



Study on the financing needs in the area of sustainable urban mobility

Final Report

Prepared for:

Directorate-General for Mobility and Transport

Contract No.: MOVE/B4/457-1 2010 SI2.585084

London

March 2012

Booz & Company ref: R01063

This study is subject to a disclaimer and copyright. This study has been carried out for the European Commission and express the opinions of the organisations having undertaken them. The views have not been adopted or in any way approved by the European Commission and should not be relied upon as a statement of the European Commission's views. The European Commission does not guarantee the accuracy of the information given in the studies, nor does it accept responsibility for any use made thereof. Copyright in this study is held by the European Union. Persons wishing to use the contents of this study (in whole or in part) for purposes other than their personal use are invited to submit a written request to the following address: European Commission - Mobility and Transport DG - Library (DM28, 0/36) - B-1049 Brussels or by electronic form.

Table of Contents

Executive Summary	1
1. Introduction.....	7
1.1 Background.....	7
1.2 Objectives of this Study	8
1.3 Definition of Measures Supporting Sustainable Urban Mobility.....	8
1.4 Structure of the Report	8
2. The European Urban Context	10
2.1 The Importance of European Cities	10
2.2 Urban Transport Systems	11
2.3 Governance framework for urban mobility in Europe.....	14
2.4 Future Transport Challenges.....	16
3. European Policy & Existing Funding Instruments	18
3.1 Introduction	18
3.2 EU Policy Framework	19
3.3 Overview of Existing Funding Instruments.....	38
3.4 State Aid and Public Procurement Rules	55
4. Overview of the City Case Studies.....	60
4.1 Introduction & Approach.....	60
4.2 Main Findings.....	62
4.3 Case Study Summaries.....	67
5. Assessing Future Expenditures & Funding Needs	82
5.1 Introduction	82
5.2 Drivers of Transport Expenditure & Funding Needs.....	82
5.3 Trends & Issues Affecting EU Cities.....	83
5.4 Assessing Future Funding Needs for Urban Transport	100
6. Assessment of Funding Sources.....	108
6.1 Introduction	108

6.2	Assessment of funding and financing sources and instruments	111
6.3	Conclusion	117
7.	Scope & Value-add of Additional EU Financial Support.....	120
7.1	Introduction	120
7.2	Priorities, principles and potential “value-add”	120
7.3	Option 1: Reinforcement of one or more existing instruments	121
7.4	Option 2: Creation of a dedicated additional EU financial instrument.....	125
7.5	Proposal Impact Assessment.....	127
7.6	Conclusion	136

List of Figures

Figure 1: European Urban Population & Urban Population Share.....	11
Figure 2: Length of Road and Public Transport Networks in a Selection of EU Cities.....	12
Figure 3: Length of Road, Train and Bus Routes Divided by the Area of a Selection of EU Cities.....	13
Figure 4: Allocation of Regional Funding.....	29
Figure 5: Cohesion Funding by Key Objective (2007-2013)	30
Figure 6: Cohesion Funding by Territory: Eligible Areas (2007-2013)	31
Figure 7: Allocation of Cohesion Funding by Member State (2007-2013)	32
Figure 8: Funding of Urban Mobility by DG Regio (2007-2013)	33
Figure 9: Technologies which will reduce carbon emissions.....	38
Figure 10: Planned ERDF & CF Allocations by Member States (2007-2013)	41
Figure 11: Funding of Projects and Programmes of the ESF (2007-2013)	41
Figure 12: Map of Member States Eligible for Financing by the Cohesion Fund	42
Figure 13: Total EIB Financing by Region in 2010.....	49
Figure 14: Total EIB Funding in the EU, 2006-2010	49
Figure 15: EIB Public Transport Funding, 2006-2010	50
Figure 16: Total Transport-Specific Funding by Region and Member State, 2006-2010	51
Figure 17: Total Funding Provided by the EBRD within the EU by Sector, 2005-2009.....	54
Figure 18: Funding Provided by the EBRD by EU Member State, Total for 2005-2009	54
Figure 19: Illustration of Hypothetical Case Studies – Financial Analysis.....	60
Figure 20: Illustration of Hypothetical Case Studies – Economic Benefits Analysis	61

Figure 21: Map of Cities chosen for Case Studies	63
Figure 22: Historic & Forecast Population Trends for EU Member States – 2000 - 2016	84
Figure 23: Regional (NUTS 2) Population Projections – Relative Change in Total Population between 2008 and 2030.....	85
Figure 24: Historic & Forecast Urbanisation Trends for EU Member States – 2000 - 2050	86
Figure 25: Regional (NUTS 2) Population Projections – Relative Change in Proportion of People Aged Over 65 between 2008 and 2030.....	87
Figure 26: Net Land Cover Changes in Europe between 2000 and 2006.....	88
Figure 27: Changes in Population Density in European Cities between 2001 and 2004.....	89
Figure 28: Intensity of Urban Sprawl in Estonia, Latvia & Lithuania, and Ireland between 2002 and 2006.....	90
Figure 29: The Extent of Decoupling of Economic Growth and Transport Demand (pkm) ..	91
Figure 30: Historic and Forecast Trends in GDP per Capita for EU Member States - 2000 - 2016	92
Figure 31: Current GDP per Capita (based on Purchasing-Power-Parity) for EU Member States	93
Figure 32: Historic and Forecast Trends in General Government Revenue for EU Member States - 2000 - 2016	93
Figure 33: Historic and Forecast Trends in General Government Revenue as a Share of Expenditure for EU Member States - 2000 - 2016.....	94
Figure 34: Historic and Forecast Trends in the Local Government Taxation Share of Total Taxation for EU Member States - 2000 - 2008.....	95
Figure 35: Average Local Government Taxation Share of Total Taxation for EU Member States - 2000 - 2008	95
Figure 36: Historic and Forecast Price Inflation (CPI) for EU Member States - 2000 - 2016...	96
Figure 37: Forecast Growth in Real Individual Public Transport Subsidies for Modelled Cities - 2010-2040 (2010 prices).....	102
Figure 38: Forecast Growth in Real Per Capita Public Transport Subsidies for Modelled Cities by Country Classification – by five-year band over period 2010-2040 (2010 prices) .	103

List of Tables

Table 1: Action Plan on Urban Mobility – Themes and Actions.....	26
Table 2: Cohesion Policy: Objectives, Structural Funds and Instruments.....	29
Table 3: Urban Mobility Funding through the Structural Funds, 2007-2013.....	32
Table 4: Priority Objectives and Intervention areas of ERDF	39

Table 5: Disbursement of Cohesion Fund by Member State (000s EUR)	44
Table 6: General Information on the Case Study Cities.....	62
Table 7: Case Study Summary – Brno.....	67
Table 8: Case Study Summary – Burgas	69
Table 9: Case Study Summary – Helsinki	72
Table 10: Case Study Summary – Madrid.....	74
Table 11: Case Study Summary – Poznan.....	77
Table 12: Case Study Summary – Vienna	79
Table 13: Forecast Growth in Real Per Capita Public Transport Subsidies for Modelled Cities by Country Classification – by five-year band over period 2010-2040 and CAGR	103
Table 14: Forecast Growth in Per Capita Public Transport Subsidies for Modelled Cities by Country Classification – by five year band over period 2010-2040, Cumulative and CAGR	104
Table 15: Analysis of Local/ regional/ national: Parking charges/road user charges.....	112
Table 16: Analysis of Local: Public transport fares.....	112
Table 17: Analysis of Local, Regional, National: Rents from infrastructure properties.....	113
Table 18: Analysis of Local, Regional: Development contributions.....	113
Table 19: Analysis of Local, Regional, National: General Taxation	113
Table 20: Analysis of National (sometimes regional): Fuel Taxation.....	114
Table 21: Analysis of Local, Regional, National: Public sector borrowing.....	114
Table 22: Analysis of Local, Regional, National: PPP.....	114
Table 23: Analysis of EU: ERDF	115
Table 24: Analysis of EU: CIVITAS	115
Table 25: Analysis of EU: ESF.....	115
Table 26: Analysis of EU: Cohesion Fund.....	116
Table 27: Analysis of EU: EIB	116
Table 28: Analysis of EU: EIB (JASPERS).....	116
Table 29: Analysis of EU: EIB (JESSICA)	117
Table 30: Analysis of EBRD	117
Table 31: Comparing Option 1 and Option 2.....	130

Executive Summary

Scope of study

Booz & Company were commissioned by the European Commission's Directorate-General for Mobility and Transport (DG MOVE) to assess the financing needs in the area of sustainable urban mobility. The purpose of the study has been to:

- Examine future funding needs for the urban mobility improvements required across the European Union (EU);
- Consider the synergies between sustainable urban mobility and regional policy at the EU level, including the availability of financial instruments to support this;
- Develop and assess possible options for EU financial contributions to urban mobility improvements should EU funds be made available; and
- study the synergies between policies for sustainable urban mobility and regional policy at the EU level, including currently available financial instruments, and to develop and assess possible options for EU financial contributions to the improvements.

For the purposes of this study, sustainable urban mobility is defined as the sustainable movement of people and goods within an urban geography. Sustainability has several dimensions including environmental, economic, social and financial sustainability, and is defined as contributing to cities being able to function in a way that minimises air and noise pollution, contributes towards targets to reduce CO₂ emissions, promotes economic development of the city, enables good levels of mobility for people and goods, and is affordable to users and taxpayers. Sustainable urban mobility is challenged when urban transport is:

- unreliable;
- contributes towards deteriorating air quality standards;
- seen as a safety risk for users, residents and visitors;
- creates delays and bottlenecks for users; and
- becomes difficult to fund to maintain essential service levels and standards.

Influences and trends affecting sustainable urban mobility in Europe

Promotion of sustainable urban mobility is affected by a wide range of factors which affect costs and revenues. Costs of land, labour and geographical factors are key influences on capital costs, whilst operating costs are also affected by labour costs, topography, demand patterns and the structure/governance of the transport sector in different cities. Particularly notable are costs arising from aging capital intensive infrastructure in need of renewal, and changing demand patterns affected by seasonal factors, car ownership levels and growing incomes. In terms of revenues, urban transport expenditure is constrained by public transport fare levels typically being below the cost of operating and renewing capital in such systems. In addition, there is frequently a lack of authority and political will to introduce

direct pricing of road use, increase fares and parking charges, as well as limits on powers to raise local taxation to address funding gaps.

Overall, the fundamental problem in the promotion of sustainable urban mobility is that many of the solutions to advance this objective do not generate sufficient revenue in themselves to pay for their capital costs or even to pay for all of the operating and maintenance costs for the infrastructure and services needed. As such, advancements in urban transport systems and services may typically require a greater on-going contribution from public funding more generally to sustain their operation and renewal.

There are various trends in European cities in coming years that are likely to put further pressure on urban mobility budgets:

- Forecast increases in urban populations of 5% overall by 2050, with growth particularly concentrated in accession countries (with the highest increase forecast as being 27%);
- Aging populations changing demand patterns (reducing peak demand but increasing demands for more accessible public transport and pedestrian facilities, as well as demands for concessionary fares);
- Growth in overall metropolitan areas (urban sprawl) paralleling increased car ownership particularly in Eastern Europe and the Iberian peninsula;
- Higher incomes resulting in increasing demands for better quality and safer public transport systems, as well as supporting rising car ownership levels in accession countries;
- Growing resistance to increases in fares, taxation and other user charges without commensurate clear increases in services or service quality;
- Severe constraints in national and local budgets arising from the sovereign debt crisis and fiscal restraint over the medium term (with local authority revenue as a proportion of total government expenditure remaining low);
- European and national policies to reduce greenhouse gas emissions demanding capital investment in measures to reduce energy consumption, private car use and improve use of existing infrastructure; and
- Policies to promote alternative fuels and motive power sources through investment in new technologies to reduce dependency on imported fossil fuels.

Funding gap

Having considered six case studies of European cities and available data on transport spending, it is estimated that there will be a significant increase in funding gap requirements for the period 2010-2040.

The estimate is that operational funding needs will double (real average compound growth of 2.8% per annum) for the EU-12 cities modelled, and increase by around 50% (real average compound growth of 1.5% per annum) for the EU-15 cities modelled.

This study estimates that the total operational subsidy requirement for all of the 28 cities modelled is expected to rise from €13.1 billion in 2010 to €24.1 billion in 2040 (in 2010

values). Of that increase of €11 billion, €9.7 billion is expected to come from the EU-15 cities and €1.3 billion from the EU-12. In other words, it will be the faster growing lower income cities in accession countries that will proportionately generate a higher rate of funding demands for urban mobility, yet those cities will still be at relatively lower levels of per capita funding than that of western European cities.

The study estimates that the expected capital expenditure requirement for all of the 28 cities modelled is expected to rise from €2 billion in 2010 to €4.1 billion in 2040 (in 2010 values). Of that increase of €2.1 billion, €0.2 billion is expected to be required by the EU-12 cities and €1.9 billion from the EU-15.

Sustainable urban mobility and European policy framework

The *Europe 2020* strategy emphasises smart, sustainable and inclusive growth, focusing on innovation and the flagship initiative “Resource efficient Europe”. This is also consistent with the *2011 Transport White Paper* which prioritises a shift in transport use to cleaner options (which includes active modes such as walking and cycling), a shift to smaller, lighter and more specialised vehicles using alternative fuels, and greater use of technology to increase the efficiency of freight movements.

A shift towards more sustainable urban mobility, by reducing pollution and greenhouse gas emissions, can be substantially achieved by combining best practice management and technologies that can catalyse changes in behaviour in the use of infrastructure, vehicles and services. This corresponds with the goals in the *Action Plan on Urban Mobility* and the *Green Paper Towards a new culture for urban mobility* both of which promote smarter, more accessible and more environmentally friendly urban transport. Together, the EU has a range of complementary strategic policy goals that are about achieving sustainable urban mobility. The more fundamental issues behind them are around the policy instruments needed to achieve those goals, and whether (and to what extent) there is a funding challenge to implement those instruments.

Policy initiatives to deliver sustainable urban mobility

Some of the demands to improve urban mobility are focused on high profile capital intensive projects that deliver significant improvements to single route or trip users. However, many of the types of projects that can deliver more systematic and sustainable benefits are about transferring best practice techniques of management and operations, including technological innovations, to existing infrastructure and services. Significant gains can be made by improving utilisation, maintenance and operation of existing systems, and by using the latest technologies, management and planning techniques to achieve efficiencies and overall improvements in economic, environmental and social outcomes. For example, the latest bus technologies can achieve ultra-low emissions alongside fuel savings, whilst road pricing can significantly reduce traffic congestion, promote transfer of trips to more sustainable modes and reduce emissions from road use. The introduction of neither low emission buses nor road pricing may be seen as high profile politically popular policies, but sustainable urban mobility would be strongly supported by such policies in some cities.

This would be further supported by a longer term engagement to increase capabilities and capacity in local policy and operational agencies, which can also be extended to promoting the development of capital programmes that are outcome oriented rather than input focussed.

Whilst there will continue to be considerable investment in capital projects to address bottlenecks and replace legacy infrastructure, a broader strategic approach is likely to develop greater benefits for users that can be sustainable in all senses of the word.

Options for addressing the funding gap

A significant part of the funding responsibility for urban mobility is at national, regional and local levels, with national constitutions and laws setting governance, taxation and funding powers. However, within those diverse national frameworks, the EU may be able to provide a useful role in contributing towards addressing the funding gap either directly through financial assistance, or indirectly by enabling local authorities to improve management, procurement and prioritisation to get better use out of existing funds and to find innovative new sources of revenue.

Whilst existing EU instruments do provide some support, none provide a comprehensive mechanism to realise the EU's full potential in promoting sustainable urban mobility:

- The Cohesion Fund supports TEN-T capital projects, but these do not specifically target urban areas to support urban mobility, although some such projects do happen to do so because of geography;
- The CIVITAS programme provides funding and technical support for demonstration, evaluation and implementation of innovative technology led projects, but is focused on promoting innovation rather than addressing specific needs across Europe;
- The JASPERS programme assists cities in managing delivery of already funded urban mobility projects, but such assistance tends not to translate into sustainable improvements in the capability or capacity of public agencies it has supported;
- The JESSICA programme enables cities to access private finance for urban regeneration projects, but is limited to a focus on projects that can generate a commercial return.

Although useful, none of these programmes individually or collectively provides a means to support the promotion of best practice management to reduce costs and generate revenue, or other high value measures that can support sustainable urban transport at relatively low costs, such as active transport modes. In addition, none of the programmes appear to have a mandate to support and promote highly effective, higher risk measures such as road pricing, roll-out of alternative fuel vehicles on a large scale or modern integrated electronic ticketing systems. Finally, there is little support at present to build capability among agencies in assessing and ranking priorities for expenditure, particularly to make trade-offs between expensive large capital projects and smaller capital projects and maintenance expenditure.

The following criteria were developed to allow for options to be developed and assessed for EU action:

- Ability to support sustainable urban mobility;
- Ability to support wider European transport policy objectives;
- Support for high value long term investment to improve outcomes;

-
- Provision of an appropriate EU role given the principle of subsidiarity;
 - Ability to support specific regional issues;
 - Likelihood of generating long term benefits;
 - Incentivisation of better integration across sectors and policy areas;
 - Ability to benefiting the widest range of users and communities;
 - Targets cities that have specific economic needs;
 - Incentivises greater use of the private sector; and
 - Flexibility to meet local conditions and promote collaboration.

Two options were developed that could be implemented if additional funds were to be made available by the EU to specifically support sustainable urban mobility. They were assessed according to the criteria listed above:

1. Reinforcement of one of more existing instruments;
2. Creation of a dedicated additional EU financial instrument.

Option 1 would add to existing instruments, a focus of improving the capacity of cities to adopt better approaches to allocate existing funding, and enhance their procurement and asset management processes. This could be reinforced through technical assistance provided in association with those programmes (e.g. JASPERS and CIVITAS). It would help to build a more sustainable improvement in capabilities across cities receiving financial assistance through existing programmes.

Option 2 would involve the creation of a new financial instrument to take a strategic view of how best to address the capabilities, capacities and innovation requirements of local agencies to deliver significant gains in urban mobility outcomes. It would add to the capabilities and project selection processes, as well as support innovative management techniques and technologies within cities. It would also focus on improving utilisation and management of existing networks, and enhancing them where value can be best added. It would emphasise innovative measures to promote small high value projects, such as those supporting active modes, as well as higher risk more complex longer term measures with high benefit, such as road pricing and integrated electronic ticketing systems. The overall objectives would be to improve efficiencies, minimise costs, and develop a holistic, integrated long term approach to sustainable urban mobility by supporting international best practice in infrastructure and service management, project identification and selection, and intelligent transport systems. It would also seek to take the widest approach to supporting cities adopting new innovative sources of funding and finance.

Conclusion

Either option would provide a long term improvement in sustainable urban mobility outcomes. However, given the current constrained mandates of existing instruments and programmes (and the lack of commercial return from most urban mobility projects), Option 2 is likely to present the greatest opportunity to uplift capabilities and outcomes for European cities over the longer term. It could enable existing programmes and instruments to be integrated with it and focus not simply on providing funds to meet gaps, but also to enable cities to use existing funding and financing resources better, to develop new ones and

to address long term trends of rising costs and mismatches of demand for mobility with supply of transport infrastructure and services. It could enable the European Union to provide a central role in realising the greatest potential gains in urban transport sustainability across economic, financial, social and environmental outcomes in the long run, and provide a foundation for raising capabilities across cities in Europe.

1. Introduction

1.1 Background

As part of its ongoing programme of policy development in the area of sustainable urban mobility, and according to the Action Plan on Urban Mobility, the European Commission's Directorate-General for Mobility and Transport (DG MOVE) has commissioned this Study on the financing needs in the area of sustainable urban mobility.

This study recognises the growing role that mobility in urban areas plays in driving economic growth, employment, social cohesion and sustainable development in the EU. The challenges faced by cities in contributing to these European objectives were outlined in the Green Paper on Urban Mobility in 2007. The five main challenges included:¹

1. Free-flowing towns and cities;
2. Greener towns and cities;
3. Smarter urban transport;
4. Accessible urban transport;
5. Safe and secure urban transport.

Overcoming these challenges was the basis for the EU Action Plan on Urban Mobility, which was developed following the consultation on the Green Paper. It is the Action Plan that provides the main policy context for this study. The Action Plan sets out a coherent framework for 20 EU initiatives in the area of urban mobility while respecting the principle of subsidiarity. It aims to this be encouraging and supporting the development of sustainable urban mobility policies to help achieve EU objectives, for example by promoting best practice and/or providing funding to Member States and their regions.

A current cornerstone of EU transport policy is the 2011 White Paper, *Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system*. This describes the current vision at EU level in relation to urban transport, and hence an important context for this study. Under this vision for sustainable transport development, the EU aspires to grow transport and to continue to support mobility while achieving a 60% reduction in CO₂ emissions.

A key element of this is to develop systems for clean urban transport and commuting. In cities, the aspiration is for a switch to cleaner transport to be facilitated by lower requirements for vehicle range and high population density. As such, public transport choices would be more widely available, along with options for walking and cycling. It also envisaged that the greater role for collective transport, supported by appropriate demand management (including through better road and other infrastructure pricing) and land-use planning, and that the use of smaller and light passenger vehicles will be encouraged. Large fleets of urban buses, taxis and delivery vans have also been identified as being suitable for the introduction of fuel efficient engines, or alternative fuels and propulsion systems.²

¹ COM(2007) 551

² COM(2011) 144

Achieving these aspirations is going to require a sustained commitment from the EU, Member States and citizens, recognising that each party has a role to play. Policy and financial support to these objectives and measures will require coordination across all layers of government and effective partnerships with the private sector. In this context, the next section describes the purpose of this study, which relates to the role of the EU in supporting Member States in meeting their future aspirations and funding needs for sustainable urban and transport development.

1.2 Objectives of this Study

The objectives for this study are threefold, and include:

- Studying the synergies between sustainable urban mobility and regional policy at EU level, including available financial instruments;
- Examining the future funding needs for the urban mobility improvements that will be required across the EU; and
- Developing and assessing possible options for EU financial contributions to these improvements, should EU funds be made available.

1.3 Definition of Measures Supporting Sustainable Urban Mobility

For the purpose of this study it is helpful to provide a working definition of the relevant policies and measures that are considered to support sustainable urban mobility. Sustainability covers a number of dimensions, including economic, social, environmental and financial aspects, each of which can either support or undermine the other. For example, any transport measures that aim to support growth in the economy and employment can be included, notwithstanding the potential impacts they may have on CO₂ emissions and social exclusion. The latter considerations tend to exclude investments in expanding highways capacity that encourage greater car use. Although there are exceptions, for example, the provision of ring roads, which can reduce through-traffic and reduce inner-city congestion, or the provision of tolled capacity which may promote sustainable use of road infrastructure. This study has assumed that this provides a reasonable framework for considering what is typically included as a sustainable mobility measure. However, a limitation of the framework is that it focuses mainly on new investments, and does not give explicit consideration to aspects of ongoing transport expenditure that is required to be made by local transport authorities (i.e. to pay for the upkeep of highways networks and other transport assets). This study takes the view that measures aimed at better financial and asset management should also be considered under the framework for sustainable urban mobility.

In addition, at a wider level, land-use policy and planning can also made to affect urban development in a way that supports the objectives of sustainable urban mobility. For example, urban infill projects can increase urban density and enhance the catchments for public transport systems in inner-city areas. It can also bring people closer to places of business, enhancing the attractiveness of walking and cycling options.

1.4 Structure of the Report

The structure of the remaining report is as follows:

-
- Chapter 2 provides background on the European Urban Context, setting the scene for the study.
 - Chapter 3 provides an overview of the relevant EU policy framework and existing funding instruments.
 - Chapter 4 provides an overview of the city case studies.
 - Chapter 5 provides the analysis of future funding needs in the area of sustainable urban mobility.
 - Chapter 6 provides an assessment of existing funding and financing sources.
 - Chapter 7 provides the options for the EU to “add value” in contributing to sustainable urban mobility outcomes

2. The European Urban Context

2.1 *The Importance of European Cities*

Cities and their surrounding urban areas play a vital and growing role in supporting large populations and driving economic activity. They form the centre of such activity and are the homes to many businesses and places of employment. As well as the major higher education institutions, cities are rich sources of innovation and economic growth. As hubs of government, business, education and culture, they form the hearts of European countries.

These factors are reflected in some of the important facts regarding European cities, as outlined in recent EU regional policy documents. For example:³

- A significant majority, currently over 70%, of Europeans live in cities and urban areas, with over 60% living in cities with more than 50,000 residents.
- Residents of cities generally contribute higher than average per capita economic productivity. Cities with more than one million residents generate 25% more GDP than the EU average, and 40% than their own national average. This mirrors the findings of the Action Plan on Urban Mobility, which states that around 85% of European GDP is generated in cities.⁴
- Reflecting levels of economic productivity, higher qualified people are measured as being over-represented in cities. However, it is worth noting that people with low skill levels and problems with unemployment are also highly represented.

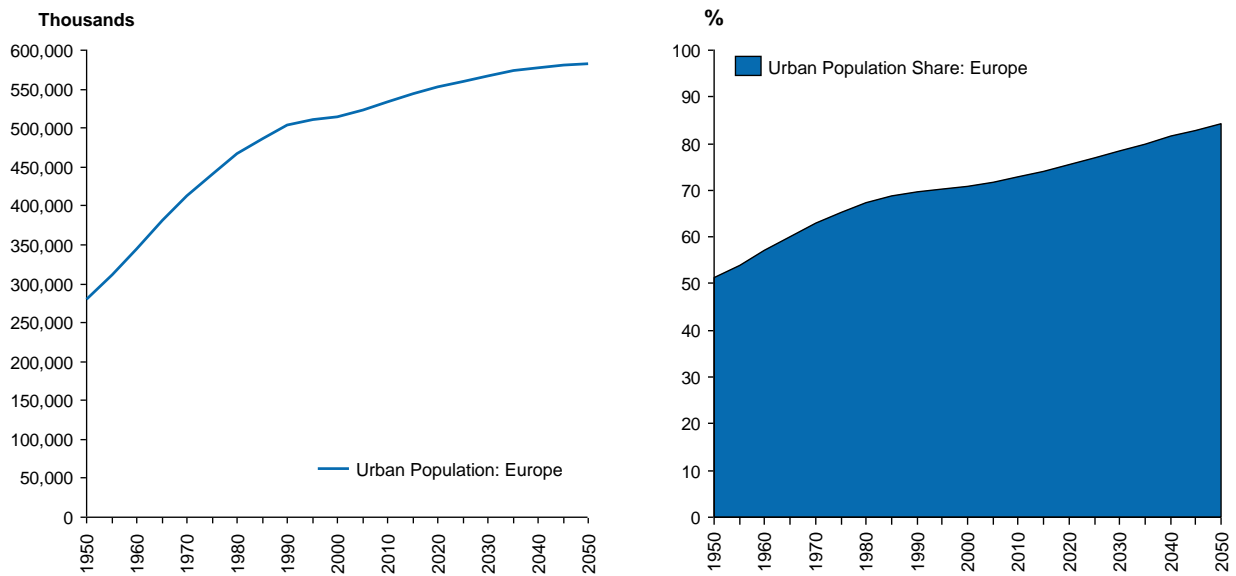
These features of cities are set to intensify over the next forty years, as a growing share of the European population is predicted to live in urban areas. For example, the United Nations predicts that the share of the European population that resides in urban areas will grow to 80% by 2035 and to nearly 85% by 2050 (Figure 1).

While growing urban populations can create a number of social and other problems, particularly during periods of reduced economic prosperity (e.g. crime, social deprivation, etc.), on the whole these trends reflect positively for the coherence of the European Union and the achievement of many of its regional policy objectives.

³ EC - DG REGIO, Promoting Sustainable Urban Development in Europe: Achievements and Opportunities, 2009

⁴ EC COM(2009) 490, Action Plan on Urban Mobility

Figure 1: European Urban Population & Urban Population Share



Source: United Nations, *World Urbanization Prospects: The 2009 Revision*

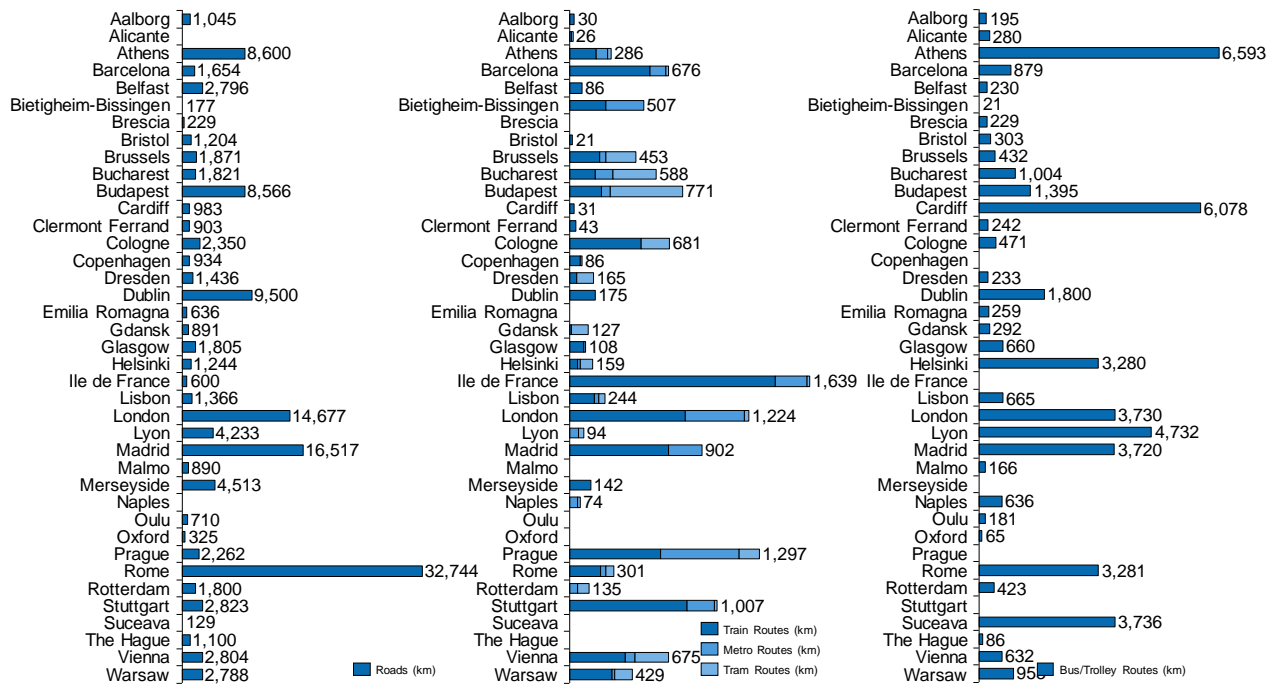
2.2 Urban Transport Systems

Well-functioning transport systems support much of the economic and social activity of cities by facilitating many of the interactions that take place between residents, visitors, businesses and public and private institutions on a daily basis.

The development of cities and their transport systems across European cities reflects a number of historic economic and social factors. Reflecting the diversity in cultural and economic heritage across the EU-27 countries, urban transport systems are generally unique in nature, varying in terms of the type of mode, extent of provision of transport infrastructure and levels of service. The geographies of many European histories go back centuries, with land use, major structure and road design often being legacies of development and growth over extended time periods. In some cases, major planning decisions over cities (e.g. Paris), or extensive destruction due to war or natural disaster have influenced how cities have diversely developed over so many years. More recently, different levels of economic development and different political-social systems have seen transport networks develop in widely diverse ways, with various emphases on public transport, private car use, cycling and walking. Changes in national borders and more recently abolition of some borders have facilitated significant changes in travel and freight patterns for some cities.

Figure 2 provides measures of the length of road and elements of public transport networks across a selection of European cities. This graphic highlights the vast differences in levels of infrastructure across cities.

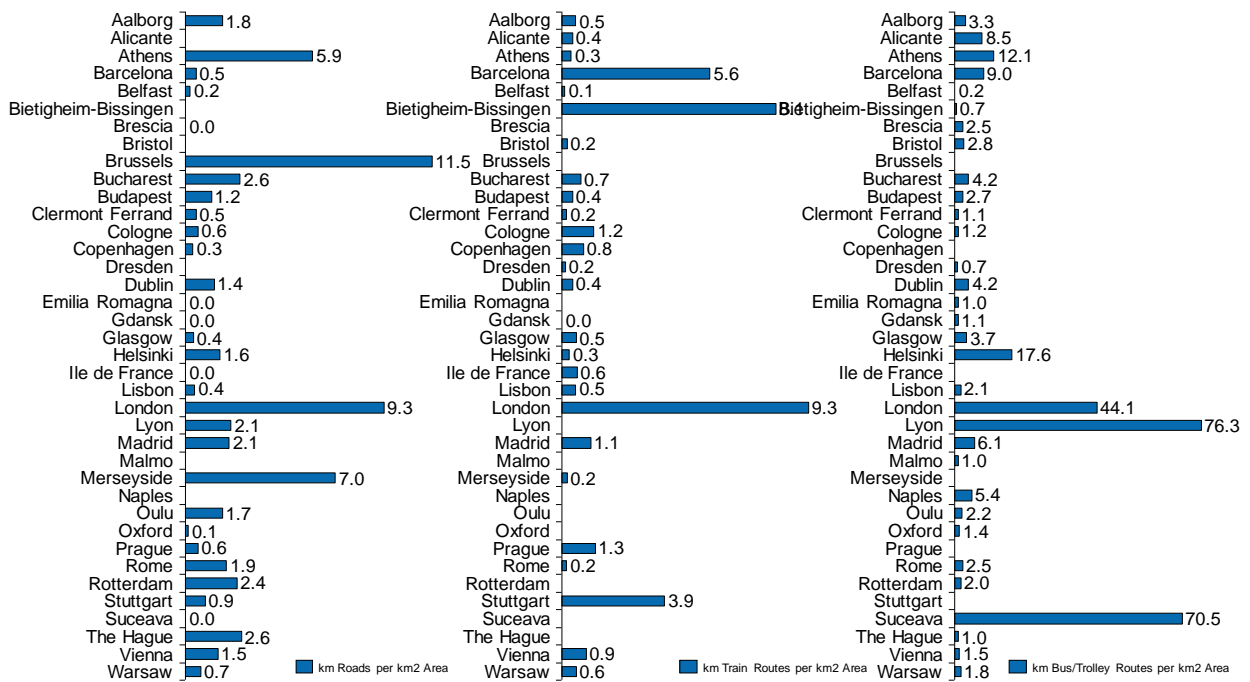
Figure 2: Length of Road and Public Transport Networks in a Selection of EU Cities



Source: The Urban Transport Benchmarking Initiative (<http://www.transportbenchmarks.eu/>), Booz & Company analysis

Even when differences in geographic area covered by each city are accounted for, the difference in length of transport networks remain substantial across European cities (Figure 3). A diverse pattern also emerges when measuring the level of transport infrastructure per head of the population in each city area.

Figure 3: Length of Road, Train and Bus Routes Divided by the Area of a Selection of EU Cities



Source: The Urban Transport Benchmarking Initiative (<http://www.transportbenchmarks.eu/>), Booz & Company analysis

Cities have always faced a range of key challenges in maintaining and improving standards of urban mobility. The infrastructure used for urban mobility (roads, railways, metro, tram, trolley bus networks, and stations/stops) tends to be capital intensive. In many cases, it has been difficult to recover these costs entirely from users, either because it has been technologically difficult or inefficient to do so, or been politically unacceptable. Technology has made direct charging of road use technically and economically feasible, but no more politically acceptable. However, it has reduced costs of fare collection and facilitated easier transfer, purchase and use of public transport services.

Most cities charge public transport fares that do not meet operating costs, let alone capital renewal costs. As a result, there is a persistent and ongoing need for public funding to maintain services, renew vehicles and infrastructure and to develop, expand and enhance infrastructure. Similar demands exist to maintain and develop road networks.

Based on our understanding of working with transport authorities, the challenges faced by cities in urban mobility tend to be focused on a number of themes:

- Funding maintenance and renewal of infrastructure;
- Generating sufficient revenue to fund operating costs;
- Reducing congestion and overcrowding;
- Reducing injuries and fatalities;
- Reducing the environmental impacts of transport use;
- Providing capacity to cope with expanding cities;

-
- Improving the operational efficiency of networks and addressing bottlenecks;
 - Meeting expectations of increasing standards of service;
 - Ensure access is maintained for the most disadvantaged;
 - Promoting public health through use of active transport modes;
 - Encouraging greater use of alternative fuels to reduce dependence on oil and improve environmental outcomes;
 - Reduction in CO2 emissions;
 - Ensuring transport for people and goods can sustain economic growth and development.

Cities across Europe have varied financial capability to implement the projects or measures that could address these issues. Indeed, the global economic downturn has created particular fiscal pressures on national and local governments that have reduced the capacity of cities to continue funding urban mobility to the extent they have been used to.

This analysis suggests that alternative approaches to assessing and meeting future funding needs are required. Exacerbating these issues is the fact that each city starts from an entirely different position when thinking about the types of investments that they will need to make to address future transport problems. Issues of legacy infrastructure and transport operations will need to be managed as cities move towards implementing sustainable transport solutions to address future transport challenges.

2.3 Governance framework for urban mobility in Europe

The potential roles and powers for addressing urban mobility issues are limited by the various levels of government, and the funding, taxation and regulatory powers that reside at those levels. This section provides a summary of the roles of local, regional and national governments, as well as that of the EU.

2.3.1 Local government

Typically, most powers and roles for urban mobility tend to be held by local authorities or metropolitan authorities. They are likely to be responsible at least for the delivery of services, including either contracting, franchising or licensing services, or owning and operating the provision of public transport services. Local authorities also typically have responsibility for local road networks, pedestrian and cycling facilities, including bus stops and bus lanes. They may have powers to raise taxes from land use, parking charges, revenue from public transport fares and may have powers to borrow. The key responsibility at the local level is to manage assets, long term maintenance and to generate project proposals for maintaining and enhancing urban mobility. More importantly, they provide the key strategic role in determining the key issues, options, solutions and priorities for urban mobility, by virtue of their core role in urban governance. They are the entities that have the closest relationship to users, business, communities and taxpayers, so are considered by most Member States as being in the best position to set these strategic goals and identify projects to achieve them.

Moreover, local government has powers over local land use planning, and the wider infrastructure planning needs of a city that are critical to building an integrated approach to the provision of transport infrastructure, services and where businesses, education, homes and other facilities are located.

2.3.2 *Regional/state government*

Some countries have regional, state or provincial administrations that may have an overall strategic role for transport across their territory. They may also have greater powers of taxation and borrowing that increase their potential powers as a source of funding, but similarly may put strategic economic, social and environmental policy goals around urban transport funding applications. However, for larger metropolitan areas (e.g. London), urban mobility policy, funding and planning may be at this level because of the sheer size and interrelationships within the metropolitan urban commuting catchment area. In these cases, there may also be tax raising powers, and powers to raise revenue from parking, road tolls and public transport fares, but also wider responsibilities for planning that may affect infrastructure development of local authorities. Such entities are also likely to have a strategic role in governance of transport across a region or wider metropolitan area, which may identify major projects of regional importance, but not the smaller scale activities confined to a specific district, borough or city.

2.3.3 *National government*

National governments typically have the primary tax raising powers, as well as the powers to raise revenue from road users through fuel, vehicle ownership and purchasing taxes, which can provide a substantial source of funding for land transport infrastructure that is typically provided through local authorities. In this context, a key role for national governments is to establish coherent policy, legislative and funding frameworks for ensuring both horizontal and vertical policy coherence.

National governments can often have responsibility for ownership and regulation of national networks that can be critical to urban mobility, such as national highways and railway networks. National governments are less likely to be involved in specific projects (unless they are on their own networks), but more involved in developing an overall strategic framework for the context of urban mobility in the countries concerned. Within the principle of subsidiarity, any powers or activities not reserved to the European Union remain within the jurisdiction of Member States, as governed by their own constitutions.

2.3.4 *European Union*

The Action Plan on Urban Mobility identifies a clear role for the EU in supporting coordinated actions to address urban mobility issues. According to the Action Plan:⁵

Urban transport systems are integral elements of the European transport system and as such an integral part of the Common Transport Policy under Articles 70 to 80 EC Treaty. In addition, other EU policies (cohesion policy, environment policy, health policy, etc.) cannot achieve their objectives without taking into account urban specificities, including urban mobility.

⁵ COM(2009) 490

While decisions for urban mobility policy are made primarily at local, regional and national level, they are made within a framework of national, regional and EU policy and legislation. As such, the EU is active in ensuring a coordinated approach is taken to addressing urban mobility issues, with the flexibility to ensure approaches are tailored to local circumstances in recognition of the different needs affecting different areas of the EU.

The following chapter demonstrates that the EU has developed significant policy and funding instruments in support of its role. Key funding sources include the structural funds, which provide significant capital funding that can be accessed by Member States for the purposes of investing in sustainable urban transport solutions, CIVITAS and the TEN. There are also technical assistance programmes (e.g. JASPERS, JESSICA) to support Member States in using some of their allocation of grants for urban mobility schemes.

However, what is critical in considering the role of the European Union is that while it can be a facilitator of good practice, and point of contact for sharing information and resources, it is unable to take a direct role in advancing projects in urban areas unless those local authorities themselves are promoters. While the European Union can be seen as providing incentives to pursue sustainable urban mobility projects, in the form of funding, it does not and cannot be the initiator of such projects in the absence of interest from cities. Therefore, it is vital to understand that as the European Union is able to set a wider strategic view of where urban mobility should develop across Europe in the longer term, it is limited in its powers, and funding capacity to be able to advance this without the strong co-operation and support of cities, regions and Member States.

