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Transport Glossary – Definitions

TERM	DEFINITION
Mobility	the efficient movement of people and goods / the ability to move
Accessibility	the ability to reach opportunities / the ability/easiness to reach the destination of a trip
Connectivity	Connectivity in general context is about bringing areas and people close – one aspect of connectivity is linked with the transport sector; it means bringing people closer by providing them different (sustainable) mobility options, the notion encompasses both hard (infrastructural) and soft (i.e. ICT) measures
Sustainable Urban Mobility Plans	A Sustainable Urban Mobility Plan has as its central goal improving accessibility of urban areas and providing high-quality and sustainable mobility and transport to, through and within the urban area. It regards the needs of the 'functioning city' and its hinterland rather than a municipal administrative region. [https://ec.europa.eu]
Participatory Planning	Participatory planning is an urban planning paradigm that emphasizes involving the local community from the very beginning (preparation of Local Action Plans) of the strategic and management processes of urban planning; or, community-level planning processes. [SURE URBACT II project]
Information and communication technology (ICT)	the various Telecommunications and Information Technologies, which have been used in the field of Transport since the mid-80s. They include a large number of technologies and systems in various stages of development from research prototypes or even concepts, to commercially available products and applications. [https://doi.org/10.1016/S0377-2217(03)00026-2]
Transport external costs	Negative side effects of a certain activity that impose a cost upon society or environment [Update of the Handbook on External Costs of Transport, DG MOVE]
Stakeholders engagement	the process by which stakeholders and citizens are involved in mobility planning and decision making
Equity in transportation	the fairness with which mobility related impacts (benefits and costs) are distributed to citizens [Victoria Transport Policy Institute]
White Papers EU	European Commission White Papers are documents containing proposals for European Union (EU) action in a specific area. In some cases, they follow on from a Green Paper published to launch a consultation process at EU level.
Green Papers EU	Green Papers are documents published by the European Commission to stimulate discussion on given topics at European level. They invite the relevant parties (bodies or individuals) to participate in a consultation process and debate on the basis of the proposals they put forward. Green Papers may give rise to legislative developments that are then outlined in White Papers.
TEN-T	The Trans-European Transport Network (TEN-T) is a European Commission policy directed towards the implementation and development of a Europe-wide network of roads, railway lines,

	inland waterways, maritime shipping routes, ports, airports and rail-road terminals [ec.europa.eu]
Resilient cities	Urban resilience is defined as “the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience.” (Definition by “100 Resilient Cities—Pioneered by The Rockefeller Foundation (100RC)”)

1. Introduction

1.1 Urbanization and mobility

From the beginning of the twentieth century and mainly after the industrial revolution, urban areas have been constantly growing as a result of a continuous flow of people from rural areas to cities seeking jobs and therefore better living conditions (figure 1). Urbanization is linked to the need of reducing time and expenses in commuting and transportation while increasing opportunities for jobs, education, health and rest public services accessibility and leisure.

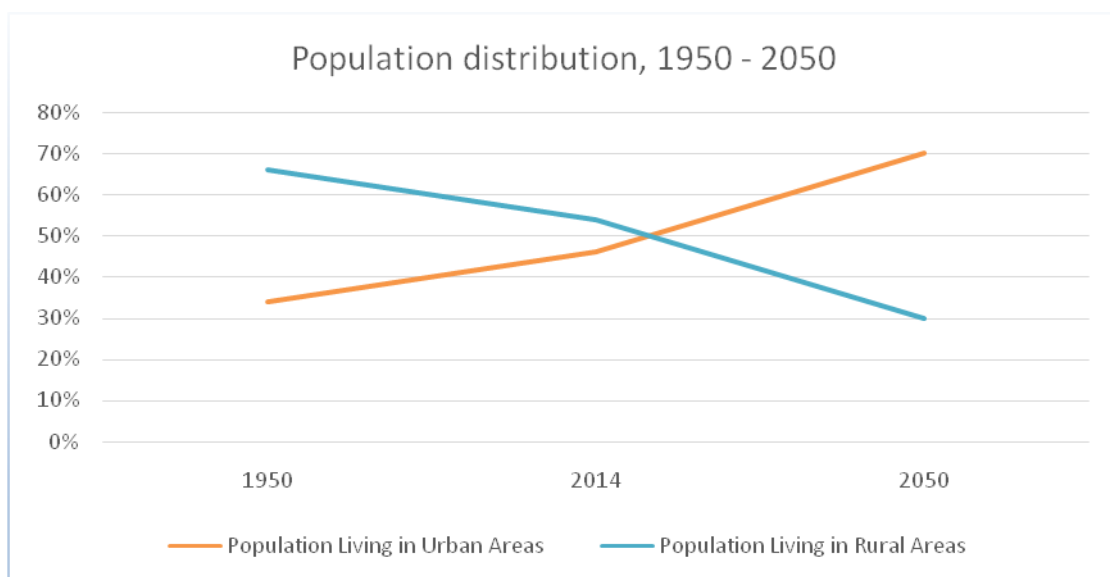


Figure 1. Global Population Distribution (and trend) among urban and rural areas [1]

According to the United Nations today, nearly 54% of the world's population lives in urban areas [1]. The global urban land coverage vary considerably, ranging from less than 1 % of global land area [2,3,4,5,6] to 3 % of global land surface [7,8,9].

Following a similar trend, in Europe, an increasing share of the European Union (EU's) population lives and works in cities, a pattern that seems to continue [10] (figure 2).

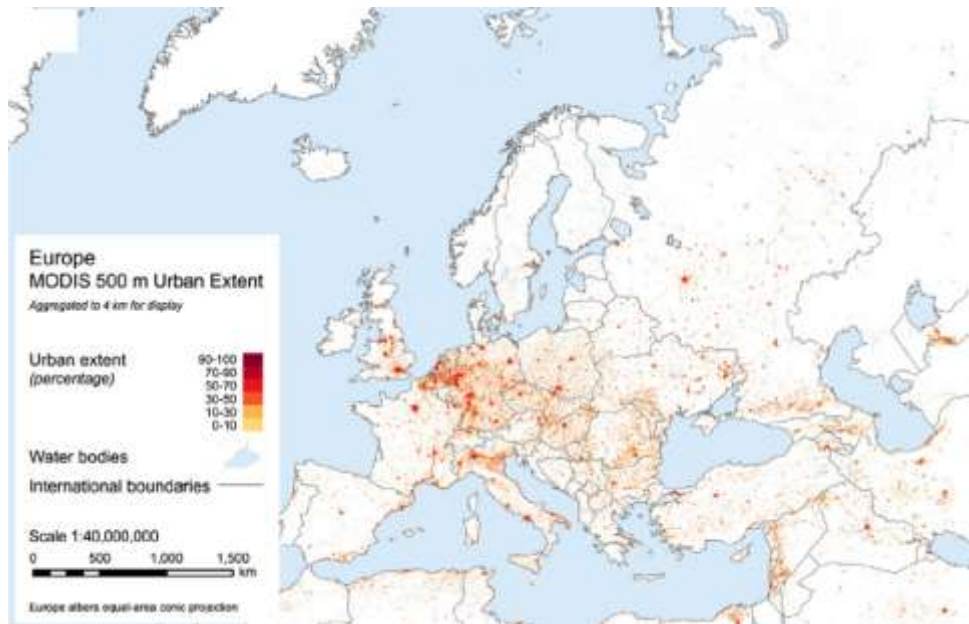


Figure 2. Europe's cities land occupation, MODIS Collection 5 map of urban extent

While urbanisation has the potential to raise wealth, it often does so accompanied by negative impacts. Leaving behind the opportunities offered in an urban environment, the opposite side of urbanization has to do with the negative impacts on peoples' life, on health, on environment (pollution), on social relationships (alienation, isolation) and on personal welfare (increased cost of life).

Coming to transportation, the high level of urbanization in EU cities results in increased congestion phenomena affecting cities' daily operation and citizens' quality of life; extreme delays, pollution, noise, accidents and many billion Euros lost every year are only some of the negative effects of urban transportation. Urban mobility accounts for 40% of all CO₂ emissions of road transport and up to 70% of other pollutants from transport. European cities face increasing problems caused by uncontrolled traffic. The question of how to enhance mobility and accessibility while at the same time reducing congestion, accidents and pollution is a common challenge to all major cities in Europe. Congestion in the EU is often located in and around urban areas and costs nearly 100 billion Euros, or 1% of the EU's GDP, annually [11].

The following table (table 1) summarizes main externalities of badly organized transport systems:

Table 1. Transport externalities

Economic impacts	Environmental impacts	Social impacts
Congestion	Pollution	Social inequity
Low accessibility	Noise	Health problems
Accidents	Climate change	Lower quality of life
Increased costs		Aesthetic damage
Bottlenecks in logistic chain		

What is necessary is to maintain and enhance cities attractiveness while supporting them as drivers of economies. Part of the challenge of greening and smoothing urban areas functioning is linked to urban mobility upgrade. Sustainable urban mobility is a common goal for all cities and Europe is already putting forward proposals and articulating them for development.

Having realized the life quality downgrading while recognizing at the same time urban transportation as an important facilitator of growth, employment and territorial development, the EU has started from the early 2000, working towards building effective and sustainable urban mobility plans. The concept of Sustainable Urban Mobility Plans has been officially set out by the European Commission in 2013 with the Urban Mobility Package, “Together towards competitive and resource-efficient urban mobility” [12] and different aspects of urban mobility management and plans development have been studied in depth by many European projects (e.g. ELTISplus, CIVITAS MODERN, CIVITAS ELAN, CIVITAS MIMOSA, Poly-SUMP, CHALLENGE, ADVANCE). In 2014, the Commission presented guidelines introducing the concept and the benefits of Sustainable Urban Mobility Plans as a paradigm to be followed by cities, urban transport and mobility practitioners and stakeholders. In contrast to traditional approaches on transportation planning, the most recent guidelines focus on citizens’ needs for enhanced accessibility, on social equity and improved environmental performance.

Urban sustainable mobility refers to a large pool of measures and solutions able to tackle urban mobility challenges linked to the uncontrolled growth of vehicles. Sustainable mobility measures, although all of them concentrated towards promoting low carbon strategies, are selected and tailored by city planners so as to meet the specific needs and objectives of each functional area. Broad dimensions of sustainable mobility planning include promotion of Public Transport (PuT) modes, alternative modes (walking, cycling) and alternative fuel driven vehicles (e.g. electric), while in order to achieve the desired modal shift, strong emphasis is given on multimodality enhancement (e.g. development of fully interconnected and accessible terminals), Intelligent Transport Systems development (exploiting the advantages of Information and communications technology – ICT) and services integration (integrated information to passengers for all modes, integrated ticketing and harmonized timetables among PuT modes).

Transforming today’s cities into sustainable urban environments that meet Europe’s 2020 goals for tackling congestion, improving air quality, enhancing accessibility and sustainability, apart from requiring a comprehensive and integrated policymaking and decision-making approach, presupposes citizens’ collective endeavour and participation in the mobility planning procedure. Citizens’ engagement however is a very complex issue since it depends on successful citizens’ training and the respective daunting task of (travel) behavioural, thus the development of a culture that favours the use of alternative to private car modes of transport.

1.2 Objectives

The current book aims to introduce and familiarize young people (the potential policy makers of tomorrow) with basic notions and principles of urban mobility, show them the challenges, educate them on sustainable urban mobility planning and motivate them to become active agents of change.

