OCTOBER 2013
EUROPEAN COMMISSION, DG MOVE

STUDY TO SUPPORT AN IMPACT ASSESSMENT OF THE URBAN MOBILITY PACKAGE

ACTIVITY 31 SUSTAINABLE URBAN MOBILITY PLANS

FINAL REPORT

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CONTENTS

1	Summary	5
1.1	Introduction	5
1.2	Problem definition	6
1.3	Benchmark SUMP framework	8
1.4	Policy options	12
1.5	Impacts of policy options	14
1.6	Comparison of options	18
2	Introduction	21
2.1	Background	21
2.2	Methodological considerations	24
2.3	Terminology	29
2.4	Structure of the report	29
3	Policy context and problem definition	31
3.1	Description of the key mobility and environmental challenges	32
3.2	How to achieve the key EU Transport White Paper objective of a competitive and resource-efficient transport system	59
3.3	Planning situation in cities	90
3.4	Definition of the problem	109
4	Baseline	111
4.1	Projected development in integrated urban mobility planning	111
4.2	Impacts of integrated urban mobility approaches	120
5	Policy objectives	123
5.1	Involvement of the EU	123

5.2	Policy objectives	124
5.3	Intervention logic	124
6	Policy options	127
6.1	Defining relevant policy framework for defining the policy option objectives	127
6.2	Alternative policy options	133
7	Impact assessment of policy options	139
7.1	Introduction and approach	139
7.2	Impact on coordination and targeted policy action	140
7.3	Impacts of increased SUMP uptake	153
7.4	Economic impacts	165
7.5	Social impacts	188
7.6	Environmental impacts	200
8	Comparison of policy options	203
8.1	Effectiveness and cost efficiency of the options	203
8.2	Coherence with EU priorities, strategies and objectives	206
8.3	Summary of comparison of options	207
9	Monitoring and evaluation	210
10	Literature list	213

APPENDICES

Appendix A	City data
Appendix B	Country case studies
Appendix C	City survey
Appendix D	City cases
Appendix E	Method and Data Used in Creutzig et al (2012)

1 Summary

1.1 Introduction

1.1.1 Background

The transport-related challenges faced by Europe's towns and cities today are considerable. In several Member States, it has been concluded that mechanisms must be put in place to ensure that cities make best use of the instruments and policy options at their disposal, guided by a clear vision for a future, more sustainable development. Against, this background, countries like France and the UK have strengthened urban transport planning processes considerably and ensured that cities go through the exercise by mandating them by law.

Also at European level, the European Commission has actively promoted the concept of integrated transport planning for several years. EU projects and initiatives have brought together relevant stakeholders to analyse current practices in urban transport planning across the Union, discussing problem areas, and identifying best practice examples.

From this work, the concept of Sustainable Urban Mobility Plans (SUMPs) – a term broadly used since the publication of the Commission's Action Plan on Urban Mobility in 2009 – gradually emerged and gained considerable traction.

The 2011 Transport White Paper sets out the EU objective of achieving a competitive and resource efficient transport system in response to the challenges of making the transport system more sustainable.

The development of Sustainable Urban Mobility Plans is seen as one of the key instruments to achieve the EU objective of a competitive and resource-efficient urban transport system.

1.1.2 Purpose of our study

Against this background, it has been the purpose of our study to:

1 Describe the current situation in EU cities by reviewing data and indicators on sustainable mobility and information on urban mobility planning to assess the need for initiatives to promote further use of sustainable urban mobility plans in order to achieve the EU objective of a competitive and resource efficient transport system;

2 Based on the assessment of the current situation, develop options for promoting use of sustainable urban mobility planning; and

3 Assess the economic, environmental and social impacts of the defined policy options on the use of sustainable urban mobility planning and assess their effectiveness, efficiency and coherence.

1.2 Problem definition

1.2.1 Current status of urban transport system

The assessment of each of the mobility and sustainability areas has shown that the EU cities (with more than 100,000 inhabitants) are generally far from having achieved a competitive and resource-efficient transport system. This has been assessed through indicators for congestion, accidents, air quality, noise and CO_2 emissions.

A way of putting the current situation into perspective is by monetising the problems and external costs in the areas of congestion, accidents, air quality, noise and CO_2 emissions. The estimates of the current level of external costs are presented in Table 1-1. However, these costs should be regarded with caution as they are only rough estimates in the absence of more reliable data.

Some estimates of congestion costs show that they could be as high as EUR 130 billion annually. This includes urban and interurban congestion[1]. There is no publicly available estimate of the urban share of congestion costs. However, as congestion is more widespread in urban areas, it is assumed that more than half the level of congestion costs can be attributed to the urban areas.

The total external cost of road transport air emissions has been estimated to approximately EUR 50 billion annually. The share of the EU28 population living in the cities included in this study is around 40%[2]. Hence, it is assumed that the external air pollution costs from transport in these city agglomerations can be estimated at around EUR 20 billion annually.

The external cost of noise has been estimated to EUR 40 billion, and it is all assumed to be in urban areas.

[1] COM(2011) 144 final *Impact Assessment of the White Paper*,

[2] The study has reviewed cities with more than 100,000 inhabitants.

The total external accident costs are estimated to more than EUR 200 billion with about 38% of fatal road accidents taking place in urban areas. The external costs of accidents in the urban area have been estimated at about EUR 80 billion annually.

CO_2 emissions from urban areas account for approximately 280 million tons annually. There are different approaches to valuing CO_2 emissions. However, given the difficulties of estimating the damage costs and existing EU objectives for reducing CO_2 and other GHG, an approach using the marginal abatement costs at the agreed targets seems most appropriate. The *Handbook on estimation of external costs in the transport sector* argues in favour of adapting this approach to the short-term perspective and indicates an estimate of EUR 25/ton for 2010[3]. *This value has been applied here.*

Table 1-1 Estimated annual external costs of current transport system in EU27

Indicator	Estimate of current situation	Estimated urban share
Congestion	~ EUR 130 billion	~ EUR 80 billion
Air quality	~ EUR 50 billion (road transport)	~ EUR 20 billion
Accidents	~ EUR 200 billion	~EUR 80 billion
Noise	~ EUR 40 billion	~ EUR 40 billion
CO_2		~ EUR 7 billion
Total external costs		~ EUR 230 billion

The estimate of the total external costs of transport in urban areas is about EUR 230 billion annually[4].

1.2.2 How to achieve the key EU Transport White Paper objective of a competitive and resource-efficient transport system

In order to ensure a competitive and resource-efficient transport system, the cities will have to implement a number of measures that address land use, transport behaviour and transport infrastructure. It is generally recognised that cities are unique and that an "optimal" package of measures that can achieve a competitive and resource-efficient urban transport system does not exist.

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[3] *Handbook on estimation of external costs in the transport sector*

[4] These costs should be regarded with caution and taken as rough estimates only in the absence of more reliable data.

Hence, the solution to the objective of achieving a competitive and resource-efficient urban transport system is for cities to undertake an integrated urban mobility approach through which the most effective and efficient measures are identified and subsequently implemented as a package.

The study has demonstrated that only by applying an integrated urban mobility approach can city agglomerations reduce the risk of non-compliance with the key EU Transport White Paper objective of a more competitive and resource-efficient transport system. This has been demonstrated in the following ways:

› Assessment of the system logic of urban mobility systems to identify elements of an integrated and coordinated urban mobility planning to allow for the identification and implementation of effective and efficient packages of measures. This has led to the establishment of a "benchmark" integrated urban mobility approach:

› Consideration of historical and current evidence from countries and cities that have established integrated urban mobility approaches. Examples from several cities combined with evaluations of the overall effects of integrated urban mobility approaches in countries such as France and UK are applied.

1.3 Benchmark SUMP framework

Based on the assessment of the mobility, social and environmental problems and challenges, a benchmark SUMP concept has been defined.

In practice, several European cities have implemented integrated approaches through Sustainable Urban Mobility Plans (SUMPs). These often vary in quality, ambition and effectiveness. The concept of SUMPs is here used to describe a true ‘benchmark’ integrated urban mobility approach. The benchmark SUMP includes the elements that are necessary to achieve the key EU Transport White Paper objective of a competitive and resource-efficient transport system.

Table 1-2 SUMP framework - possible scope and content elements

Minimum content and scope requirements
Addresses both freight and passenger transport
Addresses all transport modes
Public transport
Non-motorised transport
Road transport infrastructure
City logistics
Mobility management
Integration of transport modes/ intermodality
Additional comprehensive requirements
Consider specific measures/instruments: low-emission zones and urban pricing (urban road user charging/congestion charging, parking pricing and public transport pricing)

Minimum content and scope requirements
Introduction of clean technologies and alternative fuels
Ensure interoperability and/or consistency in use of instruments across the EU

Table 1-3 SUMP framework - possible process and procedure elements

Minimum processes and procedures
Contains pledge to sustainability (3 dimensions)
Includes or is built on long-term strategy
Identifies objectives and sets targets in line with EU policy objectives
Includes baseline analysis including performance audit
Includes impact assessment on proposed measures
Provides short-term implementation plan (timetable + budget plan; allocation of responsibilities)
Integrates different relevant policy areas, in particular land-use and transport planning
Considers all transport to, through and within the urban agglomeration area and coordination between different authority levels
Is developed in a participatory approach
Is based on integrated planning and implementation
Is adopted
Monitors implementation and performance
Ensures regular review and update of plans
Ensures conformity check in Member States
Additional comprehensive requirements
Foresees mechanisms for monitoring at EU level
Foresees mechanism for review at EU level
Ensures conformity check at EU level
Sets mandatory performance targets

1.3.1 Current status on integrated urban mobility approaches

Based on the defined benchmark integrated urban mobility approach, the gap between this benchmark approach and the actual situation has been assessed.

The key findings on the status of integrated urban mobility approaches are:

› *First*: European cities are moving towards integrated urban mobility approaches. All studies acknowledge that the cities meet the standards of an integrated urban mobility approach, albeit to a varying degree.

› *Second*: The development has been positive for the last ten years, and this trend is likely to continue.

› *Third*: Not black or white – few, if any, of the cities implement a 'perfect' integrated urban mobility approach while almost all cities do something.

› *Fourth*: Cities in new Member States are generally less advanced in applying integrated urban mobility approaches; however, the review of specific city practices shows that some cities in new Member States actually undertake urban transport planning at an advanced level.

› *Fifth*: Transport planners, respondents to the public consultation process as well as many researchers point to a lack of coordination as a particular challenge. The city cases indicate that insufficient coordination is a problem in half of the cities.

The assessment can be summarized by considering the level of coordination and the targeted policy action. These categories were defined as part of the benchmark 'concept of an integrated urban mobility approach':

› Coordination (all dimensions of coordination and integration across transport modes, city and agglomeration, transport and environment carried out through a participatory approach)

› Targeted policy actions (long-term and short-term quantified targets, impact assessments and implementation plans with budgets).

To provide an assessment of the city status in the EU28 regarding coordination and targeted policy actions, countries have been scored across the following four categories defined in relation to the 'concept of integrated urban mobility approach'.

Table 1-4 Status categories on integrated urban mobility approaches and number of cities scoring

Status categories	Number of cities scoring
(i) Limited coordination and targeted policy actions Cities that use traditional transport planning with no or very few of benchmark framework elements.	**(i) None** No cities, or only an insignificant number
(ii) Low/medium coordination and targeted policy action Cities that apply some of the key benchmark characteristics both regarding coordination and targeted policy actions.	**(ii) Few** Only few cities
(iii) Medium/high level of coordination and targeted policy action Cities that apply many of the benchmark elements regarding coordination and targeted policy actions.	**(iii) Some** Between more than a few and up to as many as half of all cities
(iv) High level of coordination and targeted policy action Cities that have developed and fully implemented all the benchmark framework elements regarding coordination and targeted policy actions.	**(iv) Many** From the majority of cities to all cities

It is difficult to provide an exact number of how many cities belong to each of these status categories for each country. We have therefore used the following indicators: (i) None; (ii) few; (iii) some; and (iv) many. The categories are explained in further detail in the below table.

The scoring used for indicating the number of cities is flexible, meaning that "many", for example, can occur together with both "some" and "few". As such, "many" alongside "few" is larger than "many" alongside "some".

Table 1-5 Assessment of current planning approach and the level of coordination and targeted policy actions

Country	No of cities *	Population in cities	No/ limited	Low/ medium	Medium/ high	High/ complete
Austria	5	2,344,488	None	Some	Some	None
Belgium	7	2,488,115	None	Few	Many	None
Bulgaria	7	2,687,217	None	Many	None	None
Croatia	3	1,109,183	Some	Some	None	None
Cyprus	2	432,848	One	One	None	None
Czech Republic	6	2,212,657	Few	Many	Few	None
Denmark	4	1,741,892	None	Some	Some	None
Estonia	1	401,140	None	Many	None	None
Finland	6	1,687,458	Some	Some	Few	None
France	54	28,785,276	None	Few	Many	None
Germany	81	25,486,299	Few	Some	Some	None
Greece	5	3,854,079	Some	Some	None	None
Hungary	9	3,218,521	Few	Many	Few	None

Country	No of cities *	Population in cities	No/ limited	Low/ medium	Medium/ high	High/ complete
Ireland	2	1,300,973	One	None	One	None
Italy	40	18,613,509	Few	Some	Some	None
Latvia	1	806,993	None	One	None	None
Lithuania	4	1,241,273	Some	Some	One	None
Luxemburg	1	84,679	None	One	None	None
Malta	1	195,863	None	One	None	None
Netherlands	20	7,076,804	Few	Some	Many	None
Poland	39	12,028,862	Few	Many	Few	None
Portugal	6	3,450,469	Few	Many	Few	None
Romania	19	5,916,715	Some	Many	None	None
Slovakia	2	763,984	One	One	None	None
Slovenia	2	374,016	One	None	One	None
Spain	51	19,284,201	Few	Many	Few	None
Sweden	6	2,652,158	None	Some	Some	None
United Kingdom	54	30,138,398	None	Few	Many	None
Total	**438**	**180,378,070**	**Few**	**Some**	**Some**	**None**

Note: It cannot be excluded that a few cities might have reached a level of sustainable urban mobility planning that includes all benchmark elements and resembles the complete 'concept of integrated urban mobility approach'.
** Agglomerations above 100,000 inhabitants.*
Source: Appendix A: City data

Key general elements in the assessment of the current status include:

› Apart from France and the UK, which have specific legislative requirements, the plans in other countries tend to serve the municipality (city) rather than the whole agglomeration.

› Freight transport is typically less covered than passenger transport.

› There is no extended conformity checking of the plans as in most cases the requirements are not defined in detail.

These factors indicate that few or no cities are at the level of a high/complete benchmark urban mobility approach.

1.4 Policy options

Having identified the gap between the current situation regarding sustainable urban mobility planning and the benchmark SUMP, the key consideration in defining policy options is to make sure that they clearly respond to the identified risk of non-compliance with the key EU Transport White Paper objective of a competitive and resource-efficient transport system due to lack of integration and coordination.

There are six principally different options, and the mandatory options are assessed in the sub-variants based on the different city size categories. The options are on the one hand based on minimum and comprehensive requirements of content, scope and governance (processes and procedures), as outlined in Table 1-2 and Table 1-3, and on the other hand on instruments used at EU level. The comprehensive requirements on governance have been discarded as they do not meet the subsidiarity principle. Table 1-6 shows an overview of the policy options.

Table 1-6 Overview of options

Approach	**Scope/content minimum** **Processes and procedures minimum**	**Scope/content maximum** **Processes and procedures minimum**
1. **Business-as-usual**		R&D, best practice, campaigns, local capacity building, etc.
2. **Recommendations**		Recommendations for cities for development and implementation
3. **Recommendations and incentives** Recommendations and benchmarking by urban mobility scoreboard		Recommendations for cities for development and implementation and voluntary performance targets
4. **Recommendations and incentives** Recommendations and linking access for cities to EU regional funds > x MEUR for urban transport projects		Recommendations for cities for development and implementation and financial incentives
5. **Mandatory approach under certain conditions** a. Urban agglomerations with population size > 100,000 inhabitants b. Urban agglomerations with population size > 250,000 inhabitants c. Urban agglomerations with population size > 1,000,000 inhabitants and capitals	Mandate for the development and implementation, under certain conditions, with minimum requirements	

Approach	Scope/content minimum Processes and procedures minimum	Scope/content maximum Processes and procedures minimum
6. **Mandatory approach under certain conditions** a. Urban agglomerations with population size > 100,000 inhabitants b. Urban agglomerations with population size > 250,000 inhabitants c. Urban agglomerations with population size > 1,000,000 inhabitants and capitals		Mandate for the development and implementation, under certain conditions, with comprehensive requirements

1.5 Impacts of policy options

The assessment of the impacts of the options has addressed the following questions:

› How many cities will apply the benchmark SUMP?
› What will be the impacts of applying the benchmark SUMP?

Overall, it is difficult to estimate how each policy option will affect the uptake of the benchmark SUMPs as each city makes individual and political decisions on how to develop their transport system. In case of a mandatory framework, however, it is assumed that all Member States will implement the benchmark SUMPs and make sure that all cities develop and apply SUMPs.

With the voluntary options, the uptake is going to be lower than for the options with mandatory requirements. Many cities have already introduced some form of integrated planning, but still some elements are missing.

The ranges of the uptake are scenarios for the percentage of the population in urban agglomerations that will be covered by SUMPs. Based on an indication from France suggesting that around 20% of urban agglomerations below the threshold for the mandatory PDU have implemented an integrated urban mobility approach voluntarily, the lower uptake level (Option 2) could be 15-25%. For Option 5 and 6 in which SUMPs are made mandatory, the uptake is 100% assuming that all cities will comply with requirements.

Table 1-7 Summary of the assessments of effect of options on take-up of SUMPs

Option	Qualitative scoring of options with regard to uptake of SUMPs	Possible range of uptake of SUMPs in % of population
Option 2: Recommendations	4+	15-25
Option 3: Recommendation with voluntary benchmarking	5+	25-35
Option 4: Recommendations with incentives, linking access to EU funding	8+	30-50
Option 5: Mandatory with minimum requirements for content and scope	10+	100
Option 6: Mandatory with comprehensive requirements for content and scope	10+	100

Note: Higher number of + means higher impact on uptake

In terms of the effects of estimated uptake of benchmark SUMPs on the key mobility, social and environmental indicators, overall the effects are likely to be more or less proportional to the uptake.

The benchmark SUMP includes requirement to define targets in line with the EU objective of achieving a competitive and resource-efficient transport system. Hence, all the options will reduce the risk of EU urban agglomerations not meeting EU targets, and it is likely that the reduction in risk is proportional to the uptake of the benchmark SUMP.

The sub-versions of Options 5 and 6 where the urban agglomerations covered by requirements could be above 100,000 inhabitants, above 250,000 inhabitants or be based on the TEN-T urban nodes and urban agglomerations above 1 million inhabitants would have slightly different impacts in proportion to the share of the urban population covered by the three variants.

1.5.1 Economic impacts

The main components of the economic impacts include:

- Reduced congestion costs
- Changes in investment costs as result of the integrated planning
- Increased planning costs of developing and implementing the SUMP.

It should also be considered that the funding for the investments and for the establishment of a SUMP comes from different sources, and often institutional barriers prevent using funds for investments for the planning of these investments, even when it would increase the efficiency.

A qualitative assessment of the economic impacts by policy option is presented in Table 1-8. The economic effects are largely proportional to the uptake of the benchmark SUMP.

Options 2, 3 and 4 – the recommendation options – are based on the comprehensive content and scope requirements as is Option 6, while Option 5 is based on the minimum requirements.

Whether this means that Options 2, 3 and 4 will have an additional effect depends on several factors. Under an option based on a voluntarily application of the recommendations, a city might choose not to fully apply all elements. So while the comprehensive requirements add specific measures, it is not "required" that these measures are introduced if they are assessed not to be necessary to achieve the overall objectives. The comprehensive scope and content elements are not estimated to add significant value to the overall economic impacts.

Table 1-8 Economic impacts by policy option – compared to baseline

Economic impacts	Congestion costs	Savings from cost-effective packages of measures	Planning costs
Option 2: Recommendations	++	+	-
Option 3: Recommendation with voluntary benchmarking	++	+	-
Option 4: Recommendations with incentives, linking access to EU funding	+++	+	-
Option 5: Mandatory with minimum requirements for content and scope	++++	++	--
Option 6: Mandatory with comprehensive requirements for content and scope	++++	++	--

There could be an order of magnitude difference between the key economic impacts. The effect on congestion costs are counted in billions of Euros, savings from more cost-effective measures in hundreds of millions of Euros and the planning costs in millions of Euros. It means that the overall economic impacts would be positive and could reach a substantial amount.

1.5.2 Conclusions on social impacts

The main social impacts include:

- Accessibility to work and social activities
- Public health (through active lifestyle, improved traffic safety and reduced air pollution)
- Employment effects
- Social inclusion and involvement.

A qualitative assessment of the alternative policy options is presented in the table below. As argued above in the discussion of the economic impacts, impacts are more or less proportional to the uptake of the benchmark SUMP. Hence, the estimated social impacts are highest for Options 5 and 6, and somewhat lower for the voluntary options.

The main social impacts are all conceivable, and based on the monetised estimates presented for some of the impacts, the overall order of magnitude is likely to be billions of Euros.

Table 1-9 Social impacts by policy option – compared to baseline

Social impacts	Accessibility	Public health	Employment	Other social impacts
Option 2: Recommendations	+	+	+	+
Option 3: Recommendations with voluntary benchmarking	+	++	+	+
Option 4: Recommendations with incentives, linking access to EU funding	++	+++	+	+
Option 5: Mandatory with minimum requirements for content and scope	+++	++++	++	++
Option 6: Mandatory with comprehensive requirements for content and scope	+++	++++	++	++

Overall, the social benefits are very important and likely to be substantial though they cannot all be quantified. This is for example the case for the employment effects that could be significant as well as for improved accessibility for all social groups.

1.5.3 Summary of environmental impacts

The main environmental impacts are CO_2 reductions and air quality improvements. The impacts by policy option are presented in the below table.

As is the case for the economic and the social impacts, the environmental impacts are largely proportional to the uptake of the benchmark SUMP.

On CO_2 reductions, it is estimated that Option 6 could have a higher impact than Option 5 due to the specific inclusion of requirements to consider the introduction of clean vehicles and alternative fuels.

Options 2, 3 and 4 are also based on comprehensive scope and content requirements, which would strengthen the efforts to reduce CO_2. Still, the overall effects are not as high as for Option 5 given the lower uptake of the benchmark SUMPs.

Table 1-10 Environmental impacts by policy option – compared to baseline

Environmental impacts	CO_2 emissions	Air quality	Other environment impacts
Option 2: Recommendations	+	+	+
Option 3: Recommendations with voluntary benchmarking	++	+	+
Option 4: Recommendations with incentives, linking access to EU funding	++(+)	++	+
Option 5: Mandatory with minimum requirements for content and scope	+++	+++	+
Option 6: Mandatory with comprehensive requirements for content and scope	++++	+++	+

1.6 Comparison of options

The different aspects of assessing the alternative options can be summarised into the advantages and disadvantages of each option. Table 1-10 includes such an assessment of each option based on the assessment of their impacts, effectiveness, efficiency and coherence. Note that this impact assessment study is not to recommend any particular option, but to outline the impacts and effects of each alternative option.

Table 1-11 Advantages and disadvantages of alternative policy options

Option	**Advantages**	**Disadvantages**
Option 2 – Recommendation by the EU for a SUMP framework	Allows cities to benefit from an urban transport planning framework based on best practice and experience from across EU.	Risk of only modest uptake of SUMPs
Option 3 – Recommendations by the EU for a SUMP framework, with voluntary benchmarking	Same as option 2. Also, cities will have the opportunity to compare their own situation and progress to other cities, and good performance will be noticed.	Same as option 2. Concern that benchmarking exercise might be perceived as name-and-shame exercise. Difficult to develop common benchmark indicators.

Option	Advantages	Disadvantages
Option 4 – Recommendations by the EU for a SUMP framework, with voluntary benchmarking, plus the requirement to do a SUMP as a condition for receiving EU funding	Same as Option 2. It also ensures that EU funding goes to urban transport projects that are embedded in a comprehensive and integrated strategy, developed with due consideration for the key EU TWP objective.	Might be barrier to the use of EU funding for urban transport projects; EU funds might instead be directed to areas where such conditionality does not exist. However, if funding is available for preparing the SUMP, there are few disadvantages of this option.
Option 5 – Mandatory SUMP framework based on the minimum requirements on content and scope	Ensures that cities go through the exercise of developing a comprehensive strategy for better and more sustainable urban mobility.	Some administrative costs to Member States in implementing the framework (lowest for Member States that already have a legal framework).
Option 6 – Mandatory SUMP based on the comprehensive requirements on content and scope	Same as Option 5. Also, cities are directed to specific relevant measures. Introduction of clean technologies and alternative fuels could contribute to achieving the objective on CO_2. Interoperability of measures could reduce costs to certain traffic users. Standardisation of measures could make it easier for cities to implement the measure.	Some administrative costs to Member States in implementing the framework (lowest for Member States that already have a legal framework). Difficult to establish specific measures due to differences between urban areas and scarcity of suitable methodologies and tools. Requirement on interoperability could slow uptake of certain measure.

The legislative options are likely to reduce the risk that EU cities will not achieve the key EU TWP objective more than the non-legislative options; however, they will also be more demanding to implement. First, the individual requirements may have to be further developed before they can become part of a framework directive. Second, the political feasibility is lower as Member States and cities could argue using the subsidiarity principle.

Even with a directive, the ultimate factor for reducing the risk of not achieving the key EU TWP objective will be the political will in each city to apply SUMPs; and more importantly, to actually implement all the necessary measures. A framework for SUMPs cannot guarantee that cities implement all the necessary measures.

2 Introduction

2.1 Background

Challenges as set in the Transport White Paper

The transport White Paper focused on the key challenges of delivering a sustainable transport system that meets the current and future needs and addresses external impacts of transport.

One element was urban transport and the paper included various actions. There were actions on the Urban Mobility including initiative 31 on Urban Mobility Plan.

Textbox 2-1 Relevant needs and actions defined in the White Paper

(49) 'In the urban context, a mixed strategy involving land-use planning, pricing schemes, efficient public transport services and infrastructure for non-motorised modes and charging/refuelling of clean vehicles is needed to reduce congestion and emissions. Cities above a certain size should be encouraged to develop urban mobility plans, bringing all those elements together. Urban Mobility Plans should be fully aligned with Integrated Urban Development Plans. An EU-wide framework will be needed in order to make interurban and urban road user charging schemes interoperable'. To this end, the White Paper announces concrete initiatives (under 2. Innovating for the Future: Technology and behaviour):

31 Urban mobility plans

Establish procedures and financial support mechanisms at European level for preparing Urban Mobility Audits, as well as Urban Mobility Plans, and set up a European Urban Mobility Scoreboard based on Common targets. Examine the possibility of a mandatory approach for cities of a certain size, according to national standards based on EU guidelines

Link regional development and cohesion funds to cities and regions that have submitted a current, and independently validated Urban Mobility Performance and Sustainability Audit certificate

Examine the possibility of a European support framework for a progressive implementation of Urban Mobility Plans in European cities.

Integrated urban mobility in a possible Smart Cities Innovation partnership

Encourage large employers to develop Corporate/Mobility Management plans

The White Paper Impact Assessment

The White Paper is accompanied by an extensive Impact Assessment Report. This report states that the key driver of relevance to the need for further efforts in regards to Urban Mobility Plans is:

› *Transport planning: not sufficiently integrated from the first to the last mile.* Consequently, the White Paper foresees measures that *encourage the establishment of urban mobility plans and implementation of related measures to manage demand in non-collective motorised transport modes.*

And it points among other things to the need of more integrated sustainable transport planning at local level, and notes the emphasis of the Action Plan on Urban Mobility (2009) regarding the need to promote integrated policies in this area.

Past and on-going initiatives

Much work has been done hitherto at local and national levels, and stimulated by EU initiatives, to develop sustainable and resource efficient urban transport schemes. The ex-post evaluation of Transport Policy 2001-2010 lists and assesses some of the major initiatives and achievements at EU level. It takes note of the 2009 Action Plan and its 20 listed actions, and it mentions the series of initiatives that was initiated after the 1995 Green Paper, i.e. with the CIVITAS initiative as one of the most prominent ones. The below table provides examples of such EU supported and best-practice oriented initiatives that can inspire also this impact assessment:

Textbox 2-2 Examples of recent or ongoing initiatives

CIVITAS VANGUARD – 2008-2013, will raise the awareness, disseminate and market the results of CIVITAS-Plus demonstration projects to a wide audience of urban transport practitioners, located in all member states of the enlarged European Union

CIVITAS demonstration projects : MIRACLES, TELLUS, TRENDSETTER and VIVALDI – 2002 – 2006, Multi initiatives for rationalised urban accessibility and clean, liveable environments

CIVITAS ELAN 2008-2012, Mobilising citizens for vital cities Ljubljana - Gent - Zagreb - Brno - Porto

CIVITAS MIMOSA – 2008-2012, CIVITAS making innovation for mobility sustainable actions.

ARCHIMEDES 2008-2012, an integrating project, bringing together 6 European cities to address problems and opportunities for creating environmentally sustainable, safe and energy efficient transport systems in medium sized urban areas.

ELTIS PLUS 2010-2013, a three-year project aiming at accelerating the large scale uptake of Sustainable Urban Mobility Plans by competent authorities in Europe, delivering guidelines, state of the art reports and a dedicated website.

INTELLIGENT ENERGY EUROPE 2003 - ongoing, supporting the use of clean and sustainable solutions provides targeted funding to creative projects (such as the Poly-SUMP and ENDURANCE projects).

COVENANT OF MAYORS, 2009 - ongoing, a movement bringing together local and regional actors around the fulfilment of EU objectives, especially with the initiative on Sustainable Energy Action Plan (SEAP).

EC THEMATIC STRATEGY ON THE URBAN ENVIRONMENT 2006 - ongoing, considers the environmental challenges of urban areas in Europe (and especially transport), making strong recommendations for implementing SUMPS. The cities of Copenhagen and Nantes are presented as examples.

TIDE – 2012 -2015, The mission of the TIDE project will be to enhance the broad transfer and take-up of 15 innovative urban transport and mobility concepts throughout Europe.

PRIMUS – 2009-2012, Policies and research for an integrated management of urban sustainability

NICHES+ - 2008 – 2011, New and innovative concepts for helping European transport sustainability - towards implementation

PROGRESS – 2000 – 2004, Pricing regimes for integrated sustainable mobility.

BUSTRIP - 2005 -2008, Moving Sustainably. Guide to Sustainable Urban Transport Plans

PILOT -2005-2007, "Sustainable Urban Transport Plans –SUTP Manual, Guidance for Stakeholders

Until now, the role of the EU in promoting Sustainable Urban Mobility Plans (SUMPs) has been a facilitating and supporting one. While the White Paper has been scrutinized for the appropriateness of EU action, including alignment with the principles of proportionality and subsidiarity, initiatives that bring more streamlining and commonality into the EU's role as regards SUMPs must be carefully checked against these principles. The competence for urban mobility is shared between authorities at local, regional, national and EU level, and any changes to the current balance must be motivated in the need and relevance of EU action.

Main conclusions from ongoing initiatives

Without going into detail on the specifics of each initiative, it is evidence that the awareness on the need to implement sustainable actions is spreading both on European wide as well as on local level. Cities around Europe have responded positively to the guidance and support from the European Commission and are considering more and more the uptake of sustainable urban mobility plans. Despite the development of these initiatives, it appears that the potential for development and promotion of SUMPs has not been fully realised.

Scope of this study

Following on that, the Commission is currently considering how to take that imitative forward. As part of its actions, it has launched this study on Supporting the Impacts Assessment of options to promote Sustainable Urban Mobility Plans. This report presents the assessment of the impacts of alternative options for promoting Sustainable Urban Mobility Plans.

2.2 Methodological considerations

2.2.1 Methodological approach

Methodology steps described

This part provides an overview of the applied methodology for each of the impact assessment elements. A more detailed description of the methodology, the sources used, assumptions made as well as specific issues encountered during the process is presented in the corresponding sections of this report.

Demonstrating the problem includes three steps:

- Step 1: Examining the current transport systems. This first step looks into the existing situation regarding the transport systems. The key mobility and environmental challenges are described based on the identification of a series of indicators related to each category of externalities. Available data on congestion, accidents, air quality, noise and CO2 emissions are identified through desk study and literature review and used to understand the current situation. A first overview of these key quality indicators indicates to a lack of competitiveness and resource efficiency of the current urban transport systems.

- Step 2: Examining the measures needed to achieve the objective: developing a benchmark concept. Stock is taken of the possible measures that can be implemented to address the different problems that EU cities face. By making reference to the findings of Activity 32 a multi criteria analysis overview of the effects they have on the externalities is used to illustrate the complexity of the situation. This process highlights the requirement for coordination and target policy actions in solving the mobility and sustainability challenges by defining a benchmark concept for integrated urban mobility approaches.

› Step 3: Examining current integrated urban mobility planning practices. The current planning practices are assessed using a wide number of sources including making use of the results of relevant projects, desk review, primary survey as well as input from stakeholders and experts. Based on this we gain an insight and indications regarding the current level of coordination and targeted policy actions. Despite the wide range of sources, it has not been possible to come up with a detailed picture of the existing situation due to the limitations of the sources. However, it is exactly the use of this large number of sources and the fact that they mainly point to similar conclusions that increases our confidence of the findings. This information is sufficient to allow us to proceed to a grouping of EU cities above 100,000 inhabitants according to their integrated urban mobility status. A varied picture emerges with implies the need for integrated mobility planning. Finally all the above information allows us to proceed with a better definition of the problem.

Defining possible evolution

Developing a baseline scenario. The first step in undertaking an impact assessment is to establish the baseline or business as usual scenario. In effect this is an attempt to estimate how the situation will involve in the future if no further action is taken. In our case we proceed to estimate the baseline by considering the drivers behind the problem, and more specifically:

› The development in the mobility challenges (economic growth, technological developments etc);

› The development in integrated urban mobility approaches: further uptake of integrated planning and improvement in the levels of coordination and targeted policy actions in EU 27 cities.

Estimation of future effects

By making use of the information sources considered above, and especially the actions that are already in place, we proceed with an estimation of the likely effects of these actions compared with the existing targets for each externality. Barriers to integrated urban mobility approaches are identified and an attempt is made to rank them, followed by an examination of the impacts of integrated approaches. The information so far uncovered the importance of the level of ambition in implementing such plans as a critical factor in their success. Therefore this parameter is examined in more detail.

Defining objectives and options

Objectives and policy options. The next step in the procedure involves the identification of the objectives and of the possible policy options. These were developed based on the problem definition and benefited from the input from DG MOVE and the intervention logic. The whole procedure begins with a discussion on the EU's right to act, which is essential as it sets the barriers of which options are "realistic".

In line with the view of a large majority of experts and stakeholders, researchers, and with experience from initiatives such as CIVITAS the most successful urban areas use integrated approaches to tackle multi-sectorial problems in policy making linked to their transport system. In order to do so, several European cities have in practice implemented these integrated approaches through Sustainable Urban Mobility Plans (SUMPS). In this section, the concept of SUMPs is used to describe the "benchmark" integrated urban mobility approach as identified above in step two of the description of the problem. Based on this benchmark approach, despite the difficulties encountered due to the lack of an agreed definition on SUMPS, an effort was made to establish the scope and content of a SUMP based on input from the public consultation as well as from experts, which we consider as the most accurate source available.

Voluntary and mandatory options for different city sizes

The exact policy options have been developed following a set number of aspects and principles. The question of incentives (i.e. voluntary or mandatory nature of the option) has been considered at this stage as well as the content, processes, procedures and scope (coverage). From a number of possible options a number of "realistic" ones have been chosen and agreed with the Commission. Both voluntary and mandatory options have been included and especially for the latter and due to their possible impacts and implications, a further break down per urban agglomeration size has been undertaken. This was done in order to allow for a more detailed analysis which would enable the Commission to make a better informed policy decision at a later stage. The policy options are derived from the assessment of which elements of integrated urban mobility planning are necessary to increase the level of coordination and targeted policy actions.

Impact assessment of options. Having developed the policy options, the next stage involves their assessment. This stage includes two steps:

› Step 1: The effect of the alternative policy options on the uptake of SUMPs is estimated;

› Step 2: the effect of the policy option on the realisation of the improvement potential is assessed.

A combined qualitative and quantitative approach …

The method used to assess the impact of the policy options involves a qualitative analysis based on a review of the literature, combined with a quantitative illustration based on three sources, namely a literature review, city data and country reports.

… based on informed and realistic assumptions

Every effort has been made to identify accurate quantifiable data that can be used for our assessment of impact. When such data was not found to be available we have proceeded by identifying the best available source which can provide us with at least an indication as to the level or to the nature of the effect identified in each particular case. Based on this an informed assumption is made which is then used in the section on assessment of impact. By following this procedure, we allow for sufficient flexibility that would allow us to reach a meaningful, useful and realist conclusion while at the same time safeguarding the accuracy and consistency of the information to the extent possible.

In line with the Impact Assessment guidelines, the economic, social and environmental impacts of each policy option each examined in detail and consequently a comparison of the options is undertaken. The options are compared based on a number of aspects including effectiveness, efficiency and coherence.

The analysis concludes with a short discussion on the requirements of these options as regards monitoring and evaluation.

2.2.2 Methodological challenges

IA requirements

It is important that an impact assessment - as set out the EU guidelines - clearly demonstrates the added value of the proposed EU actions. To the extent possible an impact assessment therefore includes quantification of the problem to be addressed as well quantification and monetisation of the impacts of the proposed options for EU action.

Specific issues relating to the problem under consideration

The EU cities face many challenges and particularly the challenge of providing high quality mobility in environmentally sustainable manner requires an integrated approach. With the current measures in place there is a perceived risk that many cities will not achieve the key EU Transport White Paper objective of competitive and resource efficient transport system. The purpose of the policy options that are being assessed in this study is to reduce the risk of failing the EU objectives.

One important element to consider is the fact that the cities vary across many dimensions:

› The geographical location including topography and climate gives cities different conditions for achieving certain performance from the transport system;

› The historical economic and social development has been different (car ownership);

› The national regulations are different giving cities starting points (e.g. taxation for transport means);

› Planning traditions are different across cities for example regarding formal versus non-formal consultation, stakeholder involvement etc.;

› The inadequacy of the available data and indicators. Data are often not comparable across cities. For example congestion is difficult to measures and only recently due to new technologies such as GPS it is possible to assess and compare congestion. Still there are large uncertainties attached to this and most other indicators.

Each city is special

This means that the cities are at different "stages" regarding the level of car ownership and use and the extent of the public transport system as two main elements of the transport system.

The final key challenge is about how to measure the uptake of "integrated urban mobility approaches" or the specific content and process elements.

› The difficulty of measuring the planning practices in the cities. Most of the integrated urban mobility approach elements which are necessary for coordination and targeted policy actions can be done at various degrees and quality. It means that in most cases there are some integration and some coordination. In theory this can be measured though only with large uncertainty. It requires a further breakdown of each of the integrated urban mobility approach elements to a number of indicators for existence and quality of each element. Such an assessment and evaluation of the planning in just one city would be a study in itself. This leaves some degree of uncertainty as to where the cities are today.

The impacts of an integrated urban mobility approach will gradually be realised so there are cities that have completed integrated urban mobility approaches but where the effects have not yet been realised. This makes in difficult to establish "statistically" a causal link.

Initial approach

At the outset of this project it was our understanding that the problem - the risk of not achieving the EU objectives on sustainable mobility could largely be approximated by the question of whether cities had an integrated urban mobility approach or not. This has led us to a detailed examination of this issue, whereby we uncovered a number of uncertainties, with the lack of a clear definition of a benchmark integrated urban mobility approach being one of them.

Main obstacles encountered

During the course of our investigations we encountered difficulties in identifying a clear link between the existence of a Sustainable Urban Mobility Plan with specific results in terms of improved mobility and reduced negative environmental, health and other impacts.

We have found that is due to two key aspects. Firstly, a benchmark integrated urban mobility approach, a SUMP, can be done in many ways as there is no commonly agree definition of what it should include and how it should be developed. Secondly, a SUMP is a tool to select effective and efficient combinations of measures. As the "best" set of measures depends on the situation in each city it not possible to generalise about the outcome of a SUMP. In each city it is a political decision about which measures to implement and this outcome is influenced by many factors.

The result of this provided extra complicating factors in our attempts to quantify the risk of failing the EU objectives. The existence of many uncertain parameters such as the overall economic development and the fact that currently the uptake of SUMPs is a political decision (taken at different levels depending on the specific country) adds a layer of risk in any attempts at quantifying future events.

Main conclusions regarding the approach to follow

Having analysed further the concept of sustainable urban mobility and how the elements of SUMP are embedded into specific local contexts, we have reached the following conclusions:

› that the justification of the need of SUMP and the verification of the impacts will have to rely on a mix of qualitative and quantitative data sources;

› where data is not available the use of alternative sources with preference to expert and stakeholders input will be sought and used;

› that despite out efforts and given the number of underlying uncertainties, we will have to accept that based on ex-post data the causality between SUMP and the problems it is intended to solve can only be documented to a slightly lower degree of precision;

› that we nevertheless can see a relatively widespread consensus among experts, local planners and previous horizontal evaluations studies on urban transport planning that integrated transport planning is the way forward.

A multiple approach to ensure the best results

Urban mobility is a complex area with multi-causality and many types of differences across Member States (e.g. policy styles and ways of doing planning), many dimensions and lack of historically recorded data to monitor whether SUMP has had a positive impact where it has been introduced. Therefore, it is necessary to use many types of data and much of the identified information provides indications and examples which will allow us to develop informed and realistic assumptions.

Proposal on establishing a framework for maritime spatial planning and integrated coastal management

We have reviewed a number of previous Impact Assessments in order to identify if similar problems have been encountered before.

We have in particular identified the example of the IA on the integrated coastal zone management (ICZM). This is a concept similar to sustainable urban mobility plans, i.e. it is a planning tool which by the nature of being integrated provides better outcome compared to "traditional" sector based planning.

The specific outcome of the planning depends on the measures and due to differences across the EU coastal Member States the IA was forced to rely in that case mainly on examples. As such the impact assessment following the ICZM made use of a qualitative approach providing some illustrative quantitative examples.

2.3 Terminology

There are a few key terms that are used in this report with specific meaning.

Urban agglomeration

Urban agglomeration and city is sometimes used to describe the same. The urban agglomeration is main unit and it is based on the definition of functional city where relevant commuter catchments are included. Where the word "city" is used it means urban agglomeration.

SUMP

The term Sustainable Urban Mobility Plans (SUMP) is used to describe a specific benchmark integrated urban mobility approach which encompasses requirements on content, scope and governance of cities' policy making.

2.4 Structure of the report

Following the IA guidelines

Overall the study component of Activity 31 should provide answers to the key impact assessment questions as defined in the EU Impact Assessment guidelines. . The structure and question covered in each section is indicated in Table 2-1.

Table 2-1 Report structure

Report Chapter	IA questions addressed
Chapter 3 Policy context and Problem definition	(1) What is the nature and scale of the problem, how is it evolving, and who is most affected by it? (2) What are the views of the stakeholders concerned?
Chapter 4 Baseline	Further answers to question (1) on how the problem will evolve in the absence of further additional actions
Chapter 5 Policy objectives	(3) Should the Union be involved? (4) If so, what objectives should it set to address the problem?
Chapter 6 Policy options	(5) What are the main policy options for reaching these objectives?
Chapter 7 Impact assessment of the policy options	(6) What are the likely economic, social and environmental impacts of those options?
Chapter 8 Comparison of options	(7) How do the main options compare in terms of effectiveness, efficiency and coherence in solving the problems?
Chapter 9 Monitoring and evaluation	(8) How could future monitoring and evaluation be organised?

3 Policy context and problem definition

Requirements of an Urban Transport System

The urban transport system faces many challenges. It needs to be competitive and to deliver the mobility required for a continued economic development. At the same time, it needs to be more sustainable to increase the quality of life for those living and working in the cities but also to contribute to the regional global challenges such as climate change.

The basic trend of economic development increases the demand for transport thereby increasing the challenge of creating a sustainable transport system. This was the basis for the recent Transport White Paper where the key objective of the competitive and resource efficient transport system was set out.

Mobility challenges

The mobility dimension of creating sufficient accessibility for the functioning of the economy and quality of life for the citizens is very important, but currently our research shows a general lack of well-defined indicators to measure and compare the level of mobility across Member States and cities and to assess the time trend.

A particularly important EU goal is to ensure the proper functioning of the TEN-T network. Despite infrastructure investments in the main corridors, "the last mile" in main European urban agglomerations is often restricted by congestion. Congestion is therefore an important indicator, and this section includes an assessment of congestion in urban areas and with specific focus on the TEN-T node cities.

Environmental challenges

The social and environmental aspects of the mobility provisions are described by the following indicators accidents, air quality, noise and GHG emissions, which are the most important elements of achieving a resource-efficient transport system.

The selected indicators provide one part of the assessment of the risk of not achieving the key EU Transport White Paper objective of a competitive and resource-efficient transport system. The second part is the assessment of initiatives in place to mitigate the challenges and achieve the objective. The assessment of these initiatives includes in particular the assessment of the current status regarding the use of integrated urban mobility approaches in EU cities.

Finally, this section presents the assessment of the gaps and shortcomings in the existing measures taking as its starting point the problem definition, which is to assess the magnitude of the risk of not achieving the objectives.

3.1 Description of the key mobility and environmental challenges

General trends

The growth of the cities and the economic growth have led to higher car ownership and transport volumes from individual, motorised transport. These trends are significant, underlying causes of the main problem and impacts, but on the other hand, they also contribute to the economic development of cities and economies.

Urban transport systems are vital to the economic functioning of cities through their provision of accessibility for goods and commuters. Similarly, they are vital to the welfare of the population by providing accessibility for all social activities, but at the same time the transport systems can generate external effects that have significant health and environmental impacts. The challenges are reflected by the EU transport policy. Therefore, the recent White Paper[5] sets out the overall objective of developing a competitive and resource-efficient transport system.

Key indicators

The key indicators for describing whether the EU cities are on track to achieve the objective include:

› Accessibility: qualitative description of the challenges
› Congestion: estimate of congestion costs and congestion index cities
› Road traffic accidents: overall trends in accident rates and data for each city
› Air quality: overall trends in air quality and data for each city
› Noise: noise exposure by Member State and by city
› Energy/CO_2: overall trend in energy and CO_2 emissions.

Each indicator is described in the subsequent sections.

3.1.1 Accessibility

Where mobility deals with the use of the transport system, accessibility is about the transport system in relation to land use. Accessibility can be defined in many ways. In this study, we use the following definition:

Accessibility refers to people's ability to reach goods, services and activities, which is the ultimate goal of most transport activity. It is a precondition for people's ability to participate in society as well as for economic development of cities, regions and countries. For sustainable accessibility, we could add, with as little as possible use of non-renewable, resources, including land and infrastructure.

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[5] White Paper (2011) *Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system*

Mobility and accessibility are closely related. Trade-offs between cars and other modes, for example pedestrian zones, dedicated bus lanes, parking regulation versus space for cars, affect accessibility of sustainable transport modes and as a result the modal split.

Generally stated, accessibility is higher in high-density areas (cities) than in low-density (rural) areas: distances to reach goods, services and activities are shorter, public transport more frequent and the public transport (PT) network more dense.

This can be seen in the following map:

Figure 3-1 Accessibility Map of Europe based on a travel-cost approach model[6]

Types of accessibility

We distinguish between the following types of accessibility:

- Accessibility of the urban transport network in the urban area.
- Accessibility between local urban transport networks and regional, national and international transport networks for persons and goods.
- Specific: accessibility of the urban transport system including pedestrian access to urban streets and sidewalks for older persons, persons with reduced mobility and those with functional limitation.

Accessibility of the urban transport network

Four components of accessibility can be distinguished: infrastructure, temporal, spatial and personal.[7]

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[6] *Performance of Accessibility Measures in Europe*, Siamak Baradaran, Farideh Ramjerdi Royal Institute of Technology, Journal of Transportation and Statistics Volume 4 Number 2/3, 2001

Infrastructure: availability of choice of modes and the associated variables, such as comfort and ease of access to different modes, travel time and monetary cost;
Temporal: time at which activity is scheduled to operate and associated time availability with individual to assess the activity, which also depends on the commuting time;
Spatial: distance and time taken to reach destination; and
Personal: individual's accessibility to different modes depending on the affordability and physical constraints to using the mode.

Indicators to measure accessibility

A wide range of indicators can measure these components, including:

- time taken by different modes
- time taken to reach the nearest PT station
- share of population within x metres of a PT stop with at least one arrival/departure per hour during daytime
- commuting time to specific destinations
- monetary cost and discomfort by using a particular mode, including safety risks encountered by pedestrians (especially pedestrians with reduced mobility),
- distance travelled and time taken to access a destination
- expenditure on transport of the total household (HH) income
- affordability and access to destination for people with special needs
- share of urban HHs and jobs served by PT.

There is low availability of data, which can be used to compare levels of accessibility and to show trends. Eurostat has a few indicators, which can be used to characterize accessibility. The following is one example of such an indicator:

- Average time of journey to work (minutes)

The average time of journey to work in 154 EU 27 cities for which this piece of information is available is roughly 23 minutes. The average time in Bulgarian cities seems very low and very high in Hungary. However, these averages are not directly comparable because they relate to Urban Audit data collections for different time periods, depending on data availability. In cities with more than 250,000 inhabitants, the average time of journey is 26 minutes and in cities with more than 1 million inhabitants, it is 33 minutes.

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[7] van Wee et al. (2004).

Table 3-1 Average travel time per country in cities with more than 100,000[8] inhabitants

Country	Average time (min.) of journey to work (data 2000-2010)	Number of cities in sample Eurostat
Bulgaria	12	6
Czech Republic	34	4
Denmark	25	4
Estonia	25	1
Finland	24	4
France	21	7
Germany	24	35
Hungary	58	3
Ireland	22	3
Italy	21	18
Lithuania	30	1
Netherlands	29	13
Portugal	32	3
Slovakia	37	1
Slovenia	22	2
Spain	25	20
Sweden	31	5
United Kingdom	27	23
Luxembourg	17	1

Source: Eurostat 2000-2010

Accessibility for persons with reduced mobility, current situation and trends

A problem not to be neglected

One in six citizens in the EU has a disability that ranges from mild to severe, preventing around 80 million citizens from taking fully part in society and the economy because of environmental and attitudinal barriers. For people with disabilities, the rate of poverty is 70% higher than the average, partly due to limited access to employment. More than one third of people aged 75+ have disabilities that restrict them to some extent, and more than 20% are considerably restricted. Furthermore, these numbers will rise as the EU population is ageing[9].

For persons with mobility impairments, it is important that all elements of the trip from door to door are accessible. This means low-floor buses, accessible bus stops, buildings, footpaths, safe pedestrian crossings, interchanges (bus/metro/railway

[8] The averages by country are not directly comparable because they relate to Urban Audit data collections for different time periods (i.e. 2003/2004 data collection, 2006/2007 data collection or 2009 data collection), depending on data availability.
[9] COM(2010) 636 final.

station), accessible pre-trip and on-trip travel information, an accessible ticketing system, etc.

The weakest link determines accessibility

If one of the elements in the transport chain is not accessible, the whole journey cannot be completed, which is why the weakest link determines the accessibility.

Considerable improvements have been achieved in many EU cities, for example through the introduction of low-floor buses, and accessible bus stops. In heavy rail systems, such as metros, accessibility cannot be improved by fleet renewal; investments in the fixed equipment are needed, such as lifts or higher platforms. The United Nations Convention on the Rights of Persons with Disabilities, signed since 2007 by the European Community and all Member States, contains clear obligations. The Commission is developing an European Accessibility Act to address accessibility of goods and services in the internal market in particular concerning built environment, transport and ICT in line with article 9 of the UN Convention on the Rights of Persons with Disabilities.

A detailed picture is not available …

A comprehensive updated overview of the status of accessibility of the transport system for disabled person in European cities is not available, but results from a study in 2008 show that most EU countries at that time had developed accessibility policies and deliverable plans, see Table 3-2. At the city level, local accessibility plans have been or are being developed as well.

Table 3-2 Status of policies and action plans specifically aimed at accessibility of public transport systems for disabled people[10].

Policies aimed at accessibility of public transport?			Action plans?		
Yes	In progress	No	Yes	In progress	No
Austria (1992[19]) Bulgaria (2003) Czech Republic (2005) Denmark (2003) Finland (2003) France (2005) Germany (2006) Ireland (2006) Norway (2004) Portugal (2007) Romania (2007) Slovenia (2006) Spain (2003) Sweden (2006) The Netherlands (2004) United Kingdom (2006)	Belgium Denmark Iceland Slovakia Slovenia Poland	Greece Italy Malta Lithuania	Austria Bulgaria Czech Republic Denmark Finland The Netherlands Ireland Norway Poland Portugal Romania Slovenia Spain Sweden United Kingdom	Belgium France Iceland Poland Slovakia Slovenia	Austria Germany Greece Italy Malta Lithuania

… but some indications of progress exist

A comprehensive, updated overview illustrating the trend from 2008 is not available. Nevertheless, there are indications from Member States as well as many cities that progress is made on developing and implementing policies and delivering plans for more accessible urban transport systems.

[10] Euro access, Accessible public transport, A view of Europe today – policies, laws and guidelines, 2008.

Accessibility for persons with reduced mobility, causes and specific measures to improve the problem

Causes of poor accessibility

Making the urban transport system accessible takes a long time and requires an integrated approach and large investments. The main causes of poor accessibility for persons with reduced mobility are:

- Improper physical environment (kerbstones without ramps, stairs, lack or unsuitability of pedestrian crossings, etc.)
- lack of information systems in the physical environment (e.g. lack of audio signals at pedestrian crossings)
- information systems for planning journeys (e.g. web solutions on service information)
- Access to and facilities in the public transport system (low-floor buses, information systems, good waiting facilities, etc.).

The relevant measures are typically to remove the physical obstacles or provide better information. Some measures such as accessible information, ticketing and vehicles may be easier to accomplish than others, which require more costly infrastructure investments, like accessible footpaths, buildings and stations.

Barriers towards accessible urban transport

Barriers to the transition towards an accessible urban transport system are[11]:

- Institutional/organisational/legal: lack of legal powers to implement a particular instrument, lack of a common understanding among operators to implement a truly co-modal spirit, ambiguity on who should bear which responsibilities.
- Political/cultural: These involve lack of political or public acceptance of an instrument, restrictions imposed by pressure groups, and cultural attributes.
- Financial: These include budget restrictions limiting the overall expenditure on the strategy as well as on specific instruments.
- Technical/technological: The practical limitations for implementation of the measures.

Accessibility between local urban transport networks and regional, national and international transport networks for persons and goods

Regional and international accessibility

The term accessibility used in this way expresses how easy people in one city can reach another city or region. Accessibility of a city is indirectly an indication of the

[11] Euro access : Towards an improved accessible transport system in Europe, deliverable 4, policy and recommendations, 2009

potential for activities and enterprises in the city to reach markets and activities in other cities or regions.

Benefits from improved accessibility

Accessibility improvements of cities play a significant role in EU policy. Establishing an efficient trans-European transport network (TEN-T) was one of the key elements in the Lisbon Strategy for competitiveness and employment in Europe, and it will play an equally central role in the attainment of the objectives of the Europe 2020 Strategy. Accessibility is seen as key factor in improving the territorial balance in Europe and the attractiveness of Members States, their regions and cities.

An important element of seamless travel between cities and regions on the TEN-T network is the 'first and last mile' to and from the main air, rail and road nodes (i.e. airport, main railway station, entrance to the highway network). This is where sustainable urban mobility policies play an important role. Accessibility problems on this last mile (which is mostly a much longer distance in reality) in the cities are mainly linked to urban congestion. For this, see the next subchapter.

3.1.2 Congestion

Congestion in the EU is often located in densely populated zones with high economic activity and its costs are estimated at around EUR 130 billion, or a little more than 1% of the EU's GDP, annually[12].

Characteristics of congestion

On congestion, the Study for the Impact Assessment for the Action Plan on Urban Mobility report of 2008 states[13]:

› Congestion in urban environments is a complex phenomenon with many dimensions. The causes of congestion are placed in one of three categories, micro-factors, macro-factors, and weather.

› Macro-factors include demographic, social and economic factors, land use patterns, car-ownership, availability of public transport, availability of parking, and urban freight transport and goods delivery. These macro-factors determine where people live and work, where businesses locate, the location of different activities, and how people get to the locations of these activities. Thus, these macro-factors shape activity patterns, which in turn generate a demand for travel. This demand for travel results in traffic on the urban road network. When the volume of traffic exceeds available capacity, congestion arises.

› Micro-factors that "trigger" congestion include factors such as, for example, driver behaviour, traffic information available to drivers, mix of vehicles. These micro-factors are fundamentally different from the macro-factors.

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[12] COM(2011) 144 final *Impact Assessment of the White Paper*,
[13] Study for the Impact Assessment for the Action Plan on Urban Mobility, Ecorys 2008,

› Weather conditions have an impact on modal choice and traffic. Precipitation in all its forms (water, snow, hail) seems to dominate the harmful impacts (accidents, infrastructure collapse or damage, time delays, sub-optimal operations). Road transport system seems to be the most vulnerable of modes[14].

Congestion still not clearly defined

It follows that congestion has many dimensions and causes resulting in a wide range of impacts. For analytical purposes, it is a challenge that there is no generally accepted definition of congestion or any standard means of measuring it, which implies that consistent comparisons of congestion levels in cities cannot be obtained from general data sources. Table 3-3 illustrates the relationship between various stakeholders and the impact of congestion on affected stakeholders. To some degree, rush hours also correlate with a higher risk of road traffic crashes.

Table 3-3 Congestion, impacts and affected stakeholders

D - Direct impact; I- Indirect impact

		CONGESTION IMPACTS	Vehicle related impacts			Persons related impacts							Business related impacts	
			Increase of fuel consumption	Increase of maintenance costs	Vehicle damage	Personal damage	Increase of environmental pollution	Increase of noise pollution	Stress	Increase in travel time	Lack of punctuality	Journey reliability	Increase of tavel time (goods)	Loss of profitability of employees
INSIDE THE TRAFFIC FLUX	Private vehicles	Car drivers	D	D	D	D	D	D	D	D	D	D		
		Car passengers				D	D	D	D	D	D	D		
		Motorcycle drivers	D	D	D	D	D	D	D	D	D	D		
		Motorcycle passengers				D	D	D	D	D	D	D		
		Non-motorized users		D	D	D	D	D	D	D	D	D		
	Public transportation	Public transport drivers				D	D	D	D					
		Public transport passsengers				D	D	D	D	D	D	D		
		Taxi drivers		D	D	D	D	D	D					
		Taxi passengers				D	D	D	D	D	D	D		
	Business activities	Salaried employees				D	D	D	D					
		Employees reimbursed for journey				D	D	D	D	D	D			
		Autonomous workers	D	D	D	D	D	D	D	D	D	D	D	
		Drivers of emergency services					D	D	D	D	D			
OUTSIDE THE TRAFFIC FLUX	Perosonal activites	Roadside residents						I	I	I	I			
		Sidewalk users						I	I					
		Rest of city residents						I						
	Business activities	Roadside business	I	I	I						I		I	I
		Roadside offices									I			I
		Businesses outside congested areas	I	I	I						I		I	I

Source: OECD/ECMT (2007) Managing Urban Traffic Congestion, pp. 149

The TomTom congestion index based on GPS measurements shows significant delays in the cities monitored. The figures in the table below show the travel times in peak hours relative to travel times during non-congested periods (free flow), expressed as a percentage increase in travel time.

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[14] Study for the Impact Assessment for the Action Plan on Urban Mobility, Ecorys 2008,

Most cities in the TomTom index correspond to the nodes in the core TEN--T network. The TEN--T cities in the TomTom index are listed in the table below.

Table 3-4 Congestion data for selected cities

City Name	Member state	Congestion*
Warsaw	Poland	42%
Marseille	France	40%
Palermo	Italy	39%
Paris	France	33%
Rome	Italy	33%
Stuttgart	Germany	33%
Brussels	Belgium	32%
Hamburg	Germany	32%
Dublin	Ireland	29%
Berlin	Germany	28%
Stockholm	Sweden	28%
London	United Kingdom	27%
Nice	France	27%
Cologne	Germany	26%
Leeds	United Kingdom	26%
Lyon	France	26%
Luxembourg	Luxembourg	25%
Milan	Italy	25%
Naples	Italy	25%
Toulouse	France	25%
Vienna	Austria	25%
Budapest	Hungary	24%
Manchester	United Kingdom	24%
Munich	Germany	24%
Prague	Czech Republic	23%
Birmingham	United Kingdom	22%
Frankfurt	Germany	22%
Lille	France	21%
Genoa	Italy	20%
Lisbon	Portugal	20%
Torino	Italy	20%
Barcelona	Spain	19%
Gothenburg	Sweden	19%
Rotterdam	Netherlands	19%
Glasgow	United Kingdom	18%
Helsinki	Finland	18%
Porto	Portugal	18%
Amsterdam	Netherlands	17%
Copenhagen	Denmark	17%
Palma de Mallorca	Spain	16%

City Name	Member state	Congestion*
Madrid	Spain	14%
Seville	Spain	13%
Valencia	Spain	11%
Malmö	Sweden	10%

Source: Appendix A City data (congestion data are based on the TomTom index)
Legend: * Congestion figure: Average % delay 2012 compared to "free" flow situation in the cities

Measure to mitigate or reduce congestion

Congestion can be reduced by many types of measures including:

› Increase in infrastructure capacity
› Reduction in transport volumes
› Better management of traffic flows
› Modal shift

There is a complex relationship between measures to reduce congestion and the resulting level of congestion. For example, an increase in road capacity is likely to lead to higher traffic volumes and hence no significant reduction of congestion.

3.1.3 Road traffic accidents

Current situation

An important externality

Despite the dedicated efforts to reduce road accidents, road traffic accidents still cause around 30,000 deaths annually in the EU.

In 2008 external costs related to accidents for EU[15] plus Norway and Switzerland were estimated to over EUR 200 billion[16].

Approximately 69% (over 750,000 in absolute figures) of all reported road traffic accidents in the EU take place in urban areas. For road traffic fatalities, the corresponding figure is lower, being approximately 38%[17] road traffic.

Situation differs between Member States

The differences across European countries in terms of overall fatalities are significant, spanning from 21 fatalities in 2011 in Malta to 4,189 fatalities in Poland in the same year. The number of road fatalities in relation to the number of inhabitants gives a somewhat smaller but still significant variation. In 2010, the European average 2011 was 60 fatalities per million inhabitants varying from 31

[15] External costs for Malta and Cyprus are not included.
[16] CE Delft et al. 2011;*"External Costs of Transport in Europe - Update Study for 2008"*; Delft September 2011 (Table 17)
[17] Source: European Road Safety Observatory – Care database.

fatalities per million inhabitants in the UK to 109 in Poland. Nevertheless, the development in recent last years has been positive, with a downward trend from 75,977 fatalities in the EU in 1990 to 30,268 fatalities in 2011, which is a reduction of more than 60%[18].

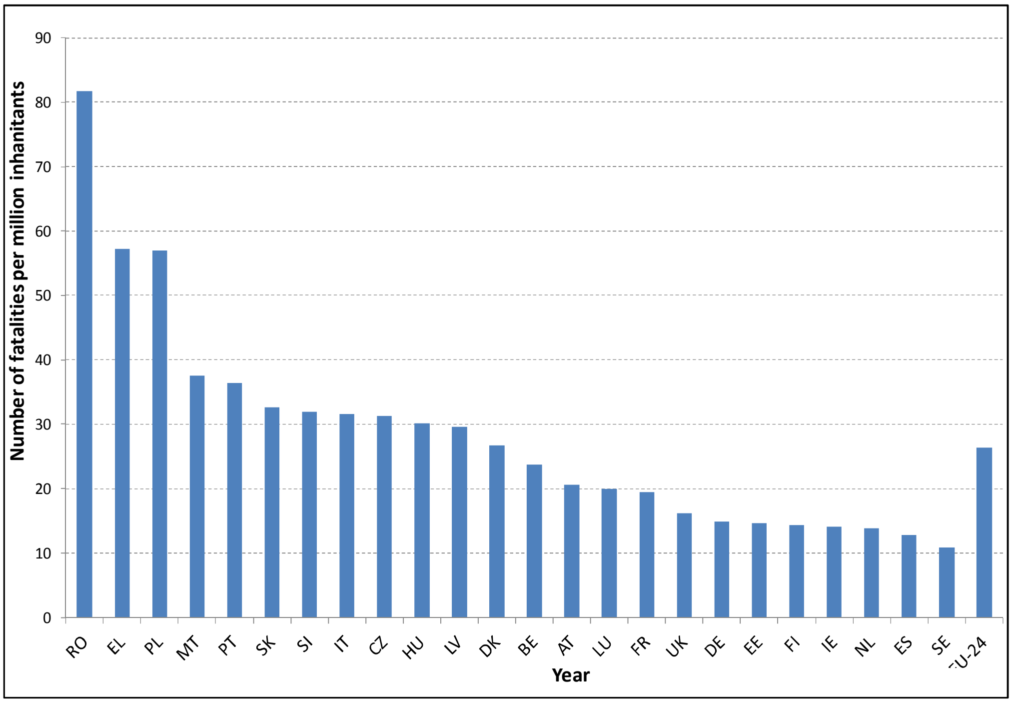
In urban areas, 50% of fatalities involve a pedestrian or a cyclist. To vulnerable road users, urban areas are the most dangerous, and around two thirds of all pedestrian fatalities occur in EU urban areas. The elderly are particularly over-represented among urban road deaths[19]. Furthermore, the share of road traffic crashes causing serious injuries is proportionally higher inside urban areas than outside urban areas[20].

Comparing the fatalities in the EU Member States with mobility expressed in passenger-km (Eurostat), the number of fatalities declined from 1995 to 2010 despite increased mobility. Efforts going into reducing the number of road accidents thus appear to have been quite successful.

According to the European Road Safety Observatory - using data from CARE (Community Road Accident Database) - 38% of all road traffic fatalities in 2009 occurred on urban streets and roads. In terms of number of urban road fatalities per million inhabitants, the EU average is 26.4 ranging from 10.8 in Sweden to 81.7 in Romania; see Figure 3-2.

[18] EC, EU transport in figures – Statistical pocketbook 2013
[19] EC, Road Safety Vademecum - Road safety trends, statistics and challenges in the EU 2011-2012
[20] SWD(2013) 94 final

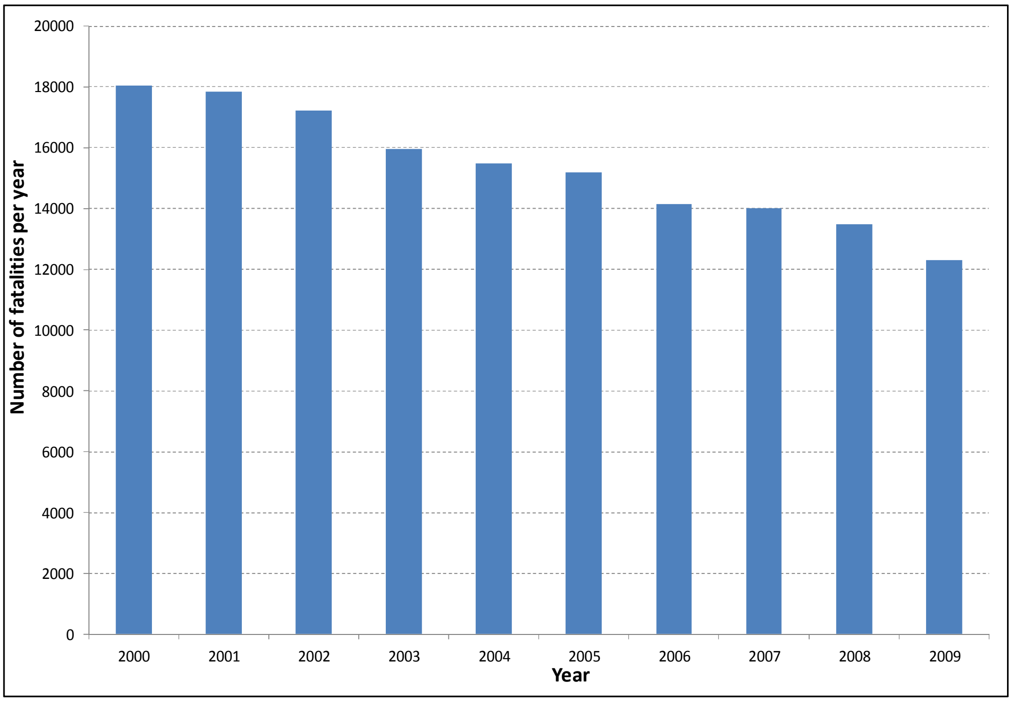
Figure 3-2 Urban road fatalities in EU Member States in relation to number of inhabitants using data from 2008



Source: CARE database

In Figure 3-3, the development in the total number of urban road fatalities in 19 of the EU countries is shown. An overall decrease can be observed.

Figure 3-3 Development in urban road fatalities in the EU



Source: CARE database

The picture is improving - but slower in urban areas

The number of fatalities in urban areas is still high, but since 2000 the number has been constantly dropping, from 18,029 to 12,301 in 2009 in 19 of the EU countries. However, urban fatalities now constitute a greater part of all road fatalities, from nearly 35% in 2000 to 38% in 2009. Hence, it seems as the decrease in urban fatalities takes place at a slower rate than the overall decrease.

Using data from 2009, this percentage varies across Member States. In Romania, urban fatalities accounts for approximately 63% of total road fatalities, whereas in e.g. Estonia the corresponding figure is 19%.

Causes and specific measures to improve the problem

Direct causes

Among the direct main causes of road fatalities and other road accidents are:

- User behaviour (alcohol consumption, speeding and non-use of safety belt are still important causes)
- Equipment failure (such as brakes and suspension)
- Roadway design and poor roadway maintenance.

Indirectly, road safety legislation (e.g. speeding sanctions, alcohol blood level limits and other regulation) and enforcement measures have contributed significantly towards reducing road fatalities in the last decades. Type-approval requirements for safety devices, minimum requirements for vehicle roadworthiness testing and road user awareness campaigns are other effective road safety initiatives.

Main areas of action

The main objectives of the European Commission's current road safety policy are:

- Education and training of road users
- Increased enforcement of road traffic rules
- Safer road infrastructure
- Safer vehicles
- Use of modern technologies and in-vehicle safety systems
- Improved emergency and post-injury services
- The safety of vulnerable road users[21].

Accident rates by city

Accident rates differ by city

The road traffic accident rates vary significantly across cities. The below table illustrates rate of fatalities per million inhabitants in the ten cities with highest rates and the ten with the lowest rates of fatalities.

[21] European Commission *Policy orientations on road safety 2011-2020*, http://ec.europa.eu/transport/road_safety/pdf/road_safety_citizen/road_safety_citizen_100924_en.pdf

Table 3-5 Number of traffic fatalities per million inhabitants in selected cities[22]

City	Country	Population	Number of fatalities per million inhabitants per year
Stara Zagora	Bulgaria	139,807	255.85
Timişoara	Romania	317,660	224.66
Brăila	Romania	207,492	207.06
Burgas	Bulgaria	192,795	180.03
Arad	Romania	164,627	168.67
Namur	Belgium	107,237	148.23
Cluj-Napoca	Romania	317,953	140.31
Göttingen	Germany	121,911	139.97
Bacău	Romania	167,656	129.88
Oradea	Romania	204,248	127.15
Halle (Saale)	Germany	236,589	12.87
Nancy	France	286,108	12.38
Mülheim	Germany	166,867	11.88
Mainz	Germany	194,282	10.12
Stuttgart	Germany	600,700	10.00
Stockholm	Sweden	1,432,737	9.88
Trier	Germany	100,226	9.56
Mönchengladbach	Germany	262,111	7.73
Bonn	Germany	311,231	6.29
Leicester	United Kingdom	441,213	3.29

Source: Appendix A City data (Eurostat data mostly from 2008)

About 66% of the cities with more than 100,000 inhabitants for which we have included accident data have fatality rates above 30. For the other two city size categories, the shares of cities with fatality rates above 30 are 60% and 564% respectively.

[22] The rate of fatalities are based on the Eurostat data for the core city while the populations presented in the table are based on CNTR_CITIES_2012

Based on the cities included in Appendix A where Eurostat's urban audit data include rates for fatalities and for seriously injured, the average rates per 1 million persons have been estimated. It should be noted that data might be from different years and given the specific selection of urban agglomerations used in this study, the data might deviate from fatality rates reported in other studies.

Table 3-6 Number of traffic fatalities and seriously injured per million inhabitants by city groups[23]

	City category		
	Above 100,000 inhabitants	**Above 250,000 inhabitants**	**Above 1 million inhabitants plus TEN-T urban notes**
Number of cities with data (fatalities)	233	134	78
Average number of deaths per million (simple average)	49.9	42.8	43.0
Average number of deaths per million (weighted by city population	41.8	39.5	38.9
Number of cities with data (seriously injured)	167	97	56
Average number of injured per million (simple average)	1,551	1,415	1,424
Average number of injured per million (weighted by city population)	1,623	1,610	1,685

Source: Appendix A City data (Eurostat data mostly from 2008)

3.1.4 Air quality

Impact on both the environment and human health

Air quality is an important factor in ensuring the sustainable development of a city. Since the emission of air pollutants can have adverse effects on both the environment and human health, it is an area of great focus. The emission of air pollutants in cities is particularly linked to traffic exhaust. As such, air quality is also closely related to traffic congestion.

Initiatives at the EU level

To improve air quality, the EU has developed an extensive body of legislation, which sets objectives and standards for the air quality by using concentrations of a number of air pollutants as indicators.

Key legation includes:

[23] The dataset do not include accident data for each city – more data are available for the larger cities.

- Air Quality Directives 2008/50/EC (EC, 2008a) and 2004/107/EC (EC, 2004a), both covering air pollutant concentrations;

- National Emission Ceilings Directive (EC, 2001) covering air pollutant emissions,

- Regulation (EC) n° 692/2008 implementing and amending Regulation (EC) n° 715/2007 on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6)

The Air Quality Directives sets the limit values for the concentration of air pollutants that the cities have to comply with. The National Emission Ceilings Directive sets overall targets for emission reduction and incorporates international conventions on air pollution.

In relation to transport, the emission regulation on road vehicles is particularly important. It drives a continued reduction of the transport contribution. The next tightening of the regulation is the Euro 6 norms that will come into force by 1st of September 2015[24].

According to an EEA report "Air Quality in Europe"[25] the dominant issues determining short-term air quality in cities are nitrogen dioxide, particulate matter and ozone. Carbon monoxide is also considered one of the most common air pollutants from transport. The potential impacts of these compounds are briefly described below:

- **NO_2:** High levels of nitrogen dioxide exposure can lead to coughing and shortness of breath. People who are exposed to NO_2 for a long time have a higher risk of respiratory disease. Recent studies also indicate that NO_2 reacts in the atmosphere to form acid rain, which can harm plants and animals.

- **$PM_{2.5}$ and PM_{10}:** Particulate matter that is small enough can enter the lungs and cause health problems. Some of these problems include more frequent asthma attacks, respiratory problems, and premature death.

- **O_3:** Ozone near the ground can cause a number of health problems. Ozone can lead to more frequent asthma attacks in people who have asthma and can cause sore throats, coughs, and breathing difficulty. It may even lead to premature death. Ozone can also hurt plants and crops.

- **CO:** Carbon monoxide prevents oxygen from being carried to vital body parts. Exposure to carbon monoxide causes dizziness, tiredness and headaches. In

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[24] For registration and sales of new cars and vans, while for type approval of new cars and vans it takes effect by September 2014.
http://ec.europa.eu/enterprise/sectors/automotive/environment/euro5/index_en.htm
[25] http://www.eea.europa.eu/publications/air-quality-in-europe-2012

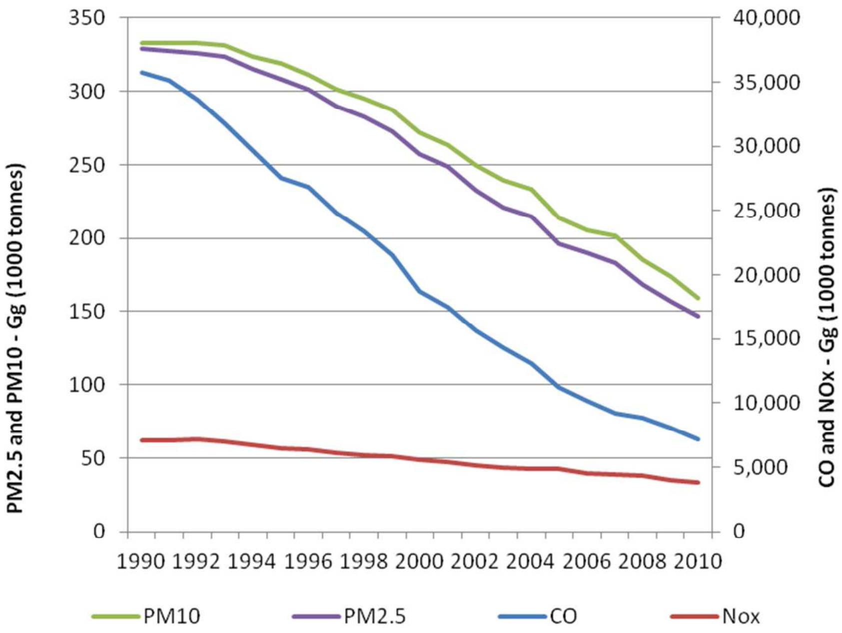
high concentrations, it is fatal. Elderly people suffering from heart disease are hospitalized more often when exposed to high amounts of carbon monoxide.

Current situation and trends

Declining trends …

Since 1990, the total road related emissions of NO_X, CO, $PM_{2.5}$ and PM_{10} in the EU (EU-27) have declined substantially, i.e. with the largest declines being for CO and particulate matter as is illustrated in Figure 3-4. It should be re-emphasised, however, that the emissions relate to road transport as a whole, and not to those specifically related to cities.

Figure 3-4 Total air pollutants from road transport in EU-27(1990-2010)

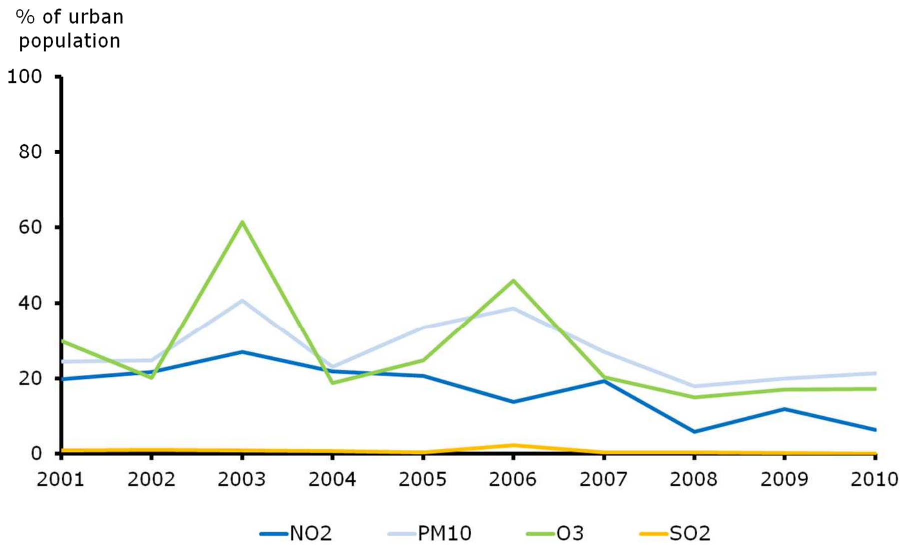


Source: EEA, Air pollutant emissions viewer (LRTAP convention). Note, emissions do not include automobile tyre and break wear or road abrasion.

… but more needs to be done at urban level

Despite declining emissions of air pollutants from road transport, air quality is still an issue in cities across Europe. For example, data from the Urban Audit database shows that a significant proportion of the urban population in EU-27 has potentially been exposed to concentrations of certain pollutants, which lie above the target levels set by the EU; see Figure 3-5.

Figure 3-5 Percentage of urban population resident in areas where pollutant concentrations are higher than selected limit/target values, 2001-2010 (EU-27)



Source: EEA, based on Urban Audit

Note: Only urban and sub-urban background monitoring stations have been included in the calculations. Data for Cyprus, Luxembourg and Malta, are not included due to the geographical coverage of the Urban Audit.

The external costs of air pollution from road transport have been estimated to approximately EUR 50 billion annually[26]. Apparently, no studies have estimated the external cost specifically caused by air emissions from urban transport.

Causes and specific measures to improve the problem

Main causes and rectifying measures

As mentioned above, the problem of air quality in cities is mainly linked to traffic exhaust. From this perspective, the emission of air pollutants can be attributed to the following three key causes, namely (i) the volume of traffic; (ii) the speed and flow of the traffic, including congestion; and (iii) the nature of propulsion of the traffic and its efficiency. From this outset, several measures can be put in place to facilitate improvements in air quality. The below table illustrates a few.

Table 3-7 Examples of measures to improve air quality

Cause of air pollution	Specific measure to improve air quality
Traffic volume	› Increase modal split towards public transport system and non-motorized transport › Car sharing/pooling schemes › Congestion zones
Speed/flow of traffic	› Low speed zones › Intelligent traffic systems

[26] CE Delft et al. 2011;*"External Costs of Transport in Europe - Update Study for 2008"*; Delft September 2011 (Table 17)

Cause of air pollution	Specific measure to improve air quality
Propulsion/efficiency of traffic	› Switch of public transport to run on clean fuels; i.e. biodiesel, electricity, hydrogen › Benefits for clean propulsion automobiles (i.e. tax, parking, priority lanes)

City data

The current situation at city level

Based on data for the cities included in this study – see Appendix A – specific assessments of compliance with limit values etc. have been calculated. It should be noted that there could be minor discrepancies between numbers reported here and data reported for urban population in other reports and official websites.

The table shows the share of cities (number of cities that exceeds divided by total number of cities for which the air quality monitoring data are available). For PM_{10} the legislation allows a maximum of 35 days per year where the daily concentration exceeds 50µg/m³. For NO_2 the requirement is that the annual mean must not exceed 40µg and for O_3 it is the 3 year average of days exceeding 120µg/m³ that must not be more than 25 days.

