



# **ACTION PLAN**

**for implementing sustainable measures for achieving  
resilient transportation in**

# **Gothenburg Region**



## 1. INTRODUCTION

Transportation in urban areas, particularly metropolitan regions, generates congestion and vast greenhouse gas emissions and thus imposes enormous challenges upon authorities in providing healthy living conditions for inhabitants and a supportive environment for businesses. Thus, the overall objective of the SMART-MR (Sustainable Measures for Achieving Resilient Transportation in Metropolitan Regions; Interreg Europe Programme) is to support local and regional authorities in improving transport policies and providing sustainable measures for achieving resilient low-carbon transportation and mobility in metropolitan regions. To tackle this issue, 10 project partners from 8 metropolitan regions (Oslo, Gothenburg, Helsinki, Budapest, Ljubljana, Rome, Porto and Barcelona) have shared their experience in transport and mobility planning by organizing 7 topically interrelated workshops. For each workshop the partners have issued an in-depth analysis, describe good practices and organize a study visit. Practical experiences have been presented and discussed, and policy recommendations developed. Through the project outputs, such as the guide Transforming European Metropolitan Regions: Smart Mobility for Better Liveability, selected good practice descriptions, and policy recommendations, and through dissemination events, such as political meetings, the final conference, and regional stakeholder meetings, SMART-MR contributes to Europe 2020 goals, Cohesion Policy, and the Interreg Europe Program by aiding managing authorities and regional and local authorities in setting new transport and mobility policies.

At the level of individual metropolitan region, the partners have used experiences, gained in the SMART-MR, to fine-tune own set of activities and goals, that are fully presented in this action plan.

## 2. THE MAIN LESSONS LEARNED WITHIN THE INTERREGIONAL EXCHANGE OF EXPERIENCES

The interregional exchange of experiences has followed the steps (workshops), presented in the introduction, where we discussed the seven thematically interrelated topics. The main conclusions of the interregional learning process, that took place within the SMART-MR project are presented below:

### I. Participatory transport planning

The exchange of experiences in the field participatory transport planning had two main aims – I) to define participatory methodology for the project and II) to elaborate on partners' experiences in order to guide and implement successful participatory planning process at regional level. The main lessons learnt were linked to specifics of the participatory planning at the regional level and to experiences with larger and sometimes unpopular investment projects. Activities at the local level are more concrete and easier to understand, whereas the complexity of tasks rises with the territorial level. This also affects the participation and engagement of the public. At the local level, initiatives often come from residents because they clearly understand the needs of the community and respond appropriately. At the regional, national, and international levels, the issues become more complex and abstract, and they can only be managed by politicians and professionals (i.e., planners and experts), whereas the residents are mostly represented by NGOs or representatives of the civil sector. At the regional stakeholder meetings, we have noticed larger interest of institutional stakeholders whereas we approached the citizens by using e-tools.

### II. Regional mobility planning

The lessons learnt already in the first topic (e.g. specificities of the regional level) proved relevant also for the regional mobility planning, where we compared the experiences on preparing mobility plans at the regional level.

To ensure integral and sustainable development of metropolitan regions, a shared vision is crucial. The central issue to be addressed while formulating a shared vision is “what kind of city do we want to live in?” and it should be created by involving all interested parties. A common strategic vision provides a description of the quality of living in a metropolitan region and serves as a guide for developing general spatial planning measures in which mobility and transport are crucial, today and in the future.

Sharing a common vision on mobility between stakeholders and the general public is an essential step in mobility planning. It should contribute to balanced and sustainable development of the environmental, economic, and social components of the territory and thus to a higher quality of life. It is also important to balance the level of the vision (and ambition) in a plan with the level of realism, consisting of what can actually be implemented during the timeframe of the plan.

This process needs to take into account the existing multimodal transport system, its conditions, and performance. It should also take into consideration land-use planning and factors that may affect the future of the area and the future performance of the transport system, including the availability of financial resources.

Multiple scenarios should be developed, indicating possible alternatives. Each alternative scenario is compared to the reference scenario, including the interventions currently being implemented and to be implemented within the given timeframe.

In a long-term perspective, the objective of the mobility plan is to provide a safer and more efficient mobility system. It also ensures an environmentally, economically, and socially more sustainable system of mobility, especially when the actions contributing to the aforementioned objective are identified during the creation of the plan together with institutions, stakeholders, and the general public. The mandatory monitoring of the plan involves measurement of the indicators linked to each individual action every two years.

The actions to be applied concern:

- Integration between the various transport systems (redistribution of the transport network in favour of public transport, pedestrians, and cyclists, strengthening interchange nodes);
- Improvement of public transport provision (lanes reserved for public transport, increase of accessibility to public transport for passengers with reduced mobility, and use of information communication technologies (ICT) to improve public transport management);
- Development of pedestrian and bicycle mobility (creation of cycling routes and services for cyclists);
- Introduction of shared mobility systems (shared mobility equipment at train or underground stations, transit and parking facilities for shared mobility, and promotion of shared mobility in public bodies and companies);
- Use of low-pollution vehicles (installation of electric charging stations, and replacement of vehicles for passenger and freight transport with electric vehicles);
- Rethinking urban logistics (changing the collection and distribution of goods in urban areas in order to reduce traffic and pollution, and redistributing the road capacity for improved flows of goods vehicles);
- Dissemination of the culture of safe mobility (improving the most dangerous road network, creating stops and protected sidewalks for pedestrians, and protected bicycle lanes).

On general, we underlined the use of the Avoid-Shift-Improve approach, which is used to address increased transport demand in a more sustainable way (GIZ-SUTP 2012):

– “Avoid” refers to the need to improve the transport system’s efficiency, reducing the need to travel and the length of the journey through integrated land-use planning and transport demand management.

– “Shift” instruments attempt to improve the efficiency of the journey through a modal shift from the most energy-consuming (i.e., cars) to more environmentally friendly urban transport modes:

1. Non-motorized transport such as walking and cycling: these are the most environmentally friendly option;
2. Public transport such as buses, trains, and so on; although public transport generates emissions, lower specific energy consumption per km and higher occupancy levels mean that the associated CO<sub>2</sub> emissions per passenger/km are lower when compared to cars.

