greencharge2020.eu

GreenCharge Project Deliverable: D7.4

European Workshop e-mobility and SUMP

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About GreenCharge

GreenCharge takes us a few important steps closer to achieving one of the dreams of modern cities: a zero-emission transport system based on electric vehicles running on green energy, with traffic jams and parking problems becoming things of the past. The project promotes:

Power to the people!	The GreenCharge dream can only be achieved if people feel confident that they can access charging infrastructure as and when they need it. So GreenCharge is developing a smart charging system that lets people book charging in advance, so that they can easily access the power they need.
The delicate balance of power	If lots of people try to charge their vehicles around the same time (e.g. on returning home from work), public electricity suppliers may struggle to cope with the peaks in demand. So we are developing software for automatic energy management in local areas to balance demand with available supplies. This balancing act combines public supplies and locally produced reusable energy, using local storage as a buffer and staggering the times at which vehicles get charged.
Getting the financial incentives right	Electric motors may make the wheels go round, but money makes the world go round. So we are devising and testing business models that encourage use of electric vehicles and sharing of energy resources, allowing all those involved to cooperate in an economically viable way.
Showing how it works in practice	GreenCharge is testing all of these innovations in practical trials in Barcelona, Bremen and Oslo. Together, these trials cover a wide variety of factors: *vehicle type* (scooters, cars, buses), *ownership model* (private, shared individual use, public transport), *charging locations* (private residences, workplaces, public spaces, transport hubs), energy *management* (using solar power, load balancing at one charging station or within a neighbourhood, battery swapping), and *charging support* (booking, priority charging).

To help cities and municipalities make the transition to zero emission/sustainable mobility, the project is producing three main sets of results: (1) *innovative business models*; (2) *technological support;* and (3) *guidelines* for cost efficient and successful deployment and operation of charging infrastructure for Electric Vehicles (EVs).

The *innovative business models* are inspired by ideas from the sharing economy, meaning they will show how to use and share the excess capacity of private renewable energy sources (RES), private charging facilities and the batteries of parked EVs in ways that benefit all involved, financially and otherwise.

The *technological support* will coordinate the power demand of charging with other local demand and local RES, leveraging load flexibility and storage capacity of local stationary batteries and parked EVs. It will also provide user friendly charge planning, booking and billing services for EV users. This will reduce the need for grid investments, address range/charge anxiety and enable sharing of already existing charging facilities for EV fleets.

The guidelines will integrate the experience from the trials and simulations and provide advice on localisation of charging points, grid investment reductions, and policy and public communication measures for accelerating uptake of electromobility.

For more information

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Executive Summary

GreenCharge set out to find different solutions for charging with renewables on different applications: vehicle sharing, charge at work and charge at home. This is to facilitate the uptake of carbon free mobility in the first place. With a view of municipalities´ interest to electrify public transport and to reduce car dependency of citizens, to encourage walking, cycling and use of public transport, it is important to consider the SUMP-process as a helping tool to introduce charging for e-mobility in housing developments, in connection with public transport and fleet management.

Sustainable Urban Mobility Plans (SUMPs) are a way to create common understanding of goals. We presented an overview about the multi-step development and update process in Bremen, followed by best practice examples from Flanders and the project ECCENTRIC.

Within GreenCharge, we support the process of a roadmap development with the uptake cities group as part of their SUMP or SUMP process. The workshop consisted of two parts:

Part 1 Get inspired

The Bremen SUMP-process, learnings from it and its current status were presented followed by the presentation of success-stories from Flanders and early movers experiences from Stockholm encouraging to start with small ideas becoming big.

Three different approaches – what can be learned from these?

- Bremen focusses on electrifying public transport and commercial vehicles, reducing private car ownership, increasing comfort and safety for walking and cycling.
- Stockholm / project ECCENTRIC is already upscaling their charging infrastructure and combines it with an extensive information campaign.
- Flanders is campaigning for shared mobility and the utilization of mobility hubs to combine shared cars with public transport and optionally with parcel stations and bike sharing. Electrifying mobility modes comes only second.

Part 2 Tell us your barriers

With an interactive tool, the pain points and barriers for electrifying mobility were discussed and the preferred channel for guidance on how to overcome these.

It showed that the uptake cities representatives find best practice examples most helpful for their roadmap development.