2.4 Future Transport Challenges

Many European cities face common challenges in addressing future transport problems and growing their transport networks. According to the Commission's Green Paper, *towards a new culture for urban mobility*, many European cities are facing problems of increased congestion, which is choking their transport networks and harming prospects for continued economic growth. It is estimated that, every year, around 100 billion Euros is lost to the economy due to transport congestion.⁶

Solutions to congestion are varied, and include an appropriate mix of new infrastructure capacity (including both public transport and roads, particularly where there bottlenecks that cause severe congestion), promotion of alternative modes and travel behaviour change and measures to change demand patterns at peak periods (including better pricing, travel planning and use of technology). Many of these are capital intensive, but also have long lead times with high costs of planning, investigation and design.

Increased traffic levels also create environmental problems, which is a particular problem for urban road traffic. The Green Paper found that urban traffic is responsible for 40% of CO₂ emissions and 70% of emissions of other road transport pollutants.⁷ The White Paper refers to the fact that 23% of the CO₂ emissions from transport arise from urban transport. Of this 70% comes from passenger cars with 27% coming from goods vehicles.

⁶ EU COM(2007) 551, Towards a new culture for urban mobility

⁷ EU COM(2007) 551, Towards a new culture for urban mobility

There are also other problems associated with growing congestion, such as a loss of urban amenity caused by repeated traffic jams through city centres, and increased accidents causing serious injury or death (with an estimated 40% increase in the external costs of urban transport accidents expected by 2050 on a “business as usual” scenario). These all have impacts beyond the cities concerned, across Member States and the EU more generally, as they affect residents, visitors, businesses and public and private institutions. In addition, congestion in urban areas affects intercity passenger and freight movements, as most international trips start and/or finish in urban areas, and some transit urban areas.

However, it is expected that improvements in vehicle fuel efficiencies and operating practices will have positive impacts on air pollution, with an expected reduction in overall levels of 60% by 2050, as EURO standard implementation feeds through to a cleaner burning vehicle fleet.

Reducing the public health impacts of transport involves measures that encourage lower emission vehicles and modes, improves the safety of interactions between vulnerable road users and road and rail vehicles. As incomes rise, expectations of safety and higher environmental standards do so as well. Whilst improving safety and pollution outcomes can create significant long term savings and economic benefits, the measures to do this may come at a considerable shorter term cost.

Furthermore, as city populations grow, along with travel, visitors and business, there will be ongoing pressures to expand the length and capacity of networks. This can be linked to the regeneration and economic development of deprived areas, or in simply the growth and development of the city more generally.

In the absence of improvements in the integration of land use planning with transport planning, it is likely that issues of congestion, safety and environmental impacts will not be adequately addressed. Transport network development that is isolated from changes in land use patterns can result in poor quality investment and imbalances in capacity.

In the context of a growing reliance on larger and better city transport networks securing our economic future, these issues highlight the extent to which city and regional authorities, Member States and the EU are under to pressure to develop well-funded and, where possible, innovative transport solutions that will ensure that our cities are developed on a sustainable basis. The compound the difficulties for policy makers and transport authorities, the previous analysis highlights the different starting positions for European cities, linked to their historic development and economic circumstances.

These issues suggest a clear role for the EU in supporting cities in addressing their unique transport challenges and developing their urban centres in sustainable fashion. The Action Plan on Urban Mobility recognises this role, which is also linked to its cohesion, environmental and health policies.

3. European Policy & Existing Funding Instruments

3.1 Introduction

This chapter provides the EU policy context for sustainable urban transport with consideration of the relevance of regional policy and other EU initiatives such as the trans-European transport network; an overview is then given of the funding instruments available at EU level for urban and clean transport projects; finally, a consideration is given of rules on state aid and public procurement with respect to urban transport.

Thus, the chapter is structured as follows:

- **EU Policy Framework:** The EU policy framework is set out, with a consideration of high-level EU strategy; EU transport policy, particularly with regard to urban areas and sustainability; and EU regional policy.
- **Overview of Existing Funding Instruments:** This includes an overview of the structural funds - the European Regional Development Fund and European Social Fund, and the Cohesion Fund, as well as the European Investment Bank, and the European Bank for Reconstruction and Development.
- **State Aid and Public Procurement Rules:** Describes the application of relevant State Aid and public procurement rules in the field of urban transport.

However, it may be useful to commence with a definition of sustainable urban mobility.

The European Union Council of Ministers⁸ adopted the following comprehensive definition of sustainable transport which has since been widely used by policy makers across the globe.⁹ A sustainable transport system is defined as one that:

- allows the basic access and development needs of individuals, companies and societies to be met safely and in a manner consistent with human and ecosystem health, and promotes equity within and between successive generations;
- is affordable, operates fairly and efficiently, offers choice of transport mode, and supports a competitive economy, as well as balanced regional development;
- Limits emissions and waste within the planet's ability to absorb them, uses renewable resources at or below their rates of generation, and, uses non-renewable resources at or below the rates of development of renewable substitutes while minimising the impact on the use of land and the generation of noise.

This definition incorporates environmental, economic and social aspects of sustainability, as well as the concept of intergenerational equity.

⁸ Strategy For Integrating Environment And Sustainable Development Into The Transport Policy (also known as the April Resolution) adopted by the Ministers responsible for Transport and Communications at the 2340th meeting of the European Union's Council of Ministers, held in Luxembourg, April 4-5, 2001

⁹ The definition itself was based on an earlier definition developed by the Toronto-based Centre for Sustainable Transportation in 1997.

More recently, a more succinct definition has been put forward by the European Council:

“A sustainable transport system meets society’s economic, social and environmental needs whilst minimising its undesirable impacts on the economy, society and the environment.” (*Renewed EU Sustainable Development Strategy as adopted by the European Council on 15/16 June 2006*)

While this definition leaves room for interpretation, it could be seen as summarising the earlier definition. Importantly, whichever definition is preferred, it is clear that “sustainability” is concerned with the economic and social impact of transport, as well as its environmental impact.

From the above, sustainable urban mobility could be said to refer to any form of mobility (including, for example, walking and cycling, as well as driving a private car, taking the train, tram, metro or bus) that occurs within an urban area (including longer journeys that begin, end or travel through urban areas), that meets society’s economic, social and environmental needs while minimising undesirable economic, social and environmental impacts. We will take this as our working definition for the purposes of this report.

3.2 EU Policy Framework

Responsibility for sustainable urban mobility sits across departments, and indeed across budgets. EC Directorate-Generals responsible include Transport, Regional Policy and Energy, while relevant budgeted items include, for example, funds for the Trans-European Transport Network (TEN-T), the Seventh Framework Programme (FP7) which funds research and technology development, the funding of Structural and Cohesion Funds and EIB loans.

Our consideration of EU Policy commences with an overview of the Europe 2020 Strategy, drawing out relevant areas. EU Transport Policy is then reviewed, with particular attention paid to key policy papers and their implications for the urban transport. Finally, EU Regional Policy is considered at a high level, setting up the background for the following section – an overview of EU funding instruments.

3.2.1 EU Strategy: Europe 2020

The European Commission’s strategy paper, *Europe 2020: A European strategy for smart, sustainable and inclusive growth* (issued March 2010), forms the background for this report by setting out the high-level objectives for Europe over the next decade.

Europe 2020 puts forward three mutually reinforcing priorities:

- Smart growth: developing an economy based on knowledge and innovation.
- Sustainable growth: promoting a more resource efficient, greener and more competitive economy.
- Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion.

These priorities are concretised into five headline targets on the following areas: employment; investment in research and development; climate/energy targets; education; poverty reduction. Of these headline targets, the most directly relevant proposal is that:

“The 20/20/20 climate/energy targets should be met (including to the increased target to reduce emissions by up to 30% if the conditions are right)”

This is more fully stated, in the main document, as:

“Reduce greenhouse gas emissions by at least 20% compared to 1990 levels or by 30%, if the conditions are right; increase the share of renewable energy sources in our final energy consumption to 20%; and a 20% increase in energy efficiency.”

However, the over-arching aims of sustainable and inclusive growth both have implications for the importance of sustainable urban mobility in Transport and Regional Policy.

The centrality of economic, social and territorial cohesion is re-affirmed: “Cohesion policy and its structural funds, while important in their own right, are key delivery mechanisms to achieve the priorities of smart, sustainable and inclusive growth in Member States and regions.” See section 3.2.3 below for more information.

3.2.1.1 *Resource efficient Europe*

In terms of sustainable growth, a flagship initiative, “Resource efficient Europe”, outlined in the Europe 2020 paper, commits the Commission to work towards a number of goals which have implications for financing sustainable urban development, including:

- Mobilising EU financial instruments, including structural funds, TENs, EIB, as “part of a consistent funding strategy, that pulls together EU and national public and private funding”;
- Enhancing “a framework for the use of market-based instruments (e.g. emissions trading, revision of energy taxation, state-aid framework, encouraging wider use of green public procurement)”;
- Presenting proposals to “modernise and decarbonise” the transport sector;
- Accelerating strategic projects to “address critical bottlenecks, in particular cross border sections and inter modal nodes (cities, ports, logistic platforms)”.

While at the national level, Member States must, *inter alia*:

- Develop “smart, upgraded and fully interconnected transport and energy infrastructures”
- Aim to increase the effectiveness of the overall EU transport system by ensuring “a coordinated implementation of infrastructure projects, within the EU Core network”
- Focus on “the urban dimension of transport where much of the congestion and emissions are generated”

3.2.2 *Transport Policy*

This overview of EU transport policy commences with a consideration of the EU Transport strategy as set out in the 2011 White Paper on Transport¹⁰. This is followed by a more

¹⁰ *Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system*, March 2011, European Commission

focused consideration of sustainable transport policy in an urban context. Finally, the links between urban transport and the trans-European transport network (TEN-T) are considered.

3.2.2.1 EU Transport Strategy

The recent Transport White Paper, *Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system*, issued by the European Commission in March 2011, set out a comprehensive strategy (Transport 2050) for a competitive transport system to:

- increase mobility;
- remove major barriers in key areas and fuel growth and employment;
- reduce Europe’s dependence on imported oil; and
- cut carbon emissions in transport by 60% by 2050.¹¹

In terms of the urban transport, the strategy focuses on the reduction of carbon-dioxide emissions from cars and a decrease in road transport related fatalities. These aims are expressed in the following specific targets:

- Halve the use of ‘conventionally fuelled’ cars in urban transport by 2030; phase them out in cities by 2050; achieve essentially CO₂-free movement of goods in major urban centres by 2030; and
- By 2050, move close to zero fatalities in road transport. In line with this goal, the EU aims at halving road casualties by 2020.¹²

Beyond these headlines, the White Paper contains many other recommendations with implications for the financing of sustainable urban mobility.

On the first page, there is an assertion that: “A lot needs to be done to complete the *internal market for transport*, where considerable bottlenecks and other barriers remain. We need to readdress these issues – how to better respond to the desire of our citizens to travel, and the needs of our economy to transport goods while anticipating resource and environmental constraints.”¹³ This could be said to inform the terms of financing urban mobility.

On the sources of finance, the Paper recommends diversification – use of both public and private sources. Specifically, it states that: “Better coordination of the Cohesion and Structural Funds with transport policy objectives is needed, and Member States need to ensure that sufficient national funding is available in their budgetary planning, as well as sufficient project planning and implementation capacities.”¹⁴

The vision given for the future transport system is one that is “competitive and sustainable”. In terms of sustainability, the emphasis appears to be primarily on the environmental aspect

¹¹ *Transport 2050: Commission outlines ambitious plan to increase mobility and reduce emissions*, Press Release, 28 March 2011, European Commission

¹² *Ibid.*

¹³ *White Paper: Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system*, March 2011, European Commission, paragraph 4

¹⁴ *Ibid.*, paragraph 56

of sustainability, with much discussion of CO₂ emissions and oil dependency¹⁵, though the latter in particular also has an economic impact, and both could be said to have a social impact in the medium to long term.

However, it is clearly stated that, with regard to reducing transport emissions: “Curbing mobility is not an option.”¹⁶ The emphasis is therefore on encouraging upgrades and modal switch to more carbon-efficient forms of transport, rather than on decreasing the length or frequency of journeys.

With regard to urban transport, the White Paper lists four points which are all worth consideration. Firstly, switching to cleaner transport may be easier in urban areas due to the higher urban densities and lower requirements for vehicle range, the greater choice in transport mode – both public transport and walking/cycling, and that “Cities suffer most from congestion, poor air quality and noise exposure”¹⁷, as well as having a high proportion of road accidents – 69% occur within urban areas. Thus, it would seem that cities have a lot to gain, and possibly less to lose, by switching to cleaner and safer forms of transport.

The second point emphasises the virtuous circle for public transport modes, whereby greater demand facilitates more frequent and wider services, which in turn increases demand. It also states that: “Facilitating walking and cycling should become an integral part of urban mobility and infrastructure design”.

The third point encourages the use of smaller, lighter and more specialised passenger vehicles, preferably powered by alternative propulsion systems and fuels.

The final point listed under urban transport concerns freight and recommends the use of the latest technological systems to increase the efficiency of the organisation of the interface between long distance and last-mile freight.

In terms of longer distance travel, the White Paper recognises that Europe needs a ‘core network’ of corridors, carrying large and consolidated volumes of freight and passengers traffic with high efficiency and low emissions. In terms of the linkage with cities, the paper states: “The core network must ensure efficient multi-modal links between the EU capitals and other main cities, ports, airports and key land border crossing, as well as other main economic centres. It should focus on the completion of missing links – mainly cross-border sections and bottlenecks/bypasses – on the upgrading of existing infrastructure and on the development of multimodal terminals at sea and river ports and on city logistic consolidation centres.”

The White Paper proposes to “develop a new infrastructure funding framework with sufficient conditionality to provide support for the completion of the TEN-T core network as well as other infrastructure programmes, encompassing the investment strategies of both the TEN-T programmes and the Cohesion and Structural Funds, and considering revenues from transport activities.” The Paper encourages the provision of EU support for developing and deploying technologies that improve infrastructure use efficiency and decarbonisation. It

¹⁵ *Ibid*, for example, paragraph 13.

¹⁶ *Ibid*, paragraph 18

¹⁷ *Ibid*, paragraph 30

also suggests linking TEN-T funding to progress towards the completion of the TEN-T core network.

Finally, the 2011 Transport White Paper recognises that better urban mobility planning has to be actively encouraged to promote more sustainable behaviour. Specifically, the paper states:

“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 inter-urban and urban road user charging schemes interoperable.”¹⁸

3.2.2.2 Urban Mobility

The European Commission’s direct involvement in the development of transport policies aimed purely at the urban context dates back to the launch of the “Citizens Network” in 1995 and 1998.¹⁹ Since that time, and following the mid-term review of the 2001 Transport White Paper, *A time to decide*, the Commission has released two key documents in relation to urban mobility policy:

- The 2007 Green Paper, *Towards a new culture for urban mobility* (COM(2007) 551); and
- The 2009 Communication, *Action Plan on Urban Mobility* (COM(2009) 490).

Towards a new culture for urban mobility

The 2007 Green Paper, *Towards a new culture for urban mobility*, is a consultation document that sets forth the Commission’s view of the issues for urban transport, and options for how policy can be best used to address them. As such, the Green Paper identified five main challenges related to urban mobility, which articulated the desire of EU residents and policy makers to move:

- (i) Towards free-flowing towns and cities;
- (ii) Towards greener towns and cities;
- (iii) Towards smarter urban transport;
- (iv) Towards accessible urban transport; and
- (v) Towards safe and secure urban transport.

Towards free-flowing towns and cities

The desire to move towards free-flowing towns and cities recognises the importance of addressing congestion in order to alleviate the economic, social, health and environmental

¹⁸ *Ibid*, paragraph 49

¹⁹ http://ec.europa.eu/transport/urban/urban_mobility/urban_mobility_en.htm

impacts it creates. Options that are promoted to support reductions in the level of congestion include alternatives to private car use, such as collective transport, walking and cycling, the use of motorbikes or scooters, and optimising the use of private car where suitable alternatives do not exist. For example, this could include solutions such as car-sharing and carpooling, tele-working, tele-shopping, etc. Appropriate car parking and accessibility policies can also be used to support these objectives and encourage the use of alternative travel options. There is also scope for better integration of urban freight distribution within local land use and transport policy making, which recognises that freight vehicles comprise a large share of daily traffic.

Towards greener towns and cities

This issue recognises the predominance of oil-based fuel in transport, which generates significant CO₂ emissions, air pollutants and noise. Despite recent improvements in vehicle fuel efficiency, transport is still seen as being particularly difficult to manage on this issue. This is especially so for urban areas given the stop-start nature of much urban traffic conditions, which is exacerbated by growing congestion levels. Noise persists despite improvements in noise control that have been achieved through the enforcement of EU directives, issues remain. Options that were promoted to address these issues include the use of new fuel technologies, encouraged through the use of industry support and regulatory instruments. Other options include the use of 'green' public procurement approaches, eco driving and traffic restrictions.

Towards smarter urban transport

This relates to the role of technology in providing smarter urban transport solutions to manage spatial and environmental constraints. This is mainly envisaged through the use of 'smart charging systems' and the provision of 'better information for better mobility'. For example, ITS can be used to ensure better management of operations and new services through fleet management, traveller information systems, ticketing and other user pays systems. The Commission set forth a desire to ensure that systems and standards are interoperable, including the interoperability of payment systems. ITS systems can also be used to provide information to enhance travel choices, and to allow dynamic management of existing infrastructure. It is stated that these measures can provide additional capacity in excess of 20-30% to existing infrastructure.

Towards accessible urban transport

Accessibility in this context largely relates to policies of ensuring people with different socio-demographic characteristics, have easy access to the transport system. This includes people with reduced mobility, the elderly, young people, families with young children. This issue also relates to the expectations of citizens that public transport should cater to their needs in terms of quality, efficiency and availability to encourage its use over private vehicles. Options that are promoted to address these issues include enhancing public transport provision, building upon an appropriate EU legal framework to allow competent authorities to procure services to meet their specific needs, and encouraging innovative and cost-effective solutions such as the use of bus rapid transit (BRT) schemes as opposed to traditional infrastructure options such as heavy and light rail. In addition, the use of properly integrated land use and transport policy is also seen as a key option to tackling issues for urban mobility. For example, this could be achieved through the use of sustainable urban transport plans (SUTPs).

Towards safe and secure urban transport

A common problem for transport in terms of user experiences and perceptions stems from issues with safety and security. This includes concerns about the high levels of road fatalities each year, which is a particular problem for cyclists, and concerns with perceived low levels of passenger security, which dissuade some people from using public transport. Options include promoting safer behaviour, providing safer and securer infrastructure and encouraging the development of safer vehicles.

Green Paper's Vision

In addition to the identifying option to addressing the challenges for urban mobility, the Green Paper set forth the Commission's vision for creating a new urban mobility culture, which related to improving knowledge and data collection. The Green Paper also identifies a need for appropriate financial resources and tools to support cities in moving toward the implementation of more sustainable transport systems. This was expected to derive from a mix of budgetary, regulatory and financial instruments, including specific local taxes. The use of private finance initiatives (e.g. public-private-partnerships) and other charging mechanisms is also stipulated.

In relation to the provision of EU funding support, the Green Paper identifies the various sources available, including the Structural Funds, the Cohesion Fund and loans from the European Investment Bank (EIB). In addition, the Green Paper highlights the CIVITAS initiative, which is a Commission demonstration and research programme for clean urban transport. Also identified is the Intelligent Energy Europe (IEE) Programme, which is financed under the Competitiveness and Innovation Programme (CIP).

Action Plan on Urban Mobility

Based on the results of the consultation that followed the 2007 Green Paper, the Commission released its *Action Plan on Urban Mobility* in 2009. This was linked to the release of its Communication on a sustainable future for transport during the same year.²⁰ That Communication recognised the importance of dealing with the impacts that increased urbanisation is expected to have on city transport systems, calling for coordinated action within a supporting framework set at EU level. This approach recognises that while responsibility for transport primarily lies at local, regional and national level, there is a role for the EU to support action at the local level through promotion of best practice, partnership arrangements and appropriate regulations.

The Action Plan focussed on six themes that addressed the main messages that flowed from the Green Paper consultation, with separate actions defined for each theme. These are listed in the table below.

²⁰ COM(2009) 279

Table 1: Action Plan on Urban Mobility – Themes and Actions

Themes	Actions
Theme 1: Promoting Integrated Policies	<ol style="list-style-type: none"> 1. Accelerating the take-up of sustainable mobility plans 1. Sustainable urban mobility and regional policy 2. Transport for healthy urban environments
Theme 2: Focusing on Citizens	<ol style="list-style-type: none"> 3. Platform on passenger rights in urban public transport 4. Improving accessibility for persons with reduced mobility 5. Improving travel information 6. Access to green zones 7. Campaigns on sustainable mobility behaviour 8. Energy efficient driving as part of driving education
Theme 3: Greening Urban Transport	<ol style="list-style-type: none"> 9. Research and demonstration projects for lower and zero emissions 10. Internet guide on clean and energy-efficient vehicles 11. Study on urban aspects of the internalisation of external costs 12. Information exchange on urban pricing schemes
Theme 4: Strengthening Funding	<ol style="list-style-type: none"> 13. Optimising existing funding sources 14. Analysing the needs for future funding
Theme 5: Sharing Experience and Knowledge	<ol style="list-style-type: none"> 15. Updating data and statistics 16. Setting up an urban mobility observatory 17. Contributing to international dialogue and information exchange
Theme 6: Optimising Urban Mobility	<ol style="list-style-type: none"> 18. Urban freight transport 19. Intelligent transport systems (ITS) for urban mobility

Source: COM(2009) 490

The implementation of the Action Plan was to be carried out from its launch in 2009 through to 2012, with a review of its implementation to be carried out during its final year. This current study on the financing needs in the area of sustainable urban mobility relates to Actions 2 and 15.

3.2.2.3 Beyond the City: links to the Trans-European Transport Network

Even inter-city and long distance journeys tend to start and finish in cities, and often involve travel through urban areas, and therefore the efficiency and sustainability of urban transport also affects people making such journeys.

The Trans-European Transport Network, known as TEN-T, comprises transport networks designed to facilitate travel across the whole of the European Union. TEN-T is one of three trans-European networks (TEN) which has been created with the aim of facilitating the movement of people, goods and services throughout EU; the others are a

telecommunications network (eTEN) and a proposed energy network (TEN-E or TEN-Energy).

TEN-T incorporates plans to improve and coordinate major roads, railways, inland waterways, airports, seaports, inland ports and traffic management systems, in order to provide integrated and intermodal long-distance high-speed routes for the movement of people and freight throughout the EU.

A major aim of the TEN-T, affirmed in the re-launched Lisbon strategy, is to build up the “missing links and remove the bottlenecks in our transport infrastructure, as well as to ensure the sustainability of our transport networks into the future”²¹. This was reaffirmed in the 2011 Transport White Paper which quantified the cost of the completion of the TEN-T network as being approximately 550 billion EUR until 2020, with 39% of this allocated to the “removal of the main blockages”.

In October 2011 the Commission released proposals for new guidelines to support the reinforcement of the TEN-T network, with specific goals to address key issues such as:

- Poor interconnectedness (e.g. interchanges between modes and between networks of the same mode);
- Bottlenecks, particularly around border crossings; and
- Poor quality East-West connections.

The goal is to ensure that the core European transport network by 2030 will:

- Connect 83 main European ports with rail and road links;
- Connect 37 main airports by rail into major cities;
- Upgrade 15,000 km of rail line to high speed; and
- 35 cross-border projects to reduce bottlenecks.

The new focus is to take a network approach, with EU added value being to help develop a core network around which Member States build and develop what is referred to as their “comprehensive networks”.

For transport, €31.7 billion is to be spent. A key focus will be promoting the transport network to be more sustainable with greater consumer choice.

The plan is to be financed through the “Connecting Europe Facility” managed by the EIB using EU budget money with the EIB’s resources to leverage long-term private sector investment. The expectation is that this will encourage new public-private partnerships.

With the emphasis on connecting airports to major cities by rail, it is likely to help contribute towards more sustainable urban mobility by addressing one of the strategic trip types within cities that connects cities to the rest of Europe and the world. The intention is to use

²¹ European Commission, Mobility & Transport:
http://ec.europa.eu/transport/infrastructure/index_en.htm

the EU budget funds combined with EIB financing to leverage up to €4.6 billion in investments.²²

The potential relevance of urban mobility to TEN-T is clear:

“Urban areas should provide efficient interconnection points for the trans-European transport network and offer efficient ‘last mile’ transport for both freight and passengers. They are thus vital to the competitiveness and sustainability of our future European transport system.”²³ Thus, sustainable urban mobility projects should look to leverage this overlap where possible, and integrate urban transport plans with the overarching EU strategy of greater mobility throughout Europe.

As urban areas include TEN-T networks, and are dependent on those and the comprehensive networks of Member States, development of all of these networks in a more interconnected way is likely to enhance achieving goals of sustainable urban mobility.

3.2.2.4 The Seventh Framework Programme (FP7)

The Seventh Framework Programme for Research and Technological Development (FP7) was launched in 2007 and is the European Union’s chief instrument for funding research over the period 2007 to 2013. FP7 bundles all research-related EU initiatives together, with high-level goals of improving growth, competitiveness and employment. It has a total budget of over 50 billion EUR over the seven year period.

In as far as transport is concerned, the central objective of FP7 is to develop safer, smarter and more environmentally-friendly pan-European transport systems that will benefit all EU citizens. A total of 4.1 billion EUR has been set aside for transport themed projects, with urban mobility being one of the priorities.

3.2.3 Regional Policy

EU Regional Policy focuses on reducing the significant economic, social and territorial disparities that still exist between Europe’s regions.²⁴

This policy, as incorporated in the EC Treaty itself (Articles 158-162), has three related aims: to reduce structural disparities between EU regions, to foster balanced development throughout the EU and to promote real equal opportunities for all.

The EU seeks to achieve the above aims by means of a variety of financing operations, principally through the Structural Funds and the Cohesion Fund (see also 3.2.4 below).

For the period 2007-2013, the European Union’s regional policy will account for 36% of the EU budget²⁵ and is the EU’s second largest budget item, with an allocation of €347 billion²⁶. As the graph below shows, over a fifth of regional funding is allocated to transport:

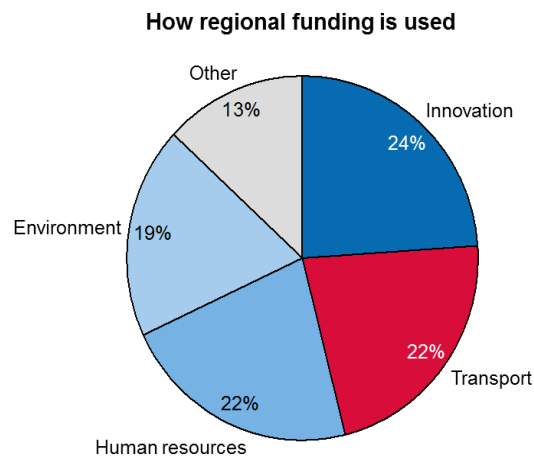
²² This initiative is for transport, energy and telecommunications/ICT. The transport component is estimated to be around 63% of the total programme of investment.

²³ Action Plan on Urban Mobility, COM (2009) 490

²⁴ European Commission, Regional Policy - Inforegio:
http://ec.europa.eu/regional_policy/index_en.cfm

²⁵ http://europa.eu/pol/reg/index_en.htm

Figure 4: Allocation of Regional Funding



Source: Europa http://europa.eu/pol/reg/index_en.htm, European Commission

3.2.3.1 Cohesion Policy

Cohesion Policy has been a concern of the EU since its foundation and remains central to EU Regional Policy. European policies addressing regional imbalances can be traced back to the Treaty of Rome, and in 1975 the European Regional Development Fund (ERDF) was created with this aim at its core. A number of other funding programmes with territorial impact existed at that time, including the European Social Fund (ESF). In 1986, the Single European Act laid the basis for a genuine cohesion policy which was specifically designed to offset the burden of the single market for the less economically favoured regions of the Community. The Cohesion Fund itself was established in the early 1990s, and with the enlargement of the EU, funds allocated to Cohesion have shown a strong tendency to increase over the last two decades.²⁷

Between 2000 and 2006 cohesion policy provided 4% of all investment in transport in the EU and 18% in the EU10²⁸.

Cohesion Policy was reorganised for 2007-2013 around three key objectives and three key funding instruments:

Table 2: Cohesion Policy: Objectives, Structural Funds and Instruments

Objective	Funding Instruments		
Convergence	ERDF	ESF	Cohesion Fund
Regional Competitiveness and Employment	ERDF	ESF	
European Territorial Cooperation	ERDF		

²⁶ http://europa.eu/legislation_summaries/regional_policy/index_en.htm

²⁷ History of Community Regional Policy, Regional Policy – Inforegio, European Commission

²⁸ Strategic reports submitted by the Member States on Cohesion policy 2007-2013: Questions and Answers, MEMO/10/115, Brussels

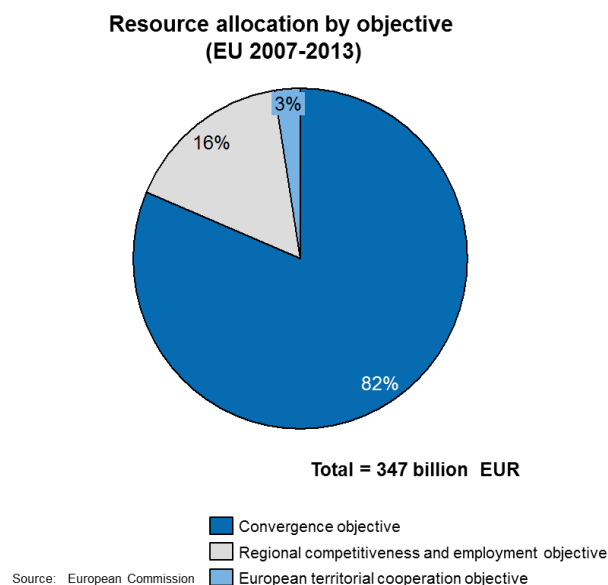
As the table shows, only the first objective, Convergence, can access funds from the Structural Funds (the ERDF and the ESF) and the Cohesion Fund.

The Convergence objective, which enjoys the lion’s share of the funding, is aimed at promoting growth for the least-developed Member States and regions and covers 84 regions in 18 Members States, all with a GDP per capita of less than 75% of the Community average. In addition, a further 16 regions which are just over the current GDP threshold (but were previously eligible prior to the expansion of the EU) are included on a “phasing-out” basis.

Regions not eligible for funding under the Convergence objectives are covered by the Regional Competitiveness and Employment objective. This takes a two-pronged approach to increasing competitiveness and employment in regions throughout the EU. Firstly, development programmes are funded to promote economic changes through innovation, entrepreneurship, protection of the environment and improvement of the region’s accessibility. Secondly, investment in human resources and adapting the workforce aims to support more and better jobs.

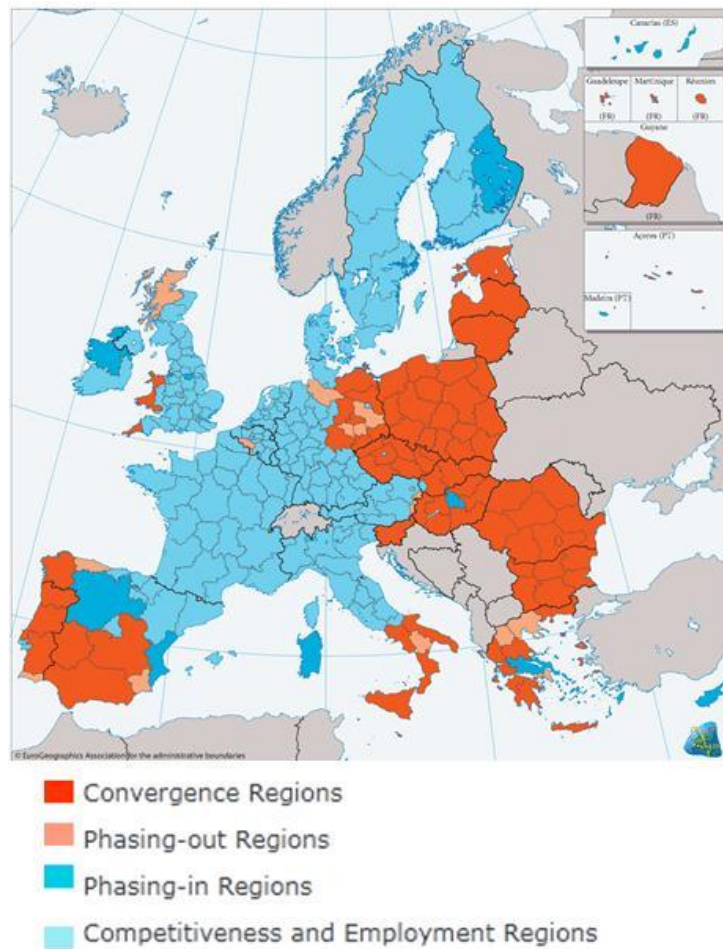
The final objective, European Territorial Cooperation, applies across the EU. In cross-border areas, it aims to support cross-border cooperation through joint local and regional initiative, while trans-national cooperation and interregional cooperation are also supported.

Figure 5: Cohesion Funding by Key Objective (2007-2013)



The graphic below shows the eligibility of EU regions for funding under the Convergence objective (given in red and pink) and the Regional Competitiveness and Employment objective (given in two shades of blue).

Figure 6: Cohesion Funding by Territory: Eligible Areas (2007-2013)

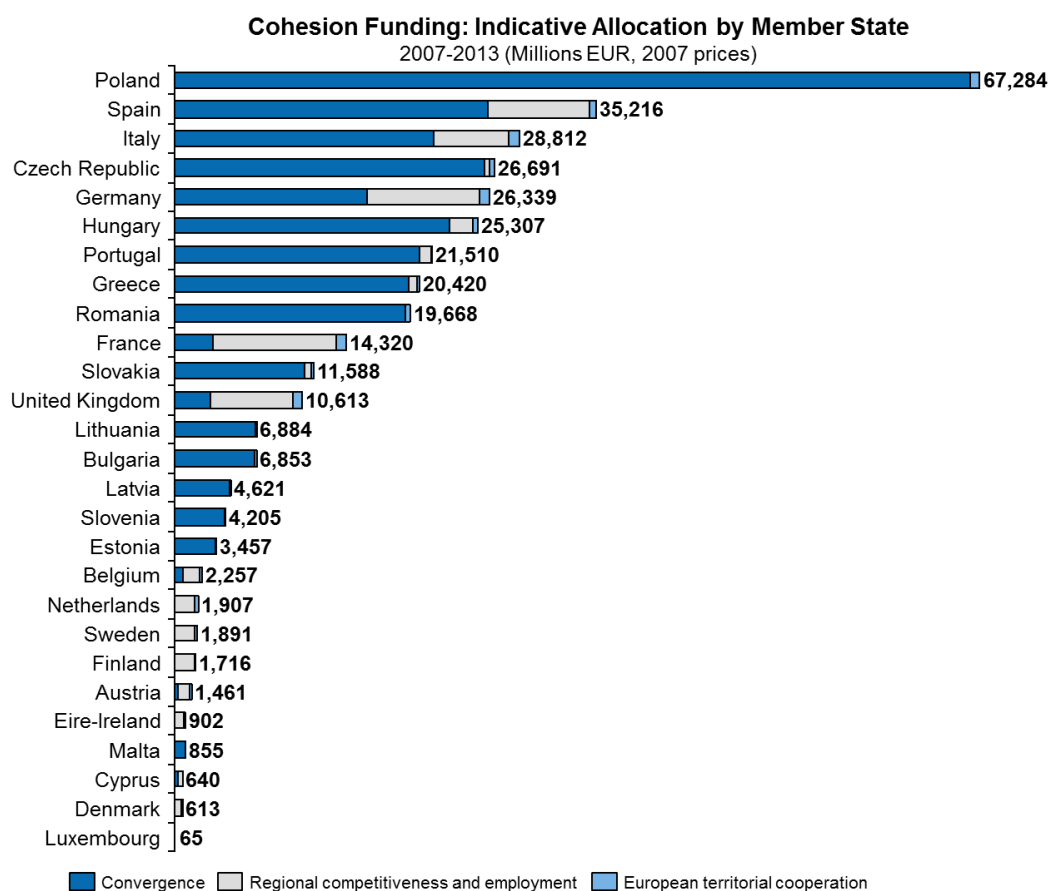


Source: History of Community Regional Policy, DG Regional Policy, European Commission

As the map above clearly illustrates, the entirety of the EU territory is eligible for cohesion funding, but, as already discussed, the majority of the funding is focussed on the less economically developed regions which are eligible under the Convergence objective.

The indicative allocation of cohesion funding by Member State is given below:

Figure 7: Allocation of Cohesion Funding by Member State (2007-2013)



Source: Cohesion Policy 2007-2013

Poland, with over 67 billion EUR provisionally allocated, has by far the largest amount of funding of any Member State, with almost double the amount of funding compared to Spain, who receives the second most at 35 billion EUR. It is also interesting to note that the EU15 countries, which are generally the most economically developed of the Member States, are set to receive just under 50% of Cohesion funding, though they are clearly receiving a far lower amount in proportion to the size of their population and economies.

In terms of urban mobility funding, over 8.5 billion EUR has been set aside, under the following budget lines:

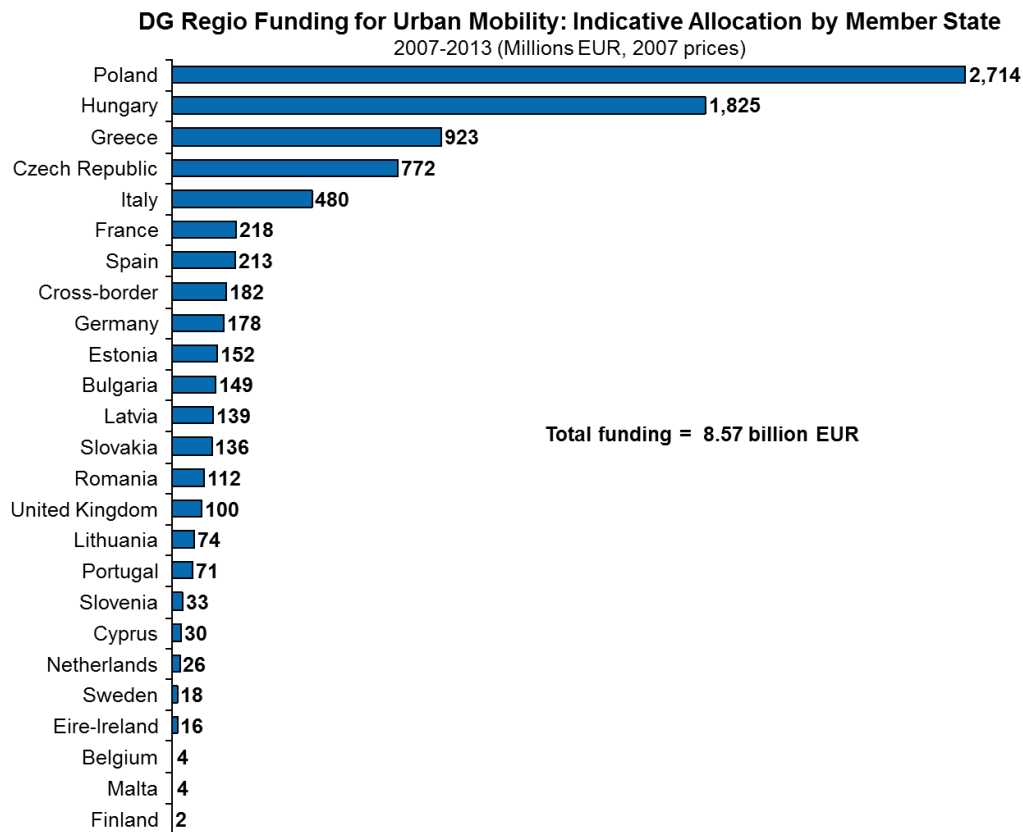
Table 3: Urban Mobility Funding through the Structural Funds, 2007-2013

Category code	Category	Transport Amount (EUR)	Shares of the total structural funds dedicated to transport
24	Cycle tracks	603 869 290	0.7%
25	Urban transport	1 660 210 940	2.0%
52	Promotion of clean urban transport	6 126 664 580	7.5%

Source: EU Budget; Eurocities – Background information on EU funding schemes

The indicative allocation by Member State is given below:

Figure 8: Funding of Urban Mobility by DG Regio (2007-2013)



Source: DG Regio

3.2.3.2 Financial Initiatives

At European level, four initiatives (The Four J's) have been launched for Cohesion Policy programmes in the period 2007-2013 to improve access to finance²⁹.

JASPERS: technical assistance in preparing funding proposals

JASPERS (Joint Assistance in Supporting Projects in European Regions) involves a partnership between the European Commission (DG Regional Policy), the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD). The main objective of JASPERS is to provide technical assistance to new EU Member States (those that have joined since 2004) in the complex task of preparing proposals for large projects supported by EU funds.

JESSICA: expertise, grants and loans for urban development and renewal

JESSICA (Joint European Support for Sustainable Investment in City Areas) is a European Commission initiative (DG Regional Policy) in cooperation with the European Investment Bank (EIB) and the Council of Europe Development Bank (CEB) to promote sustainable investment, growth and jobs in Europe's urban areas. The JESSICA initiative enables the

²⁹ http://ec.europa.eu/regional_policy/funds/2007/jjj/index_en.htm

Managing Authorities of Structural Funds programmes to take advantage of outside expertise and have greater access to loan capital, as well as benefit from a strong leverage effect by attracting sizeable amounts of private funding.

JEREMIE: access to finance for micro, small and medium businesses

JEREMIE (Joint European Resources for Micro to medium Enterprises) is an initiative of the European Commission (DG Regional Policy) together with the European Investment Bank (EIB) and the European Investment Fund (EIF) to promote increased access to finance for the development of micro, small and medium-sized enterprises in the EU regions.

