INTERCONNECTION BETWEEN SHORT- AND LONG-DISTANCE TRANSPORT NETWORKS

HIGH EFFICIENT AND RELIABLE ARRANGEMENTS FOR CROSSMODAL TRANSPORT

REVIEW OF NATIONAL AND EU POLICIES IN THE FIELD OF PASSENGER INTERMODALITY AND INTERCONNECTIVITY

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Table of Contents

Table of Contents

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

There is a substantial scope for improvement of the interconnections between long-distance and the medium/short-distance passenger transport systems in the EU, although key European transport nodes have good interconnections to both local/regional and long distance networks.

The strategic policies of the individual member states of the EU are hardly sufficient to cater for the needs of the EU wide intermodal passenger transport. Formal EU policy decisions based on the findings of this deliverable, could therefore serve two different purposes. First of all to mend the consequences of the present incapability to formulate relevant national strategic policies, and further, to ensure the need for a coherent and cross-national strategic policy covering for the entire EU, safeguarding the integration and development of the more peripheral areas, and ensuring the needs of the EU citizens without access to a private car.

In addition to the formulation of overall EU strategic policies, there is a need for intermodal initiatives improving the passenger transport systems of Europe. Three areas are of specific importance: improved physical infrastructure (especially intermodal terminals); technology facilitating passenger intermodality; and policy and legal frameworks facilitating intermodal cooperation.

The joint work of the two projects HERMES and INTERCONNECT document a lack of focus and need for formal authoritative decisions on interconnections in passenger transport at both the EU and the national level. In addition, it is documented, that this lack of focus has negative consequences to the coherence of passenger transport in the EU. Furthermore, it is also shown, that there is a substantial scope for improvements of the interconnections of passenger transport in a number of strategic areas, and the essential elements of strategic policies at each of these areas are highlighted.

In the following a summary of main findings are given relating to:

- General EU Policy Review
- Special Aspects of EU Policy
- National Policy Review

General EU Policy Review

A selection of relevant EU policy issues is investigated, and focal points are derived from an analysis of formal authoritative decisions (EU Directives, formal decisions form the EU Council etc) and other forms of EU policy related material, such as “green papers”, action plans, guidelines, “white papers” and similar.

These focal points are:

- Pushing major infrastructure projects;
- Fostering the development of a European high-speed rail network;
- Improving railway interoperability;
- Integrating network planning and spatial planning;
- Integrating European and regional transport networks;
- Enhancing airport accessibility;
- Enhancing regional accessibility;
- Improving intermodality at terminals;
- Fostering co-modality and complementarity among modes;
- Aiming to achieve ease of intermodal trips;
- Motivating the use of Intelligent Transport Systems (ITS);
- Enforcing passenger rights.

The state of the art on the interconnectivity between transport networks is identified. An assessment of network performance is made, by analysing current research results and applied activities in the field of interconnection of transport networks. Furthermore, the most crucial barriers and the emerging policies, which must be further promoted is identified and analysed. This is also done with respect to the main business models presently used for upgrading the international passenger intermodal system.

The findings can in short be summarised as follows:

In general, the present gap between formal and authoritative strategic policy decisions, and the actual EU strategic policy issues concerning passenger intermodality and interconnections highlight the need for an overall and formal strategic EU policy in three strategic areas:

- *Physical infrastructure* (especially intermodal terminals).

  There are substantial differences in the quality of the passenger infrastructure in the EU. A terminal for intermodal exchange of passenger cannot be isolated from the development of passenger transport modes, and visa versa. In general an EU policy driving the development of infrastructure and the related intermodality could be a driver for the integration of EU.

- *Technology* facilitating passenger intermodality.

  An example is the success of computer reservation systems of the airline industry. A similar system covering several or preferably all inter-EU passenger transport modes would be a substantial advantage.

- *Policy and legal frameworks* facilitating intermodal cooperation.

  An example is the creation of common EU standards to facilitate technological development and preventing the development of national suboptimal standards, especially concerning passenger ticket, passenger information and passenger reservation systems. Another example is to set-up minimum standards for the intermodal connection terminals important to cross-national passenger movements, and secondly for interconnections of national importance, thereby creating a feeder system facilitating international passenger mobility.

Special Aspects of EU Policy

A selection of specific EU policy issues is investigated. The first is the social cohesion and accessibility, and addresses the present provisions of interconnection between local and intercontinental networks by European transport networks.

The second is the Interconnections in Key European Transport Nodes, and addresses the quality of interconnections between key European transport nodes and local/regional and long distance networks.

The third is on TEN in relation to Rail and Coach Services and addresses consequences for effective interconnection of major rail terminals and of long-distance coach services, if they are included in or excluded from the designated TEN.

The fourth is the effects of the Open Skies Policy, to the de facto hub and spoke structure of European airports and the airports interconnections.

The findings can in short be summarised as follows:

- Access to Passenger Interconnections is important for development of the peripheral regions and the cohesion in the EU.
- Major Key European passenger transport nodes have good interconnections to both local/regional and long distance passenger transport networks.
- Exclusion of rail and coach modes from the designated Trans European Networks would reduce accessibility in the EU and the free movements of EU citizens, especially in peripheral areas and for people who depend on public transport.

- The "Open Skies Policy" does not change the hub and spoke structure of airports, but growth of low cost carriers at secondary airports is a challenge to improved interconnectivity between passenger transport modes.

National Policy Review

The review of the national strategic policy documents is made on a country by country basis. The status included four elements; first a review of relevant documents, including a short description of elements of relevance to interconnection; secondly an assessment of the level of focus on interconnection in national policies; thirdly a review whether there are any relations to TEN in the policy documents; and finally a classification of the documents in relation to six strategic characteristics of interconnection, and the relevant modes of transport. These systematic national reviews constitute the basis of the analysis and the following conclusions on the present national strategic policy of the EU countries.

The findings can be summarised as follows:

- In general, there is a lack of focus on interconnections in national policy documents.
- New/improved links seem to attract more attention compared to e.g. legal and organisational arrangements.
- There is more focus on interconnections to rail and air than to ferries.
- The overall lack of focus in national strategic policy formulation leads to a rather uniform situation within the member states of the EU with no major differences between countries: passenger interconnections are made without an overall strategic guidance.

1 INTRODUCTION

This current report is a joint deliverable from the HERMES project and the INTERCONNECT project, which both are projects of the EU 7th Framework Programme.

HERMES is explicitly focused on Crossmodal Transport Arrangements aiming at exploring and thus developing better business models (prototypes) for interconnectivity. Therefore, this project analyses the existing connections and evaluates the level of interconnectivity in the passenger terminals where short and long-distance transport networks cross and where fluidity between crossing networks should ensure the maintenance of the level of service when the passenger is transferred from one to the other. The objective of HERMES, as defined in the European Commission in the 7FP workprogramme, is the development and analysis of new mobility schemes and related organisational patterns at the interface and interconnection between long distance transport networks and local/regional transport networks of all modes.

INTERCONNECT is concerned with the role of local and regional connections in the context of growing importance of interregional passenger journeys in the European Union. The project addresses the potential for greater efficiency and reduced environmental impact of passenger transport by judicious encouragement of integration, co-operation and, where appropriate, competition in the provision of local connections, paying attention to land, air and maritime modes. The range and applicability of specified solutions, which have been tested in the project case studies, takes into account legal and institutional issues and will uses of policy measures like integrated pricing, and ticketing, improved links and interchanges, infrastructure pricing, strategic planning, information and marketing.

Both projects had in their original workprogrammes a review of EU and national policies. To avoid duplication of work, it was agreed early on to split this and assign specific areas of research to each of the two projects. The combined result is presented in this report.

The work of the HERMES project is presented in chapter 2, where the findings of a general review of EU policies with regard to intermodality, interconnectivity and cross-modal arrangement are being reported.

The INTERCONNECT project contributed chapters 3 and 4, with chapter 3 highlighting a number of specific European issues and chapter 4 summarising the findings from a review of national policy documents.

2 GENERAL EU POLICY REVIEW

2.1 INTRODUCTION

The current report gives an overview of EU policy objectives in the field of improving intermodality and interconnectivity of passenger transport. For this purpose, those EU policy documents – mainly issued within the last ten years – have been analysed, whose policy objectives or policy measures have a direct impact on passenger intermodality and interconnectivity. Thus, this report does not intend to give a thorough overview of EU transport policy, but rather to analyse those policy elements which are of direct relevance for the HERMES and also the INTERCONNECT project in terms of directly tackling cross-modal passenger transport.

The report is structured as follows: Section 2.2 describes the framework of the analyses in terms of policy documents taken into consideration and the way of analysis applied. Section 2.3 gives a brief, more general overview on possibilities to structure transport policies and objectives. The results of the analyses of the EU policy documents – the main *focal points* of EU transport policy with respect of passenger intermodality and interconnectivity – are explained and elaborated in section 2.4. The report concludes with 2.5, the summary and a brief overview on the main challenges on the way towards the implementation of the identified EU policy goals.

2.2 FRAMEWORK OF THE ANALYSES

The scope of the analyses of EU policies embraces policy documents, whose measures or policy initiatives have a direct impact on passenger intermodality and interconnectivity. The main attention is attached to papers issued within the last ten years.

In order to derive a set of relevant EU policy documents, in the first stage a *candidate list* of potentially relevant policy document is elaborated (see paragraph 2.2.1). After a careful screening of the policy documents of the candidate list, those policy reports are chosen, whose contents have direct impacts on passenger intermodality and interconnectivity (see paragraph 2.2.2). These selected policy documents are summarised in a selected list and are subject to detailed analyses with respect of the purposes of HERMES. Finally, in paragraph 2.2.3, the EU policy objectives and measures are summarised and condensed by *focal points*.

2.2.1 EU Policy Documents Considered for the Analyses

In order to identify those EU policy documents which are relevant for HERMES, a *candidate list* of policy reports is compiled. The identified policy documents were issued by EU institutions, i.e. the European Commission, the Parliament and the Council, and represent various types of policy documents, such as the White Paper 2001, Green Papers, Action Plans, Community Guidelines, Directives and Communication documents. In order to complete EU policies in the area of transport and cohesion, as well as interoperability, three documents beyond the *ten-years-threshold* complete the collection. The *candidate list* contains around 30 policy papers that potentially are of interest for passenger intermodality or interconnectivity. The scope of the *candidate list* is shown by Table 2-1.