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1 About this Deliverable

1.1 Why would I want to read this deliverable?

In the first part the workshop highlighted the SUMP devolution in Bremen, the focus on mobility hubs in Flanders and gives an example of how H2020 projects like ECCENTRIC enable the uptake of e-mobility in cities.

1.2 Intended readership/users

The deliverable is directed at municipal representatives and urban mobility managers and planners.

1.3 Other project deliverables that may be of interest

Further reading of D 7.1 is suggested. It shows the starting point of e-mobility with best practice examples from Oslo, Barcelona and Bremen.

1.4 Other projects and initiatives

- CIVITAS projects ELEVATE, ECCENTRIC, MEISTER
- Interreg project SEE4City

2 Introduction

GreenCharge sets out to identify different solutions for charging with renewable energy, particularly in the context of vehicle sharing, charging at the workplace, and charging at home. This is to facilitate the uptake of carbon-free mobility in the first place. With a view of municipalities´ interest to electrify public transport and reduce the car dependency of citizens to encourage active and shared modes of transport, it is important to consider sustainable urban mobility plans (SUMPs) as a helping tool to introduce charging for e-mobility in housing developments, in connection with public transport and fleet management.

SUMPs are a way to create common understanding of goals. Throughout the course of its lifetime, GreenCharge developed an overview of the e-mobility approach in the GreenCharge project and how it relates with sustainable urban mobility planning and will further develop recommendations for integrating e-mobility into SUMPs.

2.1 Participants

GC Uptake Cities

- City of Zagreb
- City of Porto
- City of Burgas
- City of Budapest
- City of Thessaloniki
- City of Oslo

Bremen partner city

- City of Windhoek

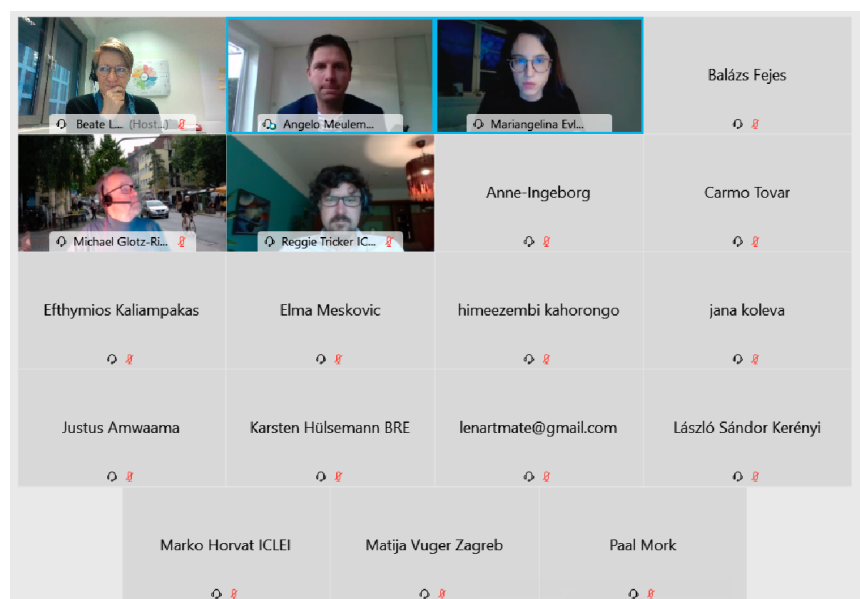GreenCharge Partners

- ICLEI
- PNO
- City of Bremen

Figure 1 screenshot of workshop participants

3 Aim and set-up of this workshop

The GreenCharge project aims at facilitating the process of a roadmap development with the uptake cities group as part of their sustainable urban mobility plan (SUMP) or sustainable urban logistic plan (SULP) process. The European workshop with the Uptake Cities was organised to address their needs and use the results as input for the planned recommendations and guidelines for integrating e-mobility into SUMPs. These recommendations will make it a truly helpful tool for their future urban planning.

The workshop was designed in a two-step approach:

Step 1 Get inspired

Lessons from Bremen's SUMP process as well as innovative success stories from Flanders and early mover experiences from Stockholm encourage cities to start with small ideas.

3 different approaches – what can be learned from them?