JASMINE: access to finance for small businesses and individuals

JASMINE (Joint Action to Support Micro-Finance Institutions in Europe) seeks to improve access to finance for small businesses and for socially excluded people, as well as ethnic minorities, who want to become self-employed. The EIB and the EIF run this facility, which will conduct market analysis, establish guidelines and promote training courses in particular to develop mentoring capacity, essential for good micro-credit operations. Financial support comes from the existing technical assistance budget of the Structural Funds (ERDF).

Further details on JASPERS and JESSICA are given in the section on the EIB below.

3.2.3.3 The Urban Dimension of Regional Policy

While there is much focus on the role of the EU in supporting regional development and competitiveness, it also has a long history of supporting urban development and regeneration. This is despite there being no clear legal basis for urban policy in the treaties establishing the EU. Instead, the promotion of urban development and regeneration policies are seen as a way in which to ensure the wider regional development objectives of the EU are met.

Key historical urban policy initiatives at EU level have included:³⁰

- The Urban Pilot Projects, 1989 to 1999;
- The Urban Community Initiative, 1994 to 2006;
- The 'Urban Mainstreaming', 2007 to 2013;
- The URBACT Programme, 2002 to 2013;
- The Regions for Economic Change Initiative; and
- The Urban Audit.

The Urban Pilot Projects and Community Initiatives were influential in trialling and demonstrating innovative and best practice approaches to urban regeneration, with significant funding provided. For example, the URBAN I Community Initiative (1994 to 1999) financed programmes in 118 urban areas with around €900 million of Community

³⁰ EU Regional Policy, *Promoting sustainable urban development in Europe: Achievements and Opportunities*, 2009

assistance. The URBAN II Community Initiative (2000 to 2006) invested around €370 million in sustainable economic and social regeneration projects in 70 urban areas.

These efforts have resulted in a common European ‘Acquis Urbain’ and URBAN mainstreaming, with the development of approaches that rely on greater involvement of stakeholders and stronger horizontal coordination through an integrated approach to urban development. It is worth noting that the EU has sought to reinforce and strengthen these approaches through the current programming period, enabling all cities to benefit from ERDF funding.

URBACT Programme

URBACT is a European exchange and learning programme that is geared toward promoting sustainable urban development. The Programme enables European cities to collaborate, share knowledge and experiences, and to develop pragmatic solutions to urban development for their own urban contexts. The URBACT Programme has four missions:

1. Coordinating exchanges to make things happen;
2. Analysing and capitalising learning;
3. Disseminating information and outputs; and
4. Funding project operations.

URBACT’s budget for 2006-13 (i.e. URBACT II) is around €69 million, including around €53 million from the ERDF. This represents a significant increase on funding for URBACT I, with the focus on enhancing the effectiveness of urban development policies in Europe and strengthening the common concept of integrated urban development.

Push for a Common Methodology for Sustainable Urban Development

Under the influence of EU and selected national/regional/local initiatives, there has been an evolution in urban planning toward a more complex and common approach across the EU. This approach includes the following key features:³¹

- A move away from individual sectors towards wider integration within the local or regional economy;
- A decentralisation of responsibilities from central government to lower levels of government and local stakeholders;
- An increasing focus on empowering citizens of cities and neighbourhoods;
- A shift from universal to focused, area-based policies; and
- A greater emphasis on the effectiveness of policies.

The integrated approach to urban development is viewed as being a key driver of added value by limiting the negative impacts of development projects, and identifying and harnessing synergies that deliver benefits beyond the actual project. Under this approach, a

³¹ EU Regional Policy, *Promoting sustainable urban development in Europe: Achievements and Opportunities*, 2009

wide mix of economic, social and environmental features are considered in developing a new urban project.

There are mixed results across the EU with respect to the implementation of a common, integrated approach to urban development and regeneration. For example, an analysis of programming patterns across convergence regions showed that those regions in EU-15 Member States were largely able to benefit from national policies and strategies for urban development, whereas this was not the case for most EU-12 Member States. This is in part linked to the fact that EU-12 Member States have not been able to take advantage of the URBAN Community Initiatives which, as we have seen, has been instrumental in influencing approaches for urban development in EU-15 Member States for some time.³²

3.2.4 *EU Environmental Policies*

One of the Commission's major priorities has been ensuring that high environmental standards are being met across Member States. Policies have been developed across the past couple of decades which are focussed on:

- **Climate change;** Establishment of a strategy to reduce the EU's greenhouse gas emissions through the European Climate Change Programme. This aims to reduce greenhouse gases by at least 20% by 2020 (compared with 1990 levels), raise renewable energy's share of the market to 20% and cut overall energy consumption by 20% (compared with projected trends). Within the drive for more renewable energy, it was agreed that 10% of fuel for transport should come from biofuels, electricity or hydrogen by 2020.
- **Emissions trading;** one of the main actions taken by the EU the introduction of an emissions trading system (EU ETS) which has essentially created a market for emissions which rewards or penalises businesses and other transport operators depending on whether they exceed or reduce their emissions target using the cap and trade principle.
- **Biodiversity;** the EU has committed to halting the loss of biodiversity in the EU by 2020, but reaching that goal will require much effort under the EU 2020 Biodiversity Strategy.
- **Environmental health;** Noise, bathing water quality, rare species and emergency response to environmental incidents are just some of the areas covered under the extensive body of environmental legislation that the EU has established over the decades. In some of its latest efforts on this front, the EU moved in 2008 to set binding limits on emissions of cars and trucks which can cause respiratory diseases. Under the new law, which takes effect in 2011, EU countries will have to reduce exposure to fine particles in urban areas by an average 20% by 2020 (based on 2010 levels).
- **Sustainable development;** the sustainable development strategy has been a key priority over the past decade since the EU Sustainable Development Strategy was

³² EU Regional Policy, *Fostering the urban dimension: Analysis of the Operational Programmes co-financed by the European Regional Development Fund (2007-2013)*, 2008

launched in 2001. Closely tied to climate change and energy policy, the plan stresses the importance of promoting sustainable transport, sustainable consumption and production, conservation and management of natural resources, public health, social inclusion and addressing challenges of demography, migration and global poverty.

The Directorate-General for the Environment (DG Environment) is focussed on developing policies which protect, preserve and improve the environment for present and future generations. The DG helps develop and monitor Member State compliance with and application of EU environmental law and investigates complaints made by citizens and non-governmental organisations. It has the capacity to take legal action if it believes that EU law has been infringed. There is some overlap between DG Environment and DG MOVE which have jointly developed policies focused on pollution, fuels, and development of sustainable transport systems.

The Directorate-General for Climate Action ("DG CLIMA") was established in February 2010. Prior to this climate change was included within the remit of DG Environment. It leads international negotiations on climate, helps the EU to deal with the consequences of climate change and to meet its targets for 2020, as well as developing and implementing the EU Emissions Trading System (EU ETS).

Launched in 2005, the EU ETS works on the "cap and trade" principle. This means there is a "cap", or limit, on the total amount of certain greenhouse gases that can be emitted by the factories, power plants and other emission sources. Within this cap, companies receive emission allowances which they can sell to or buy from one another as needed. The limit on the total number of allowances available ensures that they have a value. At the end of each year each company must surrender enough allowances to cover all its emissions, otherwise heavy fines are imposed. If a company reduces its emissions, it can keep the spare allowances to cover its future needs or else sell them to another company that is short of allowances. The flexibility that trading brings ensures that emissions are cut where it costs least to do so. The number of allowances is reduced over time so that total emissions fall. In 2020 emissions are planned to be 21% lower than in 2005.

DG CLIMA also promotes the development and demonstration of low carbon and climate change adaptation technologies, especially through the development and implementation of cost effective regulatory frameworks for their deployment (e.g. carbon capture and storage, fluorinated gases, ozone depleting substances, vehicle efficiency standards, fuel quality standards) as well as through the development of appropriate financial support schemes.

Energy Efficiency

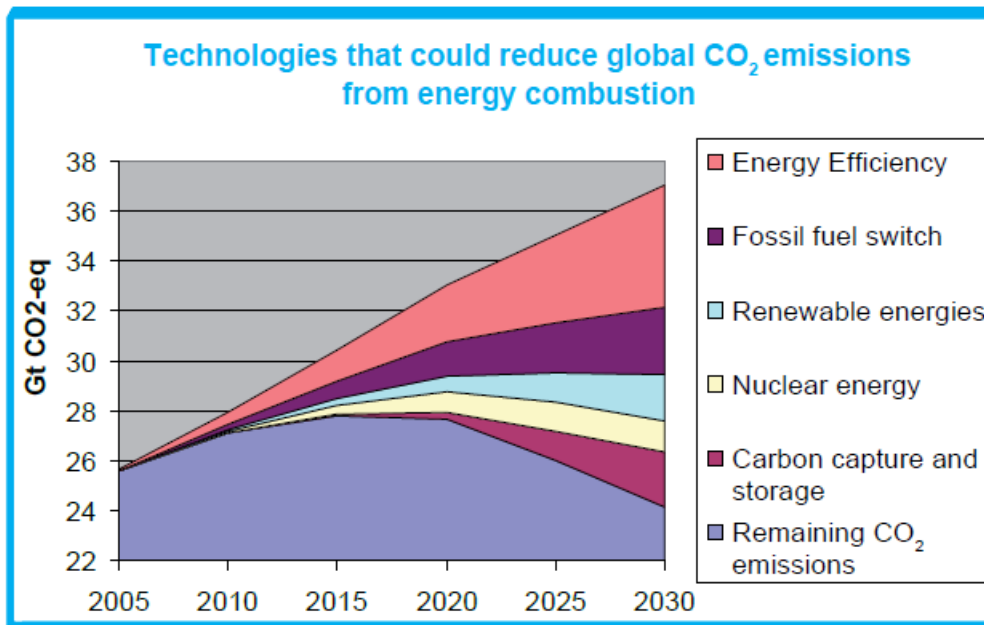
EU Member States made a commitment in March 2007 that the EU will cut its CO₂ emissions to 30% below 1990 levels by 2020 in the context of a global and comprehensive international agreement on climate change provided other developed countries commit to making comparable reductions. At the same time, EU leaders committed to transforming Europe into a highly energy-efficient, low-carbon economy.

These emissions targets are underpinned by three energy-related objectives, which are also to be met by 2020:

- a 20% reduction in energy consumption through improved energy efficiency;
- an increase in renewable energy's share of the market to 20% (from around 9% today); and

- as part of the renewable energy effort, a 10% share for sustainably produced biofuels and other renewable fuels in transport in each Member State.

Figure 9: Technologies which will reduce carbon emissions



Source: *Leading global action to 2020 and beyond*, European Commission, 2008

After extensive economic analysis and consultation with member states, in January 2008 the EU produced new legal commitments to meet these climate and renewable energy targets. They complement on going work to improve energy efficiency. The adoption of the climate and energy package makes the European Union the first region of the world to have both committed to such ambitious targets and put in place the measures needed to achieve them. The package demonstrates the EU's leadership and shows that making the emissions cuts necessary to avert dangerous climate change is fully compatible with continued economic growth and prosperity.

The investment that the package requires will help stimulate Europe's economy, jobs and innovation in the short to medium term while lays the basis for a more sustainable, lower-carbon economy in the longer term.

Beyond the commitment to reduce emissions by 20% of 1990 levels by 2020, it also puts in place the necessary arrangements for scaling this up to 30% under a satisfactory global climate agreement. In this case, EU governments and companies will be allowed to use higher amounts of credits from emission-saving projects in third countries to offset their emissions.

3.3 Overview of Existing Funding Instruments

The Structural Funds (the ERDF and the ESF) and the Cohesion Fund are the major financial instruments in place to support the Cohesion Policy. In this section, brief overviews of these three Funds will be given. In addition to the grants provided by these funds, resources are also available from the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD), which are considered in turn.

3.3.1 European Regional Development Fund

The ERDF is the longest established of the three funds considered, and funds projects across the EU for all three prongs of the EU Cohesion Policy: Convergence, Regional Competitiveness and Employment, and European Territorial Cooperation. It also has the largest budget: in the period 2007-2013, the available ERDF resources amount to EUR 203 billion (in 2007 prices) which accounts for 59% of the total funding under the Cohesion policy.

ERDF aims to reinforce economic and social cohesion by redressing the main regional imbalances through support for the development and structural adjustment of regional economies, including the conversion of declining industrial regions and regions lagging behind, and support for cross-border, transnational and interregional cooperation (EC 2006a).

The main intervention areas under the three objectives are shown in the table below. As can be seen, there are transport-specific facets under each of the three priority objectives:

Table 4: Priority Objectives and Intervention areas of ERDF

Priority Objectives	Major Intervention Areas	Transport-Specific
Convergence	<ul style="list-style-type: none"> ▪ research and technological development (RTD); ▪ innovation and entrepreneurship; ▪ information society; ▪ environment; ▪ risk prevention; ▪ tourism; ▪ culture; ▪ transport; ▪ energy; ▪ education; ▪ health. 	(Article 4): “transport investments, including improvement of trans-European networks and links to the TEN-T network”
Regional Competitiveness and Employment	<ul style="list-style-type: none"> ▪ innovation and knowledge-based economy ▪ environment and risk prevention ▪ access to transport and telecommunications services of general economic interest. 	(Article 5): “strengthening secondary transport networks by improving links to TEN-T networks”
European Territorial Cooperation	<ul style="list-style-type: none"> ▪ development of economic and social cross-border activities; ▪ establishment and development of transnational cooperation, including bilateral cooperation between maritime regions; ▪ increasing the efficiency of regional policy through interregional promotion and cooperation, the networking and exchange of experiences between regional and local authorities. 	(Article 6): “accessibility – actions may include investments in cross-border sections of trans-European networks”

Source: ERDF at http://ec.europa.eu/regional_policy/funds/feder/index_en.htm

The ERDF also pays particular attention to actions which reduce economic, environmental and social problems in towns. Towns, alongside geographically disadvantaged areas (those that are remote, mountainous or sparsely populated), and the outermost areas of the EU, are a priority area for ERDF funding.

The ERDF is set to finance over 300 Operational Programmes of Cohesion Policy in the 2007-2013 period. Of these, approximately 3% are clearly earmarked for urban projects (equivalent to 10 billion EUR). The cities and towns of regions that fall under the Convergence objective are set to receive, in absolute terms, almost three times more investment than those that fall under the Regional Competitiveness and Employment objective.³³

In the previous funding period, 2000-2006, the funding for transport programmes was approximately 35 billion EUR, of which just over two billion was allocated to urban transport.³⁴ It has been difficult locating detailed figures for spend on urban transport in 2007-2013, however, in concert with the Cohesion Fund, the ERDF looks to contribute approximately 8 billion EUR for urban transport during this period, reflecting the priorities of Member States.³⁵

Under the objectives and rules of the funds, each Member State spends their grant allocations according to national priorities for economic development and regional cohesion. In order to receive the grants, the funding priorities and allocations need to align with the Community's strategic objectives for cohesion policy. These priorities and planned funding allocations are agreed through the National Strategic Reference Frameworks (NSRFs).

As noted, the Community's strategic objectives state that Member States can use the funds to enhance the attractiveness of regions and cities by "improving accessibility, ensuring adequate quality and level of services, and preserving their environmental potential". Therefore, at the strategic level, EU cohesion policy is well aligned with its policies for sustainable mobility.

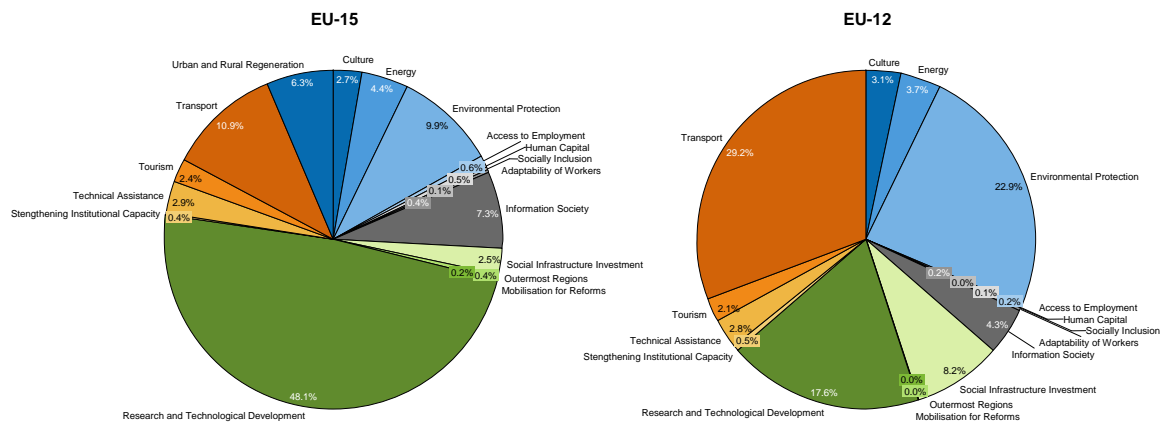
The planned allocations of the ERDF and CF by Member States for the 2007-13 programming period is depicted in Figure 10. This shows that the use of the funds for transport initiatives has been less of a priority for EU-15 countries (with the exception of Spain, Italy, Greece and Portugal), with 11% of funding earmarked for transport investments, and with the southern EU countries removed, the average decreases to 6%. In the EU-15 countries, research and technology development is more relevant to national objectives. This contrasts the EU-12 countries, where the expansion and upgrading of transport networks has been an important part of regional and economic development to bring them closer to EU level.

³³ Working document of the Directorate-General for Regional Policy, *Fostering the urban dimension – Analysis of the Operational Programmes co-financed by the European Regional Development Fund (2007-2013)*, November 2008, European Commission.

³⁴ Green Paper, *Towards a new culture for urban mobility*, 2007, European Commission

³⁵ *Ibid*; see also the Action Plan which specifies 8 billion EUR allocated to "clean urban transport".

Figure 10: Planned ERDF & CF Allocations by Member States (2007-2013)



Source: EU Regional Policy, Cohesion Policy 2007-13: National Strategic Reference Frameworks, 2008

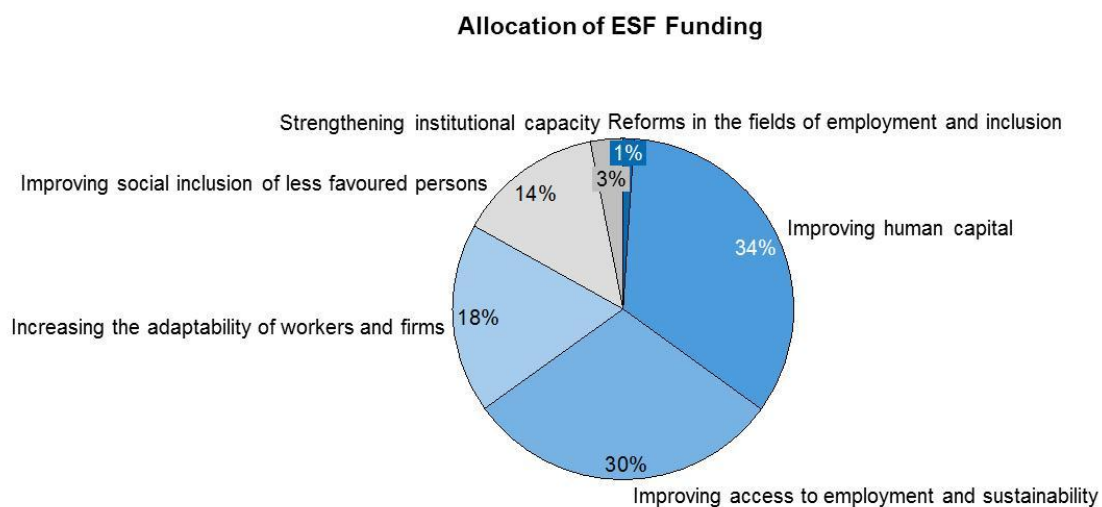
3.3.2 European Social Fund

The European Social Fund is one of EU's financial instruments set up to help reduce differences in living standards between the regions of the European Union (EU). The ESF contributes to the Union's economic and social policy by improving employment and the possibilities of employment. It supports Member States' actions in improving the adaptability of workers and enterprises, increasing access to employment, reinforcing the social inclusion of disadvantaged people, combating discrimination, increasing and improving investment in human capital and strengthening the capacity and efficiency of administrations and public services (EU 2007).

In terms of the objectives of Cohesion Policy, ESF funding is organised under the Convergence and Regional Competitive and Employment objectives. It therefore is able to operate across all regions in the EU.

To achieve its objectives, the ESF funds projects and programmes in six specific fields relevant to creating jobs and helping workers to fill them.

Figure 11: Funding of Projects and Programmes of the ESF (2007-2013)



Source: ESF Investing in people 2007-2013

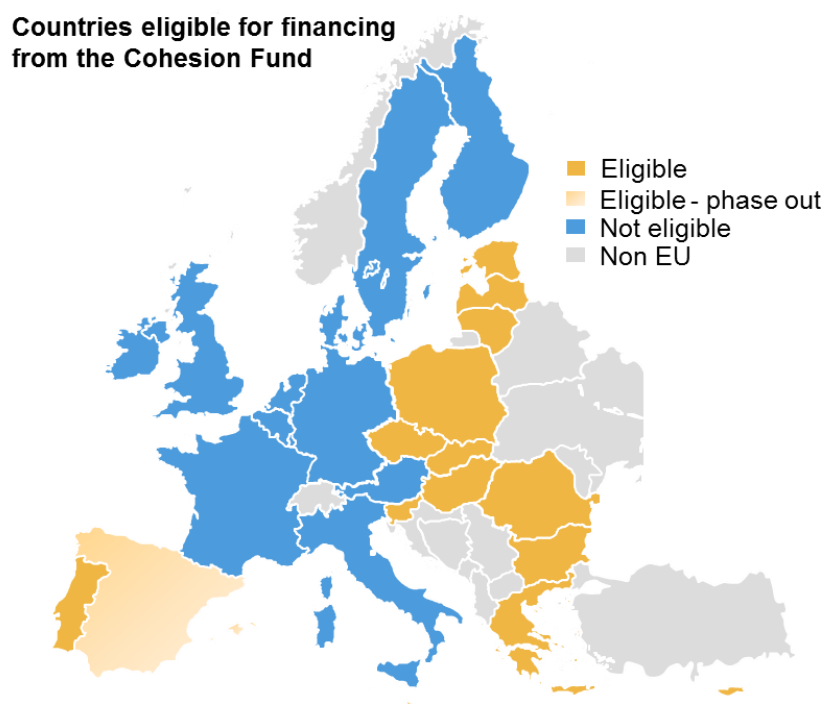
Over the period 2007-2013, some €75 billion will be distributed to the EU Member States and regions to achieve its goals. The ESF is devoted to promoting employment in the EU; while transport can facilitate access to employment and social inclusion, transport infrastructure is not within the intervention area of ESF and therefore this Fund is the least relevant of the three Funds considered.

3.3.3 *The Cohesion Fund*

The Cohesion Fund exclusively supports the aims of the Convergence objective and therefore, unlike the Structural Funds, does not operate across the EU. Instead, it serves only the Member States which have a Gross National Income (GNI) per capita of less than 90% of the Community average. The Fund represents a third of the budget allocation given to new Member States (against 12% previously). The aim of the Cohesion Fund is to strengthen economic and social cohesion in the European Union (EU) with a view to promoting sustainable development. It is now subject to the same rules of programming, management and monitoring as the ESF and the ERDF.

According to EU Cohesion Policy (2007), states eligible for Cohesion Fund financing for the 2007-2013 period are: Bulgaria, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia and Slovenia. Spain is a transitional country: although its GNI per capita is greater than 90% of the average for the EU-27, it remains less than the average of the EU-15, and therefore Spain is eligible to phase-out funding only. This is illustrated in the map below (note the contrast with the map of Cohesion Policy Funding, Figure 6 above).

Figure 12: Map of Member States Eligible for Financing by the Cohesion Fund



The Cohesion Fund finances activities under the following categories:

-
- trans-European transport networks, notably priority projects of European interest as identified by the Union;
 - environment; here, Cohesion Fund can also support projects related to energy or transport, as long as they clearly present a benefit to the environment: energy efficiency, use of renewable energy, developing rail transport, supporting intermodality, strengthening public transport, etc.³⁶

Whereas in the previous period (2000-2006), when transport and environment infrastructure are the only areas of the funding, Cohesion Fund in 2007-2013 will not only cover major transport and environmental protection infrastructures, but will also fund projects in the fields of energy efficiency, renewable energy and intermodal, urban or collective transport. Based on the European Commission proposal (EU 2007), the Cohesion Fund in 2007-13 no longer functions independently but participates in the Convergence objective (EU 2007). The Cohesion Fund will be more integrated into the operation of the mainstream Structural Funds. The Commission proposes a switch from project-based support to programme-based support. The Commission approval will be required only in the case of major projects (EUR 25 million for environmental and EUR 50 million for transport projects).

In the period of 2007-2013, EUR 70 billion will be available for Cohesion Fund which represents 20% of the total amount set aside for Cohesion Policy. The past funding awarded by Member States is given in the table below. As can be seen, the size of the fund increased significantly over the two periods considered, though it is set to remain fairly static for the forthcoming period, 2007-2013.

³⁶ http://ec.europa.eu/regional_policy/funds/cf/index_en.htm

Table 5: Disbursement of Cohesion Fund by Member State (000s EUR)

Member State	2000-2006	1994-1999	Total
Bulgaria	2,413,615		2,413,615
Cyprus			
Czech Republic	113,008		113,008
Estonia			
Greece	2,452,289		2,452,289
Hungary	40,497,367		40,497,367
Ireland			
Latvia			
Lithuania	649,156		649,156
Malta			
Poland			
Portugal	205,714	4,987,861	5,193,575
Romania	8,067,402		8,067,402
Slovakia			
Slovenia			
Spain	21,592,738	4,771,861	26,364,599
Total	75,991,289	9,759,722	85,751,011

Source: Annual Report on the Cohesion Fund (2009)

For 2007-2013, 35 billion Euros, equivalent to 50% of the Cohesion Fund's budget, is dedicated to funding TEN-T. In addition, as stated above, Cohesion Fund Regulations have been changed to place clean urban transport as an investment priority in the current financial period.

3.3.4 *European Investment Bank*

The European Investment Bank (EIB) was set up to provide long-term financing to further the policy objectives of the European Union. EIB raises the required resources through borrowing on the capital markets, mainly through public bond issues. Its shareholders are the 27 Member States – the Finance Ministers of each make up the Board of Governors.

The policies areas which the European Commission is focused on, and which the EIB provide finance to are³⁷:

- Economic and social cohesion and convergence in EU
- Fighting against climate change

³⁷ <http://www.eib.org/about/index.htm>

- Promoting sustainable communities
- Promoting sustainable competitive energy
- Implementation of a knowledge economy
- Development of trans-European networks
- Support for small and medium enterprises (SME)

EIB are not only financiers for the EU-27 countries, but they also provide financial resources to all countries across the world; 12% of total EIB financing was provided to countries outside the EU in 2010³⁸.

3.3.4.1 Financial Services

EIB offers a variety of financial services including:

Individual loans are granted to projects where the total investment cost exceeds EUR 25 million (EUR 10 million in the case of ACP). The EIB may finance a maximum of 50% of the total cost of any project. Individual loans are available to promoters in both the public and private sectors, including banks.

Intermediated loans are lines of credit or indirect loans designed to permit the financing of projects with a total investment cost of less than EUR 25 million (EUR 10 million in the case of ACP). An EIB credit line may finance up to 50% of the total cost of any project or, in certain case, the 100% of the loan granted by the intermediary bank.

Structured finance facility - The SFF was established in 2001 to generate significant value added by the provision of additional support for priority projects through instruments with a risk profile that is higher than the standard normally accepted by the Bank.

Risk sharing finance facility - the European Commission and the European Investment Bank have joined forces to set up the Risk Sharing Finance Facility (RSFF). RSFF is an innovative scheme to improve access to debt financing for private companies or public institutions promoting activities in the field of Research, Development, and Innovation (RDI). RDI promotes economic development and growth, but tends to have difficulty attracting finance due to its nature.

The European Clean Transport Facility (ECTF) is a major EIB financing programme launched in 2008 to support investments in research, development and innovation in the areas of emissions reduction and energy efficiency in the European transport industry. The ECTF is EUR 4bn per year and targets automotive (manufacturers/ suppliers), railroad, aircraft and shipping industries.

The Marguerite Fund is an additional source of funding with the specific objective of financing developments in Greenfield infrastructure within the sectors of Transport, Energy and Renewables. The fund is focused on two main EU policy areas: Trans-European

³⁸ <http://www.eib.org/projects/loans/list/index.htm>

Network development (TEN-T and TEN-E), and EU 20-20-20 climate and energy targets. The fund targets to invest EUR 1.5 billion in these areas by the end of 2011. EIB is one of six core sponsors who have committed to providing this funding. The rationale behind this fund is to bring together sources of funding from the public and private sectors to allow significant investments to be made in infrastructure development projects which would otherwise have difficulty securing funding.

Loan guarantee instruments – EIB provides guarantees for senior and subordinated debt. The guarantee is either a standard guarantee or debt service guarantee similar to that offered by monoline insurers.

Venture capital - EIB has a venture capital facility designed to strengthen the equity base of high-technology SMEs and those with strong growth potential.

Micro capital - EIB has supported Microfinance Institutions (MFIs), fund providers and other industry stakeholders in addressing specific market failures and promoting financing solutions for Micro, Small and Medium Enterprises (MSMEs) and low income self-employed. As of end 2009, the EIB group has committed EUR 654 million to around 30 microfinance projects or intermediaries, including EUR 26 million in grants for technical assistance.

3.3.4.2 *Technical Services*

In addition to the provision of financial services, technical assistance is also offered to its clients to ensure better quality of project proposal and higher levels of credit. The EIB Projects Directorate employs specialist economists and engineers who assess and advise on individual projects. Technical assistance includes:

- Studies in the areas of legislation, regulatory reform and the award of concessions
- Feasibility studies
- Project management units to avoid delays and cost overruns
- Due diligence undertakings prior to investments

Furthermore, two initiatives have been established which provides financial support to funding applicants to help cover the costs of the required technical work required to ensure high quality applications for funding. These are called ELENA and JASPERS:

ELENA (European Local ENergy Assistance)

ELENA is a EUR 15 million joint scheme between the European Commission and EIB which, through the Intelligent Energy-Europe programme (an EC Energy fund), provides funding which covers a share of the cost for the technical support required for conducting the relevant feasibility and market studies, structuring of programmes, energy audits, and anything else required to make sustainable energy projects ready for EIB funding. Cities across the EU may access ELENA.

An example of current work includes a transport project, SPIS-ELENA, based in the cities of Malmö, Lund and Helsingborg, in the region of Skane, Sweden, which aims to provide tramlines for those cities. The project is pioneering new concept of coordinating tramway investment programmes. Project development services are funded by ELENA amounting to EUR 2.97 million (90% of total cost of project development), while the total investment

programme is estimated at EUR 421 million, with a SPIS-ELENA contribution of EUR 170.5 (approximately 39% of the total). Other current transport projects include one based in Madrid, Spain, which involves large scale investment into electric vehicles, and one based in Vila Nova de Gaia, Poland, which funds, among other sustainable items, hybrid buses.

JASPERS (Joint Assistance to Support Projects in European Regions)

JASPERS is a technical assistance partnership between the European Commission, EIB, EBRD, and the German government-owned development bank KfW, which provides technical support for the EU-12 (Member States which joined after 2004) in order to help them secure finance from Structural and Cohesion Funds for large infrastructure schemes. The aim is to increase the quantity and quality of projects which are submitted to the Commission.

JASPERS is supervised by a Steering Committee which includes two representatives from DG Regio, two from the EIB, two from the EBRD and one with observer status from the KfW. The European Commission chairs the Steering Committee and the EIB provides the Secretariat. JASPERS is integrated into the Projects Directorate of the EIB as a separate department

Scope of JASPERS:

- Project Screening: Assist stakeholders with project screening to assess their viability and suitability for EU-grant finance.
- Project development: Support stakeholders from project pre-feasibility and feasibility stages through to final grant application;
- Project appraisal: Undertake final assessment of projects and relevant documents prior to submission of the grant application to DG-REGIO;
- Horizontal Support: Provide guidance on horizontal issues including State Aid, CBA and funding gap methodology;
- Training and capacity development: Provide workshops on key project and horizontal issues for project stakeholders, active participation at conferences organised by Ministries of beneficiary countries.

Application of JASPERS:

Between 2006 – 2010, JASPERS supported 49 assignments in the railways, airports and ports; 43 assignments in the roads projects (focused on TEN-T); 40 assignments in the urban infrastructure projects such as supporting preparation of metro, tram, trolleybus and bus related investments in infrastructure and rolling stock in capital and secondary cities.

3.3.4.3 Innovative Financial Engineering for Sustainable Urban Mobility: JESSICA

The Joint European Support for Sustainable Investment in City Areas, better known as JESSICA, is a unique financial initiative which allows Member States to access a portion of their allocated EU Structural Fund to make repayable investments (in the form of loans/equity) in urban development projects which form part of a larger integrated plan for sustainable urban development.

The money from the EU Structural Fund is drawn into an 'Urban Development Fund' which can also contain other private/public sector investments and is controlled through a managing authority, either at national or regional level.

The Urban Development Fund (UDF) can be classified as what is known more commonly as a 'Revolving Loan Fund'. It is a source of finance from which repayable investments are made to urban development projects, and as repayments are made back to the fund, more loans can in turn be made to new urban development projects.³⁹

EIB's involvement in JESSICA covers four areas:

- Advising and assisting national, regional and local authorities in implementing JESSICA.
- Promoting the use of Urban Development Funds and best practice across Europe.
- Acting as a Holding Fund, when requested by Member States or Managing Authorities.
- EIB will also examine the possibility of leveraging its own funding resources into urban development projects supported by JESSICA, if requested.

The characteristics of the UDF are central to this funding initiative. It is a fund which promotes and invests in public-private-partnerships for projects which contribute to the integrated plan for sustainable urban development.

A Holding Fund can be set up if multiple UDFs are required. The holding fund acts as the overarching fund which funnels off money into each UDF which are specified by their integrated urban development plans. They allow for JESSICA funds to be combined with other public and/or private sector resources for investment in UDFs.

An integrated plan for sustainable urban development comprises a system of interlinked actions which seeks to bring about a lasting improvement in the economic, physical, social and environmental conditions of a city or an area within the city.

Benefits of JESSICA

Recycling of funds – investment repayments are used to finance additional projects (revolving loan fund)

Leverage – can engage the private sector, thereby leveraging both further investment and, perhaps more critically, competence in project implementation and management.

Flexibility – broader eligibility of expenditures, and use of UDF for equity, debt or guarantee investment.

Expertise and Creativity – Member States, Managing Authorities, cities and towns will benefit from expertise of the banking and private sector.

Application of JESSICA

³⁹ http://www.eib.org/products/technical_assistance/jessica/index.htm

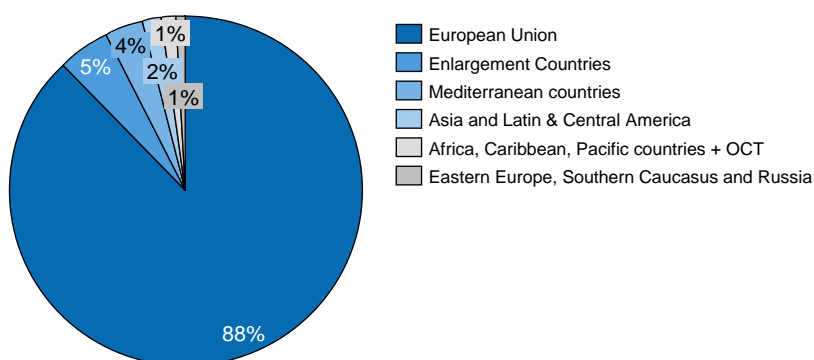
Up until November 2010, 54 JESSICA evaluation studies were undertaken in 19 Member States. A total of EUR 1.65 billion has been committed to 19 JESSICA projects across 11 Member States⁴⁰.

Of the 19 JESSICA projects, 5 have been created at national level for national development plans, and 14 at regional level responding to regional development plans. 16 of the JESSICA projects had holding funds, and 15 were managed by EIB⁴¹.

3.3.4.4 Funding 5 year trend

As stated above, the EIB provides finance principally to EU countries, but also to countries outside the European Union.

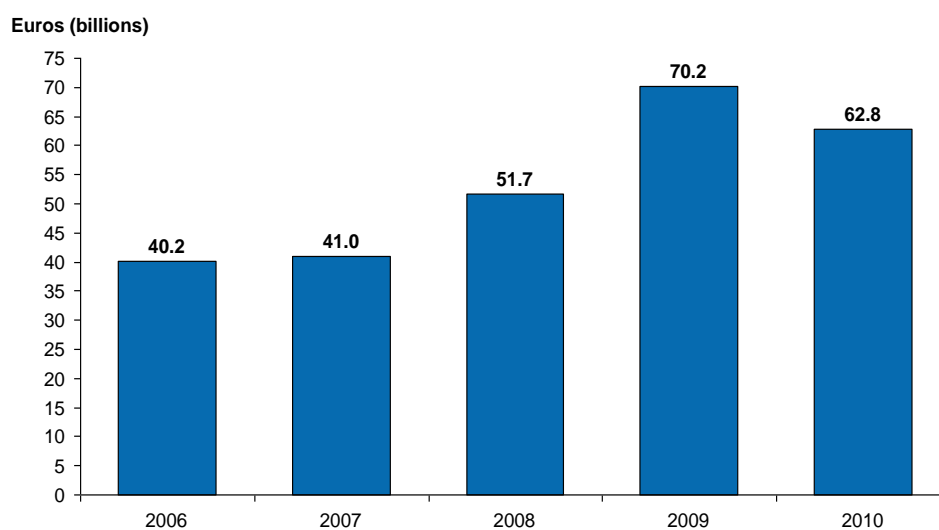
Figure 13: Total EIB Financing by Region in 2010



Source: European Investment Bank, Booz & Company analysis

In terms of the financing provided to the EU, the amount has generally increased over the last five years, although it has taken a dip in the most recent year.

Figure 14: Total EIB Funding in the EU, 2006-2010



⁴⁰ <http://www.eib.org/attachments/general/events/jessica-snapshot-an-introduction.pdf>

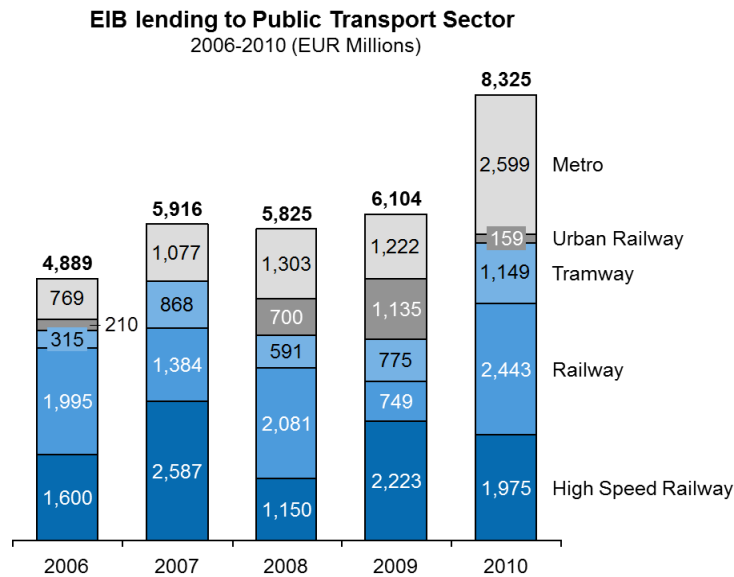
⁴¹ <http://www.eib.org/attachments/general/events/jessica-snapshot-an-introduction.pdf>

Source: European Investment Bank⁴², Booz & Company analysis

3.3.4.5 Public Transport Funding

The graph below shows the value of loans made to public transport projects by the EIB over the past five years.

Figure 15: EIB Public Transport Funding, 2006-2010

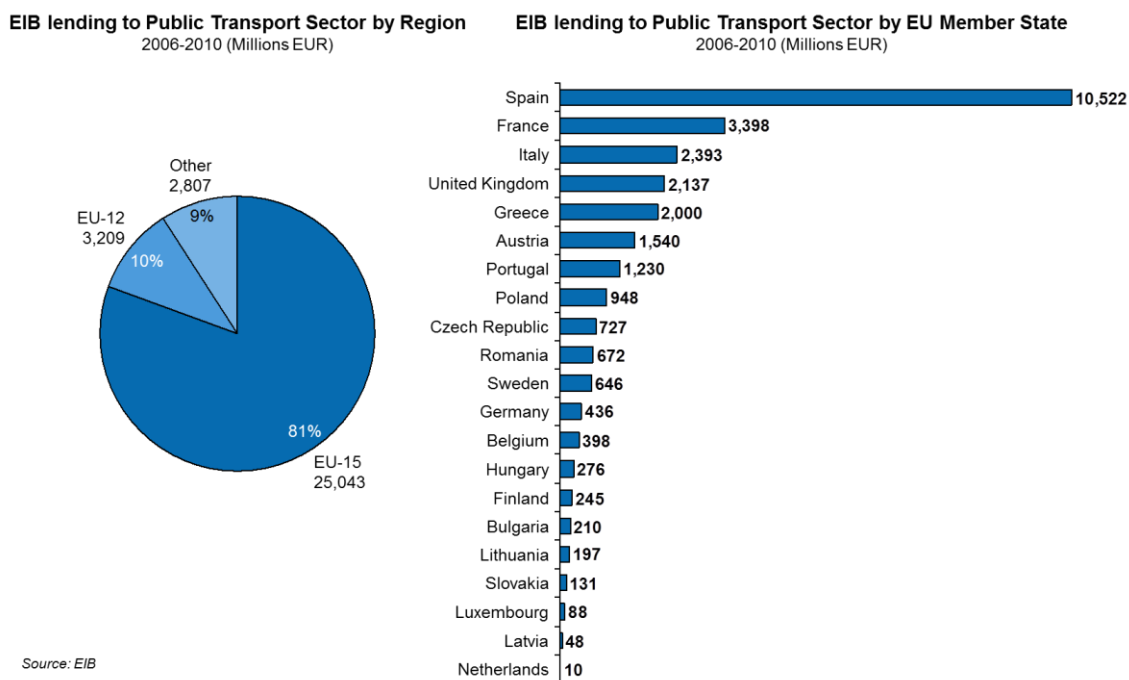


Source: European Investment Bank, Booz & Company analysis

Considering the allocation of transport funding by Member State, Spain captures the most funding by a significant margin. Poland comes second, followed by a number of western European countries.