Table 2-1 Scope of EU policy documents: the *candidate list*

Title	Document	Editor	Pub.
A sustainable future for transport – Towards an integrated, technology-led and user-friendly system	EC 2009a	European Commission	2009
Green Paper: TEN-T: A policy review	EC 2009b	European Commission	2009
Action plan on Urban Mobility	EC 2009c	European Commission	2009
Communication and action plan with a view to establishing a European maritime transport space without barriers	EC 2009d	European Commission	2009
TEN-T: Implementation of the Priority	EC 2008a	European Commission	2008

Title	Document	Editor	Pub.
Projects Progress Report			
Community guidelines for the development of the trans-European transport network	EC 2008b	European Commission	2008
Proposal for a regulation on the rights of passengers in bus and coach transport	EC 2008c	European Commission	2008
Directive on the interoperability of the rail system within the Community	EPC 2008	EU Parliament and Council	2008
An action plan for airport capacity, efficiency and safety in Europe	EC 2007a	European Commission	2007
Green Paper: Towards a new culture for urban mobility	EC 2007b	European Commission	2007
Directive on the interoperability of the trans-European high-speed rail system and of the trans-European conventional rail system	EC 2007c	European Commission	2007
Trans-European Networks: Towards an integrated approach	EC 2007d	European Commission	2007
Regulation on rail passengers' rights and obligations	EPC 2007	EU Parliament and Council	2007
Directive on the development of the Community's railways and on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure	EPC 2007b	EU Parliament and Council	2007
Regulation on public passenger transport services by rail and by road	EPC 2007c	EU Parliament and Council	2007
Keep Europe moving – Sustainable mobility for our continent	EC 2006	European Commission	2006
Green Paper: Towards a future of Maritime Policy for the Union: A European vision for the oceans and seas	EC 2006b	European Commission	2006
Facilitating the movement of locomotives across the European Union	EC 2006c	European Commission	2006
Trans-European transport network: TEN-T priority axes and projects 2005	EC 2005a	European Commission	2005
Community guidelines on financing of airports and start-up aid to airlines departing from regional airports	EC 2005b	European Commission	2005
Regulation on granting of community financial aid in the field of trans-European networks	EPC 2005	EU Parliament and Council	2005
Regulation on the interoperability of the European Air Traffic Management network	EPC 2004	EU Parliament and Council	2004
White Paper – European Transport policy for 2010: time to decide	EC 2001	European Commission	2001
Directive on the interoperability of the trans-European conventional rail system	EPC 2001	EU Parliament and Council	2001
Protection of air passengers in the EU	EC 2000	European Commission	2000
Interoperable electronic fee collection systems in Europe	EC 1998a	European Commission	1998
Developing the citizens' network	EC 1998b	European Commission	1998
Cohesion and transport	EC 1998c	European Commission	1998

2.2.2 EU Policy Documents with Direct Implications for Passenger Intermodality and Interconnectivity

In the next step, the policy document contents of the *candidate list* are pre-screened. In case a policy document of the *candidate list* contains policy measures or initiatives with direct impacts on passenger intermodality/ interoperability, the document is assigned to the *selected list* and is subject to further analysis. Some of the documents of the *candidate list* are not considered further, since the policy objectives or measures addressed do not have direct relevance for passenger intermodality/ interoperability.

The Green Paper *Towards a future of Maritime Policy for the Union: A European vision for the oceans and seas* (EC 2006b) and the Communication document *Communication and action plan with a view to establishing a European maritime transport space without barriers* (EC 2009d) refer to (intermodal) freight transport only and are for this reason not taken into further consideration.

The *regulation on the interoperability of the European Air Traffic Management network* (EPC 2004) refers to air traffic management within the single European sky. Since the main impact of this regulation can be expected for airline operators and the efficiency of air traffic management, but to a lesser extent for cross-modal passenger transport, this regulation is neglected for the more detailed analysis.

The *regulation on public passenger transport services by rail and by road* (EPC 2007c) deals with public provision of services and tendering procedures, while the Communication document *Protection of Air Passengers in the European Union* (EC 2000) deals with ensuring rights of air passengers such as compensation for denied boarding or operator liability in case of accidents. Both policy papers are focused on certain aspects of individual modes and, thus, are less relevant for the topic of the HERMES project.

The *regulation on granting of community financial aid in the field of trans-European networks* "establishes the conditions and procedures for granting Community aid to projects of common interest in the field of trans-European networks for transport, energy and telecommunications" (EPC 2005). The regulation covers investments on all TEN networks and, doing so, may also embrace infrastructure projects, which improve passenger intermodality/ interconnectivity. However, since the document does not directly refer to topics relevant for passenger intermodality/ interconnectivity, this regulation is not further analysed.

Sorting out these policy reports, the main analysis of EU policy with regard to passenger intermodality and interconnectivity is based on 22 EU policy documents, which form part of the *selected list* shown in Table 2-2.

Table 2-2 Scope of EU policy documents: the *selected list*

Title	Document	Editor	Pub.
A sustainable future for transport – Towards an integrated, technology-led and user-friendly system	EC 2009a	European Commission	2009
Green Paper: TEN-T: A policy review	EC 2009b	European Commission	2009
Action plan on Urban Mobility	EC 2009c	European Commission	2009
TEN-T: Implementation of the Priority Projects Progress Report	EC 2008a	European Commission	2008
Community guidelines for the development of the trans-European transport network	EC 2008b	European Commission	2008
Proposal for a regulation on the rights of passengers in bus and coach transport	EC 2008c	European Commission	2008
Directive on the interoperability of the rail system within the Community	EPC 2008	EU Parliament and Council	2008
An action plan for airport capacity, efficiency and safety in Europe	EC 2007a	European Commission	2007
Green Paper: Towards a new culture for urban mobility	EC 2007b	European Commission	2007

Title	Document	Editor	Pub.
Directive on the interoperability of the trans-European high-speed rail system and of the trans-European conventional rail system	EC 2007c	European Commission	2007
Trans-European Networks: Towards an integrated approach	EC 2007d	European Commission	2007
Regulation on rail passengers' rights and obligations	EPC 2007	EU Parliament and Council	2007
Directive on the development of the Community's railways and on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure	EPC 2007b	EU Parliament and Council	2007
Keep Europe moving – Sustainable mobility for our continent	EC 2006	European Commission	2006
Facilitating the movement of locomotives across the European Union	EC 2006c	European Commission	2006
Trans-European transport network: TEN-T priority axes and projects 2005	EC 2005a	European Commission	2005
Community guidelines on financing of airports and start-up aid to airlines departing from regional airports	EC 2005b	European Commission	2005
White Paper – European Transport policy for 2010: time to decide	EC 2001	European Commission	2001
Directive on the interoperability of the trans-European conventional rail system	EPC 2001	EU Parliament and Council	2001
Interoperable electronic fee collection systems in Europe	EC 1998a	European Commission	1998
Developing the citizens' network	EC 1998b	European Commission	1998
Cohesion and transport	EC 1998c	European Commission	1998

2.2.3 Approach Applied for the Screening of EU Policy Documents

For a coherent screening of EU policy documents of the *selected list*, an analysis template is drafted (see Figure 2-1). This template is filled for each individual policy objective or measure with respect of passenger intermodality/ interconnectivity. The filled sheets of each policy document of the *selected list* are contained in the *Annex* of Deliverable D1 of the HERMES project.

Policy goals addressed with relevance for passenger intermodality/ interoperability/ cross-modal transport arrangements

Sequentially numbered policy objective
1

Policy issue addressed (title)
insert text here

Description of policy issue (background)
insert text here

Type of measure proposed (title)
insert text here

Description of measure
insert text here

Modes concerned
insert text here

Related experience/ benchmarks/ prototypes
insert text here

Concerned aspect(s) of intermodality/ interoperability/ cross-modal transport arrangements
☐ Legal and regulatory
☐ Contractual / Institutional
☐ Physical / Technical
☐ Logical / Informational
☐ Economic
☐ Other: insert text here

Location of relevant section in the policy document
insert text here

Figure 2-1 Analysis template applied for the analysis of policy documents

2.3 STRUCTURING OF TRANSPORT POLICIES AND TRANSPORT POLICY OBJECTIVES

The current section intends to structure the policy objectives and corresponding policy measures with respect of passenger intermodality/ interoperability that are addressed by the policy documents of the *selected list*.

Since policy objectives always correspond to a certain policy measure (or a combination or bundle of individual policy measures), a few approaches to structure transport policy measures are briefly introduced.

Viegas (2003) proposes a grouping of transport policy instruments by three clusters:

- Transport supply;
- Regulation;

- Economic instruments.

Headicar (2009) differentiates by infrastructure investment, regulation and fiscal measures, while Grandjot (2002) mentions the possibility to structure transport policy measures by:

- Functional role of transport policy (e.g. regulatory policy, transport infrastructure policy, traffic engineering, traffic law);
- Subjects of transport policy (e.g. rail transport, road transport, waterway transport);
- Impacts on public budgets (regulatory measures versus fiscal measures).

A further approach to structure transport policies is a grouping by policy objectives. In the most important EU transport policy document issued in the last decade – *White Paper – European Transport Policy for 2010: Time to Decide* (EC 2001) – the policy goals are structured hierarchically, with following four basic policy goals:

- Shifting the balance between modes of transport;
- Eliminating bottlenecks;
- Placing users at the heart of transport policy;
- Managing the globalisation of transport.

These strategic main objectives are further split into sub-objectives and tactical policy goals, as illustrated by Figure 2-2 (based on Rothengatter and Szimba, 2009). The publication of the White Paper 2001 can be regarded as a major milestone of EU transport policy making. Thus, the hierarchy concept of policy goals in the EU White Paper 2001[1] will provide the basis for structuring the policy issues addressed within the analysed policy documents.

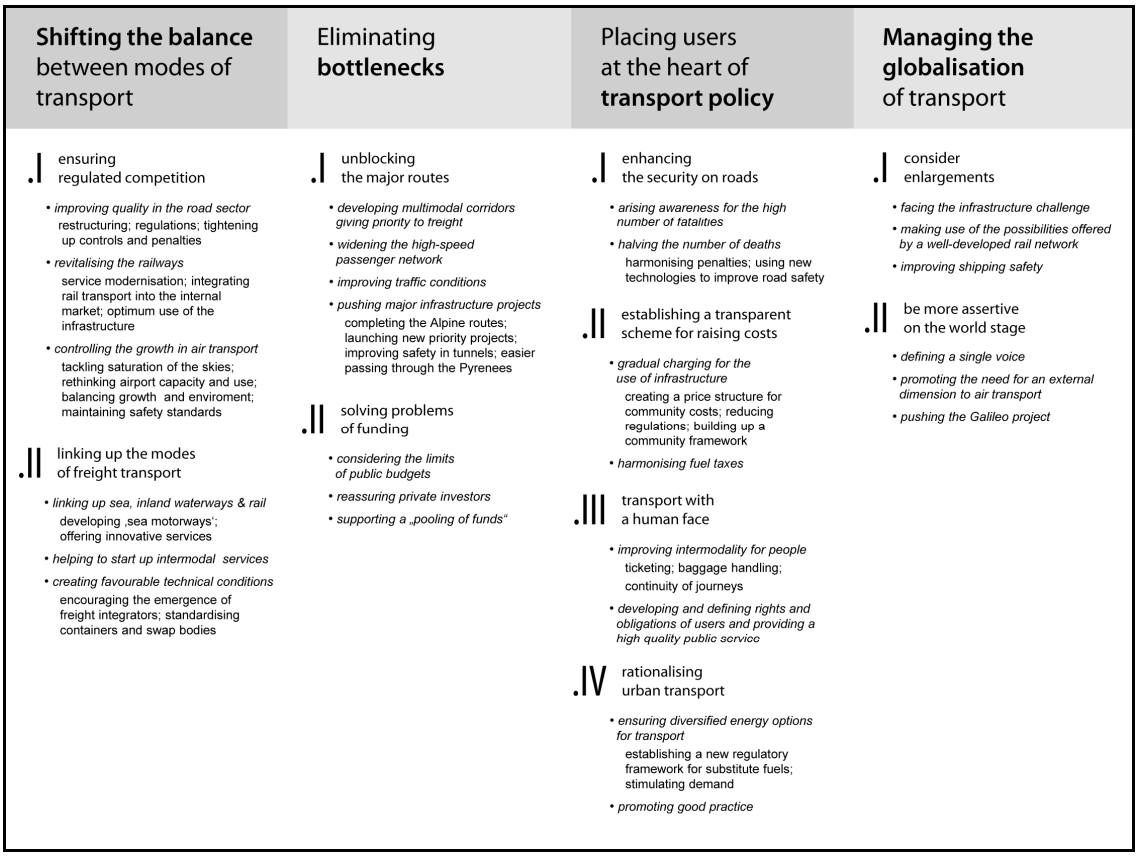

Figure 2-2 Hierarchy of transport policy goals in the White Paper 2001

[1] A new White Paper on EU transport policy is scheduled to be issued in the year 2011.

Most of the policy objectives of the White Paper can be associated with indirect impacts on passenger intermodality and interconnectivity. In the current chapter, however, the main focus is attached to *direct impacts* on passenger intermodality and interconnectivity. Therefore, the most prominent policy objectives of the White Paper with respect of passenger intermodality and interconnectivity are as follows:

- Unblocking the major routes, particularly
  - widening the high-speed passenger network,
  - and pushing major infrastructure projects;
- Transport with a human face, particularly
  - improving intermodality for people,
  - and developing and defining rights of and obligations of users;
- Rationalising urban transport with regard to promoting good practice.