The topics covered are:

- EU actions on supporting urban mobility
- The modern approach on mobility planning – Sustainable Urban Mobility Planning
- The participatory approach of mobility planning

Rather than treating exhaustively the subject, success is considered if at the end of the lecture, students will have obtained a flavour of the particular topic and will be interested in searching and learning more for sustainable mobility. For interested readers a follow up material for further deepening is provided as well as homework exercises for triggering critical assessment of the topic.

1.3 Liaison to O1, O3 and to SUSTAIN GAME

The link among the 3 intellectual outputs of the SUSTAIN project can be understood through the following approach:

- Urban (societal) metabolism concept describes relations and trade-offs among inputs and outputs at city level and therefore provides a ground for examining efficiency and framing potential solutions (figure 3).
- As described above, mobility is a major component of cities daily performance; citizens share the same infrastructure and services for satisfying their mobility needs, consume energy for transport and therefore wastes are produced.
- Comprehending societal metabolism and urban mobility position in this cycle, allows the reader to understand risks and opportunities, identify solutions and therefore facilitates and supports effective decision making.



Figure 3. Urban metabolism – waste [UrbanWINSH2020 project]

All the e-books (O1, O2 and O3) have as a common goal to introduce the concepts behind, thus the background (game's structure and usability understanding) and the SUSTAIN Game, a game that aims to promote interactive learning on urban sustainability, sustainable mobility and sustainable planning.

2. The history and future of mobility in EU cities

The European Commission (EC) has emphasized the inherent and increasing value of mobility to boost European cities economic growth and development and very early recognized its substantial role on territorial cohesion.

The EC Green Paper on Urban Environment [22] was one of the first devoted attempts on enhancing urban environments in EU; it concludes that integrated approach from all policy levels is required and that the urban environments are both the source of environmental problems and the framework of solutions identification [42]. Following, and in line with the Treaty of Amsterdam (which introduced sustainable development as an objective for the Community) and the Gothenburg European Council (which agreed on a strategy for sustainable development), the EU published the White paper 2001 – 'European transport policy for 2010: time to decide' [24]. In this paper, the EC proposes some 60 measures aimed at developing a European transport system capable of modal shift towards friendlier modes of transport than private car, revitalising railways, promoting sea and inland waterways based transport and controlling air transport growth. The starting point of the 2001 White Paper on Transport Policy is that a modern transport system must be sustainable from an economic and social as well as from an environmental viewpoint.

In 2002, the European Commission launched the CIVITAS Initiative [25], a network of cities for cities dedicated to cleaner, better transport in Europe and beyond (figure 4). Since 2002, CIVITAS has tested and implemented over 800 measures and urban transport solutions as part of demonstration projects in more than 80 Living Lab cities Europe-wide.



Figure 4. CIVITAS focus areas

In 2006, the mid-term review of the White Paper introduced two important shifts compared to previous Commission position:

- The position that mobility must be disconnected from its negative side-effects rather than from economic activity;
- The introduction of the concept of co-modality ("use of different modes on their own and in combination" in the aim to obtain "an optimal and sustainable utilisation of resources").

In 2006, when the mid-term review of the Transport White Paper was presented, the European Commission announced its intention of presenting an Urban Transport Green Paper. The Green Paper "Towards a new culture for urban mobility" published in 2007 [11] agreed on the necessity to join actions and forces towards achieving the goal of free-flowing and greener cities. With the Green Paper, the Commission set a new European agenda for urban mobility, respecting local, regional and national authorities' responsibilities and trying to reinforce citizens and stakeholders engagement in the common target of successful urban mobility management. The launching of the new era of accessible, safe and secure urban transport was planned in parallel with the identification of the obstacles hindering successful urban mobility and of ways to overcome problems. Issues as the improved quality of collective transport, clean and energy efficient technologies, support of walking and cycling and respect of passengers' rights on public transport were among the core discussion subjects of the Green Paper.

10 years after the 'European transport policy for 2010: time to decide' White Paper, the Commission adopted a new Transport White Paper, which defines its transport policy agenda for the next decade. In the "Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system", White Paper 2011 [26], the EC adopted a roadmap of 40 concrete initiatives for the next decade to build a competitive transport system that will increase mobility, remove major barriers in key areas and fuel growth and employment. At the same time, the proposals will dramatically reduce Europe's dependence on imported oil and cut carbon emissions in transport by 60% by 2050. As major emission contributor, urban transport greening holds a central position in the goals list.

In December 2013, via the Urban Mobility Package [12], the Commission reinforces its supporting measures in the area of urban transport by:

- Sharing experiences, show-casing best practices, and fostering cooperation
- Consolidation and dissemination of experiences and best practices (studies, web portals):
Urban Mobility Portal (Eltis); Platform on Sustainable Urban Mobility Plans; Member States Expert Group
- Providing targeted financial support, i.e. Structural funds, ESI-Funds, TEN-T
- Focusing research and innovation on delivering solutions for urban mobility challenges i.e. CIVITAS Initiative (2002), Smart Cities and Communities, Clean Vehicles Initiative
- Involving the Member States and enhance international cooperation.

The central element of the Urban Mobility Package is the communication "Together towards competitive and resource efficient urban mobility" that aims at providing the basis for a continuous debate on urban mobility at EU and member states levels (figure 5).

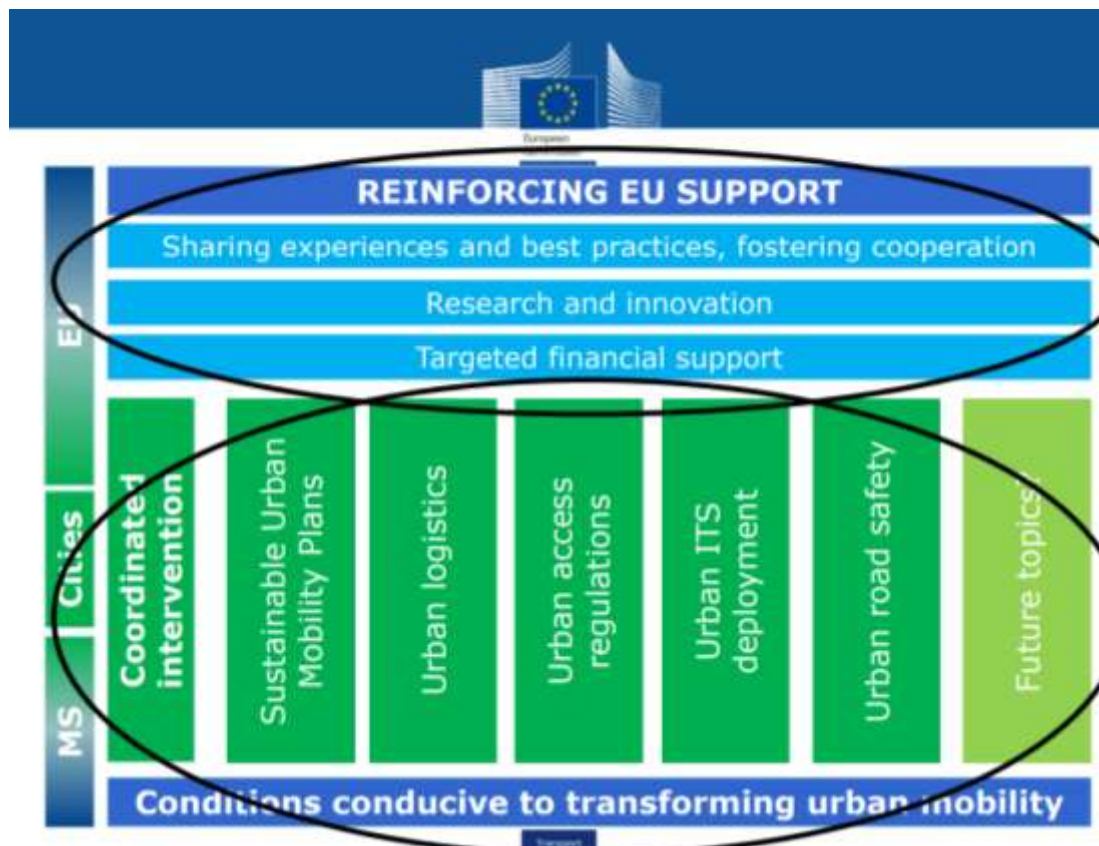


Figure 5. "European Commission 2013 – Urban Mobility Package" objectives [27]

All these years, EC Multiannual Financial Frameworks have supported projects and ideas implementation at EU cities for sustainable urban mobility. Transnational European Cooperation Programmes (e.g. Interreg MED, Europe, SEE, ADRION) and Framework Programmes for research and technological development have given the opportunity to partners from different EU countries to come close, discuss, conduct research and implement policies in transport field.

Coming in today, smart, green and integrated transport has been identified as one of the major societal challenges and simultaneously of EU2020 goals ("A European strategy for smart, sustainable and inclusive growth" [28]). EU flagship initiative "Resource efficient Europe" concentrates on helping decouple economic growth from the use of resources, by decarbonizing economy, increasing the use of renewable sources, modernizing the transport sector and promoting energy efficiency (figure 6).



Figure 6. The Urban Agenda for the EU [29]

At global level, on the 1st of January 2016, the 17 Sustainable Development Goals (SDGs - figure 7) [30] of the 2030 Agenda for Sustainable Development — adopted by world leaders in September 2015 at an historic UN Summit — officially came into force.



Figure 7. SDG goals, United Nations

Although not legally binding the SDGs are expected to be taken into account by countries and take integrated measures for ending all forms of poverty, fight inequalities and tackle climate change, while ensuring development for all.

table 2 presents in brief the (desired) connection to UN's Sustainable Development Goals and EU2020 goals.