⁴² <http://www.eib.org/projects/loans/list/index.htm>

Figure 16: Total Transport-Specific Funding by Region and Member State, 2006-2010



Source: European Investment Bank, Booz & Company analysis

3.3.5 European Bank for Reconstruction and Development

The European Bank for Reconstruction and Development (EBRD) is an international financial institution whose shareholders include the European Union and EIB in addition to a 61 countries⁴³ from around the world. The EBRD operates in 29 countries⁴⁴ in central and eastern Europe and central Asia.

The overarching EBRD mission is to encourage nations with underperforming, inefficient economies to transition to open, democratic, competitive market economies by providing finance to primarily private sector clients, but also to public sector clients.

Customer categories fall under three groups within the countries that EBRD operate:

- Businesses

⁴³ Albania, Armenia, Australia, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Egypt, Estonia, European Investment Bank, European Union, Finland, FYR Macedonia, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Kazakhstan, Republic of Korea, Kyrgyz, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Mexico, Moldova, Mongolia, Montenegro, Morocco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Turkey, Turkmenistan, Ukraine, United Kingdom, United States of America, Uzbekistan.

⁴⁴ Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Estonia, FYR Macedonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Moldova, Mongolia, Montenegro, Poland, Romania, Russia, Serbia, Slovak Republic, Slovenia, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan

- Financial Institutions
- Utilities, city governments and national authorities

EBRD work closely with the European Union to ensure that EBRD's clients gain maximum benefits from the finance made available by EBRD. Financial support is provided to EBRD customers through 'donor funds' which are used to remove any potential barriers to successful finance agreements. The EU is the single largest donor provided about half of all cooperation funds.

Donor contributions for EBRD projects cover essential costs of projects such as consultancy services, audits and training of staff. These costs are often unaffordable for clients to cover on their own. From 1991 to the end of 2009, donors have contributed €1.53 billion to fund EBRD projects⁴⁵.

3.3.5.1 Financial Services Offered

EBRD offer direct funding to its customers in the form of loans, equity, and guarantees.

Direct loans provided to the private sector fall between EUR 5 million to EUR 250 million with an average amount of 25 million. EBRD provide smaller loans to micro, small and medium sized businesses through a variety of intermediary banks which the EBRD has an equity stake in or with which it has signed a loan, and investment or venture capital funds in which the EBRD has made an investment.

Equity loans from EBRD provide between EUR 2 million to EUR 100 million per project, and EBRD only take minority positions and define clear exit strategies.

Guarantees are provided which range from all-risk guarantees whereby the Bank covers lenders against default regardless of the cause, to partial risk-specific contingent guarantees covering default arising from specified events.

Loan Syndications allow businesses to access local sources of capital in addition to EBRD financing. EBRD provide up to 35% of the total long term capital requirements for each project and support further capital investments from local sources by taking on some or all of the risk. This ensures that projects borrow from local commercial sources as well as from EBRD thus contributing to national economic independence and growth.

The Trade Facilitation Programme promotes foreign trade with central and eastern Europe and the Commonwealth of Independent States. Through the Programme, the EBRD provides guarantees to international confirming banks. In so doing, it takes the political and commercial payment risk of transactions undertaken by issuing banks in the countries where the EBRD operates. The Programme can guarantee any genuine trade transaction associated with exports from, imports to, and between the EBRD's countries of operations.

Sustainable Energy Initiative (SEI) provides technical assistance and funding to projects focused on energy efficiency and carbon reduction. The Phase 1 invested EUR 2.7 million in 166 projects between 2006 and 2008. The second phase is now underway which is targeting

⁴⁵ <http://www.ebrd.com/pages/about/workwith/donors/about.shtml>

to invest 3-5 million Euros between 2009-11 in order to tackle the barriers to sustainable urban development and energy efficiency⁴⁶.

3.3.5.2 *Technical Assistance Services Offered*

Donor funding provides finance for a range of activities central to ensuring successful EBRD loan applications including:

- Project preparation and implementation
- Institutional reform
- Enhancement of management skills
- Regulatory development
- Policy planning

EBRD Technical Assistance Programs - TAM and BAS

EBRD provides recipients of funding with technical assistance through two programs which are funded through donor funding:

- **TurnAround Management (TAM):** focuses on broad managerial and structural changes within small and medium-sized enterprises, bringing in sector-specific, internationally experienced executives from economically developed countries to help the businesses develop a new management culture and skills.
- **Business Advisory Services (BAS):** helps micro and small enterprises improve performance by supporting local consultants in projects with narrowly defined objectives and market development activities.

Areas of assistance include restructuring of businesses, improving enterprises' products, reducing operating costs, advising on local and export markets and helping to develop business planning skills at management level.

The EBRD also supports JASPERS through the provision of 3 staff years' equivalent as a contribution towards staffing per annum⁴⁷, and uses JASPERS reports, where available, as part of its due diligence process.

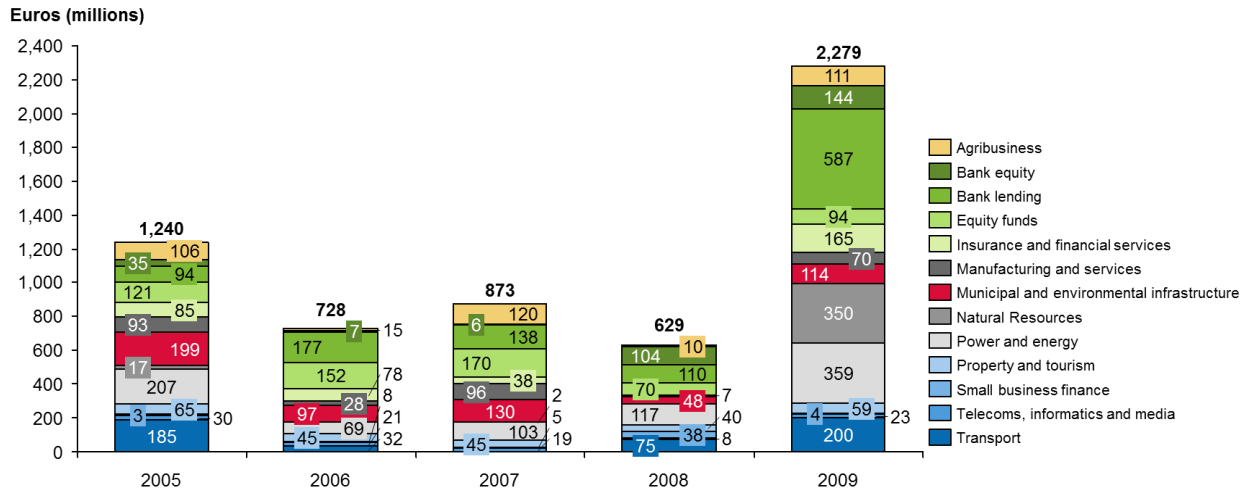
3.3.5.3 *Funding*

Of the €23,132 billion finance provided by the EBRD in the form of loans, equities and guarantees from 2005 to 2009, 25% went to European Union countries, all new Member States.

⁴⁶ EBRD annual report: <http://www.ebrd.com/downloads/research/annual/ar09eb.pdf>

⁴⁷ JASPERS Annual Report 2009

Figure 17: Total Funding Provided by the EBRD within the EU by Sector, 2005-2009

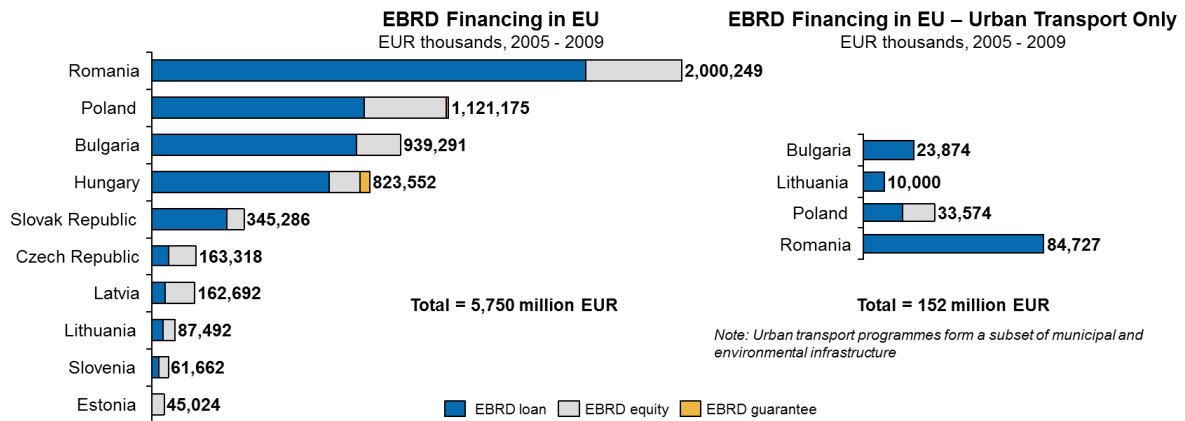


Source: European Bank for Reconstruction and Development⁴⁸, Booz & Company analysis

In terms of funding for urban mobility, the relevant category to consider is not “Transport”, which tends to refer to highway, airport and port programmes, but “Municipal and environmental infrastructure” which covers urban transport programmes, as well as, for example, energy and waste management programmes.

The graph below shows the break-down by country of total EBRD financing provided to Member States over a five year period, 2005-2009:

Figure 18: Funding Provided by the EBRD by EU Member State, Total for 2005-2009



Source: European Bank for Reconstruction and Development⁴⁹, Booz & Company analysis⁵⁰

⁴⁸ EBRD Investments 1991-2009, ERBD

⁴⁹ EBRD Investments 1991-2009, ERBD

⁵⁰ Note: the value of Urban Transport projects was derived from analysis of the EBRD Investment database and does not represent an official ERBD category.

As the charts above show, only small percentage of funding to the EU, less than 3% was spent on urban transport projects, and this funding was provided to four Member States – Bulgaria, Lithuania, Poland and Romania, and was mainly delivered in the form of loans.

3.4 State Aid and Public Procurement Rules

The European Union’s state aid rules govern the way that public expenditure is used to support economic activity with the single European Market. The objective of state aid control is, as laid down in the founding Treaties of the European Communities, to ensure that government interventions do not distort competition and trade inside the EU. In this respect, state aid is defined as an advantage in any form whatsoever conferred on a selective basis to undertakings by national public authorities. Therefore, subsidies granted to individuals or general measures open to all enterprises are not covered by Article 107 of the Treaty on the Functioning of the European Union (TFEU) and do not constitute state aid.⁵¹

Public procurement, which accounts for approximately 17% of EU GDP⁵², is subject to EU laws which enshrine the principle that public sector procurement must follow transparent open procedures to ensure a level playing field for suppliers.

Clearly, these rules have implications for how funds can be invested into transport projects.

Please note: this section provides an overview of the principles governing the application of state aid and public procurement rules – it is not intended as a substitute for legal advice.

3.4.1 State Aid

A company which receives government support obtains an advantage over its competitors. An objective of state aid control is, therefore, to allow change of market behaviour for public interest objectives, while avoiding distortive competitive behaviour. In terms of European legislation, the EC Treaty generally prohibits state aid unless it is justified by reasons of general economic development. According to Article 87: the principle of prohibition of state aid:

“...any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the common market.”

To ensure that this prohibition is respected and exemptions are applied equally across the European Union, the European Commission is in charge of watching over the compliance of state aid with EU rules.

State aid is a technical term for a subsidy granted by a national government or its agents to a commercial undertaking. To qualify as state aid, the support given must meet the following criteria:

⁵¹ European Commission Competition,

http://ec.europa.eu/competition/state_aid/overview/index_en.html

⁵² *Macroeconomic effects of cost savings in public procurement*, European Commission, DG Economic and Financial Affairs, 2009

State resources used: there has been an intervention by the State or through State resources which can take a variety of forms (e.g. grants, interest and tax reliefs, guarantees, government holdings of all or part of a company, or the provision of goods and services on preferential terms, etc.);

Economic advantage conferred: the intervention confers an advantage to the recipient on a selective basis, for example to specific companies or sectors of the industry, or to companies located in specific regions;

Competition distorted: competition has been or may be distorted;

Trade between nations affected: the intervention is likely to affect trade between Member States.⁵³

However, there are exceptions to the prohibition against state aid, thus if the planned aid meets all of the above criteria, there are two routes which can be followed to ensure that the aid is issued legally under EU law. This is necessary since if the aid is not granted legally, it may lead to investigation by the European Commission with the risk that the project may be terminated or the aid (plus interest) recovered.

The first route for gaining approval for state aid in a project is to notify the European Commission of the project for individual prior approval. The second route is that the project fits within an already approved aid scheme in the Member State concerned, or falls under a “block exemption” Regulation.

State aid is approved on the basis of its compatibility with the Common Market which is judged with reference to a number of criteria, such as the level of the aid, its purpose, the beneficiary, the sector and the region.

3.4.1.1 State Aid and Transport

Article 73 gives Member States the right to grant state aid to transport by giving two substantial exceptions to the EC Treaty:

“Aid shall be compatible with this Treaty if they meet the needs of coordination of transport or if they represent reimbursement for the discharge of certain obligations inherent in the concept of a public service”

According to a JASPERS project report⁵⁴, for state aid to be compatible with the common market for the purpose of co-ordination of transport, the following conditions must be satisfied by the granting authorities:

- Aid is necessary and proportional to the minimum necessary by not exceeding the amount of externalities (i.e. the cost advantage enjoyed by competing modes of

⁵³ This list is based on *EU Competition Policy and the Consumer*, European Commission, 2004, http://ec.europa.eu/competition/publications/consumer_en.pdf

⁵⁴ JASPERS Horizontal Task Outputs – Working Paper 3, State Aid Issues in Financing Urban Transport in Poland, prepared on the basis of a Consultancy Contract with Ove Arup & Partners Ltd, 2009

transport). This means that it must be shown that undertakings would have no incentive to shift from one mode of transport to another without state intervention and that aid must not exceed the amount of externalities and the extra costs of shifting from one mode to another.

- Aid is granted on non-discriminatory and transparent terms and it is time-limited. This means that aid is open to all companies, the terms of compensation are published in advance and that aid does not exceed the minimum required length of time (e.g. 3-5 years).
- Aid must not distort competition to an extent contrary to the common interest. Aid which is intended to put costs at the same level for different modes of transport is normally regarded as restoring competition. It is also thought in the common interest to reduce congestion and pollution. Non-discriminatory provision of aid also reduces distortion of competition.

However, it is worth noting that Article 73 does not replace the general state aid regime; thus, if state aid to transport projects cannot gain exemption through the two exceptions given (i.e. the project is not facilitating the coordination of transport or meeting public service obligations), the aid may still be subject to individual approval by the European Commission and/or fall within a block exemption as stated above.

Furthermore, as stated in the recent Green Paper on Urban Mobility, “In its policy on State aid, the Commission is committed to taking into account the environmental benefits of investment in clean transport and of the need for a shift to less polluting means of transport.”⁵⁵ It gives three concrete examples of this. Firstly, specific exceptions have been allowed for by draft guidelines for environmental protection in case of aid being required for “the acquisition of new transport vehicles to speed up the adoption of Community standards before they become mandatory.” In addition, the Commission’s proposal for a new block exemption Regulation⁵⁶ which “explicitly singles out as eligible asset investments in means of transport and transport equipment other than road freight and air transport.”

Lastly, the Commission has issued guidelines on State aid in the railway sector – a sector it regards as “crucial to ensuring sustainable mobility in Europe”⁵⁷. In these guidelines, the European Commission specifies that the granting of state aid to the railway industry can only be authorised where:

- it contributes to the completion of an integrated European market,
- it is open to competition and interoperable and
- [it contributes to] Community objectives of sustainable mobility⁵⁸.

With regard to ageing rolling stock which needs to be replaced for improved reliability, safety and interoperability, the rolling stock “must be exclusively assigned to urban,

⁵⁵ Green Paper, *Towards a new culture for urban mobility*, 2007, European Commission

⁵⁶ Commission Proposal for a new Block Exemption Regulation - SEC(2007) 513, 24.4.2007.

⁵⁷ Green Paper, *Towards a new culture for urban mobility*, 2007, European Commission

⁵⁸ *Communication from the Commission: Community guidelines on State aid for railway undertakings*, OJEU, (2008/C 184/07)

suburban or regional passenger transport services in a specific region or for a specific line serving several different regions”⁵⁹. This could cover a service that transports passengers between regions or Member States if it can be shown that this would have a positive impact on regional development, but in this case the Commission would need to confirm that state aid does not adversely affect the opening up of the international transport market.

In the guidelines on State aid for railway undertakings, the Commission identifies that the guidelines that are also applicable to vehicles used for the public transport of passengers:

“The Commission notes that, depending on the specific circumstances of the case in point, this reasoning may be applied *mutatis mutandis* to vehicles used for the public transport of passengers by road, where such vehicles meet the latest Community standards applicable to new vehicles. Where that is the case, in the interests of equal treatment the Commission will, in such situations, apply the approach described here for railway rolling stock. The Commission encourages the Member State to support the least polluting technologies when awarding this type of aid and will study the extent to which specific financial aid leading to higher aid intensities for such technologies is appropriate.”⁶⁰

3.4.2 Public Procurement

Public purchases of goods, services and infrastructure in all EU Member States are subject to public procurement rules. These aim at creating a level playing field for private operators to compete for public contracts, and to increase the efficiency of public expenditure. The public procurement rules of the Member States are coordinated by two EU Directives adopted on the basis of the Treaty provisions on freedom of establishment and free movement of services:

- Directive 2004/17/EC on the coordination of the procurement procedures of entities operating in the water, energy, transport and postal services sectors
- Directive 2004/18/EC on the coordination of procedures for the award of public works contracts, public service contracts and public supply contracts

These two primary EU Directives set out “single market” measures for public procurement, with the effect that contracts for works, supplies and services over a certain value must be advertised on an EU-wide basis.

The financial thresholds above which EU public procurement rules apply are updated every two years and vary depending on the nature of the contract and the sector. For example, for entities operating in water, energy, transport and postal services sectors, the threshold for works contracts the currently stands at 4,845,000 EUR, while for all supplies and services contracts, all design contests the threshold is 387,000 EUR⁶¹.

⁵⁹ *Ibid.*

⁶⁰ *Communication from the Commission: Community guidelines on State aid for railway undertakings*, OJEU, (2008/C 184/07)

⁶¹ Application thresholds as of January 2010; Regulation (EC) 1177/2009.

Where regulations apply, detailed rules must, in general, be followed in order to enable potential contractors from all 27 EU Member States to bid for the work in a fair contest which achieves value for money. Among other things, contracts must be advertised in the Official Journal of the EU (OJEU), non-local suppliers must not be discriminated against due to technical standards, selection criteria for short listing must be pre-defined, all selection criteria must be objective and transparent, the award process must follow an approved procedure, and certain rights of the tenderers must be respected⁶².

Failure to correctly conform to EU regulations can result in the contracts awarded becoming invalidated and a penalty imposed on the authority breaching the procurement rules.

3.4.2.1 Green Public Procurement

EU public procurement legislation allows incentives for procurement in line with the Europe 2020 objectives⁶³. An example of this is Green Public Procurement (GPP), whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle⁶⁴. This can have a direct beneficial impact due to more environmentally-friendly goods/services being used, as well an indirect impact by stimulating market demand for greener products and technologies. GPP is already practised in EU Member States, many of which have adopted National Action Plans for GPP with voluntary or mandatory targets and specific measures to promote and implement GPP.

The Green Paper on Urban Mobility⁶⁵ recognises the relevance of GPP to sustainable urban mobility, and states that: “the market introduction of clean and energy efficient vehicles could be supported by green public procurement”. The Paper suggests that this be done by internalising the cost of the environmental impact of the vehicle over its entire lifecycle, and taking this into account in addition to the price of the vehicle. This suggestion is taken up by a recent EU Directive⁶⁶ which states:

“The biggest impact on the market, together with the best cost/benefit result, is obtained through mandatory inclusion of lifetime costs for energy consumption, CO₂ emissions, and pollutant emissions as award criteria in the procurement of vehicles for public transport services.”

The Directive goes on to require, in Article 5, that contracting authorities or contracting entities who are under obligation to apply procurement procedure must take into account the operational lifetime energy and environmental impacts (including energy consumption, CO₂, NO_x, NMHC and particulate matter emissions), and either set technical specifications for energy and environmental performance in the documentation of purchase of road transport vehicles, or include these impacts as part of the award criteria or monetise the impacts.

⁶² *State Aid and Public Procurement: A Practical Guide*, Cobbetts

⁶³ *Green Paper on the modernisation of EU public procurement policy: Towards a more efficient European Procurement Market*, March 2011, European Commission

⁶⁴ *Public Procurement for a better environment*, 2008, European Commission

⁶⁵ *Green Paper, Towards a new culture for urban mobility*, 2007, European Commission

⁶⁶ *Directive 2009/33/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of clean and energy-efficient road transport vehicles*

4. Overview of the City Case Studies

4.1 Introduction & Approach

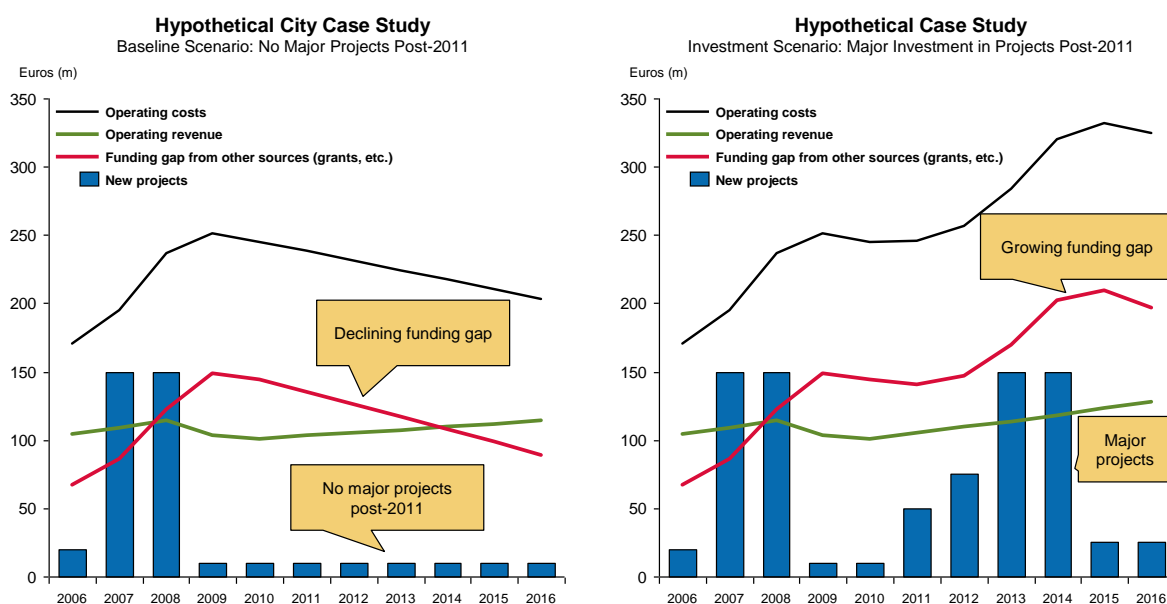
A core requirement of the study is the development of a series of city case studies. The objective for the development of the case studies was to assist with the identification of:

- The main characteristics for policy development, governance and project selection at city level;
- Issues with regional, national and EU funding sources and mechanisms, as well as trends in local taxation;
- The impact of the economic crisis;
- Institutional, political, technical and other bottlenecks and challenges restricting the development of sustainable transport and the take-up of alternative forms of finance;
- Expectations for future demand, supply and funding needs in area of urban mobility; and
- The possible value-add for additional funding on new sustainable transport projects that would not proceed without additional finance or government support at EU level.

We have developed a series of illustrations that depict the ways in which this data was intended to be used to support the objectives of the study.

The graphic below compares two investment scenarios for an hypothetical city case study – a baseline scenario with no major projects post-2011, and an investment case scenario with new major projects post-2011.

Figure 19: Illustration of Hypothetical Case Studies – Financial Analysis

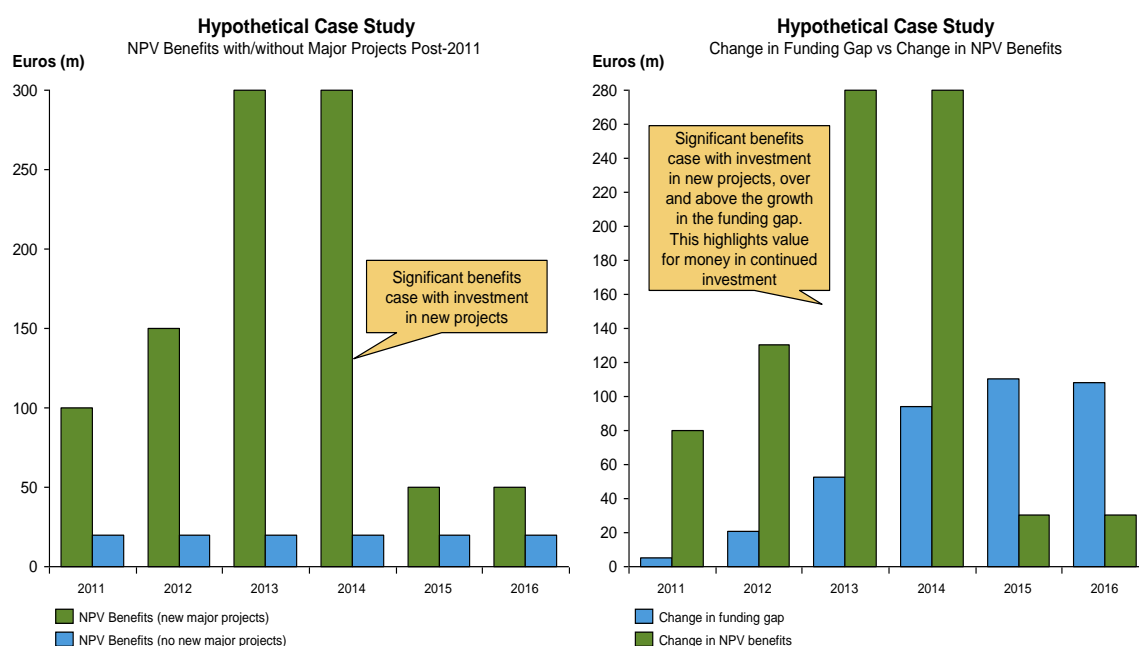


Source: Booz & Company analysis

As expected, the increased expenditure under the investment scenario leads to a growing funding gap as capital and operating costs grow more than revenue. This funding gap is the level of funding to be met from grants and other sources of finance (loans, private equity, etc.). In short, without this additional funding, these projects would not proceed.

By highlighting the profile of benefits for the new major projects in terms of quantified economic and environmental impacts the added value of additional investment via grants and other sources of finance (i.e. the funding gap) can be demonstrated. This is shown in the figure below.

Figure 20: Illustration of Hypothetical Case Studies – Economic Benefits Analysis



Source: Booz & Company analysis

These profiles are based on the assumption that the new sustainable transport projects will deliver economic and environmental benefits over and above the project costs. Under these circumstances, the additional funding to address the funding gap delivers good value for money, increasing the case for additional funding from regional, national, wider-EU and other sources.

The selection of appropriate case study cities was initially managed through the Advisory Board. The first Advisory Board meeting involved the identification of a long list of potential case study cities. This was eventually narrowed down to a shorter list of cities, with the six cities chosen providing the most elaborate data sets.

Booz & Company created a list of data requirements and then worked with the selected case study cities to gather the data. The scope of the data was intended to cover the main catchment area of the city, which would need to be defined by each authority given the unique nature of each city catchment. This could include areas outside the city's actual borders, as in many cases, commuters and other travellers will start their journeys from satellite towns or other nearby cities. The time horizon was for recent historic and forecast five-year periods.

The type of data sought included historic and forecast socio-economic, transport and financial indicators. This covered:

- population growth and economic activity;
- transport supply (physical infrastructure) and use (e.g. mode share, passenger trips, passenger kilometres);
- public transport fare revenue and other user charges (tolls, access fees, etc.);
- expenditure on public and other transport operations;
- expenditure on new public transport, road transport and ‘other urban mobility’ projects, including a description of those new projects;
- funding from local, regional and national sources;
- funding from other grants and sources of finance; and
- benefit assessments for the new public transport and other urban mobility projects (i.e. benefit-cost ratios, impacts on vehicle emissions, etc.)

Unfortunately, much of the data that was sought was not easily accessible, and there was considerable variation between the cities in the quality and quantity of data they could supply. To try to overcome these issues, a series of city visits was organised. These visits enabled the exchange for additional qualitative information, but did not lead to significantly improved quantitative data in line with the requirements of the study. However, with the combination of quantitative and qualitative data provided, a picture of current and future issues for sustainable mobility emerges that can provide useful insights for the study and future policy choices at EU level.

4.2 Main Findings

The main case studies include the six cities of Brno, Burgas, Helsinki, Madrid, Poznan and Vienna. Collectively, they represent a diverse mix across a number of geographic, socioeconomic and physical dimensions, including the composition of their transport networks. Table 6 highlights some of these differences and a map of their locations within the EU is shown in Figure 21.

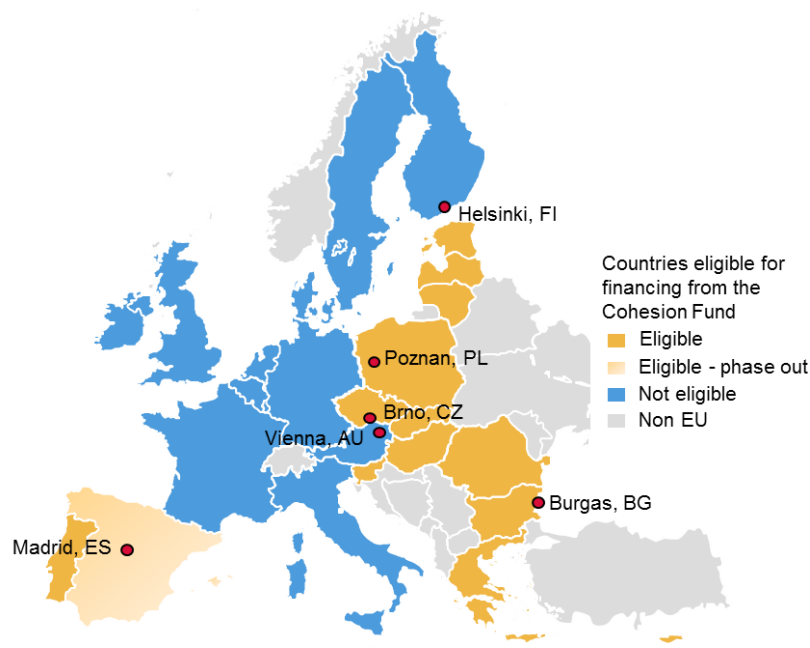
Table 6: General Information on the Case Study Cities

	Brno	Burgas	Helsinki	Madrid	Poznan	Vienna
Member State	Czech Republic	Bulgaria	Finland	Spain	Poland	Austria
EU-15/12	EU-12	EU-12	EU-15	EU-15	EU-12	EU-15
Population	371,200	197,301	1,033,933	3,300,000	553,000	1,713,957
Size (sq. km)	230	512	745	8,030	262	6,457
GDP (EUR millions)	Not reported	5,274	44,311	92,611	9,362	77,128
GDP/capita (EUR)	Not reported	26,730	42,857	28,064	16,800	45,000
PT Network, Dominant Mode	Mixed, pref. tram and bus	Light, bus, some trolleybus.	Heavy, train and metro	Heavy, metro and bus	Mixed, tram and bus	Heavy, rail metro bus

PT Subsidy / capita (€)	102	3	153	149	Not reported	Not reported
Car Mode Share	26.2%	59%	37%	35%	53%	35% / 65% (residents/ commuters)

Source: Stakeholder input

Figure 21: Map of Cities chosen for Case Studies



4.2.1 Overall conclusions from case studies

The presentation of these case studies highlights a number of important features of urban transport networks and the issues that arise due to a mix of historical factors, socioeconomic and political pressures, and the capabilities of local transport authorities to develop sustainable transport policies, obtain suitable funding and implement projects.

The case studies have raised a number of common issues across different types of cities in the EU. Funding challenges are typically based on having to meet the differences between revenue from users and other sources tied to urban transport systems, and the costs of maintaining, operating and developing the infrastructure and services. Some of these are exacerbated by a range of economic and demographic trends, others are impacted by the nature of the transport systems in place and the governance processes applied to raise and allocate funds.

More developed and wealthier cities tend to have challenges around demands for ongoing infrastructure improvements, particularly using the most expensive modes such as underground metros. As citizens get wealthier their demand for better standards of service, more information and faster, more frequent services also rise, but with this comes substantially higher costs. However, such citizens do not also wish to pay higher fares to

match these costs, and there is also limited demand and capacity to raise taxes to also cover such costs.

There are other common challenges among cities in the EU in meeting sustainable urban mobility goals. Most cities face pressure on urban form, in the form of sprawl resulting from relatively high housing costs. This means population growth continues beyond major public transport corridors and puts pressure on networks, encouraging greater car use. Even those cities which have taken substantial steps to promote higher density land use and constrain sprawl, face a continual tension between demand for larger living spaces and more housing in areas where it is affordable, and the desire to focus such growth in areas where existing infrastructure can cope with demand. Without use of other tools (e.g. distance based congestion charging) it is likely to be an ongoing challenge for many cities to constrain demand for housing outside intensification areas.

Indeed, without extensive use of pricing of road use, or targeted pricing of parking, most cities continue to face pressure of demand from private car use, as the private car is almost unrivalled in convenience and travel time for many urban trips.

There does not appear to be widespread use of economics based project evaluation criteria to determine capital investment programmes. This means there is considerable potential to improve outcomes by enabling urban authorities to better target spending. Recent additions to heavy public transport infrastructure in some cities have meant demands not only for the capital costs to be met, but also increased operating subsidies. A combination of better project evaluation and adoption of new innovative measures to manage networks, reduce costs and raise revenues could help to reduce these risks. This may help ensure future investments in any cities is related to outcomes (e.g. greater mobility, reduced congestion, mode shares) rather than inputs (e.g. construction of specific infrastructure projects).

Cities in the accession states seem to have some common issues such as:

- High capital cost legacy infrastructure (rail and light rail/tram) that will need substantial renewal;
- Incomes and car ownership increasing demand for road space and putting pressure on public transport revenues and congestion;
- Lack of local revenue raising options used or available; and
- Lack of technical capability to implement new technologies and implement new management practices.

Together, these present challenges in terms of meeting costs of maintaining and developing public transport networks that are competitive with the private car and effective, whilst also having limited capacity to consider innovative ways to reduce costs and improve service standards.

Those cities have specific challenges of tackling growth in car use in an environment where it is politically difficult to constrain car ownership, but where extensive legacy public transport systems have the capacity to handle any changes in demand that might be brought about by targeted measures (e.g. parking or road user charges). They face capability and capacity constraints in developing strategies that include improved management of existing assets and systems, adopting technologies that can deliver high value improvements.

4.2.2 *Specific insights from case studies*

Useful insights arise when comparing cities of similar size and stature. For example, Madrid and Vienna have similarly large transport networks that rely on a mix of public transport modes including heavy rail and metro (and light rail in the case of Vienna), and extensive bus networks. However, the approach to developing policy and planning for investing in new capacity follows very different approaches.

The transport authorities in Vienna actively develop sustainable transport policies with clearly stated objectives that are apparently well integrated with supporting land use policies. The strategic transport plan identifies development corridors and targets, which is then elaborated through detailed options analysis and route planning. While available funding sources are influential in determining which transport modes dominate the choice of new projects, technical appraisals are used to steer their implementation. These appraisals give consideration to factors such as engineering feasibility, timing and network effects. However, formal economic, environmental and social appraisal frameworks, including formal cost-benefit analyses, are not applied.

For Madrid, the process for developing policy and new projects is heavily dependent on prevailing political circumstances and the outcomes from election cycles. This approach has superseded the previous approach of applying multi-criteria and cost-benefit analyses. The result of these changes has meant that it appears that land use and transport planning is less well integrated. For example, there is evidence of growing urban sprawl, which is increasing demands to extend the metro system into lower density areas further away from the centre of Madrid. This is increasing costs, which has been partially met through obtaining private finance, including extensive use of PPPs.

Equally, Brno and Burgas, both in EU-12 countries, are of similar stature in terms of the size of their populations and personal income levels. However, an important difference relates to the historical development of their transport networks. Brno, for example, has a well developed light rail network that accommodates around half of the city's public transport demand. In line with its historical development, transport planning and the pipeline for new projects is heavily geared toward extending and upgrading the light rail network. As such, the public transport subsidy in Brno is high for a city of its size at around €100 per capita.

Burgas, conversely, relies on its bus network to accommodate almost four fifths of its public transport demand, with a limited trolleybus system accommodating much of the rest. Reflecting the lower costs of providing buses over transport modes that involve heavier infrastructure, the operating subsidy in Burgas is very low at around only €3 per capita. In addition, based on the effective use of the JASPERS programme, extra capacity is being added to the network through the planned BRT system, which should ensure that transport will continue to be provided in Burgas on a financially sustainable basis. However, it is worth noting that Burgas has ambitions to take over a local part of the national rail network that is currently not in use, and that there has been an attempt to use the JESSICA programme to fund a proposed monorail scheme.

The case studies have confirmed the expected impacts of general socio-economic and land use trends. For example, in Brno, there has been urban sprawl in recent years with new suburbs being created further out from town. In addition, personal incomes and car ownership has been increasing steadily over the last decade. All of these factors are helping to contribute to road congestion and increase the cost of public transport service provision, and it appears that without appropriate land use planning, these trends could continue.

The growing use of cars has also been felt in Poznan, which reported an increase in car mode share from 16% to 53% between 1987 to 2000. Poznan has a low population density and total population has been in decline in recent years, which is also reducing public transport patronage.

Both Madrid and Helsinki are experiencing urban sprawl, but their approaches to dealing with the issues appear to be quite different. Madrid is attempting to ensure that new developments are contained around specific growth areas even though, as noted, Madrid has been forced to extend its metro and bus systems to accommodate its expanding urban footprint. Helsinki appears to be following a planning approach that will ensure that its urban footprint will grow along planned new rail corridors.

A number of the case studies have shown that the current economic situation is having a significant impact on transport provision. Some of the effects include a drop in transport demand and revenue, and a reduction in the availability of national and private funding for new projects. Although, it is worth noting that the impacts of the crisis appear to be less prevalent for Vienna and Helsinki compared to the other cities.

There appear to be clear institutional bottlenecks and challenges related to the effectiveness of planning processes and technical capability across a number of the case studies. For example, the Madrid case study highlights the impact that the political process can have on both land use and transport. The cities from the EU-12 countries appear less equipped to deal with the challenges that come with accommodating expanding urban areas and congestion associated with higher incomes and car use.

Burgas provides an example of how the JASPERS programme and associated funding sources can be effectively leveraged to develop a major new transport project on a sustainable basis and ensure that it will be well integrated into the existing transport network. The Burgas transport authorities have indicated a willingness to apply the lessons learnt to future transport planning and project development. However, it is yet to be seen whether the experience will provide genuine and sustainable local capacity enhancements of a sufficient degree to enable other similarly complex transport projects.

In relation to the wealthier cities, we were not able to verify whether technical capacity is confined to the provision of traditional transport infrastructure and services. While there has been some progress in both Madrid and Vienna in developing traffic monitoring and real-time passenger information systems, there may be gaps in the ability to develop the more technical ITS approaches that will be required to develop more innovative sustainable mobility measures.

Perspectives on the availability and effectiveness of EU funding were mixed. Some cities reported that there could be issues when dealing with regional managing authorities and that some processes are overly bureaucratic. The JASPERS programme has been effectively leveraged in both Burgas and Poznan. However, some attempts to apply for support under the JESSICA programme have involved unsuitable types of projects. For example, Burgas is reported to have applied for support to fund a monorail scheme, which was viewed as being inappropriate due to its poor cash returns. Other EU projects have been successful at exploiting synergies with inter-regional links. For example, Vienna reported that the investments in a new rail link and central station for the Paris to Bratislava part of the TEN-T has enabled the city to take advantage of synergies with the local transport network and created opportunities for major new urban infill developments around the station.

As we have seen, none of the case study cities incorporate formal appraisals into their regular planning processes. However, in Burgas, where the JASPERS programme has been effectively used to develop BRT proposals, there is evidence that this process is encouraging the use of improved planning procedures for future transport development.

Lastly, across the case studies, there is mixed progress against the EU’s sustainable urban mobility objectives. While each city is delivering additional public transport capacity and encouraging sustainable travel through the provision of cycle networks, there are no clear plans to make a substantial contribution through more radical policy options. For example, each city highlights the political challenges with implementing restrictive parking and infrastructure pricing measures such as congestion charging. And while cities like Madrid are involved in pilot programmes for alternative fuels, it is yet to be seen whether the city will undertake the significant investment required to fully implement such systems.

A summary of each of the case studies is provided in the next section.