– The “Improve” component focuses on vehicle and fuel efficiency as well as on improving transport infrastructure; it seeks to improve the energy efficiency of transport modes and vehicle technology. Furthermore, the potential of alternative sustainable energy use is encouraged.

### **III. Low-carbon logistics**

The long-term actions and impacts of low-carbon logistics planning mainly focus on the reduction of transport externalities and vehicle movements, as well as improved acceptance and understanding of commercial activities in metropolitan regions. Thus, low-carbon logistics planning must become part of transport planning, which so far has not been particularly common.

First, long-term reduction in carbon emissions and improvement of air quality can be achieved from reduced vehicle movements. Therefore, to reduce freight traffic in metropolitan regions the total demand for freight transport must decrease or deliveries must become more efficient. Efficiency can be achieved through implementing solutions that increase load factors; for example, consolidation. Additional emission reductions can be expected from the transition to cleaner fuels and the introduction of eco-friendly vehicles for deliveries.

The second long-term benefit of low-carbon logistics planning is improved acceptance and understanding of these activities among all stakeholder groups. Increasing this acceptance might result in opportunities for shared infrastructure because stakeholders then become aware of the needs of the business sector. Another benefit is more effective and consensus-based stakeholder collaboration, which in the end provides a valuable framework for decision-making and policy implementation. Whereas the municipality traditionally focuses on social and environmental issues, businesses emphasize efficiency, accessibility. Authorities also have the opportunity to guide industry by changing their own delivery and procurement practices, either by having deliveries performed by one single operator or by imposing requirements of zero-emission vehicles on operators delivering their goods. Improved knowledge of the private-sector needs helps improve the quality of public planning, and the best solution is based on the compromise achieved when the municipality knows the needs of businesses and the general public.

Finally, metropolitan regions are facing rapid changes in the transport sector due to digital and technological developments. With these changes in mind, long-term logistics planning and efficient public-private collaboration will improve the commercial potential of sustainable distribution solutions and provide more efficient management of freight traffic in metropolitan regions, which in turn will help reduce emissions.

### **IV. Development of and around transport nodes & V. Low-carbon urban areas**

Transit corridors, especially rail-based corridors, are vital for urban development. Station areas are recognized as a development priority in terms of mobility, urban development, and climate targets. They are the starting points for transforming the urban environment from low-carbon station areas to low-carbon metropolitan regions.

Station areas or public transport hubs are the key focus for transit-oriented development (TOD). The TOD main drivers are reduction of car use and reducing congestion and pollution by avoiding urban sprawl. At the same time, TOD aims to increase regional accessibility by acquiring well-connected and affordable land for development in transport corridors.

TOD integrates transport and land-use planning, but at the same time it is a narrow concept that focuses on transport and how to make transit as effective as possible. It is defined as an area that has a compact and dense design with both housing and services within walking distance of public transport and with regional connectivity. Thus, TOD economizes mobility by decreasing the need for travel and by making possible efficient provision of public transport. In addition to TOD, there is a need for a broader perspective for community and low-carbon development, both in densifying the existing urban area and in creating new station areas.

The new development concept creates the need to redefine TOD. Supported by the study “Sustainable Density in Station Communities” (Nordström, Swartz and Ståhle 2017), recommended density for exploitation used by UN Habitat (2015) is added.



The aim of the sustainable densification and compact areas is both to increase the population within the given space and also to maintain a well-defined division of land use that ensures that a high-quality and accessible urban area with an optimal land-use mix is obtained (Figures 1 and 2).

Figure 1: Example of efficient distribution of land use (Nordström, Swartz and Ståhle 2017).

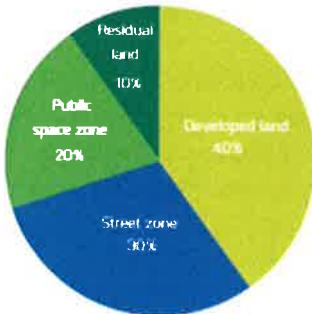
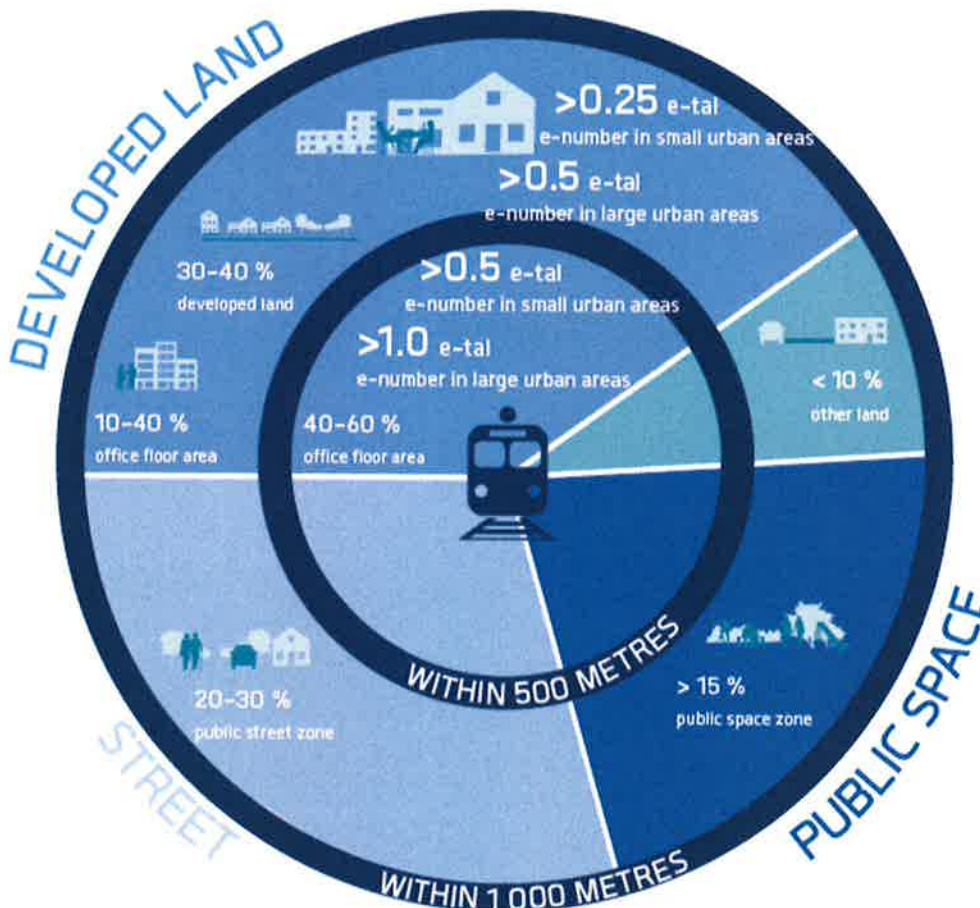