Bremen focusses on electrifying public transport and commercial vehicles, reduce private car ownership, increase comfort and safety for walking and cycling.

Stockholm / project ECCENTRIC is already upscaling their charging infrastructure and combines it with an extensive information campaign.

Flanders is campaigning for shared mobility and the utilization of mobility hubs that combine shared cars with public transport and optionally with parcel stations and bike sharing. Electrifying the mobility modes comes only second.

Step 2 identifying barriers

With an interactive part the pain points and barriers for electrifying mobility were discussed and the preferred channel for guidance on how to overcome them.

4 Best practice examples

4.1 Bremen SUMP

The city of Bremen set out for a SUMP in 2012 and adopted it with an unanimous political decision in 2014. It forms the political basis for the development of implementation steps and measures as well as the provision of municipal funds for implementation.

The main objectives of the Bremen SUMP are:

- **Increase quality of life** by optimising the transport system
- **Reduction of negative impacts** (safety risks, pollution, noise, CO_2-emission, space consumption etc.)
- **integrated development** for the city of Bremen

Modal split 25% cycling
            25% walking

Figure 2 focus on active modes - cycling city of Bremen

After five years of implementation, the evaluation of results initiated an update process. The SUMP-update process re-defined the strategies and updated targets and indicators. It started in 2019 and currently feeds into more detailed planning for specific fields of action.
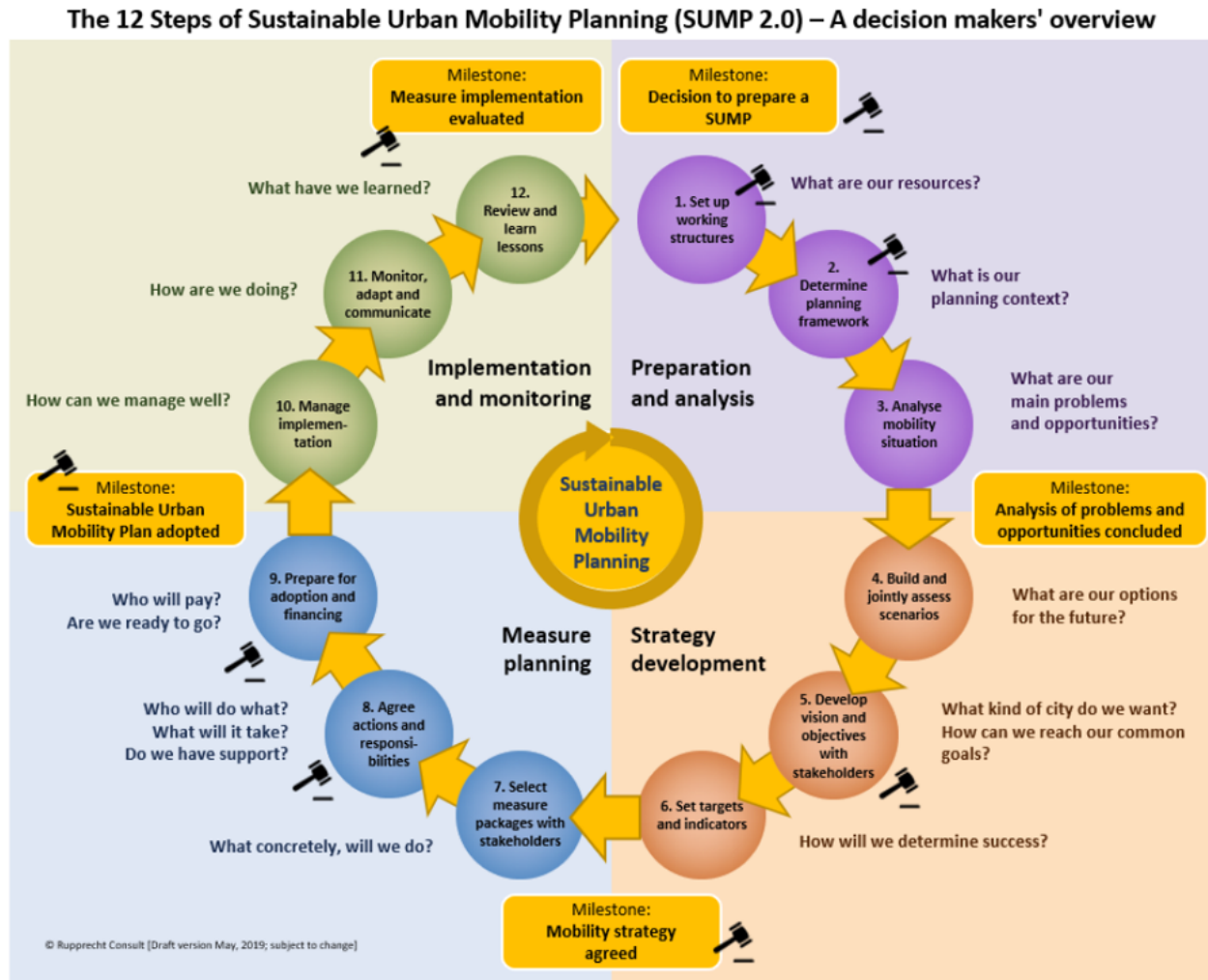
Figure 3 Steps of Sustainable Urban Mobility Planning (SUMP 2.0), graph @ Rupprecht Consult (Draft version May, 2019)

