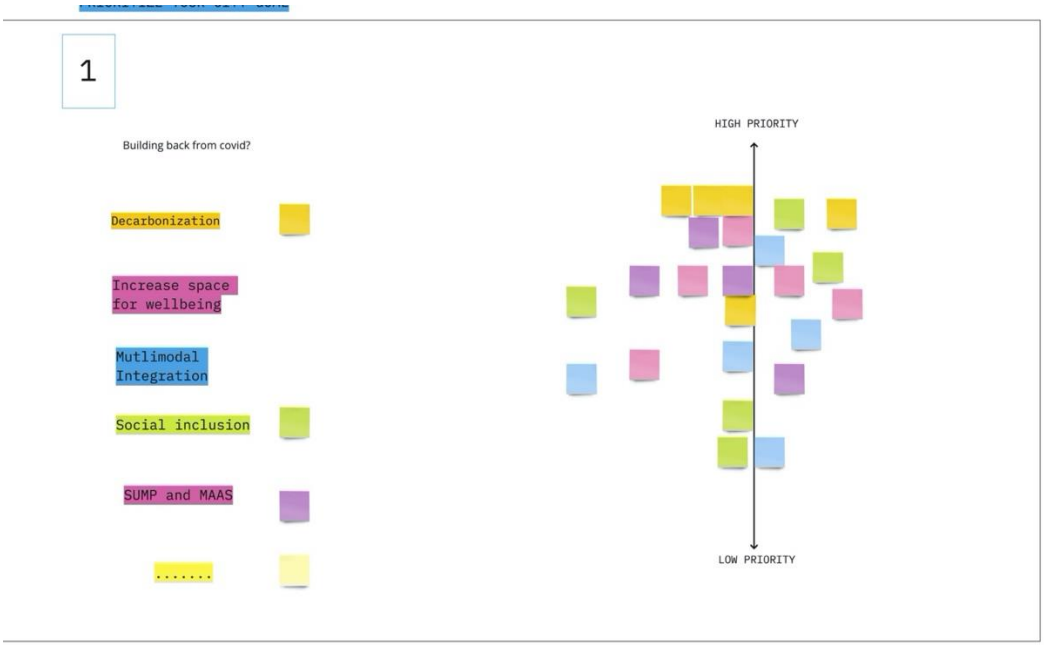
Annex II - Procurement and Regulation Play cards



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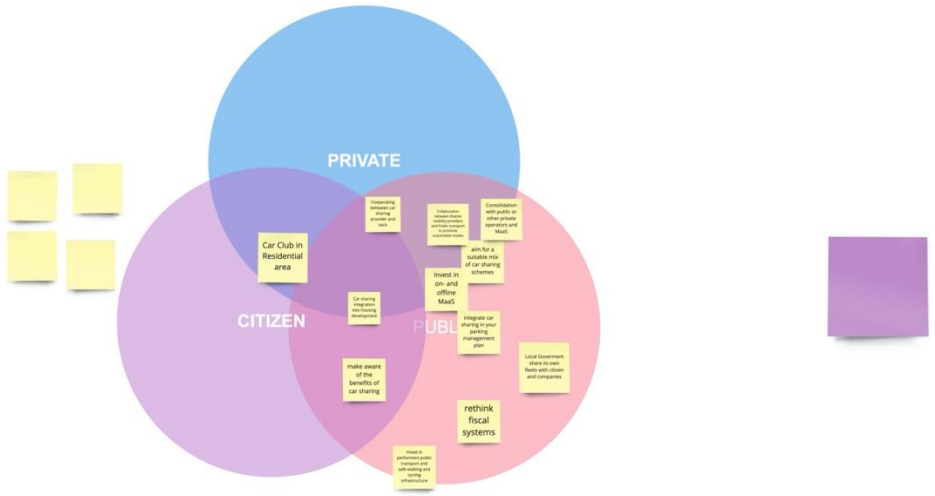
3

LIST BEST PRACTICES to built a long term PPP



City with 250.000 inhabitant

4

- Bike sharing
- Car sharing
- Scooter sharing
- Mopad sharing
- Ride hailing
- Ride Sourcing
- e-Hail
- Microtransit

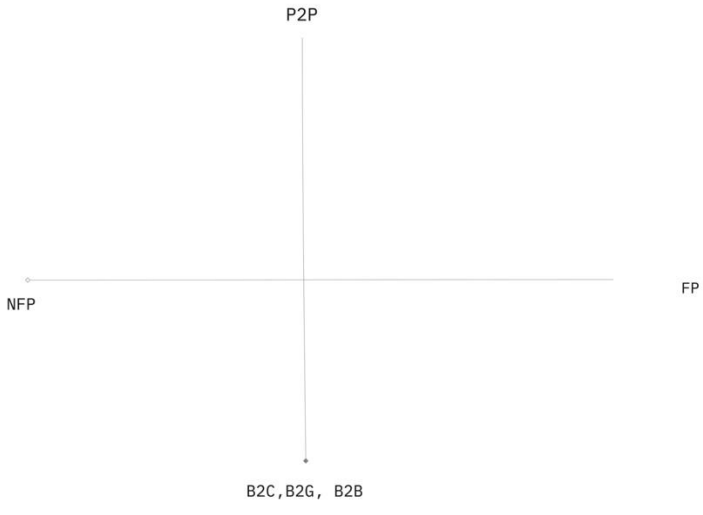
Peer-to-peer
Shared vehicles among private drivers, either in (closed) community groups or peer-to-peer.

Roundtrip homezone-based
Bringing back a shared vehicle to the same neighbourhood.

Roundtrip station-based
Bringing back a shared vehicle to the same parking location.

Free-floating with pool stations
A shared vehicle can be returned at different spots, but always in a dedicated car sharing station.

Free-floating with an operational area
A shared vehicle can be left at any parking place in an operational area



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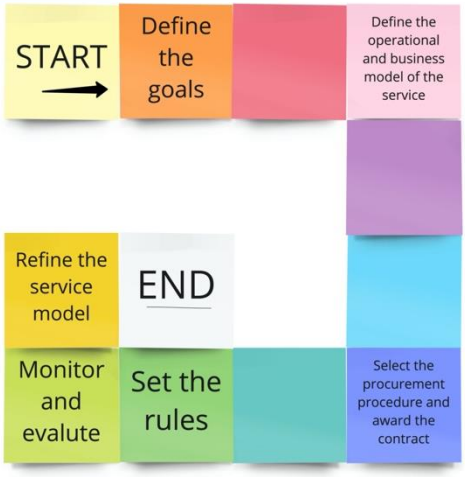
5

ORDER THE STEPS REQUIRED FOR ENABLING A SHARING MOBILITY PROCUREMENT



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