2.4 RESULTS OF THE REVIEW

2.4.1 Aspects Covered and Modes Concerned

The current section gives a first rough overview on how relevant the examined EU policy documents are in respect of the HERMES *domains* of passenger intermodality / interconnectivity, and in respect of the modes of transport.

Based on Macário et al. (2010) following *domains* of passenger intermodality/ interconnectivity have been distinguished in the templates in order to categorise the policy issues and measures:

- Legal and regulatory;
- Contractual/ institutional;
- Physical/ technical;
- Logical/ informational;
- Economic;
- Further aspects.

The appraisal of the policy analysis templates (see Figure 2-3) reveals that most of the reviewed policy documents tackle physical/ technical, logical/ informational, and economic aspects. Legal/ regulatory and contractual/ institutional aspects are covered too, but at a slightly lesser extent.

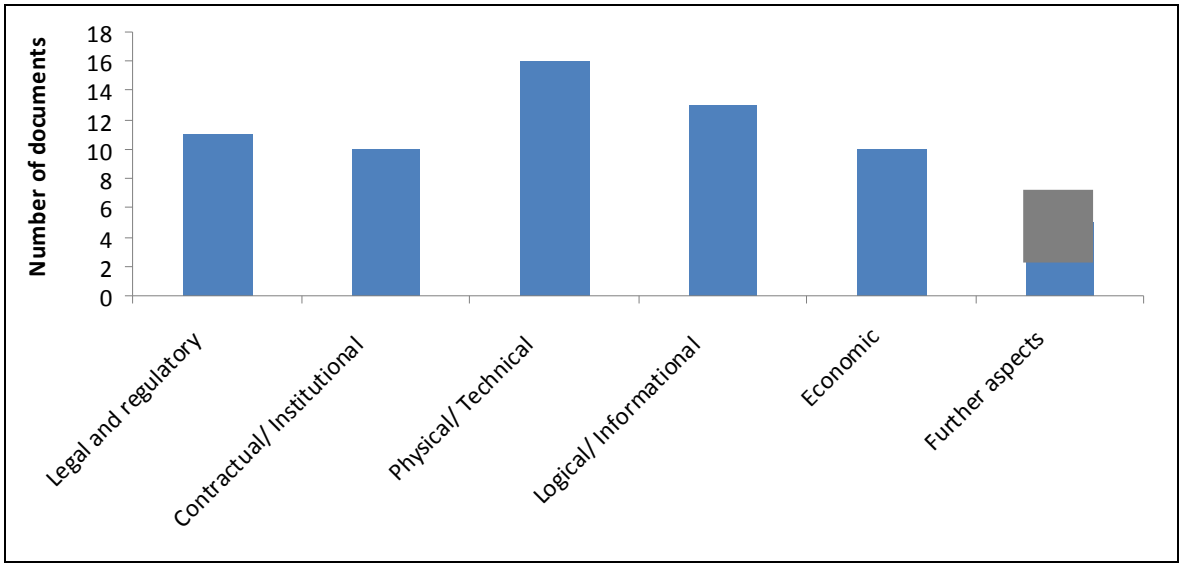

Figure 2-3 Number of policy documents reviewed per HERMES domain of intermodality/ interconnectivity

All modes of passenger transport are tackled by the policy documents, ranging from air transport to slow modes (walking, cycling). Clearly, rail transport, high-speed rail transport, air transport, as well as urban modes are in the main focus[2]. The number of reviewed policy documents per mode is illustrated by Figure 2-4.

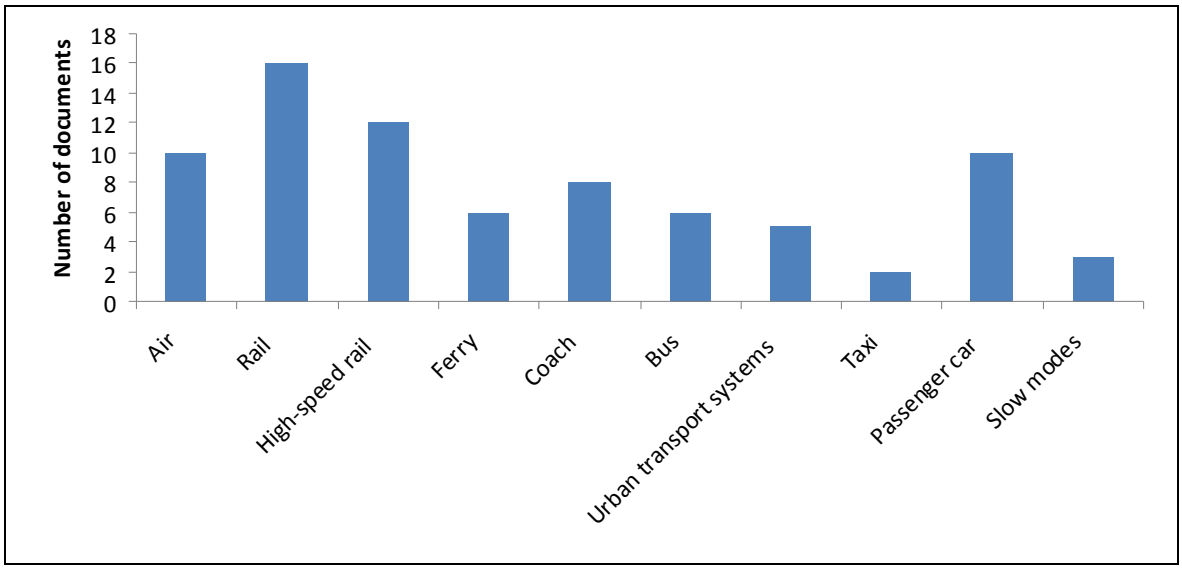

Figure 2-4 Number of policy documents per mode of transport

2.4.2 Overview Analysis of Key Words

In order to obtain first insights in the contents of the filled analysis templates (see Figure 2-1), the entries of following items in the analysis templates have been subjected to a *word cloud analysis*, i.e. a depiction of sizes of words according to frequency of occurrence of words in the examined text elements:

[2] The mode *passenger car* is referenced frequently, too. However, in many policy documents, this mode is only referred to indirectly: if investments in road infrastructure are proposed by a policy document, the analysis has implicitly assumed the mode *passenger car* as a concerned mode.

- Policy issue addressed (title);
- Description of policy issue (background);
- Type of measure proposed (title);
- Description of measure.

The outcome of this analysis is shown by Figure 2-5. The diagram gives a first overview on the key topics addressed.

Rail, *high-speed rail* and *air* are found the most important individual modes tackled, while the requirement of interconnecting these individual modes is represented by a frequent occurrence of the notions *intermodality*, *interoperability*, *integration*, *interconnection* and *multimodal*. The frequently used terms *standards* and *compatibility* underline the importance of setting adequate rules to improve the coordination across modes and within an individual mode.

All spatial dimensions, the *European*, *national*, *urban*, *regional* and *local* scope, seem to play an important role in analysed policy documents.

Items such as *information*, *quality*, *access* and *(user) rights* emphasis the customers' perspective reflected in the analysed EU policy documents.

The transport infrastructure is – apart from the key word *infrastructure* – represented by notions such as *TEN-T*, *network*, *project*, *link* and – for the research contents of HERMES even more relevant – by transport nodes, i.e. *terminals*, *airport* and *station*.

Terms such as *encourage*, *improve*, *optimising*, *opening*, *facilitate*, *needs* or *requirements* suggest a certain necessity to enhance aspects of passenger intermodality and interconnectivity.

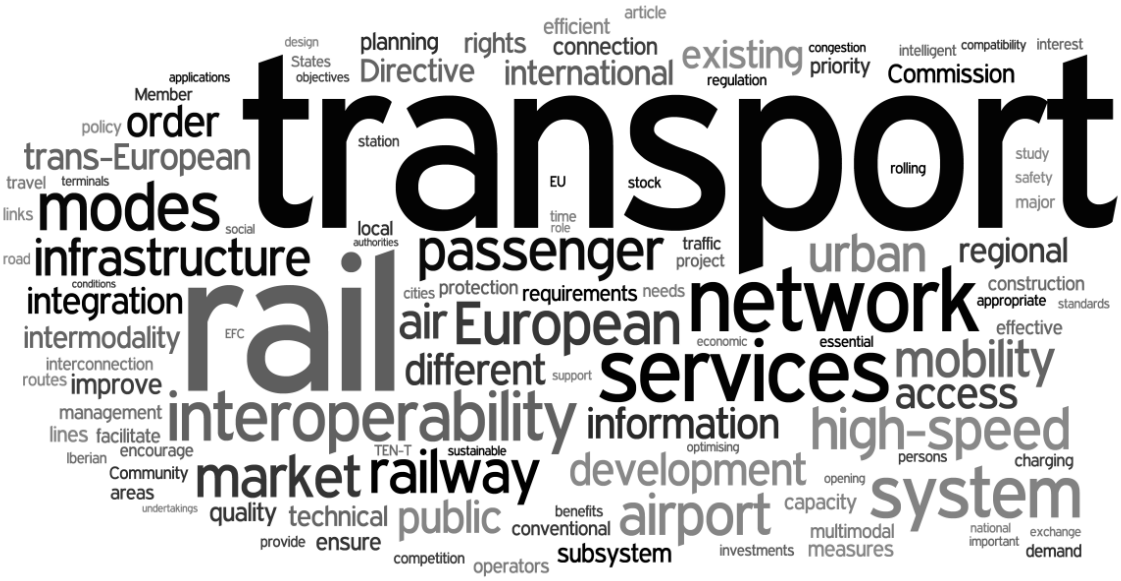

Figure 2-5 Word cloud analysis of contents of the filled analysis templates

2.4.3 Main Focal Points of EU Transport Policy

In order to structure the contents of the analysed EU policy documents, the hierarchy of policy goals of the EU White Paper 2001 has been considered as a main framework, particularly with respect of the key goals *Unblocking the major routes*, *Transport with a human face* and *Rationalising urban transport*. Based on this given framework of (transport) policy goals, the policy documents analysed with respect of passenger intermodality/ interconnectivity are structured along *focal points*. In the

context of the current analysis, the notion of *focal point* is applied to summarise EU policy measures with direct impacts on passenger intermodality/ interconnectivity, and with specific allocation pattern to at least one of the key goals *Unblocking the major routes*, *Transport with a human face* or *Rationalising urban transport*.

Major importance is attached by several EU policy documents to infrastructure measures on the trans-European transport network (TEN-T), particularly as concerns investments for *priority projects*, and the extension of the European high-speed rail network. Furthermore, interoperability of the European railway system is highlighted, both in relation to interoperable infrastructure and in relation to interoperable rolling stock. In addition, the integration of the European TEN-T networks with regional and local networks is of high political concern, in order to ensure that positive impacts of trans-national infrastructure projects can be realised not only at European or national, but also at regional and local level.

Moreover, the potential to reduce the demand for daily mobility by integrating network and spatial planning is highlighted. Several EU policy documents address the accessibility of airports and regional accessibility. Apart from accessibility to airports, the policy goal of ensuring intermodality at transport terminals in general – embracing both, stations and airports – is mentioned by a dominant share of the policy documents. Moreover, *co-modality* and complementarity of passenger transport modes, i.e. the efficient use and combination of modes are dealt with, as well as the political aim to ease intermodal trips. Finally, the application of Intelligent Transport Systems (ITS) and granting passenger rights are regarded as means to improve passenger intermodality and interconnectivity.

Summarising, following *focal points* of EU transport policy with respect of passenger intermodality/ interoperability can be identified:

- Pushing major infrastructure projects;
- Fostering the development of a European high-speed rail network;
- Improving railway interoperability;
- Integrating network planning and spatial planning;
- Integrating European and regional transport networks;
- Enhancing airport accessibility;
- Enhancing regional accessibility;
- Improving intermodality at terminals;
- Fostering co-modality and complementarity among modes;
- Aiming to achieve ease of intermodal trips;
- Motivating the use of Intelligent Transport Systems (ITS);
- Enforcing passenger rights.