4.3 Case Study Summaries

Table 7: Case Study Summary – Brno

General Information	
City, Member State	Brno, Czech Republic
Background	Brno is located in central Europe, in the Czech Republic. The City of Brno is the second largest city in the Czech Republic and is the major metropolis of the South Moravia Region. Brno is the centre of the Czech judiciary, and is the seat of, among others the Constitutional Court, the Supreme Court and the Supreme Administrative Court. Brno also contains thirteen universities and is famous for its trade fairs
Population	371,200
City Size (sq. km)	230
GDP (EUR millions)	Not reported
GDP/capita (EUR)	Not reported
PT Network Components	Dominated by tram and buses Tram: 70.2km, 50% public transport mode share (persons carried) Bus: 338.8km, 35% public transport mode share Trolleybus: 54km, 11% public transport mode share Rail: 65.5km, 4% public transport mode share
Car Mode Share	26.2%
Issue	Comments
Transport Policy Development & Progress on Sustainable Transport	Clear objectives for sustainable mobility were not provided Transport policy largely based on operating and extending existing transport infrastructure. This will include the promotion of the trolley bus and new trams if possible. City Strategy is largely focused on inter-regional rail improvements, although potential improvements to the bicycle network are highlighted Other initiatives include project(s) through CIVITAS, an integrated mobility centre, and vending machines. Changes to parking prices and park and ride facilities are

	being considered to cope with growing congestion problems.
Public Transport Operations	<p>Mostly public operation</p> <p>Dominant PT operator in Brno is City of Brno Transport Company (DPMB); other operators include Czech Railways and 13 regional bus operators</p> <p>City is serviced by 13 tram, 13 trolleybus and 72 bus lines together with 7 train lines</p>
Land Use Policy Development	Apparent lack of integration with transport planning process
Operating Subsidy & Funding Needs	<p>Revenue: €38.3 million</p> <p>Costs: €100.2 million</p> <p>Operating Subsidy: €61.9 million</p> <p>Subsidy per capita: €102</p> <p>Operating subsidy is large, reflecting funding needs associated with operating and maintaining an extensive light rail network for a relatively small transport task</p>
Key Demographic & Land Use Trends	<p>There has been some urban sprawl with new suburbs being created further out from the town centre. This is helping to cause congestion.</p> <p>Personal incomes and car ownership has been increasing steadily over the last decade</p>
New Project Selection	<p>Typically generated through studies carried out by individual departments</p> <ul style="list-style-type: none"> ○ Transport Department ○ Spatial Planning Department <p>Projects developed by network engineers/planners that consider the usefulness of the investment (e.g. need of extension). Formal evaluations using CBA or multi-criteria analyses are not part of the project selection process</p>
National Funding & Taxation	<p>The subsidy is paid by grants from the state</p> <p>There is little or no local taxation, and money is redistributed by the state based on population share</p>
Bottlenecks & Constraints	Technical capacity to build-out existing networks. However, there would be scope to enhance capacity for planning and implementing new/innovative sustainable transport measures and using alternative funding sources.
Views on EU Funding Mechanisms	<p>Managed by regional authorities, nominated at national level. Brno does not typically deal directly with the EU.</p> <p>Processes are seen as being overly bureaucratic and formal, which makes it difficult to access funding.</p>
Impact of the Crisis	<p>The impacts of the recession are partly difficult to distinguish from broad national issues, but the feeling is that Brno survived it quite well. However, problems may emerge in the next budget cycle, where an expected budget tightening will exacerbate a lack of funding</p> <p>The Head of Finance has announced that there will be no funding for new projects</p>
Other Issues	N/A

Table 8: Case Study Summary – Burgas

General Information	
City, Member State	Burgas, Bulgaria
Background	The city of Burgas (Byprac in Bulgarian) is situated in the east of Bulgaria, on the coast of the Burgas gulf on the Black Sea. It is the second largest city in Bulgaria, and the fourth most populous, after Sofia, Plovdiv and Varna. It is an important industrial, tourist, cultural, trade and transport centre. It has the largest port in Bulgaria and accounts for 60% of national sea import-export trade. It also has the second largest airport in Bulgaria, and is well-connected by railway and road. As a major tourist city, pressures on the transport system vary by season.
Population	197,301
City Size (sq. km)	230
GDP (EUR, millions)	5,274
GDP/capita (EUR)	26,730
PT Network Components	<p>Dominated by bus, with limited trolleybus</p> <p>Burgasbus – Bus: 86 buses, 78% share of passengers</p> <p>Burgasbus – Trolleybus: 15 buses, 14% share of passengers</p> <p>Comfort OOD: 42 buses, 8% share of passengers</p> <p>Burgasvolan: 22 buses, 1% share of passengers</p> <p>Urban rail (limited)</p>
Car Mode Share	59%
Issue	Comments
Transport Policy Development & Progress on Sustainable Transport	<p>Policy development based on ad-hoc consideration of new projects and management/expansion of urban bus network</p> <p>Mildly active in consideration of innovative sustainable mobility schemes – BRT scheme is the current major focus, which is being developed as a JASPERS initiative</p>
Public Transport Operations	<p>Mostly public operation</p> <p>Burgasbus is the public manager and operator of the local bus and trolleybus networks</p> <p>Some private bus lines are also operated</p> <p>The national budget is used to compensate for urban buses across the whole of Bulgaria. This relates to the provision of discounts for pensioners and students (minimum discount of 20-30%). The subsidy to city operators is controlled by the Ministry of Finance, and includes support for remote/border areas that experience low income levels. Additional subsidies are provided by the city of Burgas for certain categories (people with disabilities, mothers with more than three children, etc.). After revenue is taken into account, the total subsidy is around 11%. 5% is paid by the national government and the remaining 6-7% is paid by the municipality. The level of subsidy reflects compensation for discount passengers, but is also dependent on the available budget</p>
Land Use Policy Development	Unclear whether land use planning is well integrated with transport planning
Operating Subsidy & Funding Needs	<p>Revenue: €6.1 million</p> <p>Costs: €6.9 million</p> <p>Operating Subsidy: €0.8 million</p>

	<p>Subsidy per capita: €2.53</p> <p>Operating subsidy and funding needs are minor, reflecting dominance of bus in public transport network. Future plans to develop higher cost modes (light and heavy rail) would likely increase funding needs</p>
Key Demographic & Land Use Trends	<p>Did not identify demographic & land use trends</p> <p>Trends for Bulgaria include:</p> <ul style="list-style-type: none"> ○ Steady increase in urban population ○ Strong income growth and associated expectations for higher car ownership/use and greater urban sprawl
New Project Selection	<p>There have been no formal project selection criteria in place in Burgas. However, a more structured process was put in place by the JASPERS consultant for the proposed development of the BRT system. This included the use of criteria to evaluate and refine a range of scenarios</p> <p>Financial considerations but other factors can come into play. For example, issues with longer term fuel security underpinned the decision to invest in the trolleybus network. This will enable Burgas to maintain a 'portfolio' of transport solutions, which mitigates some of the risk of issues with the local CNG refinery (one of, if not the biggest in Bulgaria)</p>
National Funding & Taxation	<p>Reliance on national government for support on subsidy payments</p> <p>There is a recent push to further decentralise tax raising powers to local authorities (there are some local taxes)</p>
Bottlenecks & Constraints	<p>Technical capacity has been an issue.</p> <p>JASPERS programme is being used to develop their BRT scheme. The programme is viewed positively by local authorities, although we are yet to see whether this will lead to a sustained capacity improvement.</p>
Views on EU Funding Mechanisms	<p>The municipality is generally eligible for EU funding under some operational projects only, with transport funding allocated at national level. They can also access funding through 'Intelligent Energy Europe' and have finished their work with URBACT</p> <p>The JASPERS project is a success. It was seen as useful for mediating between local bodies and the EU. This is seen as an approach that is better for large projects. However, there is a perception that the Sofia waste management JASPERS project has not been going so well. Burgas is considering whether they can make use of ELENA and JESSICA</p> <p>There is a move to centralise operational projects, which is expected to be good for simplicity of procedures, and should be more efficient in responding to regional priorities. Any move to simplify approach at EU level would be welcomed, including options to allow local authorities greater freedom to develop integrated projects</p>
Impact of the Economic Crisis	<p>The crisis brought about a decline in construction activity and the collapse of a number of SMEs, which is an experience shared in the capital, Sofia</p> <p>There has been a decline in vehicle traffic, and a perceived halt to the growth in car ownership. This has required the continuation of public transport services</p> <p>Burgasbus, the public bus operator, experienced a significant decline in revenue in 2007 (22%) and 2009 (10%)</p> <p>Burgasbus managed costs by reducing staff (down from 970 to 850) and by using smaller buses where feasible. They also purchased second hand buses that used alternative fuel (i.e. CNG vs. diesel, with the latter being more expensive)</p> <p>There is an expectation that there will be less funding available for increases in subsidy for concessionary travel and new transport projects over the medium term</p>

Other Issues	N/A
--------------	-----

Table 9: Case Study Summary – Helsinki

General Information	
City, Member State	Helsinki, Finland
Background	Helsinki is the capital and by far the largest city of Finland. It is the major political, financial, educational and cultural hub in Finland and it is the host to around 70% of the foreign companies which operate in Finland. It has a population of 583,350 in the city centre, which 1,033,933 inhabitants living in Helsinki’s larger metropolitan area which includes the cities of Espoo, Vantaa and Kauniainen. This metropolitan area is home to around 20% of the country’s population and is the world’s most northerly urban area. The Helsinki metropolitan area is served by an extensive public transport network which includes suburban rail, metro, trams, a bus network and two ferry lines. The international airport is located in Vantaa, 19 kilometres north of Helsinki city centre.
Population	1,033,933
City Size (sq. km)	745
GDP (millions)	44,311,000
GDP/capita (EUR)	42,857
PT Network Components	<p>Heavy infrastructure, with train and metro</p> <p>Train - 50.9% mode share of public transport</p> <p>Metro – 17.5% mode share of public transport. Ingle line with 17 stations.</p> <p>Tram – 16.7% mode share of public transport. Network consists of 11 lines.</p> <p>Train – 14.4% mode share of public transport</p> <p>Ferry – 0.5% mode share of public transport</p>
Car Mode Share	37%
Issue	Comments
Transport Policy Development & Progress on Sustainable Transport	<p>HSL published the Helsinki Region Transport Plan which includes plans up to 2050 and beyond.</p> <p>The Plan includes clear sustainable transport objectives such as those relating to economic efficiency, environment (e.g. Relating to GHG emissions), and functionality (e.g. Improving conditions for walking and cycling)</p> <p>HSL commissioned a study on energy efficiency of public transport and has trialled biofuel-powered and hybrid buses. The scoring of CO2 emissions is included in the tendering process for bus services.</p> <p>Use of employer-subsidised tickets is expanding, with over 50,000 users currently.</p>
Public Transport Operations	<p>Public Transport in Helsinki is managed by the operating authority HSL. This is divided into departments which have specific responsibilities for different elements of planning</p> <p>The Transport System Department is responsible for transport system planning and for traffic surveys and forecasts. It also has responsibility for land use planning, showing the clear synergy between the two</p> <p>The Public Transport Planning Department plans the route network, timetabling and the development of services.</p> <p>The Transport Services Department performs procurement tasks and short-term infrastructure planning.</p> <p>The Passenger Services Department has responsibility for ticketing and information systems.</p>

Land Use Policy Development	Land use is closely coordinated with public transport planning and is incorporated into the Transport System Department of HSL. A study into the land use and the rail network has been carried out to inform the target rail network and its path of implementation. The plan is for the region to grow around the rail corridors. The new park and ride project, which is currently in the planning stage, has included elements of land use planning including measuring spatial projections of demand to determine the location of sites.
Operating Subsidy & Funding Needs	<p>Revenue - €243.4m, 49.4%</p> <p>Costs - €483.4 million (operating expenses), EUR 383.8 million was spent on public transport operating costs, EUR 59.1 million on infrastructure expenses and EUR 40.4 million on other costs including personnel and renting expenses.</p> <p>Operating Subsidy - EUR 234.1m 47.5% (municipal subsidy)</p> <p>Subsidy per capita: €153</p> <p>Operating subsidy is moderate, perhaps higher than would be expected for a city of Helsinki's size, but this reflects the extensive provision of public transport, particularly expensive modes such as train.</p> <p>Two major projects are underway, a Ring Rail Line and the extension of the metro. HSL is currently considering expanding its coverage to include eight neighbouring municipalities. The development of the new heavy infrastructure and expansion of the area are likely to increase operating subsidy needs in the future.</p>
Key Demographic & Land Use Trends	<p>Helsinki is not very densely populated for a capital city. By 2050 its population is predicted to have grown by 14%, which is below average for similar European cities.</p> <p>High costs of living in the centre of the city have led to inhabitants settling outside of the city, resulting in large numbers of commuters. Increased population numbers in neighbouring Espoo and Vantaa (both part of the metropolitan transport area) result in greater cooperation between the centres over transport and other public services.</p> <p>As land use is carefully planned, future development will be focused around new rail corridors which are to be built to plan for additional commuters.</p>
New Project Selection	Future projects are set out in the Helsinki Region Transport System Plan 2011. It is not clear upon what basis these projects are selected., including whether clear objectives are set and project selection criteria are applied
National Funding & Taxation	The vast majority of funding for the operating subsidy comes from municipal rather than national funding.
Bottlenecks & Constraints	There are no apparent bottlenecks.
Views on EU Funding Mechanisms	Follow-up is required to ascertain the views of the Helsinki municipality on EU funding mechanisms.
Impact of the Crisis	Helsinki was relatively insulated from the crisis: between 2008 - 2009 GDP experienced a decline, but this was proportionately than other European cities. GDP is predicted to grow by around 3.6% from 2011-12.
Other Issues	N/A

Table 10: Case Study Summary – Madrid

General Information	
City, Member State	Madrid, Spain
Background	<p>The city of Madrid is the capital of Spain and also its largest city. It lies in the centre of the country. Madrid, or the region of Madrid, is one of the autonomous regions of Spain and it is formed by 179 municipalities in an area of over eight thousand square kilometres and 6.4 million people live within this area.</p> <p>Madrid boasts an extensive transport network, consisting of motorways, ring roads and radial roads, as well as an extensive underground (metro), tram and city and suburban bus network. It is also the hub of Spain’s high-speed rail network and a number of regional services.</p>
Population	3,300,000
City Size (sq. km)	8,030.2
GDP (EUR millions)	92,611
GDP/capita (EUR)	28,064
PT Network Components	<p>Heavy infrastructure, dominated by metro and bus</p> <p>Metro: 233 km, 41% public transport mode share</p> <p>Rail: 340 km, 13% public transport mode share</p> <p>Bus: 24,267 km, 47% public transport mode share</p>
Car Mode Share	35%
Issue	Comments
Transport Policy Development & Progress on Sustainable Transport	<p>The process for developing policy and new project is driven by political objectives.</p> <p>It is not thought that congestion charging would be seriously considered for Madrid given its low public support</p> <p>It is expected that pedestrianisation and parking measures will be considered.</p> <p>The PTA is developing a new control centre that will be linked with the roads authority’s and emergency services’ control centres</p> <p>Real time information systems are being developed as part of this project.</p> <p>Mobility Plans (PMUS) are developed at municipal level. It is planned for all municipalities with a population over 50,000 will have them.</p> <ul style="list-style-type: none"> ○ Municipalities receive a central government subsidy that is channelled by the PTA, who also provide coordination support, review and transport planning advice. ○ These are proving to be popular, but are quite new so we are yet to see the results. ○ The plans are not compulsory, so some have been implemented and some have been put on hold or shelved. ○ They include public transport, cycling, traffic management, freight, parking. ○ Measures are selected using 12 criteria related to a number of factors including affordability, deliverability, etc. ○ The plans have clear objectives that include a mix of qualitative and quantitative factors (mode share, timing, implementation, monitoring, etc.)
Public Transport	The main role of the PTA is to subsidise the public transport operators and manage the

Operations	<p>clearing house for the integrated ticketing system.</p> <p>The PTA has a limited role for supporting policy setting given investment follows political objectives in the short term. However, the PTA does advise municipalities develop local transport plans (see below).</p> <p>Metro is run by a public company owned by the City Council and Madrid Region. Public buses are run by EMT, a public company of the City Council.</p> <p>There are also private operators for light rail and private buses.</p> <p>Within the metro system, Line 9 is operated under a PPP. A PPP was also used for the construction of the new link to Terminal 4 at the airport. There is a €1 levy on tickets to help pay for this.</p>
Land Use Policy Development	<p>Land use planning, managed by the Urban Planning Unit, focuses on developing activity centres at certain locations within Madrid.</p> <p>The perception is that this is not tightly integrated with the transport planning function, with transport usually playing the catch-up role.</p> <p>The newly created IDAE strategy for 2012 to 202 links industry, transport and building as part of an energy saving initiative.</p>
Operating Subsidy & Funding Needs	<p>Revenue: €872.4 million</p> <p>Costs: €1,694.1 million</p> <p>Operating Subsidy: €866.3 million</p> <p>Subsidy per capita: €149</p> <p>There is a general trend of a declining revenue density associated with the expanding metro and bus network. Linked to this trend, with the increase in line km, there is an increase in the level of subsidy per km.</p> <p>In some areas, buses have been replaced with trams and metro connections.</p> <p>Revenue currently covers around 40% of the operating costs (based on €865m over around €2.1bn, which includes some small capex, rolling stock and maintenance). Revenue coverage is expected to increase to 45-50% over the mid-term to help pay growing costs in the context of reduced funding availability.</p>
Key Demographic & Land Use Trends	<p>There has been significant urban sprawl in recent years. However, the population of central Madrid has been stable over that time.</p> <p>There has been a 15-20% increase in the population in recent decades, which is largely driven by immigration from South America. As there are no or little language issues, this means that the rapid increase has not created any issues in terms of catering for a new population.</p> <p>There is some African immigration, but this does not create too many difficult issues to manage. Most language issues relate to catering to tourists (as with many European cities).</p>
New Project Selection	<p>Historically, followed formal appraisal processes involving CBA and multi-criteria analysis. Now the selection process is determined through politically driven processes (e.g. election pledges, etc.).</p> <p>This has ensured that there has been significant funding available for new projects. However, it has also meant that some good projects that are required don't get funded as they lack political support.</p>
National Funding & Taxation	<p>A regional body (MINTRA) has been responsible for most investment. This has been created as a separate entity to avoid consolidation of debt on the regional authority's balance sheet.</p> <p>There has been very large capital investment in the transport network (both public transport and roads) in recent years. This has largely been funded through a mix of taxes and private finance initiatives (i.e. PPPs).</p>

	<p>PPPs have funded many projects including:</p> <ul style="list-style-type: none"> ○ Light rail ○ Urban buses interchanges (grade separated bus stations that separate bus traffic from cars and connect with metro stations, which are quite interesting and seem to be an original concept). These were modelled using assignment and micro-simulation models. The PPPs also include revenue from parking and shopping, as well as expenditure on cleaning and security. ○ Five new stations on Line 10 <p>The EIB is said to have been involved in the new airport link (i.e. soft loan with lower interest rate). The airport link is part of the TEN.</p> <p>Developer contributions are also used to provide funding for some projects.</p>
Bottlenecks & Constraints	None identified
Views on EU Funding Mechanisms	<p>Mostly involved with the EU for FP7 funding, rather than through infrastructure projects.</p> <p>The PTA is mostly involved in a coordination role.</p> <p>The PTA is involved in several projects under FP7. This includes:</p> <ul style="list-style-type: none"> ○ 5-6 projects at inter-regional level ○ EBSF, which is worth around €3bn and involves 47 partners and is coordinated by UITP. The PTA supports through staff time. ○ SECURED, which is for interchanges (safety, security) ○ COSTACTION, which is for quality bus corridors
Impact of the Crisis	The economic crisis is continuing to have a major impact on the project pipeline. It is also thought the evolving sovereign debt issue could pose further risks to existing and planned projects.
Other Issues	N/A

Table 11: Case Study Summary – Poznan

General Information	
City, Member State	Poznan, Poland
Background	Poznań is one of the oldest and largest cities in Poland. It is the historical capital of the Wielkopolska Region, where the Polish State originated. Today, Poznań is an important centre for trade, services, the automotive and chemistry industries, culture, higher education and science. It is also among the leading Polish cities in terms of its economy. Poznań ranks fifth among Polish cities in terms of population (after Warsaw, Łódź, Krakow and Wrocław). As the largest city and capital of the region, Poznań concentrates the highest demographic potential in the Wielkopolskie Province. Since the year 2000, the population of the city has experienced a slight decline of -0.4% (CAGR) and by end of 2010, the city was inhabited by 553,000 people
Population	553,000
City Size (sq. km)	262
GDP (EUR millions)	9,362,000
GDP/capita (EUR)	16,800
PT Network Components	Dominated by tram and bus Tram – 67.7km, 54.3% public transport mode share Bus - 330.8km, 45.8% public transport mode share
Car Mode Share	53%
Issue	Comments
Transport Policy Development & Progress on Sustainable Transport	The city is implementing a Transport Policy which aims to define the general directions of transport in the long term. The Transport Policy states that it assumes the principle of sustainable development as its foundation. The City Development Strategy 2030 was introduced in 2010 setting out future directions for transport and including a strategy for Sustainable Transport Development. The strategy includes sustainable objectives such as integration of public transport systems, connecting the car transport system to the public transport network, construction of city railway routes, restriction of private motor vehicles, construction of park and ride, expansion of cycle paths and improvement of cycle infrastructure.
Public Transport Operations	Public transport in Poznan is managed by Zarząd Transportu Miejskiego (ZTM) which is responsible for determining the communication lines, location of stops, distribution of tickets, ticket inspection and promotion. Four public transport operators run the public transport system
Land Use Policy Development	There is no apparent synergy between transport and land use policy, however the City Development Strategy 2030 does make some reference to the General Local Spatial Management Plan for the City of Poznan so it is clear that there is some land use policy.
Operating Subsidy & Funding Needs	Operating Expenditure - €86.2m Data on revenue and subsidy per capita is not available
Key Demographic & Land Use Trends	Poznan has a low population density of 2,200 per square kilometre. The population is slowly declining, and has shrunk by around 0.4% since 2000. This decline is reflected in passenger numbers, which have been going down since 2007. Car mode share increased from 16% to 53% over the years 1987-2000

New Project Selection	<p>Poznan is preparing for the Euro 2012 Championships so a number of planned projects aim to improve mobility for this. Planned improvements include new rolling stock, expansion of the tram network, ITS traffic control system, improvement of street infrastructure.</p> <p>The selection process for new projects is not clear.</p>
National Funding & Taxation	<ul style="list-style-type: none"> ▪ Funding sources identified for the Sustainable Transport Development plan are: <ul style="list-style-type: none"> ○ EU funds ○ Environment protection funds ○ Government grants ○ External partners (PPPs and concessions) ○ Funds from NGOs
Bottlenecks & Constraints	<p>The possible constraints identified for the implementation of the Sustainable Transport Development plan included:</p> <ul style="list-style-type: none"> ○ Budget restrictions ○ Difficulty obtaining credit resources ○ Bankruptcy of execution entities ○ Legislative problems through frequent changes of acts ○ Protests of entrepreneurs making deliveries in the cities ○ Political protests linked to restriction of cars ○ Lack of interest in investment from external partners <p>Local capacity is assisted through the JASPERS initiative which is currently working on a number of projects in Poznan. We have not been able to connect with the JASPERS team(s).</p>
Views on EU Funding Mechanisms	<p>Poznan has used assistance from the JASPERS initiative to help with grant applications for two projects: the purchase of new accessible trams and the expansion of the tram network.</p> <p>The JESSICA project in the Wielkopolska region, of which Poznan is a part, has been allocated €66m - €50m coming directly from the EDF. Poznan has applied to the EIB to introduce a Poznan UDF.</p>
Impact of the Crisis	No information was provided on the impact of the crisis.
Other Issues	N/A

Table 12: Case Study Summary – Vienna

General Information	
City, Member State	Vienna, Austria
Background	Vienna (Wien) is the capital of the Republic of Austria. Geographically it lies in the north eastern part of the country, just over eighty kilometres by road from the Czech border to the North and just under eighty kilometres from the Slovakian border and the city of Bratislava to the East. The city forms one of Austria's nine states and is divided into twenty-three districts. Vienna is the political hub of Austria and is perceived as the economic and cultural centre. International organisations, such as the United Nations and OPEC are located in the city. On 1 January 2011, the population of Vienna stood at just above 1.7 million.
Population	1,713,957
City Size (sq. km)	6,457
GDP (EUR millions)	77,128
GDP/capita (EUR)	45,000
PT Network Components	<p>Heavy infrastructure, rail/metro/bus</p> <p>Viennese Lines (City of Vienna): 1,156 km, 122 lines</p> <p>Railway (suburban and regional): 1,800 km, 37 lines</p> <p>Regional Buses: 5,350 km, 175 lines</p> <p>Cycle paths (City of Vienna): 1,170 km</p> <p>Free Park & Ride spaces close to railway stations in the region: 32,000</p> <p>Subject to charge P&R terminals within the City of Vienna: 8</p> <p>Non-car mode share:</p> <ul style="list-style-type: none"> ○ Public transport: 51.47% ○ Pedestrians: 41.18% ○ Cycling: 7.35%
Car Mode Share	35% for Vienna residents, 65% for commuters
Issue	Comments
Transport Policy Development & Progress on Sustainable Transport	<p>Active development of sustainable transport policies .</p> <p>The Urban Development & Planning unit develops long-term strategic policy and planning as an input to the process for setting the Urban Development Plan and the Transport Master Plan (both of which are set at the political level). As such, policy is set at the political level, and involves the setting of clear transport goals and objectives (e.g. mode share targets).</p> <p>The strategic plan flows from this, which identifies corridors for further investment. This is then elaborated through more detailed route planning.</p> <p>VOR has developed a real-time passenger information service that is available on-line.</p> <p>Congestion charging is not seen as being publicly acceptable.</p> <p>There is a parking management system in place, which could be scaled up to tackle other transport issues such as congestion. Although, the overriding concern is to ensure adequate parking availability.</p>
Public Transport Operations	<p>Public management, with mix of public and private operating concessions.</p> <p>Urban network:</p>

	<ul style="list-style-type: none"> ○ Wiener Lienen is responsible for running the Metro, tram and bus systems. This is wholly owned by the City of Vienna. Their reporting requirements are such that it is not possible to breakdown costs and revenues in any useful detail. ○ Vienna City Council has separate departments for finance and planning, with the Executive Planning Group providing the coordination role. ○ The City of Vienna has two titles, reflecting the size of Vienna: municipality and province, which gives it similar powers to London. <p>Rail operations:</p> <ul style="list-style-type: none"> ○ There are complex arrangements in place for rail operations ○ At the national level, minimum service levels are set (at 2000 levels) and funded by the national government. The regions fund incremental services above the defined 2000 levels (i.e. regions fund growth in services). ○ A single-ticket system is applied across the network. VOR maintains a clearing house for the payment of fare subsidies to the operators. There is also a separate monitoring body. <p>Bus operations:</p> <ul style="list-style-type: none"> ○ The bus operations also involves a complex legal situation. VOR has been funding the bus operations since 1988, and national funding is provided for school travel and students (to compensate for lost revenue). ○ Typical arrangements involve an eight year concession. The onus is on the operator to prove it is commercially viable, otherwise operations are subject to public tender, with VOR managing the process for Lower Austria.
Land Use Policy Development	An integrated approach to transport and land use planning has been developed over the last 20 years (the land use planning unit sits next door to the transport planning unit). As such, the problems in Vienna are not as bad as in other cities. Munich is recognised as being a leader in this regard.
Operating Subsidy & Funding Needs	Revenue, cost and subsidy per capita figures are not available
Key Demographic & Land Use Trends	<p>There is a trend for people to desire to move into larger homes, although with less people in each household. This can reduce urban density significantly, which is a challenge for urban transport planners.</p> <p>To some extent, urban sprawl is limited by planning restrictions and the proximity of national parks and woodlands. An approach to encourage urban infill has been to add extra floors to existing buildings in central parts of Vienna.</p> <p>Population growth is linked to a mix of sources: natural, rural, foreign immigration. This has been accommodated in ticket machines and signing.</p> <p>There are no severe problems with deprived areas.</p> <p>An interesting point is that there is considerable urban sprawl taking place in Bratislava, which is spilling across the border into Austria. This creates unique challenges as to how Austrian infrastructure is developed to support these trends and who should fund it.</p>
New Project Selection	<p>For project selection, priorities are set using technical appraisals. This considers aspects such as the feasibility, timing and network effects. The use of CBA is not well established.</p> <p>Investment in infrastructure is perceived to be a way to stimulate local employment.</p>

	<p>There has been a preference for continued investment in the Metro, which is an expensive option.</p> <p>Regeneration and urban development opportunities are considered when selecting projects, reflecting the preference for integrated transport and land use planning. This is said to have improved considerably in recent years.</p>
National Funding & Taxation	<p>The national government distributes funding grants to the regions based on demographic factors (mainly population). This can involve untied grants (i.e. can be spent on regional priorities) and grants for specific projects.</p> <p>Projects can be put forward for funding by the regions.</p> <p>There is a Federal Infrastructure Plan. Some of the regions that were participating can no longer afford it, which is causing delays.</p> <p>There is national funding for the Metro in Vienna, which partially explains why it is preferred for new investments over other parts of the network.</p>
Bottlenecks & Constraints	<p>No major constraints identified</p> <p>It is interesting to note that EIB finance is actually expensive in Austria and Germany compared with the relatively cheap debt available from other sources. In this context, PPPs are seen as being overly complex and expensive.</p>
Views on EU Funding Mechanisms	<p>EU funding is not seen to be playing a major role in Vienna.</p> <p>The funds that are available for planning costs and technical support are relatively small, and the administrative hurdles are seen as being too costly in some cases.</p> <p>There are funds available to support inter-regional and cross-border issues. This relates to coordination and development of common strategies.</p> <p>We are still waiting to see how the new Member States are integrating with the EU. There is the perception of problems with their technical capacity and access to affordable finance.</p>
Impact of the Crisis	<p>The recession caused a drop in private investment. There was a spike in public investment in road and rail schemes, which was pushed by the national government.</p> <p>It does not seem to have as big an impact as it has in other parts of the EU, and the cost of borrowing has been largely unaffected.</p>
Other Issues	<p>Road congestion is not a major problem in Vienna. Mode share for public transport, walking and cycling is quite high (65% for Vienna residents, 35% for commuters from outside - see slides).</p> <p>There are no severe bottlenecks on the PT network, although some gaps have been identified.</p> <p>TEN-T Link</p> <ul style="list-style-type: none"> ○ The TEN link from Paris to Bratislava passes through Austria, so that there has been major investments in motorways and a new main line station and tunnel. ○ The rail link and station has presented a major opportunity for a new urban infill development over what is an old freight yard. ○ The new development will include offices, housing, education, etc. ○ The increase in land values that are expected from the investment has formed part of the finance deal. ○ This is seen as a good example of synergies between inter-regional transport investment, and urban transport and development.

5. Assessing Future Expenditures & Funding Needs

5.1 Introduction

This chapter assesses future expenditures and funding needs for urban mobility improvements in the EU. The current situation will be surveyed and possible trends and evolution of some of the high level drivers of funding needs will be analysed up to 2020 and beyond, where possible.

Once high level trends have been established, the study then delves into further details with a series of case studies on a number of key cities, chosen to be representative of the diversity of European cities. A summary of the case studies are presented in this chapter, with the full set of information for each city presented in the appendices.

5.2 Drivers of Transport Expenditure & Funding Needs

Expenditure and funding needs in transport are generally related to a series of key demand and supply drivers. At a basic level, funding needs are driven by a desire by governments to invest in new transport infrastructure and services for their citizens. This desire usually derived from a series of socio-economic, policy and other drivers.

In considering the drivers of expenditure and funding needs, it is useful to construct an overall framework to guide the analytical methodology. Borrowing from other frameworks that attempt to manage grant allocations across governmental jurisdictions, the expenditure and funding needs for urban mobility across European cities and Member States can be related to the cost of implementing an average policy-based level of service of urban mobility infrastructure and services. However, this would need to be adjusted to account for some important differences.

For example, an important difference between cities and Member States relate to the different costs of service provision due to demographic and input cost differences. For example, differences in population mix in terms of factors such as age profile, ethnic diversity and car ownership can have significant implications on the cost of providing transport services. There could be major differences in other major input cost drivers, such as the size and topography of urban centres, land acquisition and construction costs for heavy infrastructure, wages for operations, maintenance expenditure linked to the size and age of existing assets, climatic factors, and other costs related to general prices levels. Once these factors are taken into account, a different picture of expenditure needs may emerge.

In relation to funding needs to meet required levels of expenditure, an important consideration should be differences in per capita revenue raising capacities across cities, regions and Member States. For example, wealthier locations may be able to raise additional revenue from residents through higher taxes and user charges. Although an important consideration in the context of urban mobility is the capacity of local government to either raise taxes or attract a share of funding from regional and national bodies.

Furthermore, geographical factors can affect differences in funding need, such as climate and topography, demographics, seasonal demands (e.g. tourism), location related to major European transport corridors and migration.

A final consideration is whether there are significant structural differences in terms of policy. For example, the concept of sustainable urban mobility and the level of service provision and types of measures that entails will differ across cities, regions and Member States. There may also be overriding policy considerations at national and pan-national level that support additional funding needs in some areas. For example, we have seen that the attempts to satisfy the objectives of EU Cohesion Policy and other regional policies can have significant impacts on funding needs across regions.

All of these factors can be used to construct a general framework for evaluating expenditure and funding needs for urban mobility. Based on this, we are aiming to develop a set of economic indicators that fit within the various elements of that framework. The findings from our preliminary analysis of a selection of socio-economic indicators is included in the next section.

5.3 Trends & Issues Affecting EU Cities

This section explores some of the trends and issues that affect urban mobility expenditures and funding needs. Much of the analysis at this stage is based on country-level data, from which only general conclusions can be drawn given the potential for sub-trends at city level that may deviate from national averages. However, as expected, we have found some clear differences among Member States for many of the socio-economic indicators included in the analysis.

5.3.1 Population trends

Population trends and social demographics can have significant impacts on the demand for transport and the ability of transport authorities and governments to recover costs through user charges and taxes. For example, rapidly growing populations can place enormous strains on existing transport infrastructure and require significant investment in new capacity. Similarly, a rapidly declining population can have serious consequences via an erosion of the tax base.

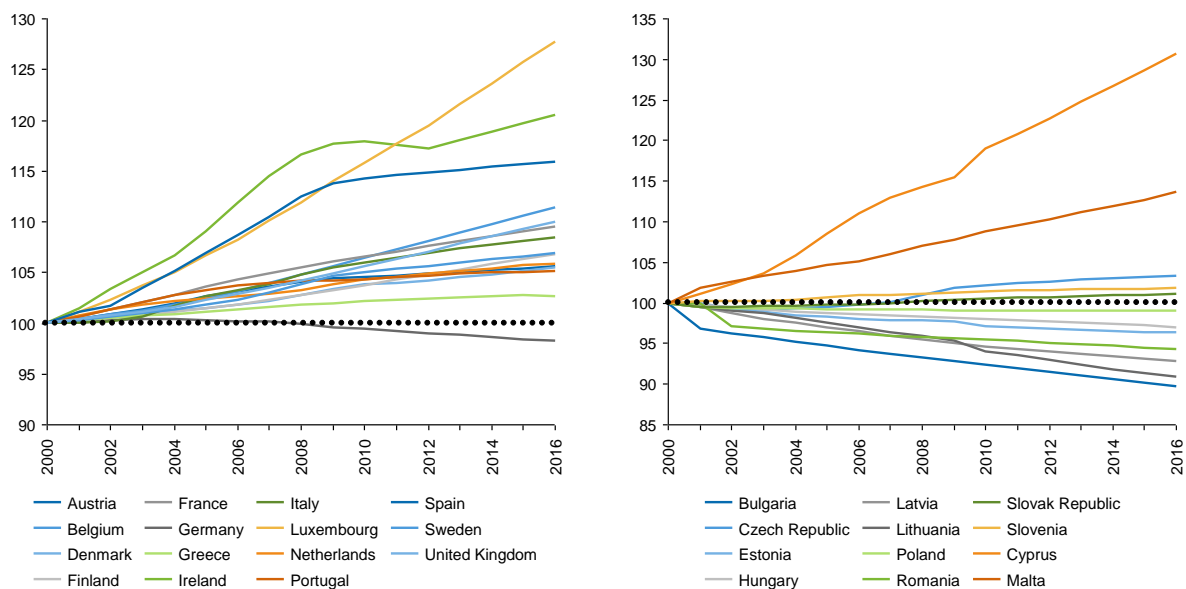
Alternatively, a changing population profile, in particular due to an ageing population, can have detrimental impacts on the ability of transport authorities to provide appropriate transport services. An ageing population is generally associated with reductions in the working age population and hence lower tax revenue and fewer transport users with incomes that can support a willingness to pay for transport services. Other pressures on wider government service provision also emerge in these circumstances, such as the need to provide extra health care services. Additionally, many ageing citizens are given support through concessions and specific infrastructure requirements to ensure they can continue to access the transport system and enjoy the benefits that secure mobility can bring.

We have begun to analyse some of the population trends affecting EU Member States. Figure 22 shows trends in total population for EU Member States over the period 2000 to 2016, as calculated by the International Monetary Fund (IMF). To simplify the analysis, the Member States have been split into two groups. The first group, the EU-15, includes the 15 Western and Northern European countries that joined the Union before the beginning of this century. The second group, the EU-12 includes the 12 Member States, mostly from Central and Eastern Europe that joined the union in 2004 and 2007.

This analysis shows that, since 2000, there has been a general increase in nearly all the populations of the EU-15 countries. It is only Germany that is expected to experience a decline in its population over the period, although the decrease is relatively minor. The countries that are expected to experience the most significant population increases over the period include Luxembourg (27% growth between 2000 and 2016), Ireland (21%) and Spain (16%). However, over the short term from 2010 to 2016, growth is expected to be modest. Belgium (5%) and the UK (4%) are expected to show the strongest growth in population for the first half of this decade.

With the clear exceptions of Cyprus and Malta, and the minor exceptions for the Czech and Slovak Republic, and Slovenia, members of the EU-12 have been and will continue to experience a decline in their overall populations. Over the short term (i.e. 2010 to 2016), Cyprus (10%) and Malta (5%) show continued growth. Bulgaria (-3%), Lithuania (-3%), Latvia (-2%) show the largest declines in population.

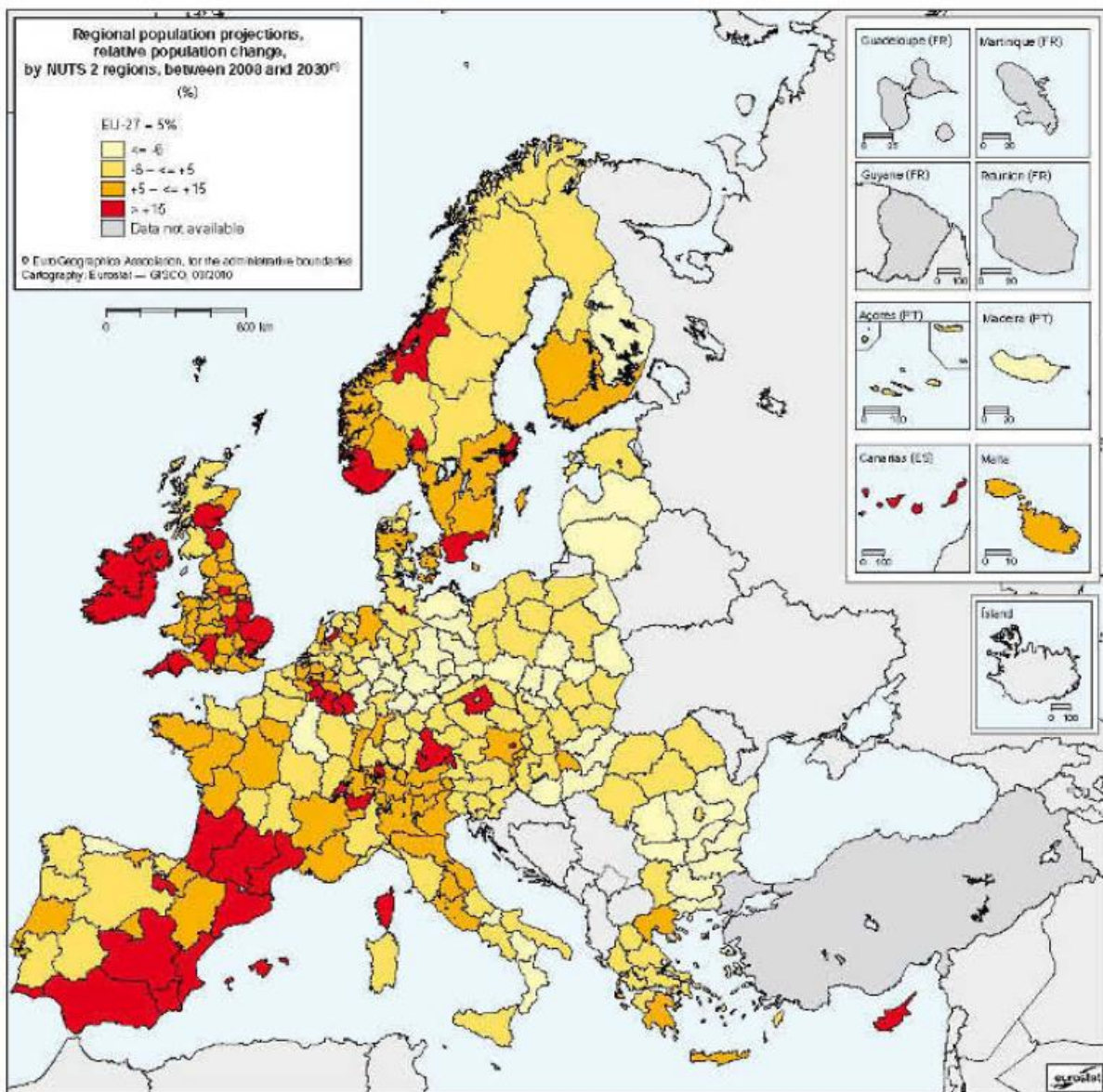
Figure 22: Historic & Forecast Population Trends for EU Member States – 2000 - 2016



Source: International Monetary Fund, World Economic Outlook Database, April 2011

These patterns are consistent with regional forecasts produced by EUROSTAT. Figure 23 shows that parts of Western, Northern and some areas of Central Europe are expected to experience the strongest population growth between 2008 and 2030.