Figure 2: Land-use recommendations (Nordström, Swartz, and Ståhle 2017).



Thus the SMART-MR project developed a new methodology named Liveability-Oriented Area Development (LOAD).

LOAD is proposed to use what is commonly considered a sustainable development perspective, combining the three dimensions: economic, environmental, and social development.

LOAD is defined by an area developed with dense housing, mixed use, and liveability targets that create attractiveness.

LOAD uses a methodology that is based on UN Habitat’s guidelines.

LOAD recommends considering these guidelines as an inspirational tool for development and using the set principles outlined as goals.

LOAD proposes a flexible attitude for how to reach these goals at the local level, adapting recommendations to unique circumstances but with the overall goals in mind.

The LOAD concept, from the perspective of efficient land use and the land-use mix in station areas, is recommended to be applied both for pre-existing station areas when complementing urban structures and for new station areas when planning land use. According to LOAD with a low-carbon development aspect, the building stock in station areas should consist of energy-efficient multifunctional buildings with businesses integrated with housing. Housing should also be mixed; that is, station areas should provide different types of housing supply for people’s different needs. It is also important to increase affordable housing near stations. Increasing the amount of housing stock and residents improves the ability of services to enter the region and increase their profitability. All this requires close joint planning of land use, housing, and mobility.

At the workshop on low-carbon station areas additional concept for low-carbon station areas has been developed for assisting planners to meet climate targets. The concept will help cities develop low-carbon areas both in existing urban structure as well as in planning new station areas. In the concept, there are four perspectives on low-carbon station areas – land use, housing and living, mobility, and businesses and services – and there are four cross-cutting themes: climate change mitigation, resilience, a circular economy, and social sustainability and health. In addition, technology integration and leadership are recognized as essential parts of transformation. Nearly seventy different criteria will help planners and city developers transform low-carbon areas step by step (Figures 3 and 4).

Figure 3: The low-carbon district toolkit for station areas includes planning criteria in four themes and four crosscutting perspectives.