In the following paragraphs, the individual *focal points* are further explained and motivated on the basis of the analysed EU policy documents.

Fostering the development of a European high-speed rail network/ Pushing major infrastructure projects/ Improving railway interoperability

The Communication document *Trans-European Networks: Towards an integrated approach* (EC 2007d) emphasises one of the main goals of TEN-T policy, the harmonisation, connection and integration of national networks. The policy objective is mainly manifested by the planning of large-scale transport infrastructure projects and the efforts to reach interoperability of European transport networks.

Therefore, the three policy focal points, *Fostering the development of a European high-speed rail network*, *Pushing major infrastructure projects* and *Improving railway interoperability*, are dealt with in a joint paragraph. European transport infrastructure planning is particularly associated with investments in European priority axes (see EC 2005a, EC 2008a).

The geographical alignment of the corridors and priority projects is displayed by Figure 2-6, while the financial scope of these priority axes is shown by Table 2-3 (EC 2008a).

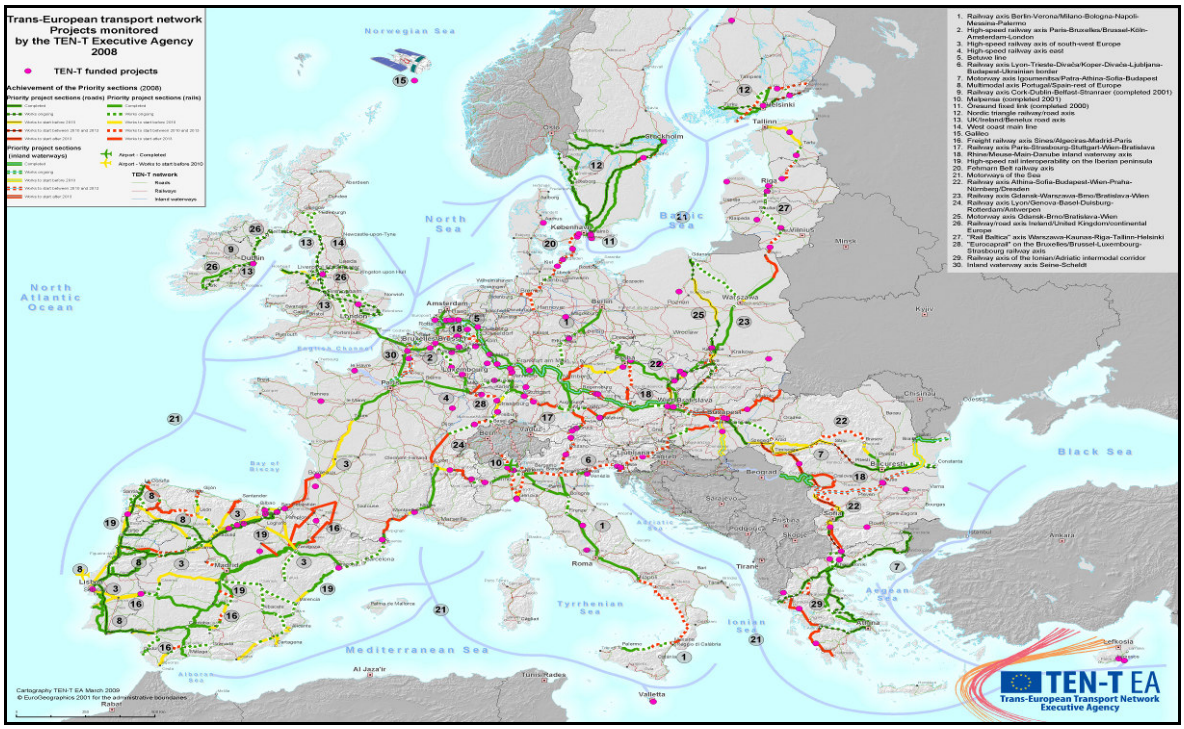

Figure 2-6 European priority axes and projects

Table 2-3 European priority axes

Priority axis	MSs involved	End of works confirmed by MS	Total cost in M EUR	Total investment before 2007 in M EUR	Total 2007-2013 in M EUR	Remaining investment in M EUR
PP1 Railway axis Berlin-Verona/Milan-Bologna-Napels-Messina-Palermo	AT, IT, DE	2024	47.054,61	22.370,53	14.285,63	10.398,45
PP2 High-speed railway axis Paris-Brussels/Brussels-Cologne-Amsterdam-London	BE, DE, NL, UK	2015	18.848,01	16.954,61	1.857,07	36,33
PP3 High-speed railway axis of south-west Europe	ES, FR, PT	2020	50.656,68	10.556,20	26.782,65	13.317,83
PP4 High-speed railway axis east	FR, DE	2013	5.255,00	4.521,60	590,60	142,80
PP5 Betuwe Line	NL	2008	4.776,40	4.361,00	415,40	0,00
PP6 Railway axis Lyon-Trieste-Divaca/Koper/Divaca-Ljubljana-Budapest-Ukrainian border	FR, HU, IT, SL	2025	60.741,96	7.827,03	10.427,94	42.486,98
PP7 Motorway axis Igoumenitsa/Patra-Athina-Sofia-Budapest	BG, GR, RO	2020	14.928,70	10.051,10	4.727,60	150,00
PP8 Multimodal axis Portugal/Spain-rest of Europe	ES, PT	2017	15.324,54	8.882,71	4.752,97	1.688,86
PP9 Railway axis Cork-Dublin-Belfast-Stranraer (COMPLETED)	IRL, UK	2001	357,00	357,00	0,00	0,00
PP10 Malpensa Airport (Milan) (COMPLETED)	IT	2001	1.344,00	1.344,00	0,00	0,00
PP11 Öresund fixed link (COMPLETED)	DK, S	2001	4.158,00	4.158,00	0,00	0,00
PP12 Nordic triangle railway-road axis	FIN, S	2016	11.746,37	4.364,40	5.705,37	1.676,60
PP13 UK-Ireland/Benelux road axis	IRL, UK	2015	7.526,44	3.285,65	4.057,80	182,99
PP14 West Coast Main Line	UK	2009	12.629,24	10.896,37	1.732,87	0,00
PP16 Freight railway axis Sines/Algeciras-Madrid-Paris	ES, PT	2020	8.899,04	48,80	1.100,34	7.749,90
PP17 Railway axis Paris-Strasbourg-Stuttgart-Vienna-Bratislava	AT, FR, DE, SK	2020	13.563,29	3.528,68	6.779,99	3.254,62
PP18 Rhine/Meuse-Main-Danube inland waterway axis	AT, BE, BG, DE, HU, NL, RO	2016	2.103,28	45,29	1.075,55	982,44
PP19 High-speed rail interoperability on the Iberian peninsula	ES, PT	2020	41.770,45	5.236,30	33.194,37	3.339,78
PP20 Fehmarn Belt railway axis	DE, DK	2018	7.930,70	36,72	2.680,50	5.213,48
PP22 Railway axis Athina-Sofia-Budapest-Vienna-Prague-Nürnberg/Dresden	AT, BG, CZ, DE, GR, HU, RO	2020	12.641,80	465,36	5.618,52	6.557,92
PP23 Railway axis Gdansk-Warsaw-Brno/Bratislava-Vienna	CZ, PL, SK	2017	6.159,17	1.384,42	3.296,22	1.478,53
PP24 Railway axis Lyon/Genoa-Basel-Duisburg-Rotterdam/Antwerp	BE, DE, FR, IT, NL	2020	22.647,29	2.103,69	5.421,19	15.122,41
PP25 Motorway axis Gdansk-Brno/Bratislava-Vienna	AT, CZ, PL, SK	2017	6.845,96	1.063,50	5.782,46	0,00
PP26 Railway-road axis Ireland/United Kingdom/continental Europe	IRL, UK	2020	6.242,82	2.356,39	2.473,43	1.413,01
PP27 Rail Baltica axis Warsaw-Kaunas-Riga-Tallinn-Helsinki	EE, LT, LV, PL	2020	3.198,19	50,00	1.556,19	1.592,00
PP28 Eurocaprail on the Brussels-Luxembourg-Strasbourg railway axis	BE, LUX	2013	1.183,19	18,76	1.083,23	81,20
PP29 Railway axis if the Ionian/Adriatic intermodal corridor	GR	2019	4.308,00	81,00	1.074,00	3.153,00
PP30 Inland waterway Seine-Scheldt	BE, FR	2016	4.422,41	21,31	4.097,70	303,40
Total			**397.262,54**	**126.370,42**	**150.569,57**	**120.322,55**

The scope of the priority axes and projects involve a considerable extension of the European high-speed rail network. In the White Paper 2001 (EC 2001) the European Commission emphasises the importance of investments in high-speed rail infrastructure "to replace air transport and encourage rail companies, airlines and airport managers not just to compete, but also to cooperate" (EC 2001: 52). An important political goal is the integration of the high-speed rail network with air transport.

The presentation of the *TEN-T priority axes and projects* (EC 2005, EC 2008a) gives an overview of state-of-the-art and further investments along the axes. Projects with evident relevance for passenger intermodality and interconnectivity are as follows:

- Priority Project 8, Multimodal axis Portugal/ Spain-rest of Europe: The new Alcochete airport in Lisbon will be part of the multimodal axis and as such be connected to the Iberian high-speed rail system.
- Priority Project 10, Malpensa Airport: There are plans to connect Gallarate Station (FS) and Milan's Central Station (FS) allowing for easy connections to international high-speed lines.
- Priority Project 15, Galileo: Galileo is a European initiative to create a global navigation satellite system (GNSS) offering precise positioning and timing services for commercial and personal users anywhere in the world, using small and inexpensive receivers. The implementation of Galileo will create a large variety of applications in the field of Intelligent Transport Systems (ITS), covering all modes.
- Priority Project 17, Railway axis Paris-Strasbourg-Stuttgart-Wien-Bratislava: Connection of Stuttgart airport to the high-speed rail network and improved connection to the regional rail network.
- Priority Project 19, High-speed rail interoperability in the Iberian Peninsula: The project involves the construction of new lines and the installation of dual-gauge sleepers, third rails or axle-gauge changeover stations on the Spanish and Portuguese high-speed rail networks, in order to make them fully interoperable with the rest of the trans-European rail network.
- Priority Project 27, "Rail Baltica" Warsaw-Kaunas-Riga-Tallinn-Helsinki rail link: The realisation of this rail corridor will substantially improve the interconnectivity of rail passenger transport between Poland and Lithuania, also by overcoming the problem of different gauges in Poland (standard gauge) and the Baltic States (broad gauge).
- Considerations of improving access to the Marco Polo Venice International Airport: Marco Polo Venice International Airport faces several interconnectivity issues. The air terminal has to be extended and its accessibility needs to be improved especially in terms of interconnections with the rail and high-speed rail networks.
- Considerations of improving access to the Fiumicino Airport in Rome: Since Rome's existing Fiumicino Airport is expected to face an increase in passenger demand, it is necessary to ensure the growth and development of the airport over the following decades.

Other priority corridors will improve intermodality and interconnectivity for passenger transport, too. In most cases the improvement of intermodality and interconnectivity along the European priority corridors has to be achieved at national and regional level of transport policy-making.

Rail interoperability has played an important role in EU transport policy: the *Directive on the Interoperability of the Trans-European Conventional Rail System* (EPC 2001) set up the basis for achieving a higher level of interoperability on the TEN-T rail network, whereas *Directive 2008/57/EC on the Interoperability of the Rail System within the Community* (EPC 2008) represents a merger of provisions of earlier interoperability directives with regard to the TEN-T and the high-speed rail network[3].