Table 2. Sustainable mobility interventions and their link to UN's Sustainable Development Goals and EU2020 goals

Sustainable Mobility Interventions	Relation with UN's Sustainable Development Goals (in some cases indirectly related to the transport sector)	First level connection to EU2020 goals (and to flagship initiatives)
NEW MOBILITY SCHEMES & ENHANCED REGIONAL CONNECTIVITY and PERFORMANCE New forms of mobility (soft mobility schemes, drive-sharing, ride-sharing, crowd shipping, crowd delivery, connected and automated vehicles, innovative flying vehicles, Mobility as a Service) Balanced development between urban and rural areas (increased inter-modality and higher resilience of the transport system between the metropolitan region and the neighbouring cities and rural areas) Meeting the challenge of reducing the	Goal 11: Sustainable Cities and Communities "Make cities and human settlements inclusive, safe, resilient and sustainable." Goal 8: Decent Work and Economic Growth "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all." Goal 3: Good Health and Well-Being for people	SUSTAINABLE GROWTH • Resource efficient Europe • An industrial policy for the globalisation era

environmental impact of commuting and inter-urban transport Overall regional development (including connectivity to TEN-T corridors) Daily performance upgrade (competitiveness, sustainability, social cohesion, equity, and citizen well-being)	"Ensure healthy lives and promote well-being for all at all ages." Goal 7: Affordable and Clean Energy "Ensure access to affordable, reliable, sustainable and modern energy for all." Goal 10: Reduced Inequalities "Reduce income inequality within and among countries." Goal 5: Gender Equality "Achieve gender equality and empower all women and girls."	
INNOVATION Introduction of innovative transport technologies Information systems exploitation Market up-take of innovations (also supporting company logistics)	Goal 9: Industry, Innovation and Infrastructures "Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation."	SMART GROWTH • Innovation Union • Youth on the move (ended in December 2014) • A digital agenda for Europe
"HAND BY HAND" SPATIAL & MOBILITY GROWTH Increased coordination between multimodal infrastructure mobility and spatial-economic development, including reduction of inequalities Reduced congestion, energy, emissions of air pollutants, carbon footprint, noise and land-use within the identified metropolitan regions	Goal 7: Affordable and Clean Energy "Ensure access to affordable, reliable, sustainable and modern energy for all." Goal 13: Climate Change "Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy."	SUSTAINABLE GROWTH (as above)
CITIZENS ACTIVE ENGAGEMENT Behavioural change towards sustainable mobility	Goal 12: Responsible Consumption and Production "Ensure sustainable consumption and production patterns."	INCLUSIVE GROWTH • An agenda for new skills and jobs • European platform against poverty and social exclusion
EFFECTIVE COOPERATION SCHEMES Operational and business models Aid to decision makers for efficient planning Cooperation schemes	Goal 17: Partnerships for the Goals "Strengthen the means of implementation and revitalize the global partnership for sustainable development."	SMART-SUSTAINABLE-INCLUSIVE GROWTH (all the above)

3. Sustainable Urban Mobility Planning

3.1 Definition

Based on the Commission's Urban Mobility Package [12], Sustainable Urban Mobility Planning is one of the most crucial aspects to be handled by competent authorities for improving urban areas' accessibility. In order to support sustainable mobility promotion and in order to facilitate local authorities in developing effective Sustainable Urban Mobility Plans (SUMP), the European Commission developed Guidelines ("GUIDELINES – Developing and implementing a Sustainable Urban Mobility Plan" [31]) that provide local authorities with a clear framework for SUMP development and implementation. What is then needed at national and regional/local level is the mainstreaming with national policies and the active involvement of different stakeholders categories that can guarantee the right development of the plans.

According to the Guidelines, "A Sustainable Urban Mobility Plan is a Strategic Plan designed to satisfy the mobility needs of people and businesses in cities and their surroundings for a better quality of life. It builds on existing planning practices and takes due consideration of integration, participation, and evaluation principles."

The main innovation of SUMP is that in general they are presented as a "new way of planning urban mobility" that include as primary objectives the accessibility and quality of life, as well as sustainability, economic viability, social equity, health and environment quality.

The following subchapters present the "power" of this modern approach on mobility planning (differences with traditional transport planning approached and benefits), provide an overview of the SUMP cycle – steps for SUMP development and close with the presentation of a SUMP success story.

3.2 Differences with the traditional approach

The new mobility planning approach places the citizen and the traveller into the centre of the planning procedure which means that it asks for active engagement of the public into the development of the mobility plans. Given the limited available public budget, especially during the last years that European economy is in the midst of the deepest recession since the 1930s, the new mobility planning era focuses more on softer interventions (integrated services, harmonized Public Transport timetables, ICT exploitation etc) than at investments requiring large capitals. Furthermore, regular assessment and continuous monitoring of plans' effectiveness in the framework of clearly defined targets (indicators and target values) play crucial role in the SUMP since they facilitate risk management and unlock potentials for constant feedback and upgrade of the plans according to the latest data and needs.

As revealed by table 3, accessibility is a SUMP core objective so as to ensure that all citizens are treated equally and are offered transport options and services that provide access enabling their trips (reaching their final destination). Equity in transportation and in accessibility refers to the coverage of mobility needs of all social groups, including groups such as children, older people and disabled people. Ways to enhance equity in mobility and increase accessibility are related to:

- reducing the distance between places where activities are undertaken through land use planning measures (i.e. high density development and mixed-use development);
- providing better mobility/transport options [31]
- providing integrated mobility solutions

Table 3. Differentiation among traditional and modern sustainable way of mobility planning [31]

TRADITIONAL TRANSPORT PLANNING	SUSTAINABLE URBAN MOBILITY PLANNING
Focus on traffic	Focus on people
Primary objectives: Traffic flow capacity and speed	Primary objectives: Accessibility and quality of life, as well as sustainability, economic viability, social equity, health and environmental quality
Modal-focussed	Balanced development of all relevant transport modes and shift towards cleaner and more sustainable transport modes
Infrastructure focus	Integrated set of actions to achieve cost-effective solutions
Sectorial planning document	Sectorial planning document that is consistent and complementary to related policy areas (such as land use and spatial planning; social services; health; enforcement and policing; etc.)
Short- and medium-term delivery plan	Short- and medium-term delivery plan embedded in a long-term vision and strategy
Related to an administrative area	Related to a functioning area based on travel-to-work patterns
Domain of traffic engineers	Interdisciplinary planning teams
Planning by experts	Planning with the involvement of stakeholders using a transparent and participatory approach
Limited impact assessment	Regular monitoring and evaluation of impacts to inform a structured learning and improvement process

3.3 Benefits of the modern planning approach

Sustainable Mobility Planning, thus planning mobility services and options with as an ultimate aim the facilitation of people's mobility and the enhancement of accessibility, provides with a large set of benefits both for the traveller as well as for the environment and the society as a whole (economy, welfare, health etc.). The following table (table 4) concentrated the main benefits as indicated in the SUMP Guidelines and as already proved by the experience.

Table 4. SUMP approach benefits

BENEFIT	Added value of intensive strategic planning within urban areas/ cities/towns
Improving life quality 	Reducing private cars Reaching improved air quality and less noise.
Creating economic benefits 	Identify effective and cost-efficient measures to overcome challenges
Supporting health while protecting the environment 	Travelling more actively (by walking and cycling more often)
Increasing accessibility and facilitating trips 	Analyse and assess local transport problems and challenges
Adding on the resource efficiency 	Balancing economic development, social equity and environmental quality
Engaging public and get support from people	Choose and agree an appropriate feasible set of measures

	
Listening to the needs and improving policies  Illustration by: Saul Lustgarten	Understand interests and expectations of transport system users Develop a common vision on urban transport development
Transforming plans to efficient schemes 	Prioritise and schedule measures: According to most urgent problems Easy-to-achieve 'quick wins' In line with available budget and implementation capacities
Supporting cooperation 	Develop a common vision on urban transport development
Becoming agents of change 	Agreeing on a common vision that goes beyond electoral cycles and that can include less attractive elements when they provide long-term benefits

Having realized the above benefits and being supported by the Commission's guidelines, many European cities have shown much interest in this modern way of mobility planning e.g. Copenhagen, Helsinki, Budapest, Bristol, Malmo and Manchester are just a few good examples of cities having developed SUMPs with a clear vision straightforwardly linked to their wider strategy (table 5).

Table 5. Good Examples of SUMPs and the vision of the cities

CITY	VISION of the future city
Copenhagen	"to make mobility in Copenhagen more efficient and green in order to stimulate growth, contribute to aCO ₂ -neutral city and to the good life for Copenhageners"
Helsinki	"high-quality and eco-efficient means of mobility and transport promote development and wellbeing of the Helsinki region"

Budapest	"Budapest is a liveable, attractive capital city with a unique character and a respected member of the European Network of cities as the innovative economic and cultural centre of the country and the city region"
Bristol	"to enable movement to and through the BTQEZ" (Bristol Temple Quarter Enterprise Zone – at the heart of the city)
Malmo	"Walking, cycling and public transport are the first choice for all who work, live or visit in Malmö. These travel choices, together with efficient and environmentally friendly freight and car traffic"
Manchester	"World class connections that support long-term, sustainable economic growth and access to opportunity for all"
Thessaloniki	"sustainable mobility for Thessaloniki to further support its role as a vivid, resilient and fully operational cell where entrepreneurship and cultural heritage are highlighted"

3.4 SUMP: the planning cycle

The current section aims at better introducing the SUMP cycle, thus the 4 phases (and the 11 steps) of the methodology described in the Commission's Guidelines (figure 8).

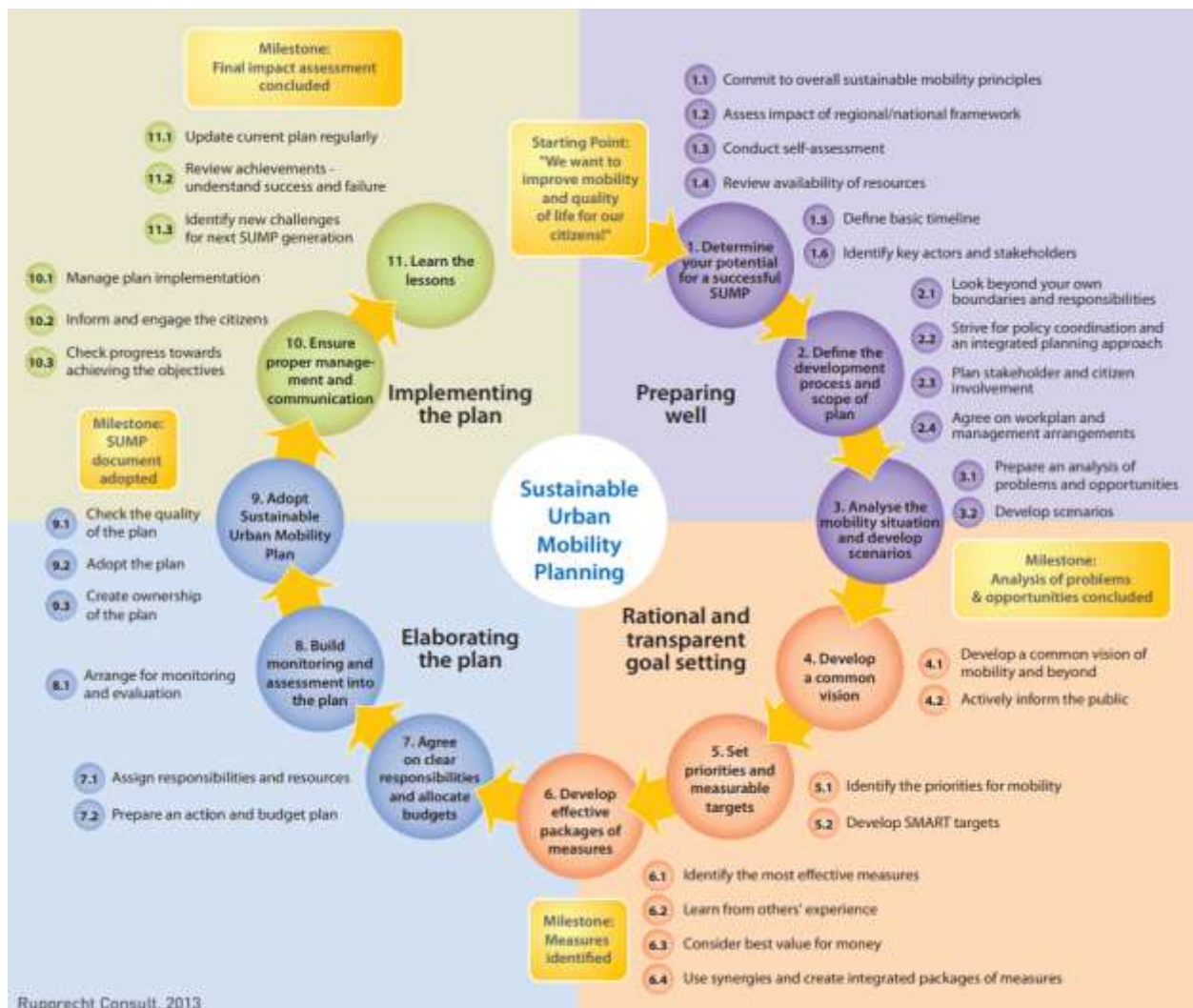


Figure 8.ELTIS SUMP cycle [31]

Summarizing the cycle's main tasks, the approach presented involves:

- status analysis and baseline scenario;
- definition of a vision, objectives and targets;
- selection of range of urban mobility policies & measures;
- assignment of responsibilities & resources;
- arrangements for monitoring and evaluation.