### Low-Carbon District Concept

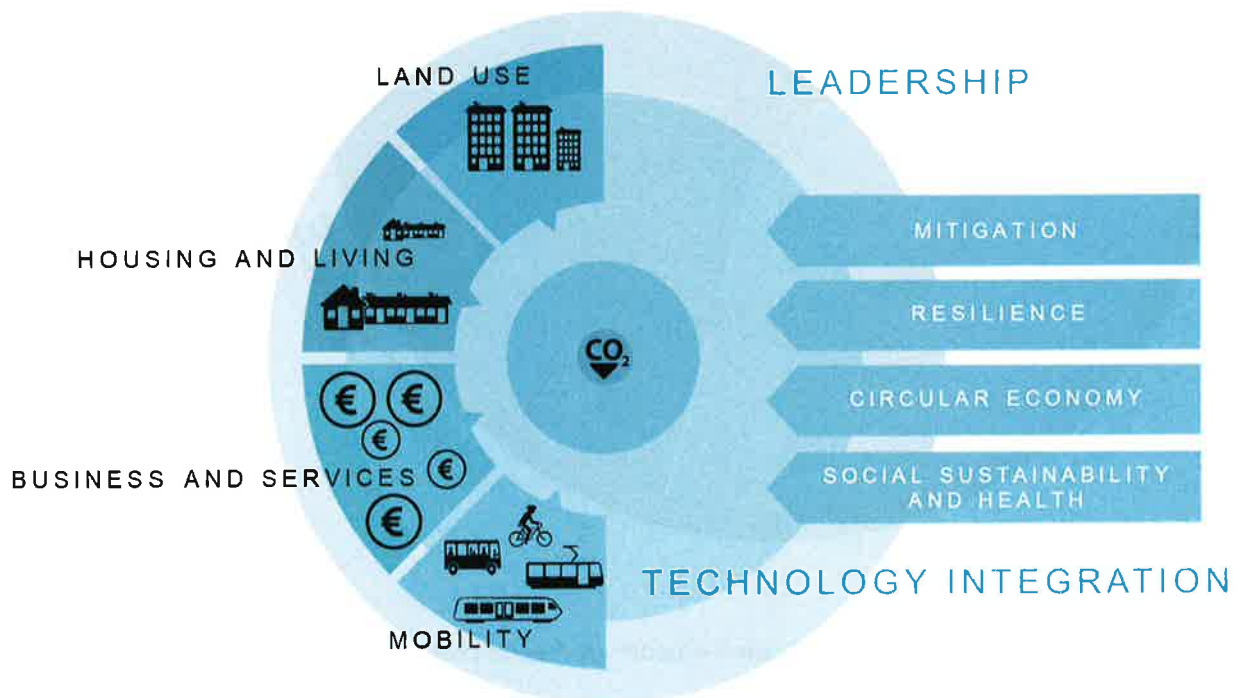
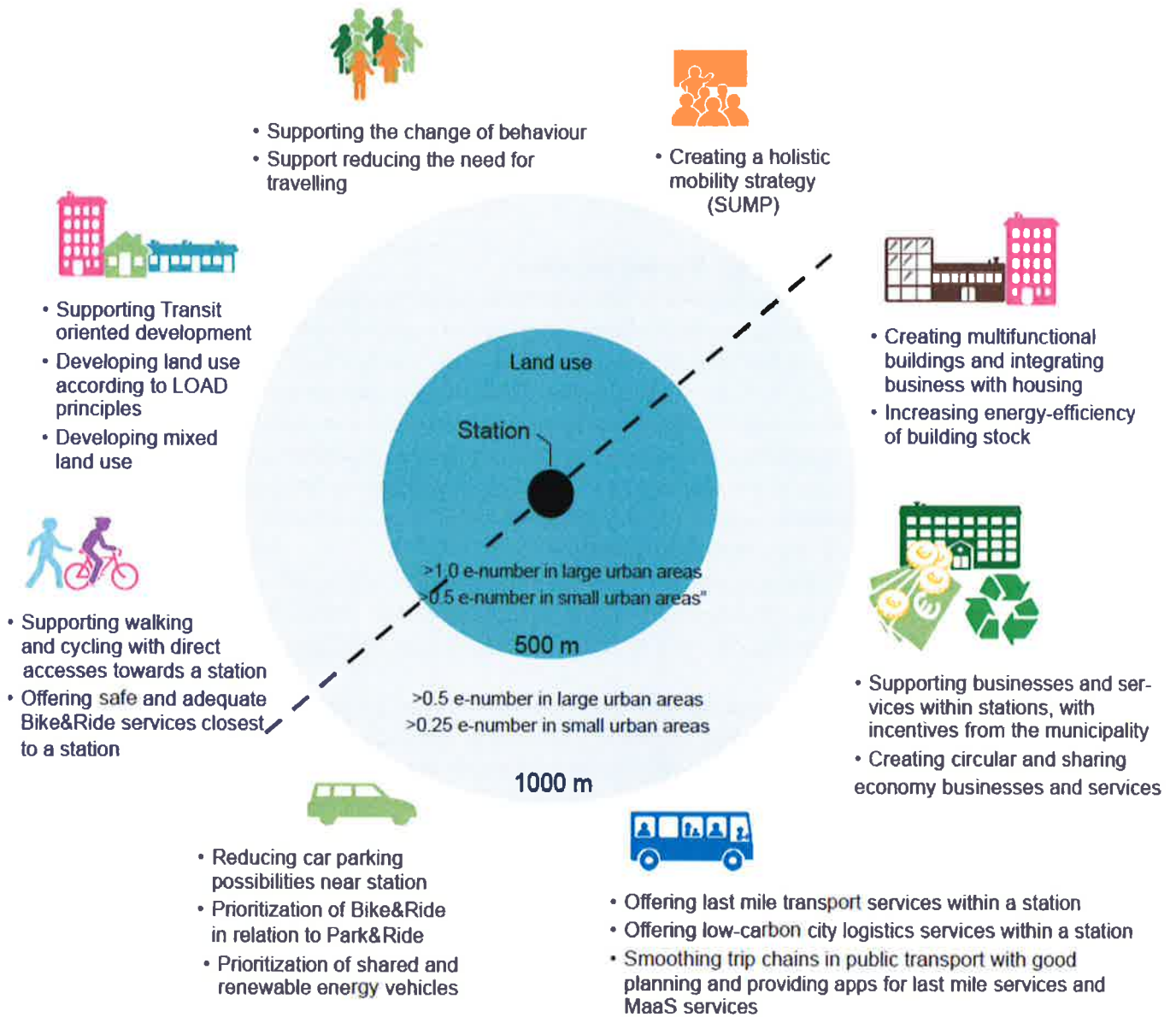


Figure 4: Low-carbon district toolkit for developing climate-friendly station areas.



From a business operational viewpoint, stations have much untapped potential as a marketplace. Improving and strengthening services at station areas will increase the added value of trip chains, will make rail transportation more attractive, and will also reduce the need for travel. Enhancing the service palette of the stations makes people's everyday lives easier and encourages movement toward low-carbon mobility. Last-mile transport services, low-carbon city logistics services, and MaaS services within a station also reduce emissions. A vibrant station area also makes a sharing economy possible. Sharing and circular economies and new models of ownership can be seen as a means to reduce consumption.

The public sector is considered to have a key role in encouraging and facilitating companies to locate themselves close to stations and introduce new types of low-carbon business operations. New business operation models may result from new types of public-private partnerships. The public sector is also seen in encouraging and facilitating the public's initiatives. Social sustainability is an important theme in developing liveable oriented station areas. If the active development of station-based services is further enhanced, the added value of the trip chains can be strengthened and people can be encouraged to use public transport. Developing station areas as small hubs for



city logistics can be part of modern e-commerce and its logistics can be handled in a centralized way to reduce number of trips.

The development of public space and safety are considered key measures for improving station areas. Upgrading public space in particular is the most focused measure to be taken to increase station areas' usability, also from the perspective of safety.

Locating services centrally on ground floors at the station and nearby will also increase social activities and enhance safety. As a minor measure, increasing smart and energy-efficient lighting and enhancing underpasses and overpasses will also increase the feeling of safety.

## **VI. Managing transportation & VII. Sharing economy:**

The backbone of a metropolitan region's transport system should be public transport, which is one of the most effective and sustainable ways of moving people in metropolitan regions – also in the long term. Public transport should be accessible, reliable, and comfortable, in most cases having electrically driven track-bound modes on the main lines with high capacity. In the long term, public transport should be decarbonized, phasing out diesel buses. However, this is not so easy at the moment because current electric bus operational models face many uncertainties. Currently, electric buses have low ranges and charging requires significant time. Trolleybuses could be a good option, especially in cities, where they are already available, because the basic infrastructure is quite expensive. Nevertheless, metropolitan regions' mobility strategies' target of zero-emission buses by 2030 is contingent upon improving battery and charging technology.

An important option for decarbonizing transport is to enhance walking and cycling as soft transport modes because the cleanest modes are those that do not require any energy except manpower. Even better is to reduce transport needs with appropriate land-use planning, the help of new communication technologies, work from home, and so on.