This Directive sets out to "achieve interoperability within the Community rail system" as concerns "the design, construction, placing in service, upgrading, renewal, operation and maintenance of the parts of

[3] Merger of: Council Directive 96/48/EC of 23 July 1996 on the interoperability of the trans-European high-speed rail system; Directive 2001/16/EC of the European Parliament and of the Council of 19 March 2001 on the interoperability of the trans-European conventional rail system; Directive 2004/ 50/EC of the European Parliament and of the Council.

this system as well as the professional qualifications and health and safety conditions of the staff who contribute to its operation and maintenance". Furthermore, the measures associated with the European Priority Project 19, High-speed rail interoperability on the Iberian Peninsula, will significantly improve interconnectivity of passenger rail transport within Spain and Portugal, as well as between these countries and other European countries. Finally, a European Coordinator has been nominated to push the implementation of a common interoperable European Rail Traffic Management System (ERTMS) along important transnational corridors – another measure to foster interconnectivity of rail networks of different EU member states.

The *Directive […] on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure* (EPC 2007b) sets out to establish the conditions to be met to achieve interoperability within the Community rail system.

Conditions concern the design, construction, lacing in service, upgrading, renewal, operation and maintenance of all parts of this system, as well as the professional qualifications and health and safety conditions of the staff contributing to its operation and maintenance. The communication document *Facilitating the movement of locomotives across the European Union* (EC 2006c) emphasises the requirement of removing technical and operational barriers to international rail activities with the help of the rail industry and the European Railway Agency.

Integrating network planning and spatial planning

Following the White Paper 2001, the European Commission considers transport not only a commodity subject to market rules, but rather as a service of general interest for the public benefit. In order to ensure continuity of journeys an integration of further integration of land-use/ town planning aspects and transport planning is regarded as essential (EC 2001). The Communication document *Developing the citizens' network* (EC 1998b) postulates that transport policy should be considered a crucial component of strategies for spatial planning, economic development and social cohesion. The requirement for a stronger integration of spatial planning and transport planning is also emphasised by the document *A sustainable future for transport — Towards an integrated, technology-led and user-friendly system* (EC 2009a). When taking decisions on locations, public authorities and companies should consider the consequences of their choices in terms of travel needs of clients and employees.

Integrating European and regional transport networks

In the Communication document *Developing the citizens' network* (EC 1998b), the European Commission raises the question, how to ensure local and regional connections to the TEN-T and in how far intermodal passenger terminals should be included in the guidelines for the development of the TEN-T. In another communication document, *Cohesion and transport* (EC 1998c), the requirement is emphasised "to improve access to infrastructure by removing technical obstacles linked to the national transport systems" and to undertake in peripheral regions "complementary investment in secondary networks, in order that those regions may gain maximum benefit from the TENs".

The *Action Plan on Urban Mobility* (EC 2009c) emphasises the requirement of integrating the urban role in the European transport system, in order to obtain a coherent mobility system. In the *TEN-T: implementation of the Priority Projects Progress report* (EC 2008a) the notion of "integrated network policy" is defined by a political approach that "aims to bring together all related aspects of transport policy, but also other key elements", such as "regional considerations".

Enhancing accessibility of regions and airports

The European Commissions document on *Cohesion and transport* (EC 1998c) underlines the role of transport policy for "strengthening the economic and social cohesion of the European Union" and for helping to "reduce regional disparities, particularly by improving access to island and peripheral regions".

According to the *Community guidelines for the development of the trans-European transport network* (EC 2008b), it is a main objective to integrate all territories of the Member States into the European transport network, and especially to facilitate the accessibility of peripheral regions. Connections of regional transport networks with the main axes of the European transport network most usually require intermodal interfaces, since short and long-distance transport is usually covered by different modes.

In order to facilitate the accessibility of regions it is planned for several priority projects to develop intermodal terminals: For instance, the connection of the railway axis Paris-Strasbourg-Stuttgart-Wien-Bratislava to the transport network of the Stuttgart region via the intermodal terminal at Stuttgart airport; the new Alcochete airport in Lisbon to become part of the multimodal axis and as such be connected to the Iberian high-speed rail system; or the plan to interconnect the Marco Polo Venice International Airport with the rail and high-speed rail network (EC 2005a, EC 2008a).

Because of their strategic relevance not only for the accessibility of regions, but also for interconnections within the European as well as the global transport network, airports are given a particularly high priority in European transport policy. Consequently, also the accessibility of airports is treated separately. In the *Community guidelines for the development of the trans-European transport network* (EC 2008b) it is stated, that international and Community connecting points shall – where appropriate – be gradually linked to the high-speed lines of the rail network. Regional connecting points and accessibility points shall facilitate access to the core of the network or help to open up peripheral and isolated regions.

Improving intermodality at passenger terminals

The importance of a high level of accessibility of public transport services is emphasised by the Communication documents *Developing the citizens' network (EC 1998B)* and *Cohesion and transport* (EC 1998c). Achieving high quality accessibility of public transport terminals is a basis for the provision of seamless interconnections between different modes of transport, which is closely related to the aim of making use of complementarities between transport modes, according to their comparative advantages. Potential efficiency gains can only be realised if accessibility of transport across different modes is ensured. Today passengers often waste significant time and effort at interchanges which makes public transport solutions less attractive and competitive. In order to facilitate transfers from one network or mode to another, the terminals where different networks intersect need to be improved. This can be fostered by the construction of so-called multimodal terminals where passengers can easily change modes, quickly access information, and feel safe, secure and comfortable. Such terminals will save time for users, thereby making public transport more attractive (EC 2009a, EC 2006) and – together with further measures – results in an intermodal door-to-door transport system which people can use as an *Integrated Citizens' Network* (EC 1998b).

Besides this physical aspect of accessibility, also *virtual* accessibility needs to be taken into account, meaning that all relevant information on the interconnection of modes is easily accessible from every point before and during the journey. Encouragement needs to be given also to integrated ticketing systems.

Within this context, European passenger transport policies repeatedly mention the relevance for interconnections between the modes of rail, high-speed rail and air, since complementarities become particularly relevant when it comes to combining the positive aspects of air and rail networks.

Accordingly, in the Commission's communication *A sustainable future for transport — Towards an integrated, technology-led and user-friendly system* it is stated that in particular, the integration of aviation with high-speed rail shall be improved (EC 2009a).

The aim to facilitate accessibility between air and rail is also stated in the *Community guidelines for the development of the trans-European transport network*. It is mentioned that high-speed rail and regional rail networks as well as airports shall permit interconnection with each other and therefore enable passengers to seamlessly change between different modes (EC 2008b).

At least three interfaces between air and rail exist and bring specific benefits to the society (EC 2007a):

- Links to the city with the benefits of de-congestion of road traffic and better air quality around airports;
- Links to the region with the same benefits and expansion of the airport's catchment area;
- Links between airports and major metropolitan areas through high-speed rail.

A combination of physical and informational measures is expected to enhance the cross-modal accessibility. In doing so the attractiveness of public transport could be increased (EC 2001).

Fostering co-modality and complementarity among modes

One of the main challenges of transport policy is to make efficient use of existing infrastructures. In this context it is argued, that in order to achieve an optimal and sustainable utilisation of resources, it has to be ensured that different modes are not only used efficiently on their own, but also in combination with other modes (EC 2006). Consequently, in their *Community guidelines for the development of the trans-European transport network* (EC 2008b), the European Parliament and Council state that the network has to include all modes of transport and apply them according to their comparative advantages in order to make optimal use of existing capacities.

This implies that transport policy aims to realise potential complementarities between modes rather than constructing parallel infrastructures and fostering intermodal competition. This is not only relevant within the Trans-European transport networks, but becomes particularly true for urban transport networks, which are more commonly affected by congestion. Therefore, co-modality is one of the central elements of urban transport policies. Urban transport networks are often constructed and operated independently next to each other without making use of the comparative advantages.

Suburban railway systems, tram-train systems, and well-located *Park & Ride* facilities at collective transport terminals in the outskirts of towns and cities are potential solutions, which have already proved to be successful in practice, to combine the strengths of different urban transport modes and to avoid congestion (EC 2007b).

Aiming to achieve ease of intermodal trips

Obtaining information, ordering tickets and transferring from one mode to another when journeys involve several transport companies or different means of transport, can be complicated due to inadequate infrastructure (lack of parking space for cars or bicycles, for example) and informational barriers. These obstacles in modal transfers are a main challenge in making public passenger transport more convenient and competitive with private transport solutions. Therefore, the White Paper 2001 (EC 2001) particularly proposes the integration of ticketing solutions and baggage handling. Integrated ticketing solutions, are expected to promote transparency of prices of multimodal trips and reduce transaction costs.

Dutch train companies offering integrated *Train & Taxi* service in a single ticket serve as a positive example. Similar solutions could be applied between rail-air and air-urban transport. Integrated baggage handling would facilitate intermodal trips by saving time at terminals since passengers don't have to look after their luggage during transfers. The air-rail service provided by the German airline/ railway companies Lufthansa and Deutsche Bahn serves as a benchmark. Air-rail passengers can check in their luggage at the railway station and enjoy the same rights and services as ordinary air passengers (EC 2001).

This holds particularly true for urban transport. In the *Action Plan on Urban Mobility* (EC 2009c) it is referred that high quality and affordable public transport is the backbone of a sustainable urban transport system. The attractiveness of bus, metro, tram and trolleybus services, rail or ships is highly dependent on reliability, information, safety and ease of access.

Motivating the use of Intelligent Transport Systems (ITS)

The optimal functioning of the transport system requires full integration and interoperability of the individual parts of the network, especially of the nodes. Since new infrastructure is costly, the focus should be on the optimal use of existing facilities. With this intention the Commission's *Green Paper: TEN-T: A policy review* (EC 2009b) proposes to upgrade existing infrastructures through Intelligent Transport Systems (ITS) – using modern information technology – since ITS' are in many cases the cheapest way to enhance the overall performance of the transport system. Given their relatively low cost compared to hard infrastructure building, and the opportunity of combining and optimising public and private sector investment, social benefits and the return on investment are considerable.

In its communication *A sustainable future for transport — Towards an integrated, technology-led and user-friendly system* (EC 2009a) the Commission states, that ICT solutions should be developed as a support for better management and integration of transport flows – e.g. by utilising the possibilities offered through the Galileo satellite positioning system (EC 2005a, EC 2008a). Moreover, ITS can be used to facilitate the accessibility of relevant information for passengers across different modes of transport. As such it is envisioned to make Transport documents and tickets electronic and multimodal, while preserving privacy of personal data. In this new framework, questions of liability, dispute settlement and complaints handling across the whole transport chain should be clarified and streamlined (EC 2009a).

Also in the *Community guidelines for the development of the trans-European transport network* (EC 2008b) it is stated, that intelligent systems shall be promoted in order to optimise the capacity and efficiency of existing and new infrastructure and in order to promote intermodality. The Communication document *Trans-European networks: Towards an integrated approach* (EC 2007d) postulates that "new technologies", i.e. Intelligent Transport Systems (ITS), the European Rail Traffic Management System (ERTMS) and the European satellite navigation project GALILEO, should be integrated into all projects of the TEN-T.

The same holds true in terms of raising efficiency of urban transport systems. In its *Action Plan on urban mobility* (EC 2009c) the Commission states that in order to provide a high quality, affordable and attractive public transport it is essential to improve the provision of relevant passenger information through the connection of different media and information systems across different modes. ITS shall be applied on an intermodal basis in order to allow users to make informed choices on modes and travel times and thereby lead to a higher use of intermodal transport (EC 2009c, EC 2007b).

Enforcing passenger rights

In order to make public transport more convenient and reliable, it is important to guarantee basic services like information for travellers, ticket sales, reservation systems, protection and assistance to disabled persons and increased personal security of passengers. Following the regulation on passenger right in air traffic the regulation of the European Parliament and the Council on *Rail passengers´ rights and obligations* (EPC 2007) targets these issues for rail services. Thereby the main emphasis is on provision of information, baggage handling and definition of liabilities in cases of claims for cross-modal transport.