The remainder of the section presents with more details the 4 SUMP phases.

Phase 1: Preparing well

The first phase of a SUMP development consists of the necessary preparatory steps for understanding the current situation in the city or region and whether sustainability principles at mobility planning

already apply or not. The self-assessment under a wider perspective (e.g. considering of wider national strategies and targets to be reached) is followed by:

- i. Resource availability identification; establishing a team able to prepare the SUMP (management, technical, operational), verification of the existence / identification of financial resources for running the planning process and for implementing measures.
- ii. Timeline definition (figure 9); embedment of SUMP into existing policies, appropriate timeframe for building a strategic and operational framework for the planning process, timeframe for the sustainable urban mobility planning process, consideration of any decision-making windows (e.g. elections)

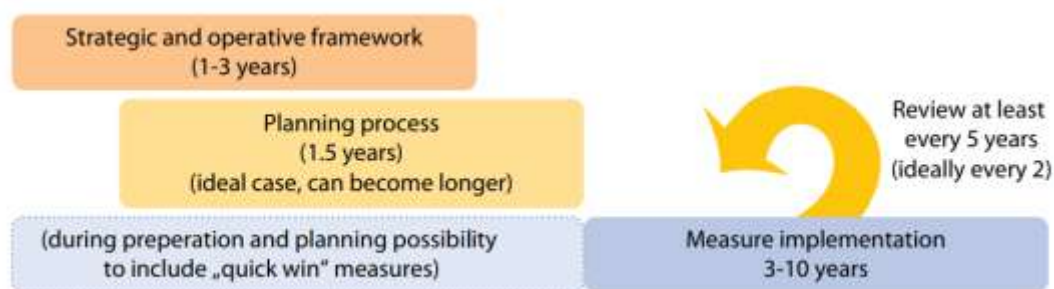


Figure 9. Indicative SUMP timeline [31]

- iii. Stakeholder groups identification as well as their objectives, their power, their capacity and their planning resources; variety of groups; residents/business groups; NGO's; transport user groups (table 6)

Table 6. Proposed Stakeholders Categories for SUMP consultation [31]

Authorities	Business / operators	Communities	Others
Local, regional authorities	Transport operators	NGOs	Research & academia
Nearby cities	Transport engineers, consultants	Citizens	Training institutions
Traffic police	Car sharing companies	Tourists	Foundations
Transport authorities	Bike sharing companies	Forums	
Politicians	Other transport providers	Trade unions	
Decision makers	Regional & local industry	Media	
Emergency services	Private financiers	Disabled people	
European Union		Motorists associations	
Relevant ministries		Cycling / pedestrian associations	

- iv. Definition of the development process and the scope of the plan; integrating local and intra-local mobility needs; Information gathering; Household Travel Diary Surveys; Journey

- Time Surveys; Roadside Interview Surveys; Car Parking surveys; Bus Passenger Surveys; Classified Traffic Counts; Data analysis; Traffic models development/exploitation;
- v. Mathematical representation of the real world and of the real transport network and services are used to predict how people will behave and how the transport network will respond under different situations (e.g. applied measures) now and in the future
 - vi. Mobility situation analysis and scenarios of possible future mobility situations development (figure 10)

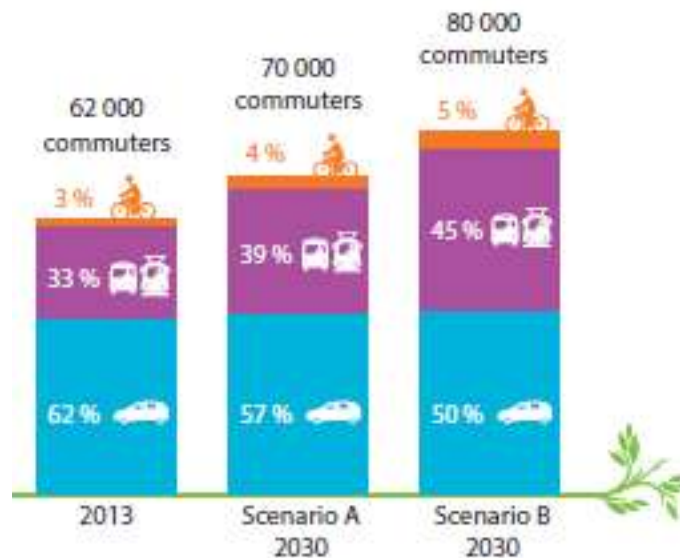


Figure 10. Example of Scenarios formulation

Phase 2: Rational and transparent goal setting

- i. Vision co-development, linking with wider strategic goals and keeping public informed.
- ii. Concrete objectives indicating the type of change desired and measurable smart targets (indicators) accompanying the vision (figure 11).

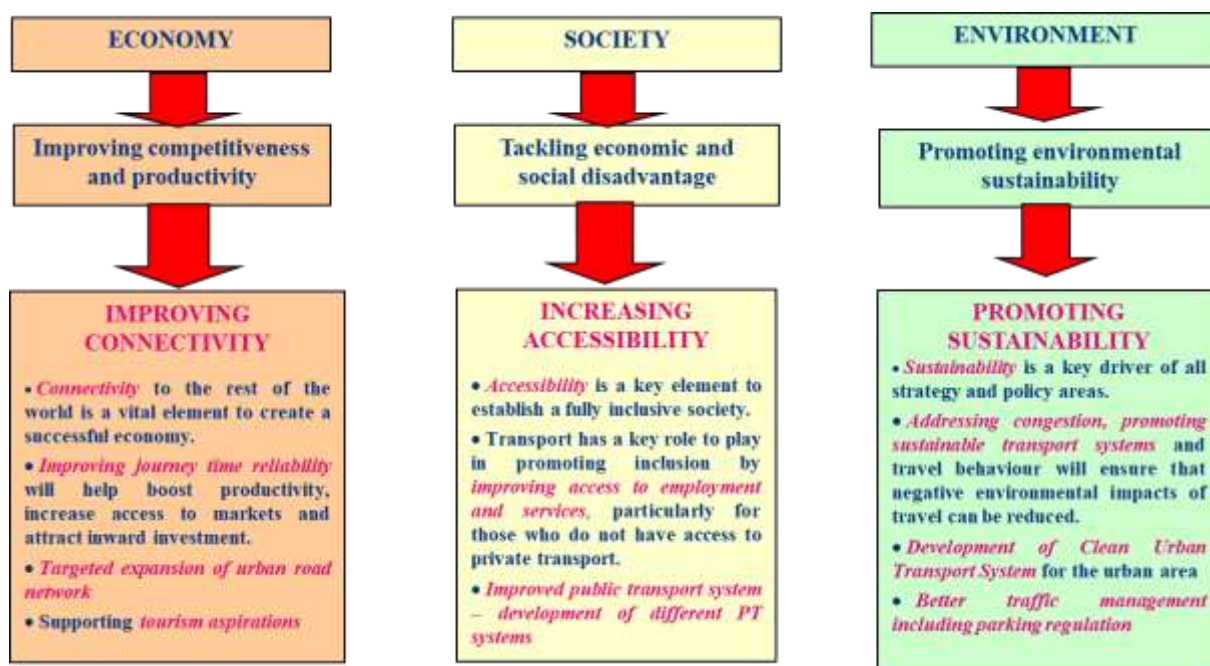


Figure 11. Strategic themes for a SUMP, REFORM INTERREG EUROPE project, “SUMP Training Programme Module 4”

- iii. Identifying Measures – best practices exchange, best value for money seeking (table 7).

Table 7. Examples of sustainable mobility measures

Examples of sustainable mobility interventions & measures
1. Introduction of alternative forms of public transport operation – e.g. Public Transport on demand
2. Active transportation support – cycling & walking interventions
3. Demand management strategies (access restrictions, environmental zones, congestion charging)
4. Specialist mobility services (e.g. public buses, car sharing, carpooling, etc.) including private initiatives
5. Clean vehicles
6. Mobility management (mobility agencies, ecopoints system rewarding the use of public transport and other sustainable mobility options instead of the private car)
7. Collective passenger transport (new forms of public transport services, access for elderly and disabled passengers, integration of modes)
8. Transport telematics (e-ticketing, traffic management and control, travel and passenger information)
9. Less car dependent mobility options (car sharing, carpooling)
10. Sustainable urban logistics concepts (transportation methods, the handling and storage of goods, the management of inventory, waste and returns, as well as home delivery services)

- iv. Measures packaging – developing packages of measures serving a common goal (figure 12)