The measure planning was based on the defined priorities. It involved a political communication with municipal department, political parties and NGOs.

The public participation was designed as online process only due to CvD19 concerns.

Agreed results from the update process are the following e-mobility priorities:

- Electrification of public transport bus fleet
- Electrification of commercial vehicles including municipal fleet
- Charging Infrastructure – regulation in public street space
- Car sharing to replace private car ownership

Figure 4 Battery electric articulated bus from Sileo at a test phase in Bremen, Foto @M. Gotz-Richter

These priorities are now being underpinned with concrete measures. It is a multi-year process of finalizing the implementation. In the coming stages of implementation new technical developments like outcomes from the GreenCharge project can be taken into consideration.

The integration of renewable energy for charging is driven by an attractive return of investment for private use. In commercial applications it is still hindered by missing business cases, complicated and adverse tax regulations and legal barriers.

4.2 Flanders – sustainablility through Mobihubs

The company Taxistop develops new services for shared and on-demand mobility under it´s motto "doing more with less" to increase efficiency through shared and connected mobility. This initiative to introduce the concept of Mobihubs receives funding from the Interreg North Sea project "Share-North" and was presented by Angelo Meuleman.

With the focus on more efficiency through shared and connected mobility developed the idea of mobility hubs in urban areas to provide mobility in connection with other services as well as to provide an option to owning a private car.

In Belgium car sharing reduces private car owner ship – 1 shared car replaces 13 private cars:

Figure 5 impact on car ownership by car sharing, graph @ Angelo Meulemann, Taxistop Belgium

A mobihub is a physical place that brings a variety of mobility and other functions together to promote a multi-modality on a small scale. Mobihubs unfolded to be a large success and the initiative resulted in the creation of a Flemish network with more than 50 municipalities.

Mobihubs can comprise shared mobility offers, public transport and upgraded modularily with parcel stations, kiosks or similar offers that make it attractive and serve neighbourhoods (proximity hubs) or within a regional strategy (network hubs).

Mobihubs became part of the Flemish Transport Plan serving the parts of complementary net and on-demand and tailor-made mobility. From the start in 2017 till 2025 at least 1.000 "Hopp-in-punten" shall be in place.

To achieve that goal, different measures were applied:

- Learning networks – Webinars, Mobihub-academies, partnerships with transport regionals and a mobi-pub game
- Visible network – with a visible branding to make it a landmark with a clear name and a strong branding
- Digital network – Mobihub database TOMP-API, dashboard, Kiosk application

Timeline
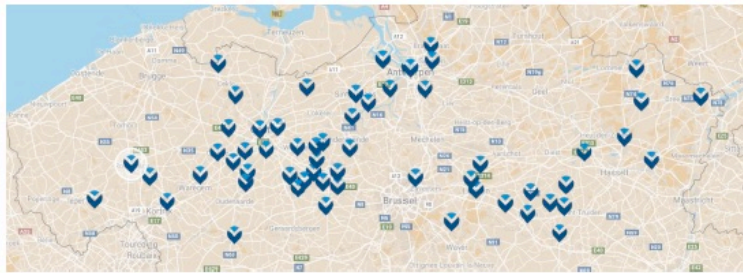
- Promotion
- Memorandum "1000 hubs
- Flemish framework
- >50 municipalities