Similar actions are intended for urban public transport services. These face the difficulty of having to coordinate measures and guarantees across many different organisations and private operators. The Commission intends to facilitate the coordination between stakeholders by establishing platforms (for user associations, operators and authorities) for the strengthening of passenger rights (EC 2009c).

2.4.4 Synthesis of focal points with respect to HERMES dimensions

The current section intends to categorise the identified focal points of EU transport policy with respect to HERMES sub-domains and transport modes.

In HERMES, interconnectivity/ intermodality imply a concept, which consists of the following six sub-domains (Macário et al. 2010):

- Legal and regulatory (market access, minimum operating and service requirements and other relevant regulation);
- Contractual (company agreements);
- Institutional (regulators and organizing agencies);
- Physical/ technical (time and space as well as interfaces);
- Logical/ informational;
- Economic (fares).

In Table 2-4, the identified focal points are associated with these sub-domains of interconnectivity. A coloured cell indicates that a certain policy focal point refers to a respective HERMES sub-domain. The darker the colour of the cell, the stronger is the relationship between the focal point and the respective HERMES sub-domain. The overview reveals that most European policies on passenger intermodality and interconnectivity refer to following three sub-domains: contractual, institutional, physical/ technical and logical/ informational aspects. Most focal points refer in one way or the other to one of these sub-domains, suggesting that European transport policy mainly focuses on practical barriers, which users, transport operators and public decision makers face.

The focus on contractual/ institutional aspects of interconnectivity underlines the relevance of contractual frameworks between operators and public authorities when it comes to the integration of transport systems of different modes. Physical/ technical aspects also play an important role since most policies target the extension or integration of existing networks and the adaption to standards.

A main barrier to intermodality seems to exist in terms of the logical/ informational interface between transport systems of different modes. Accordingly, measures to improve the exchange of information and the linkage of key activities between modes are treated extensively.

Regulatory interventions mainly play a role when it comes to the standardisation of infrastructure networks as well as charging schemes. The sub-domain *Economic* represents aspects of cash flows between stakeholders and is therefore particularly affected by policies regarding practical solutions both on site (terminals) and for cross-modal network management systems.

Table 2-4 Allocation of focal points and HERMES sub-domains

	Legal/ regulatory	Contractual	Institutional	Physical/ Technical	Logical/ Informational	Economic
Pushing major infrastructure projects						
Fostering the development of a European high-speed rail network						
Improving railway interoperability						
Integrating network planning and spatial planning						
Integrating European and regional transport networks						
Enhancing airport accessibility						
Enhancing regional accessibility						
Improving intermodality at terminals						
Fostering co-modality/ complementarity among modes						
Aiming to achieve ease of intermodal trips						
Motivating the use of Intelligent Transport Systems (ITS)						
Enforcing passenger rights						

The allocation of focal points to modes of transport reveals that the modes air, rail and high-speed rail play a key role in European policies with respect to intermodality and interconnectivity of passenger transport (Table 2-5). A coloured cell indicates that a certain policy focal point refers to a mode of transport. The darker the colour of the cell, the stronger is the relationship between the focal point and the mode of transport.

Since these modes are mainly used in long distance transport, the European perspective to connect national transport networks is reflected, as well as the political aim to shift traffic towards environment friendly modes such as rail. The high representation in the set of TEN-T priority projects underlines the importance of rail mode for EU policy goals. Modes like ferry, coach, bus and urban transport systems are in particular concerned when it comes to integrated network planning, the integration of European and regional networks, as well as the integration of different modes at the operational level.

Table 2-5 Allocation of focal points and modes of transport

	Air	Rail	High-speed rail	Ferry	Coach/ Bus	Urban transport systems	Taxi	Passenger car	Slow modes
Pushing major infrastructure projects									
Fostering the development of a European high-speed rail network									
Improving railway interoperability									
Integrating network planning and spatial planning									
Integrating European and regional transport networks									
Enhancing airport accessibility									
Enhancing regional accessibility									
Improving intermodality at terminals									
Fostering co-modality/ complementarity among modes									
Aiming to achieve ease of intermodal trips									
Motivating the use of Intelligent Transport Systems (ITS)									
Enforcing passenger rights									

2.5 SYNTHESIS AND SUMMARY

Based on the diligent analyses of EU policy documents, the following *focal points* of EU transport policy with respect of passenger intermodality/ interoperability have been identified:

- Pushing major infrastructure projects;
- Fostering the development of a European high-speed rail network;
- Improving railway interoperability;
- Integrating network planning and spatial planning;
- Integrating European and regional transport networks;
- Enhancing airport accessibility;
- Enhancing regional accessibility;
- Improving intermodality at terminals;
- Fostering co-modality and complementarity among modes;
- Aiming to achieve ease of intermodal trips;
- Motivating the use of Intelligent Transport Systems (ITS);
- Enforcing passenger rights.

Consolidating these *focal points*, three main pillars of strategic policy objectives can be identified, to which these *focal points* can be allocated. These pillars strongly correspond to some of the strategic policy goals in the White Paper 2001 (EC 2001):

1) Unblocking the major routes **<=>** Improving transport infrastructure
2) Transport with a human face **<=>** Improving the user-friendliness of passenger transport
3) Rationalising urban transport **<=>** Improving efficiency of and reducing demand potential for urban transport

Figure 2-7 gives an overview of the identified focal points of EU policies as well as to which of the three pillars of strategic transport policy measures they refer to.

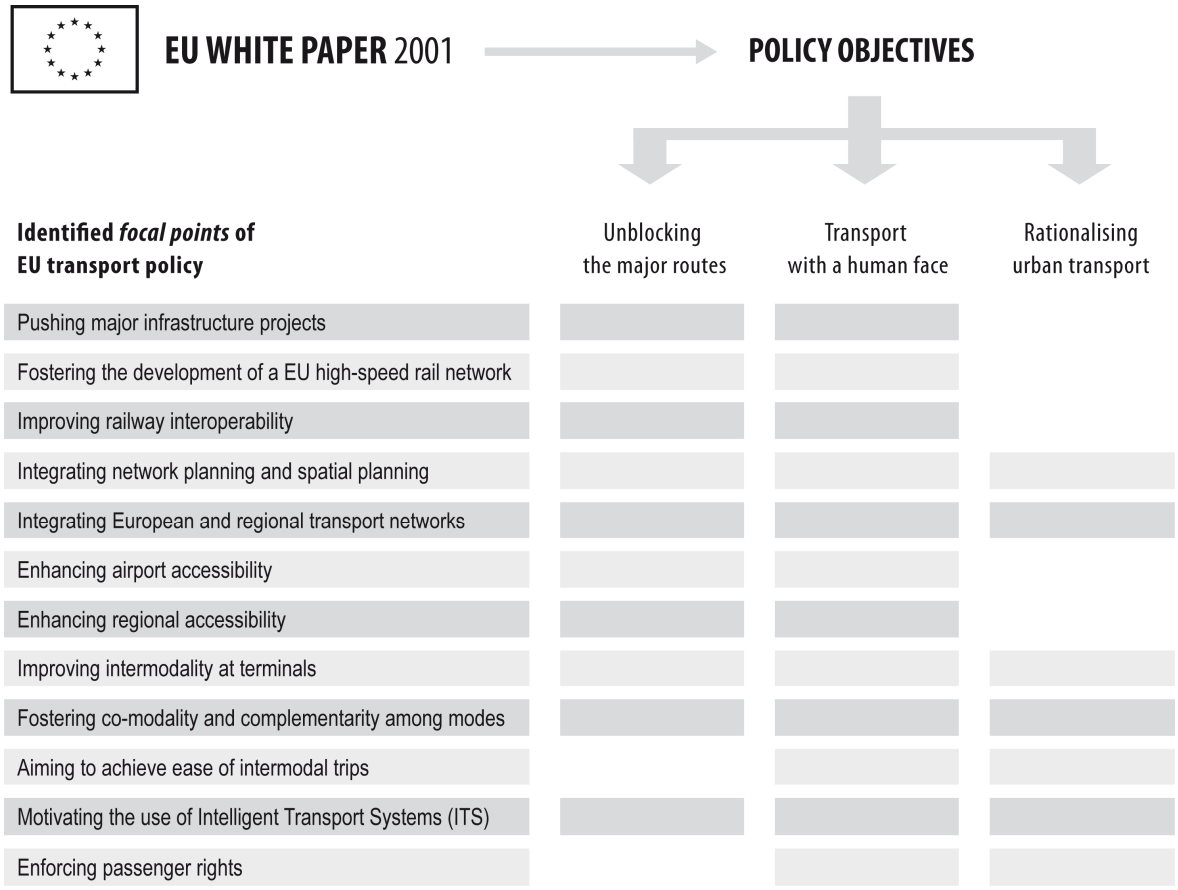

Figure 2-7 Identified focal points and grouping of EU policy with respect of passenger intermodality/ interconnectivity

Pillar (1): The planned investments in the TEN-T, particularly in the priority infrastructure projects, are expected to result in positive impacts on passenger intermodality and interconnectivity, particularly in terms of improving physical interfaces between different modes and between different networks of the same mode. The priority TEN-T projects embrace GALILEO, whose implementation will foster innovative mobility solutions and efficient use of transport infrastructure, and, thus, will support policy objectives associated with each of the three pillars.

Pillar (2): Improving the user-friendliness of passenger transport implies facilitating intermodal trips. An important pre-condition is to enable customers to plan intermodal trips by inter-modal timetable information systems, and to offer cross-modal ticketing solutions (intermodal through-ticketing). Furthermore, services across modes to ease intermodal trips have to be fostered, such as baggage handling. Finally, the pillar embraces the applicability of passengers' rights not only to an individual trip of an individual mode, but rather for each trip of an intermodal trip chain.

Pillar (3): In urban areas with high population density, negative impacts of intra-zonal and transit traffic raise a high level-of-concern. Therefore, EU transport policy postulates efficient and environmentally friendly transport systems in urban areas. To achieve this, the services offered by public transport modes have to allow user-friendly interchanges between different public modes, as well as between public transport modes and taxis and between public transport modes and private transport (slow modes and passenger car). Furthermore, urban public transport modes have to be interconnected to long-distance and regional public transport modes. Such efficient urban transport system requires physical interfaces at terminals, inter-coordinated service concepts, and a sound institutional framework. In order to reduce the demand potential of urban passenger transport, the EU stipulates an integrated planning of land-use/ urban planning and transport planning.

Given the current economic trends and in the passenger transport market, some of the *main challenges* on the way to the implementation of all proposed EU policy goals with respect of passenger intermodality/ interconnectivity are to cope

- with the complexity of planning to coherently interconnect strategic European transport axes with regional and local networks;
- with the increasing complexity and dissimilarity of the supply market;
- and with the effects of the financial crisis on the public budgets.

First, most of the EU priority projects represent large infrastructure investments along corridors, which are of strategic interest for trans-national, long-distance transport flows across Europe. Although in some examples linkages of these large-scale projects with other modes, or with regional and local networks are intended, the logical and physical connection of the strategic European corridors with regional and local networks often remains a challenge. This is due to the fact that the integration of transport service concepts across different spatial entities – ranging from the strategic EU perspective to the regional, local and urban scope – is a highly complex task due to the high number of different stakeholders, which have to take part in the process of decision-making and planning.

Second, current trends on the supply side of the passenger transport market reveal an increase in the number of operators and service concepts, which will make it more challenging to find consensus among different operators to offer certain intermodal passenger services. For instance, the deregulation of the long-distance rail market by the EU's Third Railway Package will increase the number of service providers.

For instance, even an airline company (KLM/ Air France) will enter the high-speed rail market in the next few years in order to compete with 'traditional' railway companies. On the one hand, this example reveals new possibilities for passenger intermodality/ interconnectivity, but, might on the other hand, result to an increase in complexity of negotiations to improve interconnectivity between high-speed rail and regional or local rail networks.