Figure 23: Regional (NUTS 2) Population Projections – Relative Change in Total Population between 2008 and 2030



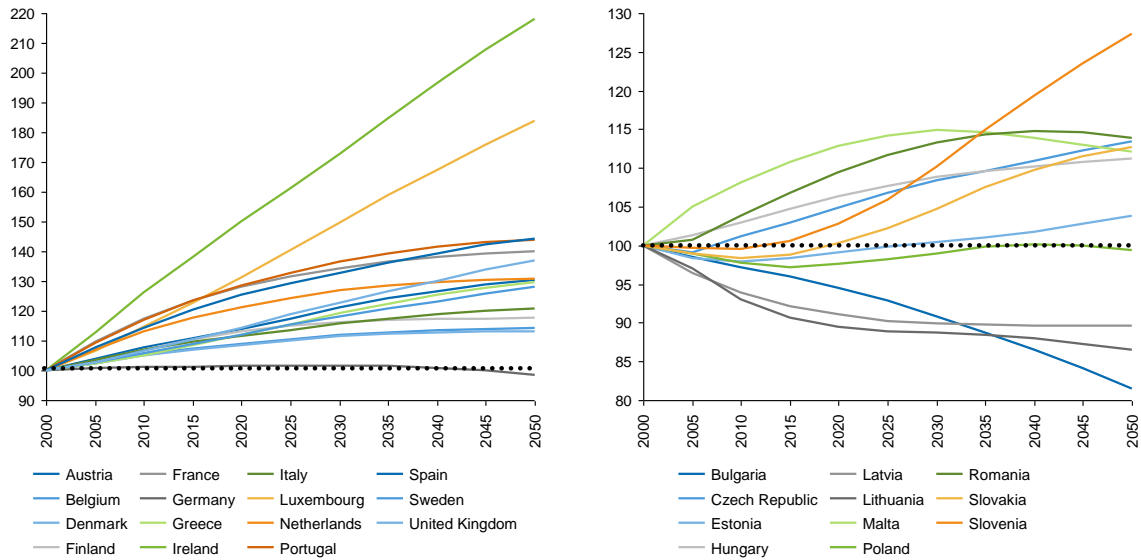
Source: EUROSTAT Regional Yearbook 2010

Another perspective on population trends is the rate of urbanisation, which can move in different directions to overall population trends. Figure 24 shows the expectations for change to the urbanised population, separately for EU-15 and EU-12 countries (excluding Cyprus). This shows that, for the EU-15 countries, growth in the urban population is expected to increase across the board, with the exception of Germany. Overall, the average increase in the urban population is expected to be 37% by 2050. These trends are broadly consistent with the patterns for total country population, with both Ireland and Luxembourg showing very strong growth.

The forecast rate of urbanisation in EU-12 countries shows that a number of countries that are expected to experience negative population growth overall could see an increase in their urban populations. This includes Hungary and Romania over the shorter term consistent with the IMF population forecasts, with the Czech Republic (up 13% by 2050), Estonia (4%),

Slovakia (13%) and Slovenia (27%) expected to show strong growth in their long term urban populations. Overall, there is an average increase in urban population of 5%.

Figure 24: Historic & Forecast Urbanisation Trends for EU Member States – 2000 - 2050



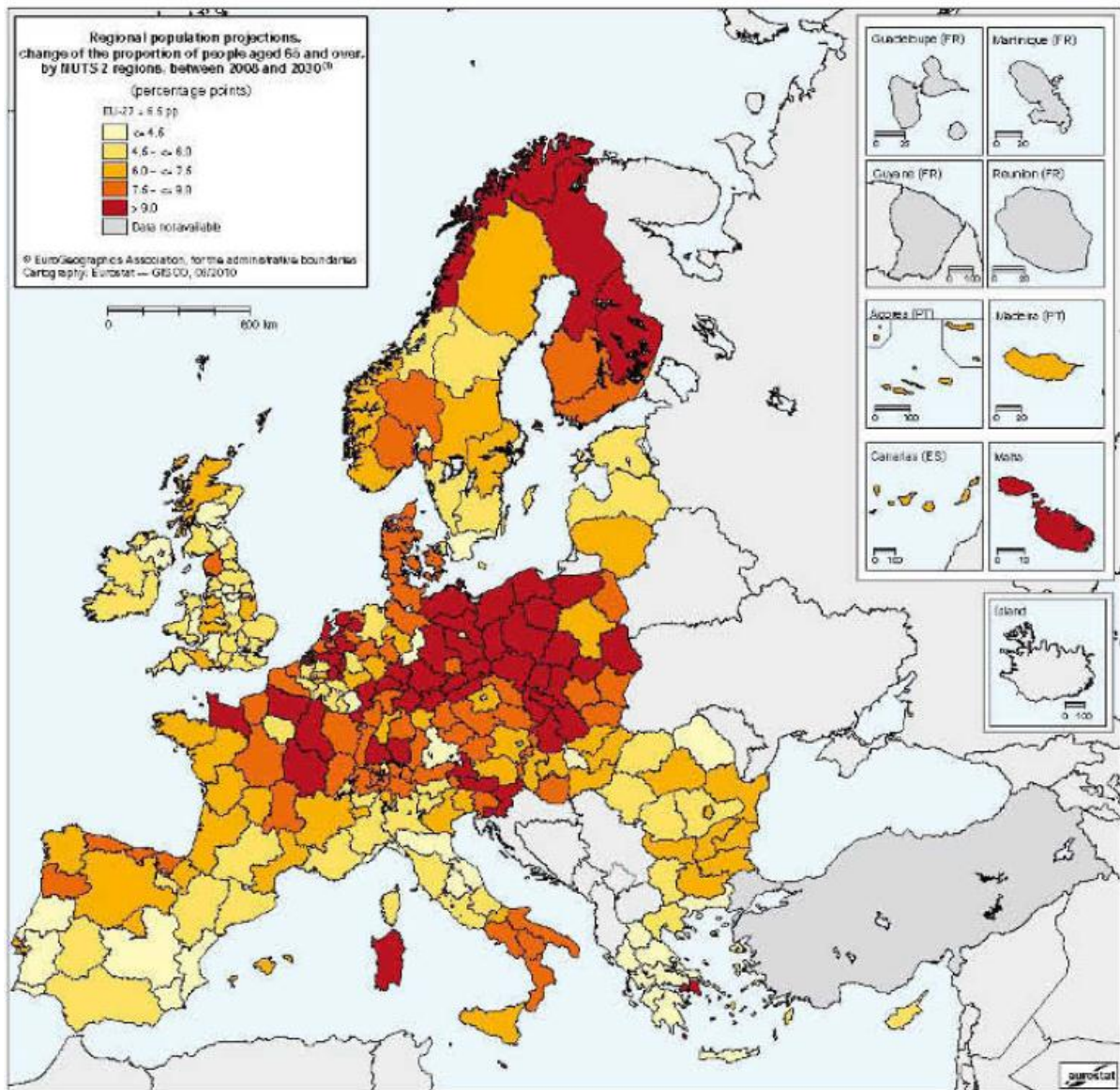
Source: United Nations, World Urbanization Prospects: The 2009 Revision

Note: Excludes Cyprus

Analysis of expected changes in the age profile of the population also reveals interesting patterns. Figure 25 shows that the countries that are expecting to experience a general decline in their population are also expected to experience the most significant increase in the proportion of their populations that are aged over 65.

The net impact of these population shifts are not yet clear and require further analysis. On the one hand, an ageing population with a reduced workforce will provide less peak hour travel demand. On the other, these constituents could require additional support in terms of accessibility to services and fare concessions.

Figure 25: Regional (NUTS 2) Population Projections – Relative Change in Proportion of People Aged Over 65 between 2008 and 2030



Source: EUROSTAT Regional Yearbook 2010

5.3.2 Land use trends

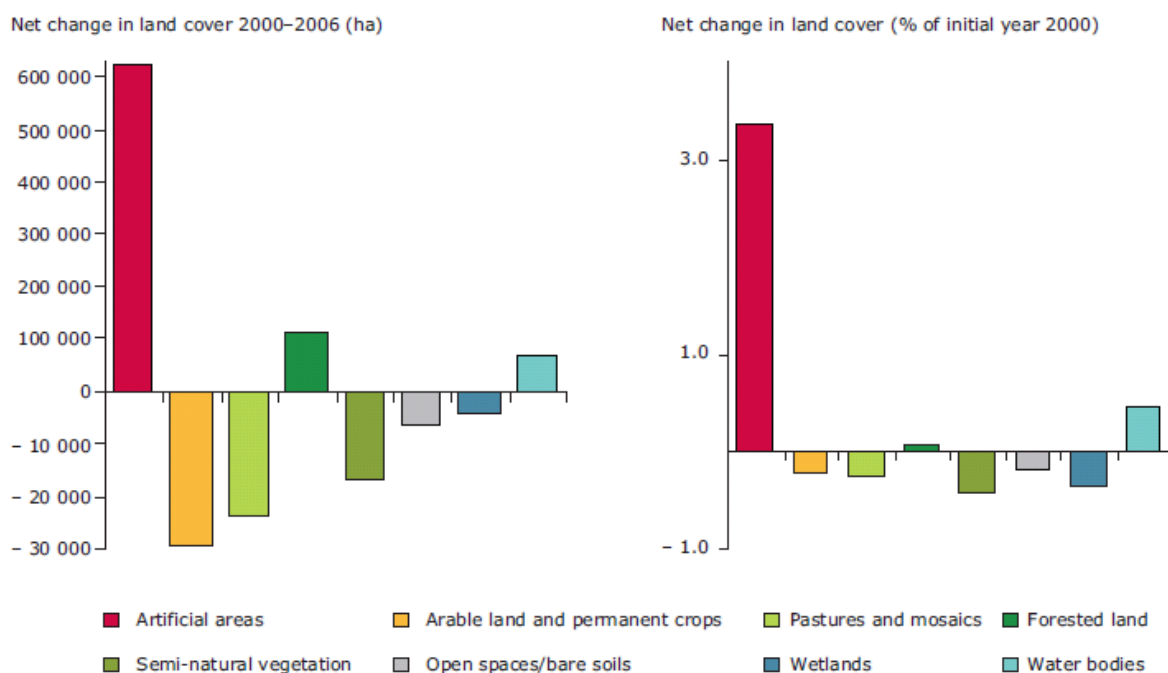
Land use trends can also have significant bearing on the requirements of a transport system for a given urban centre. For example, an increase in urban sprawl can require governments to develop transport infrastructure to carry commuters and other travellers over much larger distances to access the city centre. If this is to be done without major provision of new road space including motorways, then it can mean providing new mass transit systems that are very expensive to build and operate.

Patterns of urban infill (e.g. through regeneration of inner city areas) can also have important consequences for transport. While increasing urban densities can provide benefits in terms of increase demand for public transport, there can be issues in finding the space to

expand networks in crowded inner-city areas, where efforts to reclaim land for transport purposes can be costly and reducing impacts during construction can be difficult to avoid.

To support the assessment of funding needs, we have analysed some high level land use trends across the EU. For example, Figure 26 shows a significant increase in artificial land cover across Europe between 2000 and 2006 which is consistent with the earlier analysis showing there is a general trend towards urbanisation in the EU. It also suggests that a portion of growth in urbanisation is occurring through a process of urban sprawl.

Figure 26: Net Land Cover Changes in Europe between 2000 and 2006



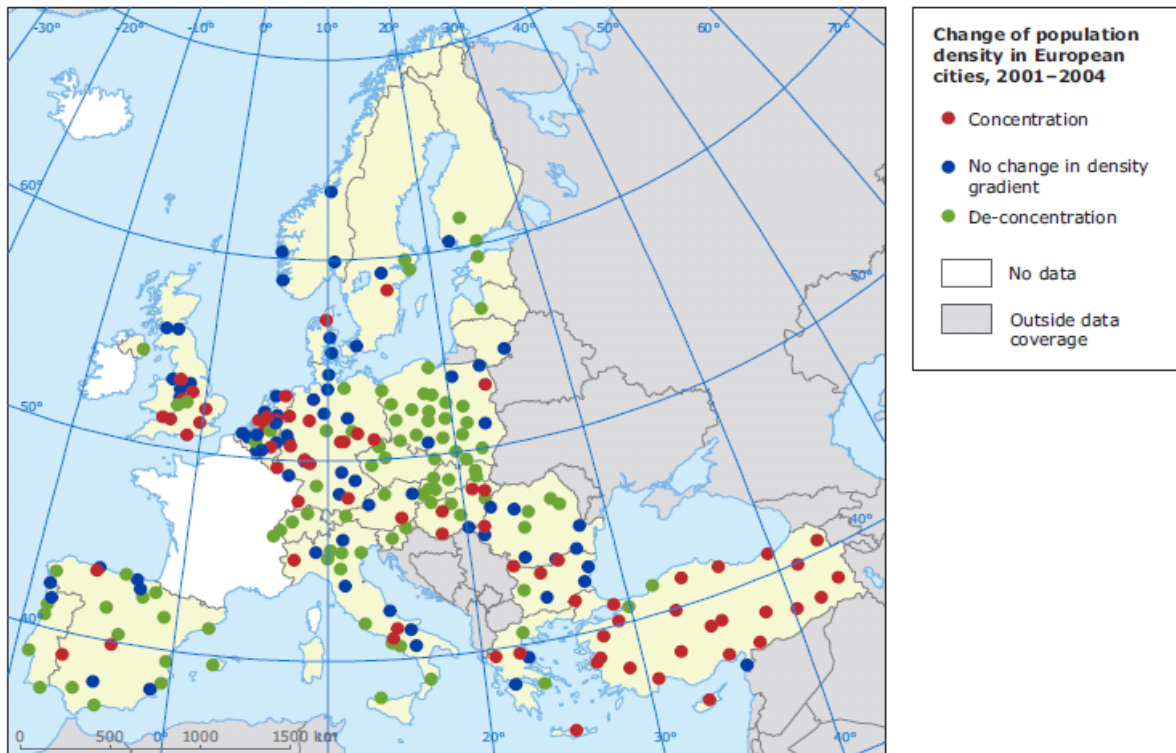
Note: Results for the 36 European countries in the Corine land cover 2006 data set.

Source: European Environment Agency, *The European Environment – State and Outlook 2010 (Land Use)*

Figure 27 below provides a spatial analysis, showing changes in population densities that were recorded to have occurred in a selection of European cities between 2001 and 2004. This analysis shows a mixed pattern of cities across the EU that have experienced either a concentration, no change in concentration, or a de-concentration in population density. Overall, it appears as though a larger share of cities in Eastern Europe have experienced a population de-concentration or urban sprawl, as have many cities along the Iberian Peninsula. This could be due to changing levels of car ownership and associated land use changes, which are encouraging residents to reside further from city centres.

Conversely, a larger share of cities in Belgium, the Netherlands and the UK appear to be experiencing concentrations in city populations, possibly reflecting recent urban infill and regeneration projects.

Figure 27: Changes in Population Density in European Cities between 2001 and 2004



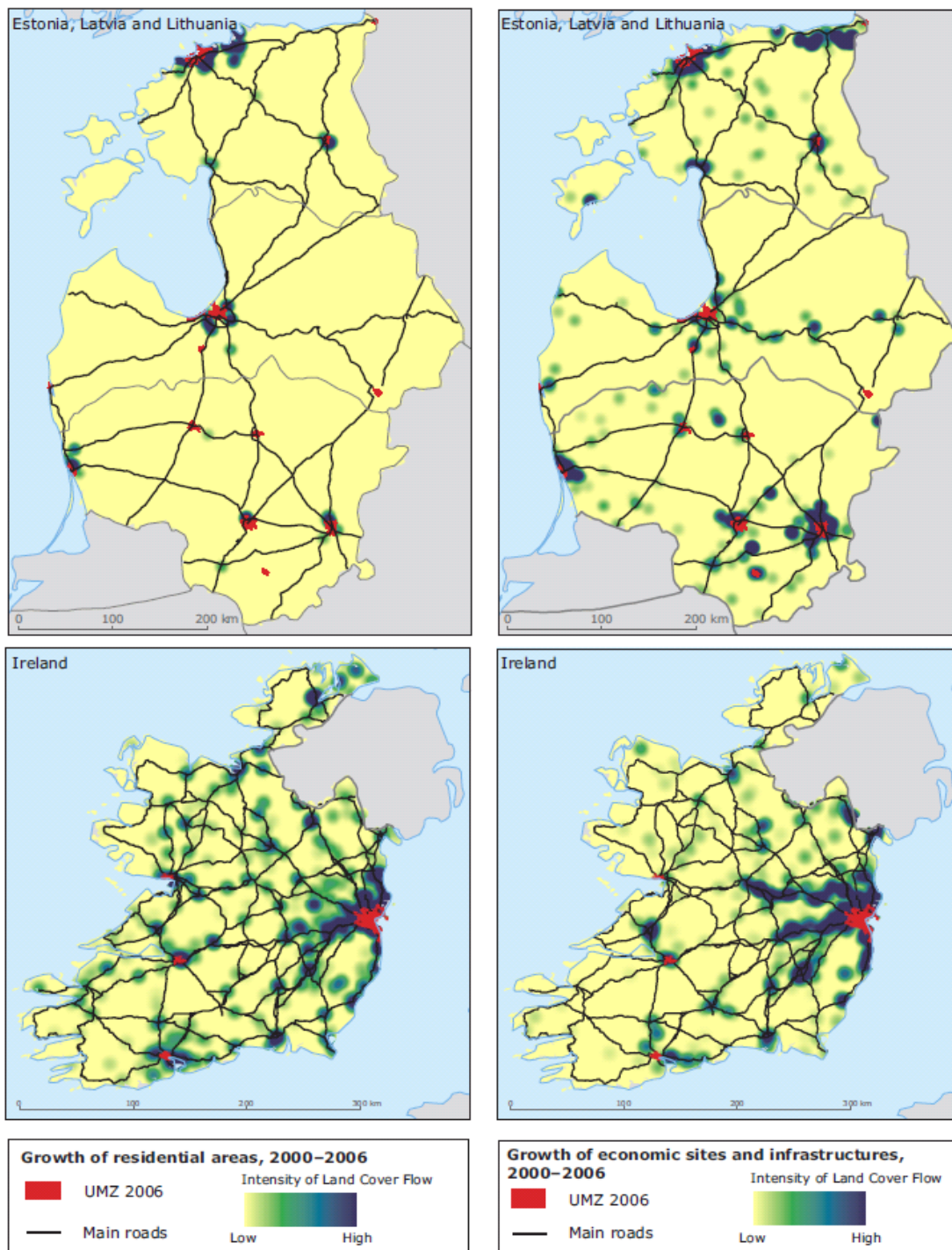
Source: European Environment Agency, *The European Environment –State and Outlook 2010 (Land Use)*

More detailed analyses of urban sprawl and economic development patterns between 2000 and 2006 for a narrow selection of countries (Estonia, Latvia & Lithuania, and Ireland) is provided in Figure 28. This analysis focussed on development along major roadways.

According to this analysis, Estonia, Latvia and Lithuania experienced high levels of urban sprawl in very isolated regions. Interestingly, growth in economic sites and infrastructures appears to be developing more rapidly than residential sprawl.

In contrast, Ireland is shown to have experienced high levels of urban sprawl and economic development in many areas of the country over the period, reflecting the countries debt and construction boom that preceded the recent global economic crisis. It can be expected that these patterns of development would have placed enormous pressure on existing transport infrastructure, which would have struggled to cope in maintaining reasonable access to its main urban centres, particularly Dublin.

Figure 28: Intensity of Urban Sprawl in Estonia, Latvia & Lithuania, and Ireland between 2002 and 2006



Note: The areas surrounding the main road transport links were analysed for increase in urban land cover. The intensity of urban sprawl is the percentage of the total area changed that is transformed to points and estimated as density within a search radius of 10 km. The map also shows the main road axes and urban areas (based on Urban Morphological Zones — UMZ 2006 data).

Source: European Environment Agency, *The European Environment – State and Outlook 2010 (Land Use)*

5.3.3 General economic trends and income levels

General economic trends, and in particular personal and national income growth, are well known drivers of transport demand. This can work at a number of different levels. At a high level, economic activity relies largely on transactions between agents that require transportation support their business and personal activities. For example, this could include ensuring commuters are able to get to work, or the delivery of freight goods as units of production. From another perspective, it is the levels as opposed to trends in economic activity can reveal much about travellers' capacities to pay for transport, whether through owning and operating private motor vehicles, or in paying to use public transport systems and tolled motorways. For this reason, it is also important to analyse the levels of economic activity and income, as well as general trends over time.

The close relationship between economic growth and transport demand is demonstrated in Figure 29. However, while economic activity and transport demand is closely related, there has been a general decoupling of these trends over recent times (also shown in Figure 29). Given the many negative consequences of excessive transport demand, such as increased congestion and pollution, the ability to ensure economic growth that is decoupled from growth in transport demand is a useful outcome for transport policy. This decoupling can occur due to a number of factors. For example, changes in the way we do business through the use of IT systems and tele-commuting can support this trend. As can other measures that can be directly influenced by government policy, such as planning for changes in land use that ensures people are more closely located to their places of work.

Figure 29: The Extent of Decoupling of Economic Growth and Transport Demand (pkm)

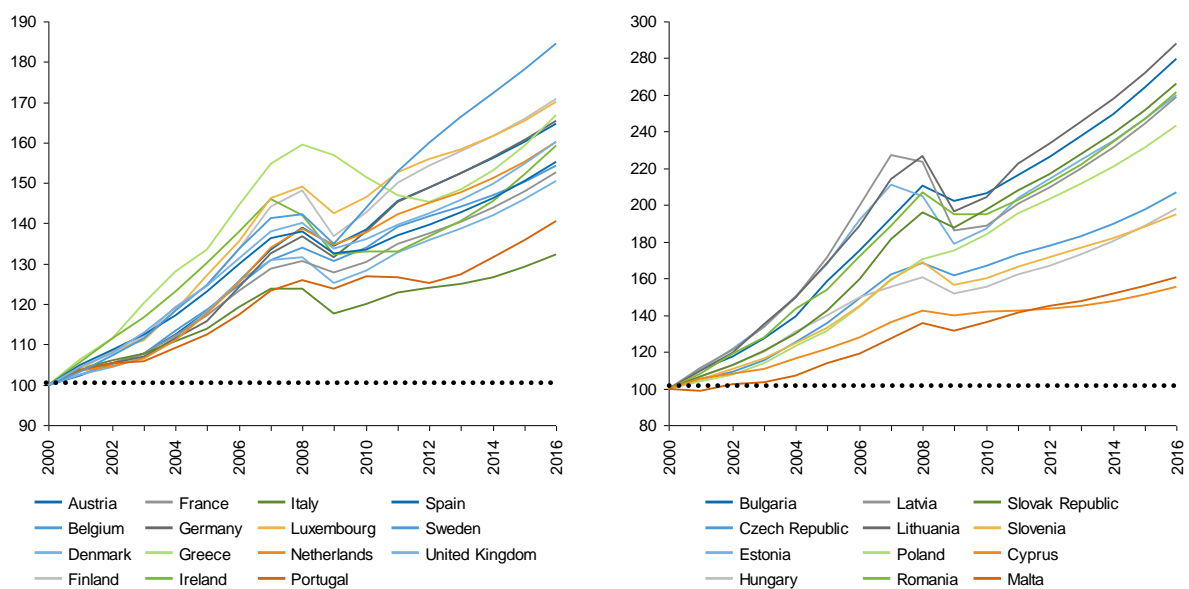


Source: European Environment Agency, *Indicators & fact sheets about Europe's environment* (www.eea.europa.eu)

As noted, analysis of income levels across the EU is also useful for considering the drivers of current and future funding needs. Figure 30 provides historic and short to medium term

forecast trends in GDP per capita for EU Member States since 2000. Despite the downturn in all Member State economies that were associated with the global financial crisis of 2008, there has been and will continue to be a general trend of positive economic growth. The level of growth is estimated to be proportionately higher in EU-12 Member States, reflecting their relatively low bases for 2000, and the strong economic growth that could be linked with those states' inclusion in the EU. These rapid growth trends suggest that EU-12 Member States have faced, and will continue to face significant needs for funding from local, regional, national and other sources in order to provide the infrastructure and services to accommodate the growing transport demands linked to economic growth. And if growing levels of car ownership and use is associated with higher prosperity, then these areas could face emerging problems of congestion and pollution.

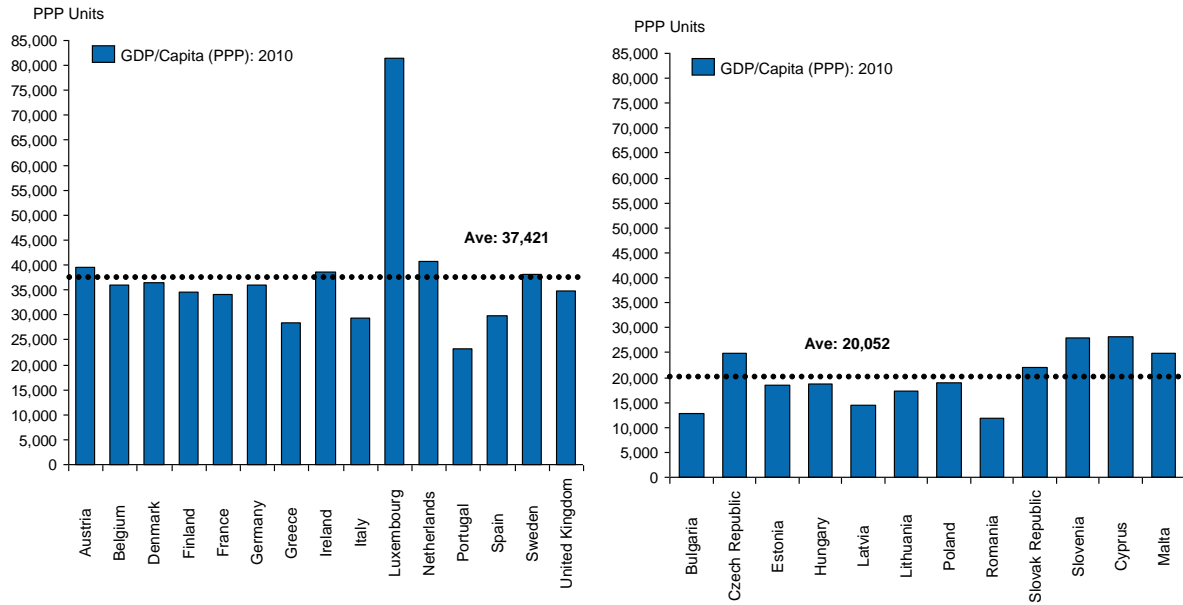
Figure 30: Historic and Forecast Trends in GDP per Capita for EU Member States - 2000 - 2016



Source: International Monetary Fund, World Economic Outlook Database, September 2011

Figure 31 below gives estimates of current (2010) GDP per capita based on the concept of purchasing-power-parity. This shows that national income levels are considerably higher in the EU-15 Member States than in the EU-12 Member States, with the exception of Greece, Italy and Portugal, where per capita incomes are comparable with many EU-12 Member States. These differences suggest that EU-15 Member States may have higher capacities for raising revenue from its citizens via taxes and direct user charges on transport users, and therefore face reduced need for external funding support. However, as incomes rise, so do the demands for higher quality and safer transport systems, which can lead to higher cost of transport provision. The link between income and funding needs is explored in more detail in the next section.

Figure 31: Current GDP per Capita (based on Purchasing-Power-Parity) for EU Member States

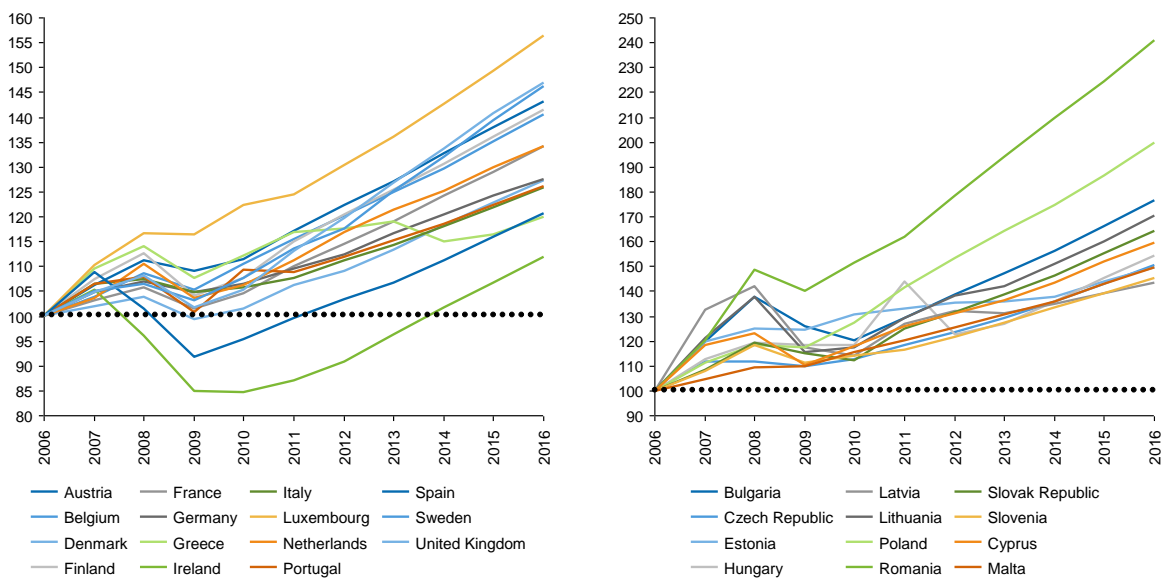


Source: International Monetary Fund, World Economic Outlook Database, April 2011

5.3.4 Government Revenue & Expenditure

Government revenue and expenditure trends are useful indicators for assessing funding needs. For example, Figure 32 highlights historic and forecast trends in general government revenue from 2006 to 2016. This shows that, despite the impacts of the financial crisis, trends in revenue raising by government is not expected to be overly affected by the financial crisis over the medium term, although the levels of government revenue collected will be permanently affected. Clear exceptions to this include Ireland and Spain.

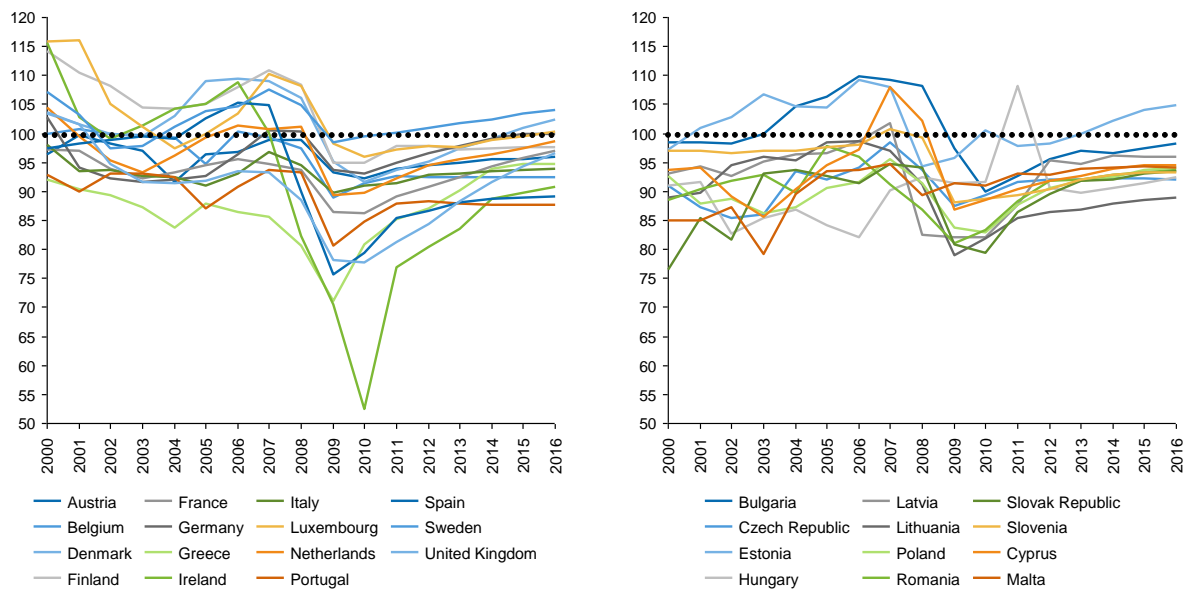
Figure 32: Historic and Forecast Trends in General Government Revenue for EU Member States - 2000 - 2016



Source: International Monetary Fund, World Economic Outlook Database, April 2011

Figure 33 displays historic and forecast trends in general government revenue as a share of expenditure, which provides a perspective on the propensity of the combined levels of government of Member States to run budget deficits. This shows that many Member States have been running budget deficits for a number of years, and that the financial crisis has ensured that practically all Member States are and will continue to experience difficulties in achieving budget surpluses over the forecast period.

Figure 33: Historic and Forecast Trends in General Government Revenue as a Share of Expenditure for EU Member States - 2000 - 2016



Source: International Monetary Fund, World Economic Outlook Database, April 2011

5.3.5 Local government tax revenue

As this study primarily relates to expenditures and funding needs and the local government level, it is useful to analyse the capacity for local government levels within Member States to raise taxation revenue. For example, local governments in Member States are raise only a small proportion of revenue will likely require subsidies from other levels of government to implement transport improvements. This can pose additional layers of administrative and political barriers to block the implementation of effective urban mobility measures.

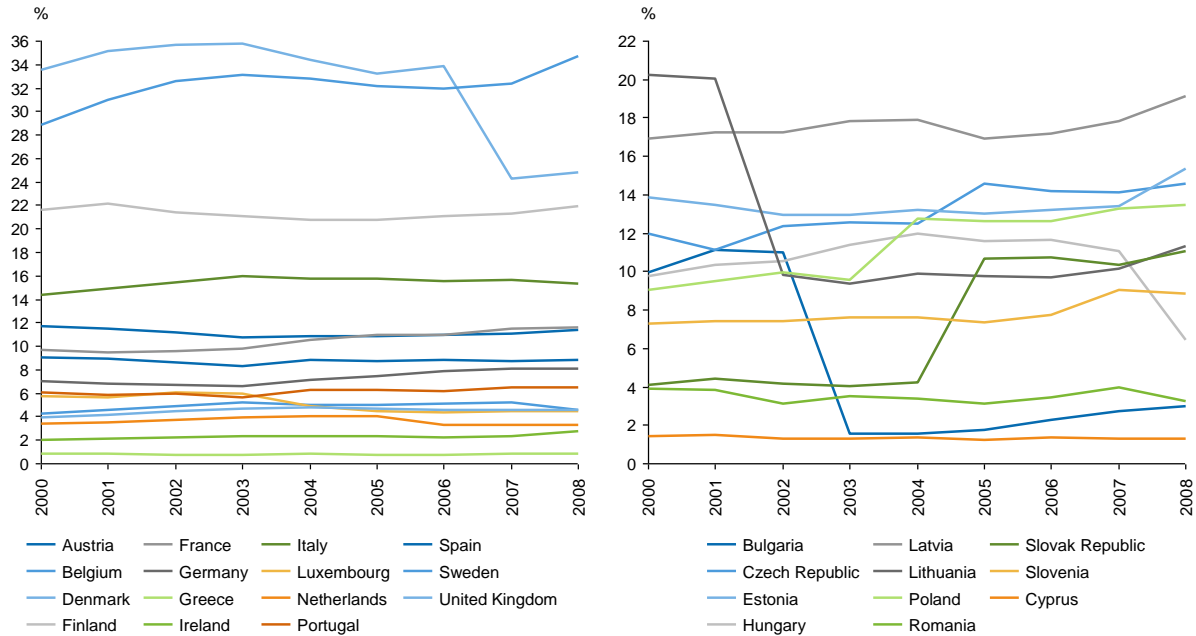
Figure 34 shows historic and forecast trends in local government taxation revenue as a share of total government revenue for EU Member States for 2000 to 2008, while Figure 35 shows the average of these shares over the same period.

Figure 34 highlights that for the EU-15 Member States, with the exception of Denmark, local government tax shares have been stable over the previous decade. Trends for the EU-12 Member States appear to be more volatile over the period. For example, Lithuania (2002) and Bulgaria (2003) experience significant drops in local government revenue shares, whereas the Czech and Slovak Republics, and Poland, experience increases in local government revenue shares.

Figure 35 shows that the average local government revenue share for EU-15 Member States is around 11%, compared to around 9% for EU-12 Member States. Countries that have very low levels of local government revenue and hence potentially higher needs for external

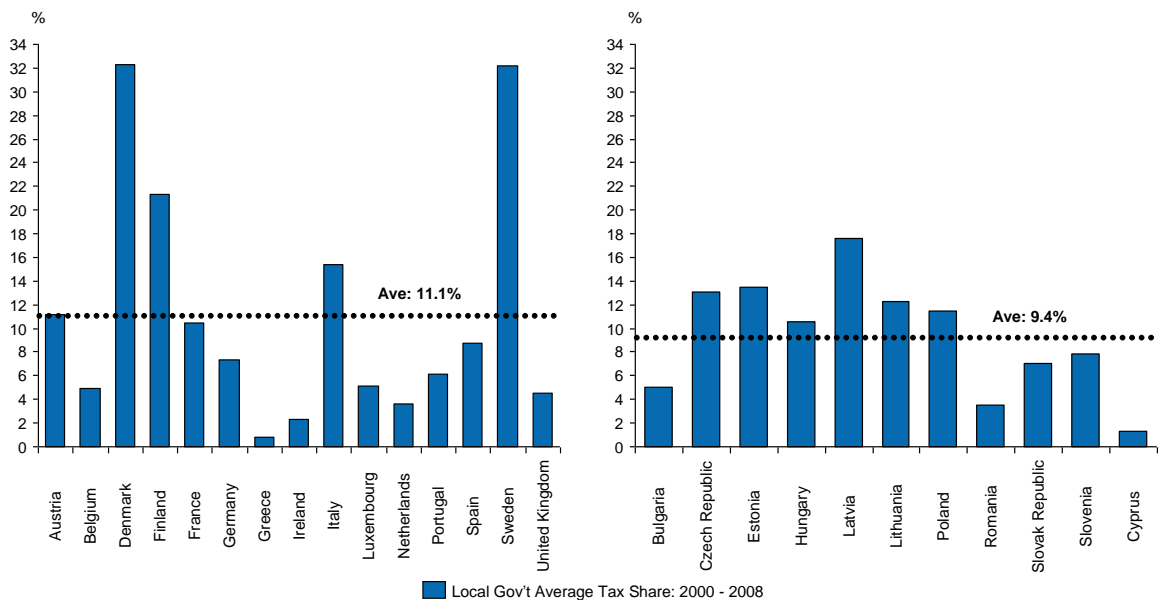
funding support include Belgium, Greece, Ireland, United Kingdom, Bulgaria, Romania and Cyprus.

Figure 34: Historic and Forecast Trends in the Local Government Taxation Share of Total Taxation for EU Member States - 2000 - 2008



Source: EUROSTAT, Taxation trends in the European Union, 2010 Edition

Figure 35: Average Local Government Taxation Share of Total Taxation for EU Member States - 2000 - 2008



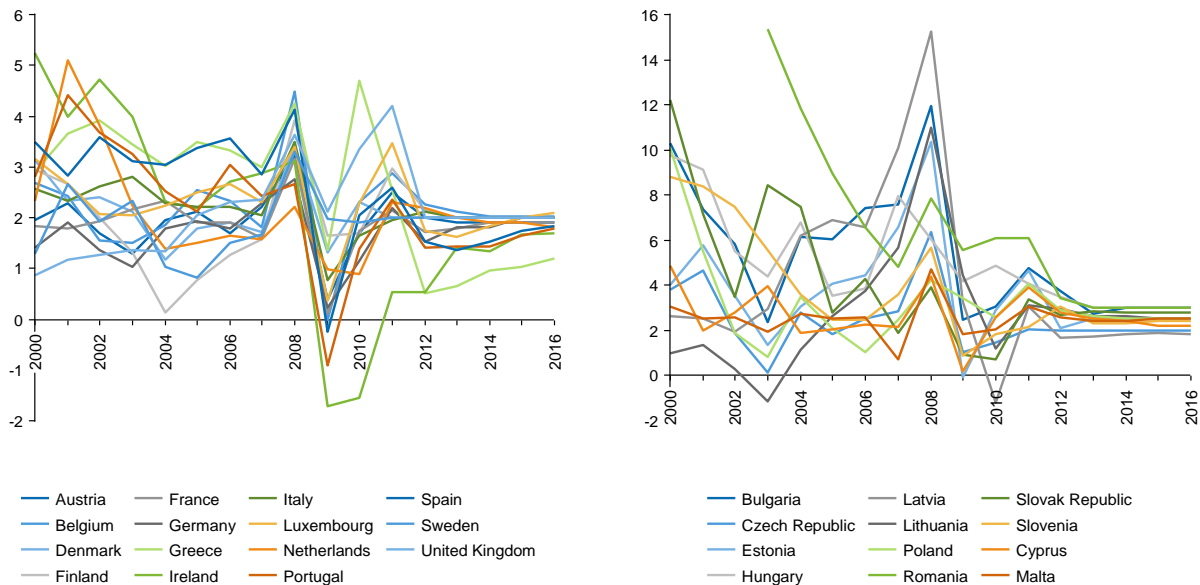
Source: EUROSTAT, Taxation trends in the European Union, 2010 Edition

5.3.6 General price levels

Another useful indicator to consider in the context of government expenditures and funding needs is the level of inflation, which can impact on the cost of building infrastructure and

providing transport services. Figure 36 shows historic and forecast consumer price inflation (CPI) for EU Member States. These are particularly volatile time series, particularly for many EU-12 Member States, which saw inflation get brought under control for much of the previous decade, before sudden and large cost pressures preceded the economic crisis of 2008. The EU-15 Member States witnessed strong inflation in the years before the crisis, but following the current adjustment period, price trends are expected to revert to their long term average and reflected in central bank inflation targets.