With the future development of autonomous vehicles, parking problems could be partially solved; however, this will not help reduce road transport. The same also applies to electric cars, which do not reduce congestion.

Autonomous vehicles are already available in public transport (mainly in the underground system); tests with autonomous trams and buses are ongoing (Figure 17). Their penetration into individual transport will cause enormous changes in the transportation system, which are not yet fully predictable.

There is a need for integration between the city and region regarding transport management, between different sectors, and also between service providers. A new manner of integration is realized in the Mobility as a Service (MaaS) system, in which a joint platform has been set up to integrate planning and managing trips together with buying and validating tickets.

A future challenge of managing transportation is to find the right mix between various transport modes, shared solutions, and autonomous vehicles in order to cut greenhouse gas emissions and create a liveable urban environment without limiting mobility options.

In the traditional mobility paradigm, the modal split is based on the majority of people using cars, followed by those using public transport, and on a small scale people that walk, bicycle, or use other transport modes.

The sharing economy could be a good way to increase the efficiency of public transport because it allows rapid change of this mobility paradigm: from car ownership to car sharing, from owning a parking space to sharing different parking spaces, and from one solution to go from point A to point B to a multiplicity of solutions in the palm of the hand (on a mobile phone). Public transport, car sharing, carpooling, bicycling, bike sharing, walking, and so on – different transport solutions, different providers, and the flexibility to make the decision on the transport mode according to the needs of each moment and with access to all the real-time information – allow people to make the best choice.

New business models in the sharing economy with their collaborative platforms, using transport digitalization, with access to big data, are changing the way people move. The main outputs of this change should be fewer cars, less congestion, and less pollution.



This allows cities to have much more space dedicated to people than to cars, permitting people to use public space to have fun, to play, to live with each other – in other words, to be happier.

Sharing solutions combined with autonomous vehicles could also be a good solution, especially for low-density areas.

Proper planning and regulation of new (sharing) business models in mobility can supplement existing public transport with new solutions for better mobility and at the same time promote fair competition between different companies, allowing traditional business to thrive in identical conditions as new ones. It is important to never forget that the target is to have fewer cars, and in the majority of cities this requires efficient public transport that allows the transportation of significant numbers of people.

### 3. THE INDICATIVE LIST OF ACTIONS LEADING TO GREATER LIVEABILITY IN EUROPEAN METROPOLITAN REGIONS

Field of intervention	Activity	Short-term effects/wins	Long-term effects/wins
Participatory transport planning	Public consultation	<ul style="list-style-type: none"> <li>– New local knowledge and possible tailor-made solutions from stakeholders</li> <li>– Awareness raising</li> <li>– Mutual learning</li> </ul>	<ul style="list-style-type: none"> <li>– Better quality of plans/strategies</li> <li>– Higher public acceptance</li> </ul>
Creating a mobility plan	Promotion and implementation of interventions to organize and manage the demand for mobility of people and goods	<ul style="list-style-type: none"> <li>– Broad commitment to the principles of sustainable mobility</li> <li>– Involvement of relevant people</li> </ul>	<ul style="list-style-type: none"> <li>– Lower environmental impact deriving from traffic</li> </ul>
	Regulation of access in some zones (and/or parking)	<ul style="list-style-type: none"> <li>– Fewer cars</li> <li>– Lower pollution/emissions</li> <li>– Less noise from traffic congestion</li> </ul>	<ul style="list-style-type: none"> <li>– Shift to public transport</li> <li>– Lower environmental impact from mobility</li> </ul>
	Support for intermodal nodes and infrastructure planning for both passengers and freight	<ul style="list-style-type: none"> <li>– Multimodal approach to travel</li> <li>– Optimization of the use of means of transport (more passengers on each means of transport)</li> <li>– Less traffic</li> <li>– Less pollution</li> </ul>	<ul style="list-style-type: none"> <li>– Improvement of mobility</li> <li>– Improvement of resilience of the transport system (through multimodality)</li> <li>– Lower environmental impact from mobility</li> <li>– Better traffic flows</li> </ul>
	Informatization of mobility, provision of real-time data on public	<ul style="list-style-type: none"> <li>– Optimization and simplification of multimodal travel</li> </ul>	<ul style="list-style-type: none"> <li>– Shift to public transport</li> <li>– Improvement of resilience of the</li> </ul>

	transport and traffic; integrated ticketing systems on mobile and personal devices		transport system (giving best solutions in real time for travelling) – Lower environmental impact from mobility
	Promote diffusion of and experimentation with collective services such as car sharing, carpooling, bike sharing, etc.	– Optimization and simplification of travel in modal shifts – Fewer cars – Less congestion	– Improvement of mobility – Lower environmental impact from mobility
	Increase in the size of areas and uninterrupted paths for bicycles and pedestrians	– More soft mobility – Fewer cars – Less noise from traffic congestion – Better and healthier quality of life	– Improvement of mobility – Shift to soft mobility – Lower environmental impact from mobility
Low-carbon logistics	Planning low-carbon logistics – Multilevel governance – Involvement of stakeholders	– Shift to low- and zero- emission vehicles – Better use of existing infrastructure – Improved terminal structure – Shared data on freight	– Reduction in carbon emissions – Better air quality – Better acceptance and understanding among all stakeholder groups
	Low-carbon last-mile pilot projects: – Establish consolidation centres for last-mile freight – Transition to e-vehicles in last-mile freight – Transition to bikes in last-mile freight – Extended use of ICT tools – Reduce kerbside parking for private vehicles	– Reduction in freight transport by vans – Better use of existing infrastructure – Modal split in favour of cargo bikes and e- vehicles – Improved efficiency in loading/unloading – Reduction in “search traffic” – Improved accessibility for deliveries	– Reduction in carbon emissions – Better air quality – Better use of existing infrastructure
	Establish charging infrastructure adapted for freight vehicles (vans)	– Transition to e-vehicles in last-mile freight	– Reduction in carbon emissions
	Establish low-/zero- emission zones	– Modal split in favour of cargo bikes and e- vehicles	– Reduction in carbon emissions – Better air quality