Third, the effects of the financial crisis and its severe impacts on public budgets are very likely to result in inability – or at least in reluctance – of national governments and regional/ urban authorities to invest in transport infrastructure. As an example, the Portuguese government recently has decided to postpone the financing of the Alcochete airport in Lisbon and the construction of high-speed rail lines between Portugal and Spain in order to save public funds. The lower the amount of public funds available for investments in transport infrastructure, the higher becomes the need for participation of private investors, for instance by Private Public Partnerships (PPP). This will involve more and more the requirement to develop services for passenger intermodality and interconnectivity in terms of business concepts, which are actually profitable. The HERMES project may well provide valuable solutions, as the development of business models for cross-modal passenger services will be a major focus within the HERMES project.

3 SPECIAL ASPECTS OF EU POLICY

3.1 SOCIAL COHESION AND ACCESSIBILITY

This chapter addresses the consequences of the absence of sufficient provision for interconnection between local and intercontinental networks by European transport networks and whether/how the absence of such provision detracts from the role of the passenger TEN in improving social and sustainable cohesion, as well as improving accessibility particularly to peripheral regions and neighbouring countries.

If the passenger TEN does not provide sufficient interconnection between local and intercontinental networks it would leave some regions in the EU less accessible compared to other regions and the people who live in these regions would have less access to the rest of the EU and other continents. In this context the accessibility of a region can have a big impact on the regions future development both economically and social. In a globalised world lack of accessibility can make regions unattractive regarding e.g. investments, location of business and as home for educated professionals[4].

At the regional level, the lack of access to and from the region can have a negative impact on the business climate and the liveability of the region. Business find inaccessible regions unattractive for location and investments and educated professionals seek dynamic places to live in, with good access to the rest of Europe and the world[5]. Some less accessible peripheral regions in the member states are already lagging behind when it comes to economic development, level of education and social standards in comparison with the central parts of the EU[6]. So if the interconnections between local/regional networks and intercontinental networks are not provided by TEN, these regions and other new regions could be left behind in the economic development and become marginal regions in the EU. As a result the lack of provision of interconnection by TEN might lead to less social and economical cohesion in the EU.

The interconnections to the neighbouring countries of the EU are also important from an EU perspective. These countries, especially east of the EU, are growing economies with growing markets that are important for the future development of the EU[7]. At the same time they are on the borders of the EU and if left behind they could potentially create/be part of border areas with social and economic instability.

3.2 EXAMPLES FOR INTERCONNECTIONS FROM SOME KEY EUROPEAN TRANSPORT NODES

This chapter addresses the quality of the available interconnections between key European transport nodes airports, ferry ports and rail stations and (I) the local/regional networks, and (II) the wider long distance networks.

[4] Sassen, S. (2001): Global Cities and Global City-Regions: A Comparison. Pp. 78-95 in: Scott, A. J. (ed.): Global City-Regions. Trends, Theory, Policy. Oxford, Oxford University Press.

[5] Panayotou, T. (2001): Environmental Sustainability in Developing Global City-Regions. Pp. 419-450 in: Scott, A. J. (ed.): Global City-Regions. Trends, Theory, Policy. Oxford, Oxford University Press.

[6] EU Structural Funds and Economic Development of Southern Italy, 2007 http://www.visionandvalue.com/insights/evaluationstructuralfundsitalynew.pdf

[7] http://ec.europa.eu/news/external_relations/100512_2_en.htm

3.2.1 Key European Airports

	Airport	City	Country	2009 PAX*
1.	Heathrow	London	United Kingdom	66.037.578
2.	Charles de Gaulle	Paris	France	57.906.866
3.	Frankfurt	Frankfurt	Germany	50.932.840
4.	Barajas	Madrid	Spain	48.270.581
5.	Schiphol	Amsterdam	Netherlands	43.570.310
6.	Leonardo da Vinci-Fiumicino	Rome	Italy	33.808.456

*The data are from Airports Counsel International, Passenger Traffic 2008 FINAL.
http://www.airports.org/cda/aci_common/display/main/aci_content07_c.jsp?zn=aci&cp=1-5-54-55_666_2__

Heathrow airport

Heathrow is the busiest airport in the European Union in terms of passenger traffic and it is located 22 kilometres west of central London.

Train	
Local / Regional	*Long distance*
It is well connected to London with options for both trains and underground directly from the terminals.	There are no direct LD train connections, but via the local train network to London a number of LD railway services can be reached.
Bus	
Local / Regional	*Long distance*
A number of operators provide connections to central London, as well as connections to nearby railway stations.	LD bus services ensure that Heathrow is easily reached by bus.
Car	
Local / Regional	*Long distance*
There are six car parks with bus shuttle service in the airport.	Located at the intersection between highways M4 and M25, Heathrow is well connected to the national road network.

http://www.heathrowairport.com/
http://www.heathrow-airport-guide.co.uk/
http://en.wikipedia.org/wiki/London_Heathrow_Airport
http://maps.google.com/maps?hl=en&q=Heathrow%20Airport&um=1&ie=UTF-8&sa=N&tab=wl

Charles de Gaulle airport

The airport is located 25 kilometres north east of Paris and it is the main airport in France.

Train	
Local / Regional	*Long distance*
The Airport is connected directly from the terminals to Paris by train.	Direct access to the rest of France is possible by train. From terminal 2 a high speed train connection is available.
Bus	
Local / Regional	*Long distance*
Several busses operate between Paris and Charles de Gaulle.	There are no LD bus services available from Charles de Gaulle.
Car	
Local / Regional	*Long distance*
Located close to the city centre, the airport is well connected to the local road network.	The Airport is connected directly to the national highway network via the E15/E19 highway.

http://www.paris-cdg.com/transportation.php
http://www.aeroportsdeparis.fr/ADP/fr-fr/Passagers/accueil/
http://en.wikipedia.org/wiki/Paris-Charles_de_Gaulle_Airport
http://maps.google.com/maps?hl=en&q=Charles%20de%20Gaulle%20Airport&um=1&ie=UTF-8&sa=N&tab=wl

Frankfurt airport

The airport is located in the second largest metropolitan region in Germany, 12 kilometres from Frankfurt am Main city centre.

Train	
Local / Regional	*Long distance*
The Airport is connected directly from the terminals by a suburban/regional train station.	Direct access to the rest of Germany is possible from a separate long distance railway station.
Bus	
Local / Regional	*Long distance*
There is a bus terminal right in front of Terminal 1 arrival hall.	-
Car	
Local / Regional	*Long distance*
Located close to the city centre, the airport is well connected to the local road network.	The Airport is connected directly to the European highway network (E42 and E451)

http://www.frankfurt-airport.com/cms/default/rubrik/24/24139.airportcity_com.html
http://en.wikipedia.org/wiki/Frankfurt_Airport
http://maps.google.com/maps?hl=en&q=Frankfurt%20Airport&um=1&ie=UTF-8&sa=N&tab=wl
http://www.rmv.de/coremedia/generator/RMV/AutoCo/Flugzeug/FlughafenFrankfurt/inhalt_3Den.html

Barajas airport

The airport is located 13 kilometres from Madrid city centre.

Train	
Local / Regional	*Long distance*
The Airport is connected directly from terminals 2 and 4 by metro to Madrid.	There are no direct regional train connections, but via the metro network a number of railway stations with service to the rest of Spain can be reached.
Bus	
Local / Regional	*Long distance*
Public bus lines run between the airport and a central station, connecting the airport to several regional busses and trains.	Several intercity bus lines call at the airport.
Car	
Local / Regional	*Long distance*
Located close to the city centre, the airport is well connected to the local road network.	Encircled by M50, M40 and E5, the airport is well connected to the European highway network.

http://www.madrid-mad.com/
http://www.aena.es/csee/Satellite?cid=1049727006353&pagename=subHome&SiteName=MAD&c=Page&Language=EN_GB
http://en.wikipedia.org/wiki/Madrid-Barajas_Airport
http://maps.google.com/maps?hl=en&q=Barajas%20Airport&um=1&ie=UTF-8&sa=N&tab=wl

Schiphol airport

The airport is located 9km south west of Amsterdam.

Train	
Local / Regional	*Long distance*
A railway station located underneath the main passenger terminal ensures direct access to Amsterdam as well as the major cities in the Netherlands and HSR connections to France and Germany.	
Bus	
Local / Regional	*Long distance*
Several busses connect Schiphol with the city centre.	-
Car	
Local / Regional	*Long distance*
Located close to the city centre, the airport is well connected to the local road network.	The Airport is connected directly to the national highway network via E19.

http://www.schiphol.nl/
http://en.wikipedia.org/wiki/Amsterdam_Airport_Schiphol
http://www.amsterdam.info/airport/
http://maps.google.com/maps?hl=en&q=Schiphol%20Airport&um=1&ie=UTF-8&sa=N&tab=wl

Leonardo da Vinci-Fiumicino

The airport is located 35 kilometres west of the old historic centre of Rome.

Train	
Local / Regional	*Long distance*
Express and local trains connect the airport to central Rome.	There are no LD rail services directly from the Leonardo da Vinci airport.
Bus	
Local / Regional	*Long distance*
Several busses connect the airport with the city centre.	-
Car	
Local / Regional	*Long distance*
The airport is well connected to the local road network.	The Airport is connected directly to the national highway network (E80).

http://en.wikipedia.org/wiki/Leonardo_da_Vinci-Fiumicino_Airport
http://www.rome-airport.info/
http://maps.google.com/maps?hl=en&q=Leonardo%20da%20Vinci-Fiumicino&um=1&ie=UTF-8&sa=N&tab=wl
http://www.airport-desk.com/airports/europe/italy/rome-fiumicino-airport-leonardo-da-vinci.html

Summary of key European airports

The major Airports are all interconnected to the local/regional network by high class public transport and all, except Leonardo da Vinci-Fiumicino outside Rome, has good or relative good interconnections to the LD train network. LD bus services do not play a big role in the transportation to and from the major airports, probably due to the good interconnections to the train network. When it comes to transport by car all the airports have good interconnections to the local/regional road network and the national/European road network.

The general picture for the major airports is that they all have good interconnections to both local/regional and Long distance transport networks.

3.2.2 Key European Passenger Ferry Ports

	Port	Country	2007 PAX*
1.	Dover	United Kingdom	14.287.318
2.	Calais	France	11.000.280
3.	Helsingør	Denmark	10.966.305
4.	Helsingborg	Sweden	10.966.205
5.	Naples	Italy	8.988.056
6.	Helsinki	Finland	8.500.000

* Data is from Shippax Market: 08 Statistics (Shippax Information. Halmstad, Sweden.ISSN:1403-3305). Please note that Calais PAX is 2008 numbers.

Dover ferry port

The ferry port is located about 2 kilometres east of Dover city centre.

Train	
Local / Regional	*Long distance*
The railway station is located 2,5km from the ferry terminal and it has regional train services and high speed and regular rail connections to London.	
Bus	
Local / Regional	*Long distance*
Local bus lines connect to the ferry terminals and a courtesy bus service operates during the day between Dover Priory Railway Station and the ferry terminals.	Frequent express coach services links the ferry terminal to London.
Car	
Local / Regional	*Long distance*
The ferry terminal is located close to the city centre.	The ferry terminal is directly connected to A2 and A20 to the national highway network (M2 and M20 respectively).

http://www.doverport.co.uk/
http://en.wikipedia.org/wiki/Dover
http://maps.google.com/maps?hl=en&q=Dover%20wiki&um=1&ie=UTF-8&sa=N&tab=wl
http://www.carlberry.co.uk/rfnshowl.asp?L1=DOV003

Calais ferry port

The ferry port is located about 2 kilometres north of the centre of Calais city.