Figure 36: Historic and Forecast Price Inflation (CPI) for EU Member States - 2000 - 2016



Source: International Monetary Fund, World Economic Outlook Database, April 2011

5.3.7 Climate change

This section considers the interplay between climate change and urban transport and mobility, which is to be considered as an ‘issue note’ for the study and as part of an overall assessment of future expenditures and funding needs. This section summarises the evidence base with respect to the contribution that urban transport makes to greenhouse gas emissions (GHG) and looks at the impacts of climate change on urban transport provision. It then considers the funding impacts that would be encountered when implementing policies to both reduce GHG emissions in resulting from urban mobility and to mitigate against the impacts of climate change. It does not focus on

5.3.7.1 Climate Change: transport’s contribution

The world is getting warmer. Estimates are that within the next century mean temperatures could rise by as much as 1.8-4.0 °C.⁶⁷ There is an established causality between transport and climate change through the level of greenhouse gas emissions. Estimates for the EU-27 in 2008 indicate that transport (excluding international maritime and air) made up 19.5% of

⁶⁷ IPCC, 2007: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning (eds.)]

greenhouse gas emissions, second only to energy production at 31%.⁶⁸ The rate of growth in emissions from transport has also been exceptional with a 24% growth in EU-27 countries between 1990 and 2007.⁶⁹

According to the White Paper, urban transport is estimated to be responsible for 23% of the CO₂ emissions arising from transport within the EU-27. Of this 70% comes from passenger cars with 27% coming from goods vehicles. Thus public transport is a very small contributor to GHG emissions from urban transport.

5.3.7.2 *Climate Change and Urban Mobility*

There are two impacts on urban mobility arising from climate change:

- As the propensity for climate change impacts such as flooding or heat waves increases, there will be a need to build greater resilience into transport systems to ensure continuity of operation
- The need to reduce the contribution of urban transport to GHG emissions overall

The former focuses on the operational needs of urban transport to ensure continued mobility in the urban environment no matter changes in overall climatic behaviour. The latter focuses on the need to employ a range of techniques to reduce GHG emissions from urban transport and thus contribute to slowing down the rate of global warming.

5.3.7.3 *Policy Decisions and Funding Impacts*

Building resilience into urban transport systems

Urban transport systems encompass the full range of infrastructure and operations one might expect: road including traffic engineering systems such as traffic lights, light and heavy rail, tram, bus, private car and alternative modes of transport such as cycling and walking. Among the various predicted impacts of climate change in Europe are increased river flooding, increasing numbers of heat waves, rising sea levels and permafrost degradation. These especially are likely to have an impact on the uninterrupted provision of urban transport and mobility.

Potential areas of impact which need further examination include:

- Identification of cities which have increased river flooding risk
- Identification of cities which might be vulnerable to severe weather storms and rising sea levels
- Identification of built infrastructure which might be vulnerable to flooding, permafrost degradation etc.

⁶⁸ Source: EEA

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsdcc210>

⁶⁹ Source: EEA Transport emissions of greenhouse gases (TERM 002) - Assessment published Jan 2011.

-
- Identification of operational infrastructure including traffic control and signalling systems which may be vulnerable to heat waves or flooding
 - Impact on costs of fuel based on supply chain resilience

Reduction of contribution of urban transport to GHG emissions

Urban mobility is clearly important for the economic wellbeing of cities and nations however the cost of maintaining levels of urban mobility in terms of GHG emission and ultimately climate change is unsustainable. It has been established that private car use is the biggest contributor to GHG emissions and therefore policies for reducing the contribution of urban transport to climate change must focus on this area. This would include the following:

- Facilitating the introduction of new technology such as electric cars
- Adoption of a range of policy tools to encourage modal shift. This could include:
 - Congestion/road user charging
 - Facilitating flexible working/living choices
 - Other travel behaviour policies such car sharing, cycle to work schemes etc.

5.3.8 The Needs of Deprived Urban Neighbourhoods

The needs of deprived urban areas are to be included in the 'issues notes' to this study, and reflecting the issue's importance for determining expenditure and funding needs. The following analysis therefore summarises the characteristics of deprived urban neighbourhoods as well as its inhabitants. It briefly highlights the role of transport in the neighbourhood and the needs of inhabitants in terms of transport provision.

5.3.8.1 Characteristics of Deprived Urban Neighbourhoods

The built environments within urban neighbourhoods that are considered deprived often have the following characteristics:

- Poor quality or insufficient housing stock (the Second State of European Cities Report⁷⁰ highlights that respondents believe that there is a scarcity of affordable housing in most cities across Europe)
- Low level public infrastructure provision (such as street lighting, car parking, public amenity areas etc.)
- Poor quality infrastructure provision such as roadways/cycleways and walkways
- Limited access to local employment, education and healthcare
- Lower levels of air quality

The location can be both inner and outer urban with people trading choices around transport, access to amenities, housing prices

⁷⁰ Second State of European Cities Report, EC, DG Regional Policy, 2010

For the inhabitants of these areas, these conditions are exacerbated by their own constraints or characteristics. These often include:

- Low incomes
- Social exclusion particularly based on ethnicity or culture (including language)
- Low levels of employment or access to employment
- Higher than average levels of health or disability issues
- Lower levels of personal safety

It is the interplay between the environment and the personal circumstances of the residents which creates deprivation and as such transport has a role to play.

5.3.8.2 The role of transport and mobility in urban deprivation

Choices and trade-offs are made by people living in deprived neighbourhoods which involve “residential location, travel distance, and travel mode, in an attempt to minimize the social exclusion associated with low earning potential”⁷¹ The World Bank’s analysis on urban transport and poverty reduction in “Cities on the Move, A World Bank Urban Transport Strategy Review”, 2002, highlights the above characteristics for urban poverty irrespective of developing or developed world and relates this to the role of transport.

5.3.8.3 Transport policy options to address needs of urban deprivation

Transport policies/interventions to address the needs of deprived urban neighbourhoods can range from policies to improve neighbourhood environments to improving accessibility in order to allow mobility, particularly in relation to accessing employment, education and healthcare.

Improving the environment

- Air quality improvement through emissions control or traffic engineering to reduce congestion
- Improving infrastructure such as bus stops and pavements to improve security and mobility for vulnerable groups
- Provision of segregated infrastructure such as walkways/cycleways to main employment centres
- Work with police and community groups to improve security and reduce vandalism

Improvement to transport service provision

- Modifications to timetables to increase accessibility for target groups (part-time or shift workers etc.)
- Extensions or modifications of routes to take in target areas

⁷¹ “Cities on the Move: A World Bank Urban Transport Strategy Review” World Bank 2002

- Innovation on transport provision (e.g. community bus services linking into the core public transport network)
- Innovations in funding for increasing access to low- cost, sustainable transport such as bicycles or bus passes etc.

5.4 Assessing Future Funding Needs for Urban Transport

5.4.1 Introduction & Approach

A key requirement of the study is to evaluate the possible trends in funding needs up to the year 2020 and beyond.

Funding needs can be defined in a number of ways. For example, funding needs for an urban area could relate to the long-term operational costs associated with operating and maintaining transport networks (such as roads, public transport and cycle paths). Alternatively, funding needs could be related to the ability to raise funds for new project capital funding. Some funding needs are met by user charges (such as tolls and public transport fares) which are mostly used to offset operational costs. As we have seen, grant funding, public and private finance can be used to support capital investments.

Overall, funding needs that include new project funding and investments are viewed in terms of both operational and capital costs.

The previous section highlighted the range of factors that can contribute to funding needs over the longer term. Important cost drivers include changes in population and urbanisation, patterns of ageing, the extent of urban sprawl, economic and income growth, and revenue raising capacity at local level. Funding needs also depend on government policy for urban transport and the choice of infrastructure and services to carry out the transport task.

Ideally it would be possible to relate current expenditure and funding needs to each of the factors outlined above. However, it is not possible to obtain comprehensive information of current and forecast expenditures for the whole transport system across EU cities. It has also not been possible to obtain reliable forecasts at city level for each of the key variables outlined above.

Based on this, we have defined funding needs as the funding gap required to bridge the gap between operational costs and direct passenger revenues and other passenger related ancillary revenues such as advertising etc. We have obtained a series data for a number of EU cities that includes the current level of public transport operating funding gap, which we have sought to relate to key explanatory variables including population and income. By forecasting the growth in the funding gap against these variables, we can obtain a view of future funding needs across the transport system.

The data we used was obtained from a combination of stakeholder input, public transport operating data and consultant analysis. The data included public transport operating data from the association of European Metropolitan Transport Authorities (EMTA), which has been collecting this type of information from its members over the last decade for its regular

publication, the EMTA Barometer.⁷² As well as a series of socio-economic indicators, the data included information on operational funding gap for public transport in the years 2002, 2004, 2006 and 2010.⁷³ As EMTA members include public transport authorities for the larger cities across Europe, we added data collected as part of the case studies exercise for Brno and Burgas. Unfortunately we could not include Poznan (or other potential case study cities that were engaged in the data collection exercise, such as Helmond), as they were not able to provide sufficient information and, in particular, revenue data. Further information in relation to capital expenditure was derived from annual reports and other industry sources.⁷⁴

In addition to the public transport financial data, we also collected time series of key socio-economic indicators, including population, urbanisation, GDP, car ownership, mode share and metropolitan area.

When assessing the quality of the data we found the financial data to vary substantially from collection year to collection year, with many cities showing a sharp increase in funding gap from 2002 to 2004, and then a reduction in funding gap between 2004-2006. Based on consultation with EMTA and the case study cities, we concluded that these variations reflect differences in accounting methods between the years as well as any underlying change in financial inputs and outputs. The fluctuations were such that 'time trend' analysis (looking at changes in funding gap as a function of historic trends) was not appropriate. Instead, we smoothed this volatility by using an 'average', inflation adjusted funding gap across collection years as the basis for our analysis.

We then adopted a cross-sectional analysis approach, examining the relationships between city subsidies and key socio-economic variables across cities, rather than through time. However, by linking the cross-sectional relationships to forecast trends in key socio-economic variables (population and income), we have projected the future funding gap as a proxy for overall funding needs over a 30 year period.

While the results from this analysis can provide useful insights when thinking about the possible trends in future funding needs for sustainable urban mobility, it is important to recognise that this form of statistical analyses carries a number of limitations. The main limitations include the comparability and comprehensiveness of public transport financial data, uncertainty around future changes to urban transport preferences and government policies, and the general uncertainty associated with long-term forecasting of socioeconomic indicators.⁷⁵

⁷² http://www.emta.com/article.php?id_article=267

⁷³ Data was not available for each city across all of the years. For some cities data was only available for one or two years.

⁷⁴ Data sources included the EMTA barometer (as quoted earlier) supplemented by Madrid's future transit expenditure plans cited in Railway Gazetted international (December 2011), information from Transport for London (annual report and accounts 2003/4, 2010/11), OECD reports on Dublin's Transport 2021 expenditure. reports on German urban infrastructure spend cited by Renner and Gardner 'Global Competiveness in the Rail and Transit Industry', Note German urban capital transit expenditure forecasts could not be broken down at the individual city level but were only provided in aggregate as a result, data for these cities was simulated by disaggregating expenditure on the basis of City size.

⁷⁵ In particular cross sectional analysis implicitly assumes that small cities will follow the development pattern of current large cities, including issues in relation to working practices etc which in reality policy makers may be keen to avoid. Also in terms of capital cost forecasts distortions may be introduced in relation to existing over provision in some EU15 countries (legacy

5.4.2 Results & Analysis

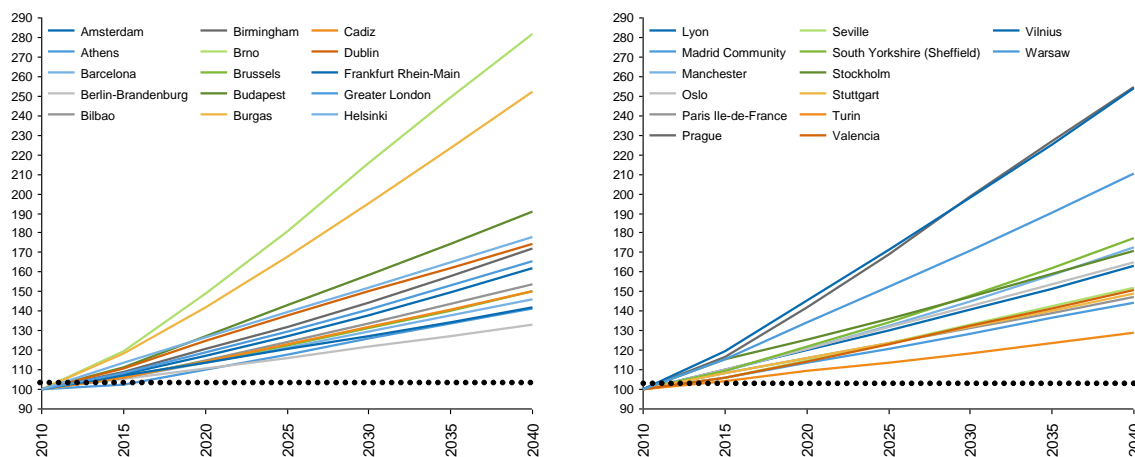
Operational Funding Gap

In relation to the cross-sectional analyses, we found a statistically significant relationship between funding gap per capita and population as well as funding gap per capita and GDP per capita.⁷⁶ Of the two explanatory variables, income growth was found to have the stronger correlation with the size of the funding gap.

Following the trends in these key variables, the analysis suggests that there could be a significant increase in funding gap requirements for the period 2010-2040. The model predicts that, on average, urban mobility funding needs, as represented by the public transport funding gap measure on a per capita basis, will more than double by 2040 for the EU-12 cities modelled, which is equivalent to real average compound growth of 2.8% per annum. For the EU-15 cities that were modelled, the per capita public transport funding gap is expected to grow by just over 50%, or around 1.5% per annum.

Figure 37 shows the forecast growth in the funding gap from 2010 levels for each of the cities included in the analysis. The model predicts that the cities with the strongest growing subsidies will be Brno, Burgas, Prague and Vilnius. Each of these cities could experience growth in the level of funding gap of 3.0-3.5% per annum. The cities with the slowest growing subsidies include Athens, Berlin-Brandenburg, Frankfurt Rhein-Main and Turin. Each of these cities could experience growth in the level of funding gap of 1% to 1.2% per annum.

Figure 37: Forecast Growth in Real Individual Public Transport Subsidies for Modelled Cities - 2010-2040 (2010 prices)



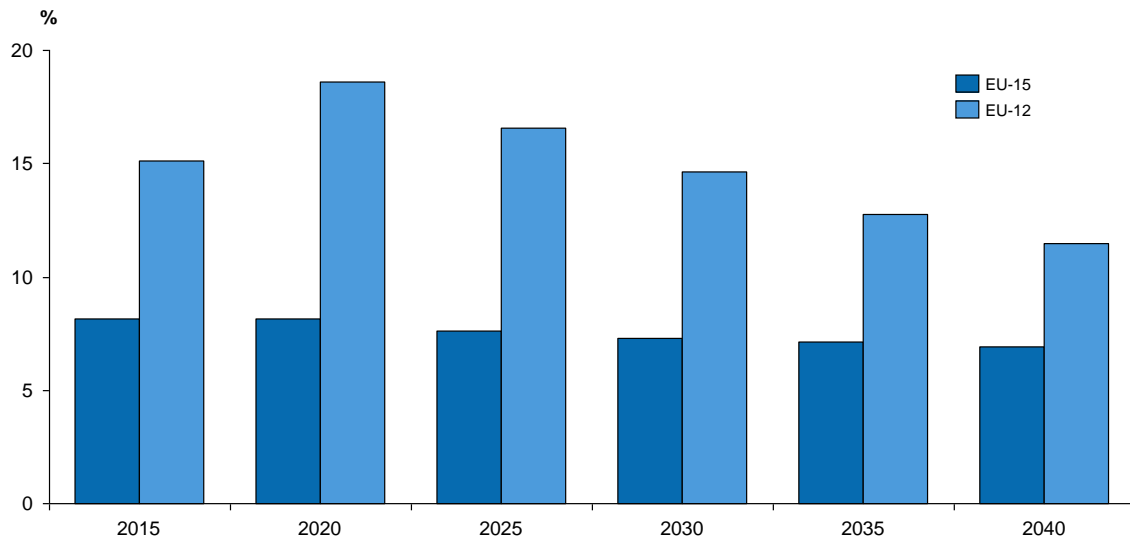
Source: Booz & Company analysis

An alternative perspective is to group cities according to their EU-15 or EU-12 classification (Figure 38 and Table 13).

systems are large and rises in car ownership may have lead to falls in utilization, building some slack into the system, however, we have assumed issues such as car park shortages have already acted to broadly ameliorate this situation).

⁷⁶ The relationship of these two variables with subsidy per capita resulted in an R Square value of 0.87, which demonstrates that the model provides a very good fit. Metropolitan area was also nearly a statistically important variable but as the measure is not fully statistically significant at the 95% confidence level it was not included in the analysis.

Figure 38: Forecast Growth in Real Per Capita Public Transport Subsidies for Modelled Cities by Country Classification – by five-year band over period 2010-2040 (2010 prices)



Source: Booz & Company analysis

Table 13: Forecast Growth in Real Per Capita Public Transport Subsidies for Modelled Cities by Country Classification – by five-year band over period 2010-2040 and CAGR

	2015	2020	2025	2030	2035	2040	CAGR ⁷⁷
EU-15	8.1%	8.2%	7.6%	7.3%	7.1%	6.9%	1.5%
EU-12	15.1%	18.6%	16.6%	14.7%	12.8%	11.5%	2.8%

To put this in real figures, the expected subsidy requirement for all of the 28 cities modelled is expected to rise from EUR 13.1 billion in 2010 to EUR 24.1 billion in 2040 (in 2010 values). Of that increase of EUR 11 billion, EUR 9.7 billion is expected to come from the EU-15 cities and EUR 1.3 billion from the EU-12. However, as figures for subsidies for EU-12 cities were more difficult to obtain (and so are a smaller proportion of the total pool of cities modelled), the size of the sample of those cities is smaller (and they themselves tend to be smaller cities with lower population than some of the Western European metropolises).

It is more important to note that the CAGR demonstrates that the EU-12 cities are likely to have the greatest proportionate increase in expected operating subsidies.

Indeed, some of the examples demonstrate the scale of this impact in that subsidies for Prague are expected to increase to nearly EUR 946 million p.a. by 2040, compared to around EUR 402 million in 2015. Although this is dwarfed by the likes of Paris expecting to increase from EUR 3.9 billion in 2015 to nearly EUR 6 billion in 2040.

In all these cases, it suggests a need to find additional sources of revenue or significant efforts to reduce operating costs over time.

⁷⁷ CAGR: Compound Annual Growth Rate

Capital Funding Needs

A similar cross sectional analysis was undertaken of funding needs across the EMTA cities for which data could be derived. In this instance the key determining variable was found to be GDP per capita (income and population were highly correlated in the data set, so separate parameters could not be derived).⁷⁸ The results of this analysis are shown in Table 14.

Table 14: Forecast Growth in Per Capita Public Transport Subsidies for Modelled Cities by Country Classification – by five year band over period 2010-2040, Cumulative and CAGR

	2015	2020	2025	2030	2035	2040	CAGR
EU-15	13%	13%	12%	11%	11%	10%	2.2%
EU-12	21%	24%	20%	17%	15%	13%	3.4%

Projected Capital funding needs show a very similar growth pattern to that derived for operational funding needs. Again the EU 12 countries are predicted to have a higher growth based on their relatively faster predicted GDP growth rates.

To put this in real figures, the expected capital expenditure requirement for all of the 28 cities modelled is expected to rise from EUR 2 billion in 2010 to EUR 4.1 billion in 2040 (in 2010 values). Of that increase of EUR 2.1 billion, EUR 0.2 billion is expected to be required by the EU-12 cities and EUR 1.9 billion from the EU-15. However, it is expected that as some EU-12 cities have capital intensive legacy public transport infrastructure likely to need extensive replacement in the next few decades, this may underestimate the total demand for renewal if those cities wish to replace such systems with similar technologies.

It is more important to note that the CAGR demonstrates that the EU-12 cities are likely to have the greatest proportionate increase in expected operating subsidies, indeed these capex requirements will increase at a rate 83% higher than that of the EU-15 cities.

What this suggests is that particular efforts will need to be made to ensure that capital project option selection and prioritisation becomes a critical part of urban mobility planning in EU cities. Not all capital works are affordable or deliver similar benefits per Euro spent. Gaining greatest value for money and deferring high cost lower value work is likely to be preferable than focusing on all high profile large capital projects.

Commentary

As noted earlier, there are considerable regional variances in both income and the rate of urbanisation across the regions of the EU. Most notably, income is predicted to grow significantly faster in some EU-12 cities. On a regional basis, over the time period shown, operational subsidies in EU-12 cities are predicted to increase by 130% on average (CAGR of 2.8%), whilst the comparative figure for EU-15 cities is only 55% (CAGR of 1.5%).

⁷⁸ The relationship of GDP per capita with capital expenditure per capita resulted in an R Square value of 0.7 and was highly statistically significant (t statistic greater than 6). However, unfortunately the data set was small, as various cities had to be eliminated, in particular the capital expenditure figures derived for Paris, were regarded as too low as renewals expenditure was specifically excluded from the data, while major UK metropolitan areas had to be excluded as rail infrastructure was excluded. This resulted in a sample of only 8 cities.

Perhaps not surprisingly capital expenditure growth is predicted to follow a very similar profile to that of operational subsidies with investment needs growing relatively more quickly in the EU12 as their economies and expand more rapidly.

The greater growth in per capita subsidies in the EU-12 cities is a result of faster predicted income growth rather than urban population growth, which is due to increase more in the EU-15 cities. Income growth is likely to lead to the population wishing to undertake more trips as incomes rise they are able to partake in more discretionary activities, and hence are likely to travel more and potentially further. These changing needs will place an additional burden on public transport systems. In fact, certain EU-12 cities are not predicted to have little population growth and others, Vilnius and Burgas, are even forecast to shrink. This shows that the effect of income growth can affect funding gap over and above the effect of a declining population.

Our analysis also suggests that per capita GDP growth causes costs such as wages to increase faster than fare increases. Not because the population cannot afford the additional fares but because they are potentially politically difficult or inequitable, and of course will be seen to discourage people from using public transport.

Additionally, as income increases there tends to be a switch to more expensive modes and an emphasis on 'quality' needed, for example, to persuade people out of car. These higher quality modes often have higher operating costs. The impact of population upon funding gap may be an indication that as cities grow public transport tasks become increasingly complex. Growing populations and a lack of space can require costly solutions, for example changing from bus transport to requirements for more expensive light rail transit and metro solutions.

5.4.3 *Other Important Drivers of Funding Needs*

There are a number of factors which it was not possible to include in the analysis which will also have an important impact upon funding gap requirements. The most important of these are further demographic change, land use trends and government policy.

EUROSTAT data has predicted that the proportion of the population made up of those aged 65 and over, currently at 17% in the EU27 as a whole, will increase over the next 50 years to reach 30% in 2060.⁷⁹ People aged 65 and over qualify for concessionary travel in the majority of Member State cities, meaning that an increase in older people as a proportion of the population is likely to lead to a further rise in required funding gap per capita. This change in demographic will further exacerbate the difference in funding needs between EU-12 and EU-15 countries, as EU-12 countries will experience a greater increase in the over 65s as a proportion of their population. The EUROSTAT data shows that the average proportion of older people in EU-15 countries will grow from 17% in 2010 to 28% in 2060, whilst the average in EU-12 countries will grow from 15% in 2010 to 32% by 2060.

Like demographic change, land use patterns are felt unevenly across EU-12 and EU-15 cities. Whilst our figures show that urban populations will grow more in EU-15 cities, the way in which population growth is accommodated has an important implication for urban transport funding. Changes in urban concentrations, identified by the European

⁷⁹ EUROSTAT: Old Age Population: June 2011: http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/3-08062011-BP/EN/3-08062011-BP-EN.PDF

Environment Agency, suggest that EU-12 cities are experiencing greater urban sprawl and feedback from stakeholders is that these trends could continue into the near future.⁸⁰ This could be due to changing levels of car ownership and associated land use changes, which are encouraging residents to reside further from city centres.

As the capital asset lives of urban transport facilities can be very long, some cities face having legacy systems that may be expensive to renew or replace and create challenges of major capital investments or transformational strategies to shift from one system to another (e.g. heavy rail to light rail or tram to bus rapid transit). In addition, the EU 12 countries have a specified need in terms of integrating strategies on urban transport network planning, land use planning and other infrastructure, reflecting the transformation of their economic in the past 20 years. The lack of such strategies can lead to poorer quality investments over time, increasing demands for funding.

5.4.4 Impacts of additional contributions to EU policy & legislation

As noted, a major driver of future funding needs will be the influence of government policy as it relates to choice of infrastructure and service provision and the setting of public transport fares, parking fees and other user charges such as road tolls and urban access charges. In this context, an interesting and important consideration is the impact of increased compliance with EU policy and legislation for sustainable urban mobility.

Based on the recent White Paper, the key aspects of EU policy and legislation for sustainable urban mobility are assumed to relate to:⁸¹

- Ensuring mobility is not restricted;
- Achieving better inter-modal connectivity;
- Implementing infrastructure pricing to achieve full cost recovery, including environmental and other external costs;
- Achieving reductions in vehicle emissions by 60% by 2050 compared to 1990 levels; and
- Limiting the growth of congestion.

Achieving these outcomes will require significant action at local level. City, regional and national governments will need to work together, supported by the EU, to develop the appropriate planning and project frameworks, and develop sufficient technical capacity in order for this to occur.

In line with the key objectives, a number of alternative and overlapping priorities will need to be pursued. This includes measures such as:

- Enhanced and integrated land use and transport planning capabilities and practices;
- Investment in the development of alternative fuel technology, which could include partnerships with the automotive and energy industries, and consideration of developing electric vehicles and related generation/distribution capability;

⁸⁰ European Environment Agency, The European Environment –State and Outlook 2010 (Land Use). Consultant Analysis.

⁸¹ COM(2011) 144, Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system

-
- Notwithstanding progress on alternative energy sources, there is likely to be the requirement to invest significantly in additional transport infrastructure, particularly in cities with low levels of public transport service today. Other sustainable measures to promote walking and cycling should also be pursued; and
 - Implementation of better pricing policies for transport and other infrastructure to support urban development. This could include higher fares for public transport, road charging, parking and access fees to recover environmental and congestion costs, and consideration of developer and other charges to pay for infrastructure that supports future urban development.

Depending on the types of public transport measures deployed, and the extent of cost recovery achieved through better infrastructure pricing, it can be expected that, overall, these measures are likely to significantly increase the costs of transport and future funding needs. The costs affecting different cities would depend on factors that place city at an advantage or disadvantage against each element outlined above. Given the complexities involved, we have not attempted to estimate the costs of compliance with EU policy.

5.4.5 *Implications*

According to this analysis, there is a strong link between income growth and preferences for transport that drive higher funding needs. Reflecting the forecast trends in these key variables, we can expect funding needs for urban transport to increase significantly over the next three decades. This could be further exacerbated by austerity measures implemented by local and national governments as a result of the 2008 economic crisis, and the trend of greater devolution of responsibilities from central government to local authorities.

A key implication of these findings is that it is important for policy makers to attempt to break the link between income growth and funding needs. For example, policy makers could encourage the implementation of transport solutions that can demonstrate better financial sustainability (e.g. bus systems compared to light and heavy rail). Another approach is to encourage revenue raising measures through better infrastructure pricing across all modes, including road pricing.

It is also evident that the urban sprawl that has been taking place in many EU-15 cities over recent decades has increased the costs of transport provision. There is a chance to limit the extent of urban sprawl in EU-12 countries through better transport and land-use planning, and project selection. Although the aspirations of citizens for car and Western-style home ownership will be difficult to contain.

6. Assessment of Funding Sources

6.1 Introduction

6.1.1 Background

The range of funding instruments (means of allocating funds, such as grants or loans) and sources (means of raising funds) available at different levels of government is dependent upon the various powers and responsibilities each level of government has. While general conclusions can be drawn about such instruments and sources, it is important to recognise that there will be specific individual conditions in each Member State, according to national constitutions, laws, policies and the financial capacities of various authorities.

Urban transport as a sector imposes a range of financial demands on government agencies. The greatest demand, in terms of scale, tends to be on providing capital for infrastructure construction and renewal, including rights of way, stations/stops, depots and associated energy and communications infrastructure. Given such projects tend to be highly capital intensive (and have long usable lives), their sheer scale can prove to be a barrier to financing and funding, as well as presenting other challenges for less experienced authorities that may not have well developed capabilities to manage such large projects. Similarly capital intensive projects can exist for purchases of public transport rolling stock/vehicles.

Meanwhile, public transport services are often unlikely to generate sufficient revenue from fares to pay for operating costs, let alone capital renewals or improvements. Much of the expenditure on urban transport is for the maintenance of infrastructure and subsidies for services. Such activities require responsible authorities to have steady funding streams to support this expenditure. Given the need for subsidies to maintain such services, the use of loans to finance public transport infrastructure is limited by the capacity of sources of funding to repay such loans. As such, this is a quite different demand on urban transport funding compared to major capital renewal, improvement or expansion projects.

However, there are innovative ways of realising value from urban transport infrastructure investments that can help contribute towards funding. Direct charging options include parking charges and road pricing, and indirect charging include advertising and sponsorship and options for getting contributions or taxation from property owners that benefit from significantly improved access that may increase property values. Treating sustainable urban transport projects as opportunities to increase economic activity and value in cities, could enable opportunities to address some of the challenges of funding and financing, although they are highly unlikely to ever meet the full extent of ambitions of transport planners.

The key issues to be considered in this assessment of funding and financing sources are:

- What funding instruments are available?
- What funding sources are available?
- What expenditure are such instruments and sources best able to support and what constraints are upon such instruments and sources?

-
- What gaps emerge from a consideration of the wide range of instruments and sources to realise the potential of the European Union?

6.1.2 *Suitability and effectiveness*

The “ideal” funding instruments and sources for any urban transport project will vary according to the scale, scope and nature of the project. For most proponents of any projects, funding should ideally have the least restrictions, easiest access and greatest flexibility. However, given fiscal constraints and the various policy and commercial imperatives of different stakeholders, this is unlikely. In order to assess suitability and effectiveness, the following criteria has been developed. A funding source is considered suitable and effective if it:

- Enables high quality projects to proceed (in terms of net outcomes) across all modes;
- Has sufficient funds available (either by itself or with other contributions) to enable progress to be made in renewing, operating and improving infrastructure and services;
- Encourages accountability for project performance (to ensure projects are completed on time and to budget, or failings are addressed and resolved promptly);
- Is available at the level of government at which urban transport expenditures are made;
- Enables projects to be developed and delivered that are consistent with meeting EU policy objectives;
- Incentivises ongoing improvement in operational efficiencies and cost management;
- Provides sustainable sources of funding to meet ongoing operating/maintenance expenditure requirements; and
- Avoids crowding out private investment where and when it is likely, but may encourage contributions from various private and public sector sources.

6.1.3 *Definition of sustainable mobility projects/activities*

The obvious fundamental priority for sustainable urban mobility is to ensure the long run safe and effective maintenance of infrastructure and services to meet the needs of people and businesses for the movement of passengers and goods. Without well maintained roads, bridges, railway lines and vehicles to operate on them, urban mobility cannot be said to be sustainable. However, given that the policy objectives of the EU are to lift the performance of such systems to be more economically, environmentally and socially sustainable, the type of activities needed to do this are wider than just securing the ongoing operation of the “status quo” in most cities. Projects and activities that advance sustainable urban mobility, by improving outcomes, can apply across all modes and for fixed infrastructure, vehicles and their operations and use. Building on the definition included in subsection 1.3, it is useful to identify projects that could contribute towards sustainable urban mobility. This enables the assessment of existing measures to take into account whether such activities may be supported by those measures.

Sustainable urban mobility projects could include:

- Energy efficiency projects around vehicles and network operation;

- Emission reduction projects around vehicles and network operation;
- Support to sustain and enhance environmentally sustainable modes (e.g. public transport infrastructure, active mode infrastructure, inter-modal interchanges);
- ITS/road pricing/intelligent parking systems that effect behaviour change and more efficient network operation;
- ITS systems that enhance ticketing, planning and service information systems for users of public transport, and that support more energy efficient driving behaviour; Better integration of transport planning, service provision and wider urban land use planning and national network planning.

It is expected that funding and financing solutions for sustainable urban mobility should be able to support these types of initiatives.

6.1.4 *Types of funding instruments*

At the most basic level, funding instruments come into three broad categories:

- Grants (the provision of funds for a specific project or activity with no expectation of financial return, repayment or ownership interest);
- Subsidies (the provision of funds for an ongoing activity, with no expectation of financial return, repayment or ownership interest);
- Loans (the provision of funds with expectations of financial return and repayment);
- Equity (the provision of funds to acquire an ownership stake in project or organisation).

Within those categories various conditions can be applied, or funding can be issued in different ways. All may be issued in stages, which may be dependent on reaching milestones or in getting contributions from others. The key limitations on all such funding instruments are the criteria that are applied in order to obtain funds through such instruments.

6.1.5 *Funding and financing sources*

Government bodies typically have various taxation powers that they use to obtain funding. However, in the context of urban transport there are certain other sources of revenue that are also available in association with transport services or use of transport infrastructure. These include:

- Fare revenue (income from use of public transport services, although this may often be insufficient to cover the costs of the services themselves);
- Parking revenue (income from on and off-road parking facilities either through ownership or by levies/taxes on parking);
- Road pricing (income from tolling new or existing roads);
- Motoring taxation (taxation on fuel, vehicle ownership or vehicle purchases);
- Commercial rents (renting of space for advertising or land associated with transport infrastructure);

-
- Development contributions (payments from property developers to assist in funding transport infrastructure improvements in exchange for planning approval for developments).

Beyond direct sources of revenue are opportunities for financing capital expenditure (either through equity or the provision of loans). In these cases, a return is required either commercially through the infrastructure built, or from revenue sources as listed above. The core sources of financing for capital expenditure are:

- State, region or local government public sector borrowing;
- Provision of loans from central or regional government sources to regional or local government;
- Public-private partnerships (providing equity and/or finance);
- Multilateral institution lending (e.g. EBRD, EIB).

6.2 Assessment of funding and financing sources and instruments

It is assumed that funding instruments and sources should be able to support the widest range of sustainable urban mobility activities that are consistent with EU policy objectives. That includes supporting capital intensive projects to expand or improve corridors, stations and facilities, as well as vehicles. It also includes being able to sustainably ensure the operation and maintenance of services and infrastructure, which is essential to provide some certainty for users, and for people and businesses wishing to locate in the cities concerned.

The funding instruments useful for major capital investments compared to ongoing operating subsidies will be different, so assessing these instruments and sources includes identifying those that may be best suited for particular activities, but not others. The assessment considers both funding sources and instruments together.

In summary, the likely future funding sources for urban transport will remain grants funded by taxation from national, regional and local sources to support subsidies and selected capital investments. The capacity to expand this is likely to be severely limited in the next five to ten years, depending on the economic outlook.

New sources of revenue for local authorities may be possible by either introducing or increasing charges on existing transport infrastructure and services (e.g. parking, fares, road user charges), but this will be constrained by political concerns of public acceptability. However, the degree to which economically efficient forms of pricing have been introduced across Europe in cities is very low. There may be considerable potential to help encourage investigations and pilots into intelligent parking, road pricing and passenger transport fare setting solutions that contribute towards sustainable urban mobility outcomes, and are positive for economic growth, environmental outcomes and generate net revenue to be invested in high value urban mobility projects. This could include building capabilities and knowledge to develop options, consider technologies and procure solutions for cities on a case by case basis.

Loan financing is an ideal way of spreading the cost of capital investments over time to make such expenditure easier to undertake and to ensure intergenerational equity in paying for assets with long service lives. Conventional sources of public sector borrowing may be more difficult to access for some cities in the medium term because of the economic

situation, and because of the need for any such borrowing to be serviced by tax revenues which are under pressure from lower than expected receipts and higher expenditure for other public policy goals (e.g. welfare).

Beyond taxation, borrowing may need other revenues to service debt or to incentivise investments by the private sector. Opportunities for revenue may be based around joint equity in property developments associated with transport terminals and stations, advertising space at such locations (and on vehicles and in corridors) and rentals from property used for transport assets. It could also include levying developer contributions for the public sector to gain some of the capital gains arising from properties benefiting from improved transport facilities.

Table 15: Analysis of Local/ regional/ national: Parking charges/road user charges

Local/ regional/ national: Parking charges/road user charges	
Description	<ul style="list-style-type: none"> Revenue raising from local authority controlled parking, tolling existing roads or other road user charges
Strengths	<ul style="list-style-type: none"> Ongoing revenue stream to support capital borrowing and subsidies. Can support demand management objectives, including encouraging mode shift to sustainable modes.
Weaknesses	<ul style="list-style-type: none"> May not have control over some parking and highway infrastructure. May not have legal powers to introduce some forms of charges
Opportunities	<ul style="list-style-type: none"> Few cities have implemented road pricing, or optimised parking revenues. EU could incentivise pilots or trials (e.g. distance based road user charging). Implementation could encourage better infrastructure pricing for all transport modes Scale of revenue limited largely by scope of options selected and political acceptability.
Threats	<ul style="list-style-type: none"> Can be politically difficult at local and national level, linked to potential for issues on social equity and the competitiveness of cities Concerns with use of revenue, and being accommodated within existing tax regimes National governments may prefer to collect revenue or determine use of it.

Source: Booz & Company analysis

Table 16: Analysis of Local: Public transport fares

Local: Public transport fares	
Description	<ul style="list-style-type: none"> Revenue raising from users of public transport services.
Strengths	<ul style="list-style-type: none"> Ongoing revenue stream that can directly support services Direct linkages between urban mobility and revenue, incentivising measures to increase patronage.
Weaknesses	<ul style="list-style-type: none"> Many public transport services do not generate net surpluses from fares Complex governance in many places, with powers sitting at various levels of government
Opportunities	<ul style="list-style-type: none"> EU may incentivise fare reforms to reduce costs/ improve revenues
Threats	<ul style="list-style-type: none"> Can be politically difficult to raise fares sufficiently to recover operating costs

Table 17: Analysis of Local, Regional, National: Rents from infrastructure properties

Local, Regional, National: Rents from infrastructure properties	
Description	<ul style="list-style-type: none"> ▪ Renting space at transport terminals, stations, stops or on corridors for businesses/ advertising
Strengths	<ul style="list-style-type: none"> ▪ Rents can be linked to economic activity and be available to support the infrastructure concerned ▪ Provides some incentives to get project development right to attract private interest.
Weaknesses	<ul style="list-style-type: none"> ▪ Demand dependent on market conditions. Revenue dependent on market conditions ▪ Degree of risk and uncertainty around funding streams
Opportunities	<ul style="list-style-type: none"> ▪ Substantial spaces of land at transport stations/terminals is underutilised for commercial purposes ▪ Regeneration potential ▪ Possible mixed use development potential
Threats	<ul style="list-style-type: none"> ▪ Competition, economic slowdown, ability of private sector to negotiate better than public sector

Source: Booz & Company analysis

Table 18: Analysis of Local, Regional: Development contributions

Local, Regional: Development contributions	
Description	<ul style="list-style-type: none"> ▪ Financial contribution towards projects from owners of properties associated with the project
Strengths	<ul style="list-style-type: none"> ▪ Can provide direct capital contribution to a major capital project (e.g. railway station)
Weaknesses	<ul style="list-style-type: none"> ▪ May not always be possible for corridor investments. Private sector may demand design changes to meet commercial objectives. ▪ Unlikely to raise a high proportion of costs except for major downtown property developments.
Opportunities	<ul style="list-style-type: none"> ▪ Can catalyse a closer relationship with private sector to advance project.
Threats	<ul style="list-style-type: none"> ▪ Difficulties in negotiating satisfactory terms and conditions. ▪ Legal issues if lack of powers to implement or failure to meet agreed conditions ▪ Defining public and private returns to base funding shares

Source: Booz & Company analysis

Table 19: Analysis of Local, Regional, National: General Taxation

Local, Regional, National: General Taxation	
Description	<ul style="list-style-type: none"> ▪ Revenue raising from local tax sources (property, sales, income)
Strengths	<ul style="list-style-type: none"> ▪ Ongoing revenue stream to support capital investment and subsidies
Weaknesses	<ul style="list-style-type: none"> ▪ Urban transport competes with other demands on such taxation ▪ Limited taxation powers at local level
Opportunities	<ul style="list-style-type: none"> ▪ Wider taxation reform possibilities.
Threats	<ul style="list-style-type: none"> ▪ Can be politically difficult to raise taxes, particularly in a period of economic downturn

Source: Booz & Company analysis

Table 20: Analysis of National (sometimes regional): Fuel Taxation

National (sometimes regional): Fuel Taxation	
Description	<ul style="list-style-type: none"> Revenue raising from taxation of motor fuels
Strengths	<ul style="list-style-type: none"> Ongoing revenue stream to support capital investment and subsidies. Low costs of collection at national level
Weaknesses	<ul style="list-style-type: none"> All Member States already have fuel taxes. Urban mobility competes with other demands for revenue
Opportunities	<ul style="list-style-type: none"> Some Member States do not charge as much as others. Many Member States do not hypothecate fuel tax revenue for transport. Fuel taxation to promote use of clean vehicles and fuels
Threats	<ul style="list-style-type: none"> Declining yields due to fuel efficiency of vehicles. Arbitrage from neighbouring Member States Rare that local authorities have much control over setting, collection and use of such taxes.