Table 3-8 Share of cities exceeding air quality limit values – 2011 data

Share of cities exceeding	PM_{10}	NO_2 Annual mean	Ozone
	More than 35 days >50µg/m³	Annual mean> 40µg	3 year average > 25 days exceeding 120µg/m³
Cities with more than 100,000 inhabitants	23%	1%	13%
Cities with more than 250,000 inhabitants	28%	2%	15%
TEN- T urban notes and cities with more than 1 million inhabitants	38%	3%	15%

Source: Appendix A City data (based on EEA air quality monitoring data for 2011

The table illustrates that the share of cities exceeding the limit values are higher for the large city category and in particularly for PM_{10}.

3.1.5 Noise

Main impacts

Noise pollution is caused by traffic, construction, industrial and some recreational activities. The external costs of noise in the EU amount to at least 0.35% of its GDP, but much higher values may be found as new findings become available, and mostly caused by road traffic[27]. This is equivalent to external costs of over 40 billion € per year.

Noise has direct as well as indirect health effects, and at least 1.600.000 Disability Adjusted Life Years[28] are lost every year in the EU, mostly due to road traffic[29]. Urbanization, a growing demand for motorized transport and inefficient urban planning are described as the main driving forces for environmental noise exposure.

Current situation and trends

EU action plans

The Environmental Noise Directive (2002/49/EC) requires agglomerations of more than 250,000 inhabitants to map noise impacts and to draw up an action plan 'to address priorities which may be identified by the exceeding of any relevant limit value or by other criteria chosen by the Member States for the agglomerations'.

The mapping from each of the agglomerations includes figures for noise levels expressed in values for 'L_{den}' (day-evening-night noise indicator) and 'L_{night}' (night-time noise indicator):

- L_{den}: The estimated number of people (in hundreds) living in dwellings that are exposed to each of the following bands of values of L_{den} in dB 4 m above the ground on the most exposed façade: 55-59, 60-64, 65-69, 70-74, > 75, separately for noise from road, rail and air traffic, and from industrial sources. (Annex VI of Directive D 2002/49/EC).
- $L_{night:}$ The estimated total number of people (in hundreds) living in dwellings that are exposed to each of the following bands of values of L_{night} in dB 4 m above the ground on the most exposed façade: 50-54, 55-59, 60-64, 65-69, > 70, separately for road, rail and air traffic and for industrial sources. (Annex VI of Directive 2002/49/EC).

The Directive does not include threshold values for the noise exposure, but each agglomeration has to assess the effect of the calculated noise on the population.

Often the L_{den} value of 55dB (A) is referred to as a reasonable target value[30]. Furthermore, the WHO has for EC prepared guidelines for night noise. For L_{night} above 40 dB(A), these guidelines state *"Adverse health effects are observed among the exposed population. Many people have to adapt their lives to cope with the noise at night. Vulnerable groups are more severely affected"*. When L_{night} exceeds 55 dB(A) *"The situation is considered increasingly dangerous for public health. Adverse health effects occur frequently, a sizeable proportion of the population is*

[27] Description of EU noise policy on http://ec.europa.eu/environment/noise/home.htm, 16 January 2013.
[28] One Disability Adjusted Life Year can be thought of as one lost year of "healthy" life.
[29] Description of EU noise policy on http://ec.europa.eu/environment/noise/home.htm, 16 January 2013.
[30] Good practice guide on noise exposure and potential health effects. European Environmental Agency, 2010.

highly annoyed and sleep-disturbed. There is evidence that the risk of cardiovascular diseases increases."[31]

An illustration of the aggregated results on Member State level is shown in Table 3-9.

Table 3-9 Number of people in agglomerations over 250 000 inhabitants exposed to noise from road traffic

	No cities*	**No of inhabitants**	**No of inhabitants exposed to noise levels above 55 dB(A) (L_{den})**	**No of inhabitants exposed to noise levels above 50 dB(A)* (L_{night})**
Austria	1	1,610,578	1,226,300	734,200
Bulgaria	3	2,084,000	1,827,300	1,575,000
Czech Republic	3	1,852,955	1,533,100	873,300
Denmark	1	1,071,714	629,100	489,300
Estonia	1	401,140	75,100	36,200
Finland	1	560,905	237,500	162,200
France	7	13,664,912	4,615,400	3,480,100
Germany	27	17,213,894	4,261,000	2,761,200
Hungary	1	2,065,230	1,268,000	1,034,500
Ireland	1	1,150,000	1,092,500	953,400
Italy	2	2,934,473	2,615,200	661,300
Latvia	1	806,993	687,900	502,700
Lithuania	2	932,847	417,900	341,500
Netherlands	6	5,026,059	1,890,800	1,056,000
Norway	1	822,800	349,300	241,500
Poland	12	7,446,365	3,855,000	2,850,000
Portugal	1	564,657	243,500	175,900
Romania	9	4,338,364	2,879,000	2,056,500
Slovakia	1	528,129	527,800	449,400
Slovenia	1	266,251	168,700	113,900
Spain	19	11,982,538	8,043,400	6,395,700
Sweden	3	1,548,886	695,800	437,200
United Kingdom	28	25,613,309	17,210,900	13,073,700

[31] Night Noise Guidelines for Europe. WHO, Regional Office for Europe, 2009.

	No cities*	No of inhabitants	No of inhabitants exposed to noise levels above 55 dB(A) (L_{den})	No of inhabitants exposed to noise levels above 50 dB(A)* (L_{night})
Total EU 27	131	103,664,199	56,001,200	40,213,200

* Agglomerations according the END.

Source: Main results on people noise exposure according to the data provided by Member States under the frame of the Environmental Noise Directive. In particular, the data correspond to data flow 4 due by December 2007. In fact, the results includes the most recent updates/late deliveries -up to 30th June, 2011. This data has been compiled by the European Topic Centre on Spatial Information and Analysis.

Out of the results, one can see that approximately 54% citizens (corresponding to approximately 56 million persons) in the agglomerations over 250 000 inhabitants covered by the Noise Directive experience an average daily noise level L_{den} above 55 dB.

Causes and measures to act on the problem

Root causes

Road and rail traffic are the main causes of traffic related noise pollution in urban areas. Some of the most important factors determining the noise pollution actually experienced are:

- Traffic volume
- Type of vehicles
- Vehicle speed
- Type of tyres or wheels on the vehicles
- Type of road surface or rail track
- Surface structure (hard or soft) between noise exposure and people affected
- Distance to people affected
- Number of people affected.

Mitigating actions

The Environmental Noise Directive (2002/49/EC) stipulates that an action plan for an agglomeration must both include actions planned for the next five years and a long-term strategy. Furthermore, the Directive includes an indicative list of potential actions that could be included in the individual action plans the agglomerations:

- traffic planning
- land-use planning
- technical measures at noise sources
- selection of quieter sources
- reduction of sound transmission
- regulatory or economic measures or incentives.

3.1.6 Energy and CO2

Current situation and trends

Recent developments

From 1990 to 2010, energy efficiency in the EU transport sector increased by around 15%. The efficiency increase is main due to efficiency improvements in car, due to measures related to new cars that have been reinforced since 2007 (EU labelling for new cars and national fiscal measures)[32].

The steady increase in both passenger and freight traffic in the EU between 1990 and 2007 contributed to the constantly increasing energy consumption in the transport sector as a whole. However, since 2007, energy consumption in the transport sector has been declining at an average rate of 1.3% annually between 2007 and 2010, which is attributed to higher oil prices, a slowdown in passenger transport activity growth and energy efficiency increases and the decrease in the freight transport activity relative to 2007sector.

The modal shift towards private passenger transport has offset energy efficiency savings in passenger transport as a whole. Passenger transport by car requires about four times more energy per passenger-km than public transport by rail and bus. While the energy consumption per passenger-km of cars has decreased by 0.9% per year on average since 1990, the modal shift and the general increase in passenger traffic have led to an increase in energy consumption of around 29 Mtoe (tons of oil equivalents) between 1990 and 2010[33].

Increased share of total CO_2 emissions

Along with the increasing energy use in the EU transport sector, CO_2 emissions from transport have increased by 2821% since 1990. This is contrary to all other sectors where CO_2 emissions have decreased relative to their 1990 levels. This means that the transport sector has increased its share of total CO_2 emissions from 20% in 1990 to 29% in 2010[34], though emissions from the transport sector have increased more slowly since 2000, just in line with the slower pace in the increase in the sector's energy use.

Figure 3-6 shows the share of renewable energy in fuel consumption in the transport sector. The share has been increasing, and in 2010 it varied between 0.2% and 7.8% across Member States.

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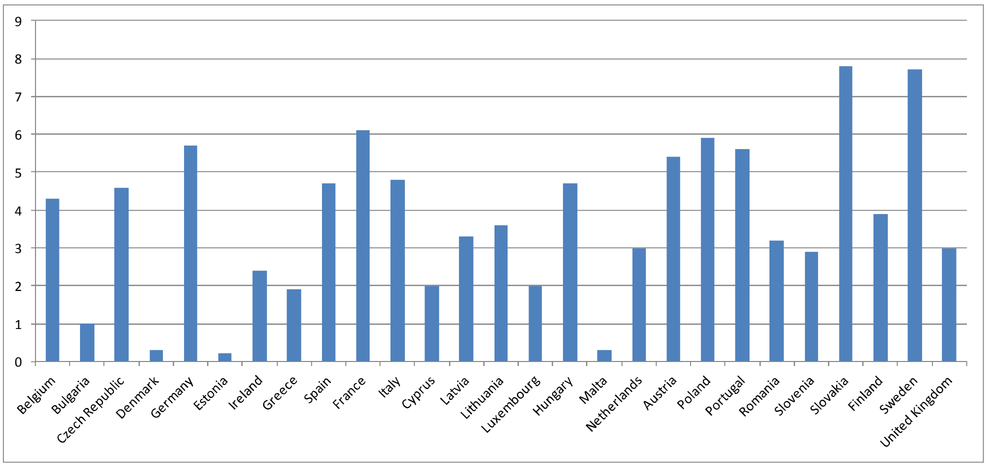
32 ADEME, Energy Efficiency Trends in the EU – Lessons from the Odyssee-Mure project
33 ADEME, Energy Efficiency Trends in the EU – Lessons from the Odyssee-Mure project
34 European Commission, EU Transport in Figures, Statistical Pocketbook 2013

Figure 3-6 Share of renewable energy in fuel consumption by the transport sector

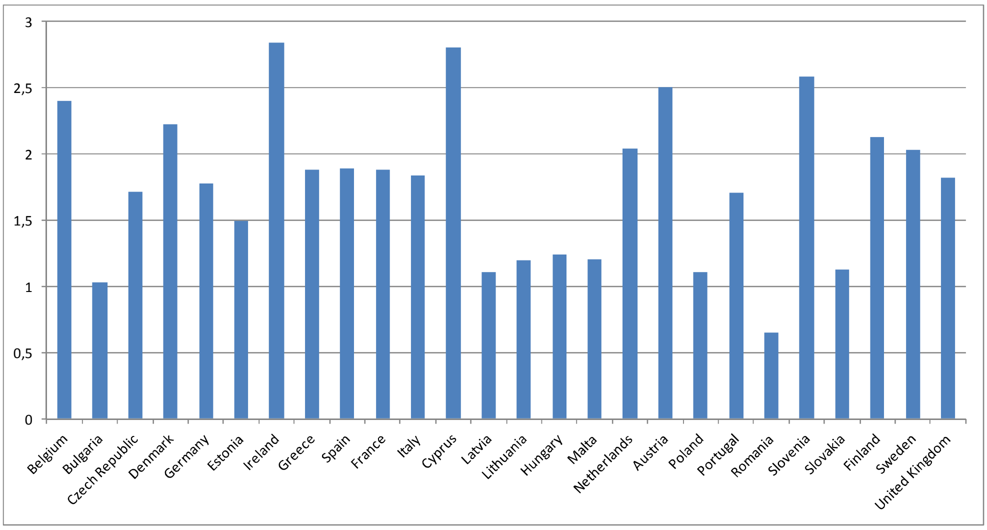


Source: EU transport in figures, Statistical pocketbook 2012

GHG emissions development

Total per capita energy consumption in transport is strongly correlated with per capital greenhouse gas (GHG) emissions. The chart below only shows per capita GHG emissions from road transport in 2010 in the Member States with the exception of Luxemburg (being an outlier with 12 tonnes/capita). It shows that per capita emissions from transport are still lowest in the new Member States of Central and Eastern Europe. It should be noted that the graph shows emissions from all types of road transport, not only passenger transport. Considering the trend of modal shift from public towards private passenger transport, there is reason to believe that per capital GHG emissions in the new Member States will rise in the coming years despite increasing energy efficiency in the transport sector and a rising share of renewable energy use.

Figure 3-7 GHG emissions from road transport per capita (Tonnes CO2 equivalent, 2010)



Source: EU transport in figures, Statistical pocketbook 2012

Car ownership plays an important role

While total energy consumption in the transport sector has declined slightly after 2007 as a result of increasing oil prices and the economic downturn, the passenger transport sector saw an increase in car ownership of 38% between 1990 and 2010 in EU-27[35]. Growth in car ownership mainly occurred in Central and Easter Europe, rising from relatively low rates in 1990.

Causes and specific measures to improve the problem

In short, energy consumption and CO_2 emissions from urban transport are caused by each km driven by motorised vehicles. Furthermore, the specific energy consumption by and emissions from each motorised vehicle is crucial to the overall problem.

Current measures

Briefly, the measures therefore aim at reducing the total volume of km driven by motorised vehicles and transferring transport needs to less energy-consuming modes of transport.

Specific measures in an urban mobility strategy could be e.g.:

- Encourage compact urban development to minimise transport demand
- Improve attractiveness of public transport in relation to individual motorised transport to change modal split
- Improve facilities for walking and cycling to encourage modal shifts from individual, motorised transport
- Encourage e.g. vehicle fleet owners to use less energy-consuming motorised vehicles.

3.1.7 Key mobility, social and environmental issues in urban areas

Overview of existing indicators

The assessment of each of the mobility and sustainability areas has shown that the EU cities (with more than 100,000 inhabitants) are generally far from having achieved a competitive and resource-efficient transport system.

- Accessibility: To date, there are no comparable indicators, which can assess and compare accessibility.
- Congestion: There is no quantified EU congestion target. The current high level of congestion hampers the functioning of the TEN-T network; however the level of congestion required is difficult to determine as the "economic optimal" congestion level could be higher than zero. The difficulty of measuring congestion means that there is no long-term trend to demonstrate whether the level of the congestion is increasing or decreasing. Data on the last few years indicate that congestion is declining, most likely as a result of the economic situation.

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[35] European Commission, EU Transport in Figures, Statistical Pocketbook 2013

- Accidents: There is a long-term EU objective for the total number of road fatalities by 2020. Accident rates are falling in most cities but many cities are still struggling with a very high number of fatalities.

- Noise: There is no quantified noise target. The Environmental Noise Directive requires Member States to map noise exposure and develop action plans. The high proportion of the population exposed to noise levels leading to negative health effects is an indicator of the current situation.

- Air quality: About 18-41% of the EU urban population was exposed to ambient concentrations of particulate matter (PM_{10}) in excess of the EU limit value set for the protection of human health between 2001 and 2010. The percentage of urban population exposed to ambient nitrogen dioxide (NO_2) concentrations above the EU limit value set for the protection of human health was 6-27% during the same period[36]

- CO_2: Even though there are no city-based CO_2 emission statistics, the general assessment demonstrates that cities need to obtain significant reductions to meet long-term objectives. The long-term objective is to reduce CO2 emissions by 60% in 2050 on the 1990 level. The short-term EU objectives concern emission reductions for specific vehicles types (light duty vehicles).

Cost estimation of externalities

Another way of putting the current situation into perspective is by monetising the described impacts of the transport system. The estimates of the current level of external costs are presented in Table 3-10. However, these costs should be regarded with care and taken as rough estimates in lack of more reliable data which is not available.

Some estimates of congestion costs show that they could be as high as EUR 130 billion per year. This includes urban and interurban congestion[37]. There is no publicly available estimate of the urban share of congestion costs. However, congestion is more widespread in urban areas. Therefore, it is assumed that more than half the level of congestion costs can be attributed to the urban areas.

In Section 0, the total external cost of road transport air emissions was estimated to approximately EUR 50 billion annually. The share of the population living in the cities included in this study is around 40%. Hence, it is assumed that the external air pollution costs from transport in these urban agglomerations can be estimated at around EUR 20 billion annually.

The external cost of noise was estimated to EUR 40 billion (see Section 3.1.5) and it is all assumed to be in urban areas.

[36] EEA, 2012. Air quality in Europe — 2012 report

[37] COM(2011) 144 final *Impact Assessment of the White Paper*,

The total external accident costs are estimated at over EUR 200 billion with about 38% of fatal road accidents take place in urban areas. The external costs of accidents in the urban area have been estimated at about EUR 80 billion annually.

CO_2 emissions from urban areas account for approximately 280 million tons annually. There are different approaches to valuing CO_2 emissions. However, given the difficulties of estimating the damage costs and existing EU objectives for reducing CO_2 and other GHG, an approach using the marginal abatement costs at the agreed targets seems most appropriate. The *Handbook on estimation of external costs in the transport sector* argues in favour of adapting this approach to the short-term perspective and indicates an estimate of EUR 25/ton for 2010[38]. *This* value *has been applied here.*

Table 3-10 Estimated annual external costs of current transport system in EU27

Indicator	Estimate of current situation	Estimated urban share
Congestion	~ EUR 130 billion	~ EUR 80 billion
Air quality	~ EUR 50 billion (road transport)	~ EUR 20 billion
Accidents	~ EUR 200 billion	~EUR 80 billion
Noise	~ EUR 40 billion	~ EUR 40 billion
CO_2		~ EUR 7 billion
Total external costs		~ EUR 230 billion

The estimate of the total external costs of transport in urban areas is about EUR 230 billion annually[39].

Apart from these external costs, there are other aspects of mobility, which can be not monetised, but are no less important. One is accessibility - providing equal mobility across social groups. Considering the aging population this is a very important objective.

Risk of not achieving EU objectives

These indicators demonstrate that cities in the EU face significant mobility, environmental and health issues. Regarding air quality, many cities are already today in non-compliance situation. Hence, the risk of non-achieving EU objectives has been demonstrated.

[38] *Handbook on estimation of external costs in the transport sector*. Ibid.

[39] These costs should be regarded with care and taken as rough estimates in lack of more reliable data which is not available.

Next steps

To further substantiate this finding and provide the basis for making a baseline assessment of how the risk of not achieving the EU objectives will develop, it is necessary to complete two steps.

› First, to establish how the competitive and resource-efficient transport system can be achieved. The question is about what identifying instruments and measures needed to achieve the necessary improvements.

› Second, to review the current situation investigating why the instruments and measures have not yet been introduced and why they do not work as intended.

3.2 How to achieve the key EU Transport White Paper objective of a competitive and resource-efficient transport system

Having demonstrated that the urban transport systems are not competitive and resource efficient the key question is: What are the necessary steps that cities need to undertake to achieve a competitive and resource-efficient transport system?

For each of the indicators described in the previous section, examples of the specific technical or behavioural measures that could tackle each problem are given in Table 3-11; but it is not possible to identify a general package of measures, which would solve the problems. It is generally recognised that cities are unique and that an "optimal" package of measures does not exist.

The solution to the issue of achieving a competitive and resource-efficient urban transport system is for cities to undertake an integrated urban mobility approach through which the most effective and efficient measures are identified and subsequently implemented as a package.

It is a crucial element of this impact assessment to **demonstrate** that by an **integrated urban mobility approach** in **urban agglomeration areas** the **risk** that the **key EU Transport White Paper objective** towards **a more competitive and resource efficient transport system** will **not be achieved** is **reduced**.

The demonstration of the need for an integrated urban mobility approach includes the following elements:

› Assessment of the system logic of urban mobility systems to identify elements of an integrated and coordinated urban mobility planning to allow for the identification and implementation of effective and efficient measures.

› Consideration of historical and current evidence from countries and cities that have established integrated urban mobility approaches.

› Establishment of a "benchmark" integrated urban mobility approach, which includes key elements necessary for the identification and implementation of a package of effective and efficient measures.

3.2.1 Integrated issues and integrated measures

Overview of possible measures

To achieve the overall objective, specific measures need to be put in place. The review of each impact area in Section 3.1 included a listing of possible measures that will have effect on the issue. These measures are summarised below for each impact area.

Table 3-11 Examples of measures that can reduce problem in each impact areas

Indicator	**Specific measures to address problem**
Congestion	› Congestion zones › Increase of modal split towards public transport system and non-motorized transport › Car sharing/pooling schemes
	› Low speed zones › Intelligent traffic systems
Air quality	› Increase of modal share of public transport system and non-motorized transport › Car sharing/pooling schemes › Congestion zones
	› Low speed zones › Intelligent traffic systems
	› Public transport switch to clean fuels; i.e. electricity, hydrogen › Benefits for clean propulsion automobiles (i.e. tax, parking, priority lanes)

Accidents	› Infrastructure measures:
	  › Low speed zone
	  › Traffic calming measures
	› User behaviour (enforcement, campaigns and driving licenses')
	› Vehicle safety (technical inspections and passive and active safety).

Noise	› Traffic planning › Land-use planning › Technical measures at noise sources › Selection of quieter sources › Reduction of sound transmission › Regulatory or economic measures or incentives.
CO_2	› Improve energy efficiency of all transport vehicles › Change fuel to low carbon fuels › Incentivise vehicle owners to use most energy-efficient vehicles Compact urban development to minimise transport demand › Improve attractiveness of public transport in relation to individual motorised transport to change modal split › Improve facilities for walking and cycling to encourage modal shifts from individual motorised transport

Effects on externalities depend on design

The list is not exhaustive, and many of the measures listed can be designed in alternative ways, often with different effects. From the detailed assessment of the access restriction schemes part of the Urban Mobility Package Activity 32[40], an example of the different impacts of various forms of access restriction schemes is given in Table 3-12.

Table 3-12 Multi-criteria analysis overview for the four types of Access Restriction Schemes

Measure	Climate	Air quality a)	Accessibility b)	Noise	Road safety
Absolute access restriction	+ / ++	+ / ++	++	+	?
Low emission Zone	?	++	+	?	+
Charging measure	0 / +	0 / +	+	?	0 / +
Parking measure	?	+	+ / ++	?	0 / +
	0: little or no impact + : some positive impact ++: substantial, positive impact ?: unknown				

Notes:
a): Air quality within the area.
b): From the perspective of the users of the area that are allowed to enter the designated area.

This illustrates two things: an example of a measure - access restriction scheme - which has alternative designs and that the impacts on the different impact areas depend on the specific design.

40 ECORYS 2013 *EU Framework For Urban Road User Charging And Access Restriction Schemes*

Text box 3-1 Example complementing measures

Krakow - complementing measures for sustainable urban mobility

The city of Krakow has about 760,000 inhabitants, and some 1.5 million when looking at the city's larger metropolitan area. Faced with the challenge of an increasing car use and congestion problems, the city developed in 2005 a plan to provide an efficient, safe, economic and environmentally friendly transport system for passengers and goods. The plan identified a selection of comprehensive, coordinated and integrated measures, of which 18 were implemented. The measures included introduction of greener versions of public transport, installation of separated traffic lanes, priority systems, safe access to public transport stops, informative audio-visual passenger information, new public transport services (e.g. demand-responsive transport in low-density areas, integrated ticketing between independent operators, bike carriers in buses, public bikes), access restrictions for cars and delivery services to the city centre. The hard measures were moreover accompanied by a series of soft measures, such as carpooling, car sharing, marketing and promotion events, incentives, training, and public meetings; and targeted towards specific and relevant user groups. Some of the results of the integrated measures are a 15% increase in trips where people combine national-city public transport options, fewer cars in the city centre, and higher speeds of city trams.

This illustrates that with an integrated approach Krakow has managed to achieve improvements, while other Eastern European cities have not seen the same improvements as their planning is still more sector focused.

Further evidence of the need for an integrated urban mobility approach can be drawn from the CIVITAS programme (City-Vitality-Sustainability or "Cleaner and Better Transport in Cities"). It is aimed at supporting "pilot" and demonstration projects for implementation of sustainable measures. It covers a large number of measures and cities. All the individual components have been evaluated but the key recommendation from the evaluations is:

"Measures should be considered in the wider context of a city's policies, with a clear strategy, an understanding of the relationships between measures and the building of appropriate organisational partnerships"[41].

Considering specific areas for example alternative car use or non-motorised transport, it is clear that different types of measures are needed to achieve the required effects.

[41] CIVITAS Guard 2010, *Overview of evaluation*; Deliverable D 2.2

Text box 3-2 Cities speak out

The following quotes from cities illustrate the recognition of the need for integration:

When asked about the importance of addressing sustainability in an integrated way, Anneli Hulthén of Gothenburg, emphasized that there is no "quick-fix.

"Addressing urban mobility in an integrated way is essential in order to achieve sustainability. Urban mobility is complex with many different issues interrelating, from human behaviour and societal trends, vehicle and product development, to city planning. They all affect each other and it is therefore important to acknowledge the complexity and not to go for quick fixes. The CIVITAS programme reflects this complexity by bringing eight thematic areas together in each city, which is very beneficial."

With respect to integration of transport modes, Jean-François Retière of Nantes described the new plan being adopted Nantes, requiring that each mode is considered for any new development.

"It is the synergy between all transport modes that can ensure a better efficiency: the motives to travel have widely diversified over the past years and the user has to be aware of the overall range of solutions available to answer his various mobility needs. The integration of all modes from their conception also improves the quality of public spaces: in Nantes, the new urban mobility plan clearly states that each new development has to take all modes into account. For instance, new bus corridors are currently being created and soft modes are systematically treated: through the creation of cycle paths, road marking, and sidewalk enlargement, for example. Treating each mode independently of the others is a nonsense."

Vice Mayor Lisa Rücker of Graz also highlighted the need to consider the impact of urban transport on fields outside of transport planning, citing the effects on health and education.

"Sustainable urban mobility is a question of both: technological solutions but also behavioural change of human beings. Sustainable urban mobility affects other political fields than only transport planning: e.g. health and educational policies – therefore it should be promoted as an integrated field of many policies responsible for the quality of our urban life."

Source: CIVITAS 2012; CIVITAS Cities speaks out

The logic of measures

The key results of the assessments are:

- There are many measures, and each measure often has many specific design variants
- Measures interact and can both reinforce each other or work against each other
- Most measures will affect more than one impact area.

Large differences between cities in Europe

Cities in Europe are not homogenous. The list of "differences" between cities is long, and this further highlights the difficulty of prescribing specific measures across EU cities.

Table 3-13 below illustrates some of the differences between Western European and Central and Eastern European cities.

Table 3-13 City characteristics[42]

Characteristics of the city	Development of the characteristics in Western-European cities	Development characteristics in Central & Eastern European cities
Spatial structure	Well developed	In the middle of transformation, suburbanization with a parallel focus on revitalisation of central areas
Spatial change dynamics	Low or medium	Medium or high
Predominant development areas	Central (revitalisation)	Peripheral
Linear transport infrastructure	Well developed	Under construction, the development does not yet meet rapidly growing needs
Transport node infrastructure	Occurrence of bottlenecks, integration nodes	None or considerably underdeveloped
Degree of urban transport subsystem integration	Medium or high	None or low
Prevailing measures	Soft	Hard (requiring investment)

Source: M. Wolek (2009) Sustainable Urban Mobility: Integrated Perspective. "Innovative Perspective of Transport and Logistics". Ed. by J. Burnewicz. University of Gdansk Press, Gdansk.

There are many other differences, such as:

- The geographical location, including topography and climate, which gives cities different conditions for achieving certain performance from the transport system
- The historical economic and social development, which has taken place at different speeds (car ownership)
- Differing national regulations, which give cities different starting points (e.g. taxation for transport means)
- Planning traditions, which differ across, cities for example regarding formal versus non-formal consultation, stakeholder involvement, etc.

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[42] CIVITAS Guard 2010; *Report on Policy Issues*; Deliverable D 4.1

Requirement to achieve EU objective

It must be noted that measures interact and while the magnitude of the effects depends on the specific situation in each city, most measures affect most of key impact areas. In effect, to achieve the overall EU Transport White Paper objective, cities need to:

› Identify and assess alternative measures in a coordinated way

› Select and implement effective measures in a coordinated manner to ensure that all problems are addressed and that they addressed efficiently.

The above examples and statements demonstrate the necessity of an integrated urban mobility approach in order meet the key EU Transport White Paper policy objective of a more competitive and resource-efficient transport system.

This leads to the next step in the assessment of the problem, which is the assessment of historical and current examples and evidence of the benefit of integrated planning.

3.2.2 Evidence on benefits of integrated planning

Link between integrated planning and performance

Establishing a clear link between an integrated urban mobility approach and a better performance of the urban transport system in terms of mobility and environment is not straightforward.

The complicating factors include:

› Differences between cities

› Numerous external factors that influence the performance of the urban transport system in parallel with the integrated planning, such as fuel price rises

› An often complex interaction between measures

› Lack of recorded historical data that can show long-term trends

› Time lag between the initiation of an integrated urban mobility approach the when the results can be observed

› The short history of more advanced integrated urban mobility approaches for which results are not yet available

› Lack of implementation of planned measures.

The combination of these factors means that it not possible to link statistically the level of an integrated urban mobility approach and the urban mobility performance.

The overall difficulty of establishing a causal link between developing an integrated urban mobility approach and achieving specific results follows from the fact that the integrated urban mobility approach defines a framework for identifying, assessing, selecting and implementing relevant, effective and efficient measures. Shortcomings in the process or inadequate contents of the resulting plans could mean that only limited results are observed in reality.

To demonstrate benefits, it is necessary to look at specific examples where cities have adopted an integrated approach and where the planned initiatives have actually been implemented.

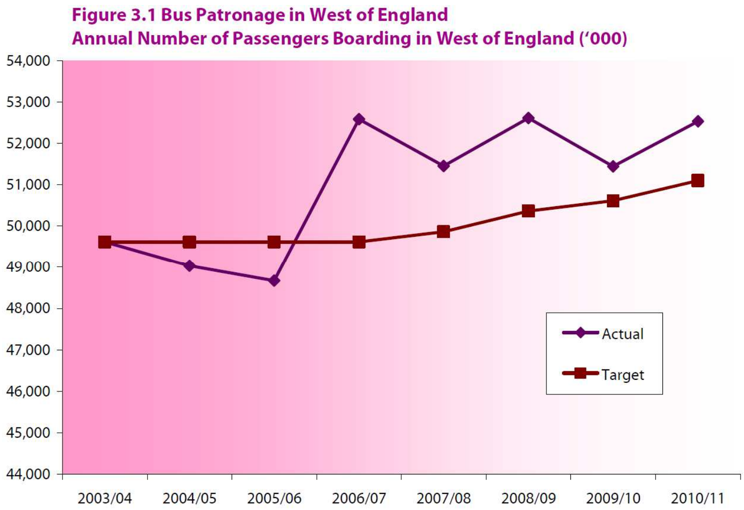
Before assessing the evidence from France and England, a more detailed review of an integrated plan and its actual performance is presented. The example is from the UK where, in England, local transport plans are mandatory.

Text box 3-3 Example of the impacts of integrated planning

West England – progress assessment of Local transport Plan

The English cities drawing up the Local Transport Plans (LTP) are required to assess progress. An example is the assessment in West England (covering the city of Bristol) where the impact of the integrated planning towards achieving the key EU policy objectives can be observed[43].

One of the objectives of the LTP2 for West England was to reduce congestion, and a means towards this increasing the use of public transport. The figure illustrates progress and that the target was more than met.



Source: West of England (2011) *5 years progress review - Joint Local Transport Plan 2006/07 – 2010/11*

The reason for this effect is ascribed to a combination of measures illustrating how the integrated approach of the LTPs is crucial for achieving the overall benefits.

It is important to observe that in addition to improving the quality of the bus service itself other measures were implemented, such as improved partnerships, changes in the parking

[43] West of England (2011) 5 year progress review

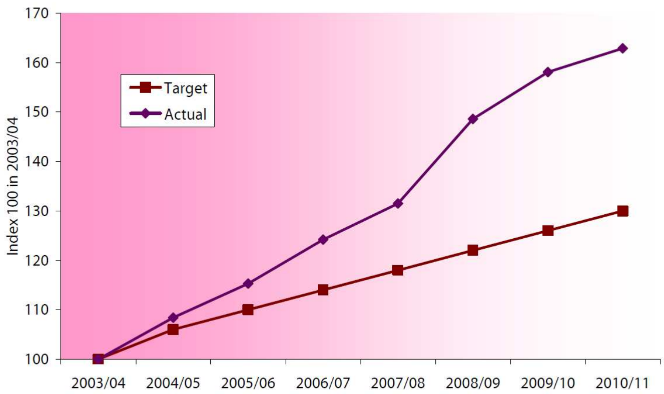
charges, employees' travel plans and park and ride schemes. The combination of these measures was necessary to achieve the targets.

Source: West of England (2011) *5 years progress review - Joint Local Transport Plan 2006/07 – 2010/11*

Increased bicycle transport is another element of reducing congestion and improving environmental indicators. Also for cycling, the planned target was more than achieved. As illustrated in the figure, the actual growth was approximately 60% while the target was increase of 30%.

The progress evaluation gives the following main reason for the success: *"This substantial growth (in cycling) is due in no small part to the package of schemes and measures.."*

Figure 3.7 Growth in Cycling Since 2003/04 (Indicator LTP 3)



Source: West of England (2011) *5 years progress review - Joint Local Transport Plan 2006/07 – 2010/11*

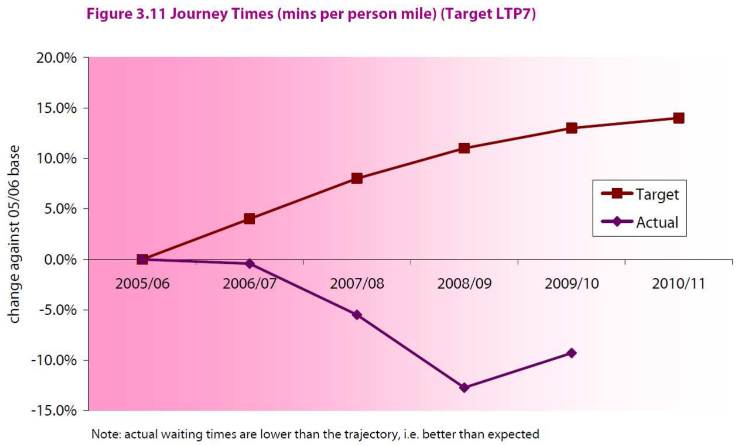
Broader initiatives to influence travel behavior was also introduced, including mobility management.

Box 3n: Working with Business on Sustainable Travel

- West of England Travel Plan Awards made every year to employers who have made a significant contribution to promoting sustainable travel (11 employers received awards in 2010 in recognition of their efforts to reduce single occupancy car travel to work);
- Green Commuter Clubs active in Bath and Bristol; quarterly travel forum meetings for employers in the North Fringe; North Fringe also seen start of a new sustainable travel business network known as SusCom;
- close working with healthcare trusts has achieved positive benefits in staff travel patterns;
- increased emphasis on shifts onto sustainable transport modes through robust Travel Plan targets as part of planning agreements for new developments; (Supplementary Planning Document on travel plans being prepared in North Somerset);
- tremendous support across the West of England for 'Jam Busting' in June and September aimed at challenging car commuters. (3400 competitors took part in 2009 from 275 employers);
- `Take a Stand' scheme for small employers and organisations to obtain free cycle stands through a partnership with Lifecycle UK; and
- steady increase in members of car share scheme operating across the West of England www.2carshare.com - now with 7000 members.

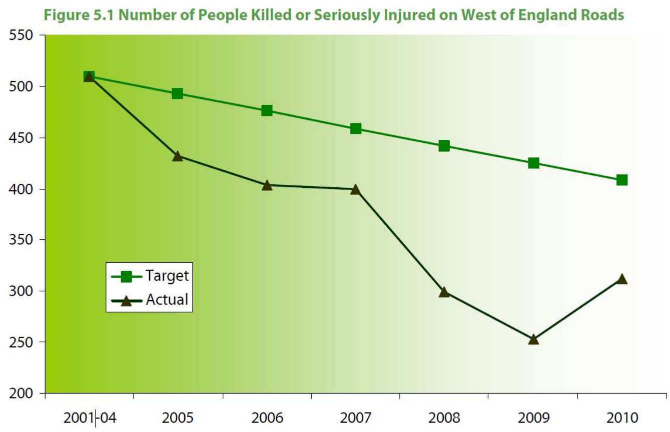
Source: West of England (2011) *5 years progress review - Joint Local Transport Plan 2006/07 – 2010/11*

The combined results of all the integrated measures include a reduction in congestion as illustrated by the average travel time per mile.



Source: West of England (2011) *5 years progress review - Joint Local Transport Plan 2006/07 – 2010/11*

Also on other areas such as traffic safety, the successful implementation of the plan has resulted in achievement of the defined targets. The number of traffic accidents with serious injury is one key indicator, and here the decrease was significant and above the target.



Source: West of England (2011) *5 years progress review - Joint Local Transport Plan 2006/07 – 2010/11*

The plan has also provided better accessibility on number of aspects. The improvement on air quality has been more moderate.

Overall, the majority of the specific targets that were defined have been achieved. Out of 21 quantified targets, only three were not achieved and for three others evidence was inconclusive. Hence, from assessing this detailed progress review, it is clear that the plan has contributed to progressing towards many aspects of the EU objective of a competitive and resource-efficient urban transport sector. As illustrated, most of the targets illustrated here have been achieved due to the integrated nature of the LTP.

This example illustrates progress towards the key EU Transport White Paper objective through implementation of a package of measures identified through a comprehensive, integrated urban mobility approach.

A review of one of the French PDUs (urban transport plan) also shows how the integrated plan – here the French PDU – is necessary for achieving the desired improvements. The example also specifically highlights how the measures are interrelated and that some measures rely on other measures to work. This is a clear manifestation of the need for coordinated transport planning.

Text box 3-4 Example of the impacts of integrated planning

Evaluation of PDU for Caen

In 2007-08, the 2001 PDU for Caen agglomeration was evaluated. The 2001 PDU covered 19 municipalities. The PDU evaluation was part of the process to revise and update the Caen PDU, and this revision focused on the following steps:

- Assessment and environmental analysis
- Formulation of issues and objectives
- Communication and consultations
- Drafting of the project
- Environmental Assessment of the project
- Establishment of a program of action
- Environmental Assessment of PDU
- Stakeholder and public consultations, and approval of the document.

Four workshops were conducted to validate the choice of indicators of the PDU revision. The workshops focused specifically on:

- Road use and parking
- Environment and quality of life
- Accessibility
- Public transportation and soft transport modes.

The PDU evaluation process looked both at external and internal consistency. Externally, consistency was investigated by cross referencing the major objectives of the overall urban plan for the Caen Agglomeration with those of the PDU. Internally, consistency was explored by highlighting the relationships between the implementation and impacts with the various measures of the program. To do this, key PDU measures were classified as follows:

- Measures with large ripple effects: Measures that are considered essential parts of the PDU. These measures determine/influences the effect on the other measures and should be carried out first.

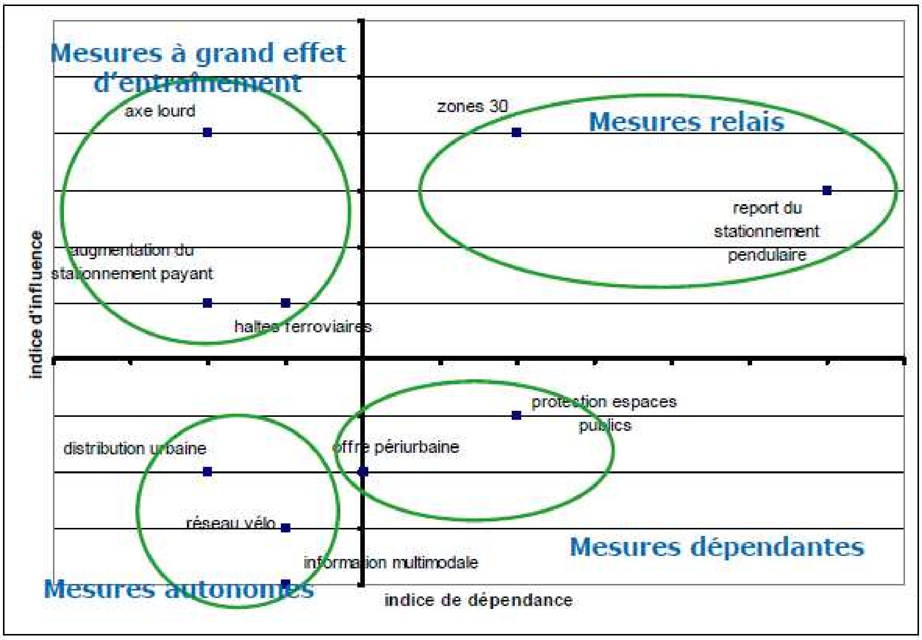
- Relay measures: These measures both depend on and influence other measures and are therefore key to the overall PDU

- Dependent measures: The dependent measures will have no impact if the first two types of measures are not performed.

- Independent measures: These can be performed independently of other actions, and have little influence on them.

The following figure depicts the measures according to the above typography. It clearly demonstrates how most of the measures are interrelated and apart from the independent measures, the measures need to be considered in an integrated way.

Note: In the figure the 50 measures of the PDU has been grouped into 11 actions to make the analysis possible. These are depicted as the black dots. The dependency of the measures is read vertically, whereas the influence is read horizontally. Each measure has been scored according to its link with other measures (0 for no link, 1 for indirect link, and 2 for direct link). The scores in the graph depict the average of scores of the measures in the each action, which visualizes the relative link relation between the measurements.



Source: AUCAME 2008 *Evaluation du PDU de l'agglomération caennaise*

Overall, some 60% of all measures have been implemented to some extent. The realization of paid parking is one of the main measures and it has had a large ripple effect on many other measures. Though large investments have been made in public transport (tram, restructuring of the urban network), many support actions promoting inter-modality are still in progress or have been only partially realized (trade station or tram terminus, ticketing compatibility between all modes).

For some issues, results are mixed, such as facilities in favour of public transport, modal road sharing more favourable to soft or bikeways modes. Most of these actions are relay or dependent measures. There are also many long-term measures, such as road improvements, or replacement of equipment, which is why most of these actions are only partially completed or in progress.

Actions that are still under consideration mainly include the planned road improvements. However, these have little impact on the objectives of the PDU (reduction in car travel). Actions under consideration for public transport are more advanced.

The figure shows the distribution of implementation status of the measures included in the 2001 PDU. Out of 50 measures 11 were fully realized while 19 was on track to be realized.

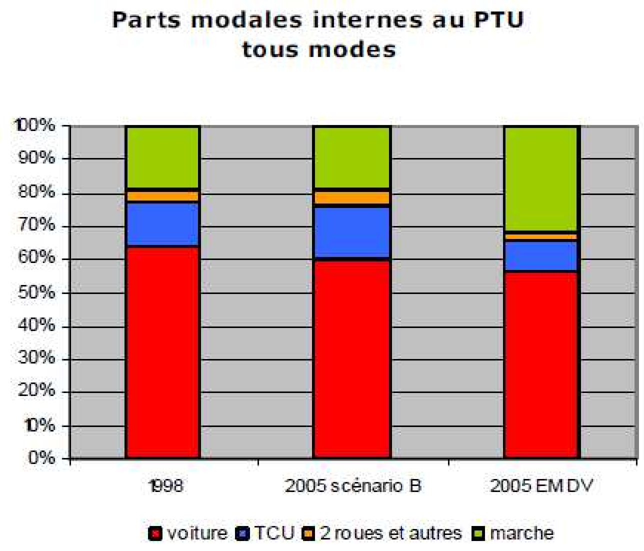
	État d'avancement	Nbr.	%
	Réalisée	11	22%
	Partiellement réalisée/en cours de réalisation	19	38%
	À l'étude	7	14%
	Non réalisée	11	22%
	Abandonnée	2	4%
	Total	50	100%

Source: AUCAME 2008 *Evaluation du PDU de l'agglomération caennaise*

The evaluation does not identify the specific causes for the lack of realization.

The evaluation of the impacts covers changes in modal shares, accidents, noise and air quality.

Regarding modal split, the below graph illustrates that the share of motorized passenger transport has declined but so has public transport while walking has increased.

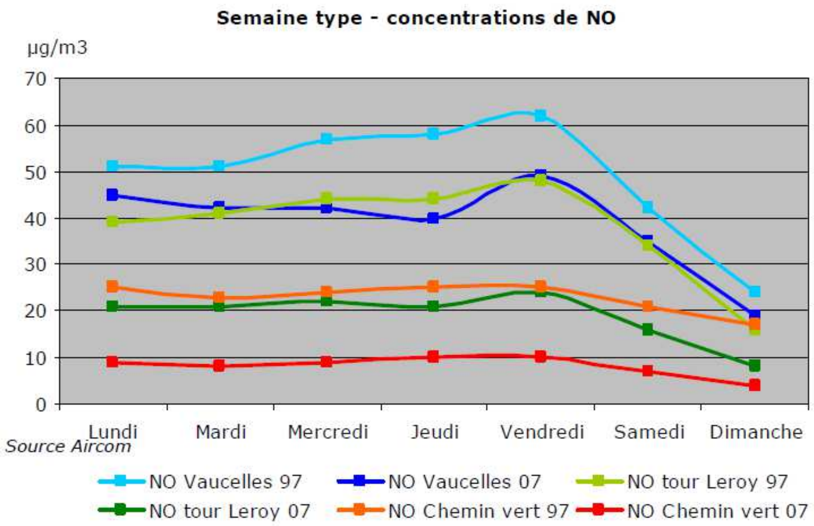


Source scénarios du PDU de l'agglomération et EDVM Caen 2005, traitement AUCAME 2008

Note: 2005 EMDV are data form a household travel survey

Source: AUCAME 2008 *Evaluation du PDU de l'agglomération caennaise*

Regarding air quality, changes in the way PM are measured mean that no trend is shown. For NO, concentrations have declined as illustrated by data from two measuring stations showing the concentration by weekday for 1997 and 2007.



Source: AUCAME 2008 *Evaluation du PDU de l'agglomération caennaise*

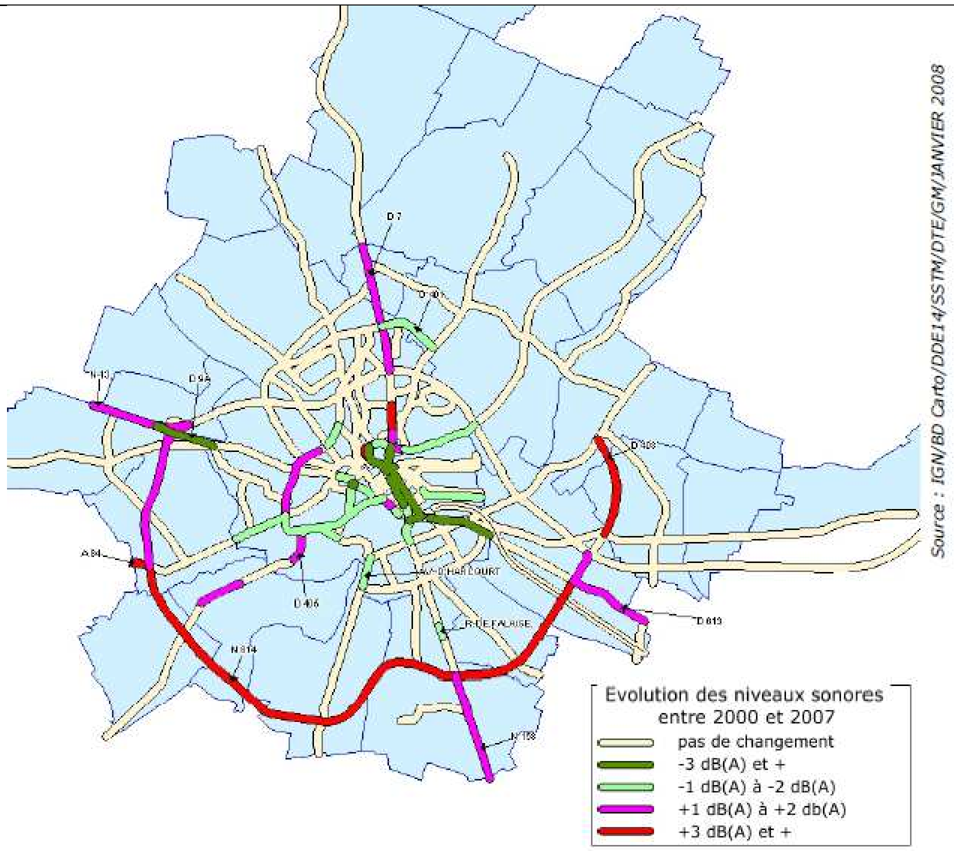
For road safety, significant improvements have been made. Overall, the number of road accidents has decreased by more 50%, while the number of fatalities has decreased by 26%.

	Du 01/01/97 au 31/12/01	Moyenne annuelle Pré-PDU	Du 01/01/02 au 31/12/06	Moyenne annuelle post-PDU	Evolution
Nombre d'accidents	2 750	550	1 260	252	-54%
Nombre de tués	72	14,4	53	10,6	-26%
Nombre de blessés	3 698	739,6	1 670	334	-55%
Nombre d'accidents mortels	68	13,6	51	10,2	-45%
Nombre d'accidents impliquant piétons ou cyclistes	613	122,6	290	58	-53%

Source : DDE du Calvados - Caen la mer, Accidentologie 2002-2006

Source: AUCAME 2008 *Evaluation du PDU de l'agglomération caennaise*

The impact on the exposure to traffic noise is mixed. Reduced noise exposure in the most densely populated areas and in the periphery there is an increase in less dense areas.



Overall, this evaluation is a useful example in relation to three important aspects of an integrated urban mobility approach:

- It shows how measures are linked and interact. This calls for an integrated approach.
- It also demonstrates that focus needs to be on implementation. Here 60% of the measures had already been implemented or were on track to be implemented, but still 40% were not.
- Finally, it shows overall progress towards key EU objectives as a result of the measures implemented.

Source: AUCAME 2008 *Evaluation du PDU de l'agglomération caennaise*

The two examples illustrate the benefit of an integrated urban mobility approach such as those required in France and England. The quality and comprehensiveness of the valuations carried out in France of the PDUs and in England of the LTP vary, but generally they display the same findings as the examples included here. In Appendix D, under city cases, additional examples of ex-post evaluations are included also from other countries. They all show actual improvements towards the EU Transport White Paper objective of competitive and resource-efficient transport system as a result of the measures implemented under the cities' integrated urban mobility approaches.

Examples of the effect of lack of integrated urban mobility approaches are more difficult to present. Cities that have not developed integrated approaches are unlikely to have assessed the development in key indicators. 'Traditional' transport planning failed as it mainly focused on motorised transport. During the 60s and

70s, motorised transport was considered to be the main transport mode and many cities removed existing public transport systems such as trams to give way for cars and vans. The example described for Vienna is probably quite representative for this general trend of adding road capacity in order to accommodate the increased number of cars.

Text box 3-5 Example of the failure of traditional sector-based transport planning

Vienna new urban motorway (and sustainable mobility in the city centre)

Vienna can display an example of what could be seen as failure of 'traditional' sector-based planning. In 1978, a new urban motorway was built in order to relieve crowded inner streets. According to Knoflacher 2007, the impact of this new motorway was most visible on the number of accidents in the city. While the number had been decreasing steadily throughout the 70s, the number of accidents started to increase when the new motorway opened, peaking in 1994 when the number had reached the previous high level. In addition to increasing the speed, the motorway also contributed to other changes such as the opening of new large shopping centres at the outskirts of the city, increasing the length of trips. The overall level of congestion also increased in the city centre. Impacts could also be measured in terms of noise and air quality that deteriorated.

At the same time as the new urban motorway was conceived Vienna also started a process with a very different perspective. Already in the early seventies, the city developed a transport plan for the city centre that had focus on introducing pedestrian areas in the city centre. This process has continued and included the construction of more than 800 km of cycle tracks and making many city-squares car free. The parking regulation has been a key element in the package of measures that has restored the attractiveness of the city. By applying the right future-oriented transport policy the city has been able to compensate the adverse effects of the urban motorway described above.

Source: Knoflacher 2007 *Success and failures in urban transport planning in Europe - understanding the transport system*

Congestion has in many cases led cities to expand the road capacity at the congested sections of the road network. It has been observed how an increase in the road capacity only temporarily reduces congestion. Soon, an increase in traffic volume from a subdued demand brings congestion back to its previous level.

Text box 3-6 Example of the failure of traditional sector-based transport planning

Congestion

In an assessment of urban congestion management, OECD/EMCT put forward a number of key findings based on their review of the current congestion management policies. They point to the need for an integrated approach to reduce congestion.

Through an assessment of the congestion situation, the study exemplified the causes of congestion. Overall, the economic development rendering individual motorised transport affordable has led to an increase in the number of cars, in turn increasing the transport demand. In countries where this development has been rapid and combined with a worn-down public transport system, the result has been an increase in congestion. Examples in the report include the Czech Republic.

Also the urban sprawl, in particular where low-density suburbs have developed, is mentioned. Spain is mentioned as an example of this and the effect is increased car traffic. Also, there are fewer possibilities for later developing an efficient public transport, given that the habit of car use has been established and that low-density areas are very expensive to service by public transport.

The study then assesses what measures can be applied to manage and reduce congestion.

The study's key findings include:

i) Congestion cannot be completely removed, but it can be managed.

ii) Effective land use planning and appropriated levels of public transport services are essential.

iii) Unmanaged access to highly trafficked urban roads is no longer a viable policy.

iv) The transport authorities will need to employ a combination of access, parking and road pricing measures to achieve the benefits from operational and infrastructure measures aimed at mitigating traffic congestion.

What is particularly important is that congestion cannot be reduced by simply adding more road capacity. The phenomenon of induced traffic demand means that traffic volumes might increase as the road capacity expands, and soon the level of congestion will be at the same level as before the road capacity was increased (see also Litman 2012)[44].

Source: OECD/ECMT 2007 *Managing Urban Traffic Congestion*

Many cities have allowed urban sprawl without conditions that would allow public transport to become an attractive transport choice. When new developments – residential or commercial areas – take place without easy access to public transport, there is a risk of increasing mobility problems.

By considering the experiences in France and the UK and the overall results, more robust evidence can be produced.

Evaluation of PDUs in France

Indication of impacts

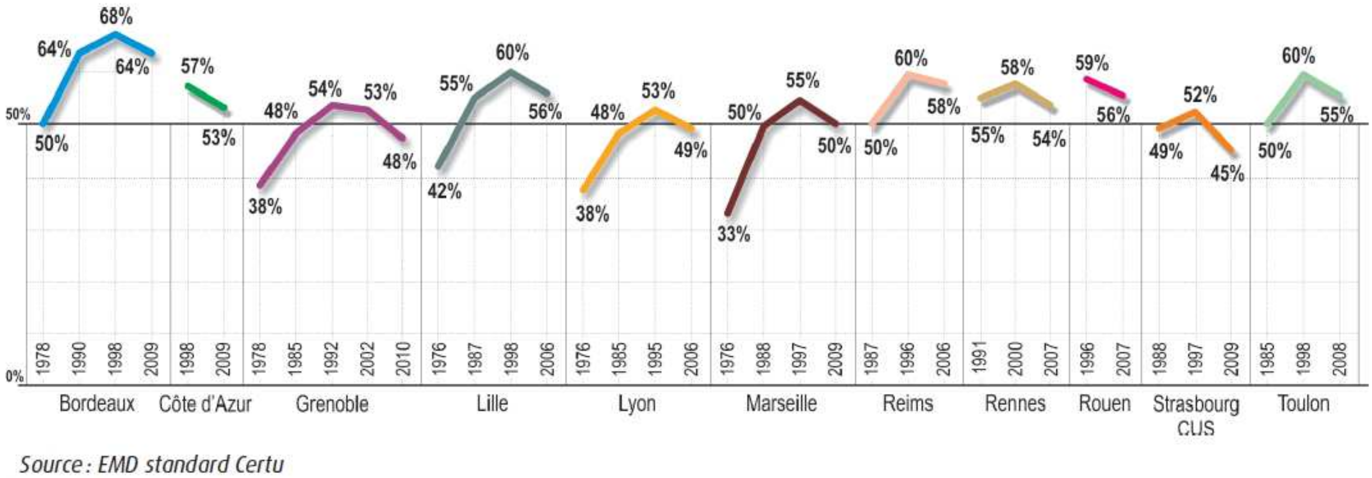
The evaluation of the PDUs in France can indicate what impacts can be expected from having a relatively high quality of Sustainable Urban Mobility Plans.

One of the indications that can be drawn from the French experience of having mobility plans over a long period of time concerns the impact on modal split. A change in modal split can be an important indicator for improvements in the performance of the urban transport system.

[44] Litman, T, 2012 "*Generated Traffic and Induced Travel*" ; Victoria Transport Policy Institute

An illustration of the development in share of cars in total trips is presented below. This is a quite strong indicator for the overall effects of having introduced the PDU in France. A shift in modal shares away from motorised transport is essential for achieving the overall objectives, and the above illustrates that this process is happening in France.

Figure 3-8 Change in the modal share of cars in selected agglomerations



Source: CERTU 2013 *Mobility and transport | Focus on Sheet n°27 | 30 years of sustainable urban mobility plans* – April 2013

PDUs in France

The figure shows that the share of the car in the total mode split increased sharply in a number of major agglomerations up to the 1980s, peaking in the 1990s and then decreasing. The years of observation differ for each agglomeration. Those with the longest time series start before 1982 (the starting year of the PDUs): Bordeaux (1978), Grenoble (1978), Lille (1976), Lyon (1976) and Marseille (1976). At that time, Bordeaux already had a car share of 50 per cent, and it has maintained the highest share of all. The other four were much lower, but all saw steep increases until the mid or late 1990s. The early PDUs focused on public transport, and policies with car restraints only came later. So it is logical that car growth continued. Also, the level of service of public transport in those cities was rather low at the time, and the policy of most cities in the 1960s and 1970s was to adapt the city to the car. Improving public transport quality does not make people leave their cars; Car restraints (circulation, parking) do that, and good public transport makes that acceptable.

It is interesting to look at the point where the trend reverses (the maximum of the share of the car) in the 11 agglomerations, but it should be remembered that the high point in the graph may not be the actual high point, because of the different years of observation and the different observation intervals. Most of these peaks were reached before the 1996 law which made PDUs mandatory and the subsequent laws which imposed further conditions on urban transport policy. Undoubtedly, the pre-1996 PDUs did play some role in this, but surely so did other factors.

The trend reversal is a phenomenon which is also observed in other European countries, and is sometimes called 'peak car'. It is generally attributed to a combination of many factors, some of which are outside the influence of local authorities, whereas others are the consequence of measures taken in the agglomerations. Rising fuel prices, ageing of the urban population, socio-cultural changes like a decrease in the propensity to acquire a driving license at an early age, the development of e-commerce, telecommuting and social networks all play a role, but they are external to any mobility policies defined at the urban level. However, better public transport, better walking and cycling conditions, better coordination between spatial urban planning and transport supply other than for cars, pedestrianisation of city centres, traffic calming, parking control and congestion charging – these are examples of policies which can be implemented by urban authorities[45]. Apart from congestion charging, most of these policies are included in some form or other in recent PDUs.

The character of the PDUs was changed over time by a number of laws. The first important change came in 1996, when the obligation for agglomerations of over 100,000 inhabitants to make a PDU was introduced (this includes all agglomerations in the above figure). Subsequent laws introduced environmental concerns and the obligation of coordination between mobility and spatial and social policies, gradually making the PDU a truly integrated planning instrument. Finally, an obligation to quantify the effect of PDU measures on GHG emissions was introduced in 2010. This means that the PDUs dating from around 2000 are of a different, more prescriptive nature than their predecessors. They are also less integrated, dealing principally with urban public transport, their original concern.

In the mid-1980s, 22 French agglomerations introduced modern tram or tram-like systems (pioneered by Nantes and Grenoble), and three introduced the VAL automatic metro system. Also, high-quality bus systems were created in a number of cities. These measures were all associated with significant car driving and parking restrictions (including large pedestrian zones), which led to a spectacular regeneration of most of the centres of the core cities. An early spectacular example is Strasbourg, but there are many more. Cycling facilities also became part of the package. These measures had a significant impact on car use. Even if those core city centres are a small part of the entire agglomeration, a regenerated core centre attracts a substantial part of the trips.

As the domain of the PDU broadened, these measures became part of well-coordinated efforts. The PDU facilitated coordination between the authorities involved. France is known for its large number of municipalities. Typically, these agglomerations number between 20 and 70 municipalities. The fact that all municipalities have to cooperate on the development of a PDU is an important factor in focusing their efforts.

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[45] For a discussion, see Phil Goodwin: Peak travel, peak car and the future of mobility: evidence, unresolved issues, policy implications, and a research agenda, International Transport Forum, discussion paper no. 2012-13, October 2012.

With the recent PDU focus on environmental policies, they can be seen to play an important part in the mobilisation of local politicians and the public. A good example is the PDU of Nantes, one of its objectives being to meet the Kyoto Protocol standards for GHG emissions (and the corresponding EU regulation). The plan is formulated to convince the public and political decision makers that all measures proposed are necessary. It compares two scenarios, (1) 'technology only' and (2) 'behaviour only', each scenario assuming that the other factor remains constant. Scenario (1) varies the technology and the demography, but not the mobility behaviour; in scenario (2), unchanged technology is assumed. These scenarios appear to play the role of reference scenarios (baseline). As neither scenario meets the goals, they enable the plan to demonstrate that only by combining changes in technology (emission reduction) and in behaviour (increased use of alternative modes to the car and shorter trip distances) can the objectives be met. In this way, they create the public acceptance that is essential for the implementation; see Appendix D, Nantes city case. However, this does not always work well. For instance, the 2001-2007evaluation of the PDU of Caen notes that at the political level in the smaller municipalities, there is little awareness of the PDU or that certain realisations were PDU measures[46].

The PDUs played an important role in the mobilisation of local politics on transport and environmental issues. They served to spread the mobilisation from the pioneer agglomerations to others who were more passive (or perhaps more pro car).

The PDU serves as an instrument to implement national legislation. The successive laws since 1996 (on air quality, solidarity and urban rehabilitation, access for mobility-reduced people, GHG emissions) all specified new conditions for the PDU. And as it is part of this integrated planning instrument, the measures automatically become integrated with other policies at the level of the agglomeration.

PDU legislation indicates how PDUs should relate to their spatial plans. Notable is the SCoT (*Schèma de Cohérence Territoriale*, Territorial Coherence Scheme), which covers a wider area than an agglomeration and concerns spatial and social development. This is particularly relevant for the PDUs, as with urban sprawl many commuting and other trips originate outside of the agglomerations and these are predominantly made by car. Also, as different urban plans with a spatial dimension should be coordinated, this creates opportunities for integration. The agglomeration of Bordeaux is trying to merge three plans into one: a PLU (*Plan Local d'Urbanisme*, local urban planning document), a PLH (*Programme Local d'Habitat*, local housing programme) and a PDU. This is possible as all three

[46] AUCAME: Evaluation du PDU de l'agglomération de Caen, décembre 2008, p.56.

encompass the same 27 municipalities. This may strengthen the link between transport and other policies with an important spatial planning component[47].

The recent history of the PDU shows how they were influenced by the national political debate and the ensuing legislation in France, notably the GHG legislation of 2010. After the PDUs became mandatory for the larger agglomerations, a series of new PDUs were enacted around 2000. After the 2010 legislation made the quantification with respect to GHG emissions mandatory, many of these were renewed. The ex-ante quantification of GHG emissions clearly showed that the measures proposed around 2000 (now forming the baseline) were by far insufficient to meet the legal objectives. Therefore, much stronger measures were deemed necessary. This is notable in all PDUs dating from 2010 or after. As said, the PDU process is used to mobilise the public and decision makers over these issues. And the fact that these much stronger measures are being implemented shows that this is working. However, the instruments to quantify the emissions are not yet fully developed. The Nantes and Lille PDUs of 2010 explain how difficult this was[48]; the Montpellier PDU (2011) has not yet made this quantification. There are no ex post evaluations of the emissions, but there were not any objectives set before 2010 either.

Looking somewhat further into history, it can be seen that the PDUs also played an important role in accepting the restraints of car use. In the 1950s and 60s, perhaps even more than in some European countries, French cities wanted to make room for the car. This led to measures like the construction of networks of urban motorways and thoroughfares, a lot of area in city centres being taken up by parking, and the abandonment of the existing tramway systems. Most of the 22 cities that now have new tram systems had one until the 1950s or 60s. Only three (Lille, St. Étienne and Marseille) kept them. The evaluation of the 2001 Caen PDU from 2008 indicates that, contrary to the spirit of the PDU, an important road investment programme continued on after 2001[49]. But many before and after pictures now that show how, in important streets in the core city, almost all space was taken up for car traffic, and how most of the surface is now used for pedestrians, cycles or bus lanes.

Such improvements are still less pronounced in the periphery of the agglomerations, however. The 2001-2007 evaluation of the PDU of Toulouse

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[47] Marie-Pierre Gaïffas, Christine Volpilhac: Le PLU 3.1 : Quand le PDU, le PLH et le PLU ne font qu'un - Gouvernance des transports collectifs : échelles et compétences, Carrefour à mi-parcours du Predit 4, Bordeaux, mai 2011

[48] Patrice Mestayer (éd.): Evaluation des impacts environnementaux d'un PDU et de eleurs conséquences socio-économiques : développements méthodologiques et tests sur le PDU de Nantes Métropole, Rapport scientifique final, ANR, 2012

[49] AUCAME: Evaluation du PDU de l'agglomération de Caen, décembre 2008, p.36

shows that in 2001, only 16 per cent of shopping malls had a good public transport service and that this increased to a still low figure of 20 per cent in 2007[50].

Many PDU evaluations note that they have not yet mastered the problem of urban freight distribution, which should lead to the banning of heavy lorries in city centres.

A notable aspect of the PDU evaluations concerns the processes surrounding its decision making and implementation and the ways of cooperating between the many authorities involved. Here, lessons have been learned recently and these are exchanged between the agglomerations at conferences.

The overall implication of this is that despite some developments with regard to the performance of the urban transport system are outside of the control of the urban authorities and that, in some respects, success is difficult to obtain in the short run, notable improvements have been realised in French agglomerations which can be attributed to the integrated urban mobility approach, the PDU.

Evaluation of Local Transport Plans in England and Wales

Review of the LTPs

The initial rounds of plans in England and Wales have been evaluated and the findings from the evaluation illustrate some key considerations.

Overall, the first round was assessed to not only have been successful in terms of delivering on the targets, but also to have provided value for money.

Text box 3-7 Cities speak out

Overall assessment of Local Transport Plans in the UK

The text box includes the key findings of the review of the first round of Local Transport Plans (LTP1).

[50] AUAT: Observatoire du PDU de l'Agglomération Toulousaine approuvé en 2001 - Évaluation 2001-2007 - Synthèse, Mai 2009, p.26

Key Research Findings

How Successful Has the LTP Policy Been to Date?

1. The Government's policy for Local Transport Plans to deliver safe, integrated, efficient and economic transport as set out in the 1998 Integrated Transport White Paper has been successful and represents good value for money in terms of the investment made.
2. Local authorities strongly support the principles of the LTP process, and have made genuine attempts to apply the Government's guidance, both in the first and second rounds. They have also added capacity and skills to improve strategy development and delivery and are becoming progressively more competent in a range of policy requirements over time.
3. The corporate profile of transport has been raised amongst local authority members and chief officers. Local transport planning is a more inclusive process with authorities involving the public and stakeholders more closely and doing more to develop partnerships for delivery.
4. LTPs are well integrated with national policies and increasingly consistent with regional objectives and priorities.
5. A number of positive outcomes are being demonstrated in line with LTP targets, in areas such as road safety, highway condition and rural accessibility together with a range of local objectives for casualty reduction and widening travel choice.
6. Delivery of national targets has been less evident compared to local targets and there are a number of areas, such as public transport patronage or cycling, where outcomes have been below targets or expectations. Progress has been weak on environmentally-based local objectives relating to air quality, climate change and sustainable distribution. It has also proved difficult to reflect improved delivery consistently in higher levels of public satisfaction with transport services.
7. Expenditure by authorities on Local Transport Plans has been in excess of Government capital allocations and the scale, breadth and complexity of delivery has increased substantially. We estimate that over £26 billion has been invested in local transport during LTP1 through a combination of capital, revenue and external funding. This has delivered over 320,000 maintenance and integrated transport schemes. Good progress has been made on over 100 major schemes.
8. Integration of capital and revenue budgeting has been limited and there remains a persistent imbalance between capital and revenue funding. This is seen as a major constraint on delivery of policy objectives and outcomes by authorities and stakeholders, exacerbated by growing pressures on Local Government finance more widely. However, authorities have been slow to pursue potential solutions available to them, for example under prudential borrowing, powers of wellbeing and direct charging for road use and workplace parking.
9. The planning and delivery of LTP1 major schemes has been problematic with many being delayed, running over budget or having funding withdrawn. DfT has introduced some reforms, such as new appraisal guidance and prioritisation of proposals against Regional Funding Allocations, which are intended to address these problems in the second round.
10. There have been a number of unintended consequences not anticipated by policy makers. For example, the focus on detailed guidance and assessment has led to significant resource burdens for DfT, Government Offices and local authorities, and high levels of compliance, rather than competence, from authorities aimed at maximising their score rather than pursuing genuinely locally relevant strategies or innovative new approaches.

Source: Atkins 2007 *Long Term Process and Impact Evaluation of the Local Transport Plan Policy Final Report June 2007*

The issue of value for money is also very important in order to achieve the objective of a competitive transport system. This aspect can be illustrated by the following statements from the review.

Regarding the overall 'value for money' of the Local Transport Plans (LTP) from the first round (LTP1):

"*Early in the study, Atkins was asked to produce an outline analysis of the 'value for money' of integrated transport schemes funded under the LTP process. Results from a spreadsheet model developed for previous research for the Department for Transport suggested that the benefits[278] of integrated transport schemes are likely to be significant relative to the costs, with a very broadbrush estimate of a Benefit: Cost Ratio representing 'medium' value for money using the categorisation developed by the Department, and based on LTP programmes set out in the 2003 Annual Progress Reports.*"[51]

Furthermore, the following statement was made regarding 'softer' measures:

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[51] Atkins (2007) Long Term Process and Impact Evaluation of the Local Transport Plan Policy - Final Report June 2007 (page 10-2)

"*The research estimates that every £1 spent on well-designed soft measures could bring about £10 of benefit in reduced congestion alone with further potential gains from environmental improvements and other effects, provided that the tendency of induced traffic to erode such benefit is controlled.*"[52]

The text box above (text box 3-3) features an example from a review of the second round of LTPs in England. It showed continued progress in the second round. A review of several other LTP2s showed similarly progress on many of the monitored indicators; see Appendix D.

Overall, the evaluation of the first round of LTPs indicated that city authorities reported strong progress against local outcome and output targets with 91 per cent of cities on track to meeting at least 50 per cent of their targets at the end of 2004/05.

Evidence of benefits of integrated planning

Despite the reservation, these findings from reviewing the French and the English experiences strongly indicate the importance and the benefit of the integrated urban mobility approach in relation to achieving the key EU Transport White Paper objective of a competitive and resource-efficient transport system.

The following has been demonstrated by the examples and the review of the PDU and LTPs:

- Having an integrated urban mobility approach leads to improvements regarding the key mobility issues: congestion, traffic accidents, noise and air quality. (CO_2 was only more recently included and the results cannot yet be observed).
- The actual implementation of all identified measures is important to achieve improvements.
- The improvements are achieved due to the combined effects of individual measures.

The next section discusses what the integrated urban mobility approach should include in order to deliver the benefits.

3.2.3 Benchmark for an integrated urban mobility approach

Elements of integrated transport planning

The previous section demonstrated as far as possible that an integrated urban mobility approach is necessary for achieving significant benefits towards the objective of achieving a competitive and resource-efficient transport system. This section further investigates what specific elements are necessary for an integrated approach to be effective and efficient.

[52] Same as previous note

Integrated versus traditional transport planning

In the last decades and especially in recent years, a growing focus on sustainability has given rise to the need for rethinking traditional urban transport planning. Many national, regional and local authorities have moved towards more integrated urban mobility approaches; i.e. by linking measures and initiatives, as well as involving the city's inhabitants and other stakeholders.

The concept of an integrated urban mobility approach

For several years, the European Commission has actively promoted the concept of integrated urban mobility planning. EU projects and initiatives[53] have brought together relevant stakeholders in analysing current practices in urban mobility planning across the Union, discussing problem areas, identifying best practice examples and developing guidance.

This development is a consequence of the recognition that an integrated approach is necessary to achieve improvement. As part of this development, the concept of Sustainable Urban Mobility Plans emerged, describing integrated urban mobility planning approaches that include the elements necessary to achieving the key EU Transport White Paper objective of a competitive and resource-efficient transport system.

Drawing on previous EU projects and initiatives, the evolution from traditional transport planning to sustainable urban mobility planning is synthesized in the following table.

Table 3-14 Traditional transport plans compared to sustainable urban mobility plans

Traditional transport plans		**Sustainable urban mobility plans**
Often short-term perspective without a strategic vision	*Strategic level/vision*	Include a long-term/strategic vision with a time horizon of 20-30 years
Usually focus on particular city	*Geographic scope*	Functional city, cooperation of city with neighbouring authorities essential
Limited input from operators and other local partners, not a mandatory characteristic	*Level of public involvement*	High, citizen and stakeholder involvement is an essential characteristic
Not a mandatory consideration	*Sustainability*	Balance social equity, environmental quality and economic development

[53] For instance, the ELTISplus project

Traditional transport plans		**Sustainable urban mobility plans**
Low, transport and infrastructure focus	*Sector integration*	Integration of practices and policies between policy sectors (environment, land-use, social inclusion etc.)
Usually, cooperation between authority levels is not mandatory	*Institutional cooperation*	Integration between authority levels (e.g. district, municipality, agglomeration, region)
Often missing or focussing on broad objectives	*Monitoring and evaluation*	Focus on the achievement of measurable targets and outcomes (=impacts)
Historic emphasis on road schemes and infrastructure development	*Thematic focus*	Decisive shift in favour of measures to encourage public transport, walking and cycling and beyond (quality of public space, land use etc.)
Not considered	*Cost internalisation*	Review of transport costs and benefits also across policy sectors

Source: ELTISplus (2012) State of the art of SUMP in Europe

Based on agreed common elements of integrated urban mobility approaches from previous EU projects, the findings from the review of the countries and cities as documented in the appendix report combined with input from the stakeholder consultation[54] and an expert workshop[55], a concept for an integrated urban mobility approach can be developed.

Scope and content. Indications from the public consultation

In the public consultation, the respondents were asked about topics to include in a SUMP. The answers are presented in the table below and will be used to develop a benchmark for integrated urban mobility approach.

[54] COWI (2013b) *"Results of the public consultation 'The urban dimension of the EU transport policy'"*.
[55] COWI (2013a) "*Expert workshop on the Urban Mobility Package Activity 31 on Sustainable Urban Mobility Plans"*

Table 3-15 Topics to be addressed by SUMP

Which topics should a sustainable urban mobility plan address?	**%[56]**
Walking and cycling	11.4%
Public transport plan including travel information, ticketing and payment systems	11.2%
Integration of transport and mobility services	7.6%
Urban logistics	7.6%
Coherence with urban development and land-use planning	7.1%
Access restriction schemes (e.g. 'green zones/low-emission zones' and 'congestion charging zones')	6.8%
Parking management	6.5%
Coherence with transport plans developed at regional, national and EU level	6.4%
Accessibility; social inclusion; demographic change	5.4%
Safety and security	5.1%
Procedures for impact or process evaluation; monitoring	4.7%
Procedures for citizen and stakeholder engagement	4.6%
School mobility plans	3.9%
Car sharing and carpooling facilities	3.7%
Investment, financing, public-private partnerships	2.9%
Corporate mobility management plans	2.4%
Other things	2%

Source: COWI (2013b) Results of the public consultation 'The urban dimension of the EU transport policy'.

At an expert workshop on SUMP, there was a discussion of an **outline** of potential key elements of a benchmark framework for the development of an integrated urban mobility approach, a SUMP, put forth by the Commission. As presented in the workshop report this outline included the following elements[57]:

- *Goal and objective: A SUMP has as its central goal high-quality and sustainable mobility and transport to and within the urban area (plan perimeter).*

- *Scope:*
  - *Long-term strategy*
  - *Detailed rolling implementation plan*
  - *Status analysis and baseline*

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[56] Percentages reflect the number of ticks for each choice of a total of 1148 ticks. On average, each stakeholder ticked six choices.
[57] COWI 2013b *Expert workshop on the Urban Mobility Package Activity 31 on Sustainable Urban Mobility Plans*

- *Performance indicators*
- *Specific objectives and targets*
- *Policies and measures including:*
  - *motorised individual transport*
  - *public transport*
  - *walking and cycling*
  - *urban freight logistics*
  - *integration of modes*
  - *mobility management*
- *Time table and budget plan*
- *Responsibilities and resources*
- *Monitoring, review and reporting.*

- *Governance:*
  - *Integrated planning:*
    - *Interdepartmental consultation and coordination*
    - *coordination between different levels of administration*
  - *Participatory approach.*

Expert suggestions

In general, the experts endorsed the proposed outline, while highlighting the following:

- A SUMP needs to consider the requirements of the larger metropolitan area (agglomeration).

- A SUMP needs to foster policy and planning integration, so it should integrate land-use and spatial planning with transport and mobility planning.

- A common framework for the development of SUMPs should allow for flexibility.

- The framework should make no detailed requirements as to the structure of a SUMP and the specific measures to be included in it.

- ITS and road safety should be horizontally integrated in a SUMP, rather than be addressed as stand-alone topics.

Concept for an integrated urban mobility approach

Based on these contributions from all the EU initiatives and consultations, a concept for an integrated urban mobility approach has been completed. It is presented in the following two tables with a short justification of each element.

Table 3-16 Concept for integrated urban mobility approach – possible scope and content elements

Content and scope	Justification
Addresses both freight and passenger transport	To achieve the objective of a competitive and resource-efficient transport system, both freight and passenger transport needs to be covered. The experience from existing practice suggests that freight or goods distribution is not always covered, and it should be explicitly mentioned. The stakeholder meeting furthermore confirmed that freight transport is very often neglected in current planning and that it is important that freight transport be included.
Addresses all transport modes	It is essential that all transport modes are addressed as demonstrated by the review of cites with integrated approaches. This was also clearly confirmed through the consultations.
Public transport	Public transport is key in increasing accessibility and promoting a shift in the modal split. The stakeholders ranked this element high. Current practices suggest that the public transport often is not coordinated sufficiently.
Non-motorised transport	Non-motorised transport is the topic most respondents point to and it is important in achieving sustainability. For bicycle transport, integrated measures are in particular important in order to achieve the benefits[58].
Road transport and infrastructure	Road transport and infrastructure are typically included in all existing transport plans and should be part of an integrated plan. It is important to consider the regulation of road transport – in relation to other modes – and the use of road infrastructure. Access regulation of road transport is often a key measure for improving sustainability of a transport system.
City logistics	City logistics is included as a specific urban mobility action area in the White Paper as it is recognised as an important tool. The stakeholders in PC also specifically point to the importance of this topic[59]. It links to the need for covering both passenger and freight transport. The stakeholder meeting confirmed that, currently, city logistics is not getting sufficient attention.
Mobility management	Mobility management is a more recent instrument to review and possible reduce the overall transport demand by companies. Examples from the city review highlight the importance of this element.
Integration of transport mode	The integration of transport modes is crucial for achieving objectives as recognised in previous work and by stakeholders. The possibility of multimodality – combining car and public transport or cycling and public transport etc. – is one of the key elements in rendering the transport system more sustainable. The review of city examples and consultations all confirm the importance of this element.

[58] CIVITAS Guard 2010; *Cluster Report 3: Cycling and Walking;* Deliverable D 2.2

[59] See also the study on city logistics: ECORYS 2013 *Activity 33: Strategy for near Zero-Emission Urban Logistic*.

Table 3-17 Concept for integrated urban mobility approach – possible process and procedure elements

Processes and procedures	Justification
Contain pledge to sustainability (environmental, social and economic dimensions)	Sustainability is societal consensus and it needs to be an explicit driving force. To achieve the objective of a competitive and resource-efficient transport system, the economic, environmental and social dimensions all need to be covered.
Include or are built on long-term strategy	The transition to a sustainable transport system takes time, so there needs to be a long-term perspective. To achieve the objectives related to CO_2 emissions, for example, a long-term strategy is necessary. This has been recognized by experts and included in the ELTIS recommendations.
Identify objectives and set targets in line with EU policy objectives	The long-term strategy needs to be made operational by means of specific and quantified targets. To achieve EU objectives, the specific targets need to be aligned with the EU and relevant national objectives. It was a key part finding that in current SUMPs, targets are not always quantified. This is one of the main reasons for not achieving the objectives.
Include baseline analysis including performance audit	This process element should be seen in combination with the next element on impact assessment. Only by considering the city's current status, identifying the specific problems and estimating what the impacts of proposed measures will be is it possible to define a combination of measures that can achieve the objective effectively and efficiently.
Include impact assessment on proposed measures	As above.
Provide short-term implementation plan (timetable and budget plan; allocation of responsibilities)	Implementation is often the weakest element if timetables, budgets and implementation responsibilities are not clearly defined. The review of cities demonstrated that, often, not all measures are implemented due to deficiencies in the implementation.
Integrate different relevant policy areas, in particular land-use and transport planning	Land use and transport are intimately linked and integration of these policy areas is an important element to achieving the objectives. Careful land-use planning can reduce the need for transport which is otherwise difficult to address. Stakeholders and experts confirm the importance of this element.