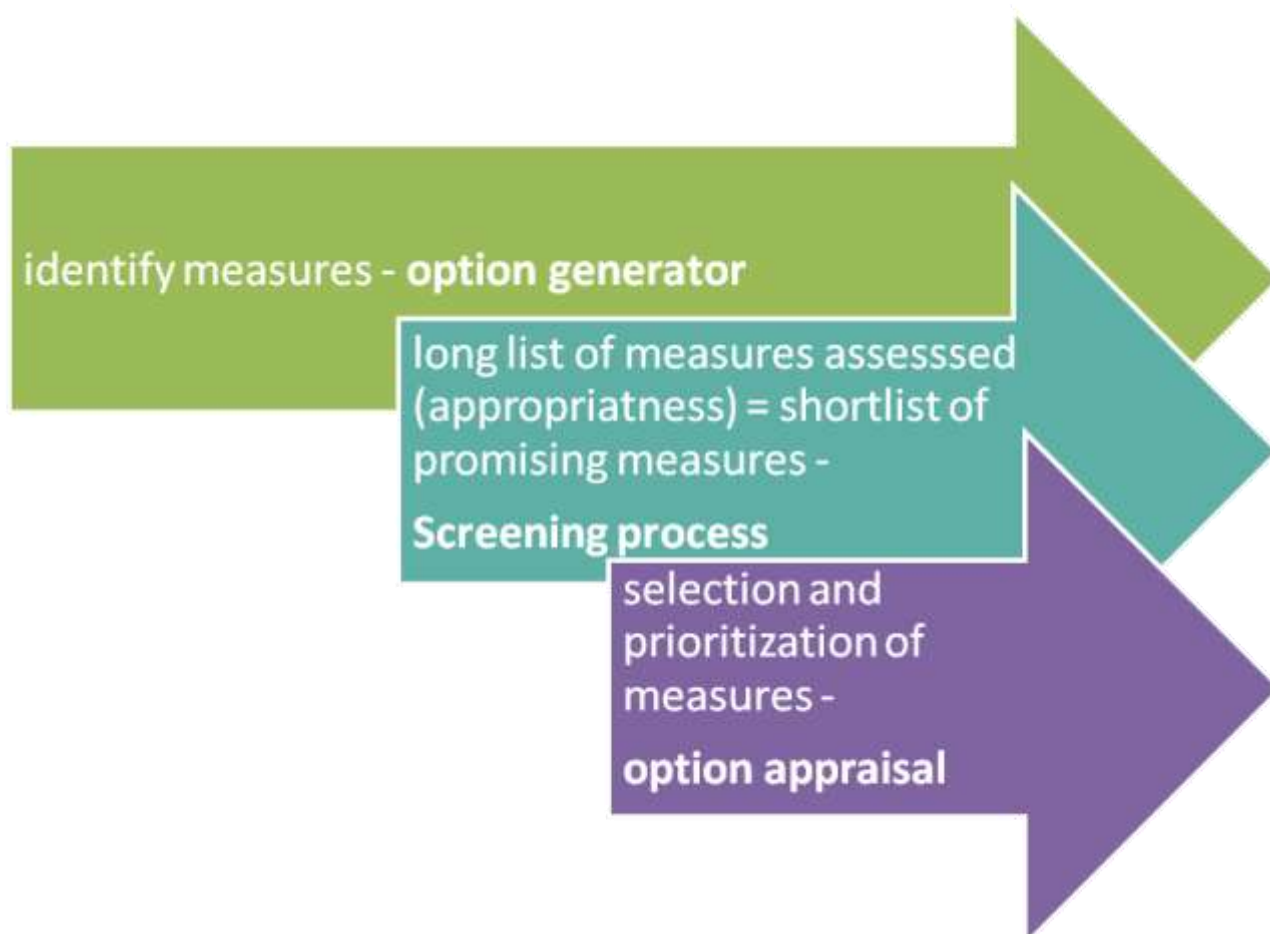


Figure 12. Packaging of measures in SUMP concept

Phase 3: Elaborating the plan

- i. Assignment of Responsibilities & Resources
- ii. Secure efficient and effective allocation of resources (human, knowledge, funds)
- iii. Close coordination and discussion among actors on development and implementation of SUMP measures/packages:
- iv. Detailed technical and budgetary plan development
- v. Suitable monitoring and evaluation plan definition
- vi. SUMP official adoption

Phase 4: Implementing the plan

- i. Ensuring proper management and communication with the public and the rest stakeholders
- ii. Continuous Monitoring of plan implementation
- iii. Systematic collection of data on specified indicators
- iv. Provides information for potential adjustment & re-planning
- v. Undertaken at shorter period intervals
- vi. Regular Evaluation & feedback
- vii. Systematic and objective assessment of ongoing/completed plan
- viii. Determines fulfilment of objectives & targets
- ix. Usually referred to as 'ex-post'
- x. Focus on effectiveness & value for money
- xi. Understanding effectiveness, realizing the future and getting prepared for the next generation of SUMP

The following table (table 8) presents SUMP steps in a nutshell:

Table 8. SUMP phases in a nutshell

SUMP Phase	Overview of the main actions
Preparing well	Understanding the current mobility situation Which is the mobility needs? Are there available transport data? Is the city's general vision in line with the sustainable principles? Has Municipality's staff the capacity to implement and monitor the plan? Seeking for the appropriate financing opportunities for the mobility measures that will be proposed Finding the exact area of plan development – examination area Identifying the stakeholders and finding out stakeholders and citizens' engagement techniques Collecting transport data Proposing indicators and methodologies to assess the current situation and future scenarios
Rational and transparent goal setting	Co-defining the mobility vision (policy makers, city planners, stakeholders and citizens) Finding out the priorities and defining the targets Proposing mobility intervention packages
Elaborating the plan	Prioritization of mobility intervention packages Setting responsibilities Finding the exact financing scheme for each package Selecting the methodology to monitor plan's progress Plan adoption
Implementing the plan	Plan diffusion and targets monitoring Potential feedback for targets' achievement Redefining city's mobility vision

3.5 Leading by example: good sustainable mobility practices at the city of Thessaloniki

The current section refers to best practices from the Greek experience regarding sustainable mobility interventions.

Thessaloniki's Intelligent Urban Mobility Management System

Thessaloniki's Intelligent Urban Mobility Management System is a unified effort of the key players of the city dealing with urban mobility, transport and environment. The system aims, through the services provided, to help citizens move around the city easily avoiding the traffic congested areas and also to raise the environmental public consciousness and to promote public transportation and alternative ways of transport (walking, cycling). At the same time, through intelligent traffic management and control in the central area of Thessaloniki, the system aims to reduce the negative influence of the gaseous pollutants. The direct involvement of citizens in planning their trips will give them the right and the opportunity to actively contribute in the improvement of the environmental quality of the city. Finally, through special urban mobility training programs that the system provides, a new culture for urban mobility is formed in the city.

The project has been executed as a partnership of public bodies (Regional Authority of Central Macedonia, Municipality of Thessaloniki), research centres (Centre for Research and Technology Hellas – Hellenic Institute of Transport, National Observatory of Athens, Norwegian Institute of Transport Economics - TOI), public transport authorities (Thessaloniki's Integrated Public Transport Authority). Financing of services & infrastructures was at 50% by the European Economic Area (EEA) Grants and at 50% by the Greek Ministry of Finance.

The system is divided into two separate although complimentary services:

- The 'Center for Urban Mobility'
- The 'Traffic Control Center'

The services of Thessaloniki's Intelligent Urban Mobility Management System are provided to the citizens through the project's electronic platform www.mobithess.gr and include:

- routing services with all modes (public transport, private vehicle, pedestrian and combined routing) taking into account several user objectives, such as the shortest route, the fastest route, the most economic route or the environmental friendlier route (figure 13, figure 14)
- mobility information provision, such as traffic information, environmental information, timetables' information and points of interest information
- sustainable urban mobility awareness tool, for increasing the knowledge of the citizens towards sustainable urban mobility

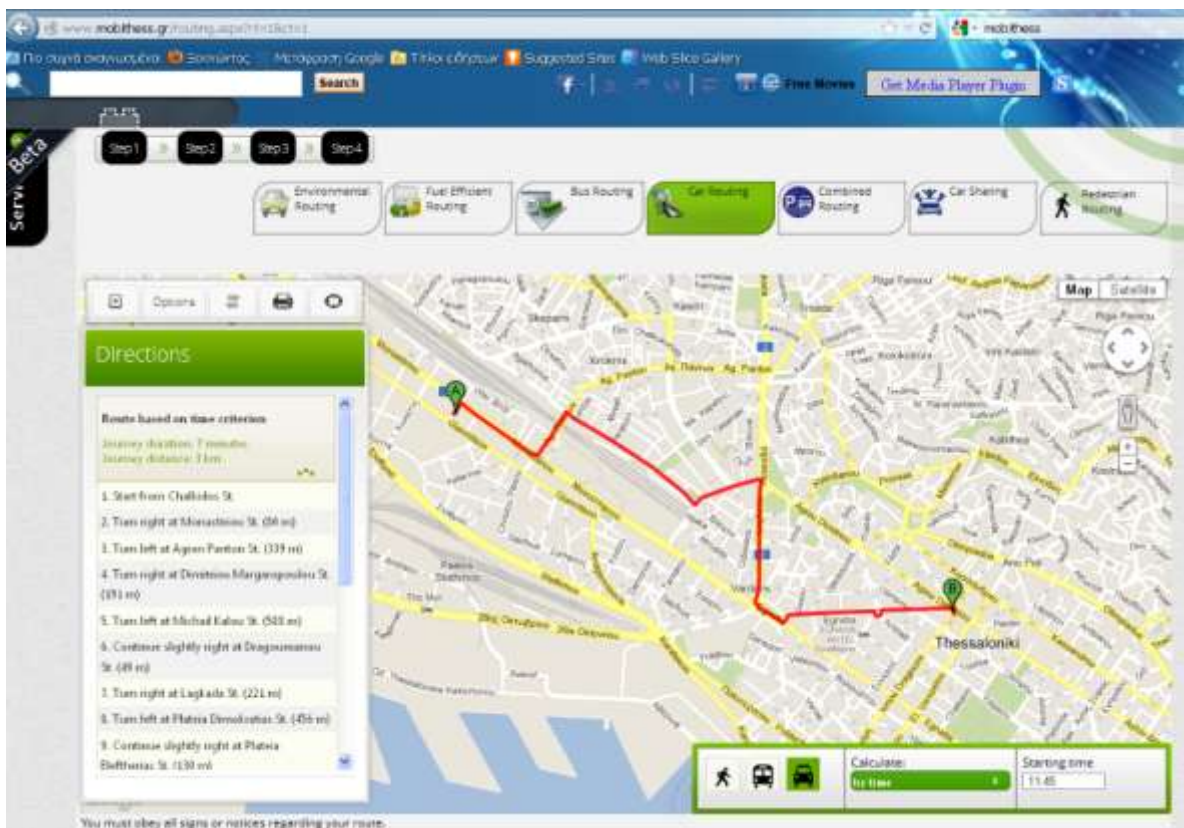


Figure 13. Mobithess: Car Routing

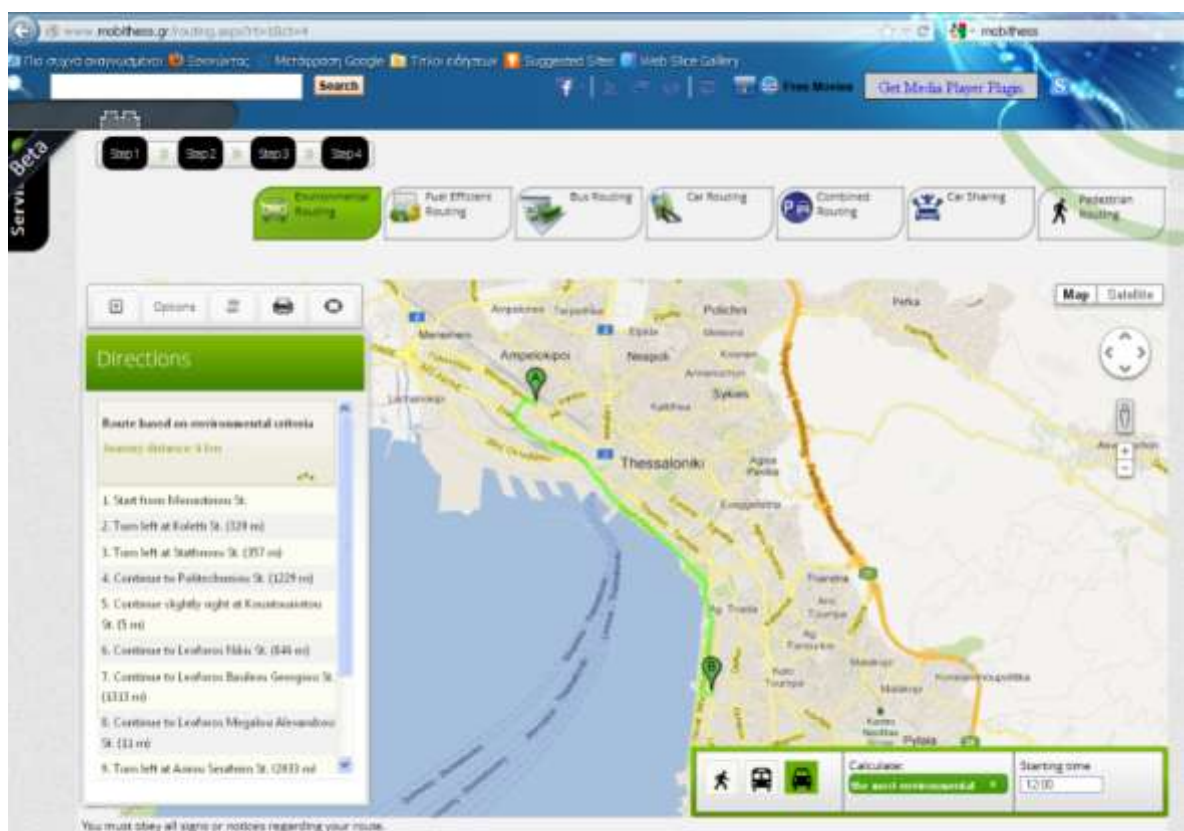


Figure 14. Mobithess: Environmental Routing

In addition, the central area of the city has been equipped with an adaptive traffic management and control system, aiming to provide higher levels of services for the travellers along the city's main arterial.