Source: Booz & Company analysis

Table 21: Analysis of Local, Regional, National: Public sector borrowing

Local, Regional, National: Public sector borrowing	
Description	<ul style="list-style-type: none"> Government borrows on debt and bond markets
Strengths	<ul style="list-style-type: none"> Usually low interest source of funds for capital expenditure (for some Member States)
Weaknesses	<ul style="list-style-type: none"> More local levels of government may have constrained powers to borrow
Opportunities	<ul style="list-style-type: none"> Capital project costs can be spread over time by being debt financed.
Threats	<ul style="list-style-type: none"> Sovereign debt issues for some Member States can make this difficult or expensive to obtain

Source: Booz & Company analysis

Table 22: Analysis of Local, Regional, National: PPP

Local, Regional, National: PPP	
Description	<ul style="list-style-type: none"> Leveraging private sector capital with public sector contributions for major projects
Strengths	<ul style="list-style-type: none"> Access to private capital and expertise can help to reduce risk and costs of borrowing.
Weaknesses	<ul style="list-style-type: none"> Requires either commercially viable projects that can raise net revenues, or public funding to pay private partner
Opportunities	<ul style="list-style-type: none"> Access to private capital can put discipline on project costs and delivery. Private investors interested in long term stable infrastructure investments
Threats	<ul style="list-style-type: none"> Demands for commercial rates of return. Higher risk profile today in some countries given economic climate. Lack of capacity of some authorities to negotiate terms and manage contracts to meet public good objectives.

Source: Booz & Company analysis

Table 23: Analysis of EU: ERDF

EU: ERDF	
Description	<ul style="list-style-type: none"> Grants
Strengths	<ul style="list-style-type: none"> Can support capital projects, particularly in areas of economic need. Wide range of policy objectives (Convergence, Regional Competitiveness and Employment, and European Territorial Cooperation)
Weaknesses	<ul style="list-style-type: none"> Limited in scope to certain regions
Opportunities	<ul style="list-style-type: none"> Possibility to make sustainable urban mobility a priority
Threats	<ul style="list-style-type: none"> Demands for other types of development projects has meant that urban mobility is a lower priority for most Member States

Source: Booz & Company analysis

Table 24: Analysis of EU: CIVITAS

EU: CIVITAS	
Description	<ul style="list-style-type: none"> Grants
Strengths	<ul style="list-style-type: none"> Directly supports both policy and technology based project initiatives with the objective of promoting sustainable urban mobility.
Weaknesses	<ul style="list-style-type: none"> Requires cities to contribute and seek to participate and propose initiatives. Incapable of funding large scale rollouts of major initiatives.
Opportunities	<ul style="list-style-type: none"> Possibility to further extend role in promoting best practice policy initiatives and more critical appraisal of outcomes from technology based projects. Demonstration of innovative technology and practices
Threats	<ul style="list-style-type: none"> Limited co-funding capacity of some cities reduces ability to participate.

Source: Booz & Company analysis

Table 25: Analysis of EU: ESF

EU: ESF	
Description	<ul style="list-style-type: none"> Grants
Strengths	<ul style="list-style-type: none"> Can support improvements to institutional capacity of public bodies
Weaknesses	<ul style="list-style-type: none"> Not available for transport infrastructure or services
Opportunities	<ul style="list-style-type: none"> Could enhance ability of public bodies to develop strategies, plans, procure and manage assets
Threats	<ul style="list-style-type: none"> May not be adequate or well targeted enough to address transport specific institutional needs

Source: Booz & Company analysis

Table 26: Analysis of EU: Cohesion Fund

EU: Cohesion Fund	
Description	<ul style="list-style-type: none"> Grants for TEN capital projects and environmentally oriented transport projects
Strengths	<ul style="list-style-type: none"> Ability to support projects to promote rail networks and strengthen intermodality. Also supports clean urban transport and wider EU Transport Policy objectives.
Weaknesses	<ul style="list-style-type: none"> Limited to TEN which are of European interest and in countries with below average incomes.
Opportunities	<ul style="list-style-type: none"> May enable TEN networks that operate through urban areas that provide urban mobility to be targeted for capacity improvements.
Threats	<ul style="list-style-type: none"> Demands for other types of development projects has meant that urban mobility is a lower priority for most Member States Could prioritise transit traffic over urban traffic in project development.

Source: Booz & Company analysis

Table 27: Analysis of EU: EIB

EU: EIB	
Description	<ul style="list-style-type: none"> Loan (direct and intermediated), structural finance and risk sharing finance facilities, European Clean Transport Facility, Marguerite Fund.
Strengths	<ul style="list-style-type: none"> Able to finance revenue earning projects or leverage potential for such projects (e.g. connected with urban renewal)
Weaknesses	<ul style="list-style-type: none"> Limited to loans, so requires revenue or other sources of funding to repay
Opportunities	<ul style="list-style-type: none"> Can provide alternative to direct public sector borrowing for projects with some revenue potential.
Threats	<ul style="list-style-type: none"> May be under increased pressure to finance projects with lower risk higher value financial returns.

Source: Booz & Company analysis

Table 28: Analysis of EU: EIB (JASPERS)

EU: EIB (JASPERS)	
Description	<ul style="list-style-type: none"> Funding to support 12 Member States prepare projects to apply for grant funding under the structural and cohesion funds
Strengths	<ul style="list-style-type: none"> Can help some Member States establish technical capability to manage major projects.
Weaknesses	<ul style="list-style-type: none"> Performance to date in terms of achieving knowledge transfer and capacity building has been substandard
Opportunities	<ul style="list-style-type: none"> Could transition from being project led to be programme based for a longer term base of technical capability.
Threats	<ul style="list-style-type: none"> EIB likely to be less interested in supporting funding that is not tied to high value project delivery

Source: Booz & Company analysis

Table 29: Analysis of EU: EIB (JESSICA)

EU: EIB (JESSICA)	
Description	<ul style="list-style-type: none"> Facilitates Member States accessing finance for urban regeneration projects
Strengths	<ul style="list-style-type: none"> Can provide source of capital to invest in infrastructure projects that can generate revenue as part of regeneration. Can encourage a more business-like approach compared to grants. Repayments allow funds to be recycled. Can support EU Transport Policy objectives.
Weaknesses	<ul style="list-style-type: none"> Requires projects to generate a financial return. Unlikely to be suitable for large capital projects.
Opportunities	<ul style="list-style-type: none"> May be opportunities to realise value from urban mobility projects that significantly improve access
Threats	<ul style="list-style-type: none"> May incentivise projects that may not be seen as sustainable

Source: Booz & Company analysis

Table 30: Analysis of EBRD

EBRD	
Description	<ul style="list-style-type: none"> Loans, equity loans, guarantees
Strengths	<ul style="list-style-type: none"> Able to finance urban transport programmes in new accession Member States. Can support EU Transport Policy objects.
Weaknesses	<ul style="list-style-type: none"> Limited to loans, so requires revenue or other sources of funding to repay.
Opportunities	<ul style="list-style-type: none"> Can be linked to new sources of revenue to help generate a sustainable source of funding to support capital investment.
Threats	<ul style="list-style-type: none"> Political barriers to implementing measures to generate additional revenue to support management of debt. EBRD is transitioning away from offering finance to any current EU Member States by 2015.

Source: Booz & Company analysis

With the exception of CIVITAS, none of the instruments or sources outlined above have any specific focus on sustainable urban mobility per se. However, it is important to recognise that there are some limitations on the ability of the EU to take a role in advancing projects that are not developed or promoted locally, given the matter of subsidiarity and the significant variances in levels of legal powers and responsibility of local and regional government in different Member States. In addition, the likelihood that the EU will have substantial additional resources to draw upon to invest in major projects at the urban transport level is low for the foreseeable future.

6.3 Conclusion

Member States, regional and local authorities have a potentially wide range of sources of funding and financing to assist in the development of infrastructure and services for sustainable urban mobility. The EU currently adds to those with specific funding and financing initiatives that can also help contribute to achieving the urban transport policy objectives of the EU. However, many urban authorities do not currently use some of the more innovative sources of revenue and finance. In some cases they simply do not have the legal authority to do so, which is a matter for the particular Member States. In others there

can be political or institutional barriers to doing so. However, regardless of such formal barriers, many authorities do not have the capabilities, expertise or confidence to be able to develop strategies for such initiatives. In particular, public-private partnerships, development contributions and direct user charges may not be pursued in cases where they could offer real opportunities to help pay for valuable improvements to urban mobility.

The key gaps that appear from the existing range of funding instruments and sources appear to be related to:

- Political limitations in raising taxes and user charges, or introducing new ones;
- The economic climate reducing the capacity of some governments to borrow and reducing the capacity and willingness of private sector investors to take on any perceived risky investments;
- Risks of option development and project selection being excessively influenced by political rather than economic or public policy related criteria;
- Lack of strategic, managerial and technical capacity to institute more innovative measures related to technology or partnerships with the private sector by some cities to enable them to confidently access new sources of revenue or financing;
- Lack of legal capacity for some levels of government to access forms of funding or financing; and
- EU support to encourage local authorities to access to existing and explore new sources of revenue or financing.

In addition, the EU does have programmes that can provide funding to assist urban mobility projects, but with the exception of the innovative CIVITAS programme, sustainable urban mobility is not the priority of those funds or financing arrangements. CIVITAS largely focuses on providing funding assistance for demonstration and evaluation of specific single technology/policy led projects in cities, and in providing a forum and means for cities to share policy experiences.

Other funding and financing sources from EU bodies have different objectives such as supporting economic development, urban renewal and regeneration and development of TEN infrastructure. The particular nature of many urban mobility projects, in that they may generate economic, environmental and social benefits, but not commercially viable financial returns, limits the extent to which some institutions (e.g. EIB) are able to support such projects.

Other EU programmes also can usefully overlap with sustainable urban mobility in some cases, but none can be said to play a major role in meeting the funding and financing gaps in that sector. A further limitation of existing funding instruments, particularly at EU level, is that they tend to favour larger scale infrastructure projects. This is linked to the EU's role of providing capital grant funding, and its lack of authority or resources to provide funding to enhance management, operations and maintenance of transport assets. In addition, the EU has a useful role in supporting TEN projects that contribute to Trans-European integration, trade and travel. However, this doesn't address issues in terms of technical capacity for new Member States that are facing growing demands for infrastructure in line with rapid economic growth.

There does not appear to be any funding or financial vehicle at the EU level to fund support for uplifting the capabilities of cities to best practice in these critical activities, which influence infrastructure standards, capacity, costs and as a result, the ability of cities to fund renewals and improvements to existing infrastructure and services. Improvements to management, operational and business practices do not have a high profile, nor are they likely to be seen as being particularly interesting from a political or marketing perspective, but the gaps in knowledge, capacity and experience that some cities have clearly hinders their ability to effectively access innovative sources of funding and finance, or to implement initiatives that could be transformational for sustainable urban mobility. While the JASPERS initiative provides significant help in facilitating cities in managing delivery of specific projects, it does not appear to have been successful in leaving such cities with notable improvements in institutional capacity or capability. It appears likely that some cities that have had JASPERS assistance for one project would need it again for another project. This clearly shows that while JASPERS can provide assistance, it is not providing a sustainable basis for cities to build capability.

The JESSICA initiative has made solid ground in establishing development funds that will be helpful in enabling cities to access private finance for urban regeneration projects, which can be associated with transport developments. However, it is mostly focused on providing loans for projects that are about regeneration and assistance in seeking private finance related to commercially viable projects of that sort, which is more likely to build capability in property development and management, rather than negotiating PPPs for transport projects.

In conclusion, while there are a wide range of existing sources for funding and financing that can help promote sustainable urban mobility, there remains a gap in the current collection of tools for cities. There are no initiatives that sustainably develop capacity and capabilities in cities to seek, develop and successfully negotiate innovative sources of funding and financing for projects. There are also no initiatives that provide support for activities that could both reduce the future financial burden on cities (by enabling better management of existing assets) and better allocate any future funding (by facilitating development of transparent evaluation procedures to enable prioritisation and rationing of project proposals). It is these sorts of projects that are likely to produce lasting and wide ranging benefits to cities, Member States and the EU, by giving cities more opportunities to be self-sufficient in funding and financing, and reducing funding demands over time.

7. Scope & Value-add of Additional EU Financial Support

7.1 Introduction

Although some existing initiatives (such as JASPERS, CIVITAS and JESSICA) are meeting part of the challenge of addressing urban mobility needs, there is merit in considering a more comprehensive and strategic approach to capacity building to support territorial cohesion. This section provides analysis of the scope and value-add of any additional EU financial support. In line with the Terms of Reference, this includes consideration of priorities, principles and potential value-added linked with proposed improvements in the overall funding framework.

In accordance with the Terms of Reference, the study has considered the following options:

1. A do-nothing scenario (addressed in Chapter 6 above).
2. Reinforcement of one or more existing instruments.
3. Creation of a dedicated additional EU financial instrument with a focus on sustainable urban mobility, innovation and/or low carbon transport. This includes two sub-scenarios:
 - Direct management by the European Commission; and
 - Management by an existing executive agency.

7.2 Priorities, principles and potential “value-add”

The options considered in this report to support urban mobility were refined on an iterative basis, based on consultation with city networks through the study Advisory Board, and with city authorities as part of developing the case studies. In completing this task we have attempted to address the objectives for additional funding according to a broad set of principles and priorities. These are meant collectively to help determine how the EU can “add value” to existing initiatives by Member States, regions and cities. These principles are as follows:

- Ability to support sustainable urban mobility: How well does the option support increasing the overall sustainability of urban transport? Does it support better use of existing funds, reduced energy consumption, better environmental outcomes and better use of existing assets?
- Ability to support European transport policy objectives: How well does the option support implementation of the principles and realisation of the objectives
- High value for money: Does the option represent a high value long term investment by the EU to improve outcomes? Can it generate significant economic and environmental benefits per Euro spent?
- Provision of appropriate EU role given subsidiarity: Does the option enable the EU to utilise an appropriate role in relation to Member States, regional and local authorities, respecting the principle of subsidiarity, and the need for urban mobility initiatives to have local support and impetus?

- Able to support consideration of specific regional and demographic issues in particular cities: Does the option support targeting improvements to reflect issues such as changes in economic activity, seasonal and geographical factors and key cross border issues? Does the option enable assistance to take into account changes in age patterns of city residents and the variations in pressures on transport systems that presents?
- Likelihood to generate long term benefits: Does the option create lasting benefits that can be built upon to enhance economic, social and environmental outcomes in the long term (e.g. 20 + years), or does it only provide a demonstration of short term improvements in outcomes?
- Incentivising of better integration across sectors and policy areas: Does the option encourage stakeholders across government, transport operators, suppliers, users and related economic, social and business stakeholders to take a more integrated approach in strategic development? Does it help promote sustainable urban mobility in an integrated way as part of wider strategies to improve transport outcomes, urban planning and development policies, policies to support economic development, regeneration and improvements in wider environmental and social outcomes?
- Benefiting the widest range of users and communities in the urban context: Does the option help to deliver benefits to the widest range of urban transport network users, or does it only benefit specific groups or sets of users?
- Targeting cities that have specific economic needs that are more likely to experience or need transformative changes in urban mobility: Does the option particularly focus on cities with specific limitation in funding and financing capacity and capability? Does the option support cities that face substantial challenges in their urban mobility patterns and trends?
- Incentivising greater use of the private sector including development of public-private partnerships: Does the option encourage and facilitate authorities pursuing project development and financing initiatives that can access private capital? Does the option allow the private sector to take a supportive role in promoting sustainable urban mobility?
- Flexibility to meet local conditions and promote collaboration across all levels of government: Does the option allow for sufficient flexibility to meet local needs and support necessary levels of collaboration and partnership across all relevant areas of government, including national government agencies

These principles and priorities provide a set of performance indicators for testing the value-add of any EU policy intervention in this area. In taking forward options for actual policy intervention, the EU would be able to refine the options presented in this study in line with these criteria.

7.3 Option 1: Reinforcement of one or more existing instruments

We have defined this option to include the following elements:

- Providing enhanced technical assistance at local level to support Member States in planning and utilisation of existing funding sources; and

- Implementing formal project evaluation processes and imposing conditions on Member States seeking to allocate grants to urban mobility measures, and undertaking post project review to identify good practice and learn lessons of application and utilising funding instrument and sources.

7.3.1 *Enhanced Capacity Building at Local Level*

The provision of urban transport infrastructure and services can provide unique challenges for transport authorities requiring particular governance arrangements and a high degree of institutional technical competency. For example, a key characteristic of transport is that significant changes to networks often involve high capital costs and long asset lives compared to other areas of government investment. They may also create a large land footprint and significant impacts on urban form, by replacing revenue (and tax) generating land use, with less financially lucrative corridors and facilities. Transport networks can also be important in supporting economic development and social interaction.

The economic and political realities of the urban transport sector mean that it can be very difficult to recover the full costs of infrastructure provision, particularly for mass transit systems and active mode networks. Funding for long term operations and maintenance may be difficult to obtain given issues in raising sufficient fare revenue, competing needs for public expenditure and the political appetite to continue to fund higher profile new capital works rather than routine maintenance.

In addition, rapid economic change can mean that demand for infrastructure is growing faster than some Member States' capacities can provide it. It is well recognised that in cities from medium sizes up, there is no lack of potential projects to reduce bottlenecks, improve corridors and enhance access and mobility. For example, the new Member States have economies that are expected to grow more rapidly than the rest of the EU, so there is a window of opportunity to ensure urban environments are developed in the right way to meet future needs on a sustainable basis. This can include reserving potential future corridors or transport node sites so that development of networks can be done affordably when the need and funding become available.

Combined, these issues create significant risks for strategy development, long term planning and project delivery that city authorities are struggling to manage. In addition to these risks, there is significant potential to achieve savings by optimising investment, improving management of assets and operations and by efficiently tackling transport externalities.

The current governance, policy and funding frameworks (i.e. grants, EIB loans, etc.) are more geared toward developing big projects, rather than promoting effective long term management and planning, or in building institutional capabilities and processes that can support this. This can mean that while large projects may be advanced, the capacity of authorities to fully take advantage of the skills gained in developing those projects may be limited. As a result priorities remain with large high-profile projects rather than the funding of less high profile operational improvements and some smaller-scale projects that are less capital intensive but provide significant sustainability benefits.

Given these issues, and the objective of strengthening territorial cohesion, there is a role for the EU to support capacity building at local levels to better enable authorities to promote integrated and sustainable solutions to meet financing needs, and get more value from existing investments.

At one level, there is a role for the EU in providing best-practice guidance and highlighting successful case studies where these initiatives have been effective in reducing funding needs. The EU is already taking an active role in this area. Initiatives like ELTIS, the EU's urban mobility portal, provide transport professionals with access to news, events, case studies and tools to assist with the task of sustainable transport planning.

The development of Sustainable Urban Mobility Plans (SUMP) is a part of the ELTIS Initiative. It is financed by the EU under the Intelligent Energy - Europe (IEE) Programme and managed by the Executive Agency for Competitiveness and Innovation (EACI). SUMP is defined as a set of interrelated measures designed to help satisfy the mobility needs of people and businesses on a sustainable basis. Resources are provided to practitioners in terms of guidelines, good practice examples and tools to develop an integrated planning approach to address all modes.

To be effective, these types of support mechanisms require active participation at local level, in terms of a desire to implement sustainable transport solutions and to follow best practice, and the appropriate governance and technical capacity to build the right long-term planning approach. As such, there are many regions across the EU where the political and institutional landscape is less capable of accommodating this.

The EU could further advance development of such capacity by providing Member States with supporting activities to help cities take a longer term strategic approach to how they manage existing assets and develop future capital programmes. The emphasis could be on financial and economic sustainability being complementary to environmentally and socially sustainable outcomes. This support could be on a range of technical functions, including integrated planning, asset management, procurement and facilitating partnerships with private financiers and developers. It would help maintain the principle of subsidiarity by allowing for local and regional authorities to lead the development of SUMPs.

This approach could be managed by the EU (e.g. via a dedicated bureau) or by an existing executive agency (e.g. EIB, as part of an expansion to its remit for JASPERS and ELENA). The EU value-add in this approach relates to supporting the objectives of European transport policy as outlined in the White Paper. A key enabler for the success of this approach would relate to the ability of the EU support programme, however defined, to unlock locally available funding and financing options for city transport authorities. This could include consider public sector funding instruments (e.g. charges for parking, road use, fares, development contributions) or potential private funding partnerships. In addition, there could be special consideration of cities with regional and demographic challenges that they may not be well equipped to manage, or which may present particular opportunities for innovative solutions. For example, a city with a substantial aging population may need to trial solutions that are not widely considered elsewhere, but in doing so could become the prototype for others that face similar challenges.

7.3.2 *Project Evaluation Processes & Funding Conditionality*

Linked to capacity building, the implementation of formal project evaluation processes and funding conditionality can also greatly enhance the effectiveness of existing funding instruments.

Formal project evaluation processes, for example, provide a standardised approach to assessing the (mostly monetised) economic, environmental and social impacts of an investment in new infrastructure and/or services. Although they carry a number of

limitations, formal project evaluation tools are an effective way to prioritise projects for funding and implementation if they are well designed and managed. They are particularly useful when choosing between investments or programmes in the same sector (e.g. transport).

In the EU, the use of formal appraisal methodologies is not widespread. For example, while formal appraisal is practiced heavily in the UK and some other areas under transparent and well developed frameworks, the case studies show that they are not used in many European regions and cities. Reasons for the lack of take-up of formal appraisal methodologies could be linked to:

- Historical preference for alternative approaches to project selection (e.g. technical approach to network development based on engineering considerations);
- Controversy around some of the underlying assumptions, particularly for cost-benefit analyses that rely on economic assumptions that may contradict a government's objectives for social equity;
- Limited resources and/or technical capacity to develop and manage effective frameworks;
- Political imperative to allocate funding based on objective criteria is not always apparent; and
- Current funding frameworks do not incentive the use of such frameworks.

The EU and EIB role in supporting new Member States by providing technical assistance to deliver transport and other infrastructure projects ensures that some progress is being made in deploying appropriate project selection frameworks. Given the growing pressure on the EU and Member States to deliver value for money on their spending decisions under future financial frameworks this strengthens the case for expanding the scope of project evaluation at EU level. This could ensure that Member States that decide to invest their structural grants on urban transport projects, do so in a way that delivers value for money and contributes to the EU's sustainable development objectives.

This could be implemented to reinforce existing financial instruments (e.g. JESSICA, JASPERS), or could form part of a wider initiative over the longer term to enhance accountability in cohesion and regional funding allocations.

An effective framework would have to be appropriately governed (i.e. at EU level by a dedicated bureau or through an executive agency) and have a well developed methodology that holds up to technical challenge by independent advisors. The methodology should be made to be scalable so that it can be applied by local authorities in smaller cities and/or for smaller projects, across different modes.

The challenge would be for the EU to find the best way to enhance project planning at city level, which could include working with national authorities to develop national project evaluation frameworks. The frameworks could also include a post-implementation project review process, which could be used to showcase good practice and provide additional guidance for local authorities.

The EU may also consider how it can demonstrate when projects do not meet expectations in a way that retains transparency, without causing embarrassment or concern by Member States where such projects reside. The key point being that there are always projects that

sometimes fail to meet expectations in any country, and that learning from such experiences can help to fine tune the criteria used by any evaluations.

Over the longer term, these types of initiatives could be built into a framework that ensures EU funds are only provided for urban mobility projects that satisfy certain conditions. These conditions could relate to the planning approach, as well as to the impacts of any project in terms of economic, financial, social and environmental sustainability.

In addition, it could also link to helping to promote higher levels of private sector involvement. Whether or not that includes equity contributions or commercially viable projects in their own right, there can still be benefits from private sector participation to add commercial disciplines, new approaches to being user oriented and providing innovative solutions.

For example, an effective way of doing this would be to create a framework whereby cities of a certain size that wish to use EU funds for urban mobility projects should be required to demonstrate that they form part of approved Sustainable Urban Mobility Plans (SUMP). This could be linked to efforts to develop national project evaluation frameworks as described above and the provision of expanded technical assistance through a reinforced existing financial instrument (i.e. JASPERS/JESSICA, etc.)

It is recognised that this would form a significant change to current practices, where regional bodies within Member States are able to allocate grants to funding priorities as long as they can demonstrate that they are compliant with the strategic priorities of the EU funds and operational programmes. As such, there would be a need for a negotiated position with the Member States, and changes to relevant regulations for the use of future EU social and regional funding, and of the regulations for the reinforcement of the chosen implementing instrument.

7.4 Option 2: Creation of a dedicated additional EU financial instrument

Whilst the EU provides some funding and financing support for urban mobility projects indirectly through various funds, some gaps have been identified in providing adequate support to Member States, regions and cities. While it is likely that the EIB will continue to support high value projects through loans and supporting financial engineering, this will not be able to address needs for projects that may generate economic and environmental benefits, but insufficient financial returns to be of interest.

A key issue is the focus on large projects, and in supporting the procurement and implementation of such projects, rather than transferring knowledge and capability to cities. The likely capacity to fund future large projects will be constrained over the next five to ten years, yet there is ample evidence of scope for high value lower cost projects that could enhance the financial, economic and environmental sustainability of urban mobility in cities which currently are eligible for Cohesion Fund assistance. In addition, support for capability development, including ability to access private financing, new sources of revenue and better asset, service and contract management could be enhanced by additional direct funding support at EU level (e.g. a dedicated funding instrument).

Such projects could be relatively lower cost, high value projects that could directly influence urban mobility such as:

- Strategies to enhance the safety and attractiveness of walking as a mode for commuting and to be complementary with public transport;
- Enhancing the safety and accessibility of cycling;
- Use of ITS to enhance the attractiveness of public transport and to improve the management of road networks, mobile travel information, and eco driving;
- Support transition to lower emission and/or alternative fuelled vehicles;
- Support the trial and development of intelligent road and parking pricing systems that can significantly affect user choice, reduce congestion, reduce emissions and enhance the viability of more environmentally sustainable transport modes.

The other value can come from supporting activities to help cities take a longer term strategic approach to how they manage existing assets and develop future capital programmes, with the emphasis on financial and economic sustainability being complementary to environmentally and socially sustainable outcomes. Such projects could include:

- Development of asset management strategies and maintenance strategies for urban road networks with a view to improving service standards and reducing long run costs through long term performance based management contracts;
- Development of procurement capabilities, outsourcing and contract management capabilities, in order to enhance the capacity of local and regional authorities to initiate, procure and manage small to medium sized projects and optimise the value from such projects;
- Facilitating participation of private sector investment, in infrastructure and service provision, as part of a long term partnership arrangement, to reduce fiscal burdens, but also with a user focus. This should be consistent with objectives to support competition and transparent use of public funds;
- Preparation of integrated transport and land-use strategies that develop a framework for prioritising capital, operational and maintenance spending, which are dynamic according to changes in transport and land use patterns, and enable authorities to maximise the value of public spending within available funding envelopes.

However, for cities to want to access funding to undertake restructuring and improvements in their own capabilities, they will want to have incentives to do so beyond the savings that are available from undertaking those activities. It may be worthwhile to link funding for high value small to medium sized projects to providing assistance to improve overall governance and management of urban mobility to meet EU policy objectives. This could be further extended to be linked with EIB loans and Cohesion Fund support for urban transport related projects.

Taking such an approach would not only promote sustainable urban mobility, and better use of existing assets (which complements EU transport and environmental policy objectives), but would enhance the value for money for transport expenditure in such cities. The development of capacity at the city level fits well with the principle of subsidiarity as it aids cities in developing strategies to meet their own needs within the wider EU and national policy contexts. The development of such capabilities can include capacity to tailor best practice to regional requirements and to be responsive to the diverse needs of users,

including communities and demographics that can only be considered adequately with local knowledge and experience.

This can generate benefits that are long term, incentivise ever improved planning, project selection and innovation, and by working in concert with the private sector, help open options that may previously have not been considered or seen to be too difficult (e.g. PPPs involving private development of terminals, or innovative revenue generation from sophisticated parking charging schemes).

7.4.1 *Type of body and functions*

It is envisaged that such a programme could be managed by a dedicated bureau or unit within the European Commission, as funding would be in the form of grants and for the Commission to purchase specific assistance in lifting the capabilities of the authorities concerned.

The body could offer grants which could build a programme based on, for a particular city:

- Initial strategic assessment of issues, needs and gaps, with particular emphasis on local geographical, demographic and economic trends;
- Assistance to undertake governance reform to better enable a city to manage its transport assets and services;
- Assistance to develop an integrated transport strategy, including prioritisation of expenditure and projects;
- Assistance to develop management systems for assets, contracting, capital programmes and operational services to improve efficiency and enhance service delivery;
- Assistance to develop public-private partnerships to deliver sustainable urban transport solutions;
- Assistance to develop procurement capabilities for ITS, and to manage relationships with private sector providers;
- Assistance to support active transport mode programmes, high value ITS deployments and other initiatives that can deliver long term improvements to sustainable urban mobility for a city.

7.5 *Proposal Impact Assessment*

High level impact assessments have been undertaken to understand how the two proposed options can contribute to achieving EU objectives more effectively. Impact assessments are typically undertaken to assist decision making on policy, funding and regulatory decisions, and tend to be detailed and generally include substantial levels of quantitative analysis.

Given that many of the impacts and effects of the proposals are project and geography dependant, a typical impact assessment would not be appropriate or even practical. As this is a strategic study to consider whether there is a funding gap in support for sustainable urban mobility, and how to address it, it has been agreed with the European Commission that a high level strategic impact assessment be undertaken.

The two proposed options and the baseline scenario are summarised below. A comparative analysis has been made of the expected impacts of the proposed options on the baseline.⁸²

Baseline scenario:

- Several existing EU funding instruments continue to be used to improve transport services and infrastructure in urban areas. These are more likely to address funding large high value and high cost projects of pan-European importance, such as those parts of TEN-T networks, or in providing major loans to large cities expanding fixed networks.
- The EU will continue to have programmes which provide funding to assist the development of urban mobility projects in association with wider regeneration or development programmes, although these are not specific to sustainable urban mobility projects (except for the CIVITAS programme).
- The existing financing instruments that support improvements to sustainable urban mobility tend to do so more because of an overlap between the instruments' core priorities and sustainable urban transport development.

Option 1: Reinforcement of one or more existing instruments

- The EU would encourage existing funding sources to be more efficiently utilised by improving the capacity of cities to adopt better approaches to allocate existing funding and to improve procurement and asset management processes. This can be enforced through providing technical assistance in planning, procurement and utilisation of existing funding sources;
- Projects would be better prioritised to support sustainable urban mobility on the basis of objectively appraised expected outcomes. This would arise from cities having developed capabilities in proposal evaluation, project conditionality, and post project review, as well as adopting outcome based, rather than input based transport strategies to tailor investments to achieving the best results given value for money.

Existing funding instruments tend to favour larger scale infrastructure projects. This may result in smaller projects which generate economic benefits but underperform in terms of financial returns to be overlooked

Option 2: Creation of a dedicated additional EU financial instrument (e.g. on the basis of CIVITAS, JASPERS and SUMP)

- A dedicated financial instrument to fund a more comprehensive uplift of urban authority capabilities, capacities and management practices to the level of best practice, whilst also supporting high net value, but modest cost innovative projects that better deliver results for users.
- The intention being to generate sustainable benefits for cities that are long term, incentivise a significant uplift in planning capability, project selection and innovation, and by working in concert with the private sector, help open options that may previously have not been considered or seen to be too difficult
- Such a fund could deliver improvements for most users of urban transport infrastructure and services within a city that chose to utilise it and adopt practices that it would

⁸² The amounts of the total funding for the three Options are comparable.

facilitate, by improving the standards of infrastructure maintenance, improving service reliability, reducing accidents and using technologically innovative solutions to improve network management.

Summary of expected impacts

Both Option 1 and Option 2 are expected to have worthwhile positive impacts in supporting sustainable urban mobility. Option 1 can be achieved by more efficient use of existing funding sources. Option 2 requires the creation of a dedicated instrument available for funding projects which promote sustainable urban mobility. In particular, such an instrument could support projects that may generate economic and environmental benefits, but generate insufficient financial returns (e.g. improving cycling and walking infrastructure). It could support projects to use innovative source of funding and finance (e.g. PPP and road user charging), and support projects to use technologically innovative solutions to reduce accidents and CO2 emissions. These are consistent with EU policy objectives set out in the White Paper.

In addition, the Options proposed can also contribute to sustainable urban mobility by increasing capacities and capabilities of cities to develop long term innovative initiatives in infrastructure and services management and planning, and use innovative sources of funding and finance.

According to the policy objectives set out in the White Paper and the potential impacts of the Options proposed, the following 8 indicators have been selected for comparing the impact between the two Options:

- Impacts on the funding gap in support for sustainable urban mobility;
- Changes in demand for travel by private cars;
- Changes in CO2 and air pollutant emissions;
- Effects on transport safety outcomes;
- Effects on efficiency of the transport systems (e.g. reducing congestion);
- Effects on innovation and research;
- Effects on capacity building of urban authorities; and

Impacts on energy use and energy source use.

- The main objectives considered are based on those which are described in the White Paper. **Error! Reference source not found.** shows a comparison of impacts on the main objectives between Option 1 and Option 2. The impacts of Option 1 and Option 2 are compared on the basis of the baseline scenario (i.e. do-nothing).

Table 31: Comparing Option 1 and Option 2

	Option 1: Reinforcement of one or more existing instruments	Option 2: Creation of a dedicated additional EU financial instrument
Impacts on the funding gap in support for sustainable urban mobility	Although this option will increase capabilities and capacities of urban authorities to reduce the funding gaps, the impacts will depend on the efficiency gains possible for specific cities based on improved planning and procurement approaches for expected projects, including better consideration of longer term planning issues.	Capabilities and capacities of urban authorities will be uplifted more comprehensively to enable them to reduce funding gaps for sustainable urban mobility including: <ul style="list-style-type: none"> • Use of innovative source of revenues and finances (e.g. road user charge, public-private partnerships) • Reductions in operating costs by more efficient asset management, operations management, and maintenance.
Changes in demand for travel by private cars	The funding of some public transport infrastructure projects is likely to improve the potential for urban authorities to sustain mode shares for public transport relative to private care use.	The dedicated EU financial instrument will uplift capabilities and capacities of urban authorities that access it and will promote initiatives that can reduce demand for private car use such as: <ul style="list-style-type: none"> • Road user charging that targets congestion times and locations; • Promotion of active modes (e.g. walking and cycling) • Better public transport service reliability, and more user friendly ticketing and service information; • More integrated planning and operation of public transport services and transport infrastructure.

	Option 1: Reinforcement of one or more existing instruments	Option 2: Creation of a dedicated additional EU financial instrument
Changes in CO2 and air pollutant emissions	Eligibility criteria for funding projects can be refined to promote more projects that reduce CO2 and pollutants. However, the impacts will depend on the objectives and priorities of each individual project.	A dedicated instrument will be able to better promote development of a comprehensive strategy to get more efficient use of transport networks in ways to reduce emissions and environmental impacts. Promotion of road user charging, more efficient network operations and active modes are some key tools that could have more widespread usage in the EU as a result, helping to reduce emissions.
Effects on transport safety outcomes	There are likely to be positive effects on transport safety outcomes because of increased capabilities of urban authorities to manage project deployment and design to reduce safety risks. However, the impacts will depend on the objectives and priorities of individual projects.	Urban authorities will be facilitated to undertake more comprehensive strategies for reducing transport sector accidents, particularly through comprehensive asset management programmes, development of cost-effective safety management systems and use of ITS applications. Such applications include: Mobile information for hazard warning (e.g. roadworks, accident sites).

	Option 1: Reinforcement of one or more existing instruments	Option 2: Creation of a dedicated additional EU financial instrument
<p>Effects on efficiency of the transport systems (e.g. reducing congestion)</p>	<p>Some additional positive impacts are expected from those projects which aim at increasing efficiency of transport systems because of increased capabilities of urban authorities to ensure projects take into account best practice in utilisation of existing networks.</p> <p>However, the impacts will depend on the objectives and priorities of individual projects.</p>	<p>By uplifting the capabilities and capacities of urban authorities, there will be a new emphasis on better use of existing infrastructure and to focus on using management systems and technology (including pricing tools) to improve network efficiency. This will also target investment towards measures that realise the greatest net benefit, such as those which reduce congestion through redesign of intersections and better corridor management. A shift towards more comprehensive approaches involving smaller projects away from large single high profile projects is likely to result in better overall network efficiencies. Other options that will do this which will be facilitated include:</p> <ul style="list-style-type: none"> • Reducing traffic congestion by congestion charging Automatic vehicle positioning to improve public transport fleet management

	Option 1: Reinforcement of one or more existing instruments	Option 2: Creation of a dedicated additional EU financial instrument
Effects on innovation and research	No major changes are expected compared to the baseline	Innovative approaches towards sustainable urban mobility will be supported such as; <ul style="list-style-type: none"> • Demonstration and evaluation of innovative technologies (e.g. alternative fuels and information systems; • Demonstration and evaluation of innovative systems of network management (e.g. pricing, active traffic management) • Demonstration and evaluation of innovative policies (e.g. integrated transport plan, travel plan, active mode initiatives)
Capacity building of urban authorities	The capacity and capabilities of urban authorities will be improved particularly in the area of project planning, project evaluation, funding conditionality.	,Ccapabilities and capacities of urban authority will be increased more comprehensively across planning, project evaluation, innovative sources of funding and financing, asset, network and operations management and pricing and procurement.

	Option 1: Reinforcement of one or more existing instruments	Option 2: Creation of a dedicated additional EU financial instrument
Impacts on energy use and energy source use	<p>Some additional positive impacts are expected from those projects which aim at promoting energy efficiency and alternative fuels because of increased capabilities of urban authorities to use the fund more efficiently and manage and select projects more effectively. However, the impacts will depend on the objectives and priorities of individual projects.</p>	<p>By uplifting the capabilities and capacities of urban authorities, there will be greater scope to adopt cost effective strategies to improve energy efficiency and provide efficient alternative fuel solutions</p> <p>, for example by:</p> <ul style="list-style-type: none"> • Developing a recharging network for Electric vehicles where appropriate; • Increase fuel economy by supporting initiatives of eco-driving by public transport operators; • Adopting energy efficiency strategies for stations, stops and network operations (e.g. lighting).

	Option 1: Reinforcement of one or more existing instruments	Option 2: Creation of a dedicated additional EU financial instrument
Changes on economic growth	There will be incremental improvements to economic growth by the sustainable development of enhanced capabilities and capacities at urban authority level. This will mean over the longer term, less dependency on outsourced experience, higher standards of efficiency and effectiveness in planning and strategy. It is also likely to mean more efficient allocation of resources as projects may be more likely to be scoped and managed to be on time and on budget, and at an appropriate level given expected demand.	A dedicated financial instrument is likely to facilitate a step change in the quality of expenditure on urban mobility in the EU. This will be seen by the promotion of best practice in infrastructure and system maintenance, to achieve efficiency savings in expenditure and improve the experience for users. It will also be seen in the implementation of high value initiatives such as road pricing to improve network efficiencies and reduce congestion. In addition, the development of best practice approaches in strategy development, project selection and capital expenditure planning and deployment will see a new focus on high value modest cost investments that together will deliver greater net gains on a value for money basis than achievable through the baseline. In the long term, this should mean a reduction in need for capital expenditure and better economic outcomes through less delays, better energy efficiency and more efficient selection of travel options.

Overall, Option 2 is preferable to Option 1 in terms of the opportunities and potential to reduce funding gaps in support for sustainable urban mobility, particularly over the longer term. For the analysis, it was assumed that the three Options will have similar funding capacities. If any additional amount of funding is available for the creation of a dedicated instrument for supporting sustainable urban mobility, the net impact will be greatest if Option 2. Option 1 is likely to result in better management and development of large infrastructure projects which will generate economic returns, although this is likely to simply mean a better allocation of existing projects in delivering such projects. Option 2 is likely to generate more projects which will influence behaviour more widely and hence

provide a greater value because it better targets spending on a wide range of modest cost but high net value projects.

7.6 Conclusion

It is clear that some of the existing instruments of the EU that can support improvements to sustainable urban mobility, although in most cases this is due to some overlap between their core activities and urban transport. The CIVITAS and JASPERS initiatives offer potential to be expanded into helping to build capacity to improve asset management, operational management. CIVITAS could raise capability in managing contracts particularly related to technologically based solutions. JASPERS could provide more support in embedding project management, procurement and contract management practices as part of its assistance in developing major projects. A future expansion of SUMP could also provide a means to expand the strategic and integrative planning capacity of cities in develop SUMPs.

While, expanding the scope of existing instruments could provide some incremental improvements in institutional capabilities, capacities and help catalyse more economically sustainable urban mobility strategies, this is unlikely to be able to unlock the full “value add” that the EU is capable of providing at its level to enhance sustainable urban mobility.

A more pro-active approach would see the creation of a dedicated fund, to be operated within a bureau of the EC, to be able to fund a more comprehensive uplift of urban authority capabilities, capacities and management practices to the level of best practice, whilst also supporting high value, but modest cost innovative projects that deliver results for users. Such a fund could deliver improvements for most users of urban transport infrastructure and services within a city, by improving the standards of infrastructure maintenance, improving service reliability, reducing accidents and using technologically innovative solutions to improve network management. Rather than support single high cost capital intensive projects, such a fund could support wider scale projects that could support active modes (walking and cycling), better information, ticketing and route planning systems for public transport, and traffic management systems, that could include opportunities to raise revenue and manage demand (e.g. road pricing), that could integrate transport solutions with land use planning to deliver long term benefits to society.

As any such initiative would need to have strong support from cities themselves that want to have their capabilities improved, it would be appropriate to pilot this approach with a handful of cities. Such a pilot would be subject to regular performance monitoring, to report on achievement of milestones and lesson learnt, whilst providing a blueprint of how the EU can help improve the capabilities of other cities.