Processes and procedures	Justification
Consider all transport to, through and within the urban agglomeration area and coordination between different authority levels	It is a key element of the integrated approach that the integrated urban mobility approach covers the functional city[60] so that commuting is considered in the planning. The legal requirements in France and UK explicitly require the plans to cover the relevant agglomeration. The need to cover the agglomeration – in fact, the functional city – has been confirmed by experts and through the stakeholder meeting. In relation to the functioning of the TEN-T network, it is also important to ensure comprehensive consideration of the urban leg and the last mile of long-distance transport.
Are developed in a participatory approach	The requirement to develop the integrated urban mobility approach in a participatory way is based on the need to reflect the stakeholders' needs and to get buy-in by stakeholders to secure effective implementation.
Are based on integrated planning and implementation	In addition to the spatial dimension, the integration covers coordination between transport and environmental authorities and coordination between authorities responsible for roads, public transport etc. The integration and coordination between the transport, health and environment authorities is crucial for achieving 'sustainable' urban mobility. Improvements on safety, social distribution of accessibility, air quality and CO_2 can only be achieved through the integrated and coordinated approach. The stakeholder and expert consultations confirmed the importance of the integrated approach. The assessment of the impacts and benefits of integrated urban mobility approaches in France and England has further demonstrated how the integration has led to more improvements. This is a core element of the integrated urban mobility approach and its importance has been pointed to in our city review where many cities pointed to traditional sector planning as being a barrier to improvement.
Are formally adopted	The plan needs to be approved by all relevant authorities and governing bodies in order for the implementation to take place. Political adoption is a validated basis for implementing a plan.
Monitoring of implementation and performance	Successful implementation requires that the process is monitored. Also, for next planning cycle, better data on performance is required to facilitate the development of an effective and efficient plan. Currently, there is a lack of monitoring data.

[60] The definition of agglomeration/functional city could be based on the harmonised definition of urban areas agreed by OECD and EU. It is a four-step approach based on, among other things, the criterion of a population density above 1,500 people/km^2 in the 'core' city combined with working catchment areas where more than 15 per cent works in the defined core area.

Processes and procedures	Justification
Regular review and update of plans	The sustainable urban mobility plans will need to be regularly reviewed in order to accommodate change in external factors as well as in response to monitored performance.
Conformity check of the plan	The current practice does not always include this element. It is important that the plans and the processes be checked against the requirements so that all key elements are included. Given some of the deficiencies identified in existing urban mobility approaches, this requirement could potentially increase the quality of the plans.

The individual elements are all important for achieving the results of the integrated urban mobility approach. To achieve the key EU Transport White Paper objective of a competitive and resource-efficient transport system, it vital that the urban mobility approach covers the key policy issues, that it is coordinated and integrated and, finally, that it leads to targeted policy actions. The key aspects are organised into two main characteristics of the integrated urban mobility approach: coordination and targeted policy actions.

Coordination: The aspect includes all dimensions of coordination and integration across transport modes, covering the whole urban agglomeration, and integrating the mobility, social and environmental aspects. It also includes the fact that the process should be based on a participatory approach.

Targeted policy actions: This aspect includes the need for long- and short-term quantified targets in line with EU objectives, presumes integrated impact assessments as well as implementation plans with budgets and responsibilities.

With this basis, the next step it to review the current planning situation across EU cities in order to determine how close cities are to having implemented all of the elements of the integrated urban mobility approach.

3.3 Planning situation in cities

Towards an integrated urban mobility approach

Following a brief overview of the evolution of urban transport planning, this section describes where cities are today with respect to the planning and implementation principles that are described in the previous section. Drawing on seven different studies (including a case study covering 20 cities undertaken as part of this study), it is shown that the European cities have increasingly moved towards integrated urban mobility approaches within the last ten years. Nevertheless, there is still a substantial gap between the current situation and the 'ideal' urban transport planning situation.

Text box 3-8 The studies/data sources we use below to identify current 'state of play'

- A status for implementing **Sustainable Urban Transport Plans** (2005)
- A status for implementing **Sustainable Urban Mobility Plans** (2012)
- Lessons learned from **France** (2013) **and the United Kingdom** (2007)
- **Country reviews and City case studies** (2013)
- **Other studies** (CIVITAS study, 2012; Wolfram 2009)
- **Public Consultation Study** undertaken as part of this study (2013)
- Conclusions from **expert** workshops held within the context of this project (2013)

The findings from each of these sources are reported in section 3.3.2 onwards.

3.3.1 Evolution of integrated urban mobility approaches

From traditional transport plans to integrated urban mobility approaches EU projects on urban mobility

In support of this development, several EU projects have addressed urban mobility planning, and best practice guidance has been formulated based on shared city experiences. Examples of such EU projects include:

- CIVITAS: Programme that has supported demonstration projects in a large number of cities.
- ELTISplus: Guidelines, training and awareness raising on Sustainable Urban Mobility Plans.

3.3.2 Sustainable Urban Transport Plans (SUTP)

Earlier efforts – SUTP

Back in 2005, AEA Technologies undertook a study with the aim of identifying which cities with a population above 90,000 in the EU-25 had implemented a Sustainable Urban Transport Plan (SUTP). For the purpose of the study, a SUTP was defined as a plan that:

- covers the whole town/city.
- covers all types of transport.
- deals with the environmental, social and economic aspects of transport.
- tries to promote public transport, cycling and walking.
- tries to serve all of the town or city's citizens.

It also included a note saying that "*A Sustainable Urban Transport Plan is NOT simply a transport plan that aims to improve traffic flows within and around the city/town. A Sustainable Urban Transport Plan will include measures to ensure* *that the social and economic development of the town or city is balanced against managing the environmental impacts of transport.*"[61]

The SUTP approach

While the definition of SUTP is less comprehensive than the framework for an integrated urban mobility approach defined in the previous section and only covers some of the elements, the now slightly dated results of the study can still provide a first insight about the 'state of play' of the urban planning situation across cities in the EU.

The study was conducted via surveys, where cities would indicate "yes" or "no" to the question if they had a SUTP. If they answered "no", cities would be asked if they had considered having such a plan in the past, or if they were planning to have one in the future. A total of 515 cities received the questionnaire, and 51 per cent responded. Overall, 34 per cent of the cities indicated that they had a SUTP whereas 18 per cent did not. More than 50 per cent of the cities which did not have a SUTP were planning to have one. The percentage of cities with SUTP was highest (above 66 per cent) for France, the United Kingdom, Denmark and Ireland. Looking at existing and planned SUTPs combined, the following distribution emerged.

Table 3-18 Percentage of cities (above 90,000) with existing or planned SUTPs (in 2005)

a) Above 66%	b) Between 33 and 66%	c) Below 33%
France (62)	Belgium (8)*	Germany (92)*
United Kingdom (74)	Netherlands (31)*	Italy (54)*
Austria (7)	Finland (5)	Poland (43)*
Denmark (4)	Sweden (7)	Portugal (43)*
Estonia (2)	Lithuania (5)*	Spain (59)*
Hungary (9)	Cyprus (2)	Czech Republic (9)*
Slovenia (2)		
Greece (6)		
Ireland (2)		
Latvia (2)		
Malta (1)		

*Note: The number of cities surveyed is indicated in ( ). Countries with response rates lower than around 40 per cent are indicated with *. No responses were received from Luxembourg (1) and Slovakia (3).*

[61] AEA Technology (2005) Collation of data on cities in the EU25 with Environmental Management Plans, Environmental Management Systems, and Sustainable Urban Transport Plans

Illustrative results, but with some caveats

Two important caveats must be highlighted with respect to the above results. First of all, some countries, such as the Czech Republic, Germany, Italy, Spain and Portugal, showed very low response rates (less than 30 per cent). This could significantly distort the picture given in the above table; i.e. the position of countries marked with * are very uncertain. Secondly, a "yes/no" indication of whether a city has a SUTP is oversimplifying a very complex issue, which can also lead to a distorted picture of the situation.

The above table nonetheless gives some indication about the extent to which cities have already begun the shift from traditional urban transport planning towards the principles heralded by SUMP. It also shows that whether or not a city has a SUTP very much is an individual city choice, and not necessarily related to the country.

3.3.3 Sustainable Urban Mobility Plans (SUMP)

Provides a picture at national level (the ELTISplus project)

With its "State of the Art" report from 2012, the ELTISplus project provides a recent view on the SUMP status, and it uses a clearer and more advanced definition of Sustainable Urban Mobility Plans. However, the study only looks at Sustainable Urban Mobility Plans at the level of Member States and cannot be broken down to individual cities. The report is based on information retrieved from expert workshops/interviews and seeks to establish a 'national picture' of SUMP through questions of whether legal frameworks are in place, if national guidelines exist as well as other elements that promote the uptake of SUMPs.

Table 3-19 ELTISplus (modified) evaluation and categorization of transport planning frameworks

	Legally defined	Public involvement (O = obligatory)	Sustaina bility objective	National guidance	Plans in place	Linked with finance (national)	Political support (*locally)	Technical capability (*locally)
Belgium	Yes	Yes, O	Yes	Yes	Yes	Yes	Yes	Yes
France	Yes	Yes, O	Yes	Yes	Yes	Yes	Yes	Yes
Germany	No	Yes	Most	Yes	Yes	Yes	No	Yes
Italy	Yes	Yes	Yes	Yes	Some	Yes	Unknown	Yes
Netherland	Partly	Some	Most	Partly	Yes	Yes	Yes	Yes
Norway	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
UK	Yes	Yes, O	Yes	Yes	Yes	Yes	Yes	Yes
Austria	No	Yes	Most	No	Some	No	Yes*	Yes*
Denmark	No	Yes	Most	No	Yes	No	Some	Yes*
Estonia	No	Some	Some	No	Some	No	No	No
Finland	No	Yes	Most	No	Some	Yes	No	Unknown
Hungary	No	Some	Most	No	Some	No	No	Unknown
Poland	Partly	Some	Most	No	Some	Partly	Some	Yes*
Portugal	Partly	Some	Some	Ongoing	Some	Informally	Limited	Limited
Spain	Partly	Some	Some	Ongoing	Some	Yes	Limited *	Yes*
Slovenia	No	Some	Most	Ongoing	Some	No	Unknown	Limited
Sweden	No	Yes	Yes	Yes	Some	No	Yes	Yes
Bulgaria	No	Limited	Some	No	Few	No	Limited	No
Croatia	No	Limited	Some	No	Few	No	Yes	Unknown
Czech Rep	No	Some	Some	No	Few	No	No	No
Greece	No	Some	Most	No	Partly	No	Limited	Limited

	Legally defined	Public involvement (O = obligatory)	Sustaina bility objective	National guidance	Plans in place	Linked with finance (national)	Political support (*locally)	Technical capability (*locally)
Ireland	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Latvia	No	Limited	Some	No	Few	No	Unknown	No
Lithuania	No	Limited	Some	No	Few	No	No	No
Malta	No	Some	Some	No	Few	No	Limited	Limited
Romania	No	Limited	Some	No	Few	No	Limited	Yes
Slovakia	No	Limited	Some	No	Few	No	Unknown	Yes

Source: Rupprecht (2011 and 2012), State of the art of SUMP in Europe. The table has been simplified compared to the original source and revised/amended based on our own country assessments.

Note: In relation to application for EU funds, e.g. support from the ERDF, demands have been incorporated for the cities to prepare integrated urban transport planning without directly referring to SUMP definitions.

However, the table provides some very useful information about the general 'political environment' in support of cities implementing integrated urban mobility approaches. From this perspective, the results from ELTISplus could indicate the movement that cities have been likely to undertake relative to their SUTP position in 2005. The table indicates:

› that only few cities in old Member States, at least to some extent, do not use some kind of integrated urban mobility approaches in their approach to urban transport planning, since the national transport planning frameworks in these countries are partly aligned with an integrated urban mobility approach.

› that the situation appears quite different in new Member States since most of these countries have transport planning frameworks that contain few elements of the integrated urban mobility approach.

3.3.4 The cases of France and United Kingdom

Mandatory to have SUMPs

It is relevant to consider these countries in more detail since they are perceived to be SUMP-forerunners. It is therefore no surprise that these show a high percentage of cities with SUTP in 2005, and also have strong support for cities to implement an integrated urban mobility approach today – especially due to their legal requirement for cities to make plans following the key principles. Indeed, the obligation for French cities above 100,000 to make PDUs (Plan de Déplacements Urbains) has existed since 1996, while the plans themselves were introduced as early as 1982. In England, LTPs (Local Transport Plans) have been mandatory since 2001 at county level.

The France case: Problems with implementation

A recent evaluation concludes that PDUs have demonstrated their effectiveness in addressing a number of important issues, e.g. with respect to improving accessibility, decreasing car use, and increasing use of public transportation. In fact, the success of the PDUs has even encouraged many smaller cities (below 100,000) to adopt plans using many of the PDU principles on a strictly voluntary basis[62].

From the perspective of determining where cities are today in terms of implementing an integrated urban mobility approach, the developments in France may encourage one to believe that all cities in France with a population above 100,000 in fact have developed and implemented such plans. And in some sense, this is correct. However, determining the degree to which an integrated urban mobility approach *actually* has been implemented is made cumbersome by the inherent complexity of the comprehensive and integrative principles included in such approach. In France, this problem is also highlighted as a central aspect in a recent publication describing the country's now 30 years of experience with an integrated urban mobility approach.

While PDUs in France have received much attention due to their success, and are regarded as a showcase model for Sustainable Urban Mobility Plans in Europe, CERTU highlights that the plans are not without problems. In fact, CERTU states that "*problems with implementation remain, particularly due to the complexity of integrating the PDU into the hierarchy of planning documents, the multiplicity of stakeholders involved in governance and the need for cooperation between transport authorities beyond the scope of application of the PDU*."[63] It is furthermore concluded that PDUs face many challenges that must be addressed to strengthen their contribution to integrating urban and transport policies. The PDUs must also adopt a wider scope, e.g. by focusing increasingly beyond the centres of urban areas, and do more to reduce emissions from urban traffic as some cities are still under the threat of receiving financial penalties for exceeding regulatory pollution thresholds.

The UK case: Mixed results from LTPs

The first planning cycle in England and Wales of the LTPs was reviewed in 2007, suggesting overall good progress, though also with areas with more limited results[64].

Positive outcomes (and largely in line with targets) were made in the following areas: Road safety (with a 30-per cent reduction in the number of killed and seriously injured, and a 45-per cent reduction for children), highway condition and rural accessibility. Authorities report strong progress against local outcome and output targets with 91 per cent on track to meet at least 50 per cent of their targets at the end of 2004/05. Good progress has been made on targets and objectives relating to widening travel choices and reducing casualties.

Moderate progress was made on objectives relating to: Maintenance; social inclusion; demand management; travel to school; and walking and cycling.

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[62] CERTU (2013) Mobility and Transport, 2013/23
[63] CERTU (2013) Mobility and Transport, 2013/23
[64] Atkins (2007) Long Term Process and Impact Evaluation of the Local Transport Plan Policy – Final Report June 2007

Weak progress was made on environmental-based local objectives relating to air quality, climate change, and sustainable distribution.

Reasons for weak progress

Various factors contribute to areas of weak progress. It is mentioned that: "*Whilst external stakeholders generally acknowledge that larger programmes are being implemented, there are issues over their effectiveness, integration, extent of genuine user involvement, and the scale and speed of delivery*."[65]

Hence, even in those countries where cities have come the farthest in adopting an integrated urban mobility approach, it appears that more is needed. In particular, such as in the case of France, there seems to be a need for cities to develop more comprehensive and integrated approaches, and for taking clearer targeted actions with respect to a number of elements.

3.3.5 City case studies

Few cities have developed many targets

To get deeper into the 'state of play', we have conducted a city analysis. The analysis is based on two sources of input. The first is a scoring of cities according to how they live up to certain SUMP-like planning principles and the second is a questionnaire for city representatives to verify/substantiate our findings, as well as provide input on a number of elements that could not be found through desk research.

Table 3-16 Has your city developed quantitative short-term targets (STT) and/or long-term targets (LTT)?

City	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT
	Accessibility		Congestion		Accidents		Air quality		Noise		CO_2 emission	
Berlin	No	No	No	No	No	Yes	No	Yes	No	Yes	No	Yes
Birmingham	Yes	-	Yes	-	Yes	-	Yes	-	-	-	-	-
Bremen	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Brno[66]	No	No	No	No	No	No	No	No	No	No	No	No
Budapest	No	No	No	No	No	No	No	No	No	No	No	Yes
Cambridgeshire	No	No	Yes	No	Yes	Yes	Yes	No	No	No	Yes	Yes
Craiova	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes
Copenhagen	-	Yes	Yes[67]	-	-	Yes			No[68]			
Debrecen	No	No	No	No	No	No	No	No	No	No	No	No
Gdynia	No	No	No	No	No	No	No	No	No	No	No	No
Gent	No	No	No	No	No	No	No	No	No	No	No	No

[65] Atkins (2007) Long Term Process and Impact Evaluation of the Local Transport Plan Policy - Final Report June 2007
[66] Brno has qualitative targets for all indicators
[67] There are no direct targets on congestion, but indirect targets to increase the use of non-motorised transport exist.
[68] The target is to have pilot schemes with noise-reduced goods delivery realised before 2015. Quantitative short-term and long-term targets are not available.

City	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT
	Accessibility		Congestion		Accidents		Air quality		Noise		CO_2 emission	
Kaunas	-	-	-	-	Yes	-	Yes	Yes				
Lille	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Malmo	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Montpellier	No	No	No	No	No	No	No	No	No	No	No	No
Nantes	-	-	-	-	-	-	Yes	Yes	-	-	Yes	Yes
Porto	Yes	No	No	No	Yes	-	No	-	Yes	-	No	-
Sofia	No	No	No	No	No	No	No	No	No	No	No	No
Tampere	No	No	No	No	Yes	Yes	No	No	No	No	No	Yes
Vilnius	Yes	No	Yes[1]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
West of England	No	Yes[2]	No	No	No	Yes	No	No	No	No	No	Yes

Source: Appendix C

Two findings emerge from the table. First, not many cities have set clear short-term and/or long-term targets for all key areas. Second, some cities have set targets on some of the indicators even though they have not developed a single sustainable mobility plan. Examples of targets are presented in the below text box.

Text box 3-9 Examples of policy targets

Berlin has only qualitative short-term targets on indicators such as accessibility, congestion, air quality, noise and carbon emission. However, the city has long-term quantitative targets on accidents, air quality, noise and CO_2 levels. By 2025, Berlin has a goal of reducing accidents by 20 per cent and emissions by 25 per cent compared to their 2008 levels. The target on air quality is to reduce particulate matter (PM 2.5) to 25 per cent below the EU target, while the target as regards noise is to bring it below 65dB by day and 60 dB by night.

Bremen has set both short-term and long-term targets on all indicators except for congestion and accidents. Congestion is not believed to be a real problem in the city where around 25 per cent of everyday trips are made by bicycles. Bremen's short-term target on accessibility is to increase public transport users by one million per year while the 2020 target is to have 20,000 active users of car-sharing.

The Romanian city of **Craiova** has several short-term and long-term targets as part of its urban transport plans. Some of the these targets are to increase accessibility by ten per cent by 2015 and 25 per cent by 2025; to reduce congestion by five per cent by 2015 and 20 per cent by 2020; to reduce accidents by two per cent by 2015 and five per cent by 2015; and to improve air quality by eight per cent by 2015 and 18 per cent by 2020.

The action plan for the City of **Copenhagen** contains targets that range from specific quantitative targets to more qualitative targets. Examples of long-term targets in Copenhagen include: At least 1/3 of all trips will be with public transport; The world's best bicycle city: Compared to 2010, the bicyclists' travel time is reduced by five per cent in 2015 and ten per cent in 2020. A target of reaching a modal split where half of the trips are carried out by cyclists in 2015; In 2015, a prioritised pedestrian network will exist; In 2020, there will be approx. 5,000 docking cradles for electric vehicles. There will be 240 car sharing vehicles in 2020 compared to 120 in 2010; In 2020, the number of fatalities and seriously injured persons will be reduced by 50 per cent compared to the average of the period 2007-2009.

Debrecen's sustainable mobility plan declares general short-term and long-term goals with respect to accessibility and congestion as well as accidents (short-term) and air quality (long-term), but quantitative targets have not been defined. The sustainable urban mobility plan deals with accessibility problems, congestion, accidents and air quality issues and defines the necessary measures in order to make the city more liveable, but target indicators have not been set up at all.

Targets set by the city of **Kaunas** are more specific compared to that of Craiova. For instance, Kaunas' short-term targets on accidents is to bring it down to 0.4/1000 inhabitants by 2013. On air quality, the target is to make PM10 < 40 µg/m3 by 2013 and PM2.5 < 2 µg/m3 by 2015. The long-term target is to achieve a PM 2.5 level of less than 20 µg/m3 per year by 2020. The emissions reduction target level is 40 mg/m3 per year, starting in 2010.

In the Swedish city of **Malmo,** the short-term and long-term target on accidents is to have zero causality while the target on noise level is to reduce it to 65dBA.

We also asked the cities if they had conducted a quantitative impact analysis of measures that should be implemented. The cities were asked also to review if they had conducted an analysis that looked at all measures in an integrated way or rather if separate analyses of individual measures were performed. A relatively high level of planning standards can be observed since:

› four cities have undertaken integrated impact assessments.
› 12 cities have undertaken impact assessments of individual measures.
› six cities did not undertake impact assessments.
(Berlin has undertaken an integrated impact assessment as well as a separate assessment of individual measures.)

Ready for implementation?

Furthermore, the case studies clearly indicate that the SUMPs are not mere 'paper works'. According to the city planners that were consulted, a majority of the cities have a plan for implementation and, moreover, have secured budgets for implementation, cf. the table below.

Table 3-20 Does your city have a plan for implementing the measures?

	Yes	Yes We have also defined who is responsible for the implementation	Yes We have also allocated budgets for the implementation	Yes We have also a setup for monitoring of the implementation	No
Aggregate	11	8	11	5	1

Source: Appendix C

Level of coordination?

The France and UK cases pointed to a challenge regards achieving a sufficient level of coordination between authorities, and we therefore asked the cities to assess the level of coordination they experience. Half of the cities are dissatisfied with the current level of coordination while three and six cities perceive the coordination to be 'optimal' and 'adequate', respectively.

Table 3-21 How would you rate the overall level of coordination/integration among the different policy areas/offices that are involved in the planning and implementation of measures with respect to urban mobility in your city?

Optimal (more coordination is not needed)	Adequate (coordination is at a good level, but could be improved)	Insufficient level of coordination	No coordination
3	6	10	0

Source: Appendix C

3.3.6 Other information

CIVITAS POINTER evaluation

As part of the CIVITAS programme, a policy review of the planning in 23 cities was conducted[69]. The following is a quote of some of key findings:

› *"Higher variability among cities from transition countries, than among cities in Western Europe (in our sample of CIVITAS Plus cities).*

› *Short- or mid-term goals dominate; cities do not use very much strategic (long-term) planning (i.e. longer than 2020).*

› *Emphasis on personal transport (freight transport reflected less).*

› *Communication with other sectors (dominantly energy sector, but also public spaces, environmental, etc.).*

› *CIVITAS have contributed to preparation or improvement of city strategies and policies.*

› *A high variability of various documents at the city level; even SUMPs differ a lot among states, reflecting the national conditions.*

› *The most cities have a sector transport policy, but often quite narrow (focused on development of different transport infrastructure and services), without any action plans, indicators and measuring of reaching goals.*

› *CIVITAS gives an opportunity to prepare a SUMP; it is used especially by „transition cities“(such as Szczecinek, Skopje, Ljubljana, Iasi).*

› *A correlation between strategic (long-term) planning and modal split (in cities with long-term planning a lower share of cars and a higher share of active*

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[69] CIVITAS POINTER 2012 "*Policy assessment in CIVITAS Plus: SUMPs and their position in city planning"* by Hana Brůhová-Foltýnová and Radomíra Jordová, Transport Research Center Brno, the Czech Republic

transportation (walking, cycling) indicated, however we do not know the causation)"[70].

Review of German cities

A study from 2009[71] includes reviews of 75 German cities with a population of more than 100,000 inhabitants and a scoring of the transport plans against a benchmark which can be described as somewhat similar to the definition of an integrated urban mobility approach. The result of the assessment suggests that only few German cities have a well-elaborated integrated urban mobility approach. The eight characteristics include: Spatial planning, policy integration, participation, information, planning period, plan effects, monitoring and updating. The 75 cities were rated by how many planning elements their transport or mobility plan included (the more elements = the better performance).

Table 3-22 Review of German cities with regards to content and process of their transport plans

Number of planning elements	Number of cities	Distribution in % of cities
No plan	22	29%
0	2	3%
1	9	12%
2	3	4%
3	13	17%
4	12	16%
5	11	15%
6	3	4%
7	0	0%
8	0	0%
Total number of cities	75	100%
Average number of elements*	2.3	

Source: Wolfram (2009)

** For those cities with a plan*

3.3.7 Public consultation study

The formal public consultation on the current state of play for the implementation of the urban dimension of the EU transport policy and the way forward took place in late 2012. The key results of the consultation are presented below. In total, 195 respondents provided answers to the public consultation questions.

SUMP as a means to increase level of coordination

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70 Ibid

71 Wolfram (2009) Planung ohne Steuerung? Zur Qualität und Orientierung kommunaler Verkehrsentwicklungspläne in Deutschland

Table 3-23 Coordination between authorities and actors

Do you think there is lack of coordination?		
Yes	169	87%
No	10	5%
I don't know	16	8%
Do you agree that integrated Urban Mobility Plans are a useful tool for fostering coordination at local and regional level?		
Yes	178	91%
No	4	2%
I don't know	13	7%

3.3.8 Expert workshop

Cities are increasingly preparing SUMPs

The expert workshop was held in Brussels on 29 January 2013 at the European Commission's offices. Thirteen experts participated along with COWI's team and representatives from the Commission. The workshop provided input to the Commission and the COWI team about the SUMP developments in the Member States, the conclusion being that cities are increasingly taking up SUMPs on a voluntary basis, which seems a strong indicator of success. It was noted that the benefits of SUMPs are better planning processes with shared goals and stakeholder involvement, the coherence, coordination and prioritisation of actions in terms of cost effectiveness, and the strengthening of civil society.

The discussion of the scope and contents of SUMPs revealed no common trends. In Flanders and in France, the scope seemed to be changing to also include land use planning (or making SUMPs a part of land use planning). In England, it seems that the content is changing from being concrete action planning towards softer planning.

Barriers to the uptake of SUMP

The workshop participants pointed to a range of barriers. The lack of funding to implement a SUMP was particularly highlighted as a key barrier. The same was the lack of understanding of the return on investment on sustainable elements: It is very difficult to find information on these benefits. As a result, funding is pushed towards traditional planning tools. This makes it more difficult to pursue sustainability. Many cities have a technical road department with a lot of power (traditionally), and this can be a barrier to integrated urban mobility approaches (historical and cultural).

3.3.9 Assessment of the current status on integrated urban mobility approaches

Bringing the pieces together…

Data sources	Conclusions in relation to the planning situation in cities
A status for implementing Sustainable Urban Transport Plans (2005)	› 1/3 of European cities have a Sustainable Urban Transport Plan. › 50 per cent of cities without such a plan are preparing to develop one; hence a positive interest in this concept was recorded.
A status for implementing Sustainable Urban Mobility Plans (2012)	› Applying a national perspective, major differences appear: Some countries have a strong enabling environment, and an integrated urban mobility approach is mandatory in France, Belgium and the UK. Other countries – in particular, new Member States – have far weaker national frameworks.
City case studies (2013)	› Not many cities have both long-term and short term targets for all key areas, but almost all cities have some targets. › Overall, the case cities are quite advanced in their integrated urban mobility approaches: Only one city does not have a plan for implementing its SUMP, and half of the cities demonstrate a level of coordination that is either optimal or adequate. This entails that the other half of the cities perceive the actual coordination level to be insufficient
Other studies (CIVITAS study, 2012; Wolfram 2009)	› CIVITAS POINTER: Most elaborated SUMPs are found in Western European countries – large variation in quality is detected in Eastern and Southern European cities. › A majority of German cities have some form of integrated urban mobility plan, but few of these have a broad perspective and are well elaborated.
Public Consultation Study undertaken as part of this study (2013)	› An overwhelming majority of respondents consider the level of coordination between authorities to be insufficient and find that a SUMP is a useful tool to foster coordination.
Conclusions from expert workshops held within the context of this project (2013)	› European cities are increasingly moving towards planning practices in line with the SUMP concept; however, some important barriers to a continued positive development are found.

A varying picture emerges

Overall conclusions:

› *First*: European cities are **moving towards integrated urban mobility approaches**. All studies acknowledge that the cities to a varying degree meet the standards of an integrated urban mobility approach.

› *Second*: The **development has been positive in the last ten years** and it is likely to continue. Still more cities will get better and better at integrated planning.

› *Third*: Not black or white – **few, if any, of the cities implement a 'perfect' integrated urban mobility approach** while almost all cities do something.

› *Fourth*: **Cities in new Member States** are generally less advanced in applying integrated urban mobility approaches; however, the review of specific city practices show that some cities in new Member States in fact undertake urban transport planning at a high level.

› *Fifth*: Transport planners, respondents to the public consultation process as well as many researchers point to **a lack of coordination** as a particular challenge. The city cases indicate that insufficient coordination is a problem in half of the cities.

Getting an overview of the situation

The assessment can be summarized by considering the level of coordination and the targeted policy action. These categories were defined in relation to the 'concept of integrated urban mobility approach', see section 3.2.3:

› Coordination (all dimensions of coordination and integration across transport modes, city and agglomeration, transport and environment, carried out through a participatory approach)

› Targeted policy actions (long-term and short-term quantified targets, impact assessments and implementation plans with budgets).

To give an assessment of the city status in the EU-28 regarding coordination and targeted policy actions, countries have been scored across the four following categories defined in relation to the 'concept of integrated urban mobility approach'.

Table 3-24 Status categories on integrated urban mobility approaches and number of cities scoring

Status categories	Number of cities scoring
(i) Limited coordination and targeted policy actions Cities that use traditional transport planning with no or very few of benchmark framework elements. **(ii) Low/medium coordination and targeted policy action** Cities that apply some of the key benchmark characteristics both regarding coordination and targeted policy actions. **(iii) Medium/high level of coordination and targeted policy action** Cities that apply many of the benchmark elements regarding coordination and targeted policy actions. **(iv) High level of coordination and targeted policy action** Cities that have developed and fully implemented all the benchmark framework elements regarding coordination and targeted policy actions.	**(i) None** No cities, or only an insignificant number **(ii) Few** Only few cities **(iii) Some** Between more than a few and up to as many as half of all cities **(iv) Many** From the majority of cities to all cities

It is difficult to provide an exact number of how many cities belong to each of these status categories for each country. We have therefore used the following indicators: (i) None; (ii) few; (iii) some; and (iv) many. The categories are explained in further detail in the below table.

The scoring used for indicating the number of cities is flexible, meaning that "many", for example, can occur together with both "some" and "few". As such, "many" alongside "few" is larger than "many" alongside "some".

Table 3-25 Assessment of current planning approach and the level of coordination and targeted policy actions

Country	No of cities *	Population in cities	No/ limited	Low/ medium	Medium/ high	High/ complete
Austria	5	2,344,488	None	Some	Some	None
Belgium	7	2,488,115	None	Few	Many	None
Bulgaria	7	2,687,217	None	Many	None	None
Croatia	3	1,109,183	Some	Some	None	None
Cyprus	2	432,848	One	One	None	None
Czech Republic	6	2,212,657	Few	Many	Few	None
Denmark	4	1,741,892	None	Some	Some	None
Estonia	1	401,140	None	Many	None	None
Finland	6	1,687,458	Some	Some	Few	None
France	54	28,785,276	None	Few	Many	None
Germany	81	25,486,299	Few	Some	Some	None
Greece	5	3,854,079	Some	Some	None	None
Hungary	9	3,218,521	Few	Many	Few	None

Country	No of cities *	Population in cities	No/ limited	Low/ medium	Medium/ high	High/ complete
Ireland	2	1,300,973	One	None	One	None
Italy	40	18,613,509	Few	Some	Some	None
Latvia	1	806,993	None	One	None	None
Lithuania	4	1,241,273	Some	Some	One	None
Luxemburg	1	84,679	None	One	None	None
Malta	1	195,863	None	One	None	None
Netherlands	20	7,076,804	Few	Some	Many	None
Poland	39	12,028,862	Few	Many	Few	None
Portugal	6	3,450,469	Few	Many	Few	None
Romania	19	5,916,715	Some	Many	None	None
Slovakia	2	763,984	One	One	None	None
Slovenia	2	374,016	One	None	One	None
Spain	51	19,284,201	Few	Many	Few	None
Sweden	6	2,652,158	None	Some	Some	None
United Kingdom	54	30,138,398	None	Few	Many	None
Total	**438**	**180,378,070**	**Few**	**Some**	**Some**	**None**

Note: It cannot be excluded that a few cities might have reached a level of sustainable urban mobility planning that includes all benchmark elements and resembles the complete 'concept of integrated urban mobility approach'.
** Agglomerations above 100,000 inhabitants.*
Source: Appendix A: City data

Key general elements in the assessment of the current status include:

- Apart from France and the UK, which have specific legislative requirements, the plans in other countries tend to serve the municipality (city) rather than the whole agglomeration.
- Freight transport is typically less covered than passenger transport.
- There is no extended conformity checking of the plans as in most cases the requirements are not very extensive.

These factors indicate that few or no cities are at the level of a high/complete benchmark urban mobility approach.

The below table describes how the assessment has been done for each Member State. Appendices B, C and D include more details for selected Member States and selected cities. For countries and cities not covered by the specific assessment in Appendices B, C and D, the CIVITAS project[72], which include descriptions of sustainable urban mobility projects and measures in a large number of cities, have

[72] See for example CIVITAS homepage: CIVITAS cities

been used to inform the assessment as has the ELTISplus project (see Table 3-20). Additionally, the EPOMM project, which is about mobility management, has been used to inform the assessment. It includes review of the status of most Member States by 2011, regarding the level of implementation of mobility management.

Table 3-26 Basis for the assessment

Member State	Basis
Austria	The country assessment (see Appendix B) suggests that some cities have or are developing urban mobility plans. The review of Vienna and Graz indicates that many elements are included, though not all of the environmental aspects. Not all cities are reviewed – based on sources such as CIVITAS, ELTISplus and EPOMM, it is assumed that there is a mixed level, some cities being more advanced than others. Hence, cities are categorised as medium/high.
Belgium	The country assessment (see Appendix B) indicates that most cities have developed integrated plans and that they include most of the relevant elements. Hence, most cities are categorised as medium/high.
Bulgaria	The country assessment (see Appendix B) indicates that some cities have developed plans as part of applying for EU funding of transport projects. The plans have not been part of a participatory approach and they have focused on the elements for which funding was applied for. Hence, the majority of cities are categorised as low/medium.
Croatia	Based on information from CIVITAS and ELTISplus projects, some cities are in the process of implementing integrated planning. The cities are mostly categorised as low.
Cyprus	Based on information from the CIVITAS and ELTIS projects, there is some progress of implementing integrated urban mobility planning, but it is in an initial stage. The cities are categorised as limited to low.
Czech Republic	Information from CIVITAS and EPOMM indicates overall insufficient integration and coordination, though some cities have implemented specific sustainable mobility measures. The city survey indicates examples of progress, but also deficiencies in setting quantitative targets and in implementation due to lack of funds. Focus is on improvement of public transport. Hence, the majority of cities are categorised as low to medium.
Denmark	The country assessment (see Appendix B) indicates that all the included cities have implemented some or many of the key urban mobility planning elements. Hence, the cities are categorised as medium or medium/high.
Estonia	The country assessment (see Appendix B) indicates that there are no integrated urban mobility plans in Estonia. The capital (the only city above population threshold) is a CIVITAS city and has undertaken several mobility measures. Based on these sources, the city is categorised as low.
Finland	Based on information from CIVITAS, ELTISplus and EPOMM, only the capital region has developed an integrated urban mobility plan, while the other cities seem to be in the initial stages of introducing integrated urban mobility plans. One city included in the city survey also indicates insufficient coordination. Hence, the majority of cities is categorised in the low to medium categories.

Member State	Basis
France	The country assessment (see Appendix B) indicates that all city agglomerations have implemented integrated urban mobility plans as is legally required. The assessment also indicates that almost all benchmark elements are included in the plans. The city survey suggests differences across cities and the CERTU evaluation suggests that coordination is not always sufficient. French cities are generally very close to the concept of the integrated urban mobility approach and the majority of cities are therefore in the medium/high category.
Germany	The country assessment (see Appendix B) suggests that there is a large variation in the quality of the integrated urban mobility approaches. The city survey and case review suggest that some cities have developed advanced integrated urban mobility approaches. Cities are distributed over the categories of no/limited integrated urban mobility approaches to medium/high, the majority of cities being in the low/medium category.
Greece	The country assessment (see Appendix B) indicates that the two largest cities are in the process of making urban mobility plans, but focus is on infrastructure planning and not all relevant elements are included. Hence, the cities are categorised as limited or low.
Hungary	The country assessment (see Appendix B) indicates that most integrated urban mobility approaches focus on public transport and hence falls short on several key elements. The plans have been developed as part of the ERDF funding application as the Transport Operational Programme included urban transport with a focus on improvement of the public transport systems. The plans have been developed to support funding applications and hence focus on assessing the specific project including the funding application. Hence, the majority of cities are categorised as low/medium.
Ireland	As indicated in the country assessment (see Appendix B), there is a legal requirement in Ireland for the greater Dublin area to develop a strategic transport plan. It includes most of the required elements and it is assessed as medium/high. The other cities do not have a sustainable urban mobility plan though some sustainable measures have been introduced.
Italy	The country assessment (see Appendix B) indicates that a number of cities have applied an integrated urban mobility approach. It is not mandatory, but it is required in order to get national funding for transport infrastructure. This incentive means that most cities have made some developments, but the assessment finds that a limited number of cities have developed more comprehensive approaches and implemented the planned measures. The cities are distributed over the categories with the majority being in the low/medium category and some in the medium/high category.
Latvia	Based on CIVISTAS and EPOMM, it is assessed that integrated urban mobility planning is only in an early stage where the capital is in the process of developing an integrated mobility plan. The capital is categorised in the low/medium category.

Member State	Basis
Lithuania	The city survey includes two cities and one has developed an integrated plan with many of the benchmark elements, while the other is less advanced with a focus on improving public transport. This assessment is further supported by evidence from CIVITAS and EPOMM. The cities are categorised in the limited to low categories and the capital as medium.
Luxembourg	There is integrated transport planning at national level. It considers the different transport modes in an integrated way, but does not include specific targets on the environmental aspects. Hence, the categorisation is set to low/medium.
Malta	As indicated in the country assessment (see Appendix B), the capital has developed a strategy with some urban mobility elements. It is categorised as low/medium.
The Netherlands	As indicated in the country assessment (see Appendix B), most Dutch cities have developed integrated urban mobility approaches. It is not mandatory at city level, but the 12 provinces and the seven city regions are required to have an integrated transport plan. The plans include many of the key elements, but, for example, quantified targets and objectives are often defined for only some of the issues. The majority of cities are therefore categorised as medium/high.
Poland	The country assessment (see Appendix B) indicates that most integrated urban mobility approaches focus on public transport and hence fall short on several key elements. A few cities have developed more comprehensive plans – see the Krakow example (Text box 3-1). The majority of cities are categorised as low/medium.
Portugal	Based on CIVITAS, ELTISplus and EPOMM, it is assessed that some cities are developing integrated urban mobility plans while others have done less in terms of integrated planning. One city included in the city survey (see Appendix C) suggests that key elements are missing and that the level of coordination is insufficient. Cities are categorised as low to medium.
Romania	The country assessment (see Appendix B) suggests that some Romanian cities have started to apply integrated planning, typically as part of EU-funded activities. One city included in the city survey suggests that there is still a lack of coordination. Also, implementation elements are weak. The cities are categorised as limited to low/medium.
Slovakia	The country assessment (see Appendix B) indicates that the level of integrated mobility planning is low. Currently, a project of developing a sustainable urban mobility plan is being undertaken in the capital. A detailed review of that project assesses the level of coordination and integration as low. Overall, this suggests that integrated mobility planning is in an initial stage and hence the cities have been categorised as limited or low.
Slovenia	Based on information from CIVATAS and EPOMM, it is assessed that the capital is in the process of developing an integrated urban mobility approach including most of the key elements. The other city above the population threshold is indicated not to have an integrated urban mobility plan. Hence, one city is categorised as medium and one as limited.

Member State	Basis
Spain	The country assessment (see Appendix B) indicates that some cities have applied integrated mobility approaches. There are regional differences since in some regions it is mandatory to have a sustainable urban mobility plan. Generally, it is required in order to receiving funding for public transport projects. Hence, the cities are distributed over the categories from limited/low to medium/high, the majority being in the low/medium category.
Sweden	The country assessment (see Appendix B) indicates that several Swedish cities have developed or are in process of developing integrated urban mobility plans which include most of the key elements. Hence, the cities are categorised as either low/medium or medium/high.
UK[73]	The country assessment (see Appendix B) indicates that almost all UK cities have LTPs which include most of the elements of the concept of the integrated urban mobility approach. Not all elements are mandatory. The city review suggests some gaps. Not all plans include city logistics, not all targets are quantified and, generally, most lack short-term targets. The majority of cities are categorised as medium/high.

3.4 Definition of the problem

Cities risk not reaching EU objective

Based on the assessments in the previous sections, the problem can be defined as the high risk of EU28 cities not achieving the key EU Transport White Paper objective of a competitive and resource-efficient transport system.

This key EU objective is based on the need to balance the mobility, social and environmental aspects of the transport system.

The data on the indicators for the competitive and resource-efficient transport system – congestion, accidents, air quality, noise and GHG emissions – demonstrate that the cities are currently far from the objective.

Benchmark integrated urban mobility approach needed

In order to achieve the key EU Transport White Paper objective of a more competitive and resource-efficient transport system, cities need to undertake an integrated urban mobility approach with the purpose of identifying and implementing a package of effective and efficient measures. The planning elements that are necessary have been defined as the ‘concept of integrated urban mobility approach’.

[73] In the UK cities in England have a legal requirement to develop LTPs while some cities in other parts of the UK have developed some form of integrated urban mobility approaches.

A long way ahead even in countries with a legal obligation

The assessment of the current urban mobility approach has revealed that despite a process of more integrated planning; the current approaches still have many shortcomings. It means that no or very few EU cities can be characterized as having a full integrated urban mobility approach with all the elements to secure sufficient coordination and implementation of targeted policy actions. Even in Member States where it is a legal requirement to develop an integrated urban mobility approach, the level of coordination could be improved.

In order to assess the need for actions, the next chapter presents the baseline assessment which investigates the potential development of the problem.

4 Baseline

Defining the baseline

The identified problem is the risk that cities will not achieve the key EU Transport White Paper objective of competitive and resource-efficient transport. This chapter assesses how the problem will develop if no additional initiatives are taken – this is called the baseline or business-as-usual situation.

The lack of integrated urban mobility approaches, strategies and plans or the existence of inadequate plans jeopardise the timely achievement of the key EU Transport White Paper objective and compliance with relevant EU legislation in areas such as air quality, noise, climate change and road safety. Furthermore, the current situation does not ensure the best use of public funds, nor a seamless mobility along the TEN-T network.

Given that the problem lies is the risk of not achieving the key EU objective, this problem definition in itself points to the future and to whether there are factors that could increase or decrease this risk.

Two components of the baseline assessment

In order to assess how the risk might develop, the baseline section includes two main components:

- The development of coordinated and targeted policy actions
- The possible impacts resulting from the projected level of coordination and targeted policy actions.

First, the possible development in the planning approaches applied by the EU cities is assessed, followed by the considerations on how the applied integrated urban mobility approaches will affect the impact areas and the risk of not achieving the objective of sustainable urban mobility.

4.1 Projected development in integrated urban mobility planning

Factors influencing mobility planning

Several types of factors influence whether cities will change their mobility planning approach and increase the level of coordination and targeted policy actions. These factors are discussed along with the effect on the uptake of more coordinated and targeted mobility planning.

First, external factors such as the economic situation are described, followed by an assessment of existing policy instruments – legislation and support programmes – and how they can be expected to affect the mobility planning approaches. Finally, the barriers for additional uptake of coordinated and targeted integrated urban mobility planning are assessed.

4.1.1 General conditions

Economic development

The general conditions include first of all the economic development. The transport volume follows the level of economic activity; so, with economic growth, transport demand increases and thereby makes it even more difficult to achieve sustainable mobility.

The economic situation affects the uptake of more advanced and integrated urban mobility planning approaches. The city survey has suggested that a lack of funds for integrated planning is one of the more important barriers preventing cities from moving towards a full integrated urban mobility approach; see Table 4-1. The current economic recession also means that the funds for actual implementation of the measures are constrained. In the medium to long term, the economy is expected to recover.

In the baseline scenario, the recent economic crisis is assumed to have long-lasting effects, whereas the recovery from the crisis is not expected to be sufficiently vigorous to compensate for the GDP losses.In the baseline scenario, GDP is projected to grow by 1.7 per cent per year between 2010 and 2050.

Population in cities

Currently, around 76 per cent of the EU population reside in predominantly and intermediate urban areas is[74]. The population in urban areas is assumed to continue to increase.

In the baseline scenario, the proportion of the EU population residing in urban areas and intermediate regions is expected to increase by about five percentage points by 2030 and an additional five percentage points by 2050[75].

The urban agglomerations with more than 100,000 inhabitants account for about 38 per cent of today's total population. Assuming the same growth rate in urban population as in the baseline scenario, the population in question will amount to around 205 million compared to 180 million today.

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[74] About 41 per cent of the EU population live in predominantly urban regions, 35 per cent in intermediate regions and 23 per cent in rural regions according to Eurostat NewsRelease 5/12 (March 2012), available at: http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/1-30032012-BP/EN/1-30032012-BP-EN.PDF

[75] United Nations, Department of Economic and Social Affairs/Population Division (2011), World urbanisation prospects - The 2011 revision, http://esa.un.org/unpd/wup/index.htm.

4.1.2 Existing measures that could promote an integrated urban mobility approach

Overview of existing EU measures

The existing measures include both EU legislation that can promote a more sustainable urban development and many support programmes that are specifically aimed at supporting cities in the transition to more coordinated and targeted policy actions.

Legislation

Specific legislation that affects actions taken by Member States and cities include:

- air quality legislation.
- the Environmental Noise Directive.
- GHG policies.

This legislation provides incentives for cities to implement specific measures to reduce the specific problem regarding poor air quality, noise exposure and high CO_2 emissions.

Non-compliance with the air quality legislation (Directive 2008/50/EC), which could bring about legal action against several Member States, will continue to be an important driver for Member States and cities.

It is an important objective for EU as well as for most Member States to reduce the GHS emissions. Many initiatives aim at reducing CO_2 and other GHG emissions. They include, among other things:

- the Intelligent Energy Europe programme.
- the Smart Cities and Communities European Innovation Partnership.
- the EU strategy for sustainable Development.
- the Promotion of Clean and Energy Efficient Road Transport Vehicles.
- the Greening of Transport Strategy.
- the Covenant of Mayors.
- the Regulation on CO_2 from cars and vans.

For example, the Covenant of Mayors where cities sign up to reduce CO_2 emissions by more than 20 per cent by 2020 includes transport. At present, around 250 EU cities above 100,000 inhabitants have signed this covenant.

The existing initiatives are likely to result in the implementation of certain measures. In relation to the air quality legislation, for example, cities are introducing low-emission zones as one specific measure.

What is more uncertain is whether this legislation and the other initiatives will promote more integrated urban mobility planning. Cities might focus on reducing CO_2 by defining an action plan on that issue, but not integrate it in terms of how it can support other parts of the overall objective of moving towards a competitive and resource-efficient transport system. Hence, additional measures on specific issues could increase the risk of not achieving the overall objective.

Support programmes

In Chapter2, most of the existing EU programmes are listed. In addition to ELTIS and CIVITAS, which to the highest extent aim to increase the uptake of sustainable urban mobility, there are several other programmes and initiatives also supporting the uptake of sustainable urban mobility approaches.

These activities will continue to support the uptake and use of integrated sustainable urban mobility planning.

EU Cohesion Funds

The fact that the cohesion funds in the future will focus more on urban mobility might also lead more cities to revise their planning approach. Though an integrated urban mobility approach has not been a specific requirement, cities have been asked for documentation of the impacts of new or renovated urban transport infrastructure. In the past, this has led to the development of plans with some of the elements required for an integrated urban mobility approach.

4.1.3 Historical development of the uptake of integrated urban mobility approaches

There is no available historical data on the development of the uptake of integrated urban mobility approaches. What can be extracted from the historical experience up to now is mainly the importance of certain drivers.

In many Member States, access to national co-funding of local urban transport projects has been one of the drivers that have initiated development of integrated urban mobility approaches. In the Member States where some forms of integrated urban mobility approaches are now mandatory, there was initially a link to the access to funding. For example, this was the case in England.

Other Member States such as Belgium, Spain and Italy have also seen some form of link to funding that provided an incentive to develop an integrated urban mobility approach. Also the various EU programmes have funding for development of integrated policies.

Some countries have seen a more voluntary-based increase in the uptake of integrated urban mobility approaches where cities ‘compete’ to be attractive locations and realise that a sustainable transport system is important. In France, it is reported that also cities not covered by the legal PDU obligation have started to develop an integrated urban mobility approach. In the Scandinavian Member States, several cities are in the process of developing integrated urban mobility approaches even though there are no legal requirements and no link to funding.

The expert workshop on sustainable urban mobility plans provided further reasons for cities to have an integrated urban mobility approach even when there is no legal obligation.

Reasons for cities to voluntarily develop SUMPs
› Cities recognize the value of an integrated urban mobility approach to addressing their environmental, social and economic problems in an integrated way, including issues like congestion, air quality and accessibility.   › They want to live up to modern city expectations and compete with other cities.   › An appropriate support structure (at national or other level) is available to help cities develop a plan.   › An integrated urban mobility approach gives the entire city administration a sense of common goals.   › Funding from central government for cities' transport projects is pre-conditioned on cities having an integrated urban mobility approach.   › They are inspired by the successes witnessed in other cities in developing and implementing an integrated urban mobility approach.   › An integrated urban mobility approach empowers relevant stakeholders, meaning that the stakeholders are given a voice and allowed to provide important information to the urban planning process.

Source: COWI (2013) *Expert Workshop Regarding The Urban Mobility Package Activity 31 On Sustainable Urban Mobility Plans*

4.1.4 Barriers for further uptake of integrated urban mobility approaches

Main barriers

The review of the existing experience has identified some of the causes of the problem. The ELTISplus project has investigated the barriers for use of an integrated urban mobility approach by interviewing experts and Member State transport planners. The result is a list of barriers. Most of the barriers are common across the EU countries.

› Existing car-infrastructure orientation within the community (particularly, strong lobbies).

› Resistance from established planning and engineering officials, and a lack of cooperation between sectors, particularly transport and land use.

› Lack of relevant knowledge among officials.

› Lack of funds for the preparation of Sustainable Urban Mobility Plans and, increasingly, for infrastructure itself.

- Lack of coordination between different levels of government.
- The greater requirements for public participation compared to conventional transport plans.
- Adverse responses to EC-led initiatives.
- Political conservatism.
- Car orientation in terms of the community, lobbies and existing transport funding.
- The potential time required to prepare a plan.
- The expense of preparing a plan.
- The lack of resources to actually implement any measures from a plan.
- Political will or, indeed, lack of political interest – the idea of an integrated urban mobility approach is often communicated quite abstractly. But to catch the interest of politicians, it has to be linked to the measures that would be implemented as a result, and its advantages compared to a more traditional infrastructure-based approach to planning have to be demonstrated.
- No perceived added-value over conventional transport plans.
- Lack of defined responsibilities and priorities in the area.
- No public pressure and therefore no political commitment.

Barrier groups

The barriers can be grouped in different ways. They all address one or more of four main areas:

- Lack of political will or interest
- Lack of knowledge of integrated urban mobility approaches and/or benefits of integrated urban mobility approaches
- Planning culture and tradition
- Lack of funds for integrated planning.

A first ranking of barriers

As part of our city reviews, we have asked the selected cities to rank these four barriers. Nevertheless, it cannot be taken as a representative sample since the majority of the cities in the review have some form of integrated urban mobility approach, so the ranking might not indicate the main barriers for those who are to start sustainable urban mobility planning. However, as the answers are from cities that have experience in the field, they might still give a good indication of what the important barriers are for the actual development and implementation of integrated urban mobility approaches.

Table 4-1 Ranking the barriers to implement integrated urban mobility approaches (1 being the most important barrier, two the second most important and so on.)

City	Lack of political will or interest	Lack of knowledge and/or the benefits of an integrated urban mobility approaches	The planning tradition and culture (lack of tradition for integration and coordination)	Lack of funds for integrated planning
Berlin	4	3	2	1
Birmingham	-	-	-	-
Bremen	1	2		
Brno				1[76]
Budapest	2	4	1	3
Cambridgeshire				1
Craiova	4	3	1	2
Debrecen	4	3	2	1
Gdynia[77]			2	
Gent	-	-	-	-
Kaunas	3	2	1	4
Lille[78]	4	3	1	2
Malmo	3	4	1	2
Montpellier				
Nantes	-	-	-	-
Porto	1	2	3	4
Sofia			1	
Tampere	4	2	3	1
Vilnius	2	-	3	1
West of England			2	1
Number	11	10	13	13
Average score	2.9	2.8	1.8	1.8

Source: City survey, see Appendix C

The barriers that were ranked as the most important are lack of funding and planning tradition.

The high ranking of lack of funds for integrated approaches could be influenced by the current economic situation where public budgets are under pressure.

[76] Lack of funds for implementation of measures
[77] Other (spatial barriers: combination city and forest, dynamic harbours, dynamic urbanization process)
[78] Nantes gives higher weight to other barriers than the ones listed in the table: to mobilise funds in this economically difficult period to develop new transport projects, notably for an agglomeration that has a 'mature' network and which is in need of heavy investments to rehabilitate the existing ones.

Cities also added barriers regarding lack of funds for actual implementation of the measures.

4.1.5 Baseline projection of coordination and targeted policy actions

Conclusion on baseline uptake

Based on the assessment of the effect of external conditions, existing legislation and initiatives and considering the barriers for improved coordination and targeted policy actions, an overall estimate of the baseline level can be developed.

Table 4-2 Drivers of and barriers for increased coordination and targeted policy actions

Drivers and barriers	Conclusions in relation to the future planning situation in cities
The external conditions. Primarily, the overall economic situation	› In the short term, the economic recession is likely to continue which will limit the transition to more coordination, integrated and ambitions urban mobility planning.
Existing legislation and initiatives	› Specific legislation on air quality and noise is likely to lead to specific measures being implemented. › The objectives on CO_2 and voluntary initiatives are likely to lead to specific measures on energy and CO_2. › The impact on coordination and, hence, the efficiency of the additional measures are uncertain.
Other drivers and barriers	› Cities, in particular in Western Europe, might compete to attractive cities and therefore want to improve the transport system in a sustainable way. › The assessment of barriers for uptake of integrated urban mobility approaches suggests that further uptake could be slow as the lack of funds and planning traditions are key barriers. › Existing support programmes on integrated urban mobility approaches will to some extent mitigate the lack of funds for integrated planning. › While more cities will move towards applying an integrated urban mobility approach, certain elements – the ambition level and the actual implementation – will remain weak and insufficient.

The factors point in different directions; some towards more integrated and coordinated planning, others to less coordination.

The *main consideration* is that, overall, a *move towards more integrated urban mobility approaches* is likely to happen, but *setting sufficiently high ambition levels* and *implementing all the necessary measures* to achieve the ambition will still be important *weaknesses* of the applied integrated urban mobility approaches. Hence, very few or no cities will go all the way to what has been defined in Chapter 3 as a benchmark 'integrated urban mobility approach'.

In Chapter 3, the current status regarding integrated urban mobility approaches was estimated using four different categories where the high/full category means that a complete, integrated urban mobility approach is applied, including all the elements that have been defined as the minimum requirements for reducing the risk of not achieving the EU objectives.

Table 4-3 Baseline scenario for coordination and targeted policy actions by 2030

Country	No of cities *	Population in cities in million	No/ limited	Low/ medium	Medium/ high	High/ complete
Current situation	438	180	Few	Some	Some	None
Baseline	438	205	Few	Some	Many	None
Current situation	438	180	10-15%	30-35%	50-60%	0%
Baseline	438	205	0-5%	30-35%	60-70%	0%

Note: See Table 3-25 for explanations

The qualitative scoring of the cities have been translated into quantitative percentages of the population living in cities in each of scoring categories, based on the information included in the Appendices. Each city has been given a score, but for larger Member States, only a selected number of cities have been be scored and, for the rest, only the distribution across categorises has been established.

As mentioned above, this baseline scenario is based on the assumption that more cities will apply some form of an integrated urban mobility approach, but not go all the way to the full benchmark 'integrated urban mobility approach'. Hence the share of cities with no or limited integrated approaches will decrease as these cities initiate more integrated planning and move into the low or medium category. At the same time, other cities will improve the quality of the current practices and therefore apply an approach of medium to high quality, meaning that more of the key elements or requirements will be included. The combined effect is that the share in the lowest category will decrease while the share in low/medium category will remain the same (though with different cities) and the medium/high category will include a higher share of cities (measured by population).

The next section will describe the baseline scenario regarding the urban mobility indicators of congestion, accidents, noise, air quality and CO_2 emissions.

4.2 Impacts of integrated urban mobility approaches

Second step in baseline development

The previous section has assessed whether cities are likely to increase the level of coordination and targeted policy actions. The conclusion was that it is difficult to identify a clear trend, but the baseline assessment is that the level of coordination and targeted policy action will increase.

What is important for the final outcome of an integrated urban mobility approach is that it includes all the elements that lead to coordinated and targeted policy actions. If, for example, the target levels are not quantified or not defined in line with the key EU Transport White Paper objective, the result might not be a significant reduction of urban mobility problems. Implementation of the approach is contingent on the availability of funding, for which reason the current economic situation could limit the actual level of implementation.

The benchmark of the 'concept of integrated urban mobility approach' was developed in order to define the necessary components for achieving significant results. As the baseline does not envisage any significant increase in the number of cities that include all the elements, the effect of the increased uptake of integrated urban mobility approaches is overall estimated to be limited.

Therefore, an updated version of the reference scenario from the 2011 White Paper on Transport has been used as a baseline scenario. This baseline scenario has also been used in the IA accompanying the proposal for a regulation to define the modalities for reaching the 2020 target to reduce CO_2 emissions from new passenger cars, and in the proposal for a regulation to define the modalities for reaching the 2020 target to reduce CO_2 emissions from new light commercial vehicles[79], and in the IA accompanying the proposal for a Directive on the deployment of alternative fuels infrastructure[80]. This baseline includes the effects of policy measures adopted by November 2011 and hence includes, in principle, the effect of existing urban mobility plans.

As argued above, though the baseline for this impact assessment includes an additional uptake of integrated urban mobility approaches, the effects on urban mobility problems are not expected to be significant in comparison to the effects included in the updated White Paper baseline.

4.2.1 Baseline scenario regarding urban mobility problems

The baseline scenario regarding the urban mobility indicators of congestion, accidents, air quality, noise and CO_2 emissions draws on the updated White Paper

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79 SWD(2012) 213/2, available at: http://ec.europa.eu/clima/policies/transport/vehicles/cars/docs/impact_assesment_en.pdf

80 SWD(2013) 5/2, available at: http://ec.europa.eu/transport/themes/urban/cpt/index_en.htm

baseline. The following changes in the indicators from 2010 to 2050 have been applied:

Table 4-4 Assumed baseline development % change in external costs[81]

Indicator	Baseline development as change in % from 2010 to 2050
Congestion	66%
Air quality	-72%
Accidents	42%
Noise	37%

As a consequence of the combination of new CO_2 emission standards for light duty vehicles and the efforts done by Member States and cities, the CO_2 emissions in urban areas are projected to decrease by 25 per cent between 2010 and 2050.

[81] This baseline scenario has been used in the IA accompanying the proposal for a regulation to define the modalities for reaching the 2020 target to reduce CO_2 emissions from new passenger cars, and in the proposal for a regulation to define the modalities for reaching the 2020 target to reduce CO_2 emissions from new light commercial vehicles, and in the IA accompanying the proposal for a directive on the deployment of alternative fuels infrastructure.

5 Policy objectives

5.1 Involvement of the EU

Right to act

Having identified the problem as being the risk that the key EU Transport White Paper objective of a competitive and resource-efficient transport system will not be achieved, the next step is to establish the basis for possible Community involvement. The two main principles to address are subsidiarity and proportionality.

Subsidiarity

The issues with mobility and environment that have been described in previous chapters 3 and 4 affect the welfare of EU citizens and the functioning of the internal market. The European Union has established targets on urban air quality, introduced a directive on noise and initiated support programmes on urban mobility.

The functioning of the internal market depends, among other things, on a well-functioning transport system where the TEN-T network is an essential component. Part of a well-functioning TEN-T network is the 'last-mile' part which is often a transport service within the urban agglomerations. Congestion in these urban agglomerations limits the functioning of the TEN-T network, thereby affecting the internal market. An effective and efficient transport system is important for realising the economic benefits of the internal market and for the competitiveness of the EU.

The social and environmental EU targets on air quality, reduction of traffic accidents and reduction of noise exposures all require cities to act by moving in the direction of integrated urban mobility approaches. Non-achievement of these targets impacts the welfare of EU citizens, and the assessment has demonstrated that cities are currently not on track to achieve the targets.

EU cities are very different in all respects, which means that the specific targets that each city can realistically achieve may vary. Therefore, a similar degree of variation in the measures put in place is to be expected.

Hence, the initiative from the Union should not prescribe additional targets or specific measures to achieve the targets. An initiative should be flexible and allow for the differences across EU cities and the different planning and institutional frameworks in the individual Member States.

The EU supports urban transport projects with substantial funding through the cohesion funds. To ensure that these investments provide value for money, applicant cities should demonstrative how they will improve the transport system to make it more competitive and resource-efficient.

Proportionality

The second principle to respect is that an initiative has to be proportional to the problem. Given the importance of the problem and that there are legal initiatives in place regarding several of the sustainability aspects (e.g., air quality and noise), possible policy options for introducing a framework to support sustainable urban mobility planning seems proportional.

5.2 Policy objectives

Need to ensure that EU objectives are achieved

The overall purpose is to make sure that the key EU Transport White Paper objective of a competitive and resource-efficient transport system is achieved.

The assessment has revealed and demonstrated the high risk of cities not achieving this EU objective, and it has assessed how the level of coordination and targeted policy actions are the key factors determining whether cities will improve their situation.

Operational policy objectives

The following operational policy objectives have been defined in order to achieve the specific policy objectives set above:

› Provide EU cities with and stimulate the uptake of a policy framework encompassing all policy issues.

› Provide EU cities with and stimulate the uptake of a governance framework encompassing all necessary procedures and processes.

5.3 Intervention logic

Establishing an intervention logic

The intervention logic developed by the European Commission is illustrated in the below table. The background is the current situation and the challenges facing the urban transport sector.

Table 5-1 Intervention logic

Driver	Problem	Objective	Options
Problem driver 1 EU cities' policy-making often fails to address all ***policy issues*** that are essential to move towards a more competitive and resource-efficient transport system **Problem driver 2** EU cities' ***procedures and processes*** are often inadequate to ensure proper coordination of targeted policy actions necessary to move towards a more competitive and resource-efficient transport system	**The EU objectives crucial for a competitive and sustainable transport system – i.e. seamless mobility along the TEN-T, improved road safety, reduced CO2 emissions and noise pollution and improved air quality – are at risk because of transport developments in urban areas. This consequently negatively affects the well-being of citizens and effectiveness of businesses located in urban areas**	*General objective* To unlock the full potential of urban areas to contribute towards a more competitive and resource-efficient transport system *Specific objective 1* Provide EU urban areas with and stimulate the uptake of a policy framework encompassing all policy issues necessary to ensure an integrated approach to urban mobility, at the latest by 2020 *Specific objective 2* Provide EU urban areas with and stimulate the uptake of a governance framework encompassing all procedures and processes necessary to ensure an integrated approach to urban mobility, at the latest by 2020	Business-as-usual Voluntary approaches with recommendations and guidelines Benchmarking approaches Financial incentive approaches through link to funding requirements Mandatory approaches with minimum requirements (to content and procedure) Mandatory approaches with comprehensive requirements (to content and procedure)

6 Policy options

Given the problem definition and the objectives, alternative policy options have been defined. They have been defined to address the problem and to achieve the specific objective of providing a framework to cities that can ensure better coordination and targeted policy actions.

The previous chapters have included the assessment of the necessary element of an integrated urban mobility approach. In relation to the defined policy options, the framework for an integrated urban mobility approach will be abbreviated to a Sustainable Urban Mobility Plan framework or a SUMP framework.

6.1 Defining relevant policy framework for defining the policy option objectives

Intervention logic objectives

The intervention logic sets out two specific objectives. Both are about ensuring a framework that facilitates the coordinated and targeted use of policy issues and that supports procedures and process leading to the necessary level of coordination and targeted policy actions.

Benchmark framework

In Chapter 3, a concept for integrated urban mobility approach was identified and used as part of the assessment of the current situation and to assess the risk of EU urban agglomerations not achieving the key EU Transport White Paper objective of a competitive and resource-efficient transport system.

The concept approach was developed with two components: scope and content requirements as one component, and process and procedure requirements as the second component.

This concept approach is the basis for defining the elements related to the specific objectives.

Specific objective number one is about having the adequate policy issues for achieving coordinated and targeted policy actions. This links to the scope and content elements of the benchmark framework. The question is whether the scope and content elements of the framework could be defined differently. Given the assessment about what is needed to reduce the risk of not achieving the key Transport White Paper EU objective, most of the elements are crucial as argued in Chapter 3. What could be further considered given, for example, the input from the stakeholder consultation is whether to include specific measures. In the public consultation, access restriction schemes were ranked as important.

The assessment of city case examples has indicated that having an appropriate parking policy in place (which is one form of access restriction) constitutes an important element in achieving the overall effects of integrated urban mobility approach. Hence, it should be considered whether to include access restriction schemes in the framework for the integrated urban mobility approach.

Considerations of possible measures to include have resulted in the definition of a framework with a set of minimum requirements and a set of comprehensive requirements. The comprehensive requirements also include the possible introduction of clean technologies and alternative fuels and the issue of ensuring interoperability of the use of instruments.

SUMP framework

Several European cities have in practice implemented these integrated approaches through Sustainable Urban Mobility Plans (SUMPS). These often vary in quality, ambition and effectiveness. In the following sections of this impact assessment study, the concept of SUMPs is used to describe a true 'benchmark' integrated urban mobility approach, as identified in Chapter 3.

Based on these contributions, a SUMP framework has been completed, which is presented in the following two tables with a short justification of each element. The justifications are the same as included in Table 3-16 and Table 3-17. They are repeated here as to provide a full account of the proposed framework with the additional comprehensive requirements.

Table 6-1 SUMP framework - possible scope and content elements

Minimum content and scope requirements	Justification
Addresses both freight and passenger transport	To achieve the objective of a competitive and resource efficient transport system both freight and passenger transport needs to be covered. The experience from existing practise suggests that freight or goods distribution is not always covered and there it should be explicitly mentioned. The Stakeholder Meeting has furthermore confirmed that freight transport is very often neglected in current planning and that it is important to that freight transport is included.
Addresses all transport modes	It is essential that all transport modes are addressed as demonstrated by the review of cites with integrated approaches, and also clearly confirmed through the consultations.
Public transport	Public transport is important elements of both increasing accessibility and of promoting shift in modal split. The stakeholders have ranked this element high. Current practises suggest that often the public transport is not sufficiently coordinated.
Non-motorised transport	Non-motorised transport is the topic most respondents points to and it is important for the achieving sustainability. For bicycle transport integrated measures are in particular important in order to achieve the benefits.[82]
Road transport infrastructure	Road transport and infrastructure is typically included in all existing transport plans and should be part of integrated plan. It is important to consider the regulation of road transport – in relation to the other modes – and the use of road infrastructure. Access regulation of road transport is often a key measures for improving sustainability of the transport system.
City logistics	To achieve the objective of a competitive and resource efficient transport system both freight and passenger transport needs to be covered. The experience from existing practise suggests that freight or goods distribution is not always covered and there it should be explicitly mentioned. The Stakeholder Meeting has furthermore confirmed that freight transport is very often neglected in current planning and that it is important to that freight transport is included.
Mobility management	Mobility management is a more recent instrument to review and possible reduce the overall transport demand by companies. Examples from the city review highlight the importance of this element.

[82] CIVITAS Guard 2010; *Cluster Report 3: Cycling and Walking;* Deliverable D 2.2

Minimum content and scope requirements	Justification
Integration of transport modes/ intermodality	The integration of transport modes is crucial for achieving objectives as recognised in previous work and by stakeholders. The possibility for multimodality – combining car and public transport or cycling and public transport etc. is one of key elements of changing the transport system to be more sustainable. The review city examples and consultations all confirm the importance of this element.
Additional comprehensive requirements	
Consider specific measures/instruments: low-emission zones and urban pricing (urban road user charging/congestion charging, parking pricing and public transport pricing)	These measures were identified by stakeholders and they are increasingly being applied. They are likely to form part of the most effective and efficient packages of measures.
Introduction of clean technologies and alternative fuels	Part of White Paper objective is to introduce clean vehicles, making it relevant to consider as part of the framework.
Ensure interoperability and/or consistency in use of instruments across the EU	Certain measures such as low-emission zones are designed in different ways. That means that transport users in some cases have additional costs of adapting to differently designed measures.

Table 6-2 SUMP framework - possible process and procedure elements

Minimum processes and procedures	Justification
Contains pledge to sustainability (3 dimensions)	Sustainability is societal consensus and it needs to be an explicit driving force. To achieve the objective of a competitive and resource efficient transport system the economic, environmental and social dimensions all needs to be covered.
Includes or is built on long-term strategy	The transition to a sustainable transport system requires time and therefore there needs to be a long term perspective. To achieve the objectives for example related to CO_2 emissions long at term strategy is necessary. This has been recognized by experts and included in the ELTIS recommendations.
Identifies objectives and sets targets in line with EU policy objectives	The long term strategy needs to be made operational by specific and quantified targets. To achieve the EU objectives, the specific targets needs to be aligned with the EU and relevant national objectives. It was a key part finding that in current SUMPs targets are not always quantified and that is of one main reason creating the risk of not achieving the objectives.

Minimum processes and procedures	Justification
Includes baseline analysis including performance audit	This process element should be seen in combination with the next element on impact assessment. Only be considering where the city current is, identify the specific problems and estimate what the impacts of proposed measures will be, it is possible to define a combination of measures that can achieve the objective effectively and efficiently.
Includes impact assessment on proposed measures	As above.
Provides short-term implementation plan (timetable + budget plan; allocation of responsibilities)	Implementation is often the weakest element if timetables, budgets and implementation responsibilities are not clearly defined. This has been demonstrated in the review of cities that often not all measures are implemented due to deficiencies in the implementation.
Integrates different relevant policy areas, in particular land-use and transport planning	Land use and transport are intimately linked and Integration of these policy areas is an important element to achieve the objectives. Careful land-use planning can reduce the need for transport which is otherwise difficult to address. Stakeholders and expert confirm the importance of this element.
Considers all transport to, through and within the urban agglomeration area and coordination between different authority levels	It is a key element of the integrated approach that the SUMP approach does cover the functional city[83] so that commuting is considered in the planning. The legal requirement in France and UK explicitly requires the plans to cover the relevant agglomeration. The need to cover the agglomeration – in fact the functional city – has been confirmed by experts and through the stakeholder meeting.
Is developed in a participatory approach	The requirement to develop a SUMP in a participatory way is based on the need to reflect the stakeholder's needs and to get buy-in by stakeholders to secure effective implementation.

[83] The definition of agglomeration/functional city could be based on the harmonised definition of urban areas agreed by OECD and EU. It is a 4 step approach based on among other criteria of population density above 1500 people/km^2 in the "core" city combined with working catchment areas where more 15% works in the defined core area.

Minimum processes and procedures	Justification
Is based on integrated planning and implementation	The integration covers in additional to spatial dimension, the coordination between transport and environmental authorities and the coordination between authorities responsible for the road, public transport etc. The integration and coordination between the transport, health and environment authorities is crucial for achieving the "sustainability" of urban mobility. Improvements on safety, on social distribution of accessibility, on air quality and CO2 can only be achieved through the integrated and coordinated approach. The stakeholder and expert consultation have confirmed the importance of the integrated approach. The assessment of the impacts and benefits of integrated urban mobility approaches in France and England has further demonstrated how the integration has led to more improvements. This is a core element of a SUMP and its importance has been pointed to in our city review where many cities points to traditional sector planning as barrier for improvement.
Is adopted	The plan needs to be approved by all the relevant authorities and governing bodies in order for the implementation to take place. Political adoption is a validated basis for implementation of a plan.
Monitoring of implementation and performance	Successful implementation requires that process is monitored and also for next planning cycle better data on performance with facilitate the development of an effective and efficient plan. Currently there is lack of monitoring data.
Regular review and update of plans	The sustainable urban mobility plans will need to be regularly reviewed in order to accommodate change in external factors as well as in response to monitored performance.
Conformity check in Member States	The current practice does not always include this element. It is important that the plans and the processes are checked against the requirements so that all the key elements are included. Given some of deficiencies identified in existing urban mobility approaches this requirement could potentially increase the quality of the plans.
Additional comprehensive requirements	
Foresee mechanisms for monitoring at EU level	As above, plus the additional requirement that it should take place at EU level to make sure that monitoring is done based on common standards and quality.
Foresee mechanism for review at EU level	As above, plus the additional requirement that it should take place at EU level to make sure that monitoring is done based on common standards and quality.

Minimum processes and procedures	Justification
Conformity check at EU level	As above, plus the additional requirement that it should take place at EU level to make sure that monitoring is done based on common standards and quality.
Mandatory performance targets	In addition to the requirement of defining targets in line with EU objectives, this would introduce performance targets on mobility, safety and environmental indicators.

The developed framework is the basis for defining the specific policy options. The options will be defined in order to assess the importance of framework elements and thereby facilitate the choice of the most effective and efficient framework with regard to its content and the process and procedure requirements.

In the following sections of this study, the concept of SUMPs is used to describe a true 'benchmark' integrated urban mobility approach which encompasses the minimum or comprehensive requirements on content, scope and governance framework of cities' policy-making, as identified above in Table 6-1 and Table 6-2

6.2 Alternative policy options

Aspects of option definition

The key consideration in defining policy option is to make sure that policy options clearly respond to the identified problem and the defined objectives. The objectives include the need to promote a planning framework with the elements that are necessary to reduce the risk that cities will not achieve the EU sustainable mobility objectives.

The options have been defined covering the following aspects:

- Level of incentive
- Coverage of elements:
  - Scope definition of the SUMP framework
  - Governance definition of the SUMP framework
- Coverage of cities (by size).

Principle and alternative definitions

Within each aspect or dimension, the principle alternative definitions are presented:

- Level of incentive:
  - Voluntary SUMP framework
  - Voluntary SUMP framework with benchmarking

  - Voluntary SUMP framework with conditionally for EU funding
  - Mandatory SUMP framework based on minimum requirements
  - Mandatory SUMP framework with comprehensive requirement.
- Coverage of requirements:
  - Scope of the SUMP framework:
    - SUMP including a set of minimum generic requirements
    - SUMP including reference to specific measures (comprehensive scope).
  - Process and procedures:
    - SUMP including a set of minimum generic requirements
    - SUMP including reference to specific measures (comprehensive scope).
- Coverage of urban agglomerations:
  - Urban agglomerations above 100,000 inhabitants
  - Urban agglomerations above 250.000 inhabitants.
  - Urban agglomerations above 1,000,000 inhabitants and TEN-T node cities.

Incentives

The key choice regarding the appropriate policy option is whether to choose a voluntary or mandatory option. Therefore, both types of option need to be included in the impact assessment.

The voluntary option of issuing EU recommendations for SUMPs could be combined with soft incentives in the form of voluntary benchmarking. If it is possible to define relevant urban mobility indicators that are comparable across cities, this element could be part of the framework.

The recommendations could also be combined with harder incentives such as making it mandatory to develop a SUMP as a condition for receiving Community funding for urban transport projects. The application procedures already include requirements to do financial and economic cost-benefit analysis of projects seeking funding. While developing a SUMP would require additional efforts, it is in line with the objectives for use of Community funding to achieve Community objectives.

Mandatory SUMP requirements would further increase the incentive to develop SUMPs and mandatory requirements will in principle secure that all cities covered by requirements develop the SUMP. Mandatory requirements could be based on minimum requirements or based on the comprehensive requirements. It is part of the impact assessment to allow for identifying the right definition of requirements.

Content and Scope definition

Based on the considerations regarding the framework, it should be tested in the impact assessment what the effect of including reference to specific measures would be. Therefore, as a comprehensive scope definition, the following elements will be considered:

› Low-emission zones and urban pricing
› Clean technologies and alternative fuels
› Interoperability and or consistence in use of instruments.

Process definition

The difference between minimum and comprehensive process requirements is whether monitoring, review and conformity checks should take place at EU level or in each Member State.

City coverage

In countries where SUMP-like approaches are mandatory, the size of the covered urban agglomerations has been set at 100,000 inhabitants. Legislation such as the one on air quality covers cities above 250,000 inhabitants. To investigate the impacts of alternative urban agglomeration size thresholds, three alternatives will be included in the impact assessment.

Table 6-3 Urban agglomeration size categories – number of cities and population

	Above 100,000 inhabitants	Above 250,000 inhabitants	Above 1 million inhabitants plus capitals and TEN-T nodes
Number of urban agglomerations	438	168	84
Population in million	180	138	105

Source: Appendix A City data.

The specific definition of what a urban agglomeration means will be up to each Member State to define. The recommendation will be that it should be a functional city, and a definition has now been agreed between the EU and OECD[84]. The OECD functional city definition includes more of the working catchment areas, so this definition of the functional city covers a larger population. For a selected number of Member States, the data used in this study is compared to the OECD functional city definition. The data used in this IA study is based on Member States' own definitions of city agglomerations or designated urban agglomeration

[84] See harmonised definition of urban areas agreed by OECD and EU

for air quality and noise reporting (see Appendix A). The comparison shows that the OECD definition will lead to significantly larger city agglomerations. By using the OECD definition, up to 50 per cent of the population would be covered. The framework is likely to be flexible so it will be up to each Member State how to define the urban agglomerations.

Under the Air Quality Directive and the Environmental Noise Directive, Member States have designated zones with city agglomerations above 250,000 inhabitants.

Table 6-4 Urban agglomeration size categories – number of cities and population

	Urban agglomerations definition used in this study	OECD functional city definition
	Million inhabitants	
Austria	2.3	4.7
Belgium	2.5	6.3
Czech Republic	2.2	4.4
France	28.8	39.0
Germany	25.6	52.2
Italy	18.6	29.0
Poland	12.0	20.0
Spain	19.3	27.0
United Kingdom	30.1	43.0
Grand total	141.5	225.6

Source: Appendix A and OECD Functional city data

Developing the policy options

In principle, almost all aspects can be combined, but some combinations are irrelevant. Regarding the options of a voluntary instrument, only the comprehensive definition is considered. As they are but recommendations, they should include all relevant aspects and cities can leave out elements they would consider inappropriate. The urban agglomeration size definition is also irrelevant for the options with recommendations.

Regarding the mandatory options, the requirements could be based on either the minimum or the comprehensive requirements. With respect to the scope and content elements, the difference between the minimum and the comprehensive requirements is whether to include specific measures. This will be tested through the impacts assessment of the alternative option definitions.

Screening of options

As to the choice between minimum or comprehensive process and procedure requirements, it is a different situation. The comprehensive requirements on certain processes being conducted at EU level and the mandatory performance levels are significant additional requirements and it becomes relevant to consider the principle of subsidiarity and proportionality for this option alternative.

If monitoring, review and conformity checks were to be done at EU level, it will reduce the flexibility of the framework and it could mean that Member States that already have mandatory SUMP-like frameworks would have to modify or change these. It would entail that much implementation would need to be harmonised in order to facilitate reviews at EU level. Finally, the introduction of mandatory performance targets would be extremely difficult. Due to the heterogeneity of EU cities, it will be very difficult to establish common urban mobility performance targets that can accommodate the different conditions existing across EU.

Consequently, an option that includes the comprehensive process and procedure requirements does not add value and is not proportional to the problem. This option is screened out at this stage.

Final policy options

The resulting relevant alternative options are presented in the table below. There are six principally different options and the mandatory options are assessed in the sub-variants based on the different city size categories.

Table 6-5 Overview of options

Approach	**Scope/content minimum** **Processes and procedures minimum**	**Scope/content maximum** **Processes and procedures minimum**
1. **Business-as-usual**		R&D, best practice, campaigns, local capacity building etc.
2. **Recommendations**		Recommendations for cities for development and implementation
3. **Recommendations and incentives** Recommendations and benchmarking by urban mobility scoreboard		Recommendations for cities for development and implementation and voluntary performance targets
4. **Recommendations and incentives** Recommendations and linking access for cities to EU regional funds > x MEUR for urban transport projects		Recommendations for cities for development and implementation and financial incentives

Approach	**Scope/content minimum** **Processes and procedures minimum**	**Scope/content maximum** **Processes and procedures minimum**
5. **Mandatory approach under certain conditions** a. Urban agglomerations with population size > 100,000 inhabitants b. Urban agglomerations with population size > 250,000 inhabitants c. Urban agglomerations with population size > 1,000,000 inhabitants and capitals	Mandate for the development and implementation, under certain conditions, with minimum requirements	
6. **Mandatory approach under certain conditions** a. Urban agglomerations with population size > 100,000 inhabitants b. Urban agglomerations with population size > 250,000 inhabitants c. Urban agglomerations with population size > 1,000,000 inhabitants and capitals		Mandate for the development and implementation, under certain conditions, with comprehensive requirements

7 Impact assessment of policy options

7.1 Introduction and approach

7.1.1 Overall approach

Two-step approach

The assessment of the impacts of the policy options includes two steps:

- First, the impact of each policy option on the uptake of SUMP is estimated. In other words, to which extent does a given policy option catalyse a more targeted and better coordinated implementation of urban mobility policies and measures?
- Second, the effect of the policy options on the realisation of the improvement potential is assessed: What impacts can be expected from each policy option regarding the achievement of key local and EU policy objectives?

The assessment is based on a consideration of the barriers that currently impede targeted and coordinated action and the timely achievement of policy objectives, as well as an evaluation of effectiveness of the different policy options to overcome these barriers.

Case study based approach

The first step is to qualitatively assess the impacts of the policy options on the uptake and use of a benchmark SUMPs.

The second step is to estimate the potential improvement of the mobility, social and environmental performance of the urban transport system. The data to estimate specific improvement potential for each city is not available. The improvement potential is illustrated based on a literature review and the data from selected cities. Depending on the data available from specific case studies, the aim is to show by how much the mobility, social and environmental problems can be reduced by introducing SUMPs in the selected cities. The approach is illustrated in Figure 7-1.