Figure 6 Taxistop, Autodelen and Publieke Ruimte joined forces to introduce the idea of mobihubs in many municipalities across Flandern, graph @ Angelo Meulemann, Taxistopp

Electrical cars and charging infrastructure are only second in this concept. Even though the advantages of electric mobility are clean air and less noise, it has its barriers:

- Limits to the growth of car-sharing if charging networks does not follow
- Proof of business case (EV-car sharing needs to be competitive in comparison with ownership)
- Need of mixed fleet as alternative to ownership

The recommendation for planners is to focus on the modes with the highest share in the mobility system, which is walking and cycling.
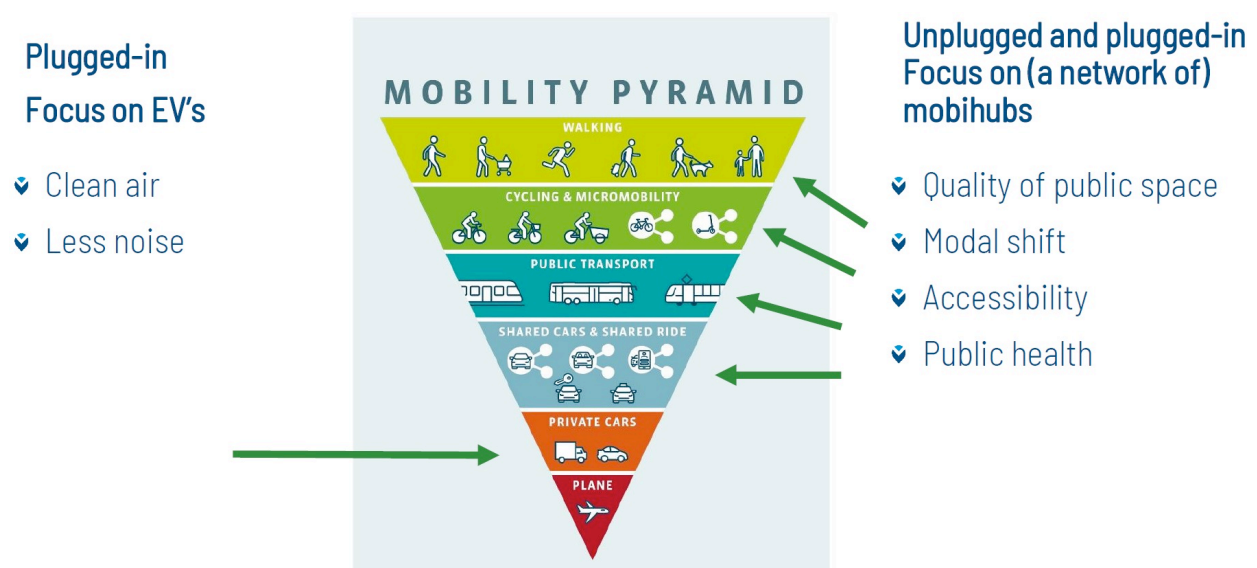

Figure 7 setting the right priorities, graph @ Angelo Meulemann, Taxistopp

4.3 ECCENTRIC – upscaling the EV charging plan in Stockholm

The upscaling of the EV charging plan in Stockholm was facilitated by the Horizon project ECCENTRIC and presented by Maria-Angeliki Evliati, project manager Clean Vehicles Stockholm.

The project ECCENTRIC run from September 2016 to November 2020.

Within CIVITAS ECCENTRIC, the cities of Madrid, Stockholm, Munich, Turku and Ruse worked together to tackle the challenges of mobility in suburban districts and clean, silent and CO2 free city logistics – two important areas that have historically received less attention in urban mobility policies. The impact of ECCENTRIC increased through communication, networking and promoting the successful commercial concepts developed.

Stockholm developed a Master plan for charging infrastructure with focus on:

- Public charging – map of possible locations in the inner city and outskirts
- Designation and construction of „charging streets"
- Public-private partnership
- City signed access rights agreement – Utility provider invests, operates, maintains and provides data

The Master plan process was accompanied with an information campaign for home charging. The City organised seminars on national funding, single- and multi-family housing, checklists, contact lists, films and recorded seminars.