Managing transportation	Improving mobility solutions	<ul style="list-style-type: none"> <li>– Better mobility options</li> <li>– Accessible, reliable, and comfortable public transport</li> </ul>	<ul style="list-style-type: none"> <li>– Lower greenhouse gas emissions</li> <li>– More public space for people</li> </ul>
	Park-and-ride solutions	<ul style="list-style-type: none"> <li>– Increased parking capacity in station areas</li> <li>– Fewer cars entering the inner-city area</li> </ul>	<ul style="list-style-type: none"> <li>– Decreased congestion in the city centre</li> <li>– Healthier environment</li> </ul>
	Introduction of alternative fuelled buses	<ul style="list-style-type: none"> <li>– Cleaner diesel engines with reduced emissions</li> <li>– Hybrid technology for less fuel consumption</li> </ul>	<ul style="list-style-type: none"> <li>– Zero-emission buses for lower GHG emissions</li> <li>– Healthier environment</li> </ul>
Sharing economy	Promotion of the sharing economy	<ul style="list-style-type: none"> <li>– New and innovative business models</li> </ul>	<ul style="list-style-type: none"> <li>– More mobility solutions</li> </ul>
	Regulating the sharing economy	<ul style="list-style-type: none"> <li>– Fair competition</li> <li>– Integration of new business providers with public transport (mobility as a service)</li> <li>– Allowing and encouraging sustainable new solutions and models</li> </ul>	<ul style="list-style-type: none"> <li>– Sustainable mobility</li> <li>– Wellbeing of people</li> </ul>
	Integrating sharing mobility solutions with public transport	<ul style="list-style-type: none"> <li>– Enables travellers to gain access to public transport on an as-needed basis</li> <li>– Last-mile solutions</li> </ul>	<ul style="list-style-type: none"> <li>– Public transport sustainability</li> </ul>
Transit-oriented development	Definition of “Liveability-Oriented Area Development” (LOAD) methodology	<ul style="list-style-type: none"> <li>– Integration of spatial and transport planning</li> <li>– Co-creation of the neighbourhood</li> </ul>	<ul style="list-style-type: none"> <li>– Higher regional accessibility</li> <li>– Reduction of car use</li> <li>– Reduction of congestion and pollution</li> </ul>
Shaping low-carbon areas	Promoting use of the low-carbon district concept	<ul style="list-style-type: none"> <li>– Lower emissions from the transport sector</li> <li>– Liveability of station areas</li> <li>– New businesses</li> </ul>	<ul style="list-style-type: none"> <li>– Sustainable urban structure</li> <li>– Contributes to achieve regional low-carbon targets</li> <li>– Promoting low-carbon modes of transport</li> </ul>
	Supporting new services in stations	<ul style="list-style-type: none"> <li>– Added value to trip chains</li> <li>– Improved social safety</li> </ul>	<ul style="list-style-type: none"> <li>– Vital and attractive stations</li> </ul>

## ACTION PLAN for PP5

### Part I – General information

Project: **SMART-MR: Sustainable Measures for Achieving Resilient Transportation in Metropolitan Regions**

Partner organisation: PP05 Göteborg Region Association of Local Authorities

Other partner organisations involved (if relevant)

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### Part II – Policy context

The Action Plan aims to impact:

- Investment for Growth and Jobs programme
- European Territorial Cooperation programme
- Other regional development policy instrument

Name of the policy instrument addressed:

Sustainable Growth, goals and strategies focusing on regional structure



### Part III – Details of the actions envisaged

#### ACTION 1

1. **The background** (please describe the lessons learnt from the project that constitute the basis for the development of the present Action Plan)

The SMART-MR project has given the Göteborg Region Association of Local Authorities (GR) the clear insight that Climate Change Challenges are relevant and important to meet both at a regional level and at a local level. In the guide prepared during the first phase of the project the urgency to address challenges is also a focus. Furthermore, the guide points out the importance to have a clear idea on how to govern change. GR therefore needs to involve the participating partners to be able to address regional and local issues.

The need of a participatory approach was also the theme for the first SMART-MR workshop organized by Ljubljana Urban Region (RRA LUR). The workshop “Participatory transport planning” showed the importance of including all stakeholders involved in transport planning.

In the second workshop organized by the Metropolitan City of Capital Rome the focus was on two specific topics: ‘Preliminary Actions for Making Sustainable Mobility Plans’ and ‘Improving the Quality of a Sustainable Mobility Plan’. A site visit to Tiburtina Station was organized in collaboration with Trenitalia, RFI (the Italian Railroad Network) and ATAC (the Public Transport Agency of Rome). The station is a major intermodal node of the City transport system, integrating high-speed and commuter trains, long-distance and city buses, metro, taxis, car sharing services and an exchange parking. The lesson we learnt from this workshop was firstly the necessity to work at a regional scale when developing a mobility plan. This experience has benefited GR work with formulating a mobility strategy for the Gothenburg region. The work with the mobility strategy is in progress. The mandate for a mobility plan lies with another regional partner, Västra Götalandsregionen. The second lesson learnt is that mobility is closely related to land use planning and must be dealing with the functional demands for mobility inhabitants has in an area. The land use needs also to be promoting mobility based on public transport if climate change challenges should be meet. The resulting conclusion is that the density of residents and workers in an area is a prerequisite for sustainable mobility in the local transit nodes of the metropolitan region.

In our own workshop organized by the GR and Kungälv Municipality, we attempted to formulate recommendations and guidelines for developing Station Communities. To support the work a study called “Sustainable Density in Station Communities” was commissioned.

The study was divided in three parts. The first part, UN Habitat recommendations for sustainable density was used to formulate guidelines and indicators for a sustainable density in station communities in the Gothenburg region. To put the UN Habitats recommendations into a Nordic context, knowledge gained in previous studies of land use and density was used, for example “Mervärdeskapande stadsutveckling (Added Value creating Urban Development), Gothenburg City, GR et al 2017.

The second part defined location of a station community as space within one kilometre of a railway station. To study and exemplify what possibilities there are for regional station communities to both densify and at the same time achieve guidelines for sustainable density, both a mapping of the present density and its connection to services within regional station communities as well as a densification analysis of the Ytterby station community have been carried out.