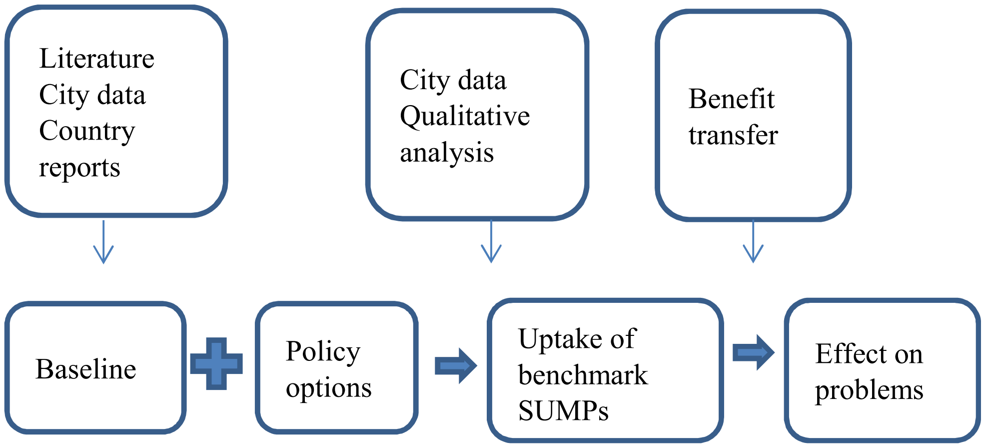


Figure 7-1 Overview of quantitative illustration

Section 7.2 presents the assessment of the uptake of the benchmark SUMP, while Section 7.3 includes considerations of the effects of the benchmark SUMP.

7.2 Impact on coordination and targeted policy action

In this section, the increased uptake of integrated urban mobility approach, meaning cities developing SUMPs, is estimated. Chapter 4 Baseline includes the assessment of the baseline – Option 1 – situation. This section covers Options 2 to 6.

7.2.1 Option 2 – Recommendations

Content of recommendations

The recommendations could consist of a set of papers, Internet documents and other material, which demonstrate to cities how sustainable urban mobility planning can be performed. Examples of material are:

- EU consolidated/approved and expert verified approach to urban mobility planning
- Outline of the SUMP framework
- Guidance documents.

Benefits of recommendations

The key benefit of the recommendations is that they make it easier for cities to develop better urban mobility plans if they so desire.

The recommendations will help cities overcome the barriers of lack of knowledge. The importance of this barrier is described in Chapter 4, Table 4-1. In that table, the cities rank lack of knowledge as the third most important barrier out of four. This indicates that even if the recommendations do succeed in removing the barrier of lack of knowledge, there are other important barriers, which affect cities' take-up of SUMPs even more. Similar findings are reported in Atkins (2007) and Rupprecht (2011).

Recommendations will be effective, if city planning staff is skilled and has the power to change planning practices. Evidence indicates that this is not always the case. As can be seen from Table 4-1, planning practices are mentioned as the second most important barrier to the implementation of SUMPs.

Barriers

The recommendations might also help overcome the barrier of planning tradition preventing coordination and integration. Though the effect of recommendations on this barrier might be less than the effect on the lack of knowledge, it might provide hints on how to increase coordination and integration across traditional sector organisations through the accompanying guidance documents.

The barrier of lack of financial resources to develop the SUMP will not be addressed by this option. Some, existing sources of finance in existing programmes are expected to continue (baseline). However, it is difficult to assess whether an official framework for SUMP will make it easier or more attractive to cities to search for funding to develop SUMPs.

To address the lack of political interest, the introduction of an official framework may be the solution. Given its higher status, an official EU recommended SUMP framework may get more attention and it may strengthen the arguments from stakeholders in favour of the introduction of SUMP.

Voluntary examples

One example of uptake of a voluntary SUMP-like approach comes from France where some cities with less than 100,000 inhabitants decided to develop the PDU though they are not legally required to do so. The text box presents the example, which suggests that as many as 20% of cities have developed a PDU – though this number is subject to some uncertainty.

Another example of voluntary actions is the Covenant of Mayors, which is an initiative to promote CO2 reductions at local level in order to achieve the EU objective of 20% GHG emission reductions by 2020. The initiative was launched in the 2008, and within five years about 4,900 EU27 cities had signed the declaration. The participating cities cover about 42% of the EU27 urban population.

The signatories are committed to achieving GHG reductions of at least 20% by 2020, and they should develop a sustainable energy action plan (SEAP). About 2600 of the participating cities had submitted a SEAP by March 2013.

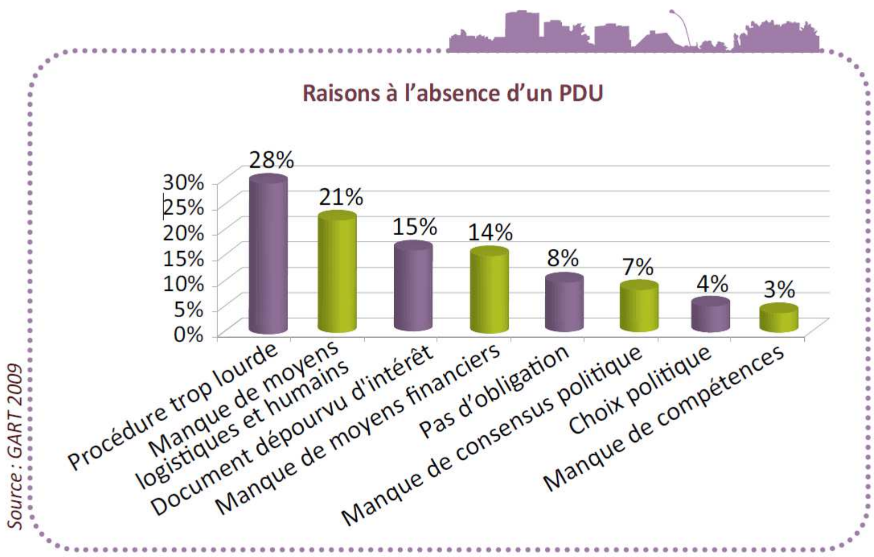
This example with the Covenant of Mayors and voluntary SEAPs illustrate a high degree of uptake during the five-year period since the initiation of the programme.

Text Box 7-1 Voluntary PDUs in France

French cities with voluntary PDUs

A survey among French cities on urban mobility planning included both cities with legal requirements to develop the PDU as well as cities with less than 100,000 inhabitants which do not have such an obligation.

Of 89 cities with no legal obligation, about 20% had voluntarily developed a PDU. The representativeness of this survey is not known (114 out of 259 cities have responded to the survey). However, it can be used as an indication of the voluntary uptake in France. The reasons for not having a PDU given by the cities without a plan should be noted. The figure below illustrates the key reasons.



Sur 71 AOTU n'ayant pas de PDU (pas de document, PGD et autres documents)

The main reasons include too burdensome procedures or lack of human resources. The areas covered by the PDUs vary, but the study – GART 2009 – does not allow for comparing whether the voluntary PDUs are more or less comprehensive.

Source: GART 2009

Compared to the SUMPs, the SEAP are somewhat simpler to develop as they are focused on one key indicator –CO_2 emissions – and they do not require the complex integration and coordination that a benchmark SUMP would require. The French cities without a SUMP stated burdensome procedures as the main reason.

Cities might apply parts of the recommendations, but this assessment considers the uptake of the benchmark SUMP, which requires a higher degree of coordination and integration than currently achieved in even the more advanced EU cities.

In Table 7-1, we present our assessment of how the policy option performs with respect to overcoming the barriers to implementation of SUMPs. In summary, we expect that the option is effective in reducing barriers caused by lack of knowledge and to a lesser extent the barriers of planning tradition and political interest. We do not expect the option to bring more funds to the area of sustainable urban mobility planning in the short run. In the longer run, recommendations may help create a good practice for sustainable urban mobility planning, which indirectly improves the political will to do sustainable urban mobility planning, changes planning traditions and provides more funding to the area.

Table 7-1 Effect of the policy option "recommendations"

Barrier	Effect	Argument
Lack of political will or interest	+	An EU-approved and consolidated approach to sustainable urban mobility planning will provide an official and thereby more authoritative status with regard to the planning principles. However, since the recommendations have no binding effect and are merely an instrument that authorities can choose to use on a voluntary basis, considering for example the case of voluntary PDUs in France, it is unlikely that the policy option will have significant effect in overcoming barriers related to lack of political will or interest in implementing sustainable urban mobility planning principles. Hence, the assessment is that it will have a minor effect on this barrier.
Lack of knowledge of SUMPs and/or the benefits of SUMPs	+	Official EU recommendations and guidance on sustainable urban mobility plans will heighten the awareness of the underlying planning principles as well as the benefits of SUMP. Guidelines and examples of such planning principles, however, already exist, and therefore one cannot expect a full impact from this policy option as regards the current lack of knowledge/awareness.
Planning tradition and culture (lack of tradition for integration and coordination)	+	Guidance in the form of official EU recommendations can only be expected to have some effects on the lack of tradition for integrated and coordinated planning.
Lack of funds for: - integrated planning. - specific measures.	0	This policy option does not come with any additional form of funding opportunities. In principle, the existence of official recommendations and guidance on how to do a SUMP may help cities apply for and use some of the existing funding opportunities. It could therefore have a minor effect on this barrier.

0: no effect, +: small effect, ++: medium effect, +++: large effect.

7.2.2 Option 3 – Recommendations with incentives

Content of the option

This option consists of the same types of material as in Option 2, but adds a benchmarking tool. This benchmarking tool could be a sustainable urban mobility scoreboard, but other tools are possible. An urban mobility scoreboard would be published on the European Commission's websites, and possibly also on the websites of national governments, national city interest organisations or others.

Benefits of the option

The benefits of the option are 1) that it reduces barriers caused by a lack of knowledge of SUMPs, and 2) that it reduces the barriers caused by a lack of political will. The improved political will arises when benchmarking facilitates comparing a city's performance with that of other comparable cities, and documents in a credible way how good a city is to live in. Assuming that cities want to be attractive – and be perceived as such – they will have an incentive to perform well in the benchmarking. Benchmarking would make city decision-makers more open to improvements in urban planning.

When will the option be effective?

The option is effective if the benchmarking becomes widely accepted and appreciated as useful and credible. Furthermore, the citizens must put weight on the issue of sustainable mobility. This can happen either through their voting at local elections or through their decision on which city to locate themselves in.

Attracting inhabitants may be desirable to city decision-makers for several reasons. First, city decision-makers may find it rewarding to have a growing city, because growth is a form of recognition or proof that the city is well run. Second, city growth may improve the economic stance of a city, thus entailing more economic opportunities for city decision-makers and businesses. The latter, however, depends on the mechanisms for transfer of funds between different administrative levels in a country. It may be that cities that improve their economy have to transfer most of the gain to other cities.

There are various benchmarks of cities but no assessments of the effects of such benefits have been identified. It would also be difficult to transfer the results from one benchmark to another. The main effect will, as mentioned above, depend on the weight the stakeholders place on the specific issues covered by the benchmark and the reliability of the benchmark. In cities where the civil society is actively engaged in the development of the city, more effect could be expected as interested organisations could raise issues and put focus on the benchmark results if they were not favourable for a city. The benchmark would therefore be expected to have a larger impact in cities that are already working with sustainable mobility issues.

A factor that could limit the effect of this option is the difficulty of defining relevant benchmark indicators. The differences between cities regarding their base conditions mean that it is not straightforward to define indicators that can measure performance objectively. The effect of this option therefore depends on good benchmark indicators being developed.

Assessment of effectiveness

In Table 7-2, we summarize our assessment of the impact of Option 3 on the take-up of SUMPs. We expect a greater reduction in the barriers caused by lack of knowledge than we did for Option 2. The reason is that we expect the urban mobility scoreboard to demonstrate to cities that those with sustainable urban mobility planning achieve a higher level of quality of life. Thereby, an additional effect is achieved compared to Option 2, because the benefits of sustainable urban mobility planning become clearer to cities. We also expect a greater reduction in the barriers caused by lack of political will, as explained earlier.

Table 7-2 Effect of the policy option "recommendations and benchmarking"

Barrier	Effect	Argument
Lack of political will or interest	++	Compared to policy Option 2, the combination of official EU recommendations with city benchmarking on selected sustainable urban mobility indicators has the potential of increasing the political will/interest in applying the recommended steps for urban mobility planning. This effect is caused by the fact that cities are now compared against each other, and that each city has an incentive to score well to stay attractive to current and new citizens.
Lack of knowledge of SUMPs and/or the benefits of SUMPs	++	Compared to policy Option 2, the comparison of cities across selected sustainable urban mobility benchmarks will naturally draw more attention to sustainable urban mobility planning principles as well as the potential benefits that cities may derive from it. Moreover, with the right approach, such attention can come from both city authorities, citizens and the public media. More focus on city performance in the public domain will drive more politicians to look closer at sustainable urban mobility principles, and this can help to boost political will/interest in the subject.
Planning tradition and culture (lack of tradition for integration and coordination)	+	With improved political will and better knowledge of sustainable urban mobility planning principles/benefits, city authorities may take actual steps that can lead to changes in planning traditions towards better integration and more coordination. However, until clear benchmarks are set up for cities to compare themselves, and until such benchmarks have been accepted and disseminated into the public domain, such steps are expected to be relatively small on average.
Lack of funds for: - integrated planning. - specific measures.	0	This policy option does not come with any additional form of funding opportunities. In principle, the existence of official recommendations and guidance on how to do a SUMP might help cities to apply for and use some of the existing funding opportunities. The benchmarking could further increase the interest in developing SUMPs and increase the search for relevant funding. It could therefore have a minor effect on this barrier.

0: no effect, +: small effect, ++: medium effect, +++: large effect.

7.2.3 Option 4 – Recommendations with incentives, linking access to EU funding

Content of the option

This option builds on Option 2 and includes a link between SUMPs and funding from the EU. In that way, cities applying for funding from, e.g., the regional development funds, will need to have a SUMP in place in order to qualify for funding. It also means that cities that already have a SUMP would more easily be ready to apply for EU funding. This option does not include the benchmarking of Option 3.

Benefits of the option

Developing a SUMP provides a solid basis for sound policy and investment decisions. Linking access to EU funding to the existence of a SUMP would help safeguard the EU's financial interests. EU funding is considerable, and such a link would create great incentives for the development of SUMP, even if the cities are doubtful that SUMPs help solve their problems.

This option addresses the barriers caused by a lack of knowledge of SUMPs, lack of political will and lack of funding. The lack of knowledge is addressed in the same way as for options 2 and 3. The lack of political interest or will is addressed in the way that if a city wants EU funding, the development of a SUMP is mandatory.

When will the option be effective?

Care is needed when designing this kind of economic incentive scheme. It is important to be aware of the following issues:

- Linking EU funding to the existence of SUMPs creates a risk of enhancing rather than closing the divide between more and less advanced cities. Therefore, EU funding should support the development of SUMPs in eligible regions and urban areas and thus make them fit to subsequently receive EU support for implementation. There are support schemes for the development of the SUMP and it is assumed for this option that cities will be able to get the SUMP development funded.

- In principle, having conditions on funding for urban transport infrastructure could lead cities to apply for less funding in this area compared to non-transport sectors. In practice, this is not likely to be a major issue. There are already requirements for preparing a cost-benefit assessment as part of the application, and if there are possibilities for funding also for the SUMP development, this issue will not be very relevant.

- Cities understand what is required of a SUMP in order to qualify for funding. It is important that the requirements be sufficiently clear so that cities and the EU can enforce the funding programme effectively. It is also important that the EU can distinguish between SUMPs that fulfil the intentions of the plans and SUMPs, which were only drafted to get funding.

Assessment of the option

The effect of this option depends also on the thresholds for SUMPs being conditional and on the overall funding sources. Considering historical EU funding through the cohesion and structural funds, the amount allocated for urban transport was about 8 billion in the period from 2007 to 2013. Also, support to the development of sustainable urban mobility plans has been provided, for example through the JASPERS programme[85].

Assuming that the funding for urban transport projects will be in the same order and assuming an average project size of EUR 50 million, about 150 projects could be funded. This corresponds to about one third of all cities above 100,000 inhabitants (assuming one project in each city). This indicates a potential uptake of about one third over the budget period from 2014 to 2020. Given that many sustainable mobility projects are less investment heavy, the average project size could be lower leading to a potential for supporting a larger number of cities. For the cohesion funds, the operational programmes that each Member State develops would include the priorities for urban transport.

[85] See for example: Integrated Urban Transport Plans And Cohesion Policy 2011

Table 7-3 summarizes our assessment of the effect of the option on cities' take-up of SUMPs. We expect a stronger effect of this option than we do of Options 2 and 3. This is because the option addresses three of the four barriers described in Chapter 4 and, most importantly, it addresses the barrier of lack of funding, which is considered the most important by the city respondents. Lack of funding is also among the most important barriers in Atkins (2007). In this way, the option goes further than the other two options.

Table 7-3 Effect of the policy option "recommendations and linking access to funding"

Barrier	Effect	Argument
Lack of political will or interest	++	Official EU SUMP recommendations combined with the requirement for implementing SUMP principles in order to gain access to EU funding for specific urban mobility measures will increase the political will/interest in sustainable urban mobility planning compared to policy option 2. To what degree the lack of political will/interest in SUMP will be affected, however, depends on the specific rules associated with the funding opportunities. The specific definition of the requirements will further determine the impact. If it will be possible to combine smaller measures into a package justified through the SUMP, it will help to secure more funding for sustainable mobility projects. Overall, this option will help to overcome the barrier of lack of interests.
Lack of knowledge of SUMPs and/or the benefits of SUMPs	++	Compared to policy option 2, the availability of funding for specific urban mobility measures may lead to a higher level of knowledge of the SUMP planning principles as well as of the associated benefits. The extent to which this policy option will improve the barrier of lack of knowledge/benefits will depend on how the SUMP requirements are defined and communicated to city authorities.
Planning tradition and culture (lack of tradition for integration and coordination)	++	Compared to policy option 2, the added effect of access to EU funding for specific urban mobility measures is more likely to initiate a planning tradition based on SUMP principles such as better integration and coordination.
Lack of funds for: - integrated planning. - specific measures.	+++	Depending on how the funding requirements are specified in this policy option, the barrier of lack of funding for specific measures will decrease. Potentially, this could have a large effect if the funding would also cover the development of the SUMP.

0: no effect, +: small effect, ++: medium effect, +++: large effect.

7.2.4 Option 5 – Mandatory approach under certain conditions

With option 5, the EU would seek to mandate the development and implementation of a SUMP by the competent authorities in the Member States under certain criteria.

Benefits of mandating

The main difference between this option of mandating a SUMP and Options 2 to 4 is that this option will lead all cities covered by the obligation to develop the benchmark SUMP. Hence, this option "overcomes" in principle all the barriers. The strength of this effect depends on:

- The power of the repercussions associated with failing to deliver on SUMPs. If the cities do not want to develop and implement SUMPs – for reasons of lack of knowledge/conviction or lack of resources – they may not perform a SUMP unless they are penalized for not doing so. The stronger and more credible the penalty is, the more effective the policy of mandating SUMPs is. In France and England where the SUMP has been mandatory, all cities have developed such plans[86].

- The ability of competent authorities or supervisory bodies in the Member States to prove that a city has not developed and implemented a SUMP. In order to impose repercussions on cities which do not develop and implement SUMPs, it is necessary to be able to document or prove whether a city has developed and implemented a SUMP (with all its requirements).

- The ability to document or prove SUMP development and implementation also depends on how well specified the SUMP contents and process are: the more room for interpretation there is, the more difficult it will be to document failure to develop and implement SUMPs, and the less effect it will have to make SUMPs mandatory.

- The parties are involved in enforcing the SUMPs. In other areas of EU law, a potential for involving environmental organization in the enforcement of EU law has been found, c.f., e.g., Slepcevic (2009)[87].

The overall assessment is presented in the table below. Making the SUMPs mandatory will mean that all urban agglomerations covered will develop a SUMP, but the quality of the SUMP – whether it meets all the benchmark criteria will depend on the conformity check done in each Member State.

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[86] Initially, the plans were required in order to receive national co-funding of urban transport so there were a clear incentive to develop the plans in both France and England.
[87] Reinhard Slepcevic (2009): The judicial enforcement of EU law through national courts: possibilities and limits. *Journal of European Public Policy*, 16(3), pp. 378-394.

Table 7-4 Effect of the policy option "mandate for the development and implementation, under certain conditions, with minimum requirements"

Barrier	Effect	Argument
Lack of political will or interest	+++	Making the SUMP mandatory will overcome this barrier. As discussed the quality of the SUMP and the quality of the implementation will depend on the political will and the way that the conformity check is being done.
Lack of knowledge of SUMPs and/or the benefit of SUMPs	+++	When SUMPs become mandatory, it is reasonable to assume that the bodies for whom it becomes mandatory to have a SUMP will also know what a SUMP is.
Planning tradition and culture (lack of tradition for integration and coordination)	++	The option will affect the planning tradition and lead to more integration and coordination in the cities' urban mobility planning and we assess that this option will lead to "++" effect.
Lack of funds for integrated planning	++	Making it mandatory means that cities will have to make the necessary funds available.
Lack of funds for implementing certain measures	+	If no additional funding to local authorities is entailed in the proposal, and the local authorities even have to spend more money on planning, the funds for concrete initiatives may go down. However, one of the benefits of a SUMP is that it should lead to more efficient packages of measures and hence leads to overall savings.

7.2.5 Option 6 – Mandatory approach with comprehensive requirements on scope and content

The assessment of Option 6 is similar to Option 5; only it considers the effect of the elements included in the comprehensive definition of scope and content.

These elements include:

› consideration of specific measures such as low-emission zones and urban pricing (urban road user charging/congestion charging, parking pricing and public transport pricing)

› the introduction of clean technologies and alternative fuels

› ensuring interoperability and/or consistency in use of instruments across the EU.

The first element would catalyse serious consideration of certain measures for inclusion into an urban transport system; measures that might otherwise not be considered or too easily discarded. By applying a SUMP approach, it is likely that most cities will consider these measures to some extent, but the specific inclusion increases the likelihood that they be considered more thoroughly. It is not going to have a large impact on the uptake of the integrated urban mobility approach and on developing SUMPs.

The introduction of clean technologies and alternative fuels also depends on external factors such as the technological development and the quality of such technologies. Many cities are already in the process of considering infrastructure for alternative fuels and including these aspects in their procurement of vehicles. Including this element will not affect the uptake of SUMPs; as they are mandatory it would likely have an impact on the effects of the SUMPs by increasing the effort regarding introduction of clean technologies and alternative fuels.

Ensuring interoperability is a different type of requirement. Its effect will depend on its precise definition. If EU standards were developed and cities were required to follow such standards, it would, on one hand, restrict the flexibility of selecting a specific design of a measure tailored to each city's needs. On the other hand, it would make selection easier and save costs of finding and designing the measures in each case. Consistency could also mean that a city, before introducing a measure, should review similar measures applied in other Member States. In case different designs were already in use, the city would have to make its own choice which would not necessarily lead to increased consistency.

In summary, for cities it would make the implementation of measures easier if there are EU standards and designs that are ready to be applied compared to a situation where each city has to investigate alternatives designs.

If or example access restrictions are done in a similar way it could reduce the costs for companies distributing goods in different cities and hence increase their support of the SUMP.

Overall, the inclusion of the specific measures and the requirement of interoperability in Option 6 will not affect the uptake of SUMPs compared to Option 5 as the SUMP is mandatory the uptake will still be 100%. The difference could be that Option 6 will lead to SUMPs that would provide more impacts compared to Option 5.

Table 7-5 Effect of the policy option "mandate for the development and implementation, under certain conditions, with comprehensive requirements on scope and content"

Barrier	Effect	Argument
Lack of political will or interest	+++	This is the same as for Option 5.
Lack of knowledge of SUMPs and/or the benefit of SUMPs	+++	The same as for Option 5, though the effect could be larger. The inclusion of concrete instruments and technologies and interoperability will probably increase the knowledge of SUMPs and their benefits.
Planning tradition and culture (lack of tradition for integration and coordination)	++	As for Option 5. The inclusion of specific measures will not in itself increase the effect on planning tradition or culture.
Lack of funds for integrated planning	++	The same as for Option 5.

Barrier	Effect	Argument
Lack of funds for implementing certain measures	+	The same as for Option 5.

7.2.6 Summary of effects of options on uptake of the benchmark SUMP

Table 7-6 presents a summary of the qualitative scoring of each option based on how the options could impact each of the problem drivers/barriers as explained in the previous sections – option by option. The qualitative scores are added to give an overall assessment of each option.

Table 7-6 Summary of the assessments of effect of options on take-up of SUMPs

Option	Lack of political will	Lack of knowledge	Planning tradition	Lack of funding	Total
Option 2: Recommendations	+	+	+	0	3+
Option 3: Recommendation with voluntary benchmarking	++	++	+	0	5+
Option 4: Recommendations with incentives, linking access to EU funding	++	++	+	+++	8+
Option 5: Mandatory with minimum requirements for content and scope	+++	+++	++	++	10+
Option 6: Mandatory with comprehensive requirements for content and scope	+++	+++	++	++	10+

Source: Own exposition based on assessments above.

The qualitative scoring in the above table expresses the expected effect of each option on the uptake of the benchmark SUMP. In the assessment of the current situation and the baseline considerations, the shares of urban agglomerations applying the different quality levels of integrated urban mobility approaches were estimated.

Having assessed the expected effect of the policy options on the uptake of the benchmark SUMP, the effect on the distribution of urban agglomerations across the different quality levels can be assessed. The level high/complete refers to the benchmark SUMP with all the requirements defined by each option; see Chapter 6 on policy options for details of the requirements.

Table 7-7 Summary of the assessments of effect of options on distribution of cities on SUMP categories

Option	**No/ limited**	**Low/ medium**	**Medium/ high**	**High/ complete**
Option 1: Baseline/business-as-usual	Few	Some	Some	None
Option 2: Recommendations	Few	Some	Some	Few
Option 3: Recommendation with voluntary benchmarking	Few	Some	Some	Some
Option 4: Recommendations with incentives, linking access to EU funding	Few	Some	Some	Some
Option 5: Mandatory with minimum requirements for content and scope	None	None	None	Many
Option 6: Mandatory with comprehensive requirements for content and scope	None	None	None	Many

Source: Own exposition based on assessments above.

This qualitative assessment might be used to make quantitative scenarios for the uptake of the benchmark SUMP. Based on an assessment of the SUMPs quality levels of each urban agglomeration or for representative samples, a quantified scenario has been established.

The uptake shares are presented in the following tables by the high/complete category. The uptake shares relate to percentages of population in urban agglomerations by each SUMP level.

In addition to the qualitative scoring, the assessment of Options 2, 3 and 4 are, see Table 7-6, based on considerations such as the example from a French survey indicating that 20% of cities have adopted an integrated urban mobility approach voluntarily but also the fact that while urban agglomerations might adopt elements of the recommendations they may not include all the benchmark elements. Option 4 could have a potential to lead to a higher uptake through the conditionally for getting EU funding.

Options 5 and 6 with a mandatory approach is assumed to lead to a 100% uptake of the benchmark SUMP.

Table 7-8 Uptake of SUMPs by policy options – cities above 100,000 inhabitants

Uptake of SUMPs	No/ limited	Low/ Medium	Medium/ High	**High/ Complete**
Option 1 = baseline	3%	33%	65%	0%
Option 2: Recommendations	0%	15%	65%	15-25%
Option 3: Recommendation with voluntary benchmarking	0%	10%	60%	25-35%
Option 4: Recommendations with incentives, linking access to EU funding	0%	0%	65%	30-50%
Option 5: Mandatory with minimum requirements on content and scope	0%	0%	0%	100%
Option 6: Mandatory with comprehensive requirements on content and scope	0%	0%	0%	100%

For cities above 250,000, the baseline is slightly different as there are more cities in the medium/high category and for the largest cities including the TEN-T node cities the share of medium/high category is even a little higher.

For Options 2 to 4, there is no distinction between city sizes as the recommendations will cover all cities with more than 100,000 inhabitants[88].

The tables below present the baseline for the category of cities with a population above 250,000 inhabitants and the category of TEN-T urban nodes and cities with a population above 1 million inhabitants.

Table 7-9 Uptake of SUMPs by policy options – cities above 250,000 inhabitants

Uptake of SUMPs	No/ limited	Low/ Medium	Medium/ High	**High/ Complete**
Option 1 = baseline	0%	30%	70%	0%
Option 5: Mandatory with minimum requirements on content and scope	0%	0%	0%	100%
Option 6: Mandatory with comprehensive requirements on content and scope	0%	0%	0%	100%

Irrespective of the city categories, Options 5 and 6 are assumed to achieve the same uptake as they it is mandatory to develop the complete benchmark SUMP under these two options.

Table 7-10 Uptake of SUMPs by policy options – cities above 1,000,000 inhabitants plus TEN-T node cities

Uptake of SUMPs	No/ limited	Low/ Medium	Medium/ High	**High/ Complete**
Option 1 = baseline	0%	25%	75%	0%
Option 5: Mandatory with minimum requirements on content and scope	0%	0%	0%	100%
Option 6: Mandatory with comprehensive requirements on content and scope	0%	0%	0%	100%

7.3 Impacts of increased SUMP uptake

Examples of overall impacts of benchmark SUMPs

This section presents different examples of how the development of benchmark SUMPs could affect the key mobility, economic, social and environmental issues.

In itself, the introduction of the benchmark SUMP does not guarantee that specific measures are implemented, but the requirements to define targets in line with EU

[88] The recommendations can in principle cover any city also cities with less than 100,000 inhabitants but the assessment of impacts covers only cities above 100,000 inhabitants.

objectives and presence of an implementation plan for the measures identified increase the likelihood of significant improvements resulting from the benchmark SUMPs.

The cases demonstrating the likely effects are the following:

- A study of four cities and simulation of effects of comprehensive package of measures (Creutzig et al 20012):
- A study by Fraunhofer/INFRAS/IFEU in Germany on the "*Economic aspects of non-technical measures to reduce traffic emissions"*
- Review of a number cities concerning their plans and the long-term targets that are included in the plans.

Subsequently, the benefits are elaborated on under the heading of economic, social and environmental impacts where case examples are used to illustrate specific impacts.

7.3.1 Example of scenario assessment in four case cities

Effects of SUMPs

The assessment of the impact of adopting a full or complete integrated mobility approach where all key requirements is based on a case study approach.

As argued in Chapter 3, the cities are very different, and it is not easy to estimate how a benchmark SUMP will affect the overall urban mobility, social and environment problems and issues at the EU level. An overall assessment would require detailed data for many cities, which are not available.

In order to describe the potential effects of the uptake of a benchmark SUMP, the example presented in this section illustrates the improvements that could be achieved by implementing comprehensive packages of measures.

An indicative mix of city examples

Creutzig et al (2012) have assessed alternative scenarios in four European cities. Through a process including stakeholder workshops, alternative packages of measures for each city were identified, and the researchers then used model simulations to estimate the potential impacts on key parameters.

- Four cities were covered: Barcelona, Freiburg, Malmo and Sofia. These cities differ in terms of size, growth prospects, geography, current mobility situation, etc.
- The cities vary to some degree with respect to their current SUMP states. Barcelona, Freiburg and Malmö have all developed SUMPs, which have been assessed as medium/high concerning the elements included. Sofia has developed plans as part of the EU funding applications, however, some elements were excluded, for example the development has not taken place through a comprehensive stakeholder process.

- Four scenarios were assessed for each city. The scenarios imply increasing ambition levels. The most comprehensive scenario that can be assumed to illustrate the order of magnitude of the effects of a benchmark SUMP approach includes the following types of policy measures:
  - Pull measures that aim at making non-motorised transport and public transport more attractive
  - Push measures that aim at restricting individual motorised transport
  - Land use measures.

The study is based on data on the volume of transport and modal split in each city, to which are applied standard assumptions on the external costs per vehicle km based on Delft 2008.

The effects of the proposed measures are estimated as changes to the transport volume and change to the modal split. This part of the simulation has been done using elasticities drawn from a literature review.

Based on Creutzig et al (2012), quite similar potential reductions in external costs of air pollution, accidents, noise, congestion and the level of GHG are observed in Barcelona and Sofia compared with developments under current trends and policies. An explanation may be the similar transport volumes per capita in the two cities (28.7 vkm/cap/day in Barcelona versus 29.2 vkm/cap/day in Sofia) despite a slightly higher modal share of motorized individual transport in Sofia compared to Barcelona (34 per cent in Sofia versus 24% in Barcelona).

The reduction potentials are somewhat higher in Barcelona and Sofia compared to Freiburg. This is for example due to differences in starting conditions where Freiburg (and Malmö) already has an extensive bicycle network and therefore already has reaped some of the benefits from such network. Malmö is projected to have a high population growth meaning that the effects of the land use measures according the study is higher compared to the other cities.

Table 7-11 shows the full effects of an integrated approach to the external costs of air pollution, accidents, noise, congestion and the level of the GHG emissions. For example, in Barcelona, the external costs of air pollution would decrease by about 59% by 2040 by adopting an integrated approach compared to developments under current trends and policies. Relatively similar effects on the external costs of air pollution are estimated for Sofia (about a 60% reduction) while the decrease in the external costs is lower in Freiburg (-37%) and higher in Malmo (-75%).

Table 7-11 Creutzig et al's (2012) comprehensive scenario assumed to illustrate the full effects of a benchmark SUMP

Change in % compared to developments under current trends and policies, in 2040	External costs of air pollution	External costs of accidents	External costs of noise	External costs of congestion	GHG (tCO2 eq)
Barcelona	-59.1%	-58.1%	-33.6%	-62.1%	-40.0%
Freiburg	-37.3%	-36.8%	-15.9%	-32.9%	-36.4%
Sofia	-59.7%	-59.4%	-32.1%	-58.7%	-46.7%
Malmo	-74.6%	-74.9%	-35.5%	-65.2%	-70.0%

The study illustrates that significant improvements are possible if comprehensive packages of measures are introduced. They should combine the elements of improving the public transport service, promoting the use of non-motorised transport and regulating use of motorised transport. Furthermore, by including land use planning measures the overall transport demand can be managed.

Even though the study is based on ex-ante model simulations, it illustrates an improvement potential that is generated when comprehensive packages of measures are introduced. Urban agglomerations that develop benchmark SUMPs may not fully achieve this improvement potential, but they may be able to achieve higher improvement than what historically has been observed.

7.3.2 German study on sustainable transport measures

Few assessments apart from the Creutzig study have estimated the possible effect of combining specific measures to promote sustainable transport. A very recent German study includes similar assessments, and the study can be used to gain further insight into this area.

The starting point for study "Economic aspects of non-technical measures to reduce traffic emissions"[89] has been to look at alternative measures to reduce traffic emissions and to investigate the economic effects of such alternative measures. The study considers alternative packages of measures and their effects. It can help to understand:

› the importance of comparing alternative packages of specific measures

› the overall economic, social and environmental impacts

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[89] Fraunhofer/INFRAS/IFEU 2013 *Economic aspects of non-technical measures to reduce traffic emissions* Report No. (UBA-FB) 001728

› the macro-economic effects as the study also considers the investments needed for implementing the specific measures.

The study investigates five packages of measures which all comprise different types of measures and instruments. The effects of the measures are assessed with regard to health, safety and environmental issues, including CO_2 and private transport expenditure.

The study also considers the macro-economic effects of the alternative packages. The assessment was made by applying different types of transport and economic models. The assessment was done for 2020 and 2030, and the figures reported here are for 2030.

The different scenarios – called measures – are illustrated below. Each "measure" includes a number of instruments (otherwise called measures in this study). The scenarios are not as comprehensive as the measures assumed in the Creutzig study, but they illustrate combinations of measures that have both pull, push and land use aspects. The scenarios M1 to M4 are most relevant to the urban situation.

Table 7-12 Measures and instruments in passenger transport[90]

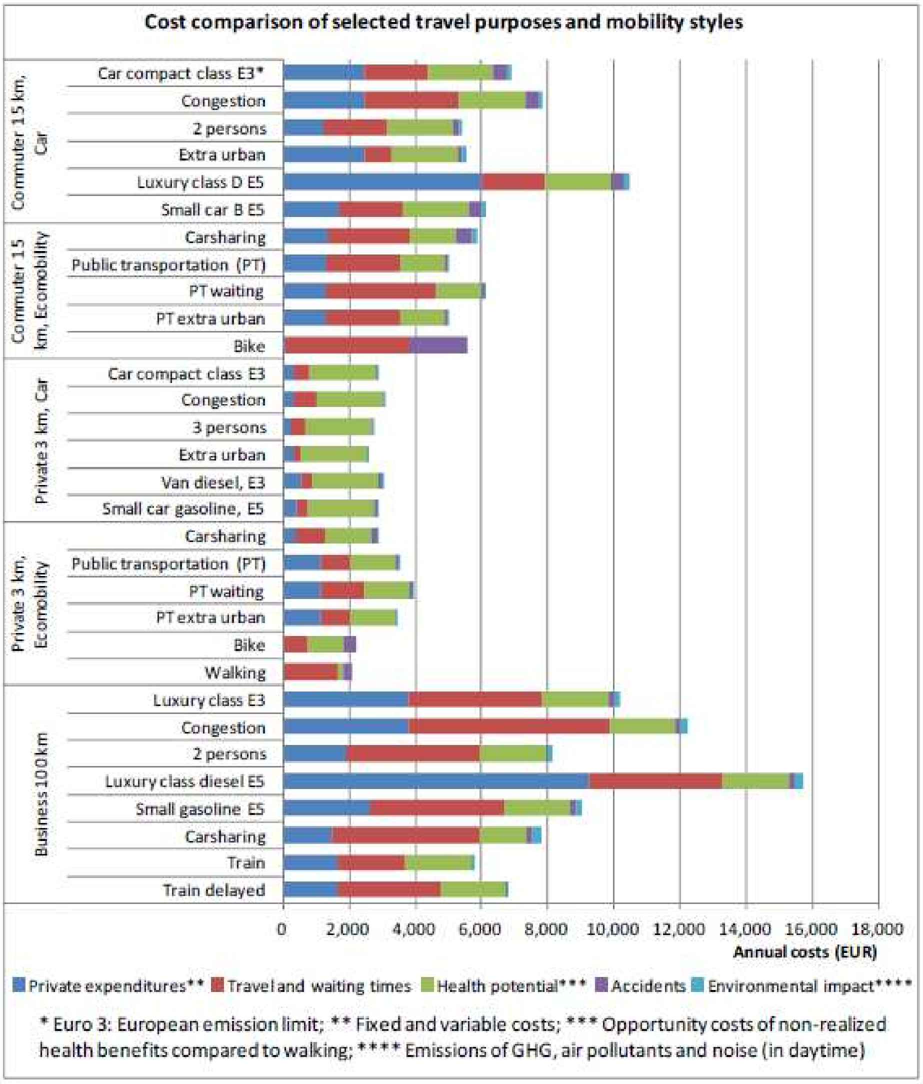
Measure	Type of instruments	Possible instruments
Measure M1: "Modal Split" Pedestrians and bicycles	Pricing incentives	Parking fees, city toll (congestion charge), subsidized car sharing
	Infrastructure	Expansion of pedestrian zones and cycle path networks, shifting capacities from motorized individual transport (cars) to bicycles
	Regulation, enforcement	Speed limits, restricted access
	Soft measures, spatial planning	Mobility management; information systems; city planning ("city of short distances")
Measure M2: modal split local public transport	Price incentives	Public transport subsidies; parking space management; city toll (congestion charge)
	Infrastructure	Investments in public transport; making railway stations more attractive; Park&Ride–offers
	Regulations, enforcement	Speed limits Restricted access (environmental zones, pedestrian zones)
	Soft measures and spa-tial planning	Mobility management; information systems/labeling; guide systems; alignment of city planning and public trans-port
Measure M3: Shorter distances traveled by car	Price incentives	Differentiation of real estate prices using incentives for raising urban density; elements of mobility pricing or "eco-logical tax reform"
	Infrastructure	Redesigning urban areas ("city of short distances"); making regional destinations more attractive (far beyond purely transport infrastructures)
	Regulations, enforcement	Land use, reporting/displaying commercial areas
	Soft measures and spa-tial planning	Urban planning ("city of short distances"); information on regional travel offers and leisure activities
Measure M4: Increased efficiency of private car use	Price incentives	Differentiated private car tax and fee systems; increased environmental tax; state subsidies for alternative drive technologies
	Infrastructure	-
	Regulations, enforcement	Restricted access (environmental zones); vehicle regula-tions/banning vehicles with lower Euro classes
	Soft measures and spa-tial planning	"Awareness Raising" and guidelines for efficient driving behavior; information systems/labeling
Measures M5: Modal shift to rail freight trransport	Price incentives	Subsidies rail infrastructrure, rolling stock and operations, HGV toll incl. external costs
	Infrastructure	Bottleneck removal port hinterland transport, etc.
	Regulations, enforcement	Longer trains, shorter rail block distances, stricter supervi-sion of HGV social regulation
	Soft measures, spatial planning	Labeling sustainable logistics, revision national transport investment plan (BVWP)

Source: Fraunhofer/Infras

At the level of the individual transport user, the comparison of different transport solutions and different transport situations illustrates that, in many cases, sustainable transport is cost effective.

[90] Fraunhofer/INFRAS/IFEU 2013 *Economic aspects of non-technical measures to reduce traffic emissions* Report No. (UBA-FB) 001728

Figure 7-2 Total private and external costs of selected mobility alternatives



Source: Fraunhofer/Infras

The study also assesses the benefits to society resulting from the five different packages of measures. The all provide significant benefits to society by reducing the external costs or by improving human health through more active mobility styles. The last effect is the most significant benefit.

Table 7-13 Reduction in external costs in EUR billion per year[91]

Benefit category	M1 Walking and cycling	M2 Local public transport	M3 Shorter routes	M4 More efficient cars
Benefit health	11.53	18.67	12.60	17.40
Benefit safety	0.64	0.40	6.93	-0.01
Benefit environment & noise	0.76	0.51	9.10	-2.28
Total	12.92	19.57	28.63	15.11

Source: Fraunhofer 2013

The assessment covers Germany as a whole, though many of the benefits are related to urban areas. As the German population is approximately 80 million, a simple interpolation of the results to the urban population of around 200 million included in our study, implies that the annual benefits by 2030 could be estimated to be in the range from EUR 40 to 75 billion.

It should be noted that in all the scenarios the main benefit is reaped from the active lifestyle, which comprises the "benefit health" element displayed in the above table.

Another interesting aspect of the German study is that it also looks at the investment costs needed to achieve the societal benefits. The annual investment in, e.g. infrastructure for non-motorised transport or improvement of public transport is in the order of EUR 1 to 3 billion for M1 and M2, while M3 requires significantly higher investments of around EUR 11 billion. In all cases, the net benefit is positive. It should be mentioned that total travel time is not included in this assessment. The study estimates the change in travel time costs, but as it is difficult to assess the real value of that without considering 'time budgets' of the population, the value of the total travel time is not included.

The study also looks at the macro-economic effects, which are estimated as the change in indicators such as GDP and employment. The below table from the study report presents the results.

[91] Ibid

Table 7-14 Comparison of the macro-economic effects of the measures[92]

Variable	Year	M1	M2	M3	M4
GDP	2020	+0.19%	+0.24%	+0.35%	-0.02%
	2030	+1.11%	+1.56%	+2.23%	-0.18%
Employment	2020	+0.14%	+0.21%	+0.35%	-0.02%
	2030	+1.37%	+1.76%	+2.49%	-0.16%
Employment transport	2020	+3.34%	+4.10%	+3.88%	-0,34%
	2030	+4.14%	+5.29%	+11.74%	-0.38%
Investments	2020	+1.67%	+2.31%	+3.33%	-0.24%
	2030	+5.45%	+7.03%	+9.09%	-0.99%
Investments transport	2020	+3.38%	+5.17%	+16.32%	-0.13%
	2030	+2.65%	+5.27%	+25.09%	-0.18%
Investments transport infrastructure	2020	+3.38%	+5.60%	+22.55%	-0.06%
	2030	+3.67%	+7.48%	+37.27%	-0.19%

Source: Fraunhofer 2013

The overall impact on GDP and employment is not large, and all but one of the packages have positive impacts both on GDP and on the level of employment. The approach in the study has taken into account that the measures to reduce car use have negative impacts on the car manufacturing industry. This, in turn, is more than balanced by the effect of the additional infrastructure investments to promote non-motorised transport as well as public transport.

The study illustrates the possible effects of the packages of measures that are in line with the types of package included in the Creutzig study, and what one can expect from cities that apply the benchmark SUMP.

In the concluding section, the German study emphasises that the most effective packages of measures combine ‘pull’ and ‘push’ measures. Furthermore, it concludes that push measures such as pricing and restrictions are important in achieving effectiveness, while pull measures rendering non-motorised and public transport more attractive are important to the acceptability of the overall package.

For this impact assessment, the importance of the German study is that:

› it illustrates the overall effect in line with the above assessment based on the Creutzig study.

› different packages of measures have different profiles of effect, which underlines the importance of the SUMP as it considers alternative packages of measures suitable for each city.

› overall macro-economic effects seem to be positive, including a positive effect on employment, albeit not very large.

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[92] Ibid

7.3.3 Stated targets in selected cities

Estimating ambition levels

Another source of information on the possible effects of SUMP is the plans that cities have prepared. The review of a number of cities included a question on the specific targets defined by cities. This allows for an assessment of the plans' ambition level. The examples of the targets give an indication of what the cities expect to achieve.

The review in Chapter 3 includes examples of actual improvements achieved. In terms of what can be expected in the further review, the targets are relevant even though there is no guarantee that they will be fully achieved. An important objective such as GHG emission reductions has only recently been included in SUMPs developed by cities[93].

Table 7-15 City targets

Area	Examples of target levels
Accidents	From 5% to 30% improvements by 2020
GHG emissions	From reduction of 14% by 2020 to carbon free by 2050
Noise	From 8% to 20% improvements by 2020
Air quality	Meeting EU air quality directive

Source: Appendix C City survey

The use and detail of targets also varies

In general, the cities' targets for the indicators of the urban transport environment have diverse features. Some of the observations that can be drawn from the reviews made in this section are that:

- some targets are very ambitious. Examples are Berlin's and Gent's targets of reducing emissions to zero by 2050 and Malmö's target of zero fatalities in the short- and long-term.
- the design of the targets makes them difficult to compare. For example, specific targets for public transport, etc.
- the targets are set for different years across cities and across indicators (2013, 2015, 2016, 2020, 2030, 2040, etc.).

Taking CO_2 emission as an example, the reduction levels included in the targets range from 14% to 20% by 2020 and to carbon free by 2030, 2040 or 2050.

Targets for accident reduction by 2020 vary between 5% and 33% (and one with zero fatalities). Noise targets are defined as a reduction of exposure above 65dB or up to a 20% reduction by 2020. A few general congestion targets are set in the order of 20% by 2020.

[93] For example, in the French PDU legislation, the CO2 objective has only been included since 2010.

A comparison of the target levels included in the cities' plans and the improvement potential indicates that the order of magnitude of potential improvements is identical.

The example from Nantes below is more detailed. It shows the expected impacts on modal split, air quality and GHG emissions.

Text box 7-2 Case example of targets and expected impacts of a SUMP – Nantes

The environmental effects of a French SUMP, the example of Nantes

Nantes Métropole is the urban transport organising authority of the agglomeration of Nantes. Its latest PDU (SUMP), for 2010-2015, contains the calculation required by French law of the GHG emissions and other atmospheric effects that are avoided by the PDU measures. The source is Annex 1 of this PDU.

The Nantes PDU calculates the travel behaviour per inhabitant as a result of the measures foreseen in the PDU. Tables 7-16 and 7-17 show the effects in terms of modal share estimated for 2015 and for the long term, i.e. 2030.

Table 7-16 Modal shares in percentage in the base year (2008, as observed in a household mobility survey), and in the forecast years with the PDU actions implemented as planned

<table>
<tr><th>Inside the Nantes ring road</th><th colspan="2">2008</th><th colspan="2">2015</th><th colspan="2">2030</th></tr>
<tr><td>Walking</td><td>30</td><td rowspan="4">59</td><td>31</td><td rowspan="4">61</td><td>35</td><td rowspan="4">75</td></tr>
<tr><td>Cycling</td><td>2</td><td>4</td><td>15</td></tr>
<tr><td>Public transport</td><td>17</td><td>17</td><td>18</td></tr>
<tr><td>Car as passenger</td><td>10</td><td>9</td><td>7</td></tr>
<tr><td>Car as driver</td><td>39</td><td rowspan="2">41</td><td>37</td><td rowspan="2">39</td><td>23</td><td rowspan="2">25</td></tr>
<tr><td>Motorised two-wheeler</td><td>2</td><td>2</td><td>2</td></tr>
</table>

Table 7-17 Modal shares in percentage in the base year (2008, as observed in a household mobility survey), and in the forecast years with the PDU actions implemented as planned

<table>
<tr><th>Outside the Nantes ring road</th><th colspan="2">2008</th><th colspan="2">2015</th><th colspan="2">2030</th></tr>
<tr><td>Walking</td><td>13</td><td rowspan="4">36</td><td>14</td><td rowspan="4">38</td><td>18</td><td rowspan="4">50</td></tr>
<tr><td>Cycling</td><td>2</td><td>3</td><td>7</td></tr>
<tr><td>Public transport</td><td>11</td><td>11</td><td>12</td></tr>
<tr><td>Car as passenger</td><td>10</td><td>10</td><td>13</td></tr>
<tr><td>Car as driver</td><td>61</td><td rowspan="2">64</td><td>59</td><td rowspan="2">62</td><td>47</td><td rowspan="2">50</td></tr>
<tr><td>Motorised two-wheeler</td><td>3</td><td>3</td><td>3</td></tr>
</table>

This mobility per inhabitant of the agglomeration is then related to the expected increase in the number of inhabitants, and a model is used to calculate the resulting emissions. Table 7-18 shows an overview of the results.

Table 7-18 Results of the PDU measures on GHG emissions related to 1990, the reference year of the Kyoto protocol

	1990	2008	2015	2030
Inhabitants of Nantes Métropole	505,000	579,000 +15%	622,425 +23%	694,800 +38%
Number of trips per day	1,739,000	2,061,000 +19%	2,216,133 +27%	2,474,693 +42%
GHG emissions/year in (t)	550,648	749,806 +36%	746,394 +36%	580,678 +5%
GHG emissions/year/ inhabitant (t)	1.09	1.30 +19%	1.20 +10%	0.84 −23%

The figures show three developments: [1] the population increase in the area, [2] the effect of the change in mobility behaviour of each inhabitant, caused by the PDU measures, and [3] the effects of technology on the emissions per trip per inhabitant. The effects of [2] and [3] are shown separately and together in the annex. In this way, it is demonstrated that improved technology alone cannot bring about the reduction, and that the change in mobility behaviour has to be the most important element of the planned change, thus justifying the measures targeting trip behaviour.

Based on the same data, the effects on atmospheric pollutants are presented. Table 7-19 presents the results for 2015 and table 7-20 for 2030. The PDU notes that, unlike the GHG emissions, the most important element in the reductions has to be technological improvements, as changes in mobility behaviour alone cannot bring about the reduction.

Table 7-19 Results for 2015 of the PDU measures on atmospheric pollution, related to the PDU base year of 2008

	Pollutants	In t/year	Development 2008-2015
Base year 2008	CO	3,645	
	NO_x	2,588	
	VOC	4,191	
	PM	119	
PDU plan 2015	CO	1,150	−68%
	NO_x	2,217	−14%
	VOC	4,184	0%

	PM	64	-46%

Table 7-20 Results for 2030 of the PDU measures on atmospheric pollution, related to the PDU base year of 2008

	Pollutants	In t/year	Development 2008-2030
Base year 2008	CO	3,645	
	NO_x	2,588	
	VOC	4,191	
	PM	119	
PDU plan 2015	CO	797	-78%
	NO_x	829	-68%
	VOC	4,560	+9%
	PM	15	-87%

Source: PDU Nantes

The examples from actual city plans illustrate that in many cases the ambition of cities is to achieve significant improvements.

7.4 Economic impacts

This section describes the economic impacts that can be estimated as a result of the policy options.

Impacts on different levels

The key economic impacts include:

- costs to competent authorities in the Member States if they have to implement and enforce the mandatory SUMP framework
- costs to cities of undertaking SUMP (additional costs to current planning costs)
- costs of actual implementation of measures defined by the SUMP
- savings due to more efficient investments in transport infrastructure and operation
- savings due to the benefit of the SUMPs
- economic benefits to those whose accessibility is increased, and the potential economic loss to users who may experience longer travel time (e.g., due to restrictions on car use)
- additional business benefits due to innovation and development of new sustainable urban mobility infrastructure.

The costs of developing the options would also include the costs to the Commission of developing the framework for the benchmark SUMP. These costs to the Commission are not included in the assessment of the economic impacts.

The next section describes the costs of developing and implementing SUMPs in cities and developing of the SUMP franework for competent authorities in the Member States.

7.4.1 Costs of developing SUMPs

Cost to cities of planning

National and local implementation costs

This subsection describes the costs of setting up SUMPs. First, we describe the costs of the planning process. Also, the potential costs to EU Member States of developing and implementing the options into the national setting or legislation is considered.

Effectiveness and efficiency of a cost

A SUMP is a public investment in obtaining greater effectiveness and efficiency of urban mobility measures. Effectiveness and efficiency are here understood in a broad sense, to improve the environment, climate, health, mobility and quality of life of the population. A SUMP has an economic lifetime of several years, though it needs to be regularly revised and updated.

Identification of cost elements

A SUMP leads to expenditures in terms of the time needed to prepare the plans including the analysis and the consultation and coordination process. The costs appear irrespective of whether the cities contract out some of the preparatory work to external consultants or whether they solve the tasks in-house.

Sources of information examined

During this project, we have encountered significant difficulties in collecting the information required for a full assessment of the costs of SUMPs. Indeed, the literature only contains little information on the costs associated with SUMPs. More specifically, we have examined the following sources:

› For information on costs of urban mobility planning. Publications, mainly from England, where cities state how much money they have spent or plan to spend on their local transport plan. However, these studies rarely present evidence of the cost of the planning process, but rather the cost of the measures.

› The CIVITAS II final report, Piao et al (2009). This report contains detailed information on the costs of a range of measures in a number of cities[94]. This is very useful for a description of the likely costs that may follow from the preparation of a SUMP. However, this report contains no information on the costs of the planning process itself.

[94] Piao, J, J. Preston, M. McDonald and R. Hall (2009): *Cost benefit analysis report*.

- Atkins' report on the English local transport plans[95]. This publication contains information on how much different cities have spent on measures to improve urban transport, but only little evidence on the cost of the planning process.
- Gart (2009), which has an estimate of the costs of developing PDUs in France[96].

Costs due to complexity

A sustainable urban mobility plan (SUMP) is a document or a series of documents. In order to complete the document, a series of analyses has to be made. These analyses can be made by in-house staff or by external consultants. This involves costs in terms of salaries, fees, and the procurement of material for the analysis. The analyses result in various graphical expositions and text. They have to be set up in a format suitable for publication to a wider audience. Furthermore, a political process surrounds the preparation of the document. This process involves costs of meetings with external and internal stakeholders, services provided at meetings, transport to meetings, follow-up dialogue, writing of minutes, etc. Furthermore, the document needs extensive quality checking in order to ensure consistency between the sustainable urban mobility plan and other plans and policies, and quality checking is also necessary to ensure that the resulting document is correct.

Based on the literature we have found, we have summarized the findings in the tables below.

Costs affected by city size

Table 7-21 shows the cost estimates developed by Gart (2009) based on 84 interviews with French cities that have developed a "plan de déplacements urbains" (PDU). The reported cost estimates reflect the total cost of developing a PDU. The costs do not cover costs of maintaining and revising the PDU, nor do they cover the costs of implementing the measures planned in the PDU. The costs are a one-off amount; hence, they are not to be interpreted as annual costs.

The table shows that costs appear to increase with city size, which is probably due to the higher complexity of coordination and stakeholder management in larger cities.

Table 7-21 Costs of developing a PDU, from Gart (2009)

	Minimum cost, EUR, average over interviewed cities	Maximum cost, EUR, average over interviewed cities
<100,000 population	59,500	300,000
100,000-200,000 population	80,000	550,000
>200,000 population	90,836	668,654

[95] Atkins (2007): *Long term process and impact evaluation of the local transport plan policy*. UK Department for Transport.
[96] Gart (2009): *Plans de Deplacements Urbains: Panorama 2009 – Résultat d'enquête et perspectives*.

	Minimum cost, EUR, average over interviewed cities	Maximum cost, EUR, average over interviewed cities
<450,000 population with public transport in segregated alignment	200,000	700,000
>450,000 with public transport in segregated alignment	185,000	Not available

Source: Own exposition based on Gart (2009).

Table 7-22 shows estimated extra staffing required to develop and manage local transport plans (LTPs) in England. The estimates are based on case studies performed by Atkins (2007). Atkins (2007) performed 12 case studies of English local authorities which have developed LTPs – both during LTP round 1 (2001-2006) and LTP round 2 (2006-2011). The estimates relate to extra staffing necessary in round 1. The numbers presented relate to estimates for individual authorities, not types of authorities. COWI has made the estimates on the basis of case study text, e.g.:

"… Staffing problems were finally resolved in 2005/06. A career grade structure was introduced, supported by MSc sponsorship and other training, enabling candidates to see promotion opportunities. The policy team now consists of 17 posts, compared with 5 in 2000."

We interpret this to mean that 12 extra staff was necessary to manage the LTP process.

Table 7-22 Extra staffing required to develop and manage local transport plans in England – COWI's estimates based on Atkins (2007)

Minimum extra staffing required	Type of authority
5	Rural county, population 756,000
4	Urban unitary, population 182,000
12	Mixed rural/urban unitary, no information on population.

Source: Own exposition based on Atkins (2007).

We interpret the numbers in Table 7-22 as indicators of current extra staffing needed, that is, each year 4-12 extra employees would be necessary to develop, manage and maintain an LTP. These figures do not include the costs of assistance from external consultants, costs of materials, meetings or other costs associated with LTPs.

Planning costs will vary

The results presented in Table 7-21 and Table 7-22 should be understood as examples of cost levels associated with developing a SUMP. The sources suggest that the costs of planning vary between authorities. The GART 2009 is considered to provide a better basis for assessing the costs. It has specifically investigated the question of the costs of developing the integrated planning approach and the results are based on a relatively large sample of city agglomerations. Hence, the assessment of the costs for EU cities will be based on the results of GART 2009.

Costs of planning in different policy scenarios

Estimation approach

The costs of developing the benchmark SUMP will depend on many factors. The current situation in each city differs in terms of planning tools already in place, the complexity of coordinating and integration, etc.

As many cities already have some form of integrated urban mobility planning, the question is what the additional costs are of implementing the benchmark SUMP.

One scenario is to assume that the existing plans are of no value and that all the processes implied by the SUMP will add to existing processes. Another more realistic scenario is to assume that the transition to the fully integrated approach will lead to some additional costs, depending on how much integration and coordination already exists.

The first scenario is estimated by applying the minimum and maximum cost figures based on GART 2009 as presented in Table 7-21.

The first step comprises the estimation of a high- and low-cost figure for each of the three city size categories: all city agglomerations above 100,000 inhabitants, city agglomerations above 250,000 inhabitants, and finally all city agglomerations above 1,000,000 inhabitants plus the TEN-T urban node cities.

Breakdown per city size

Based on Table 7-21 the following costs are assumed for the three city sizes.

Table 7-23 Assumptions for low and high estimates by city

Size of city agglomeration by number of inhabitants	Low estimate per city in EUR	High estimate per city in EUR
Cities between 100,000 and 200,000	80,000	550,000
Cities between 200,000 and 450,000	90,836	668,654
Cities above 450,000[97]	200,000	700,000

Source: Table 7-21 (GART 2009)

The next step is to apply these unit costs to each of the city agglomerations (see Appendix A) according to its population. The result of applying the unit costs per city agglomeration to the list of agglomerations is presented in Appendix A. The costs are presented for the three alternative definitions of the coverage of cities used in Options 5 and 6. For example, the EUR 46 million have been estimated as the sum overall, which the 438 urban agglomerations each assigned the unit cost

[97] In Table 7-21, the costs for cites above 450,000 inhabitants are lower than the estimated costs for cities below this threshold. The difference is insignificant and, for the large cities, the high figures are used.

displayed in Table 7-23. The average per city cost of 106,000 is calculated as 46 million divided by 438 cities.

Table 7-24 Costs of implementing a SUMP by applying unit costs based on the administrative costs for the French PDUs

SUMP costs EU	Minimum (EUR)	Maximum (EUR)
a. Cities >100,000 inhabitants		
Total	46,430,000	269,012,000
Average per city	106,000	614,000
b. Cities >250,000 inhabitants		
Total	24,321,000	114,936,000
Average per city	145,000	684,000
c. Cities >1,000,000 inhabitants and TEN-T urban nodes		
Total	14,573,000	57,698,000
Average per city	173,000	687,000

Source: Own calculations based on city database in Appendix A and Table 7-21

Table 7-24 presents an estimate of the administrative costs in case all cities were to apply SUMPs and assuming that the costs are independent of the current planning situation. For each policy option, the administrative costs can be estimated as the percentage uptake of the benchmark SUMP, see Tables 7-8 to 7-10, times the total costs displayed in the above table.

The other, more realistic scenario is estimated based on the following key assumptions about the link between planning costs and the level/quality of the SUMP:

› Cities categorised as low/medium will have costs in the low end of the range

› Cities categorised as medium/high will have costs in between the low and high estimates

› Cities that will develop a high level of SUMP equivalent to the benchmark definition of the approach will encounter costs at the high end of the range.

The cost of the benchmark SUMP is approximated by the high costs estimate. The specific assumption is that for an average city with more than 100,000 inhabitants, the average value from Table 7-24 of EUR 614,000 can be applied as the costs of implementing the benchmark SUMP. The planning cost for a city in the medium/high category is estimated as the average of minimum and maximum estimates. It means that the cost per city is estimated as (106,000 + 614,000)/2 = EUR 360,000. The planning cost for a city with a low/medium integrated approach is assumed to be equal to the minimum cost of EUR 106,000.

For an average city in the categories above 250,000 inhabitants and the category of TEN-T nodes and cities with a population above 1 million inhabitants, the planning costs are estimated in a similar way. The results are presented in Table 7-25.

Table 7-25 Estimated unit costs by level of implemented integrated urban mobility approach

Assumed unit costs of planning	Level of integrated urban mobility approach		
City category	Low/medium	Medium/high	Full/high (SUMP)
>100,000	106,000	360,000	614,000
>250,000	145,000	415,000	684,000
>1,000,000+TEN-T nodes	173,000	430,000	687,000

Source: Estimations based on Table 7-24

Using these assumed unit costs, the total administrative costs of each policy option can be estimated. The share of cities in each category of the level of the integrated urban mobility approach is taken from Tables 7-8 to 7-10.[98]

Table 7-26 Estimated total planning costs by level of implemented integrated urban mobility approach and by policy option – MEUR

Total planning costs	Low/medium	Medium/high	Full/high (SUMP)	Total
Option 1 = baseline	15	102	0	118
Option 2	7	102	54	163
Option 3	5	95	81	180
Option 4	0	95	108	202
Option 5				
>100,000	0	0	269	269
Option 6				
>100,000	0	0	269	269

Source: Estimations based on Table 7-25 and Table 7-8

For the versions of options 5 and 6 with a population of more than 250,000 inhabitants, the baseline costs relating to the cities in this category differ from the baseline planning costs for all cities with more than 100,000 inhabitants. The following tables show the baseline costs for the two city categories; above 250,000 inhabitants, and above 1 million inhabitants plus TEN-T urban nodes.

[98] This is an approximation using the share of population, and not the specific number of cities within each category.

Table 7-27 Estimated total planning costs by level of implemented integrated urban mobility approach and by policy option – MEUR

Total planning costs	Low/medium	Medium/high	Full/high (SUMP)	Total
Option 1 = baseline	5	42	0	48
Option 5				
>250,000	0	0	103	103
Option 6				
>250,000	0	0	103	103

Source: Estimations based on Table 7-25 and Table 7-9

One of the differences between options 5 and option 6 is the specific inclusion of measures such as low emission zones and urban pricing (urban road user charging/congestion charging, parking pricing and public transport pricing).

The measures included in option 6 are likely to be considered in all cases, and given the uncertainty about the costs levels, it is impossible to determine whether option 6 will lead to higher costs or not.

Another difference is the introduction of clean technologies and alternative fuels. Furthermore, no difference in the administrative costs is foreseen.

Ensuring interoperability and consistency of the applied measures could increase the costs of the planning process, but it would depend on how specifically this requirement was implemented. If EU standards were to be applied, it could decrease the planning costs, but if each city had to coordinate with other cities, costs could increase.

Table 7-28 Estimated total planning costs by level of implemented integrated urban mobility approach and by policy option – MEUR

Total planning costs	Low/medium	Medium/high	Full/high (SUMP)	Total
Option 1 = baseline	2	23	0	25
Option 5				
>1,000,000+TEN-T nodes	0	0	52	52
Option 6				
>1,000,000+TEN-T nodes	0	0	52	52

Source: Estimations based on Table 7-25 and Table 7-10

Costs to Member States of implementing framework for SUMP

For options 5 and 6, Member States would need to set up a framework for the implementation of a Directive in each Member State. Key questions that each Member State would have to determine include:

› Definition of city agglomerations/functional city

- Monitoring and review of SUMP
- Conformity check of cities with regard to their implementation of SUMP.

The resources needed by each Member State would depend on many factors such as the current status of its national frameworks for urban transport planning and coordination/integration with other planning processes. Member States which already have a national framework in place such as France and the UK would have fewer costs of implementing a directive compared to Member States without such frameworks.

Assuming that the one-off costs of developing and implementing a national framework would require between one and ten man-years and that the average costs of a man-year is about EUR 50,000, the total costs to Member States could be in the order of EUR 1.5 million to EUR 15 million.

If conformity checks were carried out for each city and assuming that it would require one man-month to perform such conformity checks for one city, the total costs would be around EUR 2 million for all 454 cities. Depending on the frequency of updating the sustainable urban mobility plans, the annual costs would be relatively minor.

7.4.2 Costs of measures implemented as a result of a SUMP

Costs of measures

Indications from LTP experience

The measures which are part of a SUMP also come with a cost. The English experience following the first round of LTPs is that authorities which develop an LTP also spend more on urban development after the plan has been developed, cf. Atkins (2007). The Atkins report estimates that over GBP 26 billion were invested in local transport over the five-year period of the first round of LTP. Furthermore, the report finds that local authorities more often than before spend up to their spending allocations for local transport, after having developed an LTP. This could reflect many things, but it is consistent with an LTP helping local authorities to plan their efforts better, which facilitates meeting budgets. It is also consistent with an LTP leading local authorities to give more priority to sustainable urban mobility.

An illustration of the possible costs

In Table 7-29 we show examples of the costs of urban mobility measures which can result from an urban mobility plan. The list is based on projects undertaken in the CIVITAS II programme, and hence they are not representative of all possible urban mobility projects that may arise from an urban mobility plan. But the list is illustrative of some project types and some magnitudes of costs.

Table 7-29 Examples of costs of urban mobility measures

Measure	Total costs in GBP
Clean municipal fleets	979,468
Biogas on the net	326,952

Measure	Total costs in GBP
Clean heavy vehicles with CO_2	1,094,451
Low-emission zone	67,602
Introduction of low-emission zone	611,600
Extension of low-emission zone	13,152
Marketing of clean vehicles by subsidized parking	29,048
Marketing of new bus route	373,277
Improved security/safety on buses	373,277
Integrating of cycling with PT	844,571
Rail station interchange	644,636
On-street ticket vending machine with real-time information	434,568
Linking individual passenger transport information with healthcare appointments	11,068
Bus priority measures	54,801
PT information	82,447
Freight driver support	299,140
Satellite based traffic management for SMEs	151,905
Priority access for goods vehicles	48,818
Goods delivery to park & ride sites	183,359
Managing mobility needs of private persons and business sector	2,018,569
Eco-driving for municipal employees	283,115
Travel planning	359,775
Car pooling	100,348
Individual travel advice	226,505
General information and awareness raising	49,801
Eco-driving for hospital employees	22,438
Heavy eco-driving	134,912
Use of real time applications for travellers	976,385
Mobile internet services in connection with bus information	1,169,486
Internet tool for traffic planning	87,048
PT priority system and automatic call & information signs in bus	4,493,889
Traffic and travel information for freight operators	40,700
Real-time passenger information	780,802
Hybrids/biodiesel	167,669
Creation of an 'overground' network for PT services	71,378
Demand responsive and feeder services	117,821

Source: Own exposition based on Piao et al (2009).

Example of costs of access restriction measures

Access restriction measures include a range of different measures from simple parking schemes to more advanced congestion zone or low emission zone systems.[99]

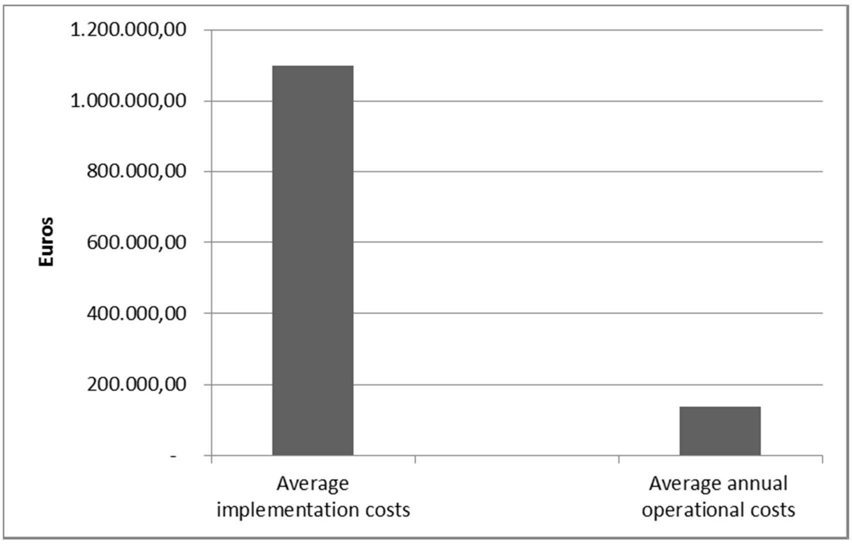
In reviewing the use of access restriction schemes, the costs of various types of ARS (Access Restriction Schemes) have been investigated. The costs vary depending on the complexity of the schemes. In many cases, the investment costs would be counted in hundreds of thousands of Euros while the operational costs would be less but in the same order of magnitude.

Absolute Access Restriction Schemes

The costs of implementing the absolute access restriction schemes vary among the cities, depending on the technology used to restrict the area. As the schemes are identified by regulation and most often closed by the use of signs and/or electric bollards, the costs are not as high as compared with charging schemes. Cases show costs ranging from around EUR 200,000 to several millions of Euros. On average this means €1.1 million as illustrated below (based on 8 cases).

Operational costs vary between EUR 30,000 to EUR 300,000 per year, with an average of EUR 137,000 as illustrated above (based on four cases).

Figure 7-3 Examples of the costs of absolute access restriction schemes



Low emission zones (LEZ)

The cases show that LEZs are often determined by regulation and in most cases not maintained by charging. It is regularly shown that certain vehicles have to acquire a license or visual sign which is less expensive for a municipality than installing Automatic Number Plate Recognition (ANPR) systems. Only in a few cases, an ANPR system is used which can costs several million Euros. The municipality may acquire some revenues because the license has to be purchased by the users.

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[99] ECORYS 2013 "*EU Framework for Urban Road User Charging and Access Restriction Schemes*" Report as part of this Study to Support an Impact Assessment of the Urban Mobility Package

Most direct costs to municipalities can be expected in terms of traffic sign placement and administrative costs.

Some cities have introduced an LEZ in which the users of the area are charged on the basis of their vehicle's pollution level (Reading, Rotterdam and Bologna). These are examples of advanced and expensive systems that also generate revenue.

In the 2009 evaluation report of the Dutch LEZ's for HGV's, the eight involved cities' investments in the preparation of environmental zones sum up to EUR 1,440,000. Yearly cumulative costs for running the environmental zones (i.e. enforcement) are EUR 600,000. Per city, these values correspond to EUR 180,000 investments and EUR 75,000 annual costs.

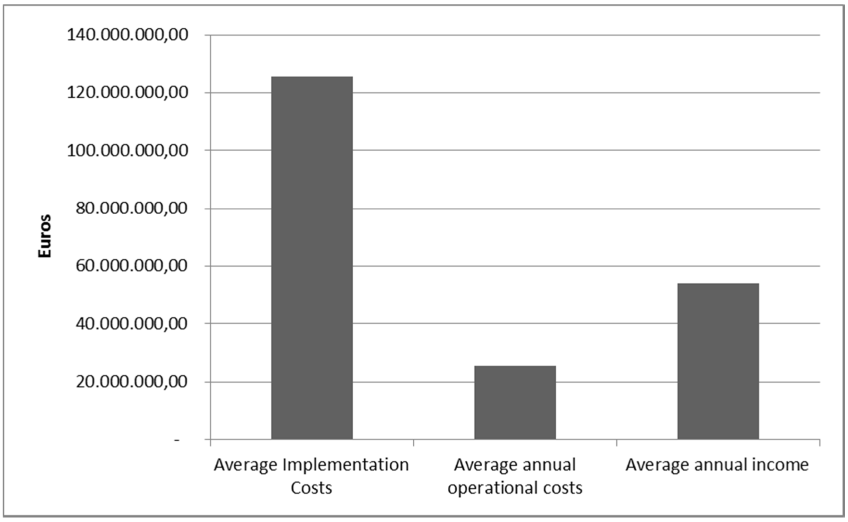
Further, the Dutch business community has invested some EUR 15 million to EUR 18 million in cleaner vehicles and particle filters. With a depreciation period of eight years, the yearly costs are EUR 1.9 million to EUR 2.25 million for the business community involved.

On average, both investment costs and the operating costs for a LEZ without ANPR are relatively low, i.e. around EUR 200,000 in investment costs and EUR 100,000 annually in operational costs. These costs will increase when ANPR is introduced; in the case of Reading in the UK, the costs of design and implementation amount to roughly EUR 2.3 million and yearly operating costs to roughly EUR 600,000.

Charging schemes

The implementation costs and operational costs of charging schemes are high compared with the other three policy measures on ARS.

Figure 7-4 Examples of costs and revenue from charging schemes



Average implementation costs are around EUR 120 million and operational costs amount to an average of EUR 20 million (figures based on 7-8 different cases). On the other hand, these schemes can also generate income because of charges and fines. These incomes are on average EUR 50 million annually (as indicated by 9 cities), and in many cases higher than the average annual operational costs.

Profitability of different types of measures

Background

The Danish Congestion Commission was set up by the Danish Government to reduce congestion in the capital of Denmark. More broadly, the task of the Commission is to provide the foundation for a strategy to improve mobility, reduce congestion and air pollution, and ensure a modal split towards public transport. The Commission was formed in 2012 and is due to present its final results in August 2013. More specifically, the Commission's task is to analyse the short and long-term challenges for the transport system of the Danish Capital Copenhagen, to analyse pros and cons of alternative solutions, and to present a proposal for a strategy and finance for fulfilling the strategy.

Initiatives

The Danish Congestion Commission has analysed a broad range of initiatives. In a 2013 report by the Commission (2013)[100], a list of 104 initiatives was screened for their effects on congestion, the environment, the climate and the overall national economy. The initiatives were classified as either large-scale initiatives, medium-scale initiatives, small-scale initiatives, finance-initiatives or initiatives aimed at reducing pollution from the transport sector.

A review of the initiatives suggests that the large-scale initiatives are generally infrastructure investment projects, where new road sections, railway sections or bicycle tracks are constructed. Examples of large-scale projects are: Expansion of the E20 road around the city of Koege, higher train speeds on the Ringsted-Odense track and new metro-line across the harbour of Copenhagen. The medium-scale and small-scale initiatives are generally aimed at improving utilisation of the existing infrastructure. Examples are bus rapid transit +way, park/kiss & ride facilities, better planning of road works, faster reactions at road incidents, and establishment of a strategic bicycle network. The finance initiatives are directed at providing funding for the other initiatives, and they encompass everything from higher taxes to the sale of public property and public-private-partnerships. The initiatives aimed at reducing pollution from the transport sector focus on pollution and not on other transport issues such as congestion. Examples of initiatives are the advancement of Euro 6 norms, low emission zones and city logistics.

From the above, the initiatives can be re-classified into four groups; namely: 1) large-new infrastructure initiatives, 2) medium sized/small planning and management initiatives, 3) initiatives aimed at raising finance and 4) pure anti-pollution measures. On this basis, the 104 initiatives can be presented as follows:

[100] Trængselskommissionen (Danish Congestion Commission) (2013) Screening af idekatalog fra Trængselskommissionen, Rapport. Version 2.0, 26 March 2013

Table 7-30 Distribution of initiatives by scale

	Number of initiatives	Share of initiatives
Large new infrastructure projects	28	27%
Medium size / small planning and management initiatives	47	45%
Initiatives aimed at raising finance	19	18%
Pure anti-pollution measures	10	10%

Source: Own exposition based on Trængselskommissionen (2013).

The initiatives can furthermore be classified according to whether they target road transport, rail/bus transport, bicycle transport or are cross-cutting. This is done with the caveat that there is an overlap between road transport, bus transport and bicycle transport, and that cross-cutting initiatives contain a range of very different types of initiatives.

Summarizing the initiatives by the mode of transport, the following results are obtained:

Table 7-31 Distribution of initiatives by focus

	Number of initiatives	Share of initiatives
Road	23	22%
Bus/rail	30	29%
Bicycle	8	8%
Cross-cutting	43	41%

Source: Own exposition based on Trængselskommissionen (2013).

Profitability

The information about the characteristics of initiatives described above and their estimated socio-economic benefits can be used to illustrate that better planning and coordination is relatively more valuable than just trying to reduce pollution; or just expanding infrastructure without coordination. This is naturally associated with some caveats, because the classification of the initiatives may miss some subtleties, and since the assessment of benefits made by the Danish Congestion Commission (2013) is in some cases based on a limited evidence base. However, the approach has the advantage that it considers a range of very different initiatives to improve the urban environment and reduce congestion, and the initiatives have been assessed using a common analytical framework. Finally, all the initiatives have been considered in the context of Copenhagen, which is a relevant European city to analyse in the context of the current study, because it is a large city with problems of congestion, air pollution, noise, traffic accidents, CO_2 emissions and all other aspects considered in this study. Maybe the problems are smaller in Copenhagen than in other capitals, but they are probably greater than in many medium-sized European cities for which this study is considering policy.

The Congestion Commission (2013) classifies the socio-economic net benefit of an initiative by four intervals (if it is possible to assess the benefits). These are listed, along with their definitions, in the below table.

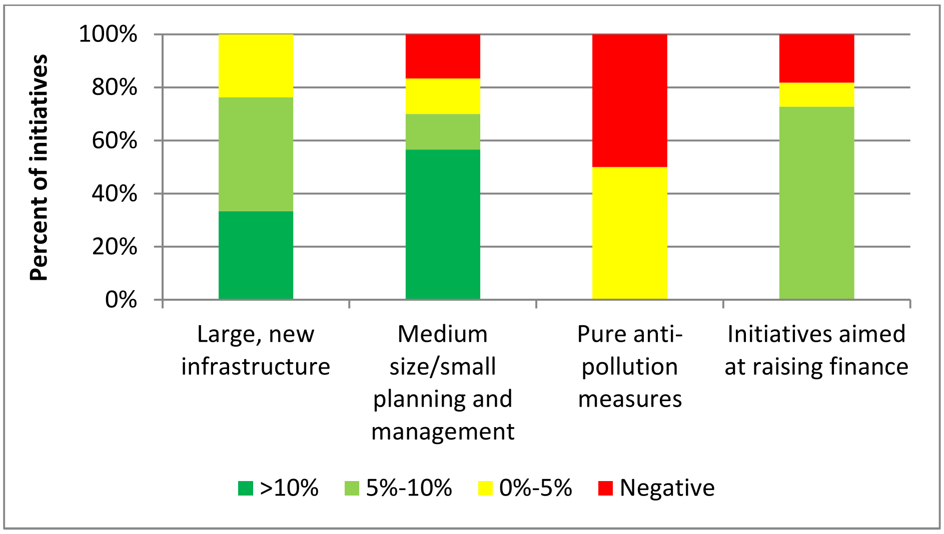
Table 7-32 Classification of socio-economic benefits of initiatives

Net benefit	**Definition**
Above 10%	Profitable from a socio-economic perspective
5-10%	Potentially profitable, i.e. based on the Danish Ministry of Finance's assumption that a project is profitable with a 5% internal rate of return, or above
0-5%	Potentially not profitable from a socio-economic perspective
Negative	Not profitable from a socio-economic perspective

The socio-economic benefits are calculated by comparing the benefits and the costs of the initiative as they relate to the public. The elements that are more specifically considered differ across initiative but include aspects concerned with construction costs, operation and maintenance costs, time savings, driving costs, ticket revenues, taxes as well as socio-economic cost and benefits associated with changes in CO_2 emissions, air pollution, noise, accidents, and health. The elements considered in the calculations also reflect the public opinion through questionnaires and/or separate analyses, such as values given to travel time savings.

If the information about net benefit is combined with the classification of initiatives by scale and scope, it is found that the medium-sized/small initiatives perform better than the other categories of initiatives. The worst performing type of initiatives are those focused only on reducing pollution.