Achievements

- 3700 mapped locations (inner city) + 1400 (outskirts)
- 200 charging spots on-street up and running
- 5000 charging points in housing location
- 30 seminars
- Increased demand for charging solutions
- New services and technology provider

Figure 8 on-street public charging infrastructure in Stockholm, photo @ Mariangelina Evliaty

Upscaling is a continuous process, and the city of Stockholm is recognising its role as enabler and neutral information provider and in charge orchestrating the process of setting up public and home charging infrastructure.

Within the project ECCENTRIC a number of replication packages were developed for efficient implementation:

- Inclusive urban planning
- Mobility management
- New parking policies
- MaaS in local context
- Walking and cycling safety
- Increase the share of walking and cycling
- Testing and operating clean and silent vehicles
- EV charging infrastructure
- Efficient supply chains
- Clean vehicle technologies
- Innovative policy tools for freight logistics
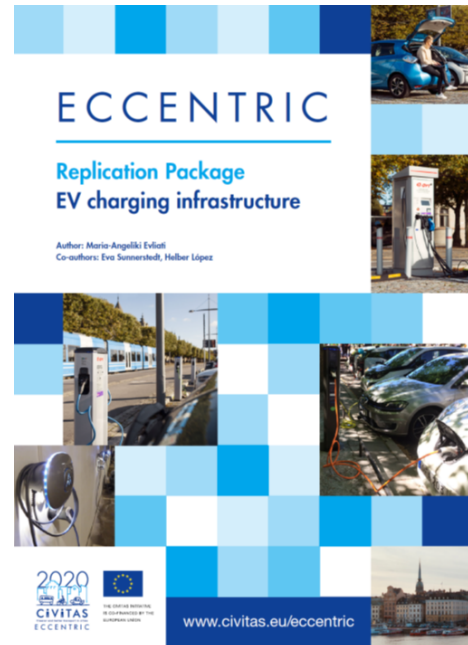
Further information and guidance: Scaling up and transferring solutions - additional materials | CIVITAS

The Stockholm example showed how central the role of municipalities and legal frameworks are to speed the uptake of e-mobility. The exchange with CIVITAS projects and the involvement of the CIVITAS project ECCENTRIC enabled the much needed the information campaign and public education and involvement.

It´s a best practice example for combining pull and push measures to make such a fundamental change in the mobility system run smoothly.

5 Uptake-Cities involvement

Each of the Uptake Cities will develop a roadmap on the construction, configuration and location of charging infrastructures designed to promote the use of electric vehicles and respective infrastructure and for integration of these roadmaps in their SUMPs. The process of roadmap development will give input to the planned guidelines and recommendations for integration of electric mobility into SUMPs.

This workshop aimed at finding the barriers that the Uptake Cities encounter during their roadmap process and what would be considered helpful insight to the planned guidelines.

The methodology used is therefore asking the Uptake Cities representatives questions in order to get the most of feedback that will make the planned guidelines for Integrating Electric Mobility into SUMPs a truly helpful tool.