All services rely on real-time mobility data, collected by newly installed field equipment, which is aggregated and processed by the electronic platform, developed by CERTH-HIT.

THESi - The parking app for Thessaloniki city centre

THESi is the newly introduced Controlled Parking System of Thessaloniki Municipality (figure 15). It is one of the most advanced and integrated technological systems in Europe, with online functions – service interface – control – public information. THESi aims to facilitate search and finding of a parking place in the city, to prevent illegal parking and all the problems this causes in Thessaloniki as well as to relieve to traffic congestion.

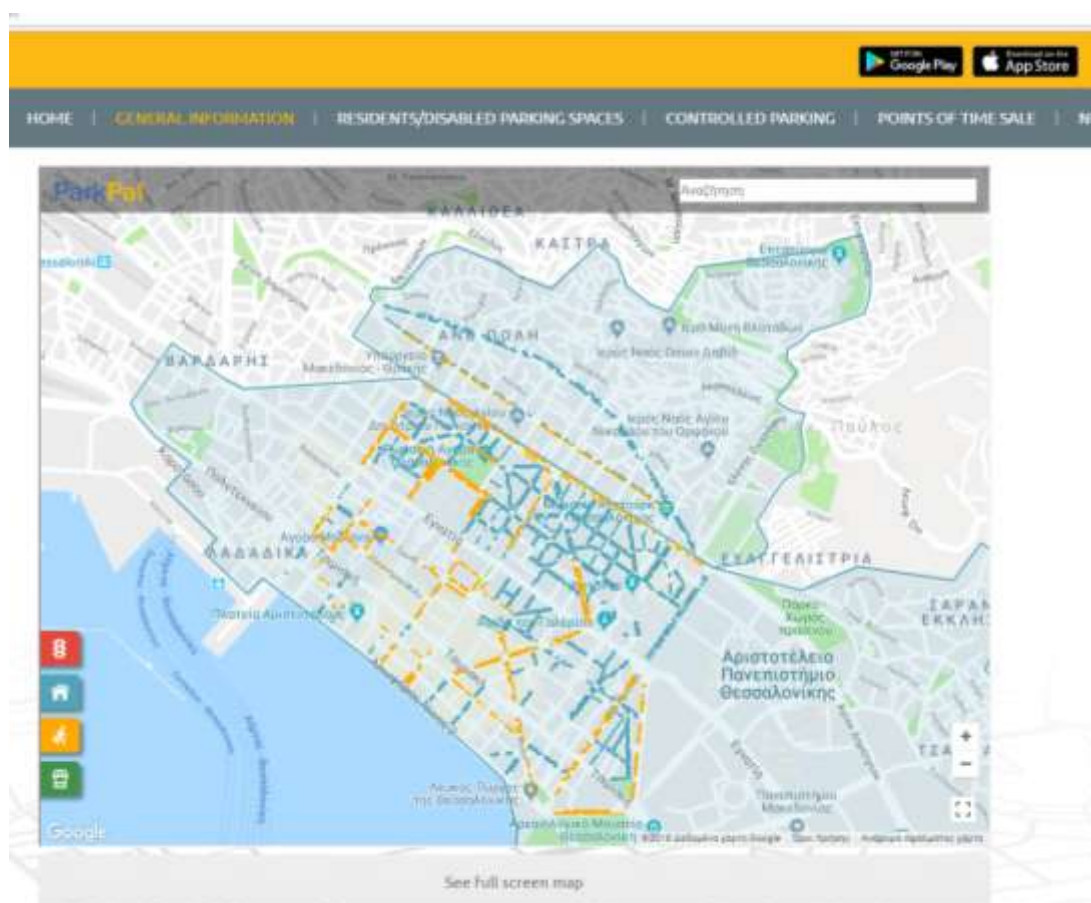


Figure 15. THESi implementation area

THESi ensures:

- Free parking spaces (blue line) for residents in their area.

- Visitor parking spaces (white line) with a price corresponding to the parking time.
- Caring for disabled fellow citizens-visitors.
- Paperless policy (scratch cards, phone cards, etc.).
- Easy parking process through phone calls, SMS, App, internet and smart devices.
- Easy access –with license plate number, used as “key” for all system operations (vehicle registration, parking, legality check).
- Easy purchase of parking time at one of the 400 points of sale (kiosks, mini market, OPAP agencies) with special marking.
- Possibility of proportional billing (per minute) and not pre-purchased parking time for registered users.
- Fast and effective control by the competent authority.
- Foreign tourist friendly, since it operates in two languages.
- Limitation of traffic problems and the resulting pollution.
- Upgrading of quality of life.

Source/webpage: <https://www.thesi.gr/>

OASTH e-services

OASTH, Organization of Urban Transportation of Thessaloniki, in an effort to modernize its profile and to attract passengers from private cars to PuT provides a series of tools and information services that facilitate bus based trip planning. All necessary information regarding buses operation (timetables, routes, stops, duration, frequency, Points of Interest) are provided via a user friendly interface along with more advanced tools which helps passengers make a customized trip organization (trip planner, real time info regarding bus positions and bus arrivals per stop).

OASTH offers through its webpage a series of information to passengers (figure 16);

- Optimal routing (specifying starting and destination points) with buses of OASTH
- Information on bus routes, schedules, the service area, the area served and the stops
- Information about the arrival of a bus lines
- Presentation of the current location of buses (real time)

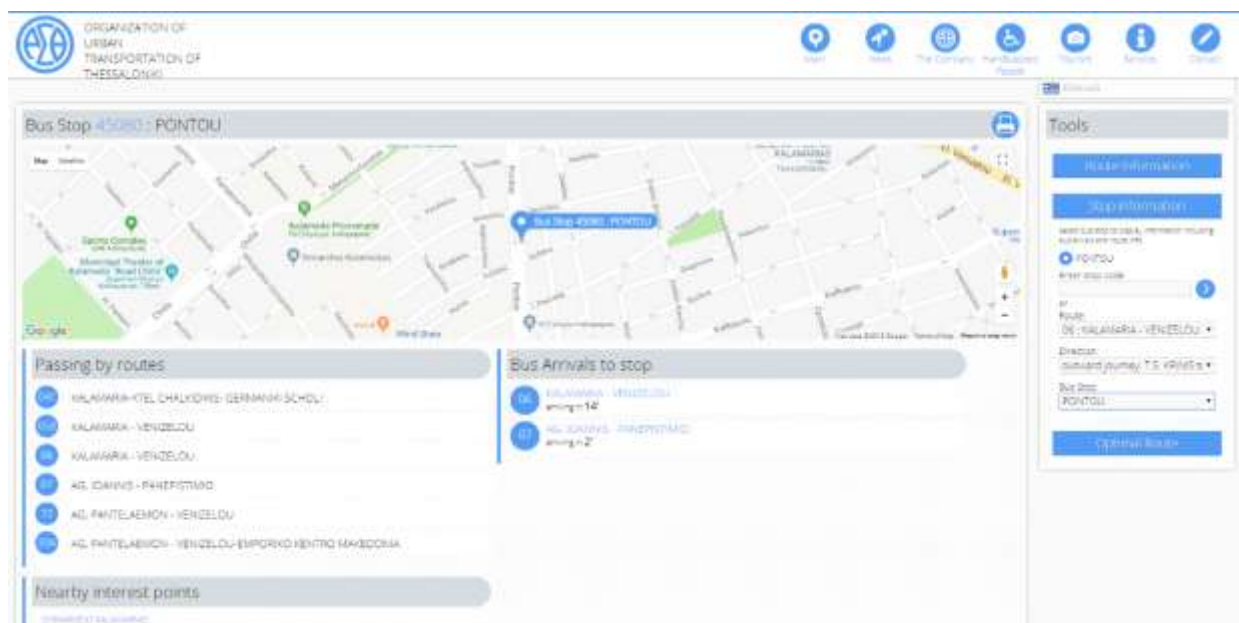


Figure 16. Public Transport information system, OASTH

Through the OASTH webpage (www.oasth.gr) passengers can have access to all information regarding the Organization and its services and also to more advanced tools (trip planner by origin and destination – address or point of interest, real time monitoring of a bus, arrivals of bus route or buses per stop).

Thessaloniki's bike sharing system



Figure 17. "Thessbike" by easy steps

THESSBIKE is one of the biggest providers of bike and mobility vehicle rentals in Greece. THESSBIKE (<https://www.thessbike.gr/en/>) owns and manages Thessaloniki's bike sharing system which has 8 stations and 350 bicycles. The fleet of the company apart from common 26" and 28" bicycles consists also of children bicycles, electric bicycles, family bicycles with 2 and 4 seats and electric mobility

scooters. Along with the renting activity, the company organizes bike tours in the city of Thessaloniki with the cooperation of certified tour guides. THESSBIKE's main goal is to motivate people to use bicycles as a main means of transport and therefore add on city's sustainability.

For its initiatives concerning sustainable mobility (figure 17), the company was honoured in May 2014 at the Greek Transport and Logistics Awards 2014.

3.6 A SUMP success story: Manchester

For the Region of Greater Manchester one SUMP (named Local Transport Plan – LTP in UK) has been prepared on behalf of and in consultation with the 10 Local Authorities in the region (Metropolitan area of Greater Manchester – population of 2.73 M) (figure 18). Greater Manchester has had a LTP/SUMP since 2000, revising the plan every 5 years. The latest plan was completed in November 2016 and approved in February 2017 and it had an overall cost above €200.000. The GM SUMP is also known as the “Greater Manchester Transport Strategy 2040: Our Vision” [32] and was developed in two stages, involving, among several other processes, a 12-week public consultation in each stage. The SUMP is accompanied by a 5-year Delivery Plan, which is updated annually in order to address the need for flexibility in a rapidly changing environment (political priorities, funding availability).



Figure 18. Greater Manchester Transport Strategy 2040

The Greater Manchester LTP/SUMP is in full alignment with the Greater Manchester Strategy, the overarching economic strategy for the conurbation, but it also considers several other documents, such as the Greater Manchester Spatial Framework (final version to be released in 2019), the Greater Manchester Air Quality Action Plan [33] and the Greater Manchester Climate Change and Low Emissions Implementation Plan [34]. It is also consistent with the existing spatial plans of the 10 local authorities. An overall spatial plan for the conurbation is being prepared (2018 - The Greater Manchester Spatial Framework), so the SUMP was structured so that it can be readily updated when this plan is finalised.