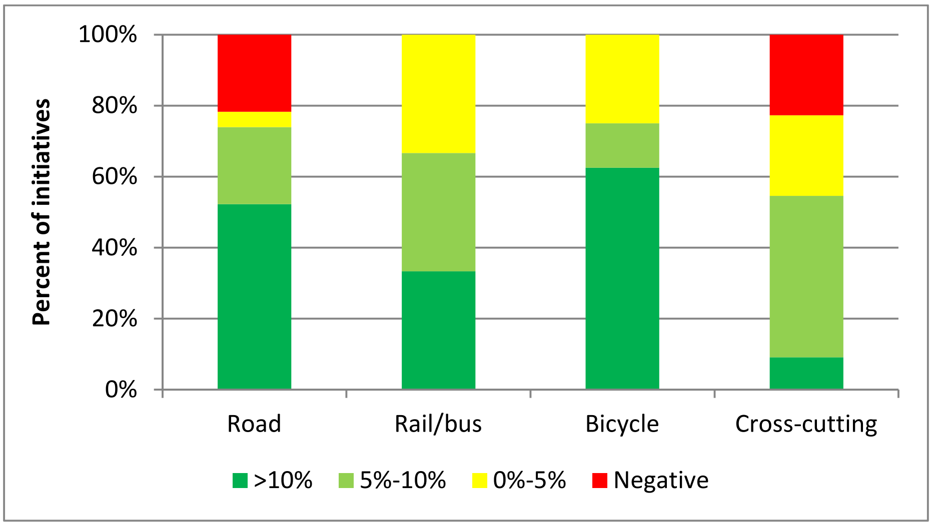
Figure 7-5 Distribution of net benefit categories (colours) for different scopes of initiatives



Source: Own exposition based on Trængselskommissionen (2013).

If the information about net benefits is combined with the classification of initiatives by transport mode, it can be seen that the bicycle projects perform best. The cross-cutting initiatives perform worst. One reason for this may be that they tend to cover many of the pure anti-pollution measures, which generally not address one particular mode of transport.

Figure 7-6 Distribution of net benefit (colours) for different mode initiatives



Source: Own exposition based on Trængselskommissionen (2013).

Summary

From the above organisation of performance information across a range of different initiatives considered by the Danish Congestion Commission, it can be seen that the category of initiatives that focuses on improving the use of existing infrastructure—e.g. through medium/small planning and management initiatives—appears to perform better than other initiatives. It can also be seen that measures to improve bicycle transport performs better than other types of measurs.

These are relevant findings in terms of demonstrating socio-economic benefits of SUMP. For example, because SUMP is directly involved with optimising infrastructure usage through various integrated planning and management processes; i.e. involving several planning domains and authorities within a city; and since it has the added value of seeking to integrate initiatives for better synergy effects and performance, it could be argued that the effective implementation of SUMP could lead to improvements in net benefits compared to the results conveyed by the above findings derived from the Danish Congestion Commission (2013).

Cost savings from SUMP

Additional costs or cost savings

The above examples illustrate that the costs of measures vary significantly. They also indicate that the profitability of sustainable mobility measures such as those related to non-motorised transport could be higher than more traditional infrastructure investments. This suggests that if a package of measures includes more sustainable transport measures, the overall economic profitability would increase.

Total investments in the road and rail sectors could be estimated to reach about EUR 150 billion per year[101]. The urban share is not known, but making a plausible assumption of 50%, the total annual investments could be in the order of EUR 75 billion.

It is not possible to estimate the implications for investment and operational costs in the urban transport sector when more cities introduce SUMPs. The different types of impacts include:

› Increased investment, for example, due to more public transport systems, bicycle infrastructure, ITS, etc.

› Savings on road infrastructure due to shifts in modal split towards non-motorised transport

› General efficiency improvements due to better coordination and integration of urban transport investment.

It should be noted that a CBA of large public transport schemes such as metro or urban light rail systems often shows negative costs-benefit ratios; one reason being that they are not seen in a broader context of providing multiple long-term benefits to a city. Another reason being that the additional accessibility provided is not valued in monetary terms.

To illustrate the possible order of magnitude effects, it could be assumed that introducing SUMPs leads to efficiency improvements that would increase the profitability of the investments. An increase from 5% to 6% profitability would amount to several hundred millions of Euros per year (depending on the lifetime of the investment) using the above estimate of annual transport investments of EUR 75 billion.

7.4.3 Other economic impacts

There could be additional economic effects, but they are more difficult to estimate. These could include:

› Additional business benefits due to innovation and development of new sustainable urban mobility infrastructure

› Possible benefits to cities and companies from exporting SUMPs to countries and cities outside of the EU.

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[101] The report: "*Ex Post Evaluation of Cohesion Policy Programmes 2000-2006. Work Package 5a: Transport*" estimates the total investments in the period 2000 to 2006 at 859 for EU25. EU inflation has been around 20% since 2005 so a rough EU28 estimate would be around EUR 150 billion per year.

It is difficult to estimate any net benefit from a possible push to new sustainable infrastructure. It is likely that increased use of measures to increase sustainability will lead to new technologies being developed and applied. The benefit to companies involved in sustainable mobility infrastructure and solutions could be balanced by a loss suffered by those whose business will decrease as a result of investments being shifted towards sustainable mobility measures.

Export Potential

Urban mobility challenges are shared by many cities in both developed and developing countries. It means that there is a potential for exporting SUMPs to cities across the globe.

In developing countries where donor organisations support urban mobility projects, EU companies could potentially increase their share of contracts if the EU were recognised as a world leader in SUMPs. Already, many EU countries and cities are trying to brand themselves as forerunners in sustainable urban development, including urban mobility and transport.

The quality of statistics on export of services, e.g., in sustainable urban mobility planning, does not allow for a detailed quantitative description. The latest available data on turnover and export of relevant services are from 2009. Urban mobility planning consultancy would typically fall under either "Architectural activities" or "Engineering activities and related technical consultancy". Eurostat data for EU28 indicates a total turnover of about EUR 100 billion in 2009 and an export outside of the EU28 of around 16% or EUR 16 billion.[102] Whether the policy options would increase such export activities is difficult to assess and quantify. Some effect is likely and if an option was to increase the export outside of EU28 by one per cent, it would be equivalent to EUR 160 million per year. Therefore, as a rough indication, the potential benefits may be in the order of tens or hundreds of millions of Euros annually.

The example included below illustrates how it is possible to export urban mobility planning based on the experience gained in domestic markets. Copenhagen has gained a reputation as one of the leading bicycle cities, and this is being used by private companies to export planning services.

[102] Eurostat: bs_bs8bdf_r2
http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database#

Example of export of planning knowledge

In 2007, the New York City Government issued a plan on how to make transport more sustainable. Examples of goals are listed below. The plan includes comprehensive actions in a wide range of mobility, safety and environmental and urban life aspects.

Some of its Major Goals are:

- Cutting city traffic fatalities by 50% from 2007 levels.
- Implementing bus rapid transit lines and measures to improve bus speeds city-wide.
- Doubling bicycle commuting by 2015.
- Initiating city-wide parking policies to manage curb space to reduce cruising and congestion.
- Adopting complete-street design templates for reconstruction projects.
- Launching a Main Street Initiative to develop people-friendly boulevards in key corridors across the city.
- Delivering better street surfaces through better management of street cuts and sub-surface infrastructure work.
- Maximizing energy efficiency throughout our street lighting and office operations.
- Retaining and attracting the best transportation engineers, planners and managers.

Source: Sustainable Streets. Strategic Plan for the New York City Department of Transportation. 2008 and beyond

One of the key elements was the promotion of non-motorised traffic, and to support the development of that aspect, they contracted Gehl Architects, a Danish architectural and urban planning consultant. This company's experience from a number of European cities in combination with an innovative approach on urban life surveys is stated as the motivation for hiring this company to support the development of the urban mobility strategy in New York.

Public Life Survey

In 2007, New York City DOT contracted with Gehl Architects to conduct public life surveys of selected sites around the city. Gehl Architects/Urban Quality Consultants is an internationally renowned urban planning and design firm, and is credited with helping to turn Copenhagen into one of the most walkable and bikeable cities in the world.

Gehl Architects has developed a unique field survey technique that quantifies how people use places in cities. For example, the company uses pedestrian count and stationary activity surveys to examine detailed information on where people walk and what they do when stationary, either as part of daily activities or for recreational purposes.

Gehl's data collectors also assess the quality and condition of outdoor seating, the quality of paving materials, construction-related impacts and other qualitative factors that affect the public realm.

Results from the public life survey helped formulate much of the city's strategy for improving streets as public spaces, and can serve as a baseline against which future surveys can be compared.

Source: http://www.nyc.gov/html/dot/downloads/pdf/WCS_Gehl_08_print.pdf

The Danish company has also conducted similar work for other cities outside the EU. For example, it supported Mexico City in developing a bicycle mobility strategy.

7.4.4 Congestion costs

Reduced congestion costs are potentially one of the main economic impacts resulting from the policy options leading to more cities developing the benchmark SUMP.

The reduced congestion costs comprise an important element of the total economic benefits. For commercial users, there might be additional indirect costs resulting from congestion, especially if time delays vary in an unpredictable way. On the other hand, reducing the congestion by restricting individual motorised traffic might increase the travel time for some users.

The simulations in the Creutzig 2012 study suggest significant improvement through reduced congestion from comprehensive SUMP-based packages of measures. The scenarios indicate a reduction in congestion costs in the order of 30% to 60% as results of the comprehensive measures. Although these estimates might be too optimistic, the potential cost savings are substantial.

The actual improvements that cities have achieved can be used to demonstrate that the costs savings are significant. Most evaluations of integrated urban mobility plans, such as the LTP in England or the PDUs in France, illustrate examples of time savings on selected routes but the reviews do typically not aggregate the effects; see Section 3.2.

An example of a more comprehensive assessment of a congestion charge scheme is presented in the text box below. It covers the congestion charge introduced in Stockholm. The assessment presents an economic assessment that includes not only the time savings but also co-benefits as well as the costs of operating the scheme. It should be noted that the time savings for motorists and bus passengers are based on actual, measured time savings. Most available assessments are purely ex-ante model based simulations, such as the Creutzig study.

Example of congestion charge scheme and its impact on congestion

In 2006, Stockholm undertook a test of congestion charge scheme. The test was evaluated and the result of the economic assessment is presented here. The scheme has later been made permanent. The effect on congestion reduction measured during the trial of the scheme has more or less been maintained after the scheme has been made permanent. The scheme included the congestion charge, extensions to public transport services and additional parking facilities.

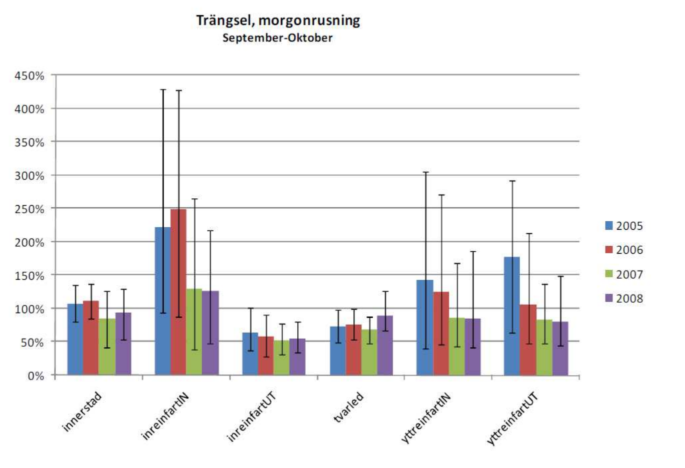
The table presents a cost-benefit assessment of the scheme.

Element	EUR million per year
Reduced travel time	79
More certain travel time	9
Change travel behaviour	1
Less GHG emissions	7
Health and other environmental effects	3
Traffic safety effects	15
Other effects net	8
Total benefits	122
Depreciation of start-up investment (40 years)	-9
Operation of scheme	-72
Total costs	-82
Total net benefits	40

Source: Transek 2006 *Samhällsekonomisk analys av Stockholmsförsöket*

The savings in travel time including the effect of more predictable travel time was estimated at around EUR 90 million per year.

A review after the scheme was made permanent illustrates the reduction in congestion time index for different segments of the road network. The years 2005 and 2006 are before the scheme while 2007 and 2008 show the congestion index after the introduction of the scheme. For one of the key segments, the reduction in the index is from around 250% to about 150% of additional travel time during morning rush hours.



Figur 2.5: Trängselindex som medelvärde av procentuell restidsförlängning på olika vägtyper under förmiddagens rusningsperiod (7:30-9:00), de vertikala linjerna avser 10- och 90 percentilerna).

Source: Trafikkontoret 2009 *Analys av trafiken i Stockholm – med särskild fokus på effekterna av trängselskatten 2005-2008* Stockholm Stad

The example from Stockholm shows reduced congestion costs in the order of EUR 90 million annually. A similar assessment done of the London congestion zone also showed significant reduction in congestion levels and also that the scheme overall has a positive cost-benefit ratio. For London, the annual reduction of congestion costs was estimated to be about EUR 300 million[103].

Although it is subject to much uncertainty to extrapolate from the Stockholm and London examples, it could give a suggestion about the order of magnitude. Extrapolating these examples based on population figures would suggest reductions in congestion costs in the order of EUR 5 to 10 billion annually[104].

In Section 3, there is an example of SUMP that has generated a reduction in average travel time of around 10%. A look at the extrapolation of the Stockholm and London examples and the current level of congestion costs suggests that the Stockholm and London examples are in the same order of magnitude.

These examples concern reductions in congestion costs that have been achieved. The potential for reductions in congestion costs as a result of the benchmark SUMPs being introduced is more difficult to estimate.

An example of ex-ante simulations is presented in the Creutzig study. The percentage reduction in congestion costs for the four case cities included in the Creutzig study varied from 33% to 65%. Whether such levels of improvements can be achieved will depend on many factors but considering that higher ambition levels and more comprehensive measures are applied, it is likely that the SUMPs being promoted by the policy options will give significant reductions in congestion costs.

The conclusion is that the examples demonstrate significant improvement potential for reducing congestion. Congestion reduction is important as it increases the general accessibility of the transport network. To the transport of goods and so the functioning of the internal market, the overall accessibility in the transport system is very important.

7.4.5 Conclusion on economic impacts

The main components of the economic impacts include:

- Reduced congestion costs
- Changes in investment costs as result of the integrated planning

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[103] Leape, J 2006 "*The London Congestion Charge*", Journal of Economic Perspectives Volume 20, Number 4, Fall 2006. Table 2 on page 172 presents total time savings as GBP 202 million in 2005 prices. Converted to EUR using rate of 1.45.

[104] The population in the Stockholm agglomeration as defined in Appendix A is around 1.4 million and with the total population in cities above 100,000 inhabitants in the order of 200 million by 2050, a simple up scaling indicates EUR 12.8 billion.

› Increased planning costs of developing and implementing the SUMP.

It should also be considered that the funding for the investments and for the establishment of a SUMP come from different sources, and often institutional barriers prevent using funds for investments for the planning of these investments, even when it would increase efficiency.

A qualitative assessment of the economic impacts by policy option is presented in Table 7-33. The economic effects are largely proportional to the uptake of the benchmark SUMP.

Options 2, 3 and 4 – the recommendation options – are based on the comprehensive content and scope requirements as is Option 6, while Option 5 is based on the minimum requirements.

Whether this means that Options 2, 3 and 4 will have an additional effect depends on several factors. Under an option based on a voluntary application of the recommendations, a city may choose not to apply all elements in full. Therefore, while the comprehensive requirements add specific measures, it is not "required" that these measures are introduced if they are assessed not to be necessary to achieve the overall objectives. The comprehensive scope and content elements are not estimated to add significantly to the overall economic impacts.

Table 7-33 Economic impacts by policy option – compared to baseline

Economic impacts	Congestion costs	Savings from cost-effective packages of measures	Planning costs
Option 2: Recommendations	++	+	-
Option 3: Recommendation with voluntary benchmarking	++	+	-
Option 4: Recommendations with incentives, linking access to EU funding	+++	+	-
Option 5: Mandatory with minimum requirements for content and scope	++++	++	--
Option 6: Mandatory with comprehensive requirements for content and scope	++++	++	--

There could be an order of magnitude difference between the key economic impacts. The effect on congestion costs are counted in billions of Euros, savings from more cost-effective measures in hundreds of millions of Euros and the planning costs in millions of Euros. It means that the overall economic impacts would be positive and could reach a substantial amount.

7.5 Social impacts

Social impacts include issues such as health, employment and social inclusion. The potentially most relevant social impacts of SUMPs include:

- Improved accessibility for the citizens and in particular for those with reduced mobility
- Improved health due to fewer accidents, air pollution and noise
- Improved health due to positive effects on cycling and walking
- Employment effects
- Strengthening of the civil society due to the participatory approach.

These types of social impacts are assessed in the subsequent section.

7.5.1 Accessibility

Accessibility has different dimensions. In Section 3.1.1, we distinguish between the following types of accessibility:

- Accessibility of the urban transport network in the urban area

- Accessibility between local urban transport networks and regional, national and international transport networks for persons and goods

- Specific: accessibility of the urban transport system, including pedestrian access to urban streets and sidewalks for older persons, persons with reduced mobility and those with functional limitation.

Accessibility of the urban transport network is mainly affected by issue of congestion and potentially of insufficient public transport. The first aspect is covered in the section on economic impact in relation to congestions; see Section 7.4.4.

The level of public transport service is an important element of the SUMP. The examples described in this section illustrate that cities aim to improve the service.

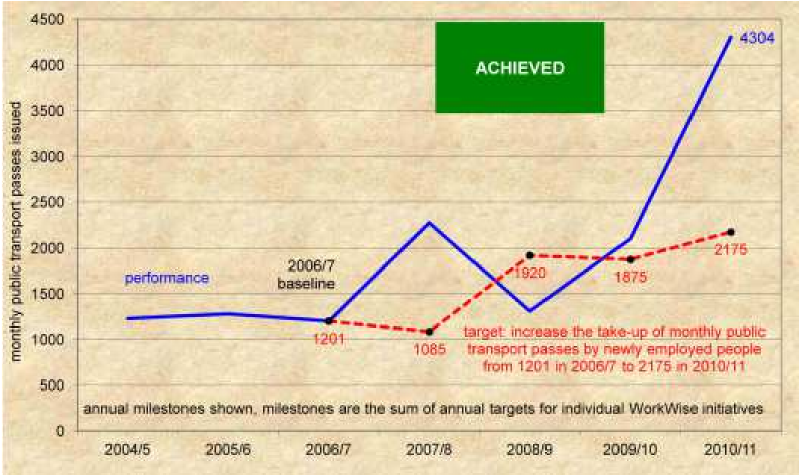
Accessibility between urban, regional, national and international networks is also mainly a question of congestion. For example for the flow of goods congestion on the urban "leg" of the transport chain is a key issue. This aspect is also covered by the discussion of congestion costs under economic impacts, see Section 7.4.4.

This section covers the last aspect of accessibility, i.e. whether the public transport systems provide sufficient mobility for all social groups. Given the objective of providing mobility for all social groups, the level and quality of public transport are crucial. The implementation of SUMPs is very likely to lead to an increase in public transport services being provided to facilitate the shift in modal split away from private cars. Irrespective of the specific change in the number of passengers, improved services for those who already use public transport will be important.

There is no simple indicator to quantify the possible effects. Specific examples are presented here. One is about access to employment.

Access to employment

An example from the evaluation of the West Midlands LTP2 illustrates how a city defines an objective on access to employment and how it is possible to achieve the target.



This shows how a SUMP can include many different elements and also that more social aspects can be part of the plan.

Source: West Midlands Evaluation of LTP2

Access to health

An example from the evaluation of the West Midlands LTP2 illustrates an accessibility indicators defined as number people within 30 minutes of a main hospital. The target was a 50% increase over 5-year period and the evaluation shows that in actual improvement was 70% increase over the 5 year plan period.

This has been achieved by various schemes improving the public transport service.

Source: West Midlands Evaluation of LTP2

A somewhat similar example is from the Local Transport Plan of Cambridgeshire, where problems of improving the accessibility from more rural areas into town centres can illustrate why coordination and cooperation across local and regional authorities is important to optimise public transport services and deliver accessibility.

The examples illustrate several aspects of accessibility and how improvements are achieved as part of the integrated urban mobility plans, such as the LPT in England.

Overall, the development of SUMPs is very likely to enhance the provision of public transport. This will improve accessibility for all social groups that depend on public transport.

Accessibility to town centres

As part of the LTP2 in Cambridgeshire, a "strategic accessibility indicator was defined that would incorporate a range of services on a countywide scale. This indicator illustrated below (NI 175 (ACC1, LTP1)) was for no less than 89.7% of households to be within an hour of an area of town centre activity in the morning peak hour in 2010/11.

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Figure 4.1 NI 175 (LTP1, ACC1): Accessibility of areas of town centre activity

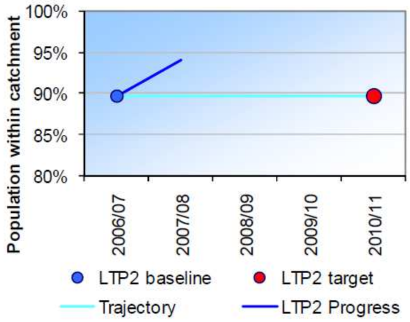
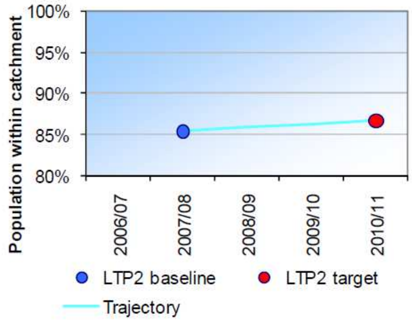


Figure 4.2 Indicator NI176 (ACC4): Accessibility of employment



In the evaluation, the following is reported:

ACC1: The proportion of households to be within an hour of an area of town centre activity in the morning peak hour as measured by Accession accessibility mapping software in 2010/11.
ACC4: The percentage of people of working age (aged 16 to 74 years) living within the catchment area of a location with more than 500 jobs by public transport, cycling and / or walking.
As can be seen from Figure 4.1, there has been a noticeable improvement over the last two years showing that more households than previously (94%) are able to access areas of town centre activity within an hour in the morning peak.

Source: Cambridgeshire, Evaluation LTP2

7.5.2 Health and safety

Improvement of public health is one of the major impact categories in relation to increased uptake of SUMPs. The specific elements considered include:

› Traffic safety

› Active lifestyle

› Noise reductions

› Air pollution reductions.

Traffic safety

Traffic safety improvement is an area whether SUMPs are likely to contribute to further significant improvements.

There is a general trend of a decreasing number of traffic accidents but the improvement has been slower in urban areas. The uptake of SUMPs can support the process of continuing the safety improvements though also national policies play a role.

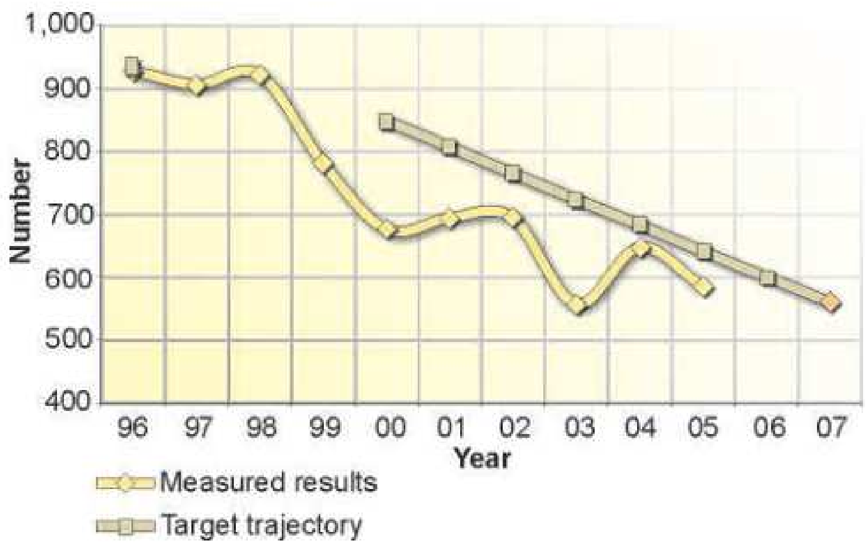
Considering the estimate of the current level of external costs of accidents in the order of EUR 80 billion in urban areas, it is clear that even a modest percentage reduction will amount to significant figure of billions of Euros.

Given the actual reductions as illustrated below and the simulations in the Creutzig study, which suggest reductions in accident costs of 37% to 75%, it would be realistic to assume, for example, a 50% reduction by 2040. This would then be equivalent to a reduction in external accident costs of EUR 40 billion annually.

Traffic accidents in (UK)

A look at the Delivery Reports of UK cities shows that Local Transport Plans have resulted in a notable reduction in accident levels across plan periods. For example, the Surrey County council considers the overall safety performances of its LTP1 as excellent. The plan has resulted in the reduction of serious causalities by 37%, serious child casualties by 52% and slight casualties by 13%.[105]

Figure 1 Number of people killed or seriously injured in Surrey



Source: Surrey County Council, Delivery Report, 2006

[105] Surrey County Council, LTP1 Delivery Report, 2006

Active life style

An active lifestyle can carry significant benefits; not just for the individual in terms of better health, improved fitness, and a higher quality of life, but also for society in terms of saved costs on lifestyle related treatments and healthcare, and fewer sick days.

Impacts from SUMPs on active life styles can be approached by looking at the benefits that arise from increased walking and cycling in cities. In recent years, for instance, there has been a growing attention on research focusing on the socio-economic benefits of cycling and walking.

In a review of economic literature on the health related benefits from cycling and walking in 2011, the WHO[106] found a median benefit-cost ratio of 5:1, albeit with a range from -0.4 to 32.5. The same review pointed towards other studies estimating that the health-related added value of each new walker or cyclist would lie somewhere in the range between EUR 120 and 1,300. Hence, with the promise of SUMPs to increase, the modal share of both walkers and cyclists, even by a small fraction, could lead to significant gains.

From an epidemiological literature perspective, similar arguments can be made. For instance, there is strong evidence of significant health benefits from a large study on cycling in Copenhagen[107] in terms of all-cause mortality rates. More specifically, the Copenhagen study found a relative risk of all-cause mortality among regular commuter cyclists of 0.72 compared to non-cyclist commuters; for three hours of commuting per week. Similarly, other studies point to a relative risk of all-cause mortality for walkers on 0.78; for walking of 29 minutes, seven days a week.[108]

There are several other studies on health effects from cycling. For example, men who cycle at least 25 km per week have less than half the risk of non-fatal and fatal coronary heart disease compared to those not physically active.[109] Commuting by cycling or walking at least 30 minutes per day has also been shown to reduce the risk of developing Type 2 diabetes by 35%.[110] A study by Teschke et al (2012) reviewed several recent studies and provided an overview of the benefits of cycling

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[106] WHO (2011) Health economic assessment tools (HEAT) for walking and for cycling

[107] Andersen LB et al. (2000) All-cause mortality associated with physical activity during leisure time, work, sports and cycling to work. Archives of Internal Medicine, 160:1621–1628

[108] WHO (2011) Health economic assessment tools (HEAT) for walking and for cycling

[109] Morris J et al (1990) Exercise in leisure time: coronary attack and death rates. Brit Heart J 1990;63:325-34

[110] Hu G et al (2003) Occupational, commuting, and leisure-time physical activity in relation to risk for type 2 diabetes in middle-aged Finnish men and women. Diabetologia 2003;46:322–9

and walking relative to potential associated risks, such as increase in accidents. The following table summarises the findings.

Table 7-34 Health risks and benefits of increased bicycling or bicycling and walking

Study	Location	Study effect	Balance of Risk and Benefits
Grabow et al (2011)	USA, 11 metropolitan areas in the mid-west	Conversion of 50% of automobile round trips of ≤ 8 km to cycling	1,129 fewer deaths in 31.9 million population = 35 fewer deaths per million population per year. Benefit-risk ratio: cannot be calculated, no risks considered
Woodrock et al (2009)	London, England	Increased active transportation: 2 times as much walking and 8 times as much cycling. Effects on cardiovascular disease, breast cancer, colon cancer, dementia, depression, and diabetes.	530 fewer premature deaths and 7,332 more disability-adjusted life-years per million population per year. Benefit-risk ratio: ~ 49:1 for premature deaths; ~ 15:1 for DALYs
Johan de Hartog et al (2010)	The Netherlands	500,000 adults switch from car to bicycle for trips < 7.5 km. Effect on life years.	Gain of 7 months of life per person = 583,333 years per million population over the life course. Benefit-risk ratio: ~ 9:1
Rabl and de Nazelle (2012)	Europe	Driver who switches to 5 km of cycling. Effect on all-cause mortality.	Gain of 1,271 EUR/year per car driver who switches to cycling = 1.3 billion EUR/year per million car drivers who switch. Benefit-risk ratio: ~ 19:1
Rojas-Rueda et al (2011)	Barcelona, Spain	181,982 subscribers to a public bike share program compared to car drivers. Effect on all-cause mortality	12.3 fewer deaths per year = 67 fewer deaths per million population per year. Benefit-risk ratio: ~ 96:1

Sources: Table is based on results from Teschke, K. (2012) Bicycling: Health Risk or Benefit? UBC Medical Journal, March 2012 3(2)

From the above, it is clear that there are substantial health benefits from improving cycling and walking; and that the reduction in mortality from increased physical activity greatly outweighs the risk of fatal injuries.

Following the above argumentation, with its goal of increasing the modal share of cycling to 15% by 2020, Helsinki (Finland) has estimated the associated cost and benefits. Looking at two different development programmes involving investments in bicycling infrastructure and networks, the cost and effects of these are compared with a baseline scenario based on current bicycling investment trends. The study finds that compared with the ordinary infrastructure investments, both development programmes result in a benefit-cost ratio of nearly 8:1; that is, for every Euro invested the society gains EUR 8 due to health effects and time savings.[111]

[111] Helsingin kaupunkisuunnitteluvirasto (2012) Pyöräilyn hyödyt ja

Identifying the potential impact of SUMPs at the EU level in terms of health benefits from increased walking and cycling is not easy; particularly since most studies operate with hypothetical scenarios of changes in modality in their assessment. However, looking at Rojas-Rueda et al (2011) in the above table, it is found that subscribers to the public bike-sharing programme in Barcelona, of which there are nearly 200,000, result in 12.3 fewer deaths annually per million compared to car drivers. In this connection, recognising that a bike-sharing programme could be considered part of a SUMP, but acknowledging that a bike-sharing programme only constitutes one of many possible measures with the aim to shift modal shares towards cycling and walking, the potential effect of SUMPs must be significantly higher.

Another point of entry could be Woodrock et al (2009) who compare an urban business as usual baseline (London, towards 2030) with a scenario of more active travel, represented by twice the amount of walking and eight times the amount of walking. Here, the study finds that the increase in active travel leads to 530 fewer deaths per million annually year. In this case, however, it is hard to provide solid arguments whether SUMPs in fact will be able to reach the amount of active travel used in the scenario.

It is also possible to derive figures for fewer deaths from increased walking and cycling from the Creutzig city study. For instance, looking at the grand averages in terms of life savings from both walking and cycling across all four cities in the baseline scenario, and comparing these with the grand averages in the full SUMP scenario (S4), leads to the conclusion that SUMPs have the potential of causing 190 fewer deaths per million annually.

The above examples suggest that there is a potential for significant health gains from active transport. Using the number lives saved, the estimates range from 35 to 530 lives saved per 1 million inhabitants.

Taking the lowest number of 35 lives per 1 million inhabitants and assuming that it can be used to estimate the order of magnitude effect, the resulting health benefits would be in the order of EUR 10 billion annually[112].

Reduced noise exposure

Also in relation to noise, the likely value of noise reductions is substantial given that the estimate of the external costs amounts to EUR 40 billion per year.

Examples of actual reductions that have been quantified are few, and hence the considerations of the possible reductions will rely more on ex-ante assessments. The Creutzig study estimated the reduction potential for noise to be in the order of

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kustannukset Helsingissä (in Finnish), quoted in ELTIS http://www.eltis.org/index.php?ID1=5&id=60&news_id=4140

[112] Assuming the value of a life saved to be 1.5 million EUR and a total population in the baseline year of around 200 million inhabitants.

15% to 36%. The examples of targets from actual city plans suggest reductions in the order of 8% to 20% by 2020.

Reduced exposure to air pollution

Reducing air pollution will lead to significant health effects. It should be noted that the baseline, see Chapter 4, includes a significant reduction in air pollution due to the impact of existing EU legislation, for example the regulation on vehicle emission standards.

The uptake of SUMPs will support and enhance the impact of the improved emission standards.

7.5.3 Employment effects

Several factors determine whether the introduction of SUMPs will have an impact on employment. The effects of the integrated planning will most likely lead to a shift in investments from "traditional" road transport infrastructure towards non-motorised transport and public transport and ITS investments.

The Fraunhofer study presented in Section 7.3.2 includes an assessment of the possible employment effects from "sustainable" mobility measures. Although the scenarios assessed in the study are not completely identical to those of a benchmark SUMP package, there are many similarities and the general findings may illustrate possible employment effects.

The study suggests that the employment effect will be in the order of 1-2% by 2030, depending on the specific scenario. Impacts of this magnitude would be very important as they translate into a total number of jobs of one to two million.[113]

If the change in planning approaches results in cities that are more attractive and generate a higher economic growth, the number of jobs will also increase in the urban areas. However, the urbanisation trend leading to a decline in rural communities would counter to this by a decline in the number of jobs in rural areas. Increased accessibility, in particular if the situation is improved for low-income groups, may lead to a more equal distribution of jobs.

In Section 7.4.3, an example of the export potential of having developed an advanced planning tool was presented. The example illustrated a potential increase in business turnover in respective service sector. A potential increase that service sector's activity would also generate additional jobs.

Overall, the transition from present situation to situation with more sustainable mobility solutions would increase the demand for support to the process; for

[113] Eurostat: EU labour force of 241 million people in 2012 http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Labour_market_and_labour_force_statistics

example information systems. These additional employment effects have not been quantified. Compared with the employment effects indicated above – one to two million additional jobs - the more indirect effects are also likely to be less significant.

7.5.4 Social inclusions and civil society

Impacts on the civil society in terms of inclusion and enhanced involvement of local communities are important benefits of the SUMP approach given its focus on the participatory approach.

Below are a few examples of such impacts.

The improvement of social dialogue (France)

The Urban Transport Plan for Paris ((Plan de Déplacements de Paris) was implemented in 2001 and covered the 2001-2005 period. When the second phase was revised and put into effect at the beginning of 2007, there was an extensive public involvement from private citizens, different district associations, police departments, families and students' councils, chambers of commerce and trade councils. All stakeholders were asked to comment on the proposed plan, and public surveys were conducted at the major points to public transport in the city to secure the broadest coverage in terms of users.[114] Thus, the first phase of the plan had a positive impact by encouraging a participatory approach in the second phase.

The improvement of social dialogue (UK)

The city of Aberdeen's draft SUMP draws its key elements from the problems and solutions that the city, citizens and stakeholders have identified. To achieve this, a communications plan was prepared, which indicates the appropriate stages during the SUMP preparation phase at which stakeholders could be consulted as well as frequency, method and format of communication with stakeholders and citizens. The city council observed that utilizing social media has led to higher response rates than previously achieved for citywide transport related surveys. It has reached a broader audience, engaging younger citizens as well as those who might not normally consider answering a paper based survey in a library. The jury of the European Commission's first SUMP Award commended the city for the "outstanding participatory approach involving stakeholders and citizens" and honoured Aberdeen with the 10,000 Euro Award prize: "Its successful use of social media demonstrates the Council's ambition for innovation and connecting to citizens. Good response rates from citizens prove the appropriate application of the chosen tools."[115]

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[114] http://www.trt.it/documenti/Sustainable%20Urban%20Transport%20Plans.pdf
[115] http://www.eltis.org/index.php?id=13&lang1=en&study_id=3785

The improvement of social dialogue (Croatia)

In Zagreb, discussions on mobility issues were previously mostly limited to professionals without involving the public. However through SUMP schemes, the city has set the following aims: to raise citizens' interest and understanding of mobility issues, to encourage them to actively contribute to the improvement of local mobility conditions and to teach them how to best communicate with the authorities. The project showed the benefits of continual communication among different stakeholders, the value of consultation when looking for concrete mobility solutions and the necessity for efficient coordination of all mobility actors.

Evaluation of the project showed a very high involvement of citizens116:

21,630 Info-point visitors and 1,400 participants on more than 30 events

60,000 website and 165,00 Facebook hits; 3,170 viewers of films

Approx. 200 media appearances

More than 150 citizens from nine local committees participated in mobility dialogue

143 citizens trained in communication with City authorities during nine workshops

More than 2,000 surveys completed on the quality of PT services and other mobility issues.

7.5.5 Conclusions on social impacts

The main social impacts include:

- Accessibility to work and social activities
- Public health (through active lifestyle, improved traffic safety and reduced air pollution)
- Employment effects
- Social inclusion and involvement.

A qualitative assessment of the alternative policy options is presented in the table below. As argued above in the discussion of the economic impacts, impacts are more or less proportional to the uptake of the benchmark SUMP. Hence, the estimated social impacts are highest for Options 5 and 6, and somewhat lower for the voluntary options.

[116] http://www.eltis.org/index.php?id=13&lang1=en&study_id=3780

The main social impacts are all conceivable, and based on the monetised estimates presented for some of the impacts, the overall order of magnitude is likely to be billions of Euros.

Table 7-35 Social impacts by policy option – compared to baseline

Social impacts	Accessibility	Public health	Employment	Other social impacts
Option 2: Recommendations	+	+	+	+
Option 3: Recommendations with voluntary benchmarking	+	++	+	+
Option 4: Recommendations with incentives, linking access to EU funding	++	+++	+	+
Option 5: Mandatory with minimum requirements for content and scope	+++	++++	++	++
Option 6: Mandatory with comprehensive requirements for content and scope	+++	++++	++	++

Especially the public health impacts can be roughly monetised, and they are estimated to be very significant. Other social benefits are also important , and they are likely to be substantial even though they cannot be quantified in a similar way. This is for example the case for the employment effects that could be significant and for improved accessibility for all social groups.

7.6 Environmental impacts

The most important environmental impacts include:

› Reduced CO_2 emissions
› Reduced air pollution.

There could be other environmental effects on biodiversity, soil and water pollution but they would be less important. It should also be noted that a review of the PDUs in France[117] indicates that targets for soil, flora and fauna were included in only 20% of the plans.

7.6.1 Reduced CO_2 emissions

Reduction of CO_2 emissions from transport is one of the key objectives of the EU Transport White Paper. It is therefore very important that the increased uptake of SUMPs will lead to significant reductions in CO_2 and other GHG emissions.

Given that the climate change issue is a relatively new element (i.e. the French legislation on PDUs introduced the requirement to consider CO2 emissions only in 2010) of integrated urban mobility approaches, it is envisaged that data or examples of actual improvements are limited.

One of the main reasons for proposing the policy options on SUMPs is to step up efforts to reduce GHG emission reductions at the urban agglomeration level.

The simulation in the Creutzig study on the possible effect of a comprehensive package of measures suggests that the improvement could be substantial. A reduction of 35 to 70% in emissions is possible. In some cases, the targets displayed by cities are more ambitious, including aims to become carbon free by 2050.

The reduction level required to achieve the EU target is approximately a 70% of the current emission level by 2050.

7.6.2 Air pollution

In terms of air pollution or air quality, many EU cities have difficulties of complying with existing legislation as demonstrated in Chapter 3. It is therefore important that SUMPs can ensure that additional measures are implemented to achieve compliance in the shorter term.

The air pollution reduction in the baseline scenario is quite substantial but it refers to the long-term baseline year of 2050, and it is based on technological improvements. Some of the applicable measures, such as introducing more low-

[117] GART 2009 Plans de déplacement urbain: Panorama 2009 – Résultat d'enquête et perspectives

emission zones, would lead to improved air quality in the designated zones in the shorter term.

Air quality (UK)

In the first plan period (LTP1), the Milton-Keynes Council achieved all three of its targets on air quality[118]. The levels of nitrogen dioxide in 2005 were only 22.8 *µg/m³* (target was 40 *µg/m³*-annual mean) and particulate matter (PM10) was only 19.3 *µg/m³* in 2005 (target was 40 *µg/m³*-annual mean). The levels of carbon monoxide also achieved the target of 10 *mg/m³* by 2003. In fact, due to an extremely low record of 2.3 mg/m³, Milton-Keynes does not monitor this pollutant anymore.

In Leicestershire, during LTP 1, CO_2 emissions have fallen by 2% annually[119]. Emission reductions per vehicle mile are largely down to improved engine management. Other strands of the work in the country, particularly those promoting walking, cycling and public transport as alternatives to car use, have also contributed to the reduction in overall traffic, which in turn reduces pollutant emissions.

7.6.3 Summary of environmental impacts

The main environmental impacts are CO_2 reductions and air quality improvements. The impacts by policy option is presented in the below table.

As is the case for the economic and the social impacts, the environmental impacts are largely proportional to the uptake of the benchmark SUMP.

On CO_2 reductions, it is estimated that Option 6 could have a higher impact than Option 5 due to the specific inclusion of requirements to consider the introduction of clean vehicles and alternative fuels.

Options 2, 3 and 4 are also based on comprehensive scope and content requirements, which would strengthen the efforts to reduce CO_2. Still, the overall effects are not as high as for Option 5 given the lower uptake of the benchmark SUMPs.

Table 7-36 Environmental impacts by policy option – compared to baseline

Environmental impacts	CO_2 emissions	Air quality	Other environment impacts
Option 2: Recommendations	+	+	+
Option 3: Recommendations with voluntary benchmarking	++	+	+
Option 4: Recommendations	++(+)	++	+

[118] Milton-Keynes Council, LTP1 Delivery Report, 2006
[119] Leicestershire County Council, Delivery Report, 2006

with incentives, linking access to EU funding			
Option 5: Mandatory with minimum requirements for content and scope	+++	+++	+
Option 6: Mandatory with comprehensive requirements for content and scope	++++	+++	+

8 Comparison of policy options

In this chapter, the policy options described in chapter 6 and analysed in chapter 7 are compared. The chapter follows the approach specified in the impact assessment guidelines and compares the options on the following three points:

- Effectiveness, i.e. the ability to fulfil the EU's goals
- Efficiency, i.e. the relationship between goal achievement and the costs of the policy options
- Coherence with the EU's priorities, strategies and objectives.

The overall objective is to attain the Transport White Paper objective of a competitive and resource efficient urban transport system. Hence, the policy options need to be assessed against this objective.

The problem definition has revealed that there is a significant risk that urban agglomerations will not improve sufficiently to increase competitiveness and resource efficiency.

The proposed options aim to address the specific objective of ensuring a framework to facilitate an integrated urban mobility approach with its two dimensions: the scope/content dimension and the process/procedure dimension.

8.1 Effectiveness and cost efficiency of the options

8.1.1 Effectiveness

The effectiveness of the options includes two elements:

- How many cities will apply the benchmark SUMP?
- What will the impacts of applying the benchmark SUMP be?

Both elements were assessed in chapter 7, and the main results are summarised below to compare the options.

Overall, it is difficult to estimate how each policy option will affect the uptake of benchmark SUMPs since each city makes individual and political decisions on how to develop its transport system. In case of a mandatory framework, however, it is assumed that all Member States will implement the benchmark SUMP and make sure that all cities develop and apply SUMPs.

The uptake is going to be lower for voluntary options than for the options with mandatory requirements. Many cities have already introduced some form of integrated planning, but some elements are still missing.

The qualitative scores are explained in Chapter 7, see Section 7.2. The ranges of the uptake are scenarios for the percentage of the population in urban agglomerations to be covered by SUMPs. Based on an indication from France suggesting that around 20% of urban agglomerations below the threshold for the mandatory PDU have implemented an integrated urban mobility approach voluntarily, the lower uptake level (Option 2) could be 15-25%. For Options 5 and 6 in which SUMPs are made mandatory, the uptake is 100% assuming that all cities will comply with requirements.

Table 8-1 Summary of the assessments of effect of options on take-up of SUMPs

Option	Qualitative scoring of options with regard to uptake of SUMPs	Possible range of uptake of SUMPs in % of population
Option 2: Recommendations	3+	15-25
Option 3: Recommendations with voluntary benchmarking	5+	25-35
Option 4: Recommendations with incentives, linking access to EU funding	8+	30-50
Option 5: Mandatory with minimum requirements for content and scope	10+	100
Option 6: Mandatory with comprehensive requirements for content and scope	10+	100

Source: Own exposition based on assessments above.

In terms of the effects of estimated uptake of benchmark SUMPs on the key mobility, social and environmental indicators, the effects are, overall, likely to be more or less proportional to the uptake.

The benchmark SUMP includes a requirement to define targets in line with the EU objectives of achieving a competitive and resource efficient transport system. Hence, all the options will reduce the risk of EU urban agglomerations not meeting EU targets, and it is likely that the reduction in risk is proportional to the uptake of the benchmark SUMP.

The sub-versions of Option 5 and 6 where the urban agglomerations covered by requirements could be above 100,000 inhabitants, above 250,000 inhabitants or be based on the TEN-T urban nodes and urban agglomerations above 1 million inhabitants would have slightly different impacts in proportion to the share of the urban population covered by the three variants.

8.1.2 Efficiency

Regarding the efficiency of each option, it may not be very different across options as both the benefits and the costs are likely to vary proportionally to the uptake of the benchmark SUMPs.

› The possible magnitude of net benefits of all the options is counted in billions of Euro annually; i.e. with the net benefits meaning the benefits of the packages of specific measures, which would be the result of developing a SUMP minus the costs to implement the measures.

› The costs of developing the benchmark SUMPs have been estimated to be in the order of millions of Euros.

› The mandatory Options 5 and 6 would require that Member States establish ways to undertake a conformity check of the SUMPs. This means additional start-up costs plus on-going conformity checking costs. These costs are of lower magnitude compared with the costs of developing the SUMPs. The conformity checking may have an effect on the quality of the SUMPs and hence lead to higher impacts. It could mean that Options 2, 3 and 4 would be somewhat more efficient but it is not a major result.

› There seem to be economies of scale in the development of the SUMP so the planning cost per capital decreases with population size. Hence, the sub-versions of Options 5 and 6 in which only the TEN-T urban nodes and large urban agglomerations are required to have SUMPs will be more cost-effective than the other two sub-versions.

From an overall perspective, it means that efficiency cannot be used as a criterion to differentiate between the options. The economies of scale observed in the administrative costs of preparing the SUMPs are relatively minor compared with potential benefits of the options.

8.2 Coherence with EU priorities, strategies and objectives

The issue of coherence is described for each option.

Table 8-2 Comparison of options regarding coherence

Option	Coherence
Option 1 – Baseline	No change
Option 2	Issuing recommendations is in line with EU strategies, and it is a logical next step from the current situation where a number of support programmes aim at promoting sustainable urban mobility. Sharing of information and best practices will be supported by establishing an official EU framework for sustainable urban mobility.
Option 3	This option adds incentives through a voluntary benchmarking scheme. The White Paper already mentions introducing an urban mobility scoreboard. This scoreboard could be the benchmarking tool. However, there is a lack of comparable data and statistics.
Option 4	Option 4 includes a requirement to develop a SUMP based on the EU framework for those applying for EU funding. This is also coherent with existing policies and practice. Various requirements for achieving EU funding do exist; for example, a cost-benefit analysis that demonstrates the value added of the EU support to the investment. With this option, existing requirements would be extended to focus on how the investment fits with the overall mobility situation in an urban agglomeration and how it contributes to achieving the key EU objective.
Option 5	This option introduces a mandatory requirement for cities to develop a SUMP based on a defined framework. Under this option, each Member State defines how the framework should be implemented, taking the planning traditions and institutions in that Member State into account. In this way, the option respects the subsidiarity principle while promoting the achievement of the EU Transport White Paper objective.
Option 6	Similar to Option 5, this option adds a number of elements through the comprehensive requirements on content and scope. It requires certain measures to be considered, including access regulations and urban pricing. Recommending specific measures might be less coherent with principles such as the one on subsidiarity. However, the requirement is only that these measures should be considered and not that they necessarily should be introduced. It is an important White Paper objective to reduce the dependence on fossil fuels so pointing to the introduction of clean technologies and alternative fuels is in line with this objective. Finally, Option 6 includes a requirement to insure interoperability and consistency in the use of instruments across the EU. While harmonisation is a key value added from EU-level action, the actual implementation of this requirement needs to be worked out.

8.3 Summary of comparison of options

All three aspects are summarised in the following table. This is a qualitative assessment based on the above assessments of effectiveness, efficiency and coherence.

Table 8-3 Comparison of options regarding coherence

Option	Effectiveness	Efficiency	Coherence
Option 2	+	++	++
Option 3	+	++	++
Option 4	++	++	+++
Option 5			
>100,000	++++	++	++
>250,000	+++	+++	++
>1,000,000+TEN-T	+++	+++	++
Option 6			
>100,000	++++	++	++
>250,000	+++	+++	++
>1,000,000+TEN-T	+++	+++	++

- Negative impact, + low ++ medium +++ high positive impact

The different aspects of assessing the alternative options can be summarised into the advantages and disadvantages of each option. Table 8-4 presents such an assessment of each option based on the assessment of their impacts, effectiveness, efficiency and coherence. This impact assessment study is not to recommend any particular option, but to outline the impacts and effects of each alternative option.

Table 8-4 Advantages and disadvantages of alternative policy options

Option	**Advantages**	**Disadvantages**
Option 2 – Recommendation by the EU for a SUMP framework	Allows cities to benefit from an urban transport planning framework based on best practice and experience from across EU.	Risk of only modest uptake of SUMPs
Option 3 – Recommendations by the EU for a SUMP framework, with voluntary benchmarking	Same as Option 2. Also, cities will have the opportunity to compare their own situation and progress with other cities, and good performance will be noticed.	Same as Option 2. Concern that benchmarking exercise might be perceived as name-and-shame exercise. Difficult to develop common benchmark indicators.
Option 4 – Recommendations by the EU for a SUMP framework, with voluntary benchmarking, plus the requirement to do a SUMP as a condition for receiving EU funding	Same as Option 2. It also ensures that EU funding goes to urban transport projects that are embedded in a comprehensive and integrated strategy, developed with due consideration for the key EU TWP objective.	Might be barrier to the use of EU funding for urban transport projects; EU funds might instead be directed to areas where such conditionality does not exist. However, if funding is available for preparing the SUMP, there are few disadvantages of this option.
Option 5 – Mandatory SUMP framework based on the minimum requirements for content and scope	Ensures that cities go through the exercise of developing a comprehensive strategy for better and more sustainable urban mobility.	Some administrative costs to Member States in implementing the framework (lowest for Member States that already have a legal framework).
Option 6 – Mandatory SUMP based on the comprehensive requirements for content and scope	Same as Option 5. Also, cities are directed to specific relevant measures. Introduction of clean technologies and alternative fuels could contribute to achieving the objective on CO_2. Interoperability of measures could reduce costs to certain traffic users. Standardisation of measures could make it easier for cities to implement the measure.	Some administrative costs to Member States in implementing the framework (lowest for Member States that already have a legal framework). Difficult to establish specific measures due to differences between urban areas and scarcity of suitable methodologies and tools. Requirement on interoperability could slow uptake of certain measure.

The legislative options are likely to reduce the risk that EU cities will not achieve the key EU TWP objective more than the non-legislative options; however, they will also be more demanding to implement. First, the individual requirements may have to be further developed before they can become part of a framework directive.

Second, the political feasibility is lower as Member States and cities could argue using the subsidiarity principle.

Even with a directive, the ultimate factor for reducing the risk of not achieving the key EU TWP objective will be the political will in each city to apply SUMPs; and more importantly, to actually implement all the necessary measures. A framework for SUMPs cannot guarantee that cities implement all the necessary measures.

9 Monitoring and evaluation

Indicators for achieving objectives

The monitoring setup should consider the relevant policy objectives starting with the overall objective of Transport White Paper: to achieve a competitive and resource efficient transport system. Then, it should allow for assessing the progress on operational objectives of stimulating the uptake of SUMPs in EU cities.

The monitoring of progress made in terms of implementing coordinated and targeted urban mobility plans requires the identification of a set of useful indicators and collection of data. In this section, we propose a simple and preliminary framework for defining these indicators.

The monitoring should therefore cover two aspects:

› The general achievement of the objective of a competitive and resource-efficient transport system;

› The implementation of SUMPs in EU city agglomerations.

Indicators for competitive and resource-efficient transport system

Indicators for the progress towards the competitive and resource-efficient transport system already exist. In this study, indicators from Eurostat's Urban Audits have been applied together with other data for example EEA data on air quality, etc. As part of the Urban Mobility Action Plan initiatives, there is an on-going activity on developing an urban mobility scoreboard. While it is not yet fully developed, it can be expected to provide the basis for monitoring of the cities' progress towards a competitive and resource-efficient transport system.

Monitoring of SUMPs

Regarding the operational objectives of implementation of SUMPs, the specific set-up of the monitoring and evaluation framework will depend on which of the policy options is selected as the preferred option. In any case, the main task in a monitoring and evaluation exercise will naturally be to ascertain the extent and quality of SUMPs.

We have considered a framework that may be used for monitoring and evaluation of the implementation of SUMPs at Member State level. It consists of a set of questions that would need to be refined at a later stage and could be used as guidance.

The questions are basically of a yes/no-type and collecting answers from cities would provide a mapping of implementation progress. They cover the areas defined in the benchmark SUMP; see Section 6.1. Also they cover the two areas, for which the Member States would need to monitor and evaluate implementation

1 Are plans being made ('planning indicators')?
2 Are plans being realised ('action indicators')?

In the table below, we have given examples of more general questions ("Has your city compiled baseline data?") and more detailed questions ("Do these baseline data relate to congestion, accessibility, accidents, noise levels and emissions?"). The idea is intended that data from the first and more general questions in each row of the table should be aggregated to a SUMP score from e.g. 0-100. 0 would indicate that a city has no plan, and a score of 100 reflects a city that has a plan that meets all general requirements for a SUMP and that this plan is of a high quality.

This may be too general and does not really take into account whether the plan actually spells out e.g. targets at a sufficiently detailed level or for a sufficiently broad number of indicators. In this case, one option would be to use more detailed questions to adjust or fine tune the scoring mechanism. Examples of this are given in the table below.

Table 9-1 Examples of elements in a monitoring framework

Indicative questions	Requirements
Does your city have a single overall urban mobility plan?	-
Does your plan have a long-term strategy or a strategic vision? Does the plan includes measurable targets and expected outcomes?	Includes or is built on long-term strategy
Are the targets in the plan aligned with EU 2020 objectives?	Identifies objectives and sets targets in line with EU policy objectives
Does the plan give due consideration to balancing social equity, economic development and environmental quality?	Contains pledge to sustainability
Has your city compiled baseline data? Do these relate to congestion, accessibility, accidents, noise levels and emissions?	Includes baseline analysis including performance audit
Has your city conducted a quantitative impact assessment of the plan? Has your city conducted separate impact assessments for the measures proposed in the plan?	Includes impact assessment on proposed measures

Indicative questions	Requirements
Does the plan include short-term quantitative targets on any of the following? Congestion and TEN-T bottlenecks Accidents Traffic accidents Air quality Accessibility	Provides short-term implementation plan (timetable + budget plan; allocation of responsibilities)
Does your plan specifically address the practical integration of practices and policies between policy sectors (environment, land use, social inclusion, transport planning)?	Integrates different relevant policy areas, in particular land-use and transport planning
Is the level of coordination between authorities (district, municipality, agglomeration and region) sufficient?	Considers all transport to, through and within the urban agglomeration area and coordination between different authority levels
Has your city tried to engage citizens (through a public consultation, online survey, stakeholder workshops) before the adoption of the plan?	Is developed in a participatory approach
Is there a good level of integration between the different authorities in your city when implementing a plan?	Is based on integrated planning and implementation
Is the plan adopted by the city council (or other relevant body)?	Is adopted
Are there mechanisms for monitoring the implementation of the urban mobility plan in your city?	Monitoring of implementation and performance
Does your city conduct regular appraisal of the implementation of the plan? Has the original plan been updated as a result of such appraisals?	Regular review and update of plans

The main weakness of the proposed set of questions is that it does not currently provide enough questions targeted at following the more specific implementation of the plan. As mentioned, 'planning' and 'action' indicators are currently pooled in the table. In final monitoring and planning, it may be fruitful to have separate sets of questions, one for assessing the SUMP and one for following the realisation of the SUMP.

Developing a standard questionnaire like the one above at the Member State level will allow for easy aggregation of data. These data could be collected at Member State level and be provided to the EU for on-going dialogue between the EU and the Member States to discuss whether implementation is progressing satisfactorily.

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ACTIVITY 31 SUSTAINABLE URBAN MOBILITY PLANS

APPENDICES

CONTENTS

Appendix A City Data 221

1 City data 223

Appendix B Country Case Studies 245

1 Introduction 247

2 Country case studies 249
2.1 France 249
2.2 Bulgaria 262
2.3 Denmark 265
2.4 Germany 269
2.5 Hungary 272
2.6 Malta 274
2.7 Italy 275
2.8 Spain 277
2.9 Belgium 280
2.10 Greece 287
2.11 Ireland 290
2.12 Poland 295
2.13 The Netherlands 305
2.14 United Kingdom 312
2.16 Other Member States 318

Appendix C City Survey 327

1 City survey 329
1.1 Methodology 329
1.2 Study process 330

1.3 Findings 331
1.4 Conclusion 347

Appendix D City Cases 354

1 City cases 356
1.1 Copenhagen 356
1.2 Birmingham 360
1.3 Nantes 365
1.4 Sofia 369
1.5 Berlin 372
1.6 Barcelona 377
1.7 Brugge 381
1.8 Oxford 383

Appendix E Method and Data Used in Creutzig et al (2012) 386

1 Method and Data Used in Creutzig et al (2012) 387

Appendix A City Data

1 City data

Table 1 City/agglomeration data (see data sources and notes below table)

City name	Country	TEN-T nodes	Population	Source of pupulation data	Congestion - index	PM 10 # days exceeding 50µg/m³	NO_2 Annual mean - µg/m3	Ozone 3y avg # days exceeding 120µg/m³	Number of deaths in road accidents per million population	Number of persons seriously injured in road accidents per million population	Total number of deaths in road accidents	Total number of persons seriously injured in road accidents	Percentage of people exposed to different noise bands (Lden)_Road noise >55 dB
Vienna	Austria	1	1,652,790	1	0.28				16.12	460.92	26.64	761.80	76
Graz	Austria	0	247,904	2		41.7	31.9	26.0	47.86	813.60	11.86	201.69	
Linz	Austria	0	185,739	2		35.8	30.1	9.7	58.33	689.32	10.83	128.03	
Salzburg	Austria	0	147,337	2		16.0	27.7	20.7	33.97	693.08	5.01	102.12	
Innsbruck	Austria	0	110,718	2		0.0	23.5	25.3	76.82	554.84	8.51	61.43	
Brussels	Belgium	1	1,003,562	2	0.33	28.5	28.9	13.0	33.38	211.64	33.50	212.39	43
Antwerp	Belgium	1	462,098	2		36.5	30.4	0.0	59.31	704.77	27.41	325.67	
Ghent	Belgium	0	361,767	2					54.79	1008.22	19.82	364.74	
Charleroi	Belgium	0	232,248	2		27.5	27.7	9.3	69.45	470.25	16.13	109.22	
Liège	Belgium	0	203,599	2		37.4	29.0	12.2	59.85	307.39	12.18	62.58	
Bruges	Belgium	0	117,604	2					85.42	563.75	10.05	66.30	
Namur	Belgium	0	107,237	2					148.23	300.17	15.90	32.19	
Sofia	Bulgaria	1	1,358,000	1		122.0	33.3	6.3	111.79	1703.50	151.81	2313.36	84
Plovdiv	Bulgaria	0	376,000	1		161.0	26.2	3.0	57.54	1343.50	21.63	505.16	92
Varna	Bulgaria	0	350,000	1					53.41	1407.42	18.69	492.60	98
Burgas	Bulgaria	0	192,795	2		75.3	13.4	6.0	180.03	857.77	34.71	165.37	
Rousse	Bulgaria	0	157,369	2					50.97		8.02		
Stara Zagora	Bulgaria	0	139,807	2		76.0	0.0	0.0	255.85		35.77		
Pleven	Bulgaria	0	113,246	2		150.0	27.8	0.0	115.69	1948.88	13.10	220.70	
Zagreb	Croatia	1	774,948	2									
Split	Croatia	0	190,255	2									

City name	Country	TEN-T nodes	Population	Source of pupulation data	Congestion - index	PM 10 # days exceeding 50µg/m³	NO_2 Annual mean - µg/m3	Ozone 3y avg # days exceeding 120µg/m³	Number of deaths in road accidents per million population	Number of persons seriously injured in road accidents per million population	Total number of deaths in road accidents	Total number of persons seriously injured in road accidents	Percentage of people exposed to different noise bands (Lden)_Road noise >55 dB
Rijeka	Croatia	0	143,980	2									
Nicosia	Cyprus	1	250,399	2									
Limassol	Cyprus	0	182,449	2									
Prague	Czech Republic	1	1,160,641	1	0.26	35.3	25.6	17.6	30.81	270.84	35.76	314.35	89
Brno	Czech Republic	0	374,929	1		39.5	18.6	28.7	56.67	240.16	21.25	90.04	67
Ostrava	Czech Republic	1	317,385	1		72.0	25.6	16.3	25.99	94.23	8.25	29.91	80
Pilsen	Czech Republic	0	161,795	2		28.3	19.0	11.4	76.80	265.84	12.43	43.01	
Olomouc	Czech Republic	0	99,979	2					29.89		2.99		
Liberec	Czech Republic	0	97,928	2		41.0	25.1	7.0	39.64		3.88		
Copenhagen	Denmark	1	1,071,714	1	0.17	0.0	17.8	5.0	20.01	322.47	21.44	345.59	59
Aarhus	Denmark	1	292,079	2		0.0	20.4	0.7	35.37	337.67	10.33	98.63	
Odense	Denmark	0	192,367	2		0.0	15.6	4.0	26.28	362.69	5.06	69.77	
Aalborg	Denmark	0	185,732	2		0.0	13.3	2.3	15.06	401.63	2.80	74.60	
Tallinn	Estonia	1	401,140	1		0.5	11.0	11.0	42.35	1337.85	16.99	536.67	19
Helsinki	Finland	1	969,423	1	0.15	1.0	17.9	4.0	20.84		20.20		42
Tampere	Finland	0	197,712	2		0.0	13.1	0.0	33.68		6.66		
Turku	Finland	1	168,695	2					34.23		5.77		
Oulu	Finland	0	131,892	2		1.0	13.4	0.0	15.20		2.00		
Jyväskylä	Finland	0	122,947	2		1.0	13.5	0.0					
Lahti	Finland	0	96,789	2		0.0	11.6	1.7					
Paris	France	1	10,303,282	3	0.34	14.5	35.3	9.9	24.53	248.47	252.70	2560.03	60
Marseille	France	1	1,558,379	3	0.42	55.0	32.1	15.0	55.37	116.21	86.29	181.11	75

City name	Country	TEN-T nodes	Population	Source of pupulation data	Congestion - index	PM 10 # days exceeding 50µg/m³	NO_2 Annual mean - µg/m3	Ozone 3y avg # days exceeding 120µg/m³	Number of deaths in road accidents per million population	Number of persons seriously injured in road accidents per million population	Total number of deaths in road accidents	Total number of persons seriously injured in road accidents	Percentage of people exposed to different noise bands (Lden)_Road noise >55 dB
Lyon	France	1	1,509,766	3	0.27	44.0	33.6	22.2	26.99	177.78	40.75	268.40	77
Lille	France	1	1,014,239	3	0.21	40.3	25.3	11.5	28.97	71.31	29.39	72.32	10
Nice	France	1	947,075	3	0.29	2.0	24.5	59.0	87.67	357.31	83.03	338.40	58
Toulouse	France	1	859,338	3	0.26	15.8	22.5	19.4	49.26	69.06	42.33	59.35	78
Bordeaux	France	0	831,788	3		21.3	21.0	18.9	54.80	78.29	45.58	65.12	67
Nantes	France	0	584,306	3	0.21	9.0	16.6	14.4	33.15	189.94	19.37	110.98	61
Toulon	France	0	556,538	3		16.0	31.5	38.9	55.51	118.42	30.89	65.91	53
Douai-Lens	France	0	511,345	3		41.0	25.4	9.0					
Grenoble	France	0	494,878	3		30.8	22.2	19.9	16.13	113.45	7.98	56.14	85
Rouen	France	0	463,681	3		27.3	26.6	9.8	54.48	76.37	25.26	35.41	89
Strasbourg	France	0	449,798	3	0.23	21.0	26.1	22.9	29.74	70.61	13.38	31.76	61
Avignon	France	0	440,651	3		32.0	21.0	35.7					
Montpellier	France	0	384,165	3		9.0	26.6	32.4	52.69	199.44	20.24	76.62	93
Saint-Étienne	France	0	372,967	3					31.15	192.74	11.62	71.88	78
Béthune	France	0	350,068	3									
Tours	France	0	344,739	3		14.0	16.7	14.3	32.46	271.77	11.19	93.69	93
Valenciennes (French part)	France	0	333,492	3									
Rennes	France	0	304,729	3		5.0	18.1	4.4	49.73	173.55	15.15	52.88	51
Metz	France	0	290,851	3		9.7	23.2	19.9	33.84	148.90	9.84	43.31	80
Nancy	France	0	286,108	3		7.5	22.8	16.1	12.38	301.71	3.54	86.32	69
Orléans	France	0	268,468	3		15.5	18.3	15.5	43.29	183.44	11.62	49.25	5
Clermont-Ferrand	France	0	261,240	3		14.3	22.8	12.9	19.31	146.63	5.05	38.30	58

City name	Country	TEN-T nodes	Population	Source of pupulation data	Congestion - index	PM 10 # days exceeding 50µg/m³	NO_2 Annual mean - µg/m3	Ozone 3y avg # days exceeding 120µg/m³	Number of deaths in road accidents per million population	Number of persons seriously injured in road accidents per million population	Total number of deaths in road accidents	Total number of persons seriously injured in road accidents	Percentage of people exposed to different noise bands (Lden)_Road noise >55 dB
Le Havre	France	0	244,745	3		27.0	20.5	6.2	26.00	113.73	6.36	27.83	
Mulhouse	France	0	243,618	3		18.0	28.5	28.7					
Dijon	France	0	237,924	3		4.7	21.7	19.5	39.48	201.49	9.39	47.94	
Bayonne (French part)	France	0	219,570	3		11.0	22.7	5.5					
Angers	France	0	218,616	3		14.0	18.2	19.2					
Reims	France	0	211,966	3		20.5	22.6	13.9	20.37	56.86	4.32	12.05	
Le Mans	France	0	208,283	3		14.0	19.2	14.3					
Brest	France	0	201,666	3		6.0	17.5	1.2					
Pau	France	0	199,199	3		11.5	19.1	10.3					
Caen	France	0	198,225	3		19.5	19.6	4.8					
Perpignan	France	0	187,569	3		6.5	18.2	41.3					
Limoges	France	0	186,499	3		5.0	22.2	7.2	45.14	194.22	8.42	36.22	
Dunkerque	France	0	181,699	3		22.0	20.4	4.5					
Nîmes	France	0	175,990	3		13.0	23.1	46.0					
Chambéry	France	0	174,833	3		27.0	24.8	23.9					
Amiens	France	0	163,158	3		32.0	33.8	9.8	61.67	97.98	10.06	15.99	
Annecy	France	0	153,288	3		57.5	26.5	20.3					
Saint-Nazaire	France	0	148,578	3		13.0	11.9	9.2					
Genève(CH)-Annemasse (French part)	France	0	145,507	3									
Boulogne-Billancourt	France	0	141,438	3		25.0	12.0	5.7					
Besançon	France	0	135,808	3		17.0	25.7	11.0	30.80	216.77	4.18	29.44	

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Troyes	France	0	133,279	3		23.0	17.6	12.4					
Thionville	France	0	130,922	3									
Poitiers	France	0	128,535	3		11.0	18.5	8.4					
Valence	France	0	126,832	3		29.0	24.7	37.5					
Lorient	France	0	116,401	3		5.0	13.9	4.3					
Creil	France	0	116,140	3		32.5	23.7	10.5					
Maubeuge (French part)	France	0	115,320	3									
Angoulême	France	0	109,009	3		9.5	15.4	7.0					
Montbéliard	France	0	108,768	3									
Berlin	Germany	1	3,390,000	1	0.27	31.5	25.1	14.6	16.03	528.60	54.33	1791.97	19
Hamburg	Germany	1	2,040,000	1	0.32	25.0	24.0	9.2	22.57	463.29	46.05	945.12	21
Munich	Germany	1	1,259,677	1	0.24	11.5	27.7	14.0	16.58	144.71	20.89	182.29	23
Cologne	Germany	1	966,391	1	0.27				20.09	721.30	19.42	697.06	33
Frankfurt	Germany	1	664,000	1	0.21	15.0	33.9	12.7	36.10	646.77	23.97	429.46	31
Stuttgart	Germany	1	600,700	1	0.33	15.0	31.1	17.3	10.00	484.95	6.01	291.31	18
Essen	Germany	0	588,428	1		39.0	33.1	14.7	24.15	601.97	14.21	354.22	30
Dortmund	Germany	0	587,965	1		32.0	29.6	11.7	18.82	545.85	11.07	320.94	30
Düsseldorf	Germany	1	571,150	1		21.0	28.3	11.3	20.54	659.00	11.73	376.39	28
Hanover	Germany	1	555,862	1		14.0	19.2	11.3	23.09	552.33	12.84	307.02	28
Bremen	Germany	1	545,991	1		11.3	23.5	13.9	18.27	548.09	9.97	299.25	29
Duisburg	Germany	0	505,332	1		25.0	0.0	0.0					27
Nuremberg	Germany	1	499,237	1					13.90	222.38	6.94	111.02	27

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Dresden	Germany	0	456,000	1		25.0	24.2	13.3	17.57	952.69	8.01	434.43	21
Bochum	Germany	0	388,650	1					13.21	398.84	5.13	155.01	25
Wuppertal	Germany	0	361,098	1		16.0	0.0	13.7					28
Leipzig	Germany	1	350,000	1		23.0	20.0	14.7	17.46	581.99	6.11	203.70	20
Bielefeld	Germany	1	328,142	1		22.0	25.2	9.7	37.08	766.34	12.17	251.47	38
Mannheim	Germany	1	325,433	1		21.0	30.8	17.5					20
Bonn	Germany	0	311,231	1		14.0	24.8	0.0	6.29	556.69	1.96	173.26	37
Karlsruhe	Germany	0	300,134	1		11.0	23.1	30.3	30.96	808.29	9.29	242.60	21
Kiel	Germany	0	292,933	1		19.0	19.0	6.0	29.46	601.91	8.63	176.32	12
Wiesbaden	Germany	0	273,000	1		10.0	31.9	22.3	18.07	607.06	4.93	165.73	25
Gelsenkirchen	Germany	0	271,267	1		0.0	27.1	0.0					24
Münster	Germany	0	270,225	2		15.0	23.5	15.7					
Augsburg	Germany	0	262,676	1		16.0	26.3	16.3	26.58	429.15	6.98	112.73	18
Mönchengladbach	Germany	0	262,111	1		21.0	0.0	13.0	7.73	830.60	2.03	217.71	46
Aachen	Germany	0	256,486	1		11.0	16.1	15.3					33
Chemnitz	Germany	0	245,905	2		23.0	26.9	18.0					
Braunschweig	Germany	0	244,846	2		17.0	13.5	13.3					
Krefeld	Germany	0	237,629	2		25.0	0.0	15.7					
Halle (Saale)	Germany	0	236,589	2		31.0	19.8	14.8	12.87	523.58	3.05	123.87	
Magdeburg	Germany	0	229,232	2		31.0	20.4	13.3	26.08	743.33	5.98	170.39	
Oberhausen	Germany	0	221,454	2									
Freiburg	Germany	0	217,890	2		8.0	21.1	24.0	27.31	760.25	5.95	165.65	

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Lübeck	Germany	0	213,313	2		19.0	14.0	11.3					
Erfurt	Germany	0	202,296	2					49.18	491.80	9.95	99.49	
Rostock	Germany	0	199,381	2		22.0	14.3	5.7	29.84	447.55	5.95	89.23	
Hagen	Germany	0	195,195	2									
Mainz	Germany	0	194,282	2		22.5	34.0	17.0	10.12	485.77	1.97	94.38	
Kassel	Germany	0	192,306	2		24.0	23.5	20.3					
Hamm	Germany	0	184,185	2									
Saarbrücken	Germany	0	178,829	2		16.0	25.3	19.7	45.26	707.22	8.09	126.47	
Herne	Germany	0	172,366	2									
Osnabrück	Germany	0	167,163	2		12.0	19.1	17.7					
Mülheim	Germany	0	166,867	2					11.88	600.16	1.98	100.15	
Solingen	Germany	0	164,272	2		12.0	24.7	18.0					
Ludwigshafen	Germany	0	161,689	2									
Leverkusen	Germany	0	160,497	2		11.0	29.5	12.7					
Oldenburg	Germany	0	155,196	2									
Neuss	Germany	0	151,426	2									
Potsdam	Germany	0	146,014	2		27.0	21.0	17.0	13.07	464.16	1.91	67.77	
Paderborn	Germany	0	143,725	2									
Heidelberg	Germany	0	140,883	2									
Darmstadt	Germany	0	140,563	2		3.0	25.8	21.3	21.08	801.07	2.96	112.60	
Würzburg	Germany	0	133,166	2		0.0	29.4	10.0					
Regensburg	Germany	0	127,918	2					22.47	951.13	2.87	121.67	

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Heilbronn	Germany	0	122,130	2									
Göttingen	Germany	0	121,911	2		8.0	16.4	18.0	139.97	1819.60	17.06	221.83	
Ingolstadt	Germany	0	121,589	2		18.0	34.4	0.0					
Recklinghausen	Germany	0	120,818	2									
Wolfsburg	Germany	0	120,600	2		15.0	18.9	11.3					
Pforzheim	Germany	0	119,418	2									
Bottrop	Germany	0	118,689	2									
Offenbach am Main	Germany	0	118,476	2									
Ulm	Germany	0	116,439	2		20.0	28.0	4.0					
Bremerhaven	Germany	0	116,172	2		11.0	22.8	9.7					
Remscheid	Germany	0	115,593	2									
Moers	Germany	0	110,022	2					46.88	778.28	5.16	85.63	
Fürth	Germany	0	108,801	2									
Salzgitter	Germany	0	107,689	2									
Koblenz	Germany	0	107,646	2					37.63	649.15	4.05	69.88	
Bergisch Gladbach	Germany	0	107,071	2									
Cottbus	Germany	0	105,649	2		36.0	16.6	19.3					
Siegen	Germany	0	104,198	2									
Gera	Germany	0	103,871	2		30.0	22.0	12.7					
Reutlingen	Germany	0	103,711	2		10.0	25.6	12.0					
Erlangen	Germany	0	103,053	2		12.0	20.4	17.0					
Hildesheim	Germany	0	102,386	2									

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Jena	Germany	0	100,945	2		24.0	16.8	13.0					
Trier	Germany	0	100,226	2		0.0	0.0	23.7	9.56	860.09	0.96	86.20	
Athens	Greece	1	3,083,703	2					66.55	296.32	205.21	913.76	
Thessaloniki	Greece	1	310,847	2					67.25	364.69	20.90	113.36	
Patras	Greece	0	179,214	2					112.61	180.17	20.18	32.29	
Heraklion	Greece	0	142,696	2					79.81	86.46	11.39	12.34	
Larissa	Greece	0	137,619	2					93.50	136.65	12.87	18.81	
Budapest	Hungary	1	2,065,230	1	0.25	54.3	28.4	31.2	51.11	590.38	105.55	1219.27	61
Debrecen	Hungary	0	204,412	2		47.0	20.6	19.3	53.64	672.90	10.96	137.55	
Miskolc	Hungary	0	174,523	2					46.76	555.24	8.16	96.90	
Szeged	Hungary	0	163,065	2					41.91	742.34	6.83	121.05	
Pécs	Hungary	0	155,422	2		0.0	17.1	42.0	51.06	497.88	7.94	77.38	
Győr	Hungary	0	128,449	2		60.0	26.7	12.3	30.66	536.50	3.94	68.91	
Nyíregyháza	Hungary	0	116,857	2					94.12	847.07	11.00	98.99	
Kecskemét	Hungary	0	109,499	2					90.65	870.23	9.93	95.29	
Szekesfehervar	Hungary	0	101,064	2					29.48	511.03	2.98	51.65	
Dublin	Ireland	1	1,187,653	2	0.27	13.5	25.8	0.0	40.27		47.82		95
Cork	Ireland	1	113,320	2		10.0	0.0	0.0	26.25		2.97		
Milan	Italy	1	3,115,392	1	0.26				57.71	14050.12	179.78	43771.63	
Naples	Italy	1	2,905,000	1	0.25				49.33	3946.02	143.29	11463.19	
Rome	Italy	1	2,546,804	1	0.34	39.0	49.4	22.5	69.88	8850.33	177.98	22540.06	91
Torino	Italy	1	2,200,000	1	0.2	105.0	50.7	34.3	42.94	6677.58	94.47	14690.68	

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Palermo	Italy	1	657,561	1	0.4				57.30	5390.75	37.68	3544.75	
Catania	Italy	0	637,587	1		0.0	16.9	0.0	123.76	6877.24	78.91	4384.84	
Genoa	Italy	1	586,180	1	0.21	0.0	34.9	33.9	29.47	9595.88	17.27	5624.91	
Bologna	Italy	1	501,292	1		40.0	31.0	43.3	53.73	8706.37	26.93	4364.44	
Florence	Italy	0	387,669	1					38.39	11392.61	14.88	4416.56	76
Bari	Italy	0	318,364	1		11.5	24.2	4.3	62.01	10774.83	19.74	3430.32	
Venezia	Italy	0	268,623	2		85.0	36.0	44.0	52.05	4717.59	13.98	1267.25	
Verona	Italy	0	262,807	2		67.0	33.4	77.3	64.35	8584.70	16.91	2256.12	
Messina	Italy	0	246,398	2									
Padua	Italy	0	216,801	2					76.13	10001.28	16.50	2168.29	
Trieste	Italy	0	204,932	2		0.0	21.7	12.7	58.44	6466.82	11.98	1325.26	
Taranto	Italy	0	198,971	2		6.3	13.4	0.0	71.75	6236.87	14.28	1240.96	
Brescia	Italy	0	191,476	2		113.0	0.0	0.0	68.51	7668.31	13.12	1468.30	
Reggio Calabria	Italy	0	183,942	2					48.50	4822.80	8.92	887.11	
Prato	Italy	0	182,132	2		43.0	31.6	0.0					
Modena	Italy	0	180,599	2		79.5	44.3	61.3	50.02	10298.05	9.03	1859.82	
Parma	Italy	0	176,303	2		61.0	29.1	61.3					
Cagliari	Italy	0	161,733	2		2.0	17.3	0.3	75.93	8124.47	12.28	1314.00	
Perugia	Italy	0	160,880	2		22.0	17.1	29.7	67.37	6320.16	10.84	1016.79	
Livorno	Italy	0	160,412	2		0.0	7.3	19.3					
Reggio Emilia	Italy	0	156,710	2		63.0	35.5	66.7					
Foggia	Italy	0	153,577	2									

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Ravenna	Italy	0	149,769	2		68.0	24.1	0.0					
Salerno	Italy	0	137,435	2					42.68	6764.83	5.87	929.72	
Ferrara	Italy	0	133,459	2		58.0	28.8	45.7					
Siracusa	Italy	0	123,545	2									
Pescara	Italy	0	123,234	2		66.0	28.1	16.8	16.29	5318.02	2.01	655.36	
Bergamo	Italy	0	118,177	2		86.0	35.5	0.0					
Vicenza	Italy	1	115,967	2		107.0	38.5	65.2					
Forli	Italy	0	112,447	2		32.0	31.4	25.3					
Trento	Italy	0	111,940	2		19.0	31.6	40.7	53.27	6809.49	5.96	762.25	
Terni	Italy	0	111,659	2									
Latina	Italy	0	111,423	2									
Novara	Italy	0	102,585	2		70.0	42.3	80.0					
Ancona	Italy	0	101,372	2		31.0	0.0	4.0	69.02	9317.32	7.00	944.52	
Bolzano	Italy	0	98,352	2		0.0	33.0	47.3					
Riga	Latvia	1	806,993	1		15.0	25.4	0.6	64.12		51.75		85
Vilnius	Lithuania	1	553,904	1		19.5	11.9	3.7	77.38	1353.17	42.86	749.53	41
Kaunas	Lithuania	0	378,943	1					53.43		20.25		51
Klaipėda	Lithuania	0	185,257	2									
Šiauliai	Lithuania	0	123,169	2									
Valletta	Malta	1	195,863	2									
Amsterdam	Netherlands	1	1,543,781	2	0.16	20.8	27.5	4.3	21.65		33.42		35
Rotterdam	Netherlands	1	1,271,832	2	0.19	21.0	37.8	3.3	36.73		46.72		38

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Den Haag	Netherlands	1	1,083,134	2	0.2								
Utrecht	Netherlands	0	460,592	2					22.20		10.23		42
Eindhoven	Netherlands	0	428,207	2					67.35		28.84		29
Haarlem	Netherlands	0	238,513	2									
Tilburg	Netherlands	0	204,589	2					55.34		11.32		
Groningen	Netherlands	0	179,859	2		0.0	14.8	0.0	33.48		6.02		
Almere	Netherlands	0	178,430	2									
Breda	Netherlands	0	171,141	2		0.0	25.1	0.0	54.21		9.28		
Nijmegen	Netherlands	0	156,582	2		0.0	25.3	0.0	25.40		3.98		
Apeldoorn	Netherlands	0	155,803	2					51.28		7.99		
Enschede	Netherlands	0	152,530	2					52.29		7.98		
Arnhem	Netherlands	0	141,266	2					28.25		3.99		
Amersfoort	Netherlands	0	135,410	2									
Maastricht	Netherlands	0	119,031	2									
Dordrecht	Netherlands	0	116,160	2		20.0	27.2	0.0					
Zoetermeer	Netherlands	0	114,477	2									
Zwolle	Netherlands	0	113,128	2									
Leiden	Netherlands	0	112,339	2									
Warsaw	Poland	1	1,700,536	2	0.45				73.11	998.96	124.32	1698.76	83
Kraków	Poland	1	1,410,000	1		150.5	30.4	0.0	47.71		67.27		21
Łódź	Poland	1	759,968	1					52.20		39.67		18
Wrocław	Poland	1	589,685	2					75.93		44.77		35