Step 1   What kind of planning framework exists in your city?
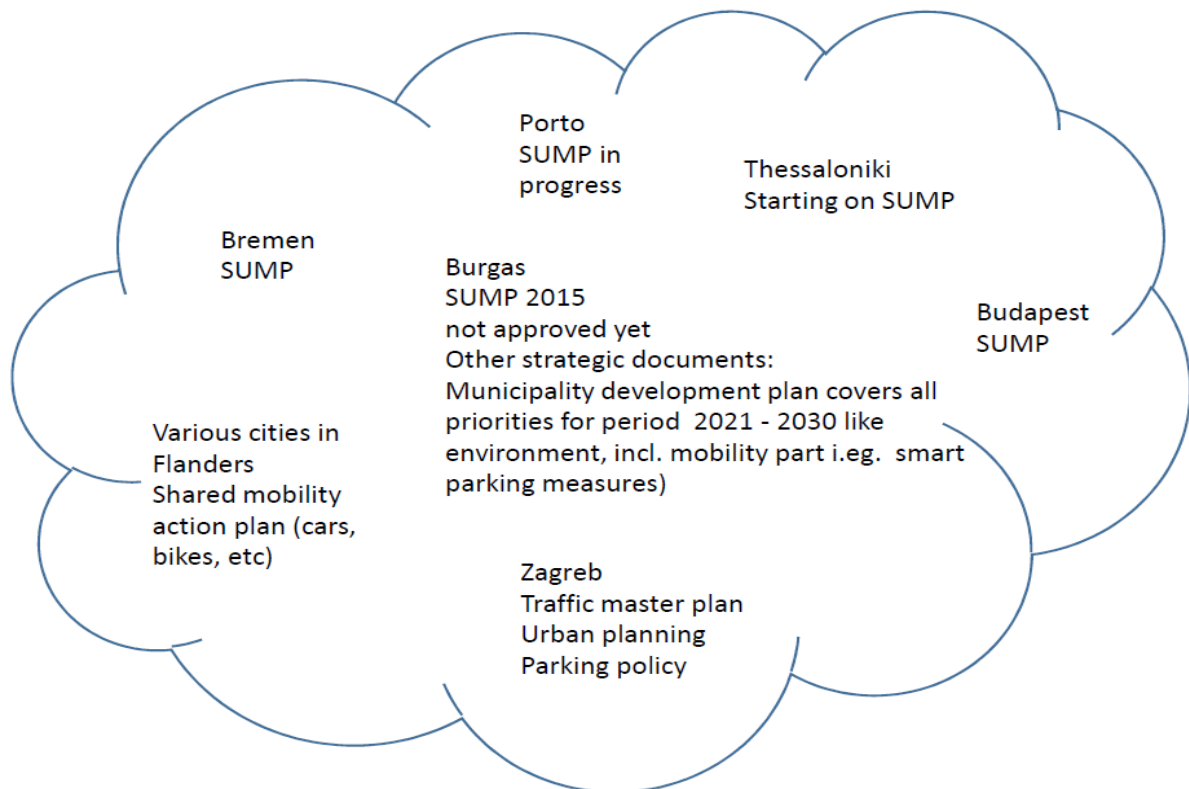