The third part exemplified the defined guidelines and indicators and used the Ytterby station community as the project’s case study. The Kungälv municipality, where the Ytterby station community is located, is currently producing a comprehensive plan for Ytterby, which, among other things, shall give an account of how Ytterby can be densified from the inside out and increase the proportion of public transport passengers through planning.

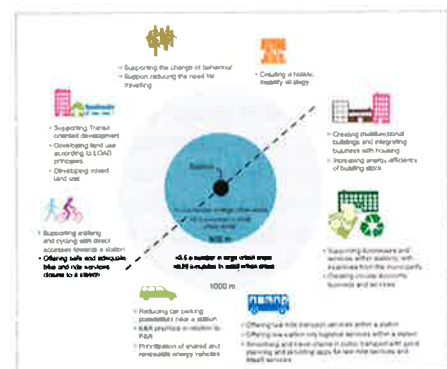
The study showed that mapping of density and service in regional station communities shows there is a strong link between the number of residents and workers and the offer of urban activities. When it comes to the diversity of services, however, a certain mix of residents and workers is needed.

The SMART-MR workshop included participants from the SMART-MR partners and their stakeholders but also local planners and politicians from Kungälv Municipality. Regional stakeholders included representation from other local municipalities, the National Road Authority, the Public Transport Authority, Boverket and the National County Administration.

By adopting and discussing the results, from the study, the participants of the workshop learned that by using recommendations for guidelines and indicators in plans, increased density in station communities can help planners to achieve sustainability goals. This was a very important lesson as this is a shared conclusion at the workshop among the participants.

We also learned the lesson that development in and around station and transit hubs using T.O.D (Transit Oriented Development) is a narrow concept. In the discussions it came up an idea that "Liveability" should be included when designing a station community. Therefore the workshop started to discuss how to incorporate liveability into the transit-oriented development concept. The broader planning concept was defined at the workshop as LOAD (Liveability Oriented Area Development). During the workshop, Swedish national, regional and local representatives was invited in a panel to reflect over the workshop results. The panel gave a positive support for using a LOAD concept in planning.

At the workshop of Helsinki organized by Helsinki Region Environmental Services Authority (HSY) additional policy recommendations was introduced. The LOAD concept was brought into the workshop and was included in the continuation of further understanding of how a low emission station area should develop. These new ways of illustrating a station area will be considered inclusion in the further work with our action plan.



In the application of SMART-MR it is stated that the "Göteborg Region Association of Local Authorities (GR) will support urban transit-oriented development and create good practices with European influence that can be an inspiration for all station communities in the Gothenburg region.

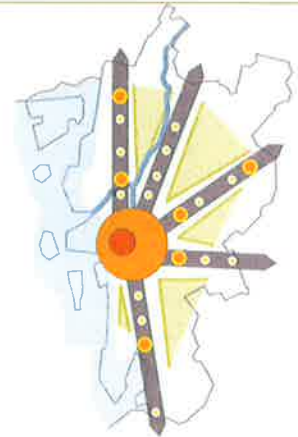
The policy document that we aim to influence is "Sustainable Growth, goals and strategies focusing on regional structure". Within the policy document a Structural illustration is included. The structural illustration is a political regional agreement that states where new dwellings and workplaces should be located. This means that the transport corridors and the station hubs is an important focus for development. The policy document also has an overall goal to achieve sustainable growth. This means that larger proportion of necessary mobility should use sustainable modes of transport. The policy document is part of a multi-level governance model adopted in the Gothenburg region since 2001. This form of governing depends on political joint regional agreements. In all 5 regional consultation rounds has been made since 2001. The latest document was adopted in June 2013 by the council of Göteborg Region Association of Local Authorities.

The policy document states the importance that the Göteborg Region will be a strong and distinct European growth region – a region that is an attractive place to live, work and visit.

The policy document also states that the support of the regional structural illustration, that creates long term sustainability, should,

- design the urban environment and other builtup areas so as to stimulate richness in our day-to-day lives, with good housing and attractive places to meet.
- We will reinforce confidence and trust between individuals and in community services, contributing to quality of life and growth.
- develop the Göteborg Region in line with the structural illustration to give it a strong, attractive regional core and a number of strong competitive sub-regional centres along certain clearly-defined corridors.

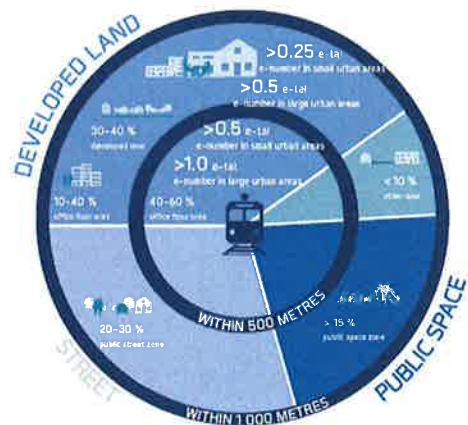
- The regional transport system will support the structural illustration for the Göteborg Region through highcapacity transport corridors.
- develop and extend the collaboration between all those involved
- create more opportunities for collaboration and the sharing of experience
- enhance our analytical processes and accumulation of expertise
- strengthen social cohesion



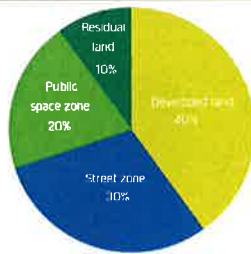
2. **Action** plan “Calculate sustainable density in Station Communities”

Using the lessons learned, in the background description, we have concluded that a co-creating workshop could be an action suitable for knowledge transfer to local authorities planning departments. The objective of the action is that all 13 local municipalities in the Gothenburg Region will understand how the guidelines and indicators in the study “Sustainable Density in Station Communities”, are defined. The participants should, under instruction, by using local data for station communities be able to describe the present land use situation. And by applying the land use recommendations determine where land can be used for development and what land should be preserved. To attain sustainable density, a certain distribution of land use is required so that densification does not impact on the need for available open public spaces, traffic spaces, green area etc.