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Poznań	Poland	1	567,621	1					69.98		39.72		18
Gdańsk	Poland	1	456,813	2		26.3	19.1	1.2	48.29		22.06		91
Szczecin	Poland	1	401,588	2		42.0	16.6	12.7	68.81		27.63		61
Dąbrowa Górnicza	Poland	0	398,574	2									
Sosnowiec	Poland	0	398,574	1		124.0	0.0	0.0					
Lublin	Poland	0	352,749	1		47.0	22.7	0.0	65.63		23.15		43
Bydgoszcz	Poland	0	351,098	2					69.65		24.45		84
Katowice	Poland	1	314,500	2		123.0	32.9	12.7	87.20		27.43		57
Białystok	Poland	0	294,193	1		55.0	13.7	0.0	37.40		11.00		65
Gdynia	Poland	0	254,742	1		11.5	19.5	4.2					87
Częstochowa	Poland	0	243,807	2					54.03		13.17		
Radom	Poland	0	226,752	2		68.5	19.4	4.3	44.60	1498.49	10.11	339.79	
Toruń	Poland	0	206,757	2					72.81	762.09	15.05	157.57	
Kielce	Poland	0	206,351	2		100.0	25.1	0.0	82.89		17.10		
Gliwice	Poland	0	186,868	2		125.0	26.4	0.0					
Zabrze	Poland	0	180,332	1		125.0	29.0	15.3					
Rzeszów	Poland	0	176,315	1		98.0	0.0	0.0					
Bytom	Poland	0	176,106	2									
Bielsko-Biała	Poland	0	175,976	1		82.0	22.8	13.3					
Olsztyn	Poland	0	172,790	1		34.0	15.0	5.7					
Ruda Śląska	Poland	0	143,024	2									
Rybnik	Poland	0	139,051	1		113.0	20.3	0.0					

City name	Country	TEN-T nodes	Population	Source of pupulation data	Congestion - index	PM 10 # days exceeding $50\mu g/m^3$	NO_2 Annual mean - $\mu g/m3$	Ozone 3y avg # days exceeding $120\mu g/m^3$	Number of deaths in road accidents per million population	Number of persons seriously injured in road accidents per million population	Total number of deaths in road accidents	Total number of persons seriously injured in road accidents	Percentage of people exposed to different noise bands (Lden)_Road noise >55 dB
Tychy	Poland	0	129,322	2		105.0	26.4	0.0					
Opole	Poland	0	127,825	1		68.0	23.3	0.0					
Elbląg	Poland	0	126,915	2		25.0	15.0	0.0					
Płock	Poland	0	126,485	2					47.35		5.99		
Gorzów Wielkopolski	Poland	0	124,390	2		61.0	0.0	3.0	95.88	623.22	11.93	77.52	
Wałbrzych	Poland	0	122,611	2									
Zielona Góra	Poland	0	118,127	2		24.0	18.1	8.3	25.52	595.46	3.01	70.34	
Włocławek	Poland	0	118,005	2									
Tarnów	Poland	0	116,238	2		82.0	25.4	0.0					
Chorzów	Poland	0	111,536	2									
Koszalin	Poland	0	108,857	1		31.0	0.0	0.0	37.33	643.98	4.06	70.10	
Kalisz	Poland	0	108,346	2		69.0	18.6	0.0	93.34	812.02	10.11	87.98	
Legnica	Poland	0	105,435	2		99.0	27.4	0.0					
Lisbon	Portugal	1	1,828,655	2	0.21				16.34	269.63	29.88	493.06	43
Porto	Portugal	1	975,905	2	0.17	49.0	30.3	7.7	23.14	166.60	22.58	162.59	
Vila Nova de Gaia	Portugal	0	186,600	2		26.0	18.5	0.0					
Amadora	Portugal	0	175,136	1		10.0	30.8	8.2					
Braga	Portugal	0	174,373	1		14.0	17.0	10.0	22.71	329.26	3.96	57.41	
Almada	Portugal	0	109,800	2		29.0	29.7	11.0					
Bucharest	Romania	1	1,926,334	1		69.0	20.5	0.0	123.43		237.77		85
Iaşi	Romania	0	320,888	1									16
Cluj-Napoca	Romania	0	317,953	1		0.0	19.0	0.0	140.31		44.61		64

City name	Country	TEN-T nodes	Population	Source of pupulation data	Congestion - index	PM 10 # days exceeding 50µg/m³	NO_2 Annual mean - µg/m3	Ozone 3y avg # days exceeding 120µg/m³	Number of deaths in road accidents per million population	Number of persons seriously injured in road accidents per million population	Total number of deaths in road accidents	Total number of persons seriously injured in road accidents	Percentage of people exposed to different noise bands (Lden)_Road noise >55 dB
Timişoara	• omania	1	317,660	1					224.66		71.36		49
Constanţa	Romania	0	310,471	1									76
Craiova	Romania	0	302,601	1		0.0	37.4	8.7	117.09		35.43		36
Galaţi	Romania	0	298,861	1		0.0	0.0	0.0					55
Braşov	Romania	0	284,596	1									61
Ploieşti	Romania	0	259,000	1									61
Brăila	Romania	0	207,492	1					207.06		42.96		
Oradea	Romania	0	204,248	2		0.0	25.9	0.0	127.15		25.97		
Bacău	Romania	0	167,656	2					129.88		21.78		
Arad	Romania	0	164,627	2		0.0	15.8	13.7	168.67		27.77		
Piteşti	Romania	0	163,149	2									
Sibiu	Romania	0	152,460	2					122.94		18.74		
Baia Mare	Romania	0	138,874	2		0.0	13.8	0.0					
Târgu Mureş	Romania	0	135,553	2					68.89		9.34		
Buzău	Romania	0	131,092	2									
Botoşani	Romania	0	113,200	2		0.0	18.2	3.3					
Bratislava	Slovakia	1	528,129	2		44.7	18.4	26.7	48.97	242.54	25.87	128.09	100
Košice	Slovakia	0	235,855	1		69.0	0.0	64.7	64.20	363.78	15.14	85.80	
Ljubljana	Slovenia	1	266,251	2		58.5	30.7	30.0	63.49	519.12	16.90	138.22	63
Maribor	Slovenia	0	107,765	1					53.89	386.20	5.81	41.62	
Barcelona	Spain	1	4,440,629	1	0.19	3.0	36.9	5.0	30.32		134.66		88
Madrid	Spain	1	3,205,334	4	0.14	6.7	39.9	25.0	23.96		76.81		50

City name	Country	TEN-T nodes	Population	Source of pupulation data	Congestion - index	PM 10 # days exceeding 50µg/m³	NO_2 Annual mean - µg/m3	Ozone 3y avg # days exceeding 120µg/m³	Number of deaths in road accidents per million population	Number of persons seriously injured in road accidents per million population	Total number of deaths in road accidents	Total number of persons seriously injured in road accidents	Percentage of people exposed to different noise bands (Lden)_Road noise >55 dB
Valencia	Spain	1	807,396	1	0.11	6.5	26.3	2.2	44.60		36.01		92
Zaragoza	Spain	0	660,895	1	0.1	10.0	26.7	8.3	67.55		44.65		39
Málaga	Spain	0	560,631	1	0.1	0.0	24.6	11.7	56.49		31.67		57
Seville	Spain	1	537,893	1	0.13				40.01		21.52		93
Murcia	Spain	0	436,000	1	0.13				48.77		21.26		25
Palma de Mallorca	Spain	1	404,335	1	0.14	0.0	12.4	11.3	34.11		13.79		71
Bilbao	Spain	1	354,918	1		58.0	28.9	0.7	22.64		8.04		67
Córdoba	Spain	0	324,327	1		5.0	19.4	36.8	39.94		12.96		85
Valladolid	Spain	0	320,287	1					75.36		24.14		37
Alicante	Spain	0	320,021	1		0.0	17.5	5.7	51.24		16.40		87
Vigo	Spain	0	293,000	1		0.0	20.1	0.0	50.73		14.86		56
Pamplona	Spain	0	280,199	1		7.5	27.0	5.2					70
Gijón	Spain	0	274,037	1		16.0	22.2	0.0	43.53		11.93		53
L'Hospitalet	Spain	0	256,509	1					35.46		9.10		
A Coruña	Spain	0	245,248	1					20.39		5.00		
Granada	Spain	0	238,742	2		19.0	33.0	0.0					
Vitoria-Gasteiz	Spain	0	224,440	2					68.82		15.45		
Badalona	Spain	0	219,241	2									
Oviedo	Spain	0	215,095	1		9.0	18.6	1.0	40.79		8.77		
Móstoles	Spain	0	211,873	2		12.0	32.0	10.3					
Cartagena	Spain	0	209,102	2		2.0	22.1	0.0					
Sabadell	Spain	0	206,949	2									

City name	Country	TEN-T nodes	Population	Source of pupulation data	Congestion - index	PM 10 # days exceeding 50µg/m³	NO_2 Annual mean - µg/m3	Ozone 3y avg # days exceeding 120µg/m³	Number of deaths in road accidents per million population	Number of persons seriously injured in road accidents per million population	Total number of deaths in road accidents	Total number of persons seriously injured in road accidents	Percentage of people exposed to different noise bands (Lden)_Road noise >55 dB
Terrassa	Spain	0	204,586	1									
Alcalá de Henares	Spain	0	201,557	2									
Jerez de la Frontera	Spain	0	199,158	2		4.0	18.3	4.7					
Leganés	Spain	0	192,161	2									
Donostia	Spain	0	185,512	2									
Fuenlabrada	Spain	0	183,897	1									
Santander	Spain	0	182,900	2		8.0	19.8	0.3	43.88		8.03		
Burgos	Spain	0	172,221	2		17.0	12.9	15.0					
Castellon de la Plana	Spain	0	171,311	2									
Alcorcon	Spain	0	163,431	2		8.0	39.2	28.3					
Salamanca	Spain	0	157,242	2		17.0	18.6	9.2					
Getafe	Spain	0	152,244	2									
Huelva	Spain	0	149,494	2									
Logroño	Spain	0	147,223	2		11.0	12.1	3.3	79.96		11.77		
Badajoz	Spain	0	143,707	2		2.0	9.8	35.0	61.29		8.81		
Leon	Spain	0	134,829	2		0.0	14.2	0.0					
Cádiz	Spain	0	129,105	2									
Tarragona	Spain	0	127,062	2		0.0	25.8	11.7					
Lleida	Spain	0	126,144	2									
Santa Coloma de Gramenet	Spain	0	119,391	2									
Marbella	Spain	0	119,025	1		0.0	15.5	12.3					
Mataró	Spain	0	115,842	2		8.0	25.7	16.3					

City name	Country	TEN-T nodes	Population	Source of pupulation data	Congestion - index	PM 10 # days exceeding 50µg/m³	NO_2 Annual mean - µg/m3	Ozone 3y avg # days exceeding 120µg/m³	Number of deaths in road accidents per million population	Number of persons seriously injured in road accidents per million population	Total number of deaths in road accidents	Total number of persons seriously injured in road accidents	Percentage of people exposed to different noise bands (Lden)_Road noise >55 dB
Jaén	Spain	0	113,997	2		0.0	17.2	46.2					
Dos Hermanas	Spain	0	113,876	2		0.0	20.3	25.7					
Algeciras	Spain	0	112,784	2									
Torrejón de Ardoz	Spain	0	110,514	2		18.0	28.7	20.0					
Ourense	Spain	0	107,887	2									
Stockholm	Sweden	1	1,432,737	2	0.3	1.0	10.2	2.0	9.88	237.00	14.15	339.56	35
Gothenburg	Sweden	1	489,226	2	0.2				25.99	191.92	12.71	93.89	43
Malmö	Sweden	1	274,700	2	0.11	13.0	17.9	3.0	13.96	233.83	3.83	64.23	77
Uppsala	Sweden	0	184,486	2					0.00	314.68		58.05	
Linköping	Sweden	0	138,399	2					49.34	133.93	6.83	18.54	
Västerås	Sweden	0	132,610	2									
London	United Kingdom	1	8,278,251	2	0.26				26.60	433.21	220.23	3586.24	39
Manchester	United Kingdom	1	2,284,093	1	0.22	0.0	33.4	0.7	23.25	378.28	53.10	864.02	95
Birmingham	United Kingdom	1	2,240,230	1	0.2	18.0	34.5	2.0	28.45	393.45	63.74	881.41	
Leeds	United Kingdom	1	1,499,465	1	0.27	16.0	37.7	0.0	34.65	441.42	51.95	661.90	
Glasgow	United Kingdom	1	1,243,150	1	0.17	2.0	34.6	0.0	25.68	542.62	31.92	674.56	43
Liverpool	United Kingdom	0	879,996	1	0.2	8.0	23.7	2.0	18.14	389.93	15.96	343.14	89
Newcastle upon Tyne	United Kingdom	0	816,216	1	0.2	7.0	32.7	0.3	32.40	370.77	26.44	302.63	
Nottingham	United Kingdom	0	666,358	1	0.24	23.0	35.8	0.7	16.86	512.47	11.23	341.49	93
Sheffield	United Kingdom	1	640,720	1		19.0	34.5	0.0	29.64	361.24	18.99	231.46	87
Belfast	United Kingdom	0	580,276	1		0.0	28.1	0.0					
Bristol	United Kingdom	1	551,066	1		0.0	27.1	2.7	21.12	274.58	11.64	151.31	95

City name	Country	TEN-T nodes	Population	Source of pupulation data	Congestion - index	PM 10 # days exceeding 50µg/m³	NO_2 Annual mean - µg/m3	Ozone 3y avg # days exceeding 120µg/m³	Number of deaths in road accidents per million population	Number of persons seriously injured in road accidents per million population	Total number of deaths in road accidents	Total number of persons seriously injured in road accidents	Percentage of people exposed to different noise bands (Lden)_Road noise >55 dB
Bradford	United Kingdom	0	491,427	1	0.27				37.89	508.58	18.62	249.93	
Portsmouth	United Kingdom	1	461,181	2		0.0	18.9	1.3	40.12	456.37	18.50	210.47	93
Edinburgh	United Kingdom	1	452,340	1		0.0	24.7	0.0	27.56	360.40	12.47	163.02	49
Brighton & Hove	United Kingdom	0	442,252	1		0.0	0.0	3.7					96
Leicester	United Kingdom	0	441,213	1		8.0	0.0	0.7	3.29	316.00	1.45	139.42	91
Bournemouth	United Kingdom	0	383,713	1		0.0	15.3	2.0					
Middlesbrough	United Kingdom	0	369,804	1									
Stoke-on-Trent	United Kingdom	0	365,323	1		13.0	30.7	0.7	20.89	125.37	7.63	45.80	
Reading	United Kingdom	0	362,403	1		8.0	25.9	3.7					89
Cardiff	United Kingdom	0	327,706	1		0.0	27.2	0.7	24.21	211.80	7.93	69.41	37
Southampton	United Kingdom	0	319,675	1		9.0	35.4	0.0					92
Coventry	United Kingdom	0	304,400	1		0.0	17.2	3.0	12.88	328.50	3.92	100.00	88
Preston	United Kingdom	0	301,416	1		0.0	30.8	0.7					85
Sunderland	United Kingdom	0	276,787	1		0.0	15.5	0.0					
Swansea	United Kingdom	0	270,506	2									43
Southend on Sea	United Kingdom	0	269,415	1									
Blackpool	United Kingdom	0	264,601	1		0.0	18.1	0.0					95
Kingston upon Hull	United Kingdom	0	261,088	1		8.0	28.8	0.0	19.15	432.78	5.00	112.99	92
Rotherham	United Kingdom	0	255,735	1									
Plymouth	United Kingdom	0	241,002	2		7.0	27.3	0.0					
Derby	United Kingdom	0	227,128	2									
Milton Keynes	United Kingdom	0	224,336	2									

City name	Country	TEN-T nodes	Population	Source of pupulation data	Congestion - index	PM 10 # days exceeding 50µg/m³	NO_2 Annual mean - µg/m3	Ozone 3y avg # days exceeding 120µg/m³	Number of deaths in road accidents per million population	Number of persons seriously injured in road accidents per million population	Total number of deaths in road accidents	Total number of persons seriously injured in road accidents	Percentage of people exposed to different noise bands (Lden)_Road noise >55 dB
Aberdeen	United Kingdom	0	208,361	2		1.0	22.8	0.7	19.01	627.38	3.96	130.72	
York	United Kingdom	0	192,131	2		8.0	0.0	0.0					
Northampton	United Kingdom	0	191,480	2		0.0	17.9	5.7					
Swindon	United Kingdom	0	186,318	2									
Crawley	United Kingdom	0	180,177	2									
Luton	United Kingdom	0	173,700	1									
Colchester	United Kingdom	0	171,308	2									
Peterborough	United Kingdom	0	164,919	2									
Telford	United Kingdom	0	161,095	2									
Dundee	United Kingdom	0	143,415	2									
Newport	United Kingdom	0	141,386	2		8.0	22.1	0.0					
Blackburn	United Kingdom	0	141,246	2									
Oxford	United Kingdom	0	140,966	2		5.0	18.2	0.0					
Poole	United Kingdom	0	137,277	2									
Norwich	United Kingdom	0	128,739	2		12.0	13.1	0.0					
Exeter	United Kingdom	0	119,028	2									
Cambridge	United Kingdom	0	117,745	2									
Ipswich	United Kingdom	0	116,751	2									
Slough	United Kingdom	0	114,385	2									
Gloucester	United Kingdom	0	108,137	2									
Eastbourne	United Kingdom	0	106,562	2									
Luxembourg	Luxembourg	1	84,679	1	0.24	0.0	37.1	7.0	72.34	599.42	6.13	50.76	

Notes and data source for Appendix A data

Notes on population data:

1	END_DF4_Results_121205_Final (agglomeration data from the Environmental Noise Directive reporting)
2	CNTR_CITIES_2012
3	Official data on th legally defined agglomerations from INSEE, the French national statistical institute
4	Official data for the legally defined area covered by the SUMP

Note:	There are different definitions of the what specfic city agglomerations include and therefore using alternative definitions will give diffirent population sizes.

Notes on congestion data:

Sources: The data come from TomTom (2012): European congestion index. **The unit of observation** is the city. **The observation is** the TomTom congestion index, which states the increase in overall travel times when compared to a free flow situation. For example, a congestion level of 12% corresponds to 12% longer travel times compared to a free flow situation. **The years** for which the TomTom index is measured is 2012. The data is based on GPS measurements of vehicle positions in Europe.

Notes on air quality:

Sources: There are two sets of air quality data presented. In column H, I and J EEA air quality monitoring data is prensented. Data are from 2011.

Notes on number of deaths and serious injuries in road accidents:

Sources: The data come from Eurostat, table urb_vcity in the Urban Audit, and from Statistics Denmark, tables UHELDK1 and FOLK1. **The unit of observation** is the core city, that is, a geographical unit which has a mayor. The data are calculated by dividing the number of deaths, respectively number of persons seriously injured in traffic accidents, by the population in millions in the core city. **The years** for which the data is measured range from 2004 for a small group of countries, to 2008 for the majority of countries. Some single countries have data for 2005, 2006 or 2011.

Notes on noise data:

Sources: The data come from European Topic Centre (2012): Population exposure to noise from different sources in Europe. **The unit of observation** is the agglomeration. **The observation** is the percentage of population exposed to noise at different levels coming from road or rail transport. **The years** is 2007.

Appendix B Country Case Studies

1 Introduction

This appendix report includes country assessments.

The country assessments includes in principle all EU27 plus Croatia[1]. Some Member States have been assessed in more detail. This includes 14 Member States:

- Focus on MS with legal requirements or funding conditionality
- Cover all regions of EU
- Cover both small and large countries

The assessment is based on a number of data sources including:

- Review of individual city plans
- Member State legislation
- ELTISplus[2]
- CIVITAS project[3]
- EPOMM project
- Expert assessments

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[1] This study was initiated in December 2012 when EU comprised 27 Member States. By July 2013 Croatia became the 28th Member State. Croatia was included in the assessment but there might be places in the report that refer to EU27 and not EU28.

[2] *The State-Of-The-Art Of Sustainable Urban Mobility Plans In Europe* July 2011 and September 2012; *Overview of current situation regarding urban mobility plans in in England, France, Germany and Poland* August 2012

[3] See for example CIVITAS homepage: [CIVITAS cities]

The template used for the detailed assessment includes a description of the any legal requirements, the content, processes and ambition levels in sustainable urban mobility plans developed by cities or city agglomeration in the Member States.

Member State	**Detailed assessment**
France	X
Bulgaria	X
Denmark	X
Germany	X
Hungary	X
Malta	X
Italy	X
Spain	X
Belgium	X
Greece	X
Ireland	X
Poland	X
The Netherlands	X
United Kingdom	X
Austria	
Croatia	
Cyprus	
Czech Republic	
Estonia	
Finland	
Latvia	
Lithuania	
Luxemburg	
Portugal	
Romania	
Slovakia	
Slovenia	
Sweden	

The assessments of cities regarding their SUMPs status is expert judgements based on review of the available (on-line) plans and documents combined with the expert's general knowledge on the situation in the cities.

Furthermore, it should be noted that the notion of SUMP here is based mainly on the content element of the SUMP. It means that for cities indicated here as having a SUMP, it might be equivalent to the scoring of medium/high SUMPs in the main report.

2 Country case studies

2.1 France

2.1.1 National legal basis

Law in which the SUMP is made mandatory

The French version of the SUMP is called Plan de Déplacements Urbains (PDU, urban mobility plan). Making a PDU is mandatory according to the Transport Act (*Code des Transports*), article L1214-3. The Environment Act (*Code de l'Environnement*), article L221-2, defines the authorities that have this obligation, and also prescribes some of the environmental objectives of the PDUs. The Urban Development Act (*Code de l'Urbanisme*) also sets a number of conditions for the PDU. The instrument of the PDU was introduced in the law in 1982, and it was made mandatory for certain urban areas in 1996.

Definition of the authorities that have to make the SUMP

In the agglomerations in France 'urban transport perimeters' PTU (*périmètres des transports urbains*) are discerned, mostly consisting of a number of municipalities, in which public transport is organised by an 'AOTU', an urban transport organising authority (*Autorité Organisatrice des Transports Urbains*), a collective entity of the relevant municipalities. If these AOTUs are situated in an agglomeration of more than 100,000 inhabitants, they are obliged to make a PDU, an urban mobility plan (*Plan de déplacements urbains*) covering not only public transport, but all forms of transport, passenger and freight, public and private. Therefore, the list of mandatory PDUs is a function of changes (growth) in the agglomerations (over or under 100,000 inhabitants) as well as changes in the 'urban transport perimeters'. The agglomerations are defined according to statistical criteria, published and applied by the national statistical office INSEE. They are not administrative agglomerations, but defined on the basis of the actual continuously built-up area (less than 200 m between any two constructions). An 'urban transport perimeter' (which is defined administratively) may be smaller or larger than an 'agglomeration'. In a number of cases there are several 'urban transport perimeters' in one agglomeration. This is why the number of PDUs is larger than the number of agglomerations. The result of the calculations is published by the Ministry for

Sustainable Development in the form of a list of the agglomerations to which the obligation applies. This is shown in the annex. This list is periodically revised.

2.1.2 Goal and objective

Article L1214-2 of the Transport Act (*Code des Transports*) lists the issues that the PDU has to address:

1. A sustainable equilibrium between mobility needs and access facilities on the one hand, and protection of the environment and health conditions on the other.
2. Strengthening of social and urban cohesion, notably improving access to the public transport network for mobility impaired people.
3. Improvement of the safety of all trips.
4. A decrease in car traffic.
5. A furthering of travel by public transport, bicycle and walking.
6. Improvement of the use of the main road network, through a better allocation between the transport modes and traffic information.
7. The organisation of parking, on-street and in public car parks, by defining zones with maximum parking, zones with paid parking, reserved parking spaces for mobility impaired people, a parking fee policy coherent with the road use policy, the creation of park-and-ride facilities, a parking and stopping policy for public transport, taxis, and goods delivery vehicles, measures favouring resident parking and car sharing.
8. The organisation of goods supply in the agglomeration, necessary for economic activities, in a multimodal perspective and in accordance with the other needs for road space.
9. Improvement of the transport of employees of companies and public bodies, stimulating the use of public transport and car-pooling by their staff.
10. The organisation of an integrated fare and ticketing system for all trips, including peripheral parking and stimulating public transport use by families and groups.
11. Developing charging facilities for electric and hybrid vehicles.
Subsequent articles of the Transport Act formulate other requirements for the PDU:

- A PDU should define the zones in which building permits fix a maximum number of parking spaces to be provided for non-residential buildings, as a function of the level of service of public transport. It should also define limits to the obligations to provide parking spaces, as required by urban development regulations (article L1214-4).

- The activities of the police and other authorities regarding parking and traffic management should be compatible with the PDU (articles L1214-5, -6).
- The PDU should be compatible with the plans of higher authorities regarding town planning, air quality, and energy consumption (article L1214-7).
- The PDU should be evaluated every five years, and be revised if necessary (article L1214-8).
- The PDU should evaluate the CO_2 (GHG) emissions avoided by the measures of the plan. CO_2 emissions caused by travel should be calculated and from 2015 this calculation should include all greenhouse gases (article L1214-8-1).

It should be noted that there are other laws which formulate requirements for PDUs (cited by the Rupprecht report, p.70-83). The most important ones are a series of laws on environmental issues, integrated in the Environment Act (*Code de l'Environnement*), and the law on Solidarity and Urban Renewal of 2000 (SRU, *Solidarité et Renouvellement Urbain*), integrated in the Urban Development Act (*Code de l'Urbanisme*) on urban planning issues. The PDUs have to be compatible with the environmental and urbanisation plans that emanate from these acts. An important plan in this context is the SCoT, the territorial coherence plan (*Schéma de Cohérence Territoriale*), made mandatory by the Urban Development Act for groupings of municipalities. It has objectives in many domains and an important mobility objective is to reduce the need for travel. The SCoT perimeters generally cover a larger area than the PTUs and include more municipalities. In some cases they contain several PTUs / AOTUs and therefore PDUs. The PDUs have to be compatible with the SCoT.

2.1.3 Ambition level

Target achievement in past plans

The PDU was instituted by the Transport Orientation Act (*Loi d'Orientation des Transports Intérieurs*) of 1982, now replaced by the Transport Act (*Code des Transports*), and made compulsory for the larger PTUs in 1996 (air and energy use law). At first it dealt principally with the development of public transport, but subsequently other policy issues were added, notably environment and climate change, accessibility for mobility impaired, the link between transport and urban planning, parking management, freight transport. The objectives of the PDU have developed over time, through successive laws, but there is still a large amount of freedom left to the AOTUs to decide the modalities and the objectives. The adoption of the SRU law in 2000 (solidarity and urban renewal) brought important changes, obliging the local authorities to strengthen the link between transport urban spatial planning. This law created the urban planning documents SCoT (territorial coherence scheme, in most cases covering a wider territory than the PDU) and PLU (local urbanisation plan, within a municipality). The PDU has to be compatible with these plans and with the mobility plans at the level of the département and the région.

Target level in current plans

Recent PDUs have objectives like "reduce the necessity to travel" or "reduce the number of car trips". E.g., the vision of the PDU of Nantes (2011) is a "city of short distances", and the common strategic vision of the 2012 Montpellier SCoT and PDU is to "transform transport behaviour". Reducing car use and lowering the modal share of cars is often given as a target in PDUs.

As a result, PDUs contributed to the developments in urban mobility in recent decades, notably the reduction of car use in the centres of the larger agglomerations, the increase in public transport patronage, and the increase in the use of 'active modes' (bicycle and walking).

The environment is the subject of the regional climate, air and energy schemes SRCAE (*Schéma régional climat, air et énergie*), made by the regional authorities. They concern air quality, climate, energy, noise, water quality, biodiversity and heritage. The PDUs have to include a calculation of GHG emissions avoided by the PDU policies, which is done using models. Examples are Nantes and Lille.

Obtaining the desired result is more difficult outside the agglomeration centres, in the lower density areas, where the car is the more attractive mode. The reduction in air pollution has until now been insufficient to meet the European air quality standards in a number of cities

About 80 authorities in agglomerations of less than 100.000 inhabitants have a transport planning document that can be considered as a voluntary PDU (although it sometimes has a different name). These AOTUs have been inspired by the successful examples of the agglomerations that made a compulsory PDU.

Barriers for SUMPs

The difficulties in developing a PDU can be summarised as follows:

- a complex relationship with other compulsory planning documents that the local authorities have to make,
- the large number of actors involved,
- the need to cooperate with other authorities beyond the borders of the PDU territory.

There is an increasing institutional complexity. France has a very large number of municipalities, many of which are very small. E.g., the agglomeration of Lille has 1,0 million inhabitants, but the municipality of Lille only has 228,000. This has led to extensive networks of inter-municipal cooperation, each with a different geographical coverage. The AOTU is responsible for the PDU, but the number of organisations it has to deal with is large. The French example shows how SUMPs cannot be stand-alone plans, but have to be compatible with other plans in a complex setting.

The PDU has its place in a hierarchy of such plans, covering related policy domains and other government levels. Notably, the PDU has to follow the orientations (strategy) of the SCoT and the regional scheme for climate, air and energy SRCAE (*Schéma régional climat air énergie*). Some other plans like the local urbanisation plan PLU (*Plan Local d'Urbanisme*) have to follow the orientations of the PDU. As these plans are not elaborated consecutively, the relationships are more complex in reality, with the relationships going in both directions. E.g., the PDU of Montpellier is based on the SCoT for its area, but the PDU of Lille feeds into the discussions of the preparation of its SCoT.

The increasingly mobile lifestyles of the population mean that the areas in which most people live are extending and that the bulk of their activities tend to take place in a wider area than that of the PTUs, AOTUs and PDUs. The SCoTs cover a wider territory, involving municipalities outside the PTU, and this may become the more relevant territory for many mobility questions. Therefore, the need for cooperation between AOTUs, and between the AOTUs and the municipalities outside the PTU but within the SCoT area, increases. The Rupprecht report notes that in some cases this exceeds the competences of the AOTU.

To overcome some barriers the possibility is studied to extend the competencies of the AOTUs into related domains like road network, traffic management, carpooling and car sharing, thereby giving them a larger influence on transport in their territory.

2.1.4 Procedures

Governance: responsibilities and resources

Responsibilities

The PDU is made and revised by the 'AOTU', the urban transport organising authority of the 'urban transport perimeter'. As most of these perimeters contain a number of municipalities, this is in most cases a common body of these municipalities. Other (higher) authorities should be consulted, as well as other relevant parties (transport providers, transport users, associations of the mobility impaired, the chamber of commerce and industry, designated associations for environmental protection).

Procedures

The draft PDU should be decided by the governing body of the organising authority AOTU. It should then be sent for advice to the relevant municipal, departmental and regional councils and the relevant national bodies. Next, the draft PDU, together with the advice from the above parties, should be the subject of a public consultation according to specified procedures. Modified to take account, if necessary, of these reactions, the PDU is approved by the governing body of the organising authority AOTU, which also implements the measures (articles L1214-16 and -18).

Special provisions apply for the DPU of the Paris agglomeration and the Île de France region, which is many times larger than any of the other PTUs, notably for local plans within this PDU area.

The Rupprecht report cites the role of the '*commissaire enquêteur*, and of the '*cour administratif*'. The former is a person specially appointed to oversee the consultation procedures, the latter is the court in the *département* in which the PTU is located, to which civilians and legal persons can appeal against the PDU. But there is no auditing or certifying institution.

Resources
The national state institute CERTU is the main source for the publication of relevant knowledge. In the past, specific guidelines on the PDU were published. Currently, a large number of guidelines which are related to PDUs in a wider context are published. They are of general character (PDU in middle size cities, public consultation, monitoring of PDUs, …) or thematic (accessibility for mobility impaired people, air pollution, road safety, freight transport, …). Also, CERTU observes the PDUs and their processes and disseminates overviews of best practice. Three recent documents concern:

› Tools and methods for integrating mobility policies,

› Overview of local practice in the PDU evaluations (both September 2012),

› Thirty years of PDU in France (March 2013).

These were used as sources here. For the first two, a version in the English language is available, for the last one a translation is being made.

Other institutes are: CETE, ADEME (both also national state institutes), and GART (the association of the authorities that have to make the PDUs).

According to the Rupprecht report, ADEME, CNPFT and PFC provide training; CERTU, GART, and CNPFT organise one-day workshops. The CIVINET Francophone covers some exchange.

Financial support for the authorities making PDUs is explained in a short section in the Rupprecht report, p.83-84. The AOTUs are also the authorities receiving the proceeds of the Versement Transport (a 'transport tax' levied from the employers of more than 9 staff members), which is an important funding source for public transport subsidies and PDU measures.

Interdepartmental consultation and coordination

As most of the PTUs contain a number of municipalities, the AOTUs are in most cases a common body of these municipalities. This ensures the coordination between the municipalities. See section 3.1. Coordination with the traffic police and the road management authorities is required by law, see section 1.2.

Coordination between different levels of administration

Consulting of other (higher) authorities is also mandatory. And PDUs should be compatible with such plans. See sections 1.2 and 3.1.

Participatory approach

The law requires two stages of consultation during preparation, with stakeholder organisations and with the general public. In the drafting process of the PDUs consultation of stakeholders is required, notably: transport providers, transport users, associations of the mobility impaired, the chamber of commerce and industry, and designated associations for environmental protection. Their advice should accompany the PDU proposal that is offered for public consultation according to specified procedures. See section 3.1.

A generally acknowledged best practice is to involve the public in discussions at the conception stage of the plan, as this leads to a better involvement of the public, a better understanding by the AOTU of the needs and wishes of the public, a reduction of the opposition against the measures and therefore fewer court appeals against it. An example of this practice is Grenoble.

Implementation plan, time table and budget plan

Since the SRU law of 2000, a time schedule for implementation and a financial plan is required. Before that time, the implementation was slow in some cases. What is required is not a rolling plan, but it should include a ‘mobility account’ (*Compte Déplacements*) in which the financial costs and the external costs have to be shown.

Monitoring, review and reporting

As indicated, the Transport Act requires that the PDU be evaluated every five years. CO_2 (GHG) emissions caused by traffic and CO_2 emissions avoided by the PDU should be calculated and this is true for atmospheric pollution, noise and energy use as well (according to the Environment Act). See also the Rupprecht report, p.13. Monitoring is also compulsory for accidents, notably those involving pedestrians and cyclists. Finally, monitoring of the implementation is needed for the compulsory evaluation after 5 years.

2.1.5 Contents

Long term strategy

In principle, the PDU is a long term planning document (15 to 20 years), but it acts as a framework for short term actions. In some agglomerations it is a 5-year action plan fitting within a 15- or 20-year strategic vision. In any case, an evaluation after 5 years is compulsory.

It may be said that the PDUs have an important mobilising effect on the politicians and other decision makers involved. It makes them consider the different problems and measures in relation to one another and makes them aware of the need to consider integrated packages of measures, even in the case of elected politicians who are new to the field of mobility and transport. The same is true for the public consultations, which help to make the public understand the issues of mobility policy. This is confirmed by the existence of voluntary SUMPs.

Status analysis and baseline

A baseline or reference scenario is not mentioned in the legal texts, but since the obligation (introduced in 2010) to show how much of the CO_2 (GHG) emissions caused by traffic are avoided by the PDU, making a baseline is in fact necessary (see section 2.2).

Performance indicators

In the 1990s and 2000s, important mobility developments observed in the larger agglomerations in France are a reduction of car use, an increase in public transport patronage and the return to the streets of the bicycle. However, in the suburbs of the large agglomerations and in the smaller cities, car use is still growing.

This is the result of many developments, including the effects of the sustainable transport and traffic policies laid down in the PDUs. But other important factors include the price of petrol, the demographic changes, the changes in income/welfare, modern communication technologies and the changes in social behaviour of people. As these effects cannot be separated from each other, it is not possible to quantify ex post the effects of the sole PDUs/SUMPs on mobility outcome as causal effect. For this reason, the CERTU does not attempt to do this, even if the changes are clearly noticeable in the cities. The ex-ante calculations of how much GHG emissions are avoided by the PDUs are made by the AOTUs, however.

Specific objectives and targets

Section 1.2 lists the many mandatory topics that have to be addressed in the PDU according the national legislation. As indicated, these come from the Transport Act (*Code des Transports*), but also from other acts. The most important of these are a series of laws on environmental issues, integrated in the Environment Act (*Code de l'Environnement*), and the law on Solidarity and Urban Renewal of 2000 (SRU, *Solidarité et Renouvellement Urbain*), integrated in the Urban Development Act (*Code de l'Urbanisme*) on urban planning issues. The important role of the SCoT, the territorial coherence plan (*Schéma de Cohérence Territoriale*) was already mentioned in section 1.2. All the legal requirements for PDUs are cited in the Rupprecht report, p.70-83.

As an example, the Nantes PDU (2012) refers to the Kyoto targets for GHG emissions when justifying the measures proposed.

Motorised individual transport

The PDUs brought coherence in the municipal policies regarding parking and road network management:

› parking on private ground: the PDU can impose on a municipality to define ceilings on the number of parking spaces in and around non-residential buildings, in areas well served by public transport;

- parking in the public space: the PDU defines the tariffs and conditions for roads and public car parks;

- road network hierarchy: the PDU defines the hierarchy, including speed limits and traffic calming.

As an example, the PDU of Lille has developed its “DIVAT” system, in which there are circles of 500 m around the major public transport stops (train, metro, tram) corresponding to a walking time of 5-10 minutes. There are three levels of circles, according to the level of service of public transport, and in level 1 circles there are strict parking norms. At all levels there are minimal norms for building density.

Public transport

The PDUs accompanied the re-introduction of tramways in French cities and this continues with more and more cities introducing trams and other public transport systems on reserved rights-of-way (high quality buses and guided rubber-tired vehicles) on an unprecedented scale.

The ‘Handicap’ law of 2005 has introduced the obligation for all trip chains to have to be accessible to mobility impaired people by 2015. This has to be planned in the accessibility plans (‘PAVE’) which must be part of the PDUs. A recent report (by Senator Ms C.L. Campion, March 2013) concludes however, that this deadline will not be met for all PDUs and that the effort must continue.

Walking and cycling

Attention to walking and cycling is a recent phenomenon in the PDUs. Walking is the second most important mode in French agglomerations. Cycling is still marginal, but its return in French cities is clearly visible, and, inspired by the examples in some other countries, it is seen as having a high development potential. This requires an urban planning based on short distances and furthering these modes for access and egress to public transport. Many cities are including the provision of cycle paths and cycle stands in their PDUs, and are publicising the health effects of cycling. The 2012 PDU of Strasbourg is a good example, but many implementations elsewhere show that there is still a lack of understanding of the needs of cyclists. CERTU is disseminating best practice in this domain.

The introduction in 2005 of the Cyclocity system of public rental bikes in Lyon, and subsequently in many other cities, also by other providers was a successful innovation. This contributed to the rediscovery of the bicycle by the population.

Urban freight logistics

Freight transport in cities is a source of nuisance and is vital to the economic functioning of the city at the same time, according to the Nantes PDU (2012). Some large agglomerations have implemented measures in their PDUs to limit the nuisance while ensuring the quality of the goods delivery process, but others policies are still falling behind.

Integration of modes

Intermodality is mentioned indirectly in the legal PDU requirements, through the measures that are aimed at this, such as park-and-ride facilities and integrated ticketing. Many PDUs conclude that it is not possible to obtain the desired results without packages of measures, and this always includes intermodality.

Mobility management

Many PDUs are stimulating mobility management by private and public organisations/employers for their staff. Other policies concern car-pooling and car-sharing, electric vehicles (with preferential parking facilities and charging points). Mobility agencies, charged with informing the public, have been founded.

2.1.6 Specific measures

Integration with land use planning

An important instrument in land use planning is the SCoT, the territorial coherence plan (*Schéma de Cohérence Territoriale*), made mandatory by the Urban Development Act for groupings of municipalities. It has objectives in many domains and an important mobility objective is to reduce the need for travel. The SCoT perimeters generally cover a larger area than the PTUs and include more municipalities. In some cases they contain several PTUs/AOTUs and therefore PDUs. The PDUs have to be compatible with the SCoT.

Access restriction schemes

Action restriction schemes are not mentioned in the legal PDU requirements, but many cities have introduced pedestrian zones (sometimes with bicycle access) linked to the introduction of new public transport systems (trams, guided and non-guided buses of reserved right-of-way).

Public procurement of clean technology

Public procurement of clean technology is not a specific item in PDUs, but it may be mentioned.

Annex - List of PDU agglomerations

This annex presents the current list of cities/agglomerations/urban areas (according to the definition of the law) for whom a PDU is mandatory.

Remarks

› This list shows the agglomerations for which a PDU will be mandatory as soon as the corresponding legal texts are updated. The expected update had not yet become law on 1 February 2013.

› The limits of the agglomerations have been re-established by the national statistical office INSEE in 2010. Awaiting the said update of the legal texts, the relevant population is still that of 2007. Therefore the numbers given in the column "Inhabitants of the SUMP area" are those for 2007 within the agglomeration limits of 2010.

- The list shows 61 agglomerations of >100.000 inhabitants which will eventually have to be covered by PDUs, for which 88 PDUs will be mandatory. Seven agglomerations are in overseas provinces (*Départements d'Outre-Mer*, in Central and South America). Until the update of the legal texts, 82 authorities already have the obligation under the old texts.

- A map showing the state of progress of each of the mandatory PDUs is published here: http://www.certu.fr/fr/_Mobilité_et_déplacements-n25/Déplacements_et_planification-n46/PDU-n47/Mise_a_jour_de_la_liste_des_PDU_obligatoires_et_etat_d&039;avancement-a2321-s_article_theme.html

- In total, 60 mandatory PDUs had the status of having been approved in 2011, of which two were defeated by court rulings.

- The assessment in the main report does not include the agglomerations in the overseas provinces.

Table 2 List of agglomerations for which a PDU is mandatory (Note that in some cases there are several PTUs in an agglomeration, meaning that there also have to be several PDUs)

Name of the agglomeration	Inhabitants of the SUMP area	Number of municipalities involved	Comments
Agglomeration of Paris	10.303.282	412	
Marseille – Aix en Provence	1.558.379	49	
Lyon	1.509.766	130	
Lille (French part)	1.014.239	59	Continuously built-up area is partly in Belgium.
Nice	947.075	51	
Toulouse	859.338	73	
Bordeaux	831.788	64	
Nantes	584.306	24	
Toulon	556.538	27	
Douai-Lens	511.345	67	
Grenoble	494.878	53	
Rouen	463.681	51	
Strasbourg (French part)	449.798	23	Continuously

Name of the agglomeration	Inhabitants of the SUMP area	Number of municipalities involved	Comments
			built-up area is partly in Germany.
Avignon	440.651	59	
Montpellier	384.165	22	
Saint-Étienne	372.967	33	
Béthune	350.068	93	
Tours	344.739	36	
Valenciennes (French part)	333.492	56	Continuously built-up area is partly in Belgium.
Rennes	304.729	13	
Metz	290.851	42	
Nancy	286.108	28	
Orléans	268.468	19	
Clermont-Ferrand	261.240	17	
Pointe à Pitre – Les Abymes	252.869	11	In overseas province (*département d'outre mer*): Guadeloupe.
Le Havre	244.745	18	
Mulhouse	243.618	21	
Dijon	237.924	15	
Bayonne (French part)	219.570	27	Continuously built-up area is partly in Spain.
Angers	218.616	10	
Reims	211.966	7	
Le Mans	208.283	18	
Brest	201.666	7	
Pau	199.199	53	
Caen	198.225	21	

Name of the agglomeration	Inhabitants of the SUMP area	Number of municipalities involved	Comments
Perpignan	187.569	15	
Limoges	184.066	9	
Dunkerque	181.699	9	
Nîmes	175.990	9	
Chambéry	174.833	35	
Saint-Denis	171.876	2	In overseas province (*département d'outre mer*): Réunion.
Saint-Paul	166.511	3	In overseas province (*département d'outre mer*): Réunion.
Amiens	163.158	11	
Annecy	153.288	19	
Saint-Pierre	151.672	3	In overseas province (*département d'outre mer*): Réunion.
Saint-Nazaire	148.578	11	
Genève(CH)-Annemasse (French part)	145.507	34	Continuously built-up area is partly in Switzerland.
Le Robert	137.629	11	In overseas province (*département d'outre mer*): Martinique.
Besançon	135.808	11	
Troyes	133.279	19	
Fort-de-France	132.980	4	In overseas province (*département d'outre mer*): Martinique.
Thionville	130.922	12	
Poitiers	128.535	8	

Name of the agglomeration	Inhabitants of the SUMP area	Number of municipalities involved	Comments
La Rochelle	127.033	10	
Valence	126.832	10	
Lorient	116.401	5	
Creil	116.140	22	Agglomeration is new on the list.
Maubeuge (French part)	115.320	22	Continuously built-up area is partly in Belgium.
Angoulême	109.009	18	
Montbéliard	108.768	21	
Cayenne	101.412	3	In overseas province (*département d'outre mer*): Guyane.

Source: Ministry responsible for the environment and for transport (MEEDDAT)
http://www.developpement-durable.gouv.fr/Listes-des-agglomerations-de-plus.html

2.2 Bulgaria

SUMP is not mandatory to prepare for any urban or regional authorities in Bulgaria. Seven cities (municipalities) have more than 100.000 inhabitants:

2.2.1 National incentives for voluntary SUMPs

Bulgaria has an Operational Programme for Regional Development (OPRD) 2007 to 2013 developed together with the EC. The programme provides the framework for supporting EU financing in the areas eligible for Structural funds, and in particular – for the European Regional Development Fund (ERDF). The programme sets out a coherent regional development strategy for the period 2007-2013 supported by a multi-annual investment commitment in the key areas of infrastructural development of urban centres, territorial connectivity, sustainable tourism growth and support to regional and local partnerships.

The programme includes five priority axes, one being "Sustainable and Integrated Urban Development" with five main sub-programmes, one being "Sustainable Urban Transport Systems". This sub-programme includes the seven largest cities in the country.

All seven cities were given financial support (consultancy work) from the OPRD in 2011 - 2012 to develop a feasibility study identifying feasible projects. To manage and facilitate the work in the seven cities, a Project Management Unit (PMU) in the Ministry of Regional Development was established with the support from JASPERS. The PMU was responsible for engaging consultants for the seven cities and for cooperating with the city councils.

The feasibility studies ended up with an application for a grant from the ERDF to implement selected feasible projects.

The urban transport planning in Bulgaria has no strong tradition. The legislation includes the demand of preparing an overall development plan including issues on socio-economic and spatial development, including transport infrastructure. These development plans include visions and long term objectives also for urban transport.

Bulgaria has, except for the OPRD activity on sustainable urban transport systems, no national guidelines for urban transport planning. During the development of the activity, several seminars were held among the municipalities to share and disseminate knowledge.

The future national incentives on developing urban transport/mobility planning are not known.

2.2.2 Contents

The seven cities have in the feasibility studies developed - with some variation among the cities - the following:

› A thorough mapping of the present situation on urban transport (travel surveys, demographic data, infrastructure mapping, urban public transport system).

› Set up of objectives and to some degree measurable targets for the successful implementation of supported projects from the ERDF.

› Transport modelling, even though only some of them can be said to deal with modal split issues.

› Analyses and evaluation of various project package options, generally by using multi criteria analyses.

› Cost benefit analyses of preferred options.

› Implementation plans including organisational set up, responsibilities, time schedule and procurement plans.

A fairly generic evaluation of the effort so far in the seven cities compared to the SUMP definition would be:

- No tradition for a **participatory approach** but to some extent it has been attempted during the mentioned feasibility studies.

- In general a **pledge for sustainability** described in the overall plans and the feasibility studies, but only on a fairly vague level in the actual plans.

- No tradition for **an integrated approach** of practices and policies between policy sectors (e.g. transport, land-use, environment, economic development, social inclusion, health, safety) or between authority levels and between neighbouring authorities.

- Integration of planning for all transport modes is less developed. Traditionally public transport and individual transport have been dealt with separately and to ensure integrated planning demands, change of attitudes and organisational set up is needed. The feasibility studies have most likely assisted in speeding up this process.

- **A focus on achieving measurable targets** regarding traffic/transport can be found in some plans, but the links between the targets and the measures to achieve them are mostly not very developed and substantiated.

- During the feasibility studies, **reviews of transport costs and benefits** were developed for selected projects, but not for a coherent project package.

- One does not fully find the use of **a method** comprising all the following tasks: 1) status analysis and baseline scenario; 2) definition of a vision, objectives and targets; 3) selection of policies and measures; 4) assignment of responsibilities and resources; 5) arrangements for monitoring and evaluation. Due to lack of tradition and experience, none of the above 1) to 5) issues are covered thoroughly, but the feasibility studies have created a god starting point for further development of methods in Bulgaria.

2.2.3 Procedures

The actual projects in the applications for a grant from ERDF are politically approved by the city councils, but the formal municipal approval of coherent transport plans connected with the applications are not well developed.

For Bulgaria, a very important issue for the urban transport systems is the organisational set up of urban public transport. The public transport systems have a lack of solid financial funding and some discrepancies with the transparency objectives in the EU policies on provision of public transport services (Regulation EC No 1370/2007). Bulgaria is in a process of implementing the regulation. Therefore, organising and financing of public transport is a major part of the developed feasibility studies.

2.2.4 List of cities

Table 3 Cities and SUMPs

Name of city or urban area	Inhabitants SUMP area	Voluntary SUMP	Stimulated SUMP	Comments
Sofia	1,358,000	Partly	Yes, by ERDF	Contains an Urban Mobility Centre with responsibility for integration
Plovdiv	376,000	Vague	Yes, by ERDF	
Varna	350,000	Vague	Yes, by ERDF	
Burgas	192,795	Vague	Yes, by ERDF	
Rousse	157,369	Vague	Yes, by ERDF	
Stara Zagora	139,807	Vague	Yes, by ERDF	
Pleven	113,246	Vague	Yes, by ERDF	

Reasons for preparing a SUMP

Based on relevant documents and contacts in Bulgaria, the reason for developing projects under the title of sustainable urban mobility is mainly to ensure financial support for implementation of major projects like e.g. new BRT or light rail/tram lines, rehabilitation of network for trolleybuses, supply of new public transport vehicles and to a lesser degree new bicycle facilities and optimisation of street network (ITS measures) to reduce congestion.

2.3 Denmark

SUMP is not mandatory to prepare for any urban or regional authorities in Denmark. Four cities (municipalities) have more than 100.000 inhabitants:

2.3.1 National incentives for voluntary SUMPs

All municipalities in Denmark have to prepare an overall spatial plan, a Municipal Plan (Kommuneplan) with a 12 years’ time horizon. This plan must include networks for roads, public transport and bicycle facilities and an overall strategy for the main traffic system. The plan has to be taken up to revision every fourth year.

Furthermore, e.g. in the 1990's national guidelines (not mandatory) were prepared to support and encourage municipalities with cities having more than 10.000 inhabitants to take up "Traffic and the environment" as a specific theme in the

Municipal plan. Some municipalities have continued working out and revising such a plan with approx. 4 years intervals.

No mandatory national approach exists on the exact content of and procedures for urban traffic planning. In general, the Danish planning system is traditionally based on a framework approach, where the national level only sets up a framework without very specific and detailed demands on content and procedure.

Nevertheless, national guidelines exist on urban traffic planning, and a new version of these guidelines is under preparation (a public hearing of a draft version was finished December 2012). The new version includes the following overall objective (own translation from Danish):

"Transport is a necessity for the functioning of a city (or town), but transport is not an objective in itself. Transport is a consequence of the need for mobility and accessibility to and between the many functions of a city.

The transport system should in the ideal world both be adapted to the transport demand and offer exactly the access to travel destinations that are necessary for the city to function.

An overall condition for the urban transport planning is to contribute to sustainable transport - economic, social and environmental - to meet the transport demand in force at any time.

The guidelines aim to provide guidance on the urban traffic planning so that the necessary transport demand is met and the greatest possible consideration is taken towards the city. The urban life with regard to e.g. health, well-being, activities and experiences shall be taken into account and the negative impact from traffic reduced at the same time as accessibility to the city is ensured.

The transport demand shall be met using the right balance between the transport modes. The balance will differ from city to city regarding when and where each transport mode is most suitable."

2.3.2 Contents

The new national guidelines include the following issues of specific relevance for a SUMP:

› Framework for urban traffic planning (economic development, environmental conditions, health and exercise) transferred in to local topics on accessibility, climate and air pollution, road safety and social security, noise, visual impact, urban life and climate change adaptation.

› Cohesion between urban spatial development and urban traffic planning as

› Participatory approach with stakeholder and citizen consultations as well as cooperation and participation from different sectors in the municipality itself as well as use of soft measures (mobility management) and hard infrastructure measures.

- Planning for all transport modes; pedestrians, bicyclists, individual passenger traffic, local public transport by bus/BRT/light rail, freight transport, parking and disabled persons.

- Vision, objectives and specific targets are mentioned, but without reference to specific topics or target values.

- Impact assessment is mentioned only as part of SEA (Strategic Environmental Assessment of programmes and plans) and EIA (Environmental Impact Assessment of projects) according to Danish law.

For the four relevant cities (more than 100.000 inhabitants) the following is to add:

- **Copenhagen** City Council has in 2010 - 2012 prepared a plan titled Grøn Mobilitet (Green Mobility) which has many similarities with a SUMP. Copenhagen Municipality constitutes 0.5 million inhabitants, whereas the Copenhagen city agglomeration in total has approx. 1 million inhabitants. Copenhagen is a CIVITAS Forum member.

- **Aarhus** Municipality has not prepared a plan that can be said to be similar to a SUMP, but has approved a number of plans that in total cover most of the relevant topics.

- **Odense** Municipality has prepared a plan titled "Trafik- og mobilitetsplan for bymidten" (Traffic and mobility plan for the city centre) which has some similarities with a SUMP, but the plan only addresses the city centre. Odense has participated in a CIVITAS II project, MOBILIS 2005 - 2009.

- **Aalborg** Municipality has not prepared a plan that can be said to be similar to a SUMP. Nevertheless, Aalborg participates in CIVITAS Plus project, ARCHIMEDES 2008 - 2012.

A fairly generic evaluation for the four relevant cities compared to the SUMP definition would be:

- Long tradition and to a certain degree legal requirements for a **participatory approach**

- In general a **pledge for sustainability**, now described directly in upcoming national guidelines (no legislation), but in present plans dealt with a bit indirectly (the three issues.

- A long tradition for **an integrated approach** of practices and policies between policy sectors (e.g. transport, land-use, environment, economic development, social inclusion, health, safety) and to a certain degree between authority levels and between neighbouring authorities, but with no very specific legal demands. When carried out on transport issues, it is based mostly on local experienced needs (e.g. voluntary cooperation in the Copenhagen region on establishing bicycle super highways across municipal borders).

- **A focus on achieving measurable targets** regarding traffic/transport can be found in some plans, but the links between the targets and the measures to achieve them are mostly not very developed and substantiated.

- You do not find overall **reviews of transport costs and benefits** at a planning level, only on single major infrastructures such as e.g. a new light rail line and mostly due to national participation in planning and financing

- You do not fully find the use of **a method** comprising all the following tasks: 1) status analysis and baseline scenario; 2) definition of a vision, objectives and targets; 3) selection of policies and measures; 4) assignment of responsibilities and resources; 5) arrangements for monitoring and evaluation. Especially 4) and 5) are not always explicitly prepared even though some of the elements often can be found.

2.3.3 Procedures

The urban plans for transport or/and mobility are usually encapsulated in the overall municipal urban planning process and these municipal plans are approved by the city council. These plans are mostly without actual time schedules and budgeting for implementation.

No procedures exist for approvals, auditing, monitoring or similar at national level.

2.3.4 List of cities

Table 4 Cities and SUMPs

Name of city or urban area	Inhabitants SUMP area	Voluntary SUMP	Stimulated SUMP	Comments
Copenhagen	1,071,714	Yes		Nearly full SUMP, but only for the municipality, not for the agglomeration
Aarhus	292,079	Partly		
Odense	192,367	Partly		SUMP only for part of the city, participant in CIVITAS project
Aalborg	185,732	Partly		Participant in CIVITAS project

Reasons for preparing a SUMP

For the four cities in general, the reasons are the national planning legislation and long-time tradition.

For Copenhagen, the only city with a nearly full SUMP, the reason is a desire to live up to best practise on being an internationally recognised sustainable city as well as pressure from citizens on having a sustainable city.

2.4 Germany

There is no legal obligation for having a SUMP for municipalities in Germany. The Federal Government has a sustainability strategy that also covers sustainable mobility and in some areas relates directly to urban transport. As the strategy is a high-level strategy it however has no direct implications on local planning.

Despite this lack of a legal obligation most of the 80 German municipalities with more than 100.000 inhabitants have some kind of urban mobility plan, often called a "Verkehrsentwicklungsplan" (VEP).

2.4.1 National incentives for voluntary SUMPs

As mentioned above there is no legal requirement for having urban mobility plans, local authorities in all Federal States but Hamburg are however obliged to have a public transport plan. According to EU directives cities are furthermore obliged to have clean air plans and noise reduction plans.

In order to obtain co-financing (50-70%) for local transport infrastructure from the federal government municipalities are obliged to have an urban mobility plan. There are however no defined minimum standards regarding the scope, timing or development of such urban mobility plans. Most urban mobility plans developed by German municipalities do not meet the requirements of a SUMP.

2.4.2 Contents

As there is no legal obligation for SUMPs in Germany there is also no legal standard for the content of a SUMP. Many urban mobility plans in Germany are focused on the infrastructure and public transport provision with only some municipalities covering soft measures and "green" transport.

2.4.3 Procedures

Additional to the content of their mobility plans cities in Germany are also free in the decision of how to design and monitor the implementation of their urban mobility plans. There is no standard for the planning of urban mobility plans in Germany and there is hence a lot of variation across German cities regarding the planning process. It is however common practice to involve key stakeholders and at least inform the general public in the different stages of the mobility plan development. The level of involvement of citizens in the planning process regarding urban mobility plans in Germany differs greatly. For large infrastructure projects and urban development projects the German law however sets formal requirements regarding the participation of citizens.

2.4.4 EPOMM

Using the level of mobility management as one indicator, the Mobility Management Monitor 2011 report for Germany presents the following ranking of the level of mobility management in Germany.

Table 5 Ranking of advancement in mobility management

Level of advancement in Mobility Management		Rank
Level 1	No or hardly any activity, save some isolated initiatives	
Level 2	Some successes, some funding, several initiatives started	
Level 3	Several successes, temporary structural funding, but no standard practise	X
Level 4	Solid position, structural funding and standard practise	

Source: Mobility Management Monitor Germany 2011

The Mobility Management Monitor report also describes that there is number of different initiatives and programmes that support or promote mobility management either directly or indirectly.

2.4.5 Cities with SUMP

The number of cities in Germany with more than 100.000 inhabitants is 80.

A study from 2009[4] includes reviews of 75 German cities with a population of more than 100,000 inhabitants and a scoring of the transport plans against a benchmark which can be described as somewhat similar to the definition of an integrated urban mobility approach. The eight characteristics or planning elements include: Spatial planning, policy integration, participation, information, planning period, plan effects, monitoring and updating. The 75 cities were rated by how many planning elements their transport or mobility plan included (the more elements = the better performance).

The result of the assessment suggests that only few German cities have a well-elaborated integrated urban mobility approach.

[4] Wolfram (2009) Planung ohne Steuerung? Zur Qualität und Orientierung kommunaler Verkehrsentwicklungspläne in Deutschland

Table 6 Review of German cities with regards to content and process of their transport plans

Number of planning elements	Number of cities	Distribution in % of cities
No plan	22	29%
0	2	3%
1	9	12%
2	3	4%
3	13	17%
4	12	16%
5	11	15%
6	3	4%
7	0	0%
8	0	0%
Total number of cities	75	100%
Average number of elements*	2.3	

Source: Wolfram (2009) Planung ohne Steuerung? Zur Qualität und Orientierung kommunaler Verkehrsentwicklungspläne in Deutschland

** For those cities with a plan*

Due to this large number not all cities will be covered. Instead this section will focus on a number of cities with well-developed urban mobility plans. The cities that have been chosen for this analysis are the following:

› Berlin. Berlin developed a SUMP-like mobility plan (Stadtentwicklungsplan Verkehr) for the metropolitan area Berlin-Brandenburg until 2040. The mobility plan includes initiatives in the four dimensions economic, social, ecological and institutional goals.

› Hannover. The region Hannover has 1.100.000 inhabitants and consists of the city of Hannover and its metropolitan area. In 2011 it decided on a mobility plan (Verkehrsentwicklungsplan) with a strong focus on climate and the aim of reducing CO_2 emissions from transport by 40% by 2020. It builds on the four areas urban development, traffic management, public transport and mobility management.

› Dortmund. The urban mobility plan (Masterplan Mobilität)of Dortmund was decided in 2004 as a basis for the transport planning for the next 15-20 years in the city of 580.000. In the development of the plan representatives of all relevant societal groups were included and it will be complemented by sub-plans for the individual districts of the city.

› Munich. The urban mobility plan (Verkehrsentwicklungsplan) of Munich was developed in 2006 and sets the frame for the next 10-15 years of mobility planning. It has the aim of reducing traffic, changing modal splits towards public transport and of better management of necessary traffic flows. It is furthermore based on the expected growth in the number of inhabitants in both Munich and the surrounding municipalities.

- Freiburg. Freiburg, a city of 230.000 inhabitants developed in 2008 a mobility plan (Verkehrsentwicklungsplan) until the year 2020. The main goal of the plan is to develop mobility in Freiburg in a sustainable way and to create access to mobility for all societal groups. Besides the priority on the development of sustainable transport infrastructure the plan also includes measures to reduce traffic (e.g. through integrated urban development).

2.5 Hungary

SUMP is not mandatory to prepare for any urban or regional authorities in Hungary. Eight cities (municipalities) have more than 100.000 inhabitants:

2.5.1 National incentives for voluntary SUMPs

No specific national incentives exist for preparing SUMPs. Every city is obliged to work out a traditional plan for transport networks as part of their general master plan. However, many cities realised the importance of the transport development concept and developed their transport policy paper in the form of a transport master plan or transport development strategy or concept.

Hungary has a Transport Operational Programme (TOP) 2007 - 2013 within the framework of the Regional Development policy in EU. The TOP includes as one out of five priorities, an effort to "Improving urban and sub-urban public transport". The intention is primarily to tackle congestion and overcrowding of the urban transport networks and thus motivate for more passengers to travel with public transport.

The programme has supported projects in the cities of Budapest, Debrecen, Miskolc and Szeged, mainly focused on improvements and renewal of the public transport system in the form of new rolling stock, rehabilitation of tram lines and of trolleybus networks.

2.5.2 Contents

Some of the cities have participated in CIVITAS projects or otherwise worked on sustainable urban transport plans and projects.

The cities which have been involved in projects supported by the TOP have carried out feasibility studies to identify the most efficient projects.

The feasibility projects have typically included:

- A thorough mapping of the present situation on urban transport (travel surveys, demographic data, infrastructure mapping, urban public transport system).

- Set up of objectives and to some degree measurable targets for the successful implementation of supported projects from the ERDF.
- Transport modelling, even though only some of them can be said to deal with modal split issues.
- Analyses and evaluation of various project package options, generally by using multi criteria analyses.
- Cost benefit analyses of preferred options.
- Implementation plans including organisational set up, responsibilities, time schedule and procurement plans.

2.5.3 Procedures

The master plans including transport plans are approved by the local city councils.

2.5.4 List of cities

Table 7 Cities and SUMPs

Name of city or urban area	Inhabitants SUMP area	Voluntary SUMP Yes/partly/no	Comments
Budapest	2,065,230	Yes, by ERDF	
Debrecen	204,412	Yes, by ERDF	Participated in CIVITAS MOBILIS
Miskolc	174,523	Yes, by ERDF	CIVITAS FORUM City
Szeged	163,065	Yes, by ERDF	CIVITAS FORUM City
Pécs	155,422		Participated in CIVITAS I, TRENDSETTER
Győr	128,449		CIVITAS FORUM City
Nyíregyháza	116,857		
Kecskemét	109,499		
Szekesfehervar	101,064		

Reasons for preparing a SUMP - or similar

Impressions expressed by urban transport planner.

According to the guidelines on the Application for EU financial assistance the applicants shall explain how the projects fit into the overall local transport development strategy. Large and medium municipalities therefore developed their own local policy to fulfil this demand.

Transport services and infrastructure is often subject of the agreements/ negotiations on industrial/real estate developments between investors and municipalities.

Reasons for not preparing a SUMP (barriers)

A few barriers identified from discussion with urban transport experts in Hungary:

- No tradition for integration of various local and regional public transport services.
- Service obligations are different for local and regional public transportation, thus the public service contracts are not very well harmonised.
- Tariff systems are not integrated for urban and intra-urban public transportation.

Sources

Description of TOP projects on the Internet: http://ec.europa.eu/regional_policy/projects/stories/search.cfm?LAN=en&PAY=HU&the=ALL&type=ALL&region=ALL

Links to cities on CIVITAS website: http://www.civitas-initiative.org/index.php?id=35.

2.6 Malta

Malta's biggest city is the capital Valetta with approximately 6,500 inhabitants. SUMP is therefore as such not relevant to assess further in this study, but in the following a brief overview of available information on urban traffic planning is given.

Malta has a national transport strategy to develop sustainable mobility. Furthermore, for Valetta a "Valletta Strategy" exists. It includes several measures aiming specifically to contribute to encourage a modal shift from the private car onto public transport. Measures like Park and Ride facilities, bus lanes and an ITS system (controlled vehicle access for charging access to the city centre) have been implemented leading to a change in modal split towards public transport.

As part of the EU Cohesion Policy 2007 - 2013, Malta has applied for support from the European Regional Development Fund to encourage a modal shift in land transportation (project called MODUS). The application is based on cost benefit analysis of options.

2.6.1 List of cities

Table 8 Cities and SUMPs

Name of city or urban area	Inhabitants SUMP area	Voluntary SUMP	Stimulated SUMP	Comments
Valletta	195,863	No		Cost-benefit analysis of measures as part of application for EU support

Source: Application for Form to the European Regional Development Fund, 2011 (access to document due to COWI assistance to JASPERS on part of the MODUS project).

2.7 Italy

2.7.1 National legal basis

SUMP is mandatory

In fact, the SUMPs are not mandatory in Italy, but the "Law n. 340/2000, Art. 22" establishes that urban mobility plans ("Piano Urbano della Mobilità", PUM) are mandatory as a tool for transportation planning in cities (over a period of 10 years). Municipalities with more than 100.000 inhabitants can only get funding from the National Government if they have an urban mobility plan. The municipalities are in charge of applying and elaborating the Urban Mobility Plans, but they must be done according to the National Law.

The "Piano Generale dei Transporti e della Logistica" (National Transport Plan) adopted in 2001 a new approach for managing public funding mobility projects: objectives and integrated measures in PUMs are funded instead of single interventions.

2.7.2 National support measures

Nowadays there are the following supporting elements (or instruments) for the implementation of SUMP's:

› There is a guidance document (PUM Guidelines) that describes clearly the steps for elaborating the PUM (2005). This document followed a first Regulation on PUMs (Regolamento per il cofinanziamento statale dei Piani urbani della mobilità: prime Indicazioni) adopted in a joint Conference with regions and local authorities in October 2002.

› It is mandatory to develop an Urban Mobility Plan for municipalities with more than 100.000 inhabitants (including the metropolitan urban area) that wish to access the National Funds (up to 60% of the total investment).

2.7.3 Contents

In terms of SUMPs requirements, the Law 340/2000 establishes the following contents of a PUM:

- An urban public transport plan (including infrastructure and services, accessibility and taxis).
- A city logistics plan.
- A plan to promote non-motorised modes of transport (walking, cycling - including cycling infrastructure, bike sharing schemes and soft measures).
- Multimodal connection platforms.
- An ITS action plan management measures.
- Promoting clean vehicles and clean fuels in different urban transport modes.
- Time horizon: 10 years.
- Measures commented: low emission zones; other pricing policies (congestion charging zones) and/or internalisation of external costs strategy; urban public transport work travel plans; corporate mobility management plans; awareness raising campaigns on sustainable urban mobility; car sharing and carpooling schemes and telecommuting plans.

Barriers

The main barriers for no deeper extension of SUMPs in Italian cities are as follows:

- Lack of funds.
- The adoption of Sumps implies a transversal approach of transportation: transportation, environmental issues, quality of life and land planning, basically. Usually, all these different approaches are split in several public bodies or departments and the one in charge of transportation planning is not often used/prepared to incorporate new approaches in their analysis.

2.7.4 List of cities

Some of the cities with more than 100,000 inhabitants that have adopted the SUMPs are indicated in the following table. The list of cities illustrates a selection of Itian cities.

Table 9 Cities with SUMPs

Name of city or urban area	Inhabitants core city	Inhabitants SUMP area	Mandatory SUMP	Stimulated SUMP	Comments
Milano	1,307,495	3,115,392	Yes		
Roma	2,743,796	3,695,148	Yes		Comune di Roma - Piano Strategico per la Mobilità Sostenibile (2009)
Parma	163,457	163,457	Yes		Sintesi dello scenario di PUM della città di Parma (2011-2020)
Torino	911,823	2,200,00	Yes		Piano Urbano della Mobilità Sostenibile di Torino (2010-2020)
Venezia	107,223	107,223			Comune di Venezia – Piano Urbano della Mobilità (2008-2018)
Bolzano	94,989	94,989			
Ferrara	130,992	130,992			Piano Urbano della Mobilità (PUM) del Comune di Ferrara (2009-2019)
Monza	120,204	120,204			
Padova	204,870	400,000			
Ravenna	134,631	134,631			
Reggio Emilia	167,678	167,678	Yes		Piano della mobilià di area vasta di Reggio Emilia (2008-2015)

2.8 Spain

2.8.1 National legal basis

SUMP is not mandatory

At national level, the National Energy Agency only published non-binding guidelines for the Sustainable Urban Mobility Plans. However, national funding for public transportation in cities over 100,000 inhabitants is subject to have a Sustainable Urban Mobility Plan.

At the regional level, Madrid, Catalonia and the Basque Country have other legislation to be considered regarding the topic: Madrid has a Law for the Land Use since 2001 where public transport must be provided in any new development; Catalonia has a Law of Mobility (2003) that provides the criteria for managing mobility and establishes that Sustainable Urban Mobility Plans are mandatory for cities obligated to provide public transport. The Basque Country has a Master Plan for Sustainable Transportation (2002) and some of its goals are in the line of the SUMP's.

2.8.2 Incentives for voluntary SUMPs

Except for the region of Catalonia where, in practice, the SUMPs are mandatory, the main incentive is the requirement of having a Sustainable Urban Mobility Plan to receive national funding for public transport (only in cities larger than 100,000 inhabitants, where public transport is mandatory).

2.8.3 Contents

At national level, the main topics included in the guidelines published by the National Energy Agency for the Sustainable Urban Mobility Plans are:

› Main actions and measures to achieve.

› Methodology for developing the main actions.

› Recommendations about how the process of elaborating a SUMP should be done in terms of timing, budget, structure, transportation means, and so on.

The Law of Mobility of Catalonia (9/2003) establishes the main objectives and criteria for managing the mobility of people and goods. The decree 362/2006 further develops the contents of the law by means of 27 mobility directives (Directrius Nacionals de Mobilitat). The most relevant topics in terms of SUMPs are:

› Accessibility to the public transport systems especially for children, old people and people with impaired mobility.

› Urban planning includes urban freight distribution.

› Sustainable urban freight distribution.

› Public transport promotion.

› ITS applied to provide real time information.

- Reliability, quality, safety and security of transport.
- Reducing the use of private vehicles.
- Reducing the impacts of transport on the people.
- Participation of citizens in mobility planning.

Some indicators are provided as well to evaluate the accomplishment of each directive after implementing any specific plans.

The Master Plan for Sustainable Transportation of the Basque Country addressed the basis of the transport policy from 2002 to 2012. Of its five main goals, three relate closely to the SUMPs: universal accessibility, sustainable transport models and equilibrium among all transport means.

Finally, the Law for the Land Use from the Region of Madrid, in terms of SUMPs, forces the provision of public transportation in any new developments.

Barriers

The main barriers for no deeper extension of SUMPs in Spanish cities are:

- Lack of funds.
- The adoption of SUMPs implies a transversal approach to transportation regarding transportation, environmental issues, quality of life and land planning. Usually these approaches are split in/belong to different public bodies and the one in charge of transport planning is not used to/prepared to incorporate every single approach in its analyses.
- Lack of vertical integration of transport planning in some Autonomous Communities of Spain.
- Lack of a mandatory rule at the national level.

2.8.4 List of cities

The table indicates the Spanish city agglomerations that have SUMPs.

Table 10 Cities with SUMPs

Name of city or urban area	Inhabitants core city	Inhabitants SUMP area	Voluntary SUMP	Stimulated SUMP	Comments
Barcelona	1,615,908	4,440,629	Yes		Law of Mobility (Region of Catalonia, 2003) establishes the criteria and goals for Urban Mobility Plans
Vitoria	216,852	216,852	Yes		
Tarrassa	173,775	173,775	Yes		Law of Mobility (Region of Catalonia, 2003) establishes the criteria and goals for Urban Mobility Plans
Zaragoza	614,905	614,905	Yes		

2.9 Belgium

Flanders

2.9.1 National legal basis

The relevant law is the 'the decreet betreffende het mobiliteitsbeleid' (Decree on local mobility policy 2009). It does not make the development of a 'Mobiliteitsplan' (mobility plan) mandatory, but de facto it is a 'must', because municipalities can only get funding from the Flemish government if they have an approved plan. The decree on local mobility policy makes clear reference to sustainability objectives. Weblink: www.mobielvlaanderen.be/overheden/artikel.php?id=859&nav=9.

2.9.2 Goal and objective

The goal is a long-term sustainable mobility development. The local mobility plan seeks coherence in the preparation, adoption and implementation of decisions on sustainable mobility, and secondly alignment of the mobility with related policies. The goals and objectives are not further specified in the 'decreet'.

2.9.3 Ambition level

Target achievement in past plans

- Gent
- Antwerpen
- Brugge

Target level in current plans

- Gent
- Antwerpen
- Brugge

Barriers for using SUMPs

Not applicable.

2.9.4 Procedures

Governance: responsibilities and resources

The scope of the local mobility plan is the municipality. The mobility plan Flanders (Mobiliteitsplan Vlaanderen) defines the regional policy outlining the long-term vision on sustainable mobility development. The mobility plan Flanders aims to create coherence in the preparation, adoption and implementation of decisions on sustainable mobility, as well as integration of the Urban Mobility Policy and related policy fields. There can also be mobility plans at the following levels:

- Municipal, for the whole of the territory of the municipality
- Inter communal, for the entire territories of neighbouring municipalities
- At an intermediate level: for transport regions or for specific mobility issues

Approval procedure

- The municipality decides to draft a mobility plan and proposes an accompanying participation process.
- The municipality approves the provisional mobility plan and the participation process.
- The Flanders Government appoints a multidisciplinary provincial audit commission. The audit commission does a review and gives a positive or negative judgment. The audit commission looks at compliance with both the decree as well as with the guidelines.
- If positive the municipality approves the mobility plan.

Resources

- The Flanders region subsidises two thirds of the costs of the preparation of a municipal mobility plan.

- Municipalities may apply for subsidies for the deployment of the urban mobility measures from the Flanders government when having an approved urban mobility plan.

Coordination between different levels of administration[5]

The mobility plan Flanders (Mobiliteitsplan Vlaanderen) defines the regional policy that outlines the long-term vision on sustainable mobility development. The mobility plan Flanders aims at creating coherence in the preparation, adoption and implementation of decisions on sustainable mobility, as well as integration of the Urban Mobility Policy and related policy fields. There can be mobility plans at the following levels:

- Municipal, for the entire territory of the municipality;

- Inter communal, for the entire territories of neighbouring municipalities;

- At an intermediate level: for transport regions or for a specific mobility issue.

The municipal, intercommunal and intermediate mobility plans have to be aligned with the 'Mobiliteitsplan Vlaanderen' and the Regional Structure Plan. Provinces don't have a specific mobility plan. They have integrated it in the provincial structure plans.

Source: http://www.mobielvlaanderen.be/mobiliteitsbeleid/gemmobplan.php?a=14.

Participatory approach

Public participation in the planning process is mandatory. It is the municipality who has to present the proposal for the participation process.

Implementation plan[6], time table and budget plan

The local mobility plans have to contain a detailed action plan consisting of:

- An action program regarding:
  - Spatial development and mobility effects
  - Networks per modality
  - Supporting measures

- Work programme per location

- Investments short-, mid- and long term

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[5] Vertical, between government levels.
[6] Whether detailed and rolling or not.

- Policy program in line with the objectives
- Program tasks per responsible partner

Monitoring, review and reporting

Every five years evaluation of the plan (using a standard quick test evaluation tool). The results have to be submitted to the audit commission. The quick test can result in the following follow up actions:

- Renewal of the local mobility plan
- Broadening/deepening of the local mobility plan
- Confirmation-updating of the local mobility plan

2.9.5 Contents

Long term strategy

The time horizon is 10 years. A long term vision (30 years) is optional.

Status analysis and baseline

The plans have to contain:

- Description and analysis of the current mobility situation
- Research future mobility needs
- Analysis vertical and horizontal alignment with other plans
- Potential alternatives to reach the desired mobility situation

Motorised individual transport

Mandatory topic

Public transport

Mandatory topic

Walking and cycling

Mandatory topic

Urban freight logistics

Mandatory topic

Integration of modes

Not specifically mentioned

Mobility management

Mandatory

Specific measures

Integration with land use planning

Mandatory.

Access restriction schemes

Yes.

Public procurement of clean technology

Not mentioned.

Table 11 Cities of Flanders and SUMPs

Name of city or urban area	Inhabitants SUMP area	Mandatory SUMP	Voluntary SUMP	Stimulated SUMP	Comments
Antwerp	462098			Yes	Some requirements Mandatory/ some optional mentioned in guidelines or in decreet
Ghent	232248			Yes	Some requirements Mandatory/ some optional mentioned in guidelines or in decreet
Bruges	117604			Yes	Some requirements Mandatory/ some optional mentioned in guidelines or in decreet

Source : OECD EU data

Wallonia

2.9.6 National legal basis

Law in which the SUMP is made mandatory:

The relevant law is 'Décret relatif à la mobilité et à l'accessibilité locales (M.B. du 13/05/2004, p. 38446). It does not make the development of a mobility plan mandatory, but the de facto it is a 'stimulus', because municipalities can get funding from the Wallonian government if they have an approved plan. The decree on local mobility policy makes clear reference to sustainability objectives. Weblink: www.mobielvlaanderen.be/overheden/artikel.php?id=859&nav=9

Definition of the authorities that have to make the SUMP and vertical integration

The 'standard' authority for an urban mobility plan is the municipal authority. A mobility plan can also be made for a more localized area (neighbourhood, periphery) as well as for larger areas (intermunicipal).

2.9.7 National support measures

There is a short guidance available from Service Public de Wallonia. Weblink: http://mobilite.wallonie.be/opencms/opencms/fr/planification_realisations/pcm/.

Subsidy is possible for the development and implementation of municipal mobility plans and for mobility and school travel plans (Arrêté du Gouvernement wallon relatif au financement de l'élaboration de plans communaux de mobilité et de la mise en oeuvre de plans communaux de mobilité et de plans de déplacements scolaires, 2004)

2.9.8 Contents

A mobility plan must according to the decreet contain:

› A diagnosis of mobility in the urban area, including an accessibility map for different modes of transportation throughout the country and an overview of issues and major malfunctions.

› Goals to achieve in terms of movement of people and goods in terms of accessibility, for each mode of travel, and priorities to ensure such a mapped representation of the projected situation in the medium and long terms.

› Measures to meet the objectives in the urban area that requires coordination between municipalities, especially on road safety, the development of a public transport network structure, prioritization and categorization of the road network, the completion of a cycle path network and improving the quality of life.

› Recommendations on land considered to limit the overall volume of travel and alignment of mobility patterns to develop new activities with accessibility profiles defined on the map.

2.9.9 Procedures

The municipality decides to draft a mobility plan and proposes an accompanying participation process.

The municipality approves the provisional mobility plan and the participation process.

For each municipal mobility plan a multidisciplinary "monitoring committee" is created. This committee is responsible for support in the development of municipal plans, opinion on the draft plans and approval of the plan.

After approval of the committee the municipality approves the mobility plan

2.9.10 List of cities

Table 12 Cities and SUMPs

Name of city or urban area	Inhabitants SUMP area	Mandatory SUMP	Voluntary SUMP	Stimulated SUMP	Comments
Gewest Brussels	1003562	yes (municipal plans)	yes (Iris2 plan)		IRIS 2 plan for the Gewest. 19 Municipal Mobility plans have to fit in Iris 2 plan
Antwerp	462098			yes	Some requirements mandatory/some optional. Mentioned in guidelines or in decreet
Ghent	232248			yes	Some requirements mandatory /some optional mentioned in guidelines or in decreet
Bruges	117604			yes	Some requirements mandatory/some optional mentioned in guidelines or in decreet
Charleroi	203599			yes	Under revision
Liège	361767			yes	not up to date PLAN COMMUNAL DE MOBILITE DE LIEGE, 2004
Namur	107237			yes	Plan communal de Mobilité de Namur 2008

Source: OECD EU data

In 2012 180 of 262 Wallonian municipalities adopted the 'Plan Communal Mobilité' approach.

2.10 Greece

2.10.1 National legal basis

SUMPs are not mandatory to prepare for any urban or regional authority in Greece.

Within Greece only Greater Athens and Thessaloniki are developing integrated urban transport plans containing several SUMP elements. Other cities above 100.000 inhabitants don't have an urban transport plan which can be qualified as a SUMP.

Greater Athens

For the metropolitan area of Athens, the "Organisation of Athens" planning authority is confronted with the preparation of the Athens master plan for the metropolitan area of the capital. Between others this master plan includes also transport related measures. However, this plan is more focused on the infrastructure planning aspects and the process of reaching to it is not according to the SUMP procedural requirements.

The central municipality of the metropolitan area (municipality of Athens) is currently in the final stages of approving the so called "Athens Strategic Plan for Sustainable Transport and Logistics" which deals with many of the topics prerequisite for a SUMP.

Thessaloniki

For the metropolitan area of Thessaloniki a SUMP is currently being prepared by the S.A.S.Th. (Thessaloniki's Integrated Transport Authority) following the guidelines provided by the Rupprecht report. This is the first attempt, in Greece, to prepare a SUMP according to international standards.

Other cities

Other cities with more than 100.000 inh. (Patras, Heraklion, Larissa): No SUMP.

2.10.2 Goal and objective

Athens, master plan:

› Enhancement of the accessibility of all internal areas of Athens Conurbation and Periphery of Attica, by increasing public transport connectivity, improving interoperability among all transport means and further improvement of the Public Transport System.

› Promoting sustainable mobility, enhancing public transport and creating better conditions for pedestrians and bike users.

› Upgrading of the Athens Greater Area passenger and freight transport infrastructure and facilities.