Figure 9 existing planning frameworks in place in the UC

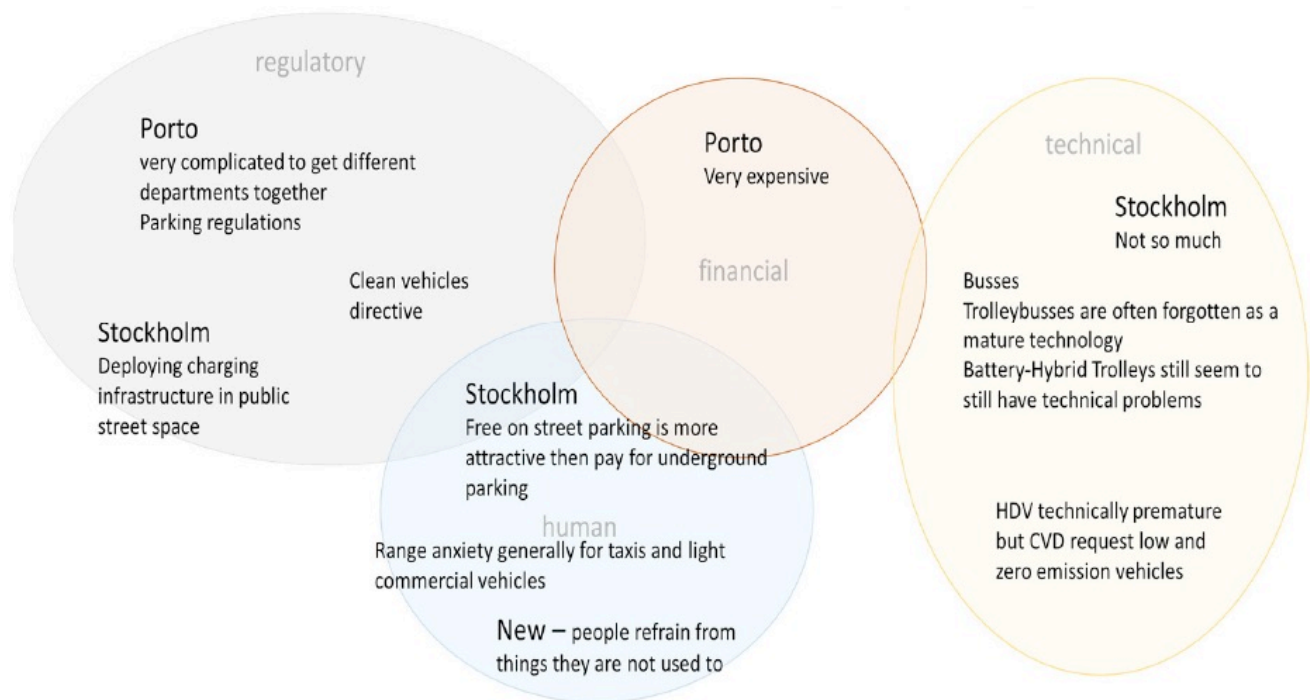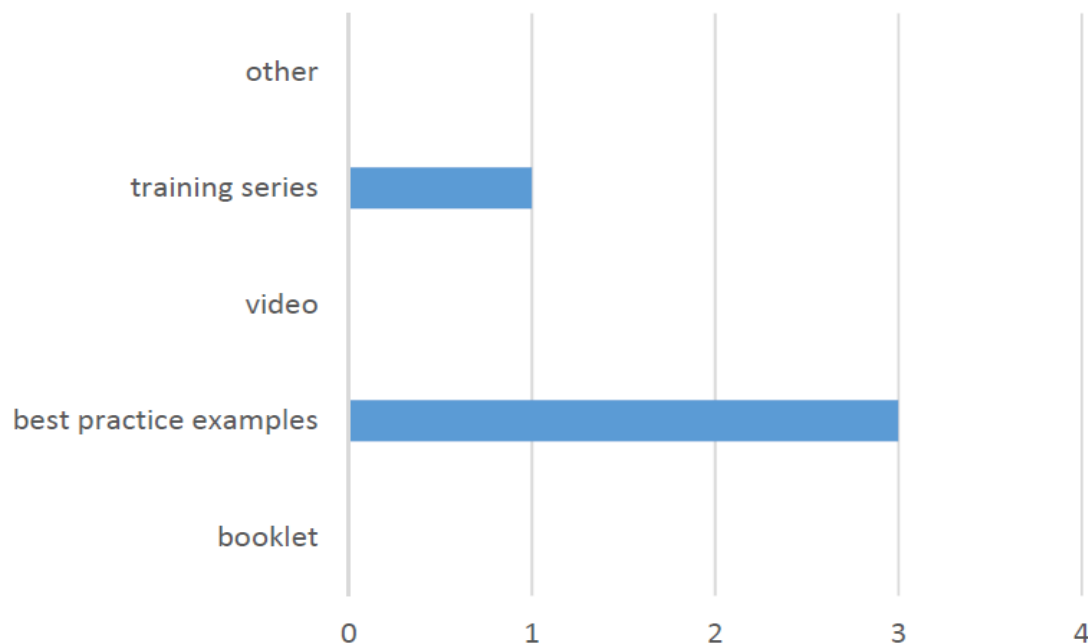Step 2 What are your pain points with e-mobility in your city?

Figure 10 pain points with e-mobility

Step 3 what format for the guidelines would you find most helpful?

6 Conclusions *and/or* Future Work

SUMPs are a framework that can be applied to define priorities, ensure broad political and public consensus, direct resources to the most cost-effective measures and enable a road map development that meets local needs.

The outcome of the workshop in regard to finding prioritising activities is:

- Start with behaviour change
- Electrification comes second
- Learning from best practise examples

The results will feed into the further process of roadmap development for the Uptake Cities that will reach a next step with investigating the development of the Oslo pilot during the virtual meeting planned end of January 2021 that will show case e-mobility under winter conditions and the combination of renewable energy from a local grid and local usage.

Also, with these results, the subsequent deliverable D7.2 Recommendations and Guidelines for Integrating Electric Mobility into SUMP will focus on preparing the best practice examples from European initiative gathered in CIVITAS Projects and related programmes to help the uptake of sustainable and zero emission mobility to meet the climate targets of Europe and make our cities future proof with high quality public space and services.

Acknowledgement

We thank ICLEI for their contribution to this workshop.

Members of the GreenCharge consortium

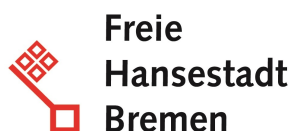|		
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