For the UK, Local Transport Plans are a statutory requirement under the national Transport Act 2000 [35], as amended by the Local Transport Act, 2008 [36]. All Local Transport Authorities are required to prepare an LTP and keep it up to date. Nonetheless, there is no national funding for preparation of

the LTP. Regional authorities can procure consultant support if required, but most plans are produced in-house. Technical support is provided, though, through the national guidance on the contents of Local Transport Plans ('Guidance on Local Transport Plans, Department for Transport 2009) [37], thus ensuring a consistent approach across the country, but, at the same time leaving scope for local flexibility. Despite this, the UK Government has recognized the importance of sustainable mobility, particularly in creating the conditions for economic growth and has provided funding through the Local Growth Fund and various smaller funds targeted at specific aspects of mobility e.g. National Productivity Investment Fund, Cycle City Ambition Grant, Local Sustainable Transport Fund etc. These are accessed through a competitive bidding process.

The SUMP was mainly developed by the in-house personnel at Transport for Greater Manchester. Most of the skills are available in-house, although in some cases additional resource were accessed through relevant consultancy companies [43].

Briefly, among the main 'powers' of Greater Manchester (GM) LTP/SUMP that triggered authors' interest for presenting it as a good practice are (Interreg Europe good practice reference):

- its integrated vision for sustainable mobility and spatial growth – 'By developing the SUMP with a spatial approach it has enabled the city region to maintain regional, strategic and multi-modal oversight in transport planning and service delivery. It also enables cross-sector integration, particularly with land-use planning.'
- the organizational structure of the SUMP – it was created through a strong cooperation of local authorities, one umbrella authority (Greater Manchester Combined Authority - GMCA) and the public body responsible for co-ordinating transport services throughout Greater Manchester in North West England (Transport for Greater Manchester - TfGM), therefore it involved almost all necessary bodies. Furthermore, TfGM, as an organization that can support transport delivery across the region, guarantees direct and quick interventions' implementation. 'GM LTP/SUMP demonstrates an effective structure by which a SUMP can be prepared while ensuring shared organisational and political ownership across districts.'
- It builds on an exhaustive mobility and spatial planning dataset and tools, therefore traffic modelling processes are strictly followed which guarantees traffic demand forecasting reliability - 'GM SUMP Evidence Base and Information Gathering (traffic and mobility related data)'
- Consultation processes and a strong communication plan is followed in order to guarantee SUMP efficiency and mobility interventions acceptability
- Innovation in local transport planning within a UK context is taken seriously into account – 'Greater Manchester demonstrates the benefits of a continual process of LTP preparation and the need to understand that the SUMP document is not the end'

Table 9 briefly presents main aspects of Greater Manchester SUMP.

Table 9. Greater Manchester SUMP [43]

Region	Greater Manchester
Approval date of SUMP	Plan approved in February 2017
Importance of sustainable mobility issues in regional funds and Policy Instruments	The UK Government recognizes the importance of sustainable mobility, particularly in creating the conditions for economic growth. It has provided funding through the Local Growth Fund and various smaller funds targeted at specific aspects of mobility e.g. National Productivity Investment Fund, Cycle City Ambition Grant, Local Sustainable Transport Fund etc. These are accessed through a competitive bidding process
Methodologies and practices adopted to harmonize SUMP with the other Territorial Plans	The Local Transport Plan Guidance ensures a consistent approach across the country, whilst leaving scope for local flexibility. In terms of harmonizing within the region, in Greater Manchester one SUMP has been prepared on behalf of all the districts in the region – so there is no need to harmonize between the districts.
Authors, responsible authority	The Greater Manchester LTP/SUMP was produced by Transport for Greater Manchester and approved by Greater Manchester Combined Authority (GMCA). The GMCA made up of representatives from each of the districts.
Needs covered	The Greater Manchester LTP/SUMP is a single plan for the Metropolitan area, which has a population of 2.73 million (2014).The area includes 10 Local Authorities: Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford and Wigan.
Specific aims	The key issues for it to address are the need to accommodate high levels of future growth without this leading to an increase in congestion and emissions and the need to improve mobility across the whole conurbation so that people can benefit from economic growth.
Mobility problems addressed by the SUMP/ main objectives	- Future growth will lead to thousands more trips on our transport networks, which could result in significant highways congestion and overcrowding on our public transport networks, - The need for additional transport links to unlock growth areas - The need to improve journey time reliability on our roads and on public transport - The need to improve resilience of networks to adverse weather conditions, ageing infrastructure and more intensive operation. - The need to improve the perception of Greater Manchester as a good place to live, invest and

	visit - Access to jobs and training and other facilities needs to be improved so that transport is not a barrier to opportunity - The need to improve health by increasing levels of physical activity - The continued need to improve safety and security - Reducing transport emissions in terms of air quality and in response to the challenge of climate change. Making the best use of existing infrastructure to reduce environmental impacts.
Direct effects on the local and regional mobility (both perceived and real)	Since 2000 there has been increased public transport patronage, reduced car trips to the City Centre and increased cycling on the routes that have been improved.
Compliance and integration with the existing urban and regional planning instruments on the territory	The SUMP is consistent with the existing spatial plans of the 10 local authorities. An overall spatial plan for the conurbation is now being prepared (The Greater Manchester Spatial Framework), so the SUMP was structured so that it can be readily updated when this plan is finalised. The SUMP is accompanied by a 5 year Delivery Plan, which will be updated annually.
Difficulties /problems (if any) encountered	The need for flexibility in a rapidly changing environment (political priorities, funding availability). The adoption of a two-part structure for the SUMP will help to deal with this, as the Delivery Plan will be updated each year.
Main approaches to delivery of the SUMP actions	- Improvements to the Light Rail network managed by a partner organization. - Improvements to rail services and infrastructure are via i) input to the specification of rail franchises as they are renewed and ii) lobbying of the national body, Network Rail to include measures in its future plans. - Improvements to other public transport infrastructure (e.g. bus interchanges) are planned in-house and delivered by contractors. - Local Highway infrastructure and traffic control – in house or by the 10 local authorities. - Improvements to the Strategic Road Network are via lobbying the national body, Highways England, to include measures in its future plans. - Improvements to walking and cycling infrastructure are planned in house (either by TfGM or the 10 local authorities) and delivered by contractors. Travel Behaviour change is delivered mainly by TfGM

	and some local authority staff.
Monitoring system	There is a suite of Key performance Measures, linked to the desired outcomes of the strategy. Performance will be reported annually in the Delivery Plan

Summing up, GM SUMP represents a successful plan aiming at an integrated mobility and spatial growth for an area covering 10 districts: Bolton, Bury, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford and Wigan. The plan took a holistic view of the necessary investments and interventions (connectivity improvement; trip durations decrease; linkage between jobs and housing, ‘first and last mile’ connections, sustainable mobility options) while set out objectives and the respective detailed implementation programme for achieving the desired goals and identified funding opportunities. At the current stage, GM SUMP has entered the implementation phase aiming to deliver the new era of mobility. For the record, Greater Manchester SUMP is the winner of the 7th SUMP Award (SUMP Award recognizes excellence in sustainable urban mobility planning) focusing on multimodality (= the use of different modes of transport on the same journey or for different trips for both goods and passengers) [44].

3.7 European Mobility Week and SUMP Awards; recognizing sustainable mobility value

Since 2002, on the initiative of European Commission, an awareness raising campaign for sustainable mobility entitled ‘European Mobility Week’ was launched. Every year from 16 to 22 September, towns and cities participate in the campaign by organizing engagement activities, implementing and testing permanent mobility measures and holding a car-free day. Getting feedback from the public, therefore identifying potentials and acceptability of measures, is a unique opportunity for cities that have realized the need for shifting towards environmental friendlier ways of transport. The European Mobility Week is also an excellent opportunity for local stakeholders to get together and discuss the different aspects of mobility and air quality, find innovative solutions to reduce car-use and transport emissions, and test new technologies and planning measures.

Every year, two types of complementary awards are offered; The EUROPEAN MOBILITY WEEK Award is given to municipalities for their outstanding activities during EUROPEAN MOBILITY WEEK on 16-22 September (two categories - one for municipalities larger than 50,000 inhabitants, and one for smaller municipalities under this threshold), whereas the SUMP Award recognizes local and regional authorities for excellence in sustainable urban mobility planning, focusing on a specific topic.

As mentioned in the previous chapter, winner of the 7th SUMP Award was Greater Manchester (previous municipalities awarded are: 6th SUMP Award Winner: Turda, Romania, 5th SUMP Award winner: Brussels, Belgium, 4th SUMP Award winner: Malmö, Sweden, 3rd SUMP Award winner:

Bremen, Germany, 2nd SUMP Award winner: Rivas Vaciamadrid (Spain), 1st SUMP Award winner: Aberdeen, UK).

The cities having won the EUROPEAN MOBILITY WEEK Award (EMW) are presented in table 10 [44].

Table 10. EMW winners [44]

EUROPEAN MOBILITY WEEK AWARD WINNERS		
2018	Lisbon, Portugal (for larger municipalities)	Lindau, Germany (for smaller municipalities)
2017	Vienna, Austria (for larger municipalities)	Igoumenitsa, Greece (for smaller municipalities)
2016	Malmö, Sweden	
2015	Murcia, Spain	
2014	Östersund, Sweden	
2013	Ljubljana, Slovenia	
2012	Zagreb, Croatia	
2011	Bologna, Italy	
2010	Almada, Portugal	
2009	Gävle, Sweden	
2008	Budapest, Hungary	
2007	Koprivnica, Croatia	
2006	León, Spain	
2005	Copenhagen, Denmark	
2004	Nantes, France	
2003	Ljubljana, Slovenia	
2002	Ferrara (Italy), Geneva (Switzerland), Lund (Sweden) and Krakow (Poland)	

4. Giving the necessary participatory approach on urban mobility planning

Putting citizens in the position of city planners while giving them a sense of purpose and plans' ownership is a difficult task since the win-win effect of participating in mobility planning is, in the majority of cases, not properly communicated.

The thorough study of the widely known "Planning cycle for a sustainable urban mobility plan" presented above, concluded in the identification of potential ambiguities that hinder the implementation of the plans. Seeking within reasons potentially blocking the adoption of acceptable and thus effective plans, public rejection and public indifference cannot be overlooked. According to Dobos and Jenei [14], the actual meaning of engagement corresponds not only to information provision for awareness raising but also – and strongly – to reinforcing the sense of community and building up citizenship. Previous research has indicated major barriers in engaging citizens in transport planning [16] which extend from limited awareness and knowledge on the role of citizens and their power in planning to lack of authorities capacity in providing opportunities for participation. From the other side, Booth and Richardson [17] have highlighted the benefits from citizens'

involvement in enhancing planning quality that include large brainstorming, evaluating and testing evidence and addressing uncertainty. Gaventa and Barrett [18] refer to the engagement as a way of strengthening a sense of citizenship and building responsive states.

The level of understanding of the benefits arising from citizens' participation varies from country to country. As stated in the CH4LLENGE project [15], there are countries with formal, mandatory procedures (e.g. Germany) for planning activities under a participatory spectrum and countries without these formal procedures. Furthermore, there are countries (e.g. Belgium) that can be seen as donor of experience since having extensive experience in innovative participation instruments in complex planning processes.

table 11 summarizes the benefits arising from a well-established stakeholders and citizens' participation in mobility planning.