The suggested guidelines for sustainable density therefore includes rough indicators for land use in general within station communities. In the guidelines for sustainable density in a number of indicators which are dependent on district floor space, a mix of residents and workers, land use and the distance to a central station. The size of station communities has also been taken into consideration. District floor space is used here as an indicator for density.







Using local knowledge, the participants of the workshop, will map land use limitations in selected station community into four categories, buildable land, minor limitations, major limitations and not buildable land.

These calculations, devised in the study "Sustainable Density in Station Communities", that support guidelines and recommendations are used in the local masterplan of Ytterby as a pilot (Kungälv Municipality).

The knowledge gained, from this real local masterplan, will support the design of the workshop.

This planned action, in the second phase of the SMART-MR project, will take knowledge gained in the first phase further.

This will be done by applying the same methodology described in the study "Sustainable Density in Station Communities" to all station communities in the Gothenburg region. The results will show what the potential density can mean in terms of additional housing, population growth and opportunity for local business in station areas. Up to 30 station communities will be provided with calculations. In addition to obtaining the potential in development, the density can give the local stakeholders a methodology for sustainable density calculations.

### Further related work

The workshop results will, in a second phase, be illustrated with using references for type of housing and district floor space matching calculated densities shown in the study study "Sustainable Density in Station Communities".

The Gothenburg Region annual growth is 1,5%. The region suffers traditionally by urban sprawl. Urban sprawl is maybe one of the most unsustainable development strategies. Some provisional calculations show that the station communities can potentially harbour 120 000 residents and 50 000 workers. This would be a substantial addition for a more sustainable growth. The Gothenburg Region has 1 050 000 inhabitants 2018.

The policy document "Sustainable Growth, goals and strategies focusing on regional structure" will gain calculated potentials for the structure suggested. This will benefit political discussion on additional regional agreements regarding developments. Initially, when applying for SMART-MR, we proposed to influence the policy document directly. Now, due to uncertainties regarding when the next opportunity in the regional consultation round will take place, the proposed action is included in the yearly budget process. (Regional consultation rounds are form of regional multi-level governance process used in the Gothenburg Region).

The calculations obtained at the workshop will be part of the current project "Regional Analysis" (RA). In RA mobility analysis are carried out mapping the relation between where the population live, work, study, shop and recreate and what kind of future transport infrastructure investments is needed. Land use planning and housing is an integral part of these analysis. And sustainable density calculations curb excessive investments in unsustainable infrastructure.

### Monitoring of action

AREA OF ACTIVITY WITHIN 1000-1500 M RETAINED
AREA OF ACTIVITY
RAILWAY/HIGHWAY 168 BUFFER 25 M EACH SIDE
NATURA 2000 - BIRD DIRECTIVE AND HABITAT
NATURE RESERVE
KEY BIOTOPES
COAST PROTECTION
WETLAND INVENTORY CLASS 1
BROAD LEAF FOREST AND MEADOWS AND GRAZING LAND CLASS 1
ANCIENT MONUMENTS, AREAS
DEVELOPED LAND
ON-GOING PLANS
AREAS OF ACTIVITY WITHIN 800-1000 M CHANGED
LOCAL LOW POINTS
HIGHWAY 604 BUFFER 18-30 M
POWER LINE BUFFER 60 M
NATURAL VALUES (SWEDISH FOREST AGENCY)
NATIONAL INTEREST IN OUTDOOR LIFE AND NATURE CONSERVATION
WETLAND INVENTORY CLASSES 2 & 3
ARABLE LAND MORE THAN 1 KM FROM STATION BROAD LEAF FOREST CLASSES 2 & 3
MEADOWLAND AND PASTURE
MEADOW AND GRAZING LAND CLASSES 2 & 3
NATIONAL INTEREST CULTURAL RESOURCES MANAGEMENT
CULTURAL RESOURCES IN MUNICIPALITY
ANCIENT MONUMENTS, LINES AND POINTS
AREAS OF ACTIVITY WITHIN 500 M CHANGED
DECIDED PLAN ASSIGNMENTS
VALUABLE AGRICULTURAL LANDSCAPE
ARABLE LAND WITHIN 1 KM OF STATION
SUSPECTED AND ASCERTAINED CONTAMINATED AREAS
UNDULATING GROUND



In the application of SMART-MR it is stated that the proposed self-defined performance indicator is "The number of new dwellings established in the station community of Ytterby in the Kungälv Municipality".

This indicator will be calculated in accordance with the knowledge gained during phase 1 of the SMART-MR project. This will mean that the number of dwellings added within 500 respectively 1000 meters from the station will form a refined way of calculating the self-defined indicator. In addition, calculations on density and the effect of new dwellings will have on the density will be added.

The Action plan will initiate similar calculations for other station communities within the Gothenburg Region.

3. **Players involved** (please indicate the organisations in the region who are involved in the development and implementation of the action and explain their role)

Spatial planners from all local municipalities in Gothenburg region will be invited to participate in a workshop. The consultancy responsible for the workshop will provide an introduction and a work package. Planners both on detailed and comprehensive planning level will participate. Project leader from the regional MISTRA URBAN Futures network "Urbana stationssamhället" will be invited. Project leader and planners from the regional project "Gemensam samhällsplanering i stråket Göteborg-Borås" will be invited.

4. **Timeframe**

The action is planned to take place in early 2019 with the initial workshop. Number of new dwellings will be a continuously monitored over the project SMART-MR phase 2.

5. **Costs**

The workshop is budgeted to €3 000. In addition, the participating planners will, in kind, probably need to spend 8 hours in preparation before the workshop and 16 hours in concluding work. In all 30 hours per person including the time spent at the workshop. Number of participants is estimated to be 30-40. This will result in density calculations for all station communities in the Gothenburg Region.

6. **Funding sources** (if relevant): Internal funding and work in kind.

Date: 2019-09-09

Signature: Ulla Jön / Maria Sigroth

Stamp of the organisation (if available): Göteborgsregionen