- Integration of Athens Greater Area within the Trans-European Transport Networks.

2.10.3 Ambition level

Target achievement in past plans

Not available.

Target level in current plans

Athens, Master Plan: Increase of the Public Transport modal share, from nearly 40% (currently) up to 50%.

Thessaloniki : Info N/A.

Barriers for using SUMPs

- No national stimulation (financial or other) of SUMP development.
- No guidelines or information/experience available at municipalities for the need to create SUMPs.
- No relevant legislation. There is only legislation that makes (overall) strategic planning at a municipal level mandatory.
- The dispersion of responsibility over relevant issues promotes the creation of incremental plans.

2.10.4 Procedures

Governance: responsibilities and resources

No national incentives applicable in Greece. The only incentive given is the requirement of the Jessica initiative (Joint European Support for Sustainable Investment in City Areas) to create "Integrated plans for sustainable urban development" for eligibility of projects for funding. Those plans could include some of the SUMP requirements but are not meant to substitute the SUMPs overall.

Interdepartmental consultation and coordination[7]

Athens Master Plan: Yes.
Thessaloniki: Limited.

Coordination between different levels of administration[8]

Athens Master Plan: Yes

Thessaloniki: Limited.

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[7] Horizontal, within the city level
[8] Vertical, between government levels

Participatory approach
Athens Master Plan: Info N/A
Thessaloniki: Info N/A

Implementation plan[9], time table and budget plan
Athens Master Plan: Info N/A
Thessaloniki: Info N/A

Monitoring, review and reporting
Athens Master Plan: Info N/A
Thessaloniki: Info N/A

2.10.5 Contents

Long term strategy
Athens Master Plan : Yes
Thessaloniki : Yes

Status analysis and baseline

Performance indicators

Specific objectives and targets

Motorised individual transport
Athens Master Plan : Yes
Thessaloniki : Yes

Public transport
Athens Master Plan : Yes
Thessaloniki : Yes

Walking and cycling
Athens Master plan: Yes
Thessaloniki :

Urban freight logistics
Athens Master Plan : Yes
Thessaloniki : No

Integration of modes
Athens Master Plan : Partly
Thessaloniki : Yes

Mobility management
Athens Master Plan : No
Thessaloniki :

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[9] Whether detailed and rolling or not

2.10.6 Specific measures

Integration with land use planning
Athens Master Plan : Yes
Thessaloniki : No

Access restriction schemes:
Athens Master Plan : Yes
Thessaloniki : Yes

Public procurement of clean technology
Athens Master Plan : No
Thessaloniki : Yes

2.10.7 List of cities

Table 13 Cities and SUMPs

Name of city or urban area	Inhabitants core city	Inhabitants SUMP area	Mandatory SUMP	Voluntary SUMP	Stimulated SUMP	Comments
Greater Athens	799.686	3.083.703		partly		Athens, Piraeus, Peristerie, Kallithea
Thessaloniki		310.847		partly		
Patras		179.214		no		
Heraklion		142.696		no		
Larissa		137.619		no		

Source :OECD EU data (Sumparea), Eurostat (Athens city)

2.11 Ireland

2.11.1 National legal basis

With the Dublin Transport Authority Act 2008, a statutory body (The National Transport Authority) was established by the Minister for Transport. One of its obligations is the preparation of a Strategic Transport Plan for the Greater Dublin Area (GDA), which comprises the city and county of Dublin, and counties Kildare, Meath and Wicklow. In the GDA lives almost 40% of the Irish population.

Other cities

For other cities a SUMP is not mandatory to prepare for any urban or regional authority in Ireland. Relevant are the regional authorities as a statutory public body with responsibility for strategic planning in the region, including transport. The regional authorities also make recommendations on government investment programmes, monitor and review the operation of the National Development Plan.

The national transport policy for the period 2009-2020 is laid down in SmarterTravel: A Sustainable Transport Future. SUMP's or local transport plans are – besides many actions focussing on the local level - not specifically mentioned.

2.11.2 Goal and objective

The national transport policy 'Smarter Travel' includes a number of key goals and national targets for 2020, including a reduction in Green House Gas emissions from the transport sector from 2005 levels, a reduction in the share of journeys to work by car form current 65% to 45% of total journeys to work, and a 10% share of all journeys to be by cycling.

The targets set out in Smarter Travel are met by the Transport Plan for the GDA.

2.11.3 Ambition level

Target achievement in past plans

N/A

Target level in current plans

National targets are met by the Transport Plans for the GDA.

Other cities

N/A.

Barriers for using SUMPs

Greater Dublin area

Mandatory.

Other cities

- Lack of funds and human resources.
- Lack of awareness of SUMP, as well as the benefits (and evidence hereof) that cities may derive from SUMP.
- Lack of felt urgency to develop a SUMP.

2.11.4 Procedures

Governance: responsibilities and resources

Greater Dublin Area
The strategy needs ministerial approval. The strategy represents the overall strategic approach. Legislation requires the preparation of six- year implementation plans addressing the delivery of the elements of the strategy to the required level of detail for the period covered by each plan. Legislation also requires a cycle of six annual reviews of the strategy.

The strategy has been prepared following the publication of the Regional Planning guidelines (RPGs) for the Greater Dublin Area and the relevant legislation requires that the strategy and the RPGs are aligned in their objectives and intent. The RPGs in turn were prepared to be consistent with the National Spatial Strategy (NSS), published by the Government in 2002. The NSS provides the policy framework for all regional plans, including this strategy and the RPGs.

Other cities
N/A.

Interdepartmental consultation and coordination[10]

Greater Dublin Area

Coordination between different levels of administration[11]
Yes.

Participatory approach

Greater Dublin Area
A stakeholder and public consultation has been carried out at key stages during the development of the strategy i.e.

› Formulation of the strategy vision and objectives and identification of key issues that the strategy should address.

› Identification of appropriate measures.

Other cities
Not applicable.

Implementation plan[12], time table and budget plan

[10] Horizontal, within the city level.
[11] Vertical between government levels.
[12] Whether detailed and rolling or not.

Greater Dublin Area
According to legislation a six-year implementation plan will be prepared to follow up on the strategy. It should address the delivery of the elements of the strategy to the required level of detail for the period covered. It is not in force yet.

Other cities
Not applicable.

Monitoring, review and reporting
Details of the monitoring arrangements will be established as part of the short term implementation plan (to be developed).

Other cities
Not applicable.

2.11.5 Contents (Greater Dublin Area)

Long term strategy
Yes.

Status analysis and baseline
Yes.

Performance indicators
To be developed in the implementation plans, will be in line with the national targets.

Specific objectives and targets

Motorised individual transport
Included.

Public transport
Included.

Walking and cycling
Included.

Urban freight logistics
Included.

Integration of modes
Included.

Mobility management
Included.

2.11.6 Specific measures

Integration with land use planning

Included.

Access restriction schemes

Yes, parking policy, proposal for road user charging.

Public procurement of clean technology

Only general: The authority will promote the use of low emission freight vehicles, including electric vehicles, throughout the Greater Dublin Region and specifically in the urban areas.

2.11.7 List of cities

Table 14 Cities and SUMPs

Name of city or urban area	Inhabitants core city 2011	Inhabitants SUMP area 2011	Mandatory SUMP	Voluntary SUMP	Comments
Greater Dublin	527.612	1.681.180	yes		Greater Dublin Area Draft Transport Strategy 2011-2030 (Dublin city and county of Dublin, and counties Kildare, Meathand, Wicklow)
Cork	119.230	119.230		no	Several sustainable transport measures, actions and plans, not a SUMP as one document

Source: Central Statistics Office, Skehard Road, Cork, Ireland

Dublin

The Strategic Transport Plan for the Greater Dublin Area (city and county of Dublin, Kildare, Meath and Wicklow) for the period up to 2030 (developed by The National Transport Authority) is set out in full in this document. The strategy's role is to establish appropriate policies and transport measures that will support the Greater Dublin Area in meeting its potential, as a competitive, sustainable city-region with a good quality of life for all.

The strategy is the top level in a hierarchy of transport plans for the GDA that will include an implementation plan and strategic traffic management plan

The strategy vision and objectives and the preparation of the strategy itself were guided and informed by extensive stakeholder and public consultation. The strategy preparation was also informed by the outcome of the appraisal of the merits of various potential measures and alternative strategy options that were developed and assessed.

Source: Greater Dublin Area Draft Transport Strategy, 2011-2030, 2030 vision.

Cork
Cork has not prepared a plan that can be said to be similar to a SUMP. Cork City Council, Traffic Division though has been involved for many years in various trans-national projects, e.g. INTERREG, R&D FRAMEWORK PROGRAMME (FP5,6,7) and INTELLIGENT ENERGY EUROPE instruments. Several services or projects like “Black Ash Park and Ride”, “Park By Phone”, “Bio-Fuelled Vehicles” or “Local Community Bus on Demand” have been strongly supported in that way. Cork City Council is also a member of two networks of European cities and regions.

2.12 Poland

2.12.1 National legal basis
A SUMP is not mandatory to prepare for urban or regional authorities in Poland.

Since the 1990s many Polish cities started preparing urban transport strategies. A legal obligation to do so is the Act on Public Transport (of December 2010) which came into force only in March 2011. The Act, published by the Ministry of Transport, lays down rules on the organisation and operation of public transport carried out on Polish territory. It foresees the development of so called “plan zrównoważonego rozwoju publicznego transportu zbiorowego”, PZRTP (plan for sustainable public transport development) for cities with more than 50,000 inhabitants.

Corresponding plans for regional public transport and for long-distance public transport are to be developed by Voivodships (Polish provinces) and the Ministry of Transport. Each plan should specify, among others, the network in which it is planned to operate a public transport, the assessment and prediction of transport needs and the anticipated funding of transport services, following the principles of sustainability.

Requirements in the planning process are public consultation, assessment and forecast of transport needs and costs. The plan should consist of a text and a graphical parts, and includes a justification. The Chamber of Urban Transport is the supporting body at local level and is publishing developer’s guidelines.

As the plan is aimed as a tool to organise public transport (other modes are not considered), it is not qualified as a full SUMP but has the potential to do so if cities would consider the integration with other modes (including freight, walking and cycling) on a voluntary basis.

Out of 40 cities above 100.000 inh. 24 are assessed to have a mobility plan, which fulfils most of the SUMP characteristics.

2.12.2 Goal and objective

The new national guidelines include the following issues of specific relevance for a SUMP:

- The promotion of cycling as ecological mode of transport.
- The increase of traffic safety.
- The promotion of solutions to reduce truck traffic (not obligatory goal) ("Polityka transportowa Państwa na lata 2006-2025" – National Transport Policy 2006-2025).
- Cohesion between urban spatial development and urban traffic planning
- Participatory approach to stakeholder and public consultations as well as cooperation and participation from different sectors in the municipality itself and use of soft measures (mobility management) and hard infrastructure measures.
- Planning for all transport modes: pedestrians, bicyclists, individual passenger traffic, local public transport by bus/BRT/light rail, freight transport, parking and transport used by disabled persons.
- Promotion of technical, organizational and preventive solutions for the improvement of road traffic.

2.12.3 Ambition level

Target achievement in past plans

Info N/A.

Target level in current plans

A focus on achieving particular indicators regarding transport behaviours of citizens and quality of transport.

2.12.4 Procedures

Governance: responsibilities and resources

A SUMP is not mandatory to prepare for urban or regional authorities in Poland.

EU funding is often a driver for developing a SUMP.

Interdepartmental consultation and coordination13

Cooperation and participation from different sectors in the municipality required/recommended

Coordination between different levels of administration14

The urban plans for transport are usually approved by the city council. The development and implementation of plans involves different authorities at the different levels of government and in neighbouring urban areas.

Participatory approach

Participatory approach with stakeholder and public consultations required.

Cooperation involves also bodies with responsibility for transport services.

Implementation plan[15], time table and budget plan

Info N/A.

Monitoring, review and reporting

There are no rules for monitoring the implementation or reporting.

2.12.5 Contents

Long term strategy

Yes.

Status analysis and baseline

Forecast of transport needs and costs required.

Performance indicators

Info N/A.

Specific objectives and targets

Info N/A.

Motorised individual transport

Recommended.

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[13] Horizontal, within the city level.
[14] Vertical, between government levels.
[15] Whether detailed and rolling or not.

Public transport
Mandatory.

Walking and cycling
Recommended.

Urban freight logistics
Recommended.

Integration of modes
Recommended.

Mobility management
Recommended.

2.12.6 Specific measures

Integration with land use planning
Recommended.

Access restriction schemes
Recommended (parking).

Public procurement of clean technology
Info N/A.

Table 15 Cities and SUMPs

No	**Name of city or urban area**	Inhabitants core city	Inhabitants SUMP area	Voluntary SUMP	Comments
1	Białystok	293.920	293.920		
2	Bielsko-Biała	175.976	175.976		
3	Bydgoszcz-Torun Metropolitan Area (BTOM)	351.098	557.855	Yes	The City does not have any plan that is similar to the SUMP, but public transport issues are included in the plan for Bydgoszcz-Torun Metropolitan Area (BTOM) cities : Bydgoszcz, Torun
4	Częstochowa	243.807		Yes	
5	Elblag	126.915	123 977	Yes	
6	Gdansk	456.813		Yes	

No	**Name of city or urban area**	Inhabitants core city	Inhabitants SUMP area	Voluntary SUMP	Comments
7	Gdynia	254.742	247.324	Yes	
8	Górnośląski Związek Metropolitalny		1.982.573		Common plan for Communal Transport Association for Upper Silesia Industrial Area (KZK GOP) Cities : Bytom, Chorzów, Gliwice, Katowice, Myslowice, Siemianowice Slaskie, Swietochlowice, Tychy, Zabrze, Dabrowa Górnicza, Sosnowiec, Jaworzno, Ruda Slaska, Piekary Slaskie.
9	Gorzów Wielkopolski	124.390	124.390	Yes	
10	Kalisz	108.346	108.346	Yes	
11	Kielce			Yes	
12	Koszalin	108.857	108.857	Yes	
13	Kraków	757.330	757.330	Yes	
14	Legnica	105435			
15	Lodz	759.968	759.968	Yes	
16	Lublin	352.749	352.749	Yes	
17	Olsztyn	172.790	172.790	Yes	
18	Opole	127825		Yes	
19	Plock	126.485	126.485		
20	Poznan	567.621	567.621	Yes	
21	Radom	226.752	226.752		
22	Rybnik	139.051	139.051		Not included in KZK GOP despite that Rybnik is one of the cities in Upper Silesia Industrial Area
23	Rzeszów	176.315	176.315	Yes	
24	Słupsk	97.723	97.723	Yes	

No	Name of city or urban area	Inhabitants core city	Inhabitants SUMP area	Voluntary SUMP	Comments
25	Szczecin	401.588	401.588	Yes	
26	Tarnow	116.238	116.238		
27	Walbrzych	122.611	122.611	Yes	
28	Warszawa	1.705.896	1.705.896	Yes	
29	Wloclawek	118.005	118.005		
30	Wroclaw	635.145	635.145	Yes	
31	Zielona Gora	118.127	118.127		

Source: OECD EU data

1. Bialystok
2. Bielsko-Biala
3. Bydgoszcz and Torun have in 2011 prepared a plan titled „Zintegrowany program rozwoju transportu publicznego dla aglomeracji bydgosko – torunskiej, ze szczególnym uwzględnieniem bydgosko - toruńskiego obszaru metropolitarnego na lata 2010-2015" (Integrated Public Transport Development Programme for Bydgoszcz –Torun for 2010-2015) agglomeration which has many similarities with the SUMP. Bydgoszcz, Torun and other neighbouring municipalities constitute Bydgoszcz-Torun Metropolitan Area (Bydgosko Toruński Obszar Metropolitalny – BTOM). BTOM has approximately 879,000 inhabitants. The plan is an essential document for obtaining EU funding.
   Torun City Council has in 2009 prepared a plan titled "Zintegrowany plan rozwoju transportu publicznego dla Torunia" (Public Transport Integrated Development Plan for Torun) which has many similarities with a SUMP. Torun has about 199,700 inhabitants. The plan is limited to the area of the City of Torun. See also information for Bydgoszcz regarding Integrated Public Transport Development Programme for Bydgoszcz –Torun for 2010-2015.
4. Częstochowa City Council has in 2009 prepared a plan titled „Zintegrowany Plan Rozwoju Transportu Publicznego dla miasta Czestochowy na lata 2009 – 2015" (Integrated Public Transport Development Plan for Czestochowa city for 2009-2015) that can be said to be similar to a SUMP. The City of Czestochowa has approximately 235,800 inhabitants. One of the incentives of the development of the plan is the possibility of acquiring EU funding. The plan is based on the assumptions of the Priority VII of the Regional Operational Program for Silesia Region, which aims to

"…form an efficient and integrated transport system. One of the specific objectives of this goal is the implementation of priority: (…) increasing share of public transport in the movement of persons."

5. In 2010 Elblag City Council prepared „Plan zrównoważonego rozwoju publicznego transportu zbiorowego dla gminy Miasto Elblag na lata 2013-2020" (Integrated Public Transport Development Plan for Elblag city gmina for 2013-2020) that can be said to be similar to a SUMP. The City of Elbląg has approximately 248,600 inhabitants. The development of the plan is caused by the fact that European public support and co-financing in the field of transport depend on the existence of such a plan.

6. Gdansk City Council prepared „Zintegrowany Plan Rozwoju Transportu Publicznego na lata 2004 – 2015" (Integrated Public Transport Development Plan for 2004-2015) which has many similarities with a SUMP. The City of Gdansk has approximately 416,500 inhabitants. Similar plans have been already prepared by the neighbouring cities - Gdynia and Sopot (Gdansk, Sopot and Gdynia are a three cities agglomeration) in order to provide information to help apply for EU funding.

7. Gdynia City Council has in 2003 prepared „Zintegrowany plan rozwoju transportu publicznego w Gdyni w latach 2004-2013" (Integrated Public Transport Development Plan in Gdynia for 2004-2013) that can be said to be similar to a SUMP. The City of Gdynia has approximately 248,600 inhabitants. Implementation of the integrated public transport system in Gdynia is to be co-financed by EU funding.

8. In 2008 the Upper Silesian Industrial Area (GOP) developed a plan titled "The strategy of KZK GOP activities". This document is the strategy of activities of the main organizer of municipal passenger transport in the Upper Silesian Conurbation - KZK GOP – thus it focuses on the undertakings within the competencies of the Communal Transport Association GOP. This applies mainly to the implementation of solutions in the field of traffic engineering. For that reason, those undertakings will be initiated and supported by the Communal Transport Association. This should simplify the implementation of such undertakings, as well as increase the chances for obtaining EU funding for their execution.

In 2005 EKO-LAND CONSULTING company prepared a plan for Dabrowa Gornicza titled „Zintegrowany Plan Rozwoju Transportu Publicznego dla miast Dabrowa Gornicza, Sosnowiec i Bedzin" (Integrated Public Transport Development Plan for Dabrowa Gornicza, Sosnowiec and Bedzin cities). Dabrowa Gornicza has approximately 125,000 inhabitants and Sosnowiec has approximately 214,500 inhabitants. According to the document, one of the reasons for the preparation of the plan is applying for EU funding.

Gliwice: *University of Economics in Katowice* prepared in 2010 a plan titled "Strategia rozwoju zbiorowego transportu miejskiego w Gliwicach. Identyfikacja i ocena opcji strategicznych" (Development strategy for city transport in Gliwice – identification and assessment of strategic options). The City of Gliwice has approximately 183,000 inhabitants. The City developed a strong cooperation with other communes in the framework of Komunikacyjny Związek Komunalny Górnośląskiego Okręgu Przemysłowego (Communal Transport Association for Upper Silesia Industrial Area) – KPZ GOP.

9. In 2004 Gorzow Wielkopolski City Council prepared a plan titled “Zintegrowany Plan Rozowju transportu publicznego dla Gorzowa Wielkopolskiego na lata 2004-2013” (Integrated Public Transport Development Plan for Gorzow Wielkopolski for 2004-2013). Gorzow Wielkopolski has 124,600 inhabitants. The plan is needed to increase the chances of obtaining EU funding.

10. In 2008 Kalisz City Council prepared a plan titled “Strategia Rozwoju Transportu w Kaliszu na lata 2008 – 2020 wraz z Programem Rozwoju Transportu w Kaliszu na lata 2008 – 2013” (Strategy for Transport Development in Kalisz for 2008-2020 together with a Transport Development Programme in Kalisz for 2008-2013) which has many similarities with a SUMP. Kielce has about 108,000 inhabitants. The plan takes into account the City of Kalisz and neighbouring communes which are linked to the City through the transport network and a system of urban communication. Due to an important economic and social role in the region, neighbourhood cities Ostrow Wielkopolski, Nowe Skalmierzyce and Pleszew are also analysed in the plan.

11. In 2008 Kielce City Council prepared a plan titled “Zintegrowany plan rozwoju transportu publicznego dla Kielc” (Integrated Public Transport Development Plan for Kielce) which has many similarities with the SUMP. Kielce has about 201,400 inhabitants. The Plan contains a long-term program for transport development for the years 2014-2025. There is a subject of European Union VOYAGER which identifies so called mega-trends having influence on the status of public transport. These trends refer to the conditions and solutions concerning the system of public transport in Kielce.

12. DHV POLSKA Sp. z o.o. prepared a plan for thr City of Koszalin titled „Zintegrowany Plan Rozwoju Transportu Publicznego Miasta Koszalina na lata 2006-2013” (Integrated Public Transport Development Plan for Koszalin city for 2006-2013). Koszalin has 109,200 inhabitants. The developed document provides basis for preparation analyzes of the effectiveness of individual projects that make up the integrated transport system in the city.

13. Krakow City Council has prepared in 2010 a plan titled “Zintegrowany Plan Rozwoju Transportu Publicznego w Krakowie na lata 2007- 2013” (Integrated Public Transport Development Plan for Krakow for 2007-2013), which has many similarities with a SUMP. Krakow has about 1 450 000 inhabitants. The Plan is a continuation of sustainable urban transport policy conducted by the City of Krakow. This policy has started in 1993 when the first resolution on the transport policy for metropolitan area was accepted. Declared policy is conducted by the City through available legal tools and management of development of the transport system. One of the important activities is investment policy financed by own resources and funds of European Union.

14. –

15. Lodz City Council has prepared “Zintegrowany Plan Rozwoju Transportu Publicznego Aglomeracji Łódzkiej fo the years 2004-2008” (Integrated Public Transport Development Plan for Lodz agglomeration for 2004-2008. The Plan is prepared as synthesis of past planistic efforts of the City of Lodz and Cities of Agglomeration: Pabianice, Zgierz, Ozorkiow and Communes: Zgierz, Ksawerów, Konstantynow Lodzki. The strategical aim of the plan is to determine directions of efforts for the years 2004-2008 and the following years to achieve assumptions of development policy for the Agglomeration. Short-term goal refers to the preparation of the set of development projects, the axis of which is Lodzki Tramwaj Regionalny (ŁTR) – Lodz Regional Tram.

16. In 2012 Public Transport Consulting prepared a plan for Lublin titled „Plan zrównoważonego rozwoju publicznego transportu zbiorowego dla Gminy Lublin i gmin sąsiednich” (Public Transport Sustainable Development Plan for Lublin gmina and neighbourhood gminas) which has many similarities with a SUMP. The City of Lublin has approximately 331,200 inhabitants. The plan is an important document for the increase of chances to obtain EU funding.

17. Olsztyn City Council in cooperation with the Municipal Transport Office (Zakład Komunikacji Miejskiej) prepared “Plan Zrównoważonego Rozwoju Publicznego Transportu Zbiorowego dla Miasta Olsztyna na lata 2012-2020” – Sustainable Public Transport Development Plan for Olsztyn city for 2012-2020 – (working version from 17.09.2012 available on-line: http://www.zkm.olsztyn.eu/pliki/NO_2012_-_plan_transportowy_-_wersja_z_2012-09-17.pdf). The plan includes the area of the City of Olsztyn and neighbouring communes. Preparation of the plan involves participatory approach.

18. Opole City Council prepared “Program rozwju zintegrowanego systemu transportu miejskiego w Opolu –zarządzanie ruchliwością” (Integrated Public Transport Development Plan for Opole city – mobility management). Opole has approximately 122,100 inhabitants. This project is implemented through the CENTRAL EUROPE

programme co-financed by the ERDF. The development plan for Opole contains the area of the city. There is a need to appoint a special unit which manages the transport system through the use of EU funds.

19. Plock
20. Poznan City Council prepared a document titled "Plan Rozwoju Transportu Publicznego Aglomeracji Poznańskiej na lata 2014-2020 z prognozą zmian do 2030 roku" (Public Transport Development Plan for Poznan agglomeration for 2014-2020 and prognosis up to 2030), which has many similarities to the SUMP. The purpose of the Plan was to enable preparation of proposals for Structural Funds within the programming period 2007 – 2013.
21. Radom
22. Rybnik
23. Rzeszow City Council has in 2011 prepared a plan titled „Zintegrowany Plan Rozwoju Transportu Publicznego Rzeszowa na lata 2010-2015" (Public Transport Integrated Development Plan for Rzeszow for 2010-2015), which has many similarities with the SUMP. Rzeszów has approximately 181,800 inhabitants. The Plan is an important document to increase chances to obtain EU funding (Operational Program Eastern Poland Development).
24. Slupsk City Council has in 2008 prepared a plan titled „Zintegrowany Plan Rozwoju Transportu Publicznego Miasta Slupska 2008-2015" (Public Transport Integrated Development Plan for Slupsk city for 2008-2015), which has many similarities with the SUMP. Slupsk has about 96,000 inhabitants (2011). Implementation of the plan is co-financed by the EU funds (priority axis: urban and metropolitan functions).
25. In 2005 Szczecin City Council prepared a document titled "Zintegrowany plan rozwoju transportu publicznego w Szczecinie w latach 2007-2015" (Public Transport Integrated Development Plan in Szczecin for 2007-2015), which has many similarities to the SUMP. Szczecin Metropolitan Area has 750,000 inhabitants and the plan is prepared for that area. The new transport plan gives the possibility of obtaining EU funds for financing investments in transport projects as well as points to the relevant legal, organizational, financial improvements for functioning of the transport in the City.

    In the field of public transport, special attention will be paid to the development of the railway network (Priority Axis VII).
26. Tarnów
27. In 2005 Walbrzych City Council prepared "Zintegrowany Plan Rozwoju Transportu Publicznego dla Wałbrzycha na lata 2005 – 2013" (Integrated Public Transport Development Plan for Walbrzych for 2005-2013). Walbrzych has approximately 119,955 inhabitants. In addition, the Plan is the basis for applying for resources from the Structural Funds for transport and communication infrastructure. The main objective of the plan is to enable the preparation of the proposal to the Regional

Operational Programme financed from the EU Structural Funds in Action: 1.1 (Modernization and development of the regional transport system), Sub-action: 1.1.2. (Infrastructure public transport). The Agglomeration of Walbrzych includes other cities: Szczawno Zdroj and Boguszow-Gorce.

28. Warsaw City Council has in 2009 prepared a plan titled „Strategia zrównoważonego rozwoju systemu transportowego Warszawy do 2015 roku i na lata kolejne" (Startegy for Sustainable Warsaw Transport System Development up to 2015 and for following years), which has many similarities with the SUMP. Agglomeration of Warsaw has approximately 1,702 ,000 inhabitants. The plan is an important document as far as applying for EU funds. The strategy was approved by the City Council of the City of Warsaw .
29. Wloclawek
30. Wroclaw prepared "Zintegrowany System Rozwoju Transportu Szynowego w Aglomeracji i we Wrocławiu – etap I" (Integrated Rail Transport Development for Wroclaw and Wroclaw agglomeration stage I). Wroclaw has approximately 631 377 inhabitants. The project is part of the priority axis VII: Environmentally Friendly Transportation in the framework of the EU Operational Programme Infrastructure and Environment.
31. Zielona Góra

2.13 The Netherlands

2.13.1 National legal basis

The national traffic and transport planning act, passed in 1998 (Planwet Verkeer en Vervoer) requires that national objectives are reflected in regional and local transport planning /policy.

Municipalities are obliged to have an urban development plan (structuurvisie). SUMPs though are not required by law. However, Article 8 of the Planwet states that municipalities are responsible for an integrated local transport policy and it's implementation. Article 9 of the national traffic and transport planning act states that the "provincial executive council may impose (on the municipality) the obligation to establish a municipal traffic and transport plan.

Many municipalities (cities) choose to do this by having a plan – the Municipal Traffic and Transport Plan (Gemeentelijk Verkeer- en Vervoerplan - GVVP) – that in many cases has the characteristics of an SUMP.

The twelve provincial governments and seven regional governments (urban areas) are by law obliged to develop a provincial traffic and transport plan (PVVP) or a regional traffic and transport plan (RVVP).

The Netherlands has the following administrative levels regarding transport and mobility planning:

- National
- Provinces
- City regions (= urban areas): Stadsregio Amsterdam, Stadsregio Rotterdam, Stadsgewest Haaglanden, Bestuur Regio Utrecht (BRU), Samenwerkingsverband Regio Eindhoven Stadsregio Arnhem Nijmegen, Regio Twente, Parkstad Limburg
- Municipalities

Depending on the area legally covered by the existing urban transport plans we distinguish:

- 7 legally defined city regions (= stadsregio's). These consist of one or two larger municipalities plus the surrounding municipalities. Most of the city regions have RVVP's (= regional traffic and transport plan) with the characteristics of a SUMP. The municipalities of a city region often have their own GVVP (Municipal Traffic and Transport Plan) which has to be in line with the RVVP.
- Municipalities with more then 100.000 inhabitants are not part of a legally defined city region. They often have an own GVVP (Municipal Traffic and Transport Plan).

2.13.2 Goal and objective

Municipalities are responsible for an integrated local transport policy and its implementation.

General goals and objectives are mostly the realisation of an efficient, sustainable and safe transport system, which contribute to the social and economic development of the city.

2.13.3 Ambition level

Target achievement in past plans

Often no targets were defined. New or updated plans often start with a review of projects realized as well as past developments regarding aspects like modal split, number of trips per mode etc.

Target level in current plans

In current GVVP's[16] a vision of future urban mobility and accompanying objectives is defined. There are differences between cities in the way these objectives are made SMART and Targets are defined. In general GVVP's don't contain a comprehensive indicator set and accompanying targets on all relevant SUMP topics, sometimes only on one or a few topics, like traffic safety.

Barriers for using SUMPs

- Lack of awareness of SUMP, as well as the benefits (and evidence hereof) that cities may derive from SUMP.
- Lack of resources for example when it comes to monitoring.
- Lack of political will, sense of urgency.
- No national guidelines.

2.13.4 Procedures

Governance: responsibilities and resources

Municipal Traffic and Transport Plans must be coherent with the national and provincial/regional transport policies/plans as well as with the urban development plan.

There are no support measures in the form of subsidies, or national guidelines. There is an extensive exchange of best practices for example through KPVV (Dutch knowledge Centre for Traffic and Transport). Having a municipal traffic and transport plan is also not an obligatory condition for infrastructure co-financing.

Interdepartmental consultation and coordination[17]

In most of the cases.

Coordination between different levels of administration18

Municipal traffic and transport plans must be coherent with the national and provincial/regional transport policies/plans as well as with the urban development plan

[16] Source: SUMP What's in it for me?, Kennisplatform Verkeer en Vervoer, 2012
[17] Horizontal, within the city level.
[18] Vertical, between government levels.

Participatory approach

Stakeholders and citizen participation is common practice. The typical procedure looks like this:

- The municipality decides to draft a mobility plan and proposes an accompanying participation process.
- The municipality approves the provisional mobility plan and the participation process.
- Taking into account the results of the public consultation a revised mobility plan is made.
- The municipality approves the final mobility plan

Implementation plan19, time table and budget plan

Most municipalities have flexible and dynamic implementation plans. Each year priorities regarding the projects to implement are set. The GVVP is the guiding document for this.

Monitoring, review and reporting

In most cases a monitoring program is not included.

2.13.5 Contents

Long term strategy

Yes, included.

Status analysis and baseline

This is done in most of the cases.

Performance indicators

In general most GVVP's don't contain a comprehensive indicator set and accompanying targets on all relevant SUMP topics, sometimes only on one or a few topics, like traffic safety.

Specific objectives and targets

No.

Motorised individual transport

Included.

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[19] Whether detailed and rolling or not.

Public transport
Included.

Walking and cycling
Included.

Urban freight logistics
Often included.

Integration of modes
Often included.

Mobility management
Often included.

2.13.6 Specific measures

Integration with land use planning
Often included.

Access restriction schemes
Yes, parking policies, car free zones, larger cities: low emission zones.

Public procurement of clean technology
No.

2.13.7 List of cities

Table 16 Cities and SUMPs

Name of city or urban area	Inhabitants core city 1-1-2013	Inhabitants SUMP area 1-1-2013	Mandatory SUMP	Voluntary SUMP	Cities	Comments
Stadsregio Amsterdam	799.278	1.450.668	yes		Amsterdam, Zaanstad, , Haarlemmermeer, Amstelveen, Purmerend, Aalsmeer, Edam-Volendam, Uithoorn, Diemen, Waterland, Wormerland, Ouder-Amstel, Landsmeer, Oostzaan, Beemster, Zeevang	Regionaal Verkeer-en-Vervoerplan (RVVP), 2005
Stadsregio Rotterdam	616.294	1.218.656	yes	yes	Albrandswaard, Barendrecht, Bernisse, Brielle, Capelle aan den IJssel, Hellevoetsluis, Krimpen aan den IJssel, Lansingerland, Maassluis,	RVVP 2003-2020

Name of city or urban area	Inhabitants core city 1-1-2013	Inhabitants SUMP area 1-1-2013	Mandatory SUMP	Voluntary SUMP	Cities	Comments
					Ridderkerk, Rotterdam, Schiedam, Spijkenisse, Vlaardingen, Westvoorne	
Stadsgewest Haaglanden	505.856	1.045.064	yes		Den Haag, Zoetermeer, Westland, Delft, Leidschendam-Voorburg, Pijnacker-Nootdorp, Rijswijk (ZH.), Wassenaar, Midden-Delfland	Regionale Nota Mobiliteit Haaglanden 2005-2020, 2005 Haagse Nota Mobiliteit. Bewust kiezen slim organiseren (2010-2020, doorkijk 2030), 2010
BRU, Bestuur Regio Utrecht	321.916	666.670	yes		Bunnik, De Bilt, Houten, Stichtse Vecht, Nieuwegein, Utrecht (gemeente), Vianen, IJsselstein, Zeist	RVVP 2005-2015 Gemeentelijk Verkeers- en Vervoerplan 2005 - 2020
Samenwerkingsverband Eindhoven	218.433	745.019	yes		Eindhoven, Asten, Bergeijk, Best, Bladel, Cranendonck, Deurne, Eersel, Geldrop-Mierlo, Gemert-Bakel, Heeze-Leende, Helmond, Laarbeek, Nuenen, Gerwen en Nederwetten, Oirschot, Reusel-De Mierden, Someren, Son en Breugel, Valkenswaard, Veldhoven, Waalre	RVVP 2006 - 2015
Stadsregio Arnhem/Nijmegen	316.209	740.849	yes		Arnhem, Beuningen, Doesburg, Duiven, Groesbeek, Heumen, Lingewaard, Millingen aan de Rijn, Montferland, Mook en Middelaar, Nijmegen, Overbetuwe, Renkum, Rheden, Rijnwaarden, Rozendaal, Ubbergen, Westervoort, Wijchen, Zevenaar	Regionale Nota Mobiliteit Arnhem-Nijmegen 2020, 2006 Nijmegen Duurzaam Bereikbaar, Beleidsnota Mobiliteit Nijmegen 2011-202

Name of city or urban area	Inhabitants core city 1-1-2013	Inhabitants SUMP area 1-1-2013	Mandatory SUMP	Voluntary SUMP	Cities	Comments
Regio Twente	158.639	626.726	yes		Almelo, Borne, Dinkelland, Enschede, Haaksbergen, Hellendoorn, Hengelo (O.), Hof van Twente, Losser, Oldenzaal, Rijssen-Holten, Tubbergen, Twenterand, Wierden	Cities: Almelo, Borne, Dinkelland, Enschede, Haaksbergen, Hellendoorn, Hengelo, Hof van Twente, Losser, Oldenzaal, Rijssen-Holten, Tubbergen, Twenterand, Wierden. Toekomstvisie 2025 (Herijking Ruimtelijke Ontwikkelingsvisie-Binnenstadsvisie en Mobiliteitsvisie) RVVP Regio Twente
Parkstad Limburg	88.747	249.869		yes	Heerlen, Kerkrade, Landgraaf, Nuth, Brunssum, Voerendaal, Simpelveld, Onderbanken	several, not one single document.
Almere	195.213	195.213		yes	Almere	Mobiliteitsplan Almere, Deel I De Hoofdlijnen, 2012
Amersfoort	149.662	149.662		yes	Amersfoort	Yes, Verkeer- en Vervoerplan 2030, in preparation
Apeldoorn	157.315	157.315		no	Apeldoorn	no
Breda	178.140	178.140		no	Breda	Mobiliteitsplan 2006-2012
Dordrecht	118.466	118.466		yes	Dordrecht	Regionaal Mobiliteitsplan Drechtsteden 2011 – 2016 Mobiliteitsplan Dordrecht, 2005
Ede	109.823	109.823		no	Ede	Cuurently working on a new local transport plan
Groningen	195.418	195.418		yes	Groningen	Nota duurzame mobiliteit 2011-2020, 2011
Haarlem	153.093	153.093		no	Haarlem	Haarlems Verkeers- en Vervoerplan, 2002
Leiden	119.800	119.800		yes	Leiden	Leiden, stad in beweging 2005
Maastricht	121.819	121.819		no	Maastricht	
's-Hertogenbosch	142.817	142.817		yes	's-Hertogenbosch	Uitwerkingsplan Koersnota Hoofdinfrastructuur 's-Hertogenbosch, 2009

Name of city or urban area	Inhabitants core city 1-1-2013	Inhabitants SUMP area 1-1-2013	Mandatory SUMP	Voluntary SUMP	Cities	Comments
Tilburg	208.527	208.527		no	Tilburg	no
Zwolle	122.562	122.562		yes	Zwolle	Mobiliteitsvisie oktober 2008
Total	4.998.027	8.716.176				

Source: Centraal Bureau voor de Statistiek, Den Haag/Heerlen

2.14 United Kingdom

England

2.14.1 National legal basis

The legal basis is "The Transport Act 2000, as amended by the Local Transport Act 2008", it requires local transport authorities in England (outside London) to produce and maintain a Local Transport Plan (LTP) covering all of an authority's policies and 'delivery plans' (implementation plans) relating to transport. LTPs can be developed for single counties or regions. Plans of the first LTP generation (LTP1) cover the time from 2001-2006, plans of the second generation cover 2006-2011 (LTP2). Currently, third generation plans (LTP3) are in place. Many of them cover the period 2011-2025 (for strategic outlook element)[20].

2.14.2 Goal and objective

The LTP is a strategy for the development of local, integrated transport, supported by a programme of transport improvements, making reference to sustainability principles and five national key goals for future transport policy and infrastructure:

- Support Economic Growth
- Reduce Carbon Emissions
- Promote Equality of Opportunity
- Contribute to Better Safety, Security and Health
- Improve Quality of Life and a Healthy Natural Environment

[20] Rupprecht, state of the art.

2.14.3 Ambition level

Target achievement in past plans

LTP's had to contain targets which support the five national key goals.

No adequate overview study found yet on the quantitative achievements in past plans.

Target level in current plans

In preparing local transport plans and determining arrangements for monitoring delivery, transport authorities should consider the targets and indicators contained in LAAs and the National Indicator Set. It is open to authorities to set themselves additional indicators and targets. There is no overview of current target levels in LTP3 plans, but in general one can state that the targets are set above the base line results.

Barriers for using SUMPs

With the LTP3 round, England moved from a quite prescriptive and constraining framework, with strongly centralised monitoring and control, to a more flexible set of principles with good practice illustration that provides a plan making framework. This has advantages and disadvantages. The previous, more formalised approach enabled benchmarking and facilitated comparative learning, while also being expensive, bureaucratic and running against devolved responsibilities. The current approach gives more flexibility and responsibility to local authorities, but includes the risk that strategies remain paper exercises that drive little change on the ground.

2.14.4 Procedures

Governance: responsibilities and resources

The local authorities (single or several in the case of joint transport plans) are responsible for drafting, adopting and delivering the local transport plans. The LTPs approved by the local councils have to be submitted to the secretary of state. There is no formal certification any more of LTPs, although it is expected that the local authorities will follow the Guidance on Local Transport Plans (department for transport, 2009).

There are no national or regional resources linked to the ltp's anymore.

For LTP1 and LTP2 there was a link between national performance funding to the quality of local transport plans. This changed and today, for LTP3, transport funding is allocated almost exclusively on a per capita basis, and there are no penalties for weak performance.

Interdepartmental consultation and coordination[21]

An LTP should cover all of an authority's policies and delivery plans relating to transport, explaining how these contribute to the wider local agenda.

Coordination between different levels of administration[22]

The guidance states that LTPs should interface with a variety of other local, regional and national documents. It's up to the local authorities to consider how best this may be done.

Participatory approach

The Transport Act 2000 places a duty on local transport authorities, when formulating policies and plans to consult: bus operators, rail operators, public transport user groups, in the case of ITAs: district councils and any county councils in their area, in the case of county councils: district councils, the Secretary of State, in respect of Highways Agency roads (in practice, this would be via local HA contacts), any other people they consider appropriate (e.g. environmental organisations and disability groups).

Implementation plan[23], time table and budget plan

LTPs have to contain an implementation plan which should set out clearly the projects to be pursued, the projected budget and timescales, the targets to be achieved and the trajectories for their achievement.

Monitoring, review and reporting

It is recommended (not mandatory) that authorities should set up a monitoring framework and define appropriate indicators as part of the LPT.

2.14.5 Contents

General

It is voluntary to support LTPs with a number of supplementary documents, for example explaining how the plan covers particular policy areas, such as walking, cycling, accessibility, parking, freight, buses, road safety and traffic reduction.

Long term strategy

It is advised that authorities make the strategy element of their plan look forward 10 to 20 years, in order to align it with the relevant regional strategy or Sustainable Communities Strategy.

Status analysis and baseline

Recommended.

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[21] Horizontal, within the city level.

[22] Vertical, between government levels.

[23] Whether detailed and rolling or not.

Performance indicators

Recommended to define them, but not specified in the LPT guidance document.

Specific objectives and targets

Recommended, but it's up to the local authorities to define the objectives and targets.

Motorised individual transport

See general.

Public transport

See general.

Walking and cycling

See general.

Urban freight logistics

See general.

Integration of modes

See general.

Mobility management

See general.

2.14.6 Specific measures

Integration with land use planning

Recommended.

5.2 Access restriction schemes

See general.

5.3 Public procurement of clean technology

Not mentioned.

2.14.7 List of cities

Table 17 Cities UK (England, Northern Ireland, Wales, Scotland) and SUMPs

Name of city or urban area	Inhabitants SUMP area	Mandatory SUMP	Voluntary SUMP	Comments
Greater London Urban Area	8,278,251	yes		London, London Boroughs (including Croydon and many localities of broadly similar size), Watford, Hemel Hempstead
Greater Manchester Urban Area	2,284,093	yes		Manchester, Salford, Bolton, Stockport, Oldham, Rochdale, Bury, Tameside, Trafford.

Name of city or urban area	Inhabitants SUMP area	Mandatory SUMP	Voluntary SUMP	Comments
West Midlands Urban Area	2,240,230	yes		Birmingham, Wolverhampton, West Bromwich, Dudley, Walsall, Solihull
West Yorkshire Urban Area	1,990,892	yes		Leeds, Bradford, Wakefield, Huddersfield, Dewsbury, Keighley
Greater Glasgow	1,243,150	yes		Local transport strategy 2009 (Glasgow, Paisley, Coatbridge, Clydebank, Motherwell, Wishaw)
Sheffield Urban Area	896,455	yes		Sheffield, Rotherham, Chapeltown, Mosborough
Liverpool Urban Area	879,996	yes		Liverpool, Bootle, Litherland, Huyton, Roby, Crosby, Prescot, St. Helens
Newcastle upon Tyne	816,216	yes		
Nottingham Urban Area	666,358	yes		Nottingham, Beeston and Stapleford, Carlton, Long Eaton
Belfast Metropolitan Urban Area	580,276		yes	BELFAST METROPOLITAN TRANSPORT PLAN 2015 (Belfast, Castlereagh, Newtownabbey, Lisburn, Bangor)
Bristol Urban Area	551,066	yes		Bristol, Kingswood, Filton, Bradley Stoke
Bournemouth Urban Area	520,990	yes		Bournemouth, Poole, Christchurch, New Milton
Portsmouth Urban Area	461,181	yes		Portsmouth, Gosport, Waterlooville, Fareham
Edinburgh	452,340	no		Local Transport Strategy 2007 - 2012, outdated
Brighton & Hove	442,252	yes		Brighton & Hove
Leicester Urban Area	441,213	yes		Leicester, Wigston, Oadby, Birstall
Teesside	369,804	yes		Middlesbrough, Stockton-on-Tees, Redcar, Billingham
Stoke-on-Trent	365,323	yes		
Reading	362,403	yes		Reading, Bracknell, Wokingham, Crowthorne
Cardiff	327,706	yes		Cardiff, Penarth, Dinas Powys, Radyr
Southampton	319,675	yes		
Coventry	304,400	yes		
Preston Urban Area	301,416	yes		Preston, Chorley, Euxton, Leyland, Bamber Bridge
Sunderland	276,787	yes		
Swansea Urban Area	270,506		yes	Regional Transport Plan 2009 (Swansea, Neath, Port Talbot, Pontardawe/Clydach)
Southend on Sea	269,415	yes		
Blackpool Urban Area	264,601	yes		Blackpool, Fleetwood, Lytham St Annes, Poulton-le-Fylde, Thornton-Cleveleys
Kingston upon Hull	261,088	yes		
Plymouth	241,002	yes		Plymouth, Plympton and Plymstock
Derby	227,128	yes		
Milton Keynes	224,336	yes		
Aberdeenshire	208,361		yes	Local Transport Strategy (LTS) Aberdeen shire (Aberdeen city and Shire)
York	192,131	yes		

Name of city or urban area	Inhabitants SUMP area	Mandatory SUMP	Voluntary SUMP	Comments
Northampton	191,480	yes		Northampton, Wootton, Hardingstone
Swindon	186,318	yes		
Crawley Urban Area	180,177	yes		Crawley, Horley, Reigate/Redhill, Salfords, Nutfield
Luton	173,700	yes		Luton, Dunstable, Houghton Regis, Leagrave
Colchester	171,308	yes		
Peterborough	164,919	yes		Peterborough, Chesterton
Telford	161,095	yes		
Dundee	143,415		no	Local transport strategy 2000: outdated
Newport	141,386	yes		
Blackburn	141,246	yes		Blackburn, Darwen
Oxford	140,966	yes		
Norwich	128,739	yes		Norwich, Wootton, Hardingstone
Exeter	119,028	yes		
Cambridge	117,745	yes		
Ipswich	116,751	yes		Ipswich, Martlesham Heath
Slough	114,385	yes		
Gloucester	108,137	yes		
Eastbourne	106,562	yes		

2.16 Other Member States

2.16.1 Austria

There is no legal obligation to do SUMPs in Austria but several cities have developed plans that resemble many of the SUMP benchmark requirements. A review of the plans in Vienna[24] and Graz[25] indicates that many key elements are included.

The review of mobility management suggests also that Austrian cities are generally advanced in sustainable urban mobility. Mobility management is only one element of the SUMP concept but it is one of the more "advanced" elements and hence it is a useful indicator for the overall status of sustainable urban mobility.

Below the score for Austria is presented.

3.1 Overall, how advanced is your country in Mobility Management?

Please tick the right box

Level 1	No or hardly any activities, save some isolated initiatives	
Level 2	Some successes, some funding, several initiatives started	
Level 3	Several successes, structural funding, but no standard practise	
Level 4	Solid position, structural funding and standard practise	X

Further from the Mobility Management review report and CIVITAS city descriptions the relative advanced stage of Austria can be seen.

2.16.2 Croatia

Based on information from CIVITAS and ELTISplus projects, it is assessed that some cities are in the process of implementing integrated planning.

Zagreb has been part of the CIVITAS ELAN project and it has introduced specific measures to improve on public transport and promote public participation etc. The city was awarded for it effects during the Mobility Week event in 2012. While the examples of specific initiatives and measures indicate progress towards more sustainable mobility, there is no new updated sustainable urban mobility plan.

For Rijeka there is a sustainable urban mobility plan but it is stated that progress has been slow in implementation of measures due to lack of funds[26].

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[24] Masterplan Verkehr Wien 2003

[25] Mobilitätsstrategie Der Stadt Graz

[26] CIVITAS (CIVITAS Forum City Descriptions)

2.16.3 Cyprus

Based on information from the CIVITAS and ELTIS projects, there is some progress of implementing integrated urban mobility planning, but it is in an initial stage.

For Nicosia it stated that there Integrated Mobility Master Plan study was signed by Ministry for Communication and Public works in 2009 and that there are initiatives to improve the very limited public transport supply and also to promote non-motorised transport[27].

2.16.4 Czech Republic

Based on the CIVITAS city descriptions, it is found that Czech cities are in the process of introducing various sustainable mobility measures. The specific status of SUMPs is not directly available at these sources. Brno is included in the city survey (see Appendix C) and it seems to have done some progress towards an integrated plan though not all elements are included. This regards issues such having integrated assessment of the measures, having well defined implementation plans and lack of funding has limited the actual implementation (see Appendix C).

The review of mobility management suggests also that cities in the Czech Republic are generally less advanced in sustainable urban mobility. Mobility management is only one element of the SUMP concept but it is one of the more "advanced" elements and hence it is a useful indicator for the overall status of sustainable urban mobility.

Below the score for the Czech Republic is presented[28].

3.1 Overall, how advanced is your country in Mobility Management?

Level 1	No or hardly any activities, save some isolated initiatives	
Level 2	Some successes, some funding, several initiatives started	X
Level 3	Several successes, structural funding, but no standard practise	
Level 4	Solid position, structural funding and standard practise	

2.16.5 Estonia

For Estonia, Tallinn is the only city above 100,000 inhabitants that has been included in the assessment. Tallinn has been part of two CIVITAS projects and the city has undertaken some sustainable mobility measures.

[27] CIVITAS (CIVITAS Forum City Descriptions)
[28] Mobility Management Monitors Czech Republic 2011

According to the Mobility Management Monitor country review (2011), the SUTP and SUMPs that have been developed as part of EU funded projects has not become "real" action plans for the cities and therefore not integrated in the transport plans for the cities.

The following quote from the Mobility Management Monitor 2011 report illustrates the situation regarding the mobility plan for Tallinn.

Case of Tallinn "Mobility Plan". *During the application round of structural funds in Estonia in 2008 European Commission and NGOs proposed that prior to investment plans (mainly big multi- level intersections in Tallinn, widening roads etc) Tallinn city should have Mobility Plan. 2 years later (December 2010) Tallinn City comes out with a Mobility Plan that is not an official document that has not gone through any public consultation and is like a compilation of a mobility plan and a road building plan. The entire financial plan consists of only road building measures for the next 3-5 years. This plan is now added to the EU funding application of a 70 000 EUR road building scheme (Ülemiste intersection) with a disclaimer from the financial director of Tallinn City that "This plan can only be used as an information document not as a strategic development document of a city, Financial plan needs further elaboration and analyses of the future financial resources in the document are exaggerated". So the outcome of the Mobility Plan is a legally non-binding document that is not even formally fulfilling the requirements of a local mobility plan. At the time of writing this MMM it was still unclear how this document will be treated by the European Commission and Estonian government. This case shows that without a quality control and fixed standards for the Mobility Plans in the context of the SF financing they remain as isolated pro forma documents.*[29]

2.16.6 Finland

Based on information from CIVITAS, ELTISplus and EPOMM, only the capital region has developed an integrated urban mobility plan, while the other cities seem to be in the initial stages of introducing integrated urban mobility plans.

The Helsinki Region Transport system Plan (HLJ 2011) includes many of the SUMP elements. A table from an impact assessment is showed below. It lists the key goals and the estimated level of achievement based on the action plan measures.

[29] http://www.epomm.eu/docs/MMM_2011_Estonia_final.pdf

Table 18 Illustration of impact assessment of plan for Greater Helsinki

Summary of the impacts of HLJ 2011		
Sub-vision	**Key goal**	**Realization of the goal**
Economic efficiency	**Key goal 1.** The socio-economic efficiency of transport improves.	• Regional competitiveness and the competitiveness of business and industry improve. • Per capita socio-economic costs do not change substantially although investments are made in public transport.
	Key goal 2. The economic efficiency of public transport improves.	• The economic efficiency of public transport does not improve.
Functionality	**Key goal 3.** The competitiveness of public transport relative to the car improves.	• Positive impact on the modal share of public transport especially in areas outside the metropolitan area. • The relative speed of public transport does not change. • The overall performance of public transport improves. • The most significant shortages in rail transport capacity are removed. • The service level of Park and Ride improves.
	Key goal 4. Conditions for walking and cycling improve.	• Supports the expansion of the pedestrian city. • Walking and cycling networks improve.
	Key goal 5. Congestion does not impede the movement of freight transport.	• Travel times in freight transport remain at the current level. • Traffic-related bottlenecks in freight transport are removed.
Environment	**Key goal 6.** Greenhouse gas emissions from traffic will decrease on target.	• The 2020 national target (-15% from 2005 levels) is not achieved. • The 2030 target for the metropolitan area (-20% from 1990 levels) is reached. • Achievement of the 2050 target set out in the Government Foresight Report (-80% from 1990 levels) is possible.
	Key goal 7. Exposure to traffic emissions and noise, as well as health hazards from traffic decrease.	• Exposure to emissions affecting health decreases. • Exposure to noise increases. • Number of quiet areas is not extensively threatened.
Social	**Key goal 8.** Accessibility of every day services and workplaces for those without a car improves.	• The pedestrian and public transport city expands. • Accessibility of services and workplaces for those without a car improves. • Development of motorization is differentiated within the region.
	Key goal 9. The cost of mobility does not restrict basic mobility.	• The cost of transport relative to disposable income does not rise excessively.
Land use	**Key goal 10.** Land use solutions support the conditions for walking and cycling.	• The pedestrian and public transport city expands as land use develops in line with the basic policy definition.
	Key goal 11. New land use is located within public transport city.	• Calls for determined regional and city-specific policy definitions.
Safety	**Key goal 12.** Serious personal injury accidents decrease.	• The scheme improves traffic safety slightly but not sufficiently.
Other environmental effects		• Preservation of key natural areas and protected areas, landscape and cityscape factors and ecological connections have to be taken into account in the further planning.

Source: Helsinki Region Transport System Plan (HLJ 2011) Impact Assessment
http://www.hsl.fi/FI/HLJ/Documents/HLJ-katsaus%201_2011_en_netti.pdf

The city of Tempera has been included in the city survey – see Appendix C. The city has indicated that currently the level of coordination is insufficient. Also that it does not have a single plan, that measures are assessed separately, that not all the key objectives are quantified and that there is only partial an implementation plan.

The review of mobility management suggests also that cities in the Finland are generally less advanced in sustainable urban mobility. Mobility management is only one element of the SUMP concept but it is one of the more "advanced" elements and hence it is a useful indicator for the overall status of sustainable urban mobility.

Below the score for the Finland is presented[30].

3.1 Overall, how advanced is your country in Mobility Management?

Level 1	No or hardly any activities, save some isolated initiatives	
Level 2	Some successes, some funding, several initiatives started	X
Level 3	Several successes, structural funding, but no standard practise	
Level 4	Solid position, structural funding and standard practise	

2.16.7 Latvia

In Latvia, the capital Riga is the only city above 100,000 inhabitants included in this assessment. The CIVISTAS and EPOMM information suggests that a mobility plan has been developed for Riga but it that it was never adopted. It is assessed that integrated urban mobility planning is only in an early stage where the capital is in the process of developing an integrated mobility plan.

The review of mobility management suggests also that Latvia is in initial state regarding sustainable urban mobility. Mobility management is only one element of the SUMP concept but it is one of the more "advanced" elements and hence it is a useful indicator for the overall status of sustainable urban mobility.

Below the score for the Latvia is presented[31].

3.1 Overall, how advanced is your country in Mobility Management?

Please tick the right box

Level 1	No or hardly any activities, save some isolated initiatives	X
Level 2	Some successes, some funding, several initiatives started	
Level 3	Several successes, structural funding, but no standard practise	
Level 4	Solid position, structural funding and standard practise	

[30] Mobility Management Monitors Finland 2011

[31] Mobility Management Monitors Latvia 2011

2.16.8 Lithuania

The city survey includes two cities and one has developed an integrated plan with many of the benchmark elements, while the other is less advanced with a focus on improving public transport. This assessment is further supported by evidence from CIVITAS and EPOMM.

The review of mobility management also suggests that Lithuanian cities are only in the initial to medium stages regarding sustainable urban mobility. Mobility management is only one element of the SUMP concept but it is one of the more "advanced" elements and hence it is a useful indicator for the overall status of sustainable urban mobility.

Below the score for Lithuania is presented.

3.1 Overall, how advanced is your country in Mobility Management?

Please tick the right box

Level 1	No or hardly any activities, save some isolated initiatives	
Level 2	Some successes, some funding, several initiatives started	X
Level 3	Several successes, structural funding, but no standard practise	
Level 4	Solid position, structural funding and standard practise	

2.16.9 Luxemburg

There is integrated transport planning at national level. It considers the different transport modes in an integrated way, but does not include specific targets on the environmental aspects[32].

Internet review of the city homepage finds no integrated transport plan. Urban development plan exists and specific infrastructure projects are described.

2.16.10 Portugal

Based on CIVITAS, ELTISplus and EPOMM, it is assessed that some cities are developing integrated urban mobility plans while others have done less in terms of integrated planning. One city included in the city survey (see Appendix C) suggests that key elements are missing and that the level of coordination is insufficient.

Using the mobility management as indicator, the Mobility Management Monitor 2011 report presents the following ranking of Portugal regarding MM.

[32] http://www.mt.public.lu/presse/actualite/2007/10/01mobil2020/brochure.pdf

3.1 How advanced is your country in Mobility Management?

Level 1	No or hardly any activities, save some isolated initiatives	
Level 2	Some successes, some funding, several initiatives started	x
Level 3	Several successes, structural funding, but no standard practise	
Level 4	Solid position, structural funding and standard practise	

2.16.11 Romania

Based on information from CIVATAS, ELTIS and EPOMM it is assessed that some Romanian cities have started to apply integrated planning, typically as part of EU-funded activities. One city included in the city survey suggests that there is still a lack of coordination. Also, implementation elements are weak.

Based on the description on the Mobility Management Monitor 2011 it appears that while there are some national plans for introducing sustainable mobility, the concept has still not been included in the actual transport planning at regional or city level.

Using the mobility management as indicator, the Mobility Management Monitor 2011 report presents the following ranking of Romania regarding MM[33].

3.1 Overall, how advanced is your country in Mobility Management?

Level 1	No or hardly any activities, save some isolated initiatives	
Level 2	Some successes, some funding, several initiatives started	X
Level 3	Several successes, structural funding, but no standard practise	
Level 4	Solid position, structural funding and standard practise	

2.16.12 Slovakia

There is ongoing GEF/UNDP project to develop sustainable mobility in the city of Bratislava[34].

A detailed review of that project assesses the level of coordination and integration as low. The midterm review of the projects describes in detail some of issues of establishing the link between various authorities. This includes that the city was initially not interested to have formal role in the project. It has since involved itself

[33] Mobility Management Monitors Rumania 2011

[34] http://www.slideshare.net/undpeuropeandcis/sustainable-mobility-in-the-city-of-bratislava

and it transport planning experts[35]. It is an example of SUMP being developed as a "project" and not as a standard activity of the city. As the project is still ongoing, it is not possible to determine whether the final results will lead to actions being part of the relevant authority's implementation plans.

Using the mobility management as indicator, the Mobility Management Monitor 2011 report presents the following ranking of Slovakia regarding MM[36].

3.1 Overall, how advanced is your country in Mobility Management?

Please tick the right box

Level 1	No or hardly any activities, save some isolated initiatives	X
Level 2	Some successes, some funding, several initiatives started	
Level 3	Several successes, structural funding, but no standard practise	
Level 4	Solid position, structural funding and standard practise	

2.16.13 Slovenia

Based on information from CIVATAS and EPOMM, it is assessed that the capital is in the process of developing an integrated urban mobility approach including most of the key elements. The other city above the population threshold is indicated not to have an integrated urban mobility plan.

Using the mobility management as indicator, the Mobility Management Monitor 2011 report presents the following ranking of Slovenia regarding MM[37].

3.1 Overall, how advanced is your country in Mobility Management?

Please tick the right box

Level 1	No or hardly any activities, save some isolated initiatives	
Level 2	Some successes, some funding, several initiatives started	X
Level 3	Several successes, structural funding, but no standard practise	
Level 4	Solid position, structural funding and standard practise	

2.16.14 Sweden

Sweden is relatively advanced in integrated urban mobility planning. There is a national guidance in how to do sustainable urban mobility planning including examples of the practical implication[38].

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[35] Aparicio A. 2013 *Mid-term evaluation of the GEG/UNDP Project " Sustainable mobility in the city of Bratislava*

[36] Mobility Management Monitors Slovakia 2011

[37] Mobility Management Monitors Slovenia 2011

The review of Swedish cities indicates that they have advanced plans with most of the benchmark elements included[39]. See also the City Survey in Appendix C where Malmö is included.

Using the mobility management as indicator, the Mobility Management Monitor 2011 report presents the following ranking of Sweden regarding MM. The ranking indicates that mobility management is standard practice in urban mobility planning supporting the assessment of the Swedish cities as being advanced[40].

3.1 Overall, how advanced is your country in Mobility Management?

Level 1	No or hardly any activities, save some isolated initiatives	
Level 2	Some successes, some funding, several initiatives started	
Level 3	Several successes, structural funding, but no standard practise	
Level 4	Solid position, structural funding and standard practise	X

[38] Vägverket et al.2007 *Trafik för en Attraktiv Stad*

[39] For example the plan for Stockholm: Stockholms Stad 2012 *Framkomlighetsstrategi för Stockholm 203*0

[40] Mobility Management Monitor Sweden 2011

Appendix C City Survey

1 City survey

Earlier sections of this report have shown that the majority, if not all, of European cities have implemented at least some of the elements of SUMP. This section presents findings from 21 case cities[41] that were assessed through questionnaires and desk studies as to the degree to which they implemented coordinated and targeted policy actions, and what the typical barriers are to such actions.

1.1 Methodology

The cities were selected on the basis of these criteria.

1. To benefit from already existing knowledge on sustainable urban mobility planning, we selected cities which are part of the CIVITAS initiative;

2. These cities are found in different geographical locations to allow for a balanced picture of North, Central and South Europe;

3. We considered both old Member States and new Member States;

4. Cities of different sizes were considered in terms of number of inhabitants and;

5. The list includes both capital as well as other cities

Note that these cities are not statistically representative of EU Member States. Nonetheless, we believe that they are illustrative of the situation relating to the

[41] The assessment of the following cities is based on questionnaires filled out by transport experts from those cities (Berlin, Bremen, Brno, Budapest, Cambridgeshire, Craiova, Debrecen, Gdynia, Gent, Kaunas, Lille, Malmo, Montpellier, Porto, Tampere, Vilnius and West of England Partnership)
The assessment of the following cities is based on desk studies (Birmingham, Copenhagen, Nantes and Sofia)

development and/or implementation of urban mobility plans and the associated barriers in different EU cities.

Berlin	Kaunas	
Birmingham	Lille	
Bremen	Malmo	
Brno	Montpellier	
Budapest	Nantes	
Cambridgeshire	Porto	
Copenhagen	Sofia	
Craiova	Tampere	
Debrecen	Vilnius	
Gydnia	West of England Partnership	
Gent		

1.2 Study process

Immediately available information was first reviewed by COWI where after a simple questionnaire (six questions and several sub-questions) was sent to a city contact person; typically a senior transport planner, who was contacted by the consultant. The person was asked to fill-out the questionnaire which subsequently was sent to us for completion.

1.3 Findings

Table 1-1 Has your city developed a single overall plan focusing on sustainable urban mobility?

City	Yes, we have a single overall plan	No, but we have several plans	No
Berlin	x		
Birmingham	x		
Bremen	x		
Brno		x	
Budapest		x	
Cambridgeshire	x		
Craiova		x	
Copenhagen	x		
Debrecen	x		
Gdynia		x	
Gent		x	
Kaunas		x	
Lille	x		
Montpellier	x		
Malmo		x	
Nantes	x		
Porto		x	
Sofia		x[42]	
Tampere		x	
Vilnius	x		
West of England	x		

As can be seen in Table 1-1, slightly more than half of the cities reviewed for this study have a single overall plan focusing on sustainable urban mobility plans.

Berlin has an Integrated Urban Transport Plan (StEP Verkehr)[43], which encompasses most of the elements of a SUMP.

Similarly, **Bremen** has an Integrated Transport Plan developed in 1996. The city is currently in the process of developing its Transport Development Plan (Verkehrsentwicklung) for the next 10 to 15 years.

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[42] City of Sofia has no dedicated "urban mobility plan" but transport planning topics are addressed in different city plans (General Master Plan, Development Plan, and General Traffic Management Master Plan).

[43] http://www.stadtentwicklung.berlin.de/verkehr/politik_planung/step_verkehr/download/Stadtentwicklungsplan_Verkehr_Berlin_ohne_Anhaenge.pdf.

The **Copenhagen** city council has approved a single overall plan (Action plan Green Mobility) in October 2012 for Copenhagen, which is one of the 17 municipalities in the capital region of Denmark. The action plan Green Mobility is not the only plan on transport in the city, but is an integral part of the overall planning framework on urban planning and transport in the city. The action plan includes overall objectives coordinated with other plans (e.g. an objective of being CO_2 neutral by 2025), main strategic areas for action etc.

In the Polish city of **Gdynia**, currently there is a more or less outdated overall strategic plan dating back to 1998. The strategy, in which transport is one aspect, is currently being updated and is expected to be finalized in November 2013.

Gent does not have single overall Sustainable Urban Mobility Plan but has had an on going "SUM Policy" since 1997 when the ‘Mobiliteitsplan Gent Binnenstad’ was adopted. Since then it has been a continuous process, with continuous participation of citizens and stakeholders. The "SUM Policy" is an important element in the current local administrative agreement.

Nantes has a Sustainable Urban Mobility Plan[44] approved by the Council of the metropolitan agglomeration on 20 June 2011.

Vilnius also has a single overall plan on sustainable mobility integrated in the 'City Master Plan till 2015' and 'City Strategic Plan from 2010 to 2020.

On the other hand , Brno, Budapest, Craiova, Gdynia, Gent, Kaunas, Malmo, Porto, Sofia and Tampere have several plans addressing the different elements of sustainable urban mobility plans. This is also the case in the Swedish city of Malmo, where several sustainable mobility measures are being implemented within the CIVITAS initiative.

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[44] Plan de déplacements urbains, 2010-2015, perspectives 2030 – Nantes Métropole Communauté Urbaine

Table 1-2 Has your city developed general quantitative short-term and/or long-term targets?

City	Accessibility		Congestion		Accidents		Air quality		Noise		Emission	
	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT
Berlin	No	No	No	No	No	Yes	No	Yes	No	Yes	No	Yes
Birmingham	Yes	-	Yes	-	Yes	-	Yes	-	-	-	-	-
Bremen	Yes	Yes	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Brno[45]	No	No	No	No	No	No	No	No	No	No	No	No
Budapest	No	No	No	No	No	No	No	No	No	No	No	Yes
Cambridgeshire	No	No	Yes	No	Yes	Yes	Yes	No	No	No	Yes	Yes
Craiova	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes
Copenhagen	-	Yes	Yes[46]	-	-	Yes			No[47]			
Debrecen	No	No	No	No	No	No	No	No	No	No	No	No
Gdynia	No	No	No	No	No	No	No	No	No	No	No	No
Gent	No	No	No	No	No	No	No	No	No	No	No	No
Kaunas	-	-	-	-	Yes	-	Yes	Yes				
Lille	No	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
Malmo	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Montpellier	No	No	No	No	No	No	No	No	No	No	No	No
Nantes	-	-	-	-	-	-	Yes	Yes	-	-	Yes	Yes
Porto	Yes	No	No	No	Yes	-	No	-	Yes	-	No	-
Sofia	No	No	No	No	No	No	No	No	No	No	No	No
Tampere	No	No	No	No	Yes	Yes	No	No	No	No	No	Yes
Vilnius	Yes	No	Yes[1]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
West of England	No	Yes[2]	No	No	No	Yes	No	No	No	No	No	Yes

When it comes to the different indicators relating to SUMPs, cities set targets selectively based on the pertinent transport related challenges in their particular case. This is true whether the cities have a single overall SUMP or different set of plans relating to sustainable mobility. For example, Debrecen has developed a single SUMP document but does not have a target for any of the indicators listed in Table 1-2. On the contrary, some cities have set targets on some of the indicators even though they have not developed a single sustainable mobility plan. The table below shows that not many cities have set clear short-term and long-term targets. According to one of our city contacts, such targets are just political tools, which- in all seriousness- may not be attainable.

[45] Brno has qualitative targets for all indicators.

[46] There are no direct targets on congestion but indirect targets to increase the use of non-motorised transport.

[47] The targets are that pilot schemes with noise reduced goods deliverance are realised before 2015. Quantitative short-term and long-term targets are not available.

Table 1-3 City targets

City	Accessibility		Congestion		Accidents		Air quality		Noise		Emission	
	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT
Berlin	-	-	-	-	-	20% reduction by 2025[48]	-	PM 2.5 (25% below EU target)	-	2025: <65dba by day & <60 dba by night		25% reduction by 2025 & 0 by 2050
Birmingham	2015/2016: 50%[49]		2015/2016: 2.1mph[50]		2015/2016: max 907 annual road casual-ties		2015/2016: 35sqkm[51]	-	-	-	-	-

[48] From 2008 levels

[49] 50% of inbound am peak cordon trips by public transport

[50] Average AM peak speed on A roads is 2.1 mph

[51] Where annual average NO2 levels exceed 40 micrograms per cubic metre

City	Accessibility		Congestion		Accidents		Air quality		Noise		Emission	
	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT
Bremen	1 mln more P.T. users/year	2020: 20,000 active car-sharing users & 30% share of cycling in PT	-[52]	-	-	-	Meeting EU air quality directive	Meeting EU air quality directive	-	-[53]	-[54]	2020:reduce CO_2 emissions by 40% against the 1990
Brno[55]	-	-	-	-	-	-	-	-	-	-	-	-
Budapest	-	-	-	-	-	-	-	-	-	-	-	2020: -22% per capita CO_2
Cambridgeshire	-	-	2013: 4' journey time/m 56	-	2013:< 345 people 57	2020: -33% compared to 2009	2015: -50%[58]	-	-	-	2013: -6% CO2[59]	2020: -14%CO2
Craiova	2015: +10%	2025: +25%	2015: -5%	2020: -20%	2015: -2%	2025: -5%	2015: +8%	2025: +18%	-	-	-	2025: -20%
Copenhagen		1/3 of all trips			2020: -50%[60]							2025: CO_2

[52] Congestion is not a problem in Bremen

[53] http://www.senatspressestelle.bremen.de/sixcms/detail.php?gsid=bremen146.c.67859.de&asl=bremen02.c.732.de

[54] http://www.umwelt.bremen.de/de/detail.php?gsid=bremen179.c.4609.de

[55] Brno has qualitative targets for all indicators

[56] Journey time per mile to be no more than 4 minutes 12 seconds (4.2 minutes – equivalent to average speed of 14.5mph) (= equal to 2009; reverse of the trend until 2009)

[57] Killed or seriously injured

[58] Reduction in emissions of NO2 and PM10 from buses in the Cambridge core area from 2008 base levels.

[59] CO_2 emissions from road transport to drop by about 6% in 2013 compared to 2008.

City	Accessibility		Congestion		Accidents		Air quality		Noise		Emission	
	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT
		with PT										neutral
Debrecen	-	-	-	-	-	-	-	-	-	-	-	-
Gdynia	-	-	-	-	-	-	-	-	-	-	-	-
Gent	-	-	-	-	-	-	Meeting EU air quality directive	Meeting EU air quality directive	-	-	2020: 20% Carbon reduction 2020: 20 µg/m³ PM2.5	2050: carbon neutral
Kaunas	-	-	-	-	2013:0. 4/1000 Inhabitants	-	2013: PM 10 < 40µg/m3 per year 2015: PM 2,5 < 25µg/m3 per year	2020: PM 2,5 < 20 µg/m3 per year	2013: reduce noise exposed inhabitants by 8%	-	2013: 10mg/m3	-
Lille	-	Modal shift[61]	-	2006-2020: -24% road traffic	-	2020: 0 causalities	-	2006-2020 CO : −78% NOx : −46%, COV : −76% PM : −46%	-	-	-	2006-2020 CO_2 : −40%
Malmo	-	-	-	-	-	-	-	-	65dBa	65dBa	-	2030: carbon & fossil free
Montpellier			2013: Journey time per mile		2013: ≤ 345 casualities/yr	2020: -33% from 2009	2015: -50% of NO2 and PM10 from 2008 levels				2013: -6% CO2 from 2008	2020: -14% CO2 from 2008

[60] The number of fatalities and seriously injured persons will be reduced by 50 % compared to the average of the period 2007 - 2009.
[61] 2006-2020: walking 31→35%, cycling 2→10%,PT 10→20% , car 56→35%

City	Accessibility		Congestion		Accidents		Air quality		Noise		Emission	
	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT
			=4.2 min								levels	
Nantes	-	-	-	-	-	-	2015:CO (1150t/y) NO_X (2207t/y) PM(64t/y)	-	-	-	-	-
Porto					2010-2015: -20% causalities of road accidents							
Sofia	-	-	-	-	-	-	-	-	-	-	-	-
Tampere					2008-2012: (-20% injuries)	2025: -(70% injuries)						2030: traffic caused CO2 (-20%)
Vilnius	-	-	-	-	2009-2015: -10%	2009-2020: -16.7%	2009-2015: NO_X per capita per year (-7%)	2009-2020: NO_X per capita per year (-15.4%)	2009-2015: (-14.8%)[62]	2009-2020: (-21.3%)	-	-
West of England	2016: Cycling (+ 76%) 2015/2016: car	-	-	-	-	2020: -30%[64]	-	-	-	-	-	2020: -16%[65]

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[62] Population living in areas where the noise level exceeds the standards of hygiene at the time of the night (decibels 55), number (thousands of head)

City	Accessibility		Congestion		Accidents		Air quality		Noise		Emission	
	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT
	(+11%) 2019: Rail (+41%) [63]											

[64] Reduction in KSIs (Killed or Seriously Injured) by 2020, compared to the 2005-09 average. Using data collected by the police on people Killed or Seriously Injured

[65] Reduction on per capita road traffic emissions in 2006 as estimated by Department of Energy and Climate Change

[63] Cycling - 76% increase by 2016.Using annualised index with 2008/09 as base year. Bus - 11% by 2015/16.Growth in patronage since base year of 2008/09. Rail - 41% increase by 2019. Based on forecasts in Great Western Route Utilisation Strategy using 2008 as base year

A more elaborate discussion than the one provided in table 1-3 is provided below regarding the targets in selected cities (as examples).

Berlin has only qualitative short term targets on indicators such as accessibility, congestion, air quality, noise and carbon emission. However, the city has long term quantitative targets on accidents, air quality, noise and CO_2 levels. By 2025, Berlin has a goal of reducing accidents by 20% and emissions by 25% from their 2008 levels. The target on air quality is to reduce particulate matter (PM 2.5) 25% below the EU target while the goal as regards noise is to bring it below 65dB by day and 60 dB by night.

Bremen has set both short term and long term targets on all indicators except congestion and accidents. Congestion is not believed to be a real problem in the city where around 25% of everyday trips are made by bicycles. The short term target of the city of Bremen on accessibility is to increase public transport users by one million per year while the target by 2020 is to have 20,000 active users of car-sharing.

With regard to air quality, the short term target of the city of Bremen is to fulfil the targets set in the EU air quality directive(s) with Clean Air Zones established in 2009 and reinforced in 2010 and 2011. Several inner-city streets in Bremen exceed the limits of the EU air quality directive on the protection of human health from particulate matter (PM10) and nitrogen dioxide (NO_2). Hence, in 2006 the city approved a long-term Clean Air Action Plan, which contains 15 measures to reduce pollution[66].

The city of Bremen's emissions target in 2020 is to reduce CO_2 emissions by 40% against the 1990 level.

The Romanian city of **Craiova** has several short-term and long-term targets as part of its urban transport plans. Some of the these targets are to

- Increase accessibility by 10% by 2015 and 25% by 2025
- Reduce congestion by 5% by 2015 and 20% by 2020
- Reduce accidents by 2% by 2015 and 5% by 2015
- Improve air quality by 8% by 2015 and 18% by 2020

The Action Plan for the City of **Copenhagen** contains targets that range from specific quantitative targets to more qualitative targets. Targets embedded in the city's long-term strategy tend to be qualitative in nature. Examples of long-term target in Copenhagen:

[66] http://www.umwelt.bremen.de/de/detail.php?gsid=bremen179.c.7803.de

- At least 1/3 of all trips will be with public transport;

- The world's best bicycle city: percentage of PLUSnet with three lanes for bicycles will comprise 40 % in 2015 and 60 % in 2020. Compared to 2010, the bicyclists' travel time will be reduced by 5 % in 2015 and 10 % in 2020. There is also a target of reaching a modal split with 50 % of the trips carried out by cyclists in 2015;

- In 2015, a prioritised pedestrian network will exist;

- In 2020 there will be approx. 5,000 docking cradles for electric vehicles. There will be 240 car sharing vehicles in 2020 compared to 120 in 2010;

- In 2020, the number of fatalities and seriously injured persons will be reduced by 50 % compared to the average of the period 2007 - 2009.

Debrecen's sustainable mobility plan declares general short term and long term goals with respect to accessibility and congestion as well as accidents (short term) and air quality (long-term) but quantitative targets have not been defined. The sustainable urban mobility plan deals with the accessibility problems, congestion, accidents and air quality issues and defines the necessary measures in order to make the city more livable but target indicators had not been set up at all.

Targets set by the city of **Kaunas** are more specific compared to, for example, that of Craiova. For instance, Kaunas' short-term targets on accidents is to bring it down to 0.4/1000 inhabitants by 2013. On air quality, the target is to make PM10 < 40 $\mu g/m_3$ by 2013 and PM2.5 < 2 $\mu g/m_3$ by 2015. The long-term target is to achieve a PM 2,5 level of less than 20 $\mu g/m_3$ per year by 2020. The emissions reduction target level is 40 mg/ m3 per year beginning from 2010.

In the Swedish city of **Malmo,** the short-term and long-term target on accidents is to have 0 causalities while the target on noise level is to reduce it to 65dBA.

By 2030, the city of **Nantes** wants to reduce emissions linked to trips made by the inhabitants of the agglomeration to 580 kiloton of CO_2 p.a.

In general, the targets set in European cities on the indicators of the urban transport environment have diverse features. Some of the observations that can be drawn from the reviews made in this section are that;

- Some targets are too ambitious. Examples are Berlin's and Gent's target of reducing emissions to zero by 2050 and Malmo's target of 0 causalities in the short and long-term.

- While some cities provide specific targets, there are instances where cities have general targets (e.g Craiova).

- The targets are set for different years across cities and across indicators (2013, 2015, 2016, 2020, 2030, 2040 etc)

- Malmo's targets do not have years and the short term and long term targets in most cases are the same. It is not a thoroughly planned target.

- It is safe to conclude that some cities are more advanced than others in terms of setting goals and having better planned and targeted urban transport plans.

Table 1-4 Has your city conducted a quantitative impact analysis of measures that should be implemented in order to reach the city's targets?

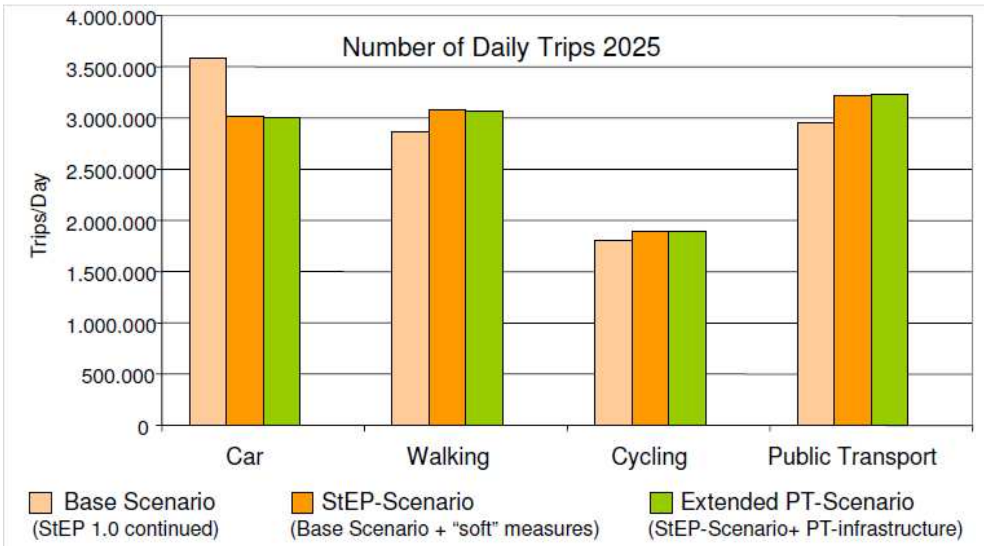
City	Yes, we have conducted an analysis that looks at all measures in an integrated way	Yes, we have conducted separate analysis of all measures)	No
Berlin	x	x	
Birmingham	-	-	-
Bremen		x	
Brno		x	
Budapest			x
Cambridgeshire			x
Craiova		x	
Copenhagen		x[67]	
Debrecen			x
Gdynia			x
Gent		x	
Kaunas		x	
Lille	x		
Malmo		x	
Montpellier		x	
Nantes		x	
Porto		x	
Sofia		x[68]	x
Tampere	x		
Vilnius	x		
West of England			x

Only 4 of the 19 cities under review carried out a quantitative impact analysis of the measures that should be implemented in an integrated way to reach the targets set within their respective plans. In most of the cities (12 out of 19), a separate analysis was made for each measure whereas in about five of the cities, no quantitative IA study was conducted.