Table 11. Benefits of stakeholder involvement in SUMP [40, own elaboration]

Benefits of stakeholder involvement in SUMP steps		
For citizens and stakeholders	For city municipalities	For everyone
- Can articulate ideas, concerns & viewpoints throughout process - Take ownership of ideas, measures and projects - Contribute towards creative and innovative solutions (elaboration of concepts/ideas tailored to local situations) - Become part of democratic process	- Have an opportunity to explain/ justify urban mobility measures & strategies - Gain acceptance of plans, decisions & approach - Can "feel the temperature" of reaction - Strengthen cooperation between actors & agencies - Persuade citizens to test measures	- Better awareness of urban mobility challenges (and complexity of solutions) - Higher efficiency and effectiveness of policy choices - Greater transparency of decision making - Reducing 'gap' between general public & politicians narrows - Increased legitimacy of measures, projects, strategy - Can encourage better use of new systems/ services

For reaching public and triggering the interest of stakeholders a large series of tools and channels can be used as presented in figure 19.



Figure 19. Stakeholders' involvement tools [40]

Based on the above, the MOTIVATE platform idea was generated and the funding for its development came from Interreg MED programme (<https://motivate.interreg-med.eu/>) 2014-2020 [20]. The platform is an ICT based tool (internet platform <http://motivate.imet.gr/> and iOS and Android Apps "Motivate Project") that tries to strengthen citizens' involvement in the mobility planning process. The term ICT based tool for encouraging citizens' involvement in the sustainable planning procedure refers to, free of time and location constraints, technology-mediated forms of citizens' participation; no need for physical attendance at conventional stakeholders events where citizens are usually represented by just few members taking the role of simple observers ([19,21,22,24]).

Focusing on citizens' involvement in the development and implementation of SUMP, the MOTIVATE app tries to capture citizens' and visitors' mobility habits & needs developing in this way a good (database) starting point for the authorities to plan interventions and improve services (figure 20).

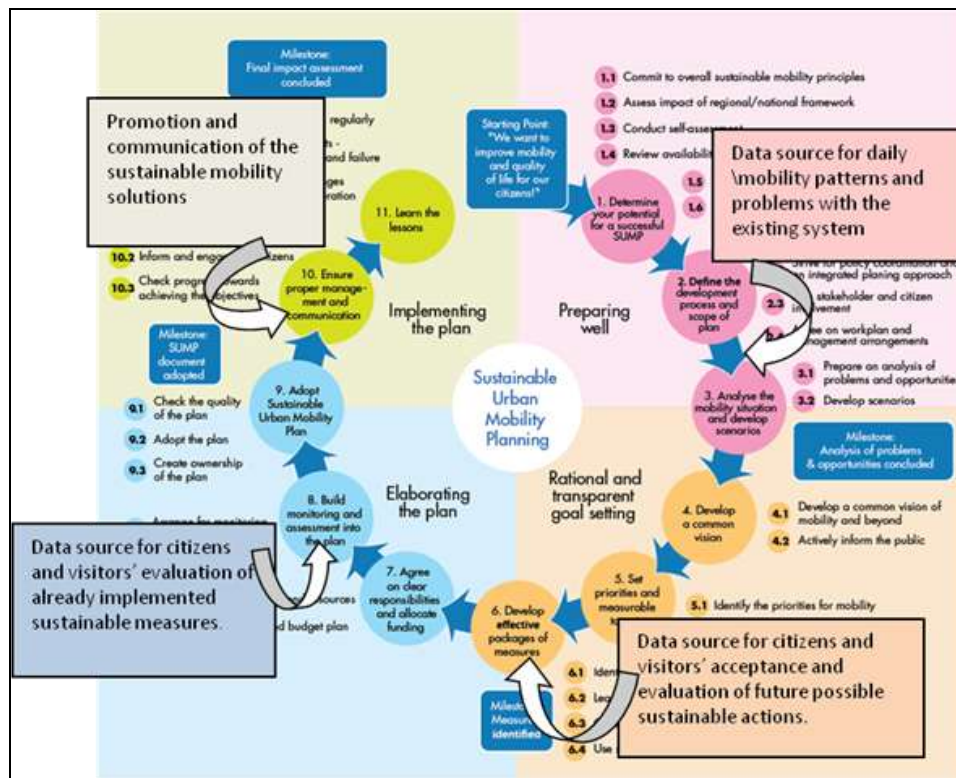


Figure 20. Core contribution of MOTIVATE's outputs in SUMP's cycle

In order to “motivate” the travellers to daily use the specific platform providing their personal data, an awareness raising game was developed (figure 21) – providing personal data (daily trips, existing mobility measures evaluation, future mobility interventions assessment) allows for points collection that can be redeemed at the game.



Figure 21. MOTIVATE game interface

Through the game, the user understands that individual and fragmented actions do not have a significant result towards a more sustainable transportation system and that what is needed is a deep and long-lasting travel behaviour change. Users are experiencing a web-based attractive training activity to adopt a bottom up approach and view the transportation system as a sum of interrelated parts that affect not only themselves and each other but also the environment, the economy and the viability of the future. Finally, the game offers insights to its users, as it puts them in the position of a

decision-maker, and demonstrates how difficult it is to achieve sustainability and how individual choices and trade-offs can affect balances of the entire system [24].

Another very recent attempt to raise awareness based in gamification approaches was launched by the Transport for Greater Manchester and Manchester Metrolink (figure 22).



Figure 22. #Metrolink Monsters, <https://tfgm.com/press-release/metrolink-monsters>

The title of the promotion is 'Metrolink Monsters', being a campaign launched in connection with TfGM's Metrolink services (travel via tram) which is a competition broken down into two parts as follows:

- a) a platform game whereby the entrant navigates through a tram whilst avoiding the 'Metrolink Monsters' and collecting coins and 'Travelcards' for extra points ("the Game"); and
- b) a multiple choice quiz whereby the entrant can find out which 'Metrolink Monster' they are most similar to ("the Quiz").

Prizes will be given to the winners (direct benefit) while the quiz and the game act as channels for passing travel behaviour change messages.

5. Homework materials and guidelines

Homework phase 1: Describe main mobility problems in your city and propose solutions

Please describe a mobility problem you can identify in your city and select a measure for alleviating the situation:

Which is the current situation?	
Which are the mobility needs that should be covered?	
Which is (/are) the measure(s) you propose for enhancing mobility and accessibility? Argue on the solution(s).	
Is it cost-efficient? Where would you seek for money in order to implement the measure(s)?	
Who should cooperate in order to implement and monitor the measure?	

Think that you are mayor/decision maker! Does the city you live in face urban mobility challenges? Or has it (recently) solve the major mobility problems? Please answer the above questions, add a link to a picture or video and then read other entries to learn what others think of.

Homework phase 2: Access the following interventions – which are the changes and benefits?

The following pictures present mobility interventions in EU cities. Let's discuss about the interventions, the benefits they brought to the cities – citizens and environment!

Reclaiming the Street – York



Reallocation of Roadspace– London





Reclaiming the Street – Brussels

From this.....



....to this!



Reclaiming the Street – Ghent



Revitalizing the Nea Paralia (New Beach), Thessaloniki



Homework phase 3: TEST your knowledge of sustainable mobility

Is it right or wrong?

	RIGHT 	WRONG 
Urban transportation is not a major emissions' generator		
Urban mobility decisions should be taken regardless citizens' view		
The use of private cars should be encouraged through sustainable mobility planning		
Congestion causes social and environmental negative effects		
Awareness raising plays an important role in attracting travellers at Public Transport		
Modern approach on mobility planning is linked with road network enlargement		
Scenarios in SUMP cycle refer to different future situations as regards transport system operation		

Select the right answer/s

Car sharing

- ☐ improves environmental performance
- ☐ is not considered as a sustainable mobility measure
- ☐ replaces 10 private cars on average
- ☐ is cost ineffective for travellers

Urban tolls

- ☐ alleviate city centres from congestion
- ☐ it is a highly acceptable measure by the public
- ☐ should apply to all vehicles; e.g. ambulances
- ☐ should apply to all types of cities e.g. even to those not facing congestion related problems

Accessibility

- ☐ refer to specific groups of citizens
- ☐ should be for all
- ☐ of disabled people is not part of the modern approach on mobility
- ☐ is not the primary objective of SUMP

SUMP cycle supports planning under a cooperation scheme that **do not** involve:

- ☐ citizens
- ☐ competent authorities

- ☐ private bodies/companies
- ☐ none of the above

Sustainable Mobility Planning refers to... (multiple choices)

☐	Citizens' centred approach
☐	Private car use increase
☐	Priority to pedestrians and cyclists
☐	Private car speed increase
☐	Accessibility for specific groups of people
☐	Vulnerable groups mobility
☐	Seamless trips via Public Transport
☐	Information provision and services integration
☐	Dialogue just among authorities and top-down decisions

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ANNEX I: Supporting material

Supporting material for chapter 1 ‘Introduction’

- **Global Mobility Report 2017**

<http://sum4all.org/publications/global-mobility-report-2017>



- Eurostat regional yearbook

https://ec.europa.eu/eurostat/statistics-explained/index.php/Eurostat_regional_yearbook

Supporting material for chapter 2 ‘The history and future of mobility in EU cities’

- **UN Sustainable Development Goals**

<https://sustainabledevelopment.un.org/?menu=1300>

- **EU2020 “A European strategy for smart, sustainable and inclusive growth”**

<http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>



- **White Papers on transport (2001, 2011)**

https://ec.europa.eu/transport/sites/transport/files/themes/strategies/doc/2001_white_paper/lb_com_2001_0370_en.pdf

&



https://ec.europa.eu/transport/sites/transport/files/themes/strategies/doc/2011_white_paper/white-paper-illustrated-brochure_en.pdf

- **Urban Agenda EU**



<http://www.astrid-online.it/static/upload/2187/218785fbfc2c037492650a69a62068b1.pdf>

- **Green Paper “Towards a new culture for urban mobility”, COM(2007) 551**

<http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52007DC0551>

- **CIVITAS**



<https://civitas.eu/>

- **Interreg Transnational Cooperation Programmes**

https://ec.europa.eu/regional_policy/sources/cooperate/10_things_transnat_en.pdf



Supporting material for chapter 3 ‘Sustainable Urban Mobility Planning’

- ELTIS platform “The urban mobility observatory”

<http://www.eltis.org/>



- ELTIS SUMP guidelines

http://www.eltis.org/sites/default/files/guidelines-developing-and-implementing-a-sump_final_web_jan2014b.pdf



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 - The State-of-the-Art Report of Sustainable Urban Mobility Plans in Europe
http://www.rupprecht-consult.eu/uploads/tx_rupprecht/SUMP_state-of-the-art_of_report.pdf

- **Transport for Greater Manchester – “Oxford Road has changed”**

<https://www.tfgm.com/oxford-road>



Life on Oxford Road has changed

Supporting material for chapter 4 'Giving the necessary participatory approach on urban mobility planning'

- MOTIVATE platform

<https://motivate.imet.gr/>



- MOTIVATE app

<https://play.google.com/store/apps/details?id=hit.certh.motivateapp>