[67] The action plan includes assessments of each of the target areas and/or initiatives. Some of these assessments are qualitative and others are quantitative.
[68] The study conducted in Sofia relates to the appraisal of different projects in the 'Integrated Urban Development Plan'. Transport issues are addressed in this plan.

On the other hand, Berlin has conducted both an integrated and a separate IA study for all the measures based on existing empirical evidence and has undertaken extensive calculations employing latest transport models[69].

Figure 1-1 Results of impact assessment in for the Integrated Urban Transport Plan in Berlin



Source: Presentation slide by Dr Friedmann Kunst, senate department for Urban mobility, Berlin (Rome, 2010)

In **Copenhagen**, forecasts for population growth, economic forecasts, transport model forecasts etc have already been integrated in the planning processes for many years. Hence, no new baseline studies were carried out specifically for the action plan. As the city also frequently carries out other studies on more specific topics (assessment of bicycle investments, urban logistics studies, studies of toll rings, studies on metro lines etc.) **no specific forecast studies were carried out for the action plan**.

Sofia was given financial support (consultancy work) from the Operational Programme for Regional Development (OPRD) in 2010 - 2012 to develop a feasibility study identifying viable projects in the 'Integrated and Sustainable Urban Development." In this study, qualitative ex-ante assessments (multi criteria analysis) were carried out for various project options and a full cost-benefit analysis, financial analysis, social analysis and environmental analysis was prepared for the chosen option. **No assessment has been made for the total plan**.

[69] The Berlin Transport Strategy: process and expectations (2010)

Table 1-5 Does your city have a plan for implementing the measures?

	A*	B	C	D	E
Berlin	x	x	x	x	
Birmingham	-	-	-	-	-
Bremen	x	x	x	x	
Brno		x			
Budapest		x			
Cambridgeshire	x		x	x	
Craiova	x[70]	x[71]			
Copenhagen	-	-	x	-	
Debrecen	x				
Gdynia	-	-	-	-	-
Gent	x		x		
Kaunas	x	x	x[72]		
Lille	x	x	x	x	
Malmo	x		x	x	
Montpellier	x	x	x		
Nantes	-	-	-	-	-
Porto			x		
Sofia	-	-	-	-	-
Tampere					x
Vilnius	x		x		
West of England	-	-	-	-	-
Aggregate	11	8	11	5	1

*A=Yes, we have a plan for implementing the measures
B=Yes, we have also defined who is responsible for the implementation
C=Yes, we have also allocated budgets for the implementation
D=Yes, we have also setup for monitoring and reviewing the implementation
E=No

With regard to implementing the measures, only Berlin, Bremen and Lille have implementation plans, identified who is responsible for implementation, allocated budgets and set up a monitoring scheme. Most of the remaining cities have three or less number of these practices in place.

The **Copenhagen** action plan includes a budget estimate for each initiative and the initiatives are divided in three groups. The action plan is followed by a yearly administrative implementation plan to be presented for the responsible political committee for information. Only new specific investments are put forward for decision. The first implementation plan was drafted in December 2012.

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70 Not for all
71 Not for all
72 Partly

In **Sofia**, the Development plan does not include budgets or specific time schedule.

Table 1-6 How would you rate the overall level of coordination/integration among the different policy areas/offices that are involved in the planning and implementation of measures with respect to urban mobility in your city?

	Optimal*	Adequate**	Insufficient***	No coordination
Berlin			x	
Birmingham	-	-	-	-
Bremen		x		
Brno	x			
Budapest		x		
Cambridgeshire	x			
Craiova			x	
Copenhagen[73]			x	
Debrecen		x		
Gdynia			x	
Gent		x		
Kaunas			x	
Lille			x	
Malmo			x	
Montpellier	-	-	-	-
Nantes[74]	x			
Porto			x	
Sofia			x	
Tampere			x	
Vilnius		x		
West of England		x		

* No more coordination is needed
**Coordination is at a good level but could be improved
***More coordination would sufficiently improve the plan

Most of the cities are not satisfied with the current level of coordination as is evident from Table 1-6. Only 3 cities think that the coordination is optimal and only 6 think that it is adequate.

In the public consultation on the 'Urban dimension of the EU transport policy, the City of Copenhagen, stated that there is a lack of coordination between authorities

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[73]The action plan in Copenhagen is coordinated with other relevant city policies and plans. However, information is not available about whether this coordination is currently optimal or insufficient.
[74] There is a strong integration at administrative unit level and across administrative unit levels.

and actors working on urban mobility and that it is *"important to involve a number of relevant actors. It's also important for the SUMP to ensure coordination between land use planning and mobility planning*." Gothenburg, Leipzig, City of Chomutov and Antwerp also stated that there is a lack of coordination between actors and SUMPs could be the answer to tackle this.

In **Nantes**, the SUMP is made by the Communauté Urbaine of the agglomeration, which is responsible for organising public transport and many other aspects of transport, but not the road network. This public agency assembles the municipalities involved (24 in this case) which together govern the authority. They are all represented in the Council of the Communauté Urbaine which has given the final approval of the SUMP. Agreement with the relevant policy domains of the municipalities is assured in this way. Important in this respect is the responsibility of the individual municipalities for their road network and for traffic and parking regulation and the traffic police.

Table 1-7 How would you rank the barriers to implement sustainable urban mobility plans based on your city's experience?

City	Lack of political will or interest	Lack of knowledge of SUMPs and/or the benefits of SUMPs	The planning tradition and culture (lack of tradition for integration and coordination)	Lack of funds for integrated planning
Berlin	4	3	2	1
Birmingham	-	-	-	-
Bremen	1	2	-	-
Brno	-	-	-	1[75]
Budapest	2	4	1	3
Cambridgeshire	-	-	-	1
Craiova	4	3	1	2
Copenhagen	-	-	-	-
Debrecen	4	3	2	1
Gdynia[76]	-	-	2	-
Gent	-	-	-	-
Kaunas	3	2	1	4
Lille[77]	4	3	1	2
Malmo	3	4	1	2
Montpellier	-	-	-	-
Nantes	-	-	-	-
Porto	1	2	3	4
Sofia	-	-	1	-
Tampere	4	2	3	1
Vilnius	2	-	3	1
West of England	-	-	2	1
Number	11	10	13	13
Average score	2.9	2.8	1.8	1.8

The main challenges in most of the cities are the lack of funds for integrated planning and the lack of good planning tradition. It can be observed from Table 1-7

[75] Lack of funds for implementation of measures

[76] Other (spatial barriers: combination city and forest, dynamic harbors, dynamic urbanization process)

[77] Nantes gives a higher weight to other barriers than the ones listed in the table: to mobilise funds in this economically difficult period, to develop new transport projects, notably for an agglomeration that has a 'mature' network and which is in need of heavy investments to rehabilitate the existing ones.

that a lot of cities ranked the barriers in the last two columns as the most pressing ones. Lack of knowledge of SUMPs and lack of political interest are also key challenges in many of the cities.

Table 1-8 Link between type of plan and coordination level

		Type of plan		
		Single plan	Several plan	No plan
Level of coordination	Optimal	Cambridgeshire, Nantes	Brno	-
	Adequate	Bremen, Debrecen, Vilnius, West of England	Budapest, Gent	-
	Insufficient	Berlin, Copenhagen, Lille	Craiova, Gdynia, Kaunas, Malmo, Porto, Tampere Sofia	-
	No coordination	-	-	-

The above cross tabulation shows that there is a connection-albeit not strong-between the existence of a single consolidated SUMP and the strength of coordination between policy makers. 6 of the 9 cities with a single plan reported that the current coordination level is either optimal or adequate where as only 3 of the 10 cities with several plans gave a similar response. On the other hand, only 3 of the 9 cities with a consolidated SUMP declared the current level of coordination insufficient whereas 8 out of 10 cities with several plans reported that the coordination is insufficient.

1.4 Conclusion

Slightly more than half (11 out of 21) the cities have produced a single sustainable urban mobility plan in a bid to meet national and EU level targets relating to sustainability. The rest of the cities have various plans devised by different planning authorities and most of these plans include a target of making urban transport more sustainable. Better coordination between policy makers and other actors is essential for a more integrated and targeted implementation of SUMPs. This is particularly true in cases where cities have multiple agencies issuing policies on urban mobility, which-if not properly coordinated-may result in inefficient implementation and waste of resources. Most city transport planners contacted by COWI do not believe that the current level of coordination and integration between different policy areas is optimal. The majority of them responded that it is at an insufficient level.

Most of the cities operate on the basis of qualitative targets rather than solid quantitative targets. Transport planners who filled-out the questionnaire responded that their respective cities do not have short-term and/or long term targets for most indicators (accessibility, congestion, accidents, noise and emissions). The most formidable barriers to the implementation of SUMPs, as ranked by the city contacts, are:

1 The lack of funds for integrated planning and implementation

2 The planning tradition and culture

3 The lack of knowledge of SUMPs and/or the benefits of SUMPs

4 The lack of political will or interest

Scores for 5 cities as validated by city contact persons

1: low, 2 medium and 3 high

Gent

SUMP content			
	Dimension	**Score**	**Justification**
1	Freight and a Passenger Transport	3	Addresses both freight and passenger transport
2	Transport modes	3	Addresses all transport modes
3	Topics	3	Addresses the following topics: public transport services, non-motorised transport, city logistics, mobility management, integration of transport modes (multi-modality), the road network and motorised transport (including moving and stationary traffic)
4	Instruments	2	Addresses the following 'promising' instruments: urban pricing (parking pricing and public transport pricing)
5	Technology	2	Measure targeted at (semi) public car fleets
6	Sustainability	3	Contains pledge to sustainability
9	Integrates policy areas	3	The mobility planning Integrates different relevant policy areas, in particular land-use and

			transport planning
10	Participatory approach	3	The mobility planning is developed in a participatory approach

Vilnius

SUMP content			
	Dimension	**Score**	**Justification**
1	Freight and Passenger Transport	2	Freight transport hardly addressed
2	Transport modes	3	
3	Topics	2	Does not addresses the following topics: city logistics, mobility management, integration of transport modes (multi-modality)
4	Instruments	2	Addresses the following instrument: parking pricing, public transport pricing
5	Clean Technology	2	Addresses mainly electric charging
6	Sustainability (ambition level)	3	Contains pledge to sustainability (3 dimensions)
9	Integrates policy areas	2	Integrates to some extent relevant policy areas, in particular land-use and transport planning
10	Participatory approach	1	As far as we can judge, hardly any citizen and stakeholders participation

West of England

SUMP content			
	Dimension	**Score**	**Justification**
1	Freight and Passenger Transport	2	There are plans, but no concrete quantitative goals for freight transport
2	Transport modes	2	Different transport modes described. Measures are not concrete
3	Topics	2	Relevant, but too vague
4	Instruments	2	A lot of goals described, but not all very concrete
5	Clean Technology	1	No focus on clean technology. No quantitative targets
6	Sustainability	1	No focus on sustainability. No quantitative targets
9	Integrates policy areas	2	Different policy areas are mentioned, but not described how they can best be integrated
10	Participatory approach	3	Engagement chapter is good

Nantes

SUMP content			
	Dimension	**Score**	**Justification**
1	Freight and a Passenger Transport	3	Addresses both freight and passenger transport
2	Transport modes	3	Addresses all transport modes
3	Topics	3	Addresses the following topics: public transport services, non-motorised transport, city logistics, mobility management, integration of transport modes (multi-modality), the road network and motorised transport (including moving and stationary traffic)
4	Instruments	2	Addresses the following 'promising' instruments: urban pricing (parking pricing and public transport pricing)
5	Technology	2	Measure targeted at (semi) public car fleets
6	Sustainability	3	Contains pledge to sustainability
9	Integrates policy areas	3	The mobility planning Integrates different relevant policy areas, in particular land-use and transport planning
10	Participatory approach	3	The mobility planning is developed in a participatory approach

Cambridgeshire

SUMP content			
	Dimension	**Score**	**Justification of the score**
1	Freight and Passenger Transport	2	Focus on passenger transport . Freight transport: only transfer freight transport from road to rail. City logistics not included.
2	Transport modes	3	Addresses all transport modes
3	Topics	3	Addresses the following topics: public transport services, non-motorised transport, mobility management, integration of transport modes (multi-modality), the road network and motorised transport (including moving and stationary traffic) City logistics not included
4	Instruments	2	The LTP3 addresses low emission zones (action in the Joint Air Quality Action Plan) and parking pricing. Road charging and Public Transport pricing not included
5	Technology	2	Only actions aimed at public transport operators to stimulate the transition to 'clean' fleets
6	Sustainability (ambition)	2	Local targets are based on the national targets.
9	Integrates policy areas	3	The transport plan integrates different relevant policy areas, in particular land-use and transport planning
10	Participatory approach	3	The transport plan is developed in a participatory approach

Appendix D City Cases

1 City cases

This section includes six city cases plus additional examples of effects of integrated planning from two cities.

1.1 Copenhagen

Name of city and member state: Copenhagen, Denmark
Title and year of plan *(original language and in English. If it is a series of plans, this could also be mentioned)*: Handlingsplan for Grøn Mobilitet (Action plan Green Mobility), City of Copenhagen, approved by the City Council in October 2012.
Geographic coverage of the plan: *i) within one municipality covering the whole urban area; ii) within one municipality covering only part of the urban area; iii) a regional plan covering more than one city/municipality and the whole (or main part of the) urban area;* The plan covers only City of Copenhagen. City of Copenhagen is one of the municipalities in the Capital Region of Denmark which consist of 17 municipalities.
Number of inhabitants in the plan area: *(figures should come from our overall statistics?)* City of Copenhagen: 549,000 per 1 January 2012
Long-term strategy, *(10 - 20 - 50 year perspective, long term vision / inclusion of general objectives according SUMP definition. If yes, write the used time horizon and the actual content)* The action plan Green Mobility is not the only plan on transport in the city, but is an integral part of the overall planning framework on urban planning and transport in the city. The action plan includes overall objectives coordinated with other plans (e.g. an objective of being CO2 neutral by 2025), main strategic areas for action etc. The action plan includes 5 main themes and hereunder a number of target areas and a number of initiatives. Target areas (including initiatives): - City development (connection to municipal spatial plan, location principles, parking policy etc.) - The world's best bicycle city (PLUSnet, shortcuts, bicycle super highways, bicycle services) - Public transport (travel speed, bus stops, high class terminals, use of renewable fuels)

- Pedestrians (pedestrian network) - Green transport systems (infrastructure for electric and hydrogen vehicles and car sharing) - Interaction - the complete trip (bike sharing systems, bike-and-ride) - Transport system (road network plan, shopping streets, safe and efficient traffic flow, flexible use of streets, city logistics, green goods distribution, mobile app for carpooling) - Mobility management (smart IT information, the future transport users, local cooperations) - Green mobility technology (laboratory for green technology, e-mobility, green zones - Generation of ideas (innovation workshop)
Short term plan for implementation *(e.g. within 2 - 5 years. If yes, write the actual status and also whether it is approved with time schedule and budget - or even implemented):* The action plan includes a budget estimate for each initiative and the initiatives are divided in three groups: Group I: Possible to implement within existing budget without new appropriations Group II: Can be implemented if the investment level from the previous years is continued Group III: Demand new investments beyond normal praxis. The action plan is followed by a yearly administrative implementation plan to be presented for the responsible political committee for information. Only new specific investments are put forward for decision. The first implementation plan was drafted in December 2012.
Status analysis and baseline *(comprehensive review. if yes, describe the content e.g. counts,* ***household surveys, traffic modelling, forecast periods for baseline etc.:)*** ***Review*** City of Copenhagen has throughout the years established a comprehensive overview of traffic flows, noise emissions, emissions to air, air quality, road accidents, information on freight transport as well as a number of household surveys with information on all transport users. Furthermore, major infrastructure projects are always carried out using transport model tools and following the national legislation on EIA, which also gives a vast amount of information on the overall transport situation. No specific new reviews were prepared for the action plan, but present information was compiled and presented in a report "Kortlægning Grøn Mobilitet" (Mapping, Green Mobility). ***Forecasts.*** Forecasts for population growth, economic forecasts, transport model forecasts etc have existed for many years and have been integrated in the planning processes for many years. No new baseline studies were carried out specifically for the action plan. As the city frequently carries out other studies on more specific topics (assessment of bicycle investments, urban logistics studies, studies of toll rings, studies on metro lines etc.) no specific forecast studies were carried out for the action plan. The action plan includes assessments of each of the target areas and/or initiatives. Some of these assessments are qualitative and others are quantitative.

Specific objectives and measureable targets *(reflecting general objectives and indicators. If yes, describe them)*

Below only selected examples are quoted to illustrate the span from specific quantitative targets to more qualitative targets. The action plan includes targets for each initiative

The world's best bicycle city
- Percentage of PLUSnet with three lanes for bicycles comprise 40 % in 2015 and 60 % in 2020.
- Compared to 2010, the bicyclists' travel time is reduced with 5 % in 2015 and 10 % in 2020.
- A target of reaching a modal split with 50 % of the trips carried out by bicyclists in 2015 (a target sat up in 2007 in an environmental plan)

Public transport
- Main part of growth in traffic shall be for pedestrians, bicycle traffic and public transport
- Long term vision is that at least 1/3 of all trips will be with public transport

Pedestrians
- In 2015, a prioritised pedestrian network will exist

Green transport systems
- In 2020 there will be approx. 5,000 docking cradles for electric vehicles
- There will be 240 car sharing vehicles in 2020 compared to 120 in 2010.

- Interaction - the complete trip
- Bicycle sharing systems will be part of the public transport system

Transport system
- In 2020, the number of fatalities and serious injured persons will be reduced by 50 % compared to the average of the period 2007 - 2009.
- ITS will ensure a more green mobility and efficient traffic flow
- Pilot schemes with noise reduced goods deliverance are realised before 2015
- 5 % of all private car commuters use carpooling in 2020

Mobility management
- Transport performance and choice transport modes are contained in companies overall environmental strategy or/and HR strategy by 2015
- In 2015 all public primary schools have a traffic policy on green mobility and road safety

Green mobility technology
- Copenhagen will be available for and function as a show window for development, testing and use of green technologies within the transport sector

Generation of ideas
- Creating space for idea generation and testing

Policies and measures *Describe the topics addressed (maybe just YES or NO?:*	
Individual motorised transport *(road transport) yes* **Public transport:** yes **Walking and cycling**: yes ***Urban freight logistics:*** yes	**Integration of modes** *(facilitating seamless and multi-modal transport): yes* **Mobility management:** yes **Addressing measures on all 3 levels** *(total transport volume; modal split; efficiency): yes*

Ex ante assessment of chosen options *included in relation to achievement of targets. If yes, describe the actual content, tools used and maybe the result?*

Yes, but mostly based on previous assessments and no overall quantification of the effects. No specific scenarios and options are sat up, at the city explains it has through many years assessed different options and did not need to do it for the preparation of the action plan.

Monitoring *(description of follow up and monitoring on a regular basis, e.g. every 1 - 2 years. If yes, maybe a short description*

Yes, annual monitoring and reporting to the responsible political committee. Relevant indicators are being developed in the first part of 2013.

Integration at administrative unit level *(e.g. across sector policies and plans. If yes, short description):*

Yes, the action plan is coordinated with other relevant city policies and plans, e.g.
Municipal spatial plan (an overall plan also being framework for general development, business policy etc.)
Municipal climate plan
Public transport plan
Road safety plan

Only indirectly, the action plan can be said to address the three sustainability areas (environment, economy and social)

Integration across administrative unit levels *(e.g. between more municipalities, at different levels of administration and authorities - regional / national -across sector policies and plans. If yes, short description):*

Yes, but only partly. No legal obligations to have a regional transport / mobility plan. Coordination and integration is to a certain degree carried out voluntarily. An example is cooperation on implementing a more than 300 km regional network of cycle super highways among approx 17 municipalities. The initiative was started by Copenhagen City to motivate commuters from other cities to use the bicycle to Copenhagen to better be able to live up to the overall target on a modal split with 50 % of all trips in the City to be carried out on bicycles in 2015.

Participatory approach (inclusion of venues, and procedures for involvement of citizens and relevant actors throughout the process. If yes, short description)

Yes, a comprehensive period of hearings, venues etc was carried out among stakeholders and the public

Actual results. *(any studies /monitoring etc showing actual results in the form of reduction of total traffic volume, change in modal split, changes/reductions in the problems with targets described (air quality, noise, accessibility, congestion, safety or …)* Not yet, but the yearly follow up will include monitoring of results.
History *(a short narrative description of tradition for integrated planning, participatory approach, use of a variety of measures, achieved results etc?)* The action plan is third generation of a "sustainable urban transport action plan". The first one was prepared in 1997. Furthermore, the city has a long tradition for working with environmentally friendly transport modes.
Overall expert assessment of the SUMP impact: *(would the results not be achieved without the integrated SUMP approach, did the SUMP approach structurally changed the attitude of stakeholders toward sustainable urban mobility etc?)* One could say that the approach in Copenhagen may be inspired by the international cooperation projects among EU cities, but to find a direct link between the plan and the actual transport performance in Copenhagen is not possible yet. The approach with public participation etc. has not been influenced by the SUMP work carried out in EU in general. Copenhagen is in a special situation without a regional body being responsible for overall urban transport planning. Regional initiatives are based on voluntary work og on national initiatives following e.g. discussions on major transport infrastructure investments like a new metro or a new road crossing the harbour. A national or EU policy setting up more specific demands on regional cooperation may enhance the regional impact.

1.2 Birmingham

Name of city and member state: West Midlands; Core City Birmingham
Title and year of plan *(original language and in English. If it is a series of plans, this could also be mentioned)*: West Midlands Local Transport Plan, LTP3: - Vision and Issues - The Strategy Plan (to 2026) - The Implementation Plan (2011 – 2014) ***Annexes Regulatory Assessments:*** - Strategic Environmental Assessment (SEA) (EU Directive 2001/42/EC) - Habitats Regulation Assessment (HRA) (Directive 92/43/EEC) - Equality Impact Assessment (EqIA) to meet the requirements of the 2010 Equality Act

Geographic coverage of the plan: *i) within one municipality covering the whole urban area; ii) within one municipality covering only part of the urban area; iii) a regional plan covering more than one city/municipality and the whole (or main part of the) urban area;* The plan covers the whole urban area consisting of the core municipality Birmingham as well as the municipalities Wolverhampton, West Bromwich, Dudley, Walsall, Solihull.
Number of inhabitants in the plan area: *(figures should come from our overall statistics?)* 2.738.100
Long-term strategy, *(10 - 20 - 50 year perspective, long term vision / inclusion of general objectives according SUMP definition. If yes, write the used time horizon and the actual content)* There is a long term strategy: 'The Local Transport Strategy' covering the 15-year period 2011 - 2026 The overall vision is: the Metropolitan Area becoming more prosperous, healthier and safer, offering a high quality and attractive environment where people will choose to live, work and visit, and where businesses thrive and attract inward investment". In the strategy document 10 long term themes are addressed: Theme 1: Regeneration, thriving centres, corridors and gateways; Theme 2: Making best use of the highway network Theme 3: Modal transfer and the creation of sustainable travel patterns Theme 4: Asset management and maintenance – a foundation for growth Theme 5: A rail and rapid transit network "backbone for development" Theme 6: Improved local accessibility and connectivity Theme 7: Sustainable and efficient freight transport Theme 8: Effective and reliable transport integration Theme 9: Improved safety and security Theme 10: Improved environment and reduced carbon through new technologies
Short term plan for implementation *(e.g. within 2 - 5 years. If yes, write the actual status and also whether it is approved with time schedule and budget - or even implemented):* For each of the 10 (long term) themes, short term actions are defined in the approved Implementation Plan - which details how West Midlands will deliver the first five years of the Strategy (2011-2016). In total 63 short term actions are defined.

Status analysis and baseline *(comprehensive review. if yes, describe the content e.g. counts,* ***household surveys, traffic modelling, forecast periods for baseline etc.:***   ***Review*** The final delivery report of the local Transport Plan 2006 (LTP2) from February 2012 contains a comprehensive review of the situation at the end five-year period 2006−2011 as well as the development during this period. One of the purposes of this report was to provide the context for the subsequent Local Transport Plan 3 (LTP3), which covers the period 2011−2026 and to examine the role of LTP2 as an evidence base for LTP3. It contains data and figures on many urban transport aspects, like road safety, air quality, modal split, traffic volumes, congestion, accessibility etc.   ***Forecasts.*** Forecasts (baser line as well scenarios) were made for the period till 2016.
Specific objectives and measureable targets *(reflecting general objectives and indicators. If yes, describe them)*   The following objectives/targets were defined to be realised by 2015/2016:   **Average, Journey Time Reliability for Goods Vehicles:** mean of network journey times that are above the annual average decreases 2,79% in 2009-2010 until 2% in 2015-2016.   **Bus Reliability**: 80% of key bus services operating between "1 minute early and 5 minutes late" by 2015/16   **Access to Employment:** 70% of working age people in areas of high unemployment can reach at least 50,000 jobs within 40 minutes by public transport   **Road Congestion:** average AM peak speed on A roads is 2.1 mph   **Principal Road Maintenance:** max 5,6% of Principal Roads is requiring further investigation   **Total Road Traffic:** Traffic index 1,03 (2009 = 1)   **Active Travel (=combination walking and cycling index):** Active Travel index 105 (2009 =100)   **Public transport trips to centres**: 50% of inbound am peak cordon trips by public transport   **Travel to School :** 72.52 % of pupils travelling to school by non-car mode   **CO2 Emissions from Transport:** CO2 index 90   **Air Quality:** max.35 sq.km where annual average NO2 levels exceed 40 microgrammes per cubic metre   **Road Accident Casualties:** max 907 annual Road Casualties   **Safety and Security on Public Transport:**   Max 5,97 Crimes on Public Transport per year   71 % Satisfied with Security on Public Transport

<table>
<tr><td colspan="2">Policies and measures Describe the topics addressed (maybe just YES or NO?:</td></tr>
<tr><td>Individual motorised transport (road transport)

Public transport: yes

Walking and cycling: yes

Urban freight logistics: yes</td><td>Integration of modes (facilitating seamless and multi-modal transport): yes

Mobility management: yes

Addressing measures on all 3 levels (total transport volume; modal split; efficiency):</td></tr>
<tr><td colspan="2">Ex ante assessment of chosen options included in relation to achievement of targets. If yes, describe the actual content, tools used and maybe the result?

Yes, targets are based on ex-ante assessment of do nothing-scenario and preferred option.</td></tr>
<tr><td colspan="2">Monitoring (description of follow up and monitoring on a regular basis, e..g every 1 - 2 years. If yes, maybe a short description

Yes, annual monitoring at least on the target indicators</td></tr>
<tr><td colspan="2">Integration at administrative unit level (e.g. across sector policies and plans. If yes, short description):

Yes, the LTP makes the connections between:

• Businesses and their workforce and markets

• Connecting the Metropolitan Area nationally and internationally

• Connecting centres within the Metropolitan Area, and its Travel To Work Area

• People and their everyday needs

• The aspirations of the public and private sectors

• Transport and economic, spatial, health and social policy (“Quality of Life”)</td></tr>
<tr><td colspan="2">Integration across administrative unit levels (e.g. between more municipalities, at different levels of administration and authorities - regional / national -across sector policies and plans. If yes, short description):

Yes, the plan includes the whole urban area Birmingham, Wolverhampton, West Bromwich, Dudley, Walsall and Solihull.</td></tr>
</table>

Participatory approach (inclusion of venues, and procedures for involvement of citizens and relevant actors throughout the process. If yes, short description)

Yes, The consultation exercise was intended to engage with the three groups of consultees: The Metropolitan Districts, Key Stakeholders and General Public.

The consultation strategy was designed to give as many opportunities as possible for people to become involved. It also sought to encourage engagement from as wide a range of stakeholders and members of public as possible.

Actual results. *(any studies /monitoring etc showing actual results in the form of reduction of total traffic volume, change in modal split, changes/reductions in the problems with targets described (air quality, noise, accessibility, congestion, safety or …)*

Not yet, LPT3 has just started, but it is possible to look at the results of its predecessor Lpt2 (2006-2011): 15 of the 26 targets in LPT2 were achieved see also next figure.

Road Congestion	ACHIEVED
AM Peak Traffic Flows to Urban Centres	
AM Peak Public Transport Trips to Urban Centres	
Road Traffic Mileage	
Air Quality	
Access to Employment	
Access to Health	
Road Accidents: Total Slight Casualties	
Satisfaction with Local Bus Services	
Cycling	
Mode Share of Journeys to School	
School Travel Plans	
Workplace Travel Plans	
More Efficient Use of the Existing Transport Network	
Highway Condition: Principal Roads	
Road Accidents: Powered Two-Wheeler Casualty Rate	NO CLEAR EVIDENCE
HGV Access to Motorways and Industrial Estates	
Road Accidents: All Killed and Seriously Injured Casualties	NOT ACHIEVED
Road Accidents: Child Killed and Seriously Injured Casualties	
Bus Patronage	
Light Rail Use	
Bus Punctuality	
Economic Regeneration of Centres	
Personal Security while using Public Transport	
Highway Condition: Unclassified Roads	
Highway Condition: High Use Footway	

History *(a short narrative description of tradition for integrated planning, participatory approach, use of a variety of measures, achieved results etc?)* LPT3 is the third generation Local Urban Transport Plans. Therefore there is already more then 10 years of experience with this integrated and participatory approach, so one can speak of a tradition.
Overall expert assessment of the SUMP impact: ***(would the results not be achieved without the integrated SUMP approach, did the SUMP approach structurally changed the attitude of stakeholders toward sustainable urban mobility etc?)*** Our assessment is that it's the attitude and will to achieve results and the measures taken and implemented that caused the results achieved. The SUMP approach appeared an effective tool/guidance in the whole process of integrated planning, implementation, monitoring etc. There is not a direct, but merely and indirect causal relationship.

1.3 Nantes

Name of city and member state: Nantes, France
Title and year of plan Plan de déplacements urbains, 2010-2015, perspectives 2030 – Nantes Métropole Communauté Urbaine PDU Urban Mobility Plan, 2010-2015, perspective for 2030 – Nantes metropolitan agglomeration approved by the Council of the metropolitan agglomeration on 20 June 2011 ***Annexes Regulatory Assessments:***
Geographic coverage of the plan: iii) The plan covers the whole agglomeration, as defined by law, consisting of 24 municipalities.
Number of inhabitants in the plan area: 584,306, in 2007 (the year currently used in the law to define the PDU areas, to be revised).
Short term plan for implementation The short term plan of the PDU (for 2015) contains a large number of actions, for which implementation schedules, finance and responsibilities have been defined. They are grouped in 17 'families' of actions: [1] calming the urban environment, [2] improving the conditions for walking and cycling, [3] improving the accessibility for the mobility impaired, [4] parking policy, [5] improving the conditions for goods distribution in the centres, [6] improving the performance of public transport, [7] improving the access to services for the most vulnerable, [9] continued study of the Loire crossings for all modes, [10] promoting reasoned use of the individual motorised modes, [11] improving the safety of mobility, [12] organising the accessibility and attractiveness of the agglomeration, [13] continuing the information and communication, [14] adapting the transport services to the new urban rhythms, [15] securing the role of Nantes Métropole in national and European organisations, [16] improving the coherence between urban and transport policies, [17] monitoring and evaluating the PDU.

Status analysis and baseline *(comprehensive review. if yes, describe the content e.g. counts, household surveys, traffic modelling, forecast periods for baseline etc.:*

As the evaluation of environmental policies is a recent phenomenon in France, new tools are being developed at the national level, but these were not yet available to be used in the preparation of the Nantes PDU 2010-2015-2030. In the absence of such tools it did not prove possible to establish strong links between the actions and the results for the environment. Therefore, a quantitative evaluation was made for each of the actions, indicating if the action had a positive impact on the environment, required attention, or had a neutral impact.

A quantitative evaluation, notably of the effect of the mobility behaviour changes, was based on the mobility of the inhabitants of the agglomeration. The calculations are made at a more overall level, were using forecasting instruments that have been developed at the national and the regional level. These are fed by extensive household travel surveys, which are organised by the authority at relatively regular intervals (most recently in 2008). The evaluation compared two scenarios, (1) 'technology only' and (2) 'behaviour only', each scenario assuming that the other factor remains constant. Scenario (1) varies the technology and the demography but not the mobility behaviour, in scenario (2) unchanged technology is assumed. These scenarios appear to play the role of reference scenarios (baseline).

Specific objectives and measurable targets

See tables 1 and 2 above. For the quantification of the GHG and pollutant emissions, special forecasts have been made. Table 3 presents the results for GHG.

Table 3: Results for 2015 and 2030 of the PDU measures on GHG emissions, related to 1990, the reference year of the Kyoto Protocol

	1990	2008	2015	2030
inhabitants of Nantes Métropole	505,000	579,000 +15%	622,425 +23%	694,800 +38%
number of trips per day	1,739,000	2,061,000 +19%	2,216,133 +27%	2,474,693 +42%
GHG emissions / year in (t)	550,648	749,806 +36%	746,394 +36%	580,678 +5%
GHG emissions / year / inhabitant (t)	1.09	1.30 +19%	1.20 +10%	0.84 –23%

There are three developments in the numbers: [1] the population increase in the area, [2] the effect of the change in mobility behaviour of each inhabitant, caused by the PDU measures, [3] the effects of technology on the emissions per trip per inhabitant. The effects of [2] and [3] are shown separately and together in the annex to the PDU. In this way, it is demonstrated that technologic innovation alone cannot bring about the reduction and that the change in mobility behaviour has to be the most important element of the planned change, thus justifying the measures on trip behaviour.

Based on the same data, the effects on atmospheric pollutants are presented. Table 4 presents the results for 2015 and table 5 for 2030. The PDU notes that, contrary to the GHG emissions, the most important element in the reductions has to be technologic improvements, the changes in mobility behaviour alone cannot bring about the reduction.

Table 4: Results for 2015 of the PDU measures on atmospheric pollution, related to the PDU base year of 2008

pollutants	base year 2008 in t / year	PDU plan 2015 in t / year	development 2008 – 2015
CO	3,645	1,150	–68%
NO_x	2,588	2,217	–14%
VOC	4,191	4,184	0%
PM	119	64	–46%

Table 5: Results for 2030 of the PDU measures on atmospheric pollution, related to the PDU base year of 2008

pollutants	base year 2008 in t / year	PDU plan 2030 in t / year	development 2008 – 2030
CO	3,645	797	–78%
NO_x	2,588	829	–68%
VOC	4,191	4,560	+9%
PM	119	15	–87%

Policies and measures*:*

Individual motorised transport *(road transport)* yes

Public transport: yes

Walking and cycling: yes

Urban freight logistics: yes

Integration of modes *(facilitating seamless and multi-modal transport):* yes

Mobility management: yes

Addressing measures on all 3 levels *(total transport volume; modal split; efficiency):* yes

Ex ante assessment of chosen options

The calculations are made using forecasting instruments that have been developed at the national and the regional level. These are fed by extensive household travel surveys, which are organised by the authority at relatively regular intervals (most recently in 2008).

Monitoring

Monitoring and evaluation are legal requirements for any PDU. An 'observatory' is charged with the monitoring. All of the quantified targets are being monitored.

Integration at administrative unit level

The PDU is made by the Communauté Urbaine of the agglomeration, which is responsible for organising public transport and many other aspects of transport, but not the road network. This public agency assembles the municipalities involved (24 in this case) which together govern the authority. These are al represented in the Council of the Communauté Urbaine which has given the final approval to the PDU. Agreement with the relevant policy domains of the municipalities is assured in this way, although this requires a lot of deliberation. Important in this respect is the responsibility of the individual municipalities for their road network and for traffic and parking regulation and the traffic police.

Integration across administrative unit levels The law requires that the PDU be in line with the plans of higher authorities, meaning that it should not be an obstacle for these other policies. Other government levels also have competencies in the domain of transport in the agglomeration: the national state (long distance and freight train services, the railway and the highway network), the region (shorter distance train services), the department (inter-municipal coach and school bus services, departmental roads). Here, a lot of deliberation is necessary as well. And there are also competencies in related domains, such as urbanisation and spatial planning. An important document in this context is the 'SCOT' (the territorial coherence scheme) Nantes - St.Nazaire, which sets out the principles for spatial planning in a wider area.
Participatory approach The law specifies the consultation and approval procedures. All along the preparation of the PDU, a large number of public and private stakeholders was consulted, on a wider scale than required by law (the PDU mentions 93 meetings). The procedure ends with a public consultation, but in fact members of the public and their associations were already involved at the earlier stages.
Actual results Monitoring results have not yet been published; it is too early for that.
History The first mandatory PDU of Nantes dates from 2000. The present one is the second under this legal regime, and the first one to quantify the difference in GHG emissions as a result of the measures (mandatory since 2010). Before 2000, Nantes had already a strong tradition of public transport development. It was the first city to create a new tramway network post WW II (1976), which sparked off many new tram networks in France, after all but a few had been discarded before and shortly after the war, to make more room for the car. More recently, it became a pioneer in high quality bus services (Busway, Chronobus).
Overall expert assessment of the SUMP impact: ***(would the results not be achieved without the integrated SUMP approach, did the SUMP approach structurally changed the attitude of stakeholders toward sustainable urban mobility etc?)*** The PDU certainly mobilised the stakeholders for the achievement of sustainable urban mobility, contributing to a change of attitude. The PDU is structured in such a way as to show clearly that only the package of measures (both new technologies and trip behaviour changes) together, allow attaining a significant reduction in GHG emissions. Even is this is only per capita and not in total. It is difficult to say if this would have been achieved without a SUMPT-approach, as the PDU is mandatory in France and all agglomerations above 100,000 have to make it. The PDU of Nantes is one of the most progressive recent PDUs, in the elaborated set of objectives which are quantified and therefore can be monitored clearly. The change opf attitude is shown by the fact that the objectives are more ambitious than those of the preceding PDU (2000).

1.4 Sofia

Name of city and member state: Sofia, Bulgaria
Title and year of plan City of Sofia has no dedicated "urban mobility plan". The following plans cover urban and transport planning issues in Sofia: › Sofia General Master Plan (GMP) revised in 2009 (an overall spatial plan including main directions to improve the transport system and a time horizon to 2020) › Sofia Development Plan 2007 - 2013 (the plan summarises planned measures, programmes and projects for implementation until 2013 including an investment programme) › General Traffic Management Masterplan (started in 2009 and ongoing).
Geographic coverage of the plan: Sofia City covers a major part of the Sofia agglomeration both in area and population, but the agglomeration in total consists of 6 municipalities (Sofia municipality- the city and a few smaller settlements - has approx. 1.2 million inhabitants and the total agglomeration approx. 1.4 million inhabitants.
Number of inhabitants in the plan area: City of Sofia has approx 1.2 million inhabitants.
Long-term strategy: The GMP includes an overall objective for transport development up to year 2020: *"to create conditions for linkage of the city of Sofia and its area with the European highway infrastructure and transformation of the city into a regional crossroads centre, as well as development of the urban transport system and transformation of Sofia into a modern European metropolis"* The GMP furthermore includes overall approaches for the improvement of the street network, the public transport and development of a bicycle network. Some of these approaches are followed up in the Municipal Development Plan 2007 - 2013 giving priorities to selected actions.

Short term plan for implementation

The Development plan does not include budgets or specific time schedule. Nevertheless, Sofia City is together with 6 more cities part of a Bulgarian programme "Sustainable and Integrated Urban Development" being implemented as part of an Operational Programme for Regional Development (OPRD) 2007 to 2013 developed together with the EC. The programme provides the framework for supporting EU financing in the areas eligible for Structural funds, and in particular – for the European Regional Development Fund (ERDF).

All seven cities were given financial support (consultancy work) from the OPRD in 2010 - 2012 to develop a feasibility study identifying feasible projects. The feasibility study ended up with an application for grant from the ERDF to implement selected feasible projects. The grant has been given in 2012. The grant was given to support public transport in the form of improved ITS priority systems for public transport, information boards, modernisation and construction of a new tramway line and purchase of new trolleybuses.

Contents

In Sofia a feasibility study has been developed (as for the other cities in Bulgaria) cover the following:

- A thorough mapping of present situation on urban transport (travel surveys, demographic data, infrastructure mapping, urban public transport system)
- Set up of objectives and to some degree measurable targets for the successful implementation of supported projects from the ERDF
- Transport modelling, even though only some of them can be said to deal with modal split issues
- Analyses and evaluation of various project package options, generally by using multi criteria analyses.
- Cost benefit analyses of preferred options
- Implementation plans including organisational set up, responsibilities, time schedule and procurement plans.

Status analysis and baseline *(comprehensive review. if yes, describe the content e.g. counts, household surveys, traffic modelling, forecast periods for baseline etc.:*

For Sofia City, a transport model comprising public transport has been developed and for this purpose also household surveys have been carried out. The model has been used for the feasibility study described above and other major studies on e.g. new metro lines in the city. The city has to some degree an overview of the current traffic situation including all modes of transport as well as road accidents.

Specific objectives and measureable targets

No specific objectives and targets have been developed.

Policies and measures*:*

Individual motorised transport *(road transport) yes*	**Integration of modes** *(facilitating seamless and multi-modal transport): no*
Public transport: yes	**Mobility management:** no
Walking and cycling: yes	**Addressing measures on all 3 levels** *(total transport volume; modal split; efficiency): no*
Urban freight logistics: no	

Ex ante assessment of chosen options

For the feasibility study described above, qualitative ex-ante assessments (multi criteria analysis) were carried out for various project options and a full cost-benefit analysis, financial analysis, social analysis and environmental analysis was prepared for the chosen option.

No assessment has been made of a total plan

Monitoring

No, only for the follow up of the projects granted by EU.

Integration at administrative unit level

No records have been identified on integration at administrative unit level.

It may though be added, that Sofia City has established an Urban Mobility Centre having the tasks to plan and operate a number of transport activities - especially public transport and parking as well as information to the public on transport issues in the city.

Integration across administrative unit levels

No specific integration has been identified.

Participatory approach

No specific participatory approaches have been identified on transport policy in Sofia City.

Actual results

To a certain degree, historical figures exist on the actual traffic performance in the city including changes in modal split.

History The urban transport planning in Bulgaria - and in Sofia - has no strong tradition. The legislation includes the demand of preparing the overall master plan including issues on socio-economic and spatial development, including transport infrastructure. Bulgaria has, except for the OPRD activity on sustainable urban transport systems, no national guidelines for urban transport planning. During the development of the activity, several seminars were held among the municipalities to share and disseminate knowledge. Furthermore, Sofia may be outstanding compared to other Bulgarian cities in following international development trends and having expertise in actually carrying out planning itself.
Overall expert assessment of the SUMP impact: ***(would the results not be achieved without the integrated SUMP approach, did the SUMP approach structurally changed the attitude of stakeholders toward sustainable urban mobility etc?)*** Sofia City has not developed a SUMP like approach and it is difficult to judge whether such an approach would be easy to implement and have political support to implement. Presently, the major challenges seem to be to modernise and old infrastructure in a fairly bad condition (street network, pavements, public transport vehicle fleet, public transport infrastructure etc). The political focus therefore may be more on ensuring investments in such modernisation rather than investing in other planning principles without having a clear incentive for it.

1.5 Berlin

Name of city and member state: Berlin, Germany
Title and year of plan *(original language and in English. If it is a series of plans, this could also be mentioned)*: Stadtentwicklungsplan Verkehr (StEP Verkehr, from now on called the Plan) 2011 (Urban development plan, transport)
Geographic coverage of the plan: *i) within one municipality covering the whole urban area; ii) within one municipality covering only part of the urban area; iii) a regional plan covering more than one city/municipality and the whole (or main part of the) urban area;* The plan covers the Berlin-Brandenburg metropolitan area.
Number of inhabitants in the plan area: *(figures should come from our overall statistics?)* Berlin has approx. 3.4 million inhabitants and Brandenburg approx. 2.6 million inhabitants.

Long-term strategy, *(10 - 20 - 50 year perspective, long term vision / inclusion of general objectives according SUMP definition. If yes, write the used time horizon and the actual content)*

The mobility plan includes initiatives in the four dimensions economic, social, ecological and institutional goals. Besides initiatives aimed at the urban area it also includes initiatives to improve regional and trans-European mobility to and from Berlin. In the economic dimension the mobility plan aims at securing and improving the functioning of urban freight transport as well as the creation of an appropriate framework for the improvement of effectiveness and economic sustainability of the entire urban mobility network. On the social level the mobility plan of Berlin aims at creating equal mobility chances taking into account different mobility needs of residents in different life situations, at strengthening the poly-centric structure of Berlin and at increasing safety of all modes and users. The plan furthermore aims at reducing the natural resource (fuel, land) use of urban mobility, at increasing multi-modality and integrating stakeholders from all social groups into the development of initiatives.

Short term plan for implementation *(e.g. within 2 - 5 years. If yes, write the actual status and also whether it is approved with time schedule and budget - or even implemented):*

The StEP Verkehr is followed by a "Mobilitetsprogram 2016" (Mobility programme 2016). The programme (March 2011) makes a more specific and operational description of the actions to take in a coordinated and efficient manner.

No record of timing, political decisions and budgeting has yet been identified.

Status analysis and baseline *(comprehensive review. if yes, describe the content e.g. counts,* ***household surveys, traffic modelling, forecast periods for baseline etc.:)***

The StEP Verkehr is based on a transport prognosis for the year 2025 which again is based on a comprehensive set of data. The prognosis is furthermore used to analyse traffic volumes, passenger kilometres and modal splits in several alternative scenarios and in sensitivity analyses.

Specific objectives and measureable targets *(reflecting general objectives and indicators. If yes, describe them)*

For the environmental dimension, a long list of quantitative targets is included. Illustrative examples are given below:

- Reduction of transport related energy consumption by 20 percent from 2008 to 2025
- Reduction of traffic caused air pollution by year 2025 with the aim of being significantly below (25 percent) the limits contained in the EU Directives
- Reduction of noise pollution from the main roads network for at least 100,000 residents being exposed to night levels above 60 dB and removing noise exposure above 65 dB at night for residents.
- Change of modal split in passenger transport by 2025 so that at least 75 percent uses sustainable transport modes (total for the city) and at least 80 percent in the city within the S-Bahn ring
- A significant raise of bicycle traffic in the total modal split.

Policies and measures *Describe the topics addressed (maybe just YES or NO?:*

Individual motorised transport *(road transport) yes*	**Integration of modes** *(facilitating seamless and multi-modal transport): yes*
Public transport: yes	**Mobility management:** yes
Walking and cycling: yes	**Addressing measures on all 3 levels** *(total transport volume; modal split; efficiency): yes*
Urban freight logistics: yes	

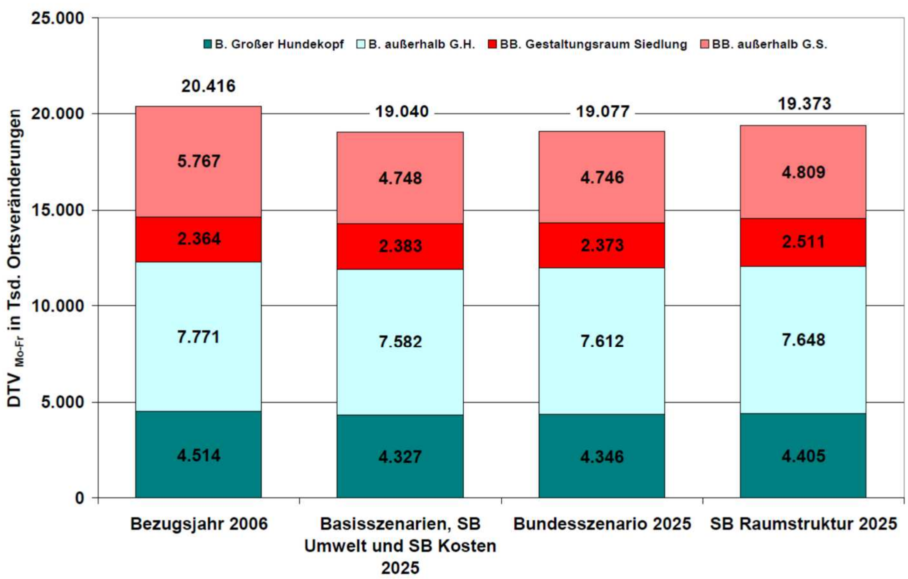
Ex ante assessment of chosen options *included in relation to achievement of targets. If yes, describe the actual content, tools used and maybe the result?*

Three scenarios for the year 2025 were developed. Base scenario 1 assumes that all agreed infrastructure projects are implemented, an increase of 1% p.a. in income adjusted user costs for motorized private transport, constant income adjusted user costs for public transport and an increase in parking fees proportional to income rises. Base scenario 2 has the same basic assumptions but furthermore includes an improvement in public transport infrastructure and services. Scenario 3, the so-called "Bundesszenario" assumes no changes in infrastructure compared to base scenario 1, but an increase in the working population of 120.000 and cost increases in public transport in line with cost increases for motorized private transport.

Additionally to the three scenarios the analysis includes three sensitivity analyses, one on costs, environment and spatial structure respectively. While the environmental sensitivity analysis studies the effect of reductions in car traffic speeds and increased parking fees the cost analysis and the spatial structure analysis focus on changes in income and cost developments and on migration respectively.

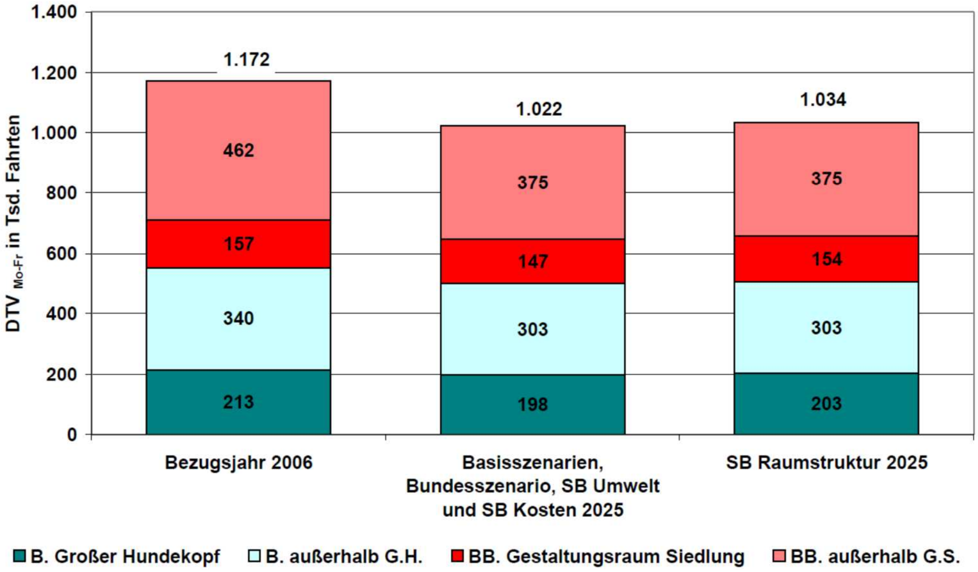
The figure below presents passenger traffic volumes for the year 2025 in the base scenarios, the "Bundesszenario" and the spatial sensitivity analysis compared to the base year 2006. Each of the scenarios shows a small decrease in passenger traffic volumes until 2025.

Passenger traffic volumes



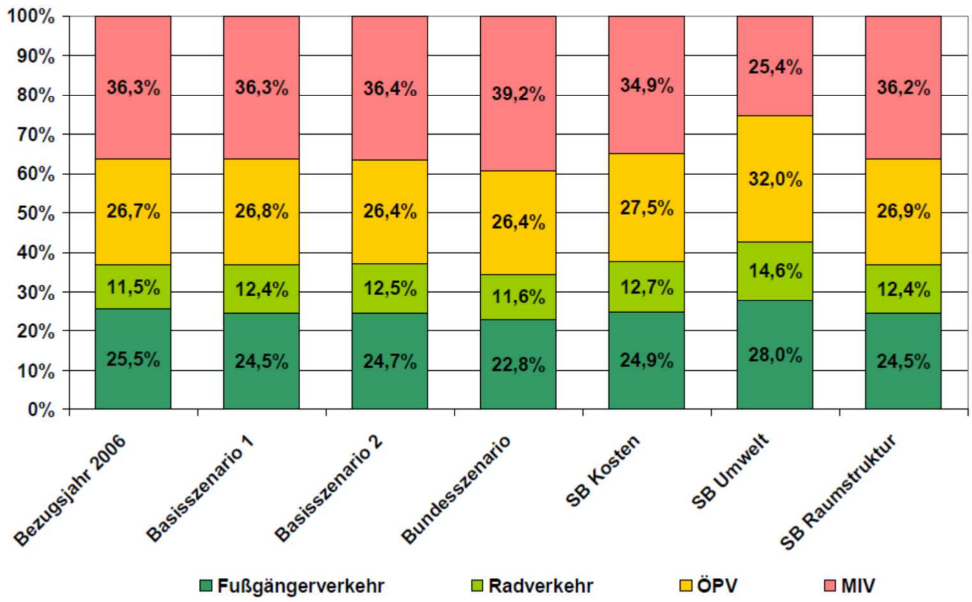
The projected decrease in freight traffic volumes is slightly higher in all scenarios than those in passenger traffic volumes. Together these two developments will however lead to a significant decrease in the number of vehicles on the roads.

Freight traffic volumes



Error! Reference source not found. The figure below shows the modal split in passenger traffic in Berlin in the year 2025 under the different scenarios and all sensitivity analyses. Except for the sensitivity analysis environment (SB Umwelt) all scenarios show only minor changes in the modal shares of pedestrians (dark green), bicycles (light green), public transport (yellow) and motorized individual traffic (red). Speed limits and increased parking fees as assumed in the environment sensitivity analysis would lead to a decrease of motorized individual transport from 36.3% in 2006 to 25.4% in 2025. In the same time the shares of pedestrians, bikes and public transport would increase slightly.

Modal split passenger traffic



Monitoring *(description of follow up and monitoring on a regular basis, e.g. every 1 - 2 years. If yes, maybe a short description* Yes, annual monitoring and reporting to the responsible political committee. Relevant indicators are being developed in the first part of 2013.
Integration at administrative unit level *(e.g. across sector policies and plans. If yes, short description):* Yes, the StEP Verkehr describes clearly a coordinated and integrated approach.
Integration across administrative unit levels *(e.g. between more municipalities, at different levels of administration and authorities - regional / national -across sector policies and plans. If yes, short description):* Yes, the plan includes the whole agglomeration
Participatory approach (inclusion of venues, and procedures for involvement of citizens and relevant actors throughout the process. If yes, short description)
Actual results. *(any studies /monitoring etc showing actual results in the form of reduction of total traffic volume, change in modal split, changes/reductions in the problems with targets described (air quality, noise, accessibility, congestion, safety or …)*
History *(a short narrative description of tradition for integrated planning, participatory approach, use of a variety of measures, achieved results etc?)*
Overall expert assessment of the SUMP impact: ***(would the results not be achieved without the integrated SUMP approach, did the SUMP approach structurally changed the attitude of stakeholders toward sustainable urban mobility etc?)***

1.6 Barcelona

1.6.1 Data examples

Data for modal split

	2006	2007	2008	2009	2006-2009
Pedestrian and bicycle	45.0%	44.6%	45.6%	47.7%	5.9%
Public transport	18.3%	18.2%	19.2%	18.3%	10.0%
Private transport	36.7%	37.2%	35.2%	34.0%	-7.3%

Data for various impacts

	2006	2008	2010	2011	Increment
Modal change					
Pedestrian and bicycle	45.0%	46.5%	47.8%	47.9%	6.5%
Public transport	18.3%	18.5%	17.9%	16.9%	-7.6%
Private transport	36.7%	35.1%	34.3%	34.2%	-6.9%
€/km					
Public transport	0.554	0.567	0.570	-	4.7%
Private transport	0.873	0.888	0.876	-	0.4%
Energy					
Energy consumption (M Tep/year)	2,139	2,105	1,978	-	-7.5%
Fuel consumption (M Tep/year)	2,078	2,009	1,876	-	-9.7%
Pollution					
PM_{10} (ton/year)	2,238	1,994	1,800	-	-19.6%
NO_x (ton/year)	33,417	29,519	25,845	-	-22.7%
Traffic fatalities					
Deaths	99	83	51	40	-59.6%

1.6.2 City case

Name of city and member state: Barcelona, Spain
Title and year of plan: "Pla director de mobilitat de la Regió Metropolitana de Barcelona 2013-2018" (Mobility plan of the Barcelona Metropolitan Region 2013-2018) which is the successor of the "Pla director de mobilitat de la Regió Metropolitana de Barcelona 2007-2012" (Barcelona Metropolitan Region's Mobility plan 2007-2012).
Geographic coverage of the plan: Barcelona Metropolitan Region with a surface area of 2.464,4 Km^2 that covers 164 municipalities.

Number of inhabitants in the plan area: 5.029.181 inhabitants
Long-term strategy: *(10 - 20 - 50 year perspective, long term vision / inclusion of general objectives according SUMP definition. If yes, write the used time horizon and the actual content)* A long-term strategy provides the basis and guidelines for all the PdMs (Mobility Plans) with these general objectives: - Improve public transport network. - Improve goods transport logistic system. - Improve road network safeness. - Promote non-motorised transport modes and improve the environmental quality of the Barcelona Metropolitan Region.
Short term plan for implementation: *(e.g. within 2 - 5 years. If yes, write the actual status and also whether it is approved with time schedule and budget - or even implemented):* The same plan provides the guidelines for the short term actions with the same general objectives
Status analysis and baseline: *(comprehensive review. if yes, describe the content e.g. counts, household surveys, traffic modelling, forecast periods for baseline etc.):* **Review.** The Mobility plan of the Barcelona Metropolitan Region 2013-2018 has taken into consideration all the data provided by TransMet Xifres, a big database with all the information related to Mobility issues like number of bus and subway users, average travelled distance, increase or decrease of the public transport demand or public transport financial results. The mobility plan also has considered the periodical surveys about user's daily mobility. **Forecasts.** Forecasts for % public transport vs. private transport, transport model forecasts, energy consumption forecast or emission of atmospheric contaminants have existed for many years and have been integrated in the planning processes for many years.
Specific objectives and measureable targets: - Reduce the unit cost of transport - Reduce the average distance travelled - Promote modal shifting - Moderate the energy consumption - Reduce the air and noise pollution - Reduce the occupation of the public space from vehicles - Integration of transport infrastructures into the landscape - Reduce accident rates

Policies and measures *Describe the topics addressed (maybe just YES or NO?:*

Individual motorised transport *(road transport)*

Public transport: Yes

***Walking and* cycling:** Yes

Urban freight logistics: Yes

Integration of modes: Yes

Mobility management: Yes

Addressing measures on all 3 levels *(total transport volume; modal split; efficiency):*

Ex ante assessment of chosen options *included in relation to achievement of targets. If yes, describe the actual content, tools used and maybe the result?*

Monitoring:

The data is monitored every 2 years and the whole PdM (Mobility Plan) is reviewed every 6 years.

Integration at administrative unit level:

The national government provides only national recommendations for urban plans. However, Barcelona is in Catalonia, and this particular region of Spain has some competence on transport planning, with the new "Llei de Mobilitat" (Mobility Law). All the mobility plans are based on the National Mobility Directives approved by Catalonia government. The authority who is in charge of these plans is the Metropolitan Transport Authority of Barcelona (ATM) that is controlled by the Catalonia Government and has some State presence with observers and consultants.

These mobility plans includes:

- Pla Director d'Infraestructures (Infrastructure Plan)
- Pla territorial metropolitan (Metropolitan Territory Plan)
- Pla d'Infraestructures del Transport de Catalunya (Catalonia's Transport Infrastructures Plan)
- Pla de l'energia de Catalunya (Catalonia's Energy Plan)
- Pla estratègic metropolità de Barcelona 2010-2020 (Barcelona Metropolitan Region Strategic Plan 2010-2020)
- Pla estratègic de la bicicleta (Bicycle strategic Plan)
- Pla de seguretat viària 2011-2013 (Road Safety Plan 2011-2013).

Integration across administrative unit levels: Municipal governments, regions governments and Catalonia Government are in charge of the implementation of all the Metropolitan Region's plans. Example: Pla de Mobilitat Urbana de Barcelona 2013-2018 (Barcelona's Urban Mobility Plan 2013-2018) provides the basis and guidelines for the Barcelona's Mobility actions.

Participatory approach: Metropolitan Transport Authority of Barcelona (ATM) has a citizen forum in its web page for suggestions. In 1998 Barcelona City Hall created the "Pacte per la Mobilitat" (Mobility Compact) as a forum where local administration and entities or associations could talk about mobility issues.
Actual results. - Minimize the distance travelled: 1,6 Km from 2006 to 2010 - Encourage modal shift: bikes and pedestrians ratio increased by 6.5% from 2006 to 2010 and public transport and private transport decreased by 7.6% and 6.9% - Reduce the consumption of energy: Total energy consumption decreased by 7.5% from 2006 to 2010. - Reduce the consumption of petroleum-based fuel: Total consumption decreased by 9.7% from 2006 to 2010. - Reduce NO_x emissions: NO_x emissions decreased by 22.7% from 2006 to 2010. - Reduce the accident rate: number of deaths per year decreased by 59.6% from 2006 to 2010 and number of serious accidents per million vehicle decreased by 7.7% - Improve railway public transport system: increase train frequency, two news subways lines, increase subway frequency and a new nocturne subway service. - Promote non-motorised transport modes: New interurban bike-lane network, improve bike parking's safeness. - Improve Bus network: More bus lanes, improve nocturne service, new express services. - Renew vehicle stock: Give incentives for the use of hybrid vehicles and incentives for acquisition of more efficiency vehicles. *(any studies /monitoring etc showing actual results in the form of reduction of total traffic volume, change in modal split, changes/reductions in the problems with targets described (air quality, noise, accessibility, congestion, safety or …)*
History: The Metropolitan Transport Authority of Barcelona (ATM) is a huge consortium created in 1997 composed of local administrations and the Catalonia Government. The ATM was created to be the union between all the organizations and administrations involved in transport issues. Since 2003 ATM has been in charge of elaborating and creating the Mobility Plans, collecting transport information, promoting sustainable mobility and promoting the participation of citizens with forums and activities. This has made Barcelona the sustainable mobility reference in Spain.

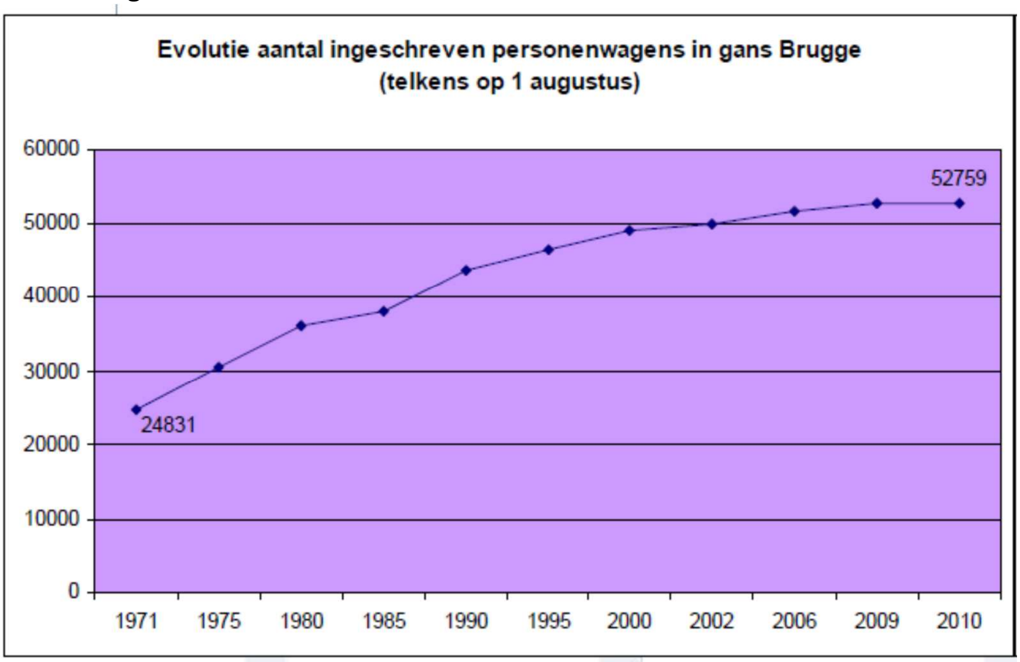
1.7 Brugge

Evaluation Mobility plan Brugge

Since the introduction of the sustainable Mobilityplan in 2004 and the update in 2008 the City followed accurately the effects of the decisions taken on the basis of objective figures. A first evaluation was done in 2007. In May 2011, a new evaluation was completed. Targets are defined as more (public transport, cycling) or less (traffic accidents), not in figures.

Main results[78]:

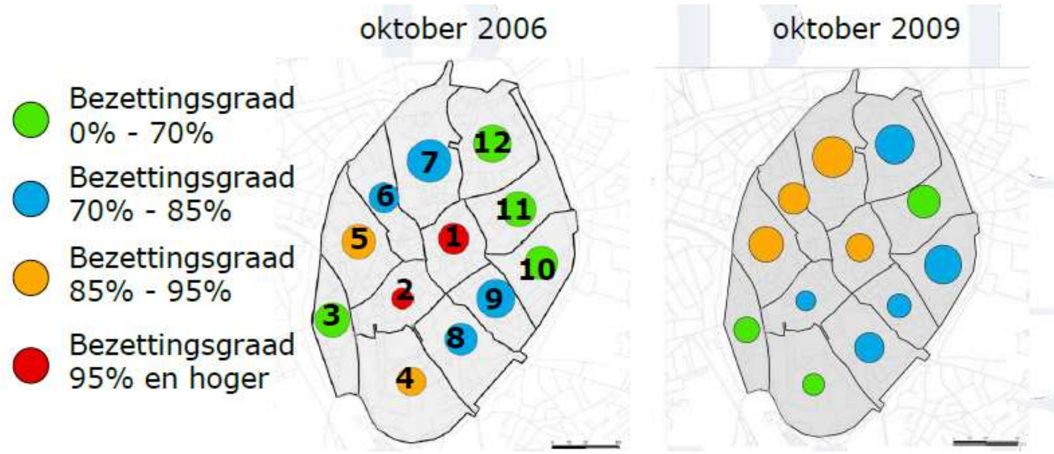
a. Registered cars



Development number of registered cars in Brugge

b. Parking occupancy inner city

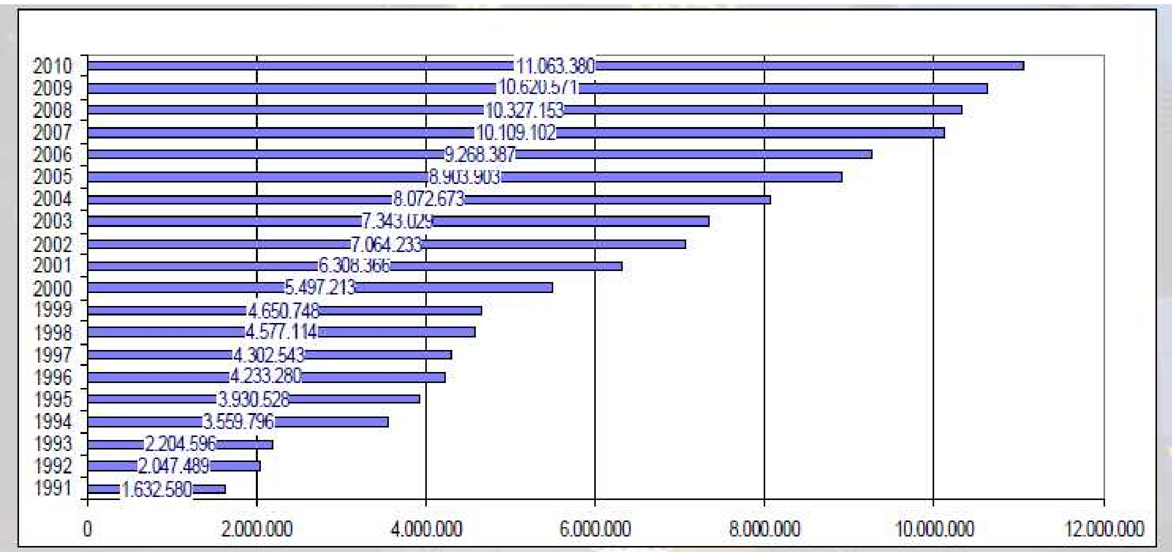
[78] Evaluatie mobiliteitsplan 2011, stad Brugge mobiliteitcel



c. Incoming traffic

Incoming cyclists	2004 – 2006: + 5,2%
	2006 – 2009: - 8,8%
	2004 – 2009: - -3,9%
Incoming cars	2004 – 2006: - 20,3%
	2006 – 2009: + 1,6%
	2004 – 2009: - -15,5%

d. Local public transport



Number of passengers in local public transport per year

User satisfaction survey:
2006 : 66% (comletely satisfied)
2010: 84% (comletely satisfied)

1.8 Oxford

Oxfordshire Local Transport Plan 2006-2011 Target monitoring, August 2011

In the Oxfordshire Local Transport Plan 2006-2011 28 indicators were outlined. Of these, 19 were core indicators set by central government and 9 were additional local indicators which were added to match the indicator set to local priorities. An additional indicator was added to the set when an Air Quality Action Plan was agreed for Henley, including a reduction target. In 2009 two bus punctuality indicators were removed from the monitoring set as a result of changes to the National Indicator set so that a total of 27 indicators remain.

	Target met	Target not met	Not surveyed
Core targets	9	9	0
Local indicators	4	4	1
TOTAL	**13**	**13**	**1**

	Improvement	Deterioration	No Change/ Not surveyed
Core targets	15	3	-
Local indicators	6	1	2
Total	**21**	**4**	**2**

It is clear that in terms of making improvements in the indicators LTP2 has been highly successful. The disappointing 2010/11 results (only 50% of the targets met) can be attributed to:

- Setting too stretching a target in 2006; and
- Even where improvement continued in 2010/11 for a number of indicators it was slower than in previous years.

Results TP2

	2003	2004	2005	2006	2007	2008	2009	2010	target 2010
CORE TARGETS									
Percentage of principal classified roads requiring maintenance (%)			4.4	4.6	4	4	5.0	4	
Percentage of non-principal classified roads requiring maintenance (%)			17	10	8	8	9.0	10	
Percentage of unclassified roads requiring maintenance (%)				16.0	14	12	12	13.1	

	2003	2004	2005	2006	2007	2008	2009	2010	target 2010
Footways (%)		30.5	26.0	47.4	13.0	-	6.0	9.0	28.8
All casualties (killed or seriously injured) (no)	482	381	335	372	374	343	345	395	245
Child casualties (no)	32	28	31	19	24	24	20	23	20
Slights casualties (no)	2480	2254	2491	2563	2272	2076	1923	1847	2223
Bus patronage (number of trips, millions)	34.7	34.5	33.3	34.89	35.30	36.24	35.3	36.22	37.5
Bus satisfaction (%)	49	-	-	52	-	-	66	68	55
Area wide mileage (millions of vehicle kilometres)	11.43	11.49	11.60	11.63	11.69	11.44	11.30	11.23	12.2
Cycling levels (index)			100	99.43	103.89	100.4	107.4	104.8	100
Car journeys to school (% from total number of journeys to school)			22.2	21.8	23.9	24.9	24.2	24.6	18
Number of journeys into Central Oxford in the morning peak hour	10400	10100	10220	9800	9400	9400	9200	8886	
Air Quality Oxford (microgrammes per cubic metre NO2)	64	64	64	62	57	51	50	57	53
Air Quality Henley (microgrammes per cubic metre NO2)				50	53.7	47	38	40	
Access to a town centre: % of the population within 30 minutes travel			87.1	87.0	86.9	76.1	76.0	76.9	87.6
Bus punctuality (non-frequent services at starting point) (%)			81.25	76.0	79.6	65.0	72.0	77.1	
Bus punctuality (non-frequent services at intermediate points) (%)			55.5	60.1	64.2		Dis-continued		
Bus punctuality (non-frequent services at non timing points) (%)			53.4	57.9	56.4		Dis-continued		
Bus punctuality (frequent services) (minutes delay)			1.22	1.64	1.47	1.40	1.62	1.69	1.25
Congestion	-	-	-	-	-	-	-	-	
LOCAL INDICATORS									
Pedestrian casualties (no)	243	247	200	200	218	215	185	168	148
Cyclist casualties (no)	239	237	175	260	269	297	273	236	140
Powered 2-wheeler casualties (no)	326	258	261	255	260	227	226	213	236
Wet skid (slipping) accidents (no)	233	286	306	285	222	217	179	166	257
Approved school travel plans (%)	26	23	39	65	65	95	95	91	100
% Ease of use of rights of way of total network		64.5	63	74	72	75	70	73	78
Pedestrian crossings with facilities for disabled persons (%)	37.2	50.9	65	76	86	87.4	88.4	89.4	85
Proportion of households with easy access to hospitals by public transport (%)	36.7	37.2	28.2	95.9	94.9	-			

	2003	2004	2005	2006	2007	2008	2009	2010	target 2010
Quality of street environment (% satisfied, source citizen panel)				59	61	-	-	59	

	Target achieved
	Target not achieved

Appendix E Method and Data Used in Creutzig et al (2012)

1 Method and Data Used in Creutzig et al (2012)

This appendix describes the approach used by Creutzig et al (2012) to estimate benefits from urban planning policies in four European cities. The approach consists of four stages: 1) stakeholder self-assessment on transport-related challenges and existing policies; 2) stakeholder meetings and interview in cities evaluating the current situation and the existing set of policies; 3) quantitative evaluation of key sustainability dimensions and construction of low-carbon and sustainability scenarios of increasing ambition; 4) stakeholder workshop to communicate the quantitative scenarios and integrate stakeholder feedback into these scenarios. In the following we describe the four stages. We focus on the method used for quantitative evaluation. This appendix reproduces much material from different documents linked to Creutzig's (2012) paper.

Stakeholder self-assessment

The stakeholder self-assessment in done in an interactive spreadsheet, which was developed for the purpose of the study. The spreadsheet can be found at http://iopscience.iop.org/1748-9326/7/4/044042/media under "Questionnaire". In the self-assessment, respondents are asked to first indicate how important a range of transport-related problems are considered to be in their city. Then the respondents are asked to indicate the level of development of urban planning policy. Examples of questions asked are how far their city is in the participation of local actors, how far the development and implementation of action plans has come, and whether targets and visions have been developed. This spreadsheet might be useful for the Commission to currently monitor the development of SUMPs. The fact that this policy assessment was done as part of Creutzig et al (2012) is part of the reason why we believe it might be useful to gauge the impacts of SUMP policy across Europe. The policy assessments provide an estimate of the "distance" of each city from a fully developed SUMP.

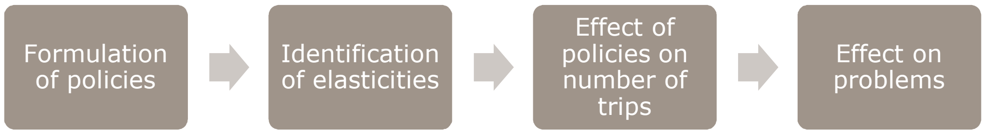
Stakeholder meetings and interview

The stakeholder meetings and interviews were used to identify the policies and policy intensities in each of the cities. The policies were tailor-made for the situation in each city. The resulting policies are shown in Table 2. We have not been able to find details of the process at the interviews.

Quantitative evaluation

Creutzig et al (2012) utilize the following steps to perform the evaluation:

Figure 1-1 Process used for quantitative evaluation



Source: Own exposition

The *Formulation of policies* is done on the basis of the policy measures identified in the *stakeholder meetings and interview*, but operationalized to match the available literature and data relevant for the evaluation.

Table 19 List of policy scenarios and policies in Creutzig et al (2012)

Area	Policies
Barcelona	**Pull measures**
	Rapid, high frequency bus and tram network, priority lanes
	Construction of L10 (connection of two tram lines)
	Extension of regional rail based public transport. Combined with the above two measures it leads to an increase in public transport speed, density and quality of 5 %
	Dense system of dedicated cycle lanes. This leads to an increase in the density of bicycle lanes of 50 %
	Together, the above measure lead to a reduction of road capacity of 10 %
	Pull + Push measures
	+Traffic calming and pedestrian/cycle only areas with high street density.
	+Enforcement of traffic calming measures towards motorcycles. Together with the above, it leads to a reduction in road capacity of 10 % and roads with a speed limit of 30 km/h
	+Doubling of parking charges and reduction of parking space.

Area	Policies
	Pull + Push + Land use measures
	+Densification in the suburban areas. Develop city from the inside. Settlements only in areas connected to public transport.
	+Mixed usage: support transition to suburban centres and polycentric topology. Combined with the above measure it leads to an increase in population density of 50 %.
	+Congestion charging.
Malmø	**Pull measures**
	Extension of regional rail based public transport
	Introduction of tram network. Combined with the extension of regional rail transport, it leads to 22 % increase in public transport travel speed
	Encouragement of intermodality.
	Cycle lanes. Combined with the encouragement of intermodality, it leads to 27 % increase in speed of non-motorized transport
	Priority to non-motorized transport and public transport in planning. Leads to 8 % reduction of road capacity.
	Pull + Push measures
	+Car free zones. Leads to 12 % reduction of road capacity.
	+Double parking fees and less parking space.
	+Reduced speed limits (40 km/h)
	Pull + Push + Land use measures
	+Densification: Develop city from the inside.
	+Introduce suburban centres
	+Prevention of outside shopping malls. Combined with the above two measures, it leads to 50 % increase in city density.
	+Congestion charge

Area	Policies
Freiburg	**Pull measures**
	Extension of regional rail based public transport
	Extension of tram system. Combined with the above measure, it leads to an increase in public transport speed and network density of 20 %.
	Encouragement of intermodal transport (bicycles and rail)
	Bicycle priority lanes, especially in city centre.
	Removal of gaps and barriers, bicycle lanes away from pedestrians and onto streets. Combined with the above measure this leads to the speed and safety of non-motorized transport of 15 %.
	Pull + Push measures
	+Rise in parking charges, reduction of parking space. This doubles parking charges.
	+Continued promotion of car free living and alternative mobility
	+Global maximum speed limit of 40 km/h. This reduces road capacity by 10 %
	Pull + Push + Land use measures
	+Densification: develop city from inside where possible
	+Mixed usage: introduce suburban centres
	+Prevention of outside shopping malls. Combined with the above two measures this increases density by 27 %
	+Congestion charge
Sofia	**Pull measures**
	Immediate modernization of public transport vehicle fleet
	Tram and bus priority lanes
	Modernization of tram rail infrastructure. Combined with the above two measures, this increases the speed and quality of public transport by 25 %

Area	Policies
	Introduction of bicycle lanes throughout city. This doubles the speed, quality and safety of non-motorized transport and reduces road capacity by 15 %
	Pull + Push measures
	+Low traffic zones (30 km/h) or traffic free streets.
	+Parking charges doubled
	Pull + Push + Land use measures
	+Congestion charge
	+Encourage mixed land use
	+Promote suburban centres. This reduces average trip length by 20 %

Source: *Own exposition based on Creutzig et al (2012a) and Creutzig et al (2012b). Creutzig et al (2012a): Creutzig, Felix, Rainer Mühlhof and Julia Römer (2012a): Decarbonizing urban transport in European cities: four cases show possibly high co-benefits. Environmental Research Letters, 7, pp. 1-9. Creutzig et al (2012b): Creutzig, Felix, Rainer Mühlhof and Julia Römer (2012b): One planet mobility - Transforming cities towards lo- carbon mobility. WWF and TU Berlin.*

The policies identified are shown in the table above. The table is structured in the way that for each city three levels of policy intensity and the concrete measures are shown. The policies all go beyond the Business as Usual. The Business as Usual is not shown, but it encompasses a continuation of current policy combined with technological progress. In the first set of rows under each city is shown the policies in the least ambitious policy scenario. The least ambitious scenario contains only so-called "pull measures", which make it more attractive to use public or non-motorized transport. In the second set of rows under each city is shown the policies in a policy scenario with medium level of ambition. This scenario combines the pull measures with "push measures", which makes motorized transport less attractive. The third set of rows describes the most ambitious scenario, which combines the pull measures, the push measures and land use measures. The measures differ between the cities, because they are tailor-made to fit each city's situation.

The *Identification of elasticities* is done through a literature review. The result of the literature review is a list of elasticities linking a given policy to a change in the number of trips of different modes of transport. For example, a 1 % increase in a congestion charge is expected to lead to a 0.6 % reduction in the number of car trips, based on Creutzig and He (2009).[79] Some of the elasticities work across several transport modes. For example, an increase in car travel time of 1 % leads to a decrease of 0.23 % in the number of car trips, an increase of 0.49 % in the number of trips by public transport and an increase of 0.25 % in the number of non-motorized trips. A list of elasticities used is given in Creutzig et al (2012).[80]

The *Effect of policies on the number of trips* is calculated by combining the indentified elasticities with the policies. For example, in Sofia, the most ambitious policy scenario involves an increase of the congestion charge by 40 %. By itself this would lead to a reduction of 24 % (40*0.6) in the number of trips by car. An other example is that in the most ambitious policy scenario in Freiburg, a global 30 km/h speed limit is introduced. Suppose the average travel time by car corresponds to 40 km/h before the policy was implemented, then the policy would result in a reduction of 25 % in the car driving speed. This would reduce the number of trips by car by 5.75 %, increase the number of trips by non-motorized transportation by 5 % and increase the number of trips by public transport by 12.25 %.

The *Effect on problems* is estimated by multiplying the effect on the number of trips by unit values which give the amount of CO2 emission per trip, the number of accidents per trip, the noise generated per trip, the congestion cost per trip, the health benefits from physical movement (non-motorized transport) and the fuel cost per trip. These unit values come from a range of different studies. These studies are detailed in the supplementary material B for the Creutzig et al (2012), which can be found at http://stacks.iop.org/ERL/7/044042/mmedia. We have not been able to develop a good example, because we need the data on the number of kilometres per trip in order to complete the calculation, and though Creutzig et al (2012) have provided extensive documentation on the web, they have not published that data.

Stakeholder workshop to communicate results

We have not been able to find material of the results of these workshops, or of the process at the workshops.

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[79] Creutzig, F and He D (2009): Climate change mitigation and co-benefits of feasible transport demand policies in Beijing. *Transport research* D 14 120-131.

[80] Creutzig, F, Muhlhoff, R and J Römer (2012): Decarbonizing urban transport in European cities: four cases show possibly high co-benefits. *Environmental Research Letters* 7, pp. 1-9.