Train	
Local / Regional	*Long distance*
The railway station is located 2 kilometres away from the ferry and it serves both regional and LD trains in France.	
Bus	
Local / Regional	*Long distance*
A free bus service operates daily, between the ferry terminal and the central Calais-Ville railway station.	Regional bus lines depart from the railway station.
Car	
Local / Regional	*Long distance*
The ferry terminal is located next to the centre of the city.	The ferry terminal is connected to the national highway network with direct access to the Benelux and central France (E15).

http://www.calais-port.com/
http://maps.google.com/maps?hl=en&um=1&ie=UTF-8&q=Calais++Port&fb=1&hq=Port&hnear=Calais&ei=YYzyS_eMNo3x-QaBkvSVDg&sa=X&oi=local_group&ct=image&resnum=1&ved=0CCsQtgMwAA
http://en.wikipedia.org/wiki/Calais
http://en.wikipedia.org/wiki/Gare_de_Calais-Ville

Helsingør ferry port

The ferry port is located on the east side of the centre of Helsingør city.

Train	
Local / Regional	*Long distance*
The railway station located next to the ferry terminal ensures direct access to regional and LD rail networks.	
Bus	
Local / Regional	*Long distance*
Several local bus lines and 6 regional bus lines operate to and from the railway station.	-
Car	
Local / Regional	*Long distance*
The ferry terminal is situated next to the city centre.	The ferry terminal directly connected to highway (E47/E55).

http://www.visithelsingor.dk/ENGELSK/mainmenu.html
http://maps.google.com/maps?hl=en&q=Helsing%C3%B8r&um=1&ie=UTF-8&sa=N&tab=wl
http://www.moviatrafik.dk/dinrejse/koreplaner/Pages/Koreplaner.aspx?k=helsing%c3%b8r
http://en.wikipedia.org/wiki/Helsing%C3%B8r

Helsingborg ferry port

The ferry port is located on the west side of the centre of Helsingborg city

Train	
Local / Regional	*Long distance*
The multimodal terminal ”Knutpunkten” connects directly to the ferry terminal and give direct access to regional and LD rail networks.	
Bus	
Local / Regional	*Long distance*
Several local busses and the regional busses depart from “Knutpunkten”.	-
Car	
Local / Regional	*Long distance*
The ferry terminal is located next to the centre of the city.	The ferry terminal is about 1km from the nearest highway intersection (E4).

http://en.wikipedia.org/wiki/Helsingborg
http://sv.wikipedia.org/wiki/Knutpunkten
http://www.helsingborg.se/templates/StandardPage.aspx?id=82907&epslanguage=SV

Naples ferry port

The ferry port is located on the south east side of the centre of Naples city.

Train	
Local / Regional	*Long distance*
The Garibaldi railway station is located about 2,5km from the main passenger terminal, providing access to the local/regional and national rail network.	
Bus	
Local / Regional	*Long distance*
Several local busses operate to and from the ferry terminals and regional busses depart from the Garibaldi railway station.	-
Car	
Local / Regional	*Long distance*
The ferry terminals are located next to the centre of the city.	The ferry terminals are about 5 kilometres from the highway intersection connecting the harbour to E45.

http://en.wikipedia.org/wiki/Port_of_Naples
http://www.porto.napoli.it/en/informazioni/raggiungere.php
http://www.metro.na.it/metro/index.php?option=com_content&task=view&id=30&Itemid=42
http://www.ferroviedellostato.it/
http://maps.google.com/maps?hl=en&q=napoli%20%20Port&um=1&ie=UTF-8&sa=N&tab=wl

Helsinki ferry port

The main ferry port is located at the southern part of the city of Helsinki.

Train	
Local / Regional	*Long distance*
The Helsinki Central railway station (Helsingin rautatieasema) railway station is located about 1,5km from the main passenger terminals, providing access to local/regional and national rail networks.	
Bus	
Local / Regional	*Long distance*
Several local bus and tramlines operates to and from the different ferry terminals and regional bus lines depart from the railway station	.
Car	
Local / Regional	*Long distance*
The ferry terminals are situated close to the centre of the city.	The port is about 6km from the nearest highway intersection (E75).

http://www.portofhelsinki.fi/default.asp?docId=12603
http://maps.google.com/maps?hl=en&q=napoli%20%20Port&um=1&ie=UTF-8&sa=N&tab=wl
http://en.wikipedia.org/wiki/Helsinki_Central_railway_station

Summary of key European ferry ports

The major passenger ferry ports all have good interconnections to both local/regional and European road networks. This is due to the fact that they transport many cars, goods vehicles and busses, which all need to get onto the road networks. When looking at the interconnections to means of public transport the picture is different, here only Helsingborg and Helsingør have train service next to the ferry terminals. The other ferry terminals all have more than 1.5 kilometres to the rail stations and you have to take local bus or tram to get to the rail station. At the same time the regional bus lines usually departs from the rail station.

The general picture for the major passenger ferry ports is that they all have good interconnections to both local/regional and European road networks, but often relatively poor interconnection to public transport networks.

3.2.3 Key European Railway stations

	Rail station	City	Country	PAX*
1.	Gare du Nord	Paris	France	180.000.000
2.	Roma Termini	Rome	Italy	150.000.000
3.	Berlin Hauptbahnhof	Berlin	Germany	128.000.000
4.	Frankfurt Hauptbahnhof	Frankfurt	Germany	128.000.000
5.	Zürich Hauptbahnhof	Zürich	Switzerland	124.000.000
6.	Waterloo station	London	United Kingdom	100.000.000

* Data are collected from various sources e.g. Wikipedia and represent different years, consequently this might not be the right ranking, but they still represent the major European passenger railway stations.

Paris Gare du Nord

Train	
Local / Regional	*Long distance*
Two Metro lines interconnect at the station and the regional express network "RER" operate from the station.	The station is terminal for HSR and regular train services, both national and international.
Bus	
Local / Regional	*Long distance*
More than 10 local bus lines operate from the station.	-
Car	
Local / Regional	*Long distance*
The station is located in the inner city and has two car parks located nearby.	There is about 6 kilometres in the inner city to the ring road where there also is a connection to E19.

http://en.wikipedia.org/wiki/Gare_du_Nord
http://www.ratp.info/Proxi/proxi.php?methode=station&lang=FRA&tmpl=CITEFUTEE&reseau=11111&nom_station=Gare%20du%20Nord&commune_station=Paris%2010
http://www.bonjourlafrance.com/france-trains/stations/gare-du-nord-station.htm
http://www.eurostar.com/UK/uk/leisure/travel_information/at_the_station/stations/paris_gare_du_nord.jsp
http://maps.google.com/maps?hl=en&q=Paris%20Gare%20du%20Nord&um=1&ie=UTF-8&sa=N&tab=wl

Roma Termini

Train	
Local / Regional	*Long distance*
Two Metro lines interconnect at the station, the main tram lines cross at Porta Maggiore, some 1500 meters east of the station and the station is terminal for a number of regional trains.	The station is terminal for national HSR and regular train services.
Bus	
Local / Regional	*Long distance*
A major bus terminal is located at Piazza dei Cinquecento just in front of the station.	-
Car	
Local / Regional	*Long distance*
The station is located in the inner city and has three car parks within 200 meters.	There is more than 10 kilometres to the nearest intersection connecting to E34 or E80 and it is mainly within the central parts of the city.

http://www.grandistazioni.it/cms/v/index.jsp?vgnextoid=b1b0cd840e9fb110VgnVCM1000003f16f90aRCRD
http://en.wikipedia.org/wiki/Roma_Termini_railway_station
http://maps.google.com/maps?hl=en&q=Roma%20Termini&um=1&ie=UTF-8&sa=N&tab=wl

Berlin Hauptbahnhof

Train	
Local / Regional	*Long distance*
Four S-Bahn lines, one U-Bahn line, the Regional Express lines and the Regional Bahn lines interconnect at the station.	The station is terminal for HSR and regular train services, both national and international.
Bus	
Local / Regional	*Long distance*
More than 20 bus lines interconnect at the station.	-
Car	
Local / Regional	*Long distance*
The station is located in the inner city and has a three storey car park in connection to the station.	There is about 6 kilometres to an intersection connecting to E26 and E51.

http://en.wikipedia.org/wiki/Berlin_Hauptbahnhof
http://en.allexperts.com/e/b/be/berlin_hauptbahnhof.htm
http://www.deutschebahn.com/site/berlin__hauptbahnhof/de/kundenzentrum__bahnhof/ankommen__weiterreisen/regionalverkehr/liniennetzkarte__berlinbrandenburg__dl.html
http://maps.google.com/maps?hl=en&q=Berlin%20Hauptbahnhof&um=1&ie=UTF-8&sa=N&tab=wl

Frankfurt Hauptbahnhof

Train	
Local / Regional	*Long distance*
Nine S-bahn lines, one U-Bahn and two tram lines interconnect at the station. The station is also terminal for the regional trains "RMV" in the state of Hesse.	The station is terminal for HSR and regular train services, both national and international.
Bus	
Local / Regional	*Long distance*
Four local bus lines interconnect at the station.	-
Car	
Local / Regional	*Long distance*
The station is located in the inner city and has 6 car parks within 100 meters of the station.	There is about 7 kilometres to an intersection connecting to E42.

http://en.wikipedia.org/wiki/Frankfurt_(Main)_Hauptbahnhof
http://www.vgf-ffm.de/de/tarife-tickets-plaene/fahrplaene/innenstadtplan/
http://www.deutschebahn.com/site/bahnhoefe/de/sued/frankfurt__hbf/ankommen__weiterreisen/parken/parken.html
http://maps.google.com/maps?hl=en&q=Frankfurt%20Hauptbahnhof%20&um=1&ie=UTF-8&sa=N&tab=wl

Zürich Hauptbahnhof

Train	
Local / Regional	*Long distance*
The station is interconnection terminal for 17 S-Bahn lines and 4 Tram lines. Some of the S-Bahn lines serves as regional trains as well in the canton.	The station is terminal for HSR and regular train services, both national and international.
Bus	
Local / Regional	*Long distance*
There are 5 tram and bus stations within 200 meters from the station.	-
Car	
Local / Regional	*Long distance*
The station is located in the inner city and has 2 car parks in connection to the station.	There is about 10 kilometres to an intersection connecting to E41 and E 60.

http://en.wikipedia.org/wiki/Z%C3%BCrich_Hauptbahnhof#cite_note-0
http://www.zvv.ch/en/routes-and-zones/city-zurich-network.html
http://maps.google.com/maps?hl=en&q=Z%C3%BCrich%20Hauptbahnhof%20busses&um=1&ie=UTF-8&sa=N&tab=wl

London Waterloo station

Train	
Local / Regional	*Long distance*
Four Underground lines interconnect at the station and the station is terminal for a number of regional/national trains servicing the southern parts of the UK.	
Bus	
Local / Regional	*Long distance*
21 bus lines connects to the station.	-
Car	
Local / Regional	*Long distance*
The station is located in the inner city and has 1 car park in connection to the station and another 5 car parks within 300 meters of the station.	There is about 2 kilometres to an intersection connecting to A3, but you are still in central London.

http://en.wikipedia.org/wiki/London_Waterloo_station
http://www.tfl.gov.uk/tfl/gettingaround/maps/buses/busdiagrams.asp
http://maps.google.com/maps?hl=en&q=waterloo%20station&rlz=1I7GZAZ_da&um=1&ie=UTF-8&sa=N&tab=wl
http://www.apcoa.co.uk/rail-station-car-parks/

Summary of key European railway stations

The key railway stations all have good interconnections to the local/regional and national public transport network. Gare du Nord, Frankfurt, Zürich and Berlin all have European high speed rail connections. Roma Termini only has national HSR and London Waterloo do not have any HSR service. At the local/regional level all the stations have good interconnection with the public transport network, while the interconnection opportunities for car drivers are generally poor. There are car parks around the stations, but all the stations are located in the central parts of the city and it is often difficult to access locations in central parts of big cities due to congestion.

The general picture for the key rail stations is that they all have good interconnection to local/regional and European public transport networks, but often poor interconnection to both local/regional and European road networks.

3.2.4 Summary of Key European Nodes

The review of the key European transport nodes shows that they generally have good interconnections to both local/regional level and European level transport networks, though the quality of interconnections to the different modes differs in relation to the nodes´ main function.

The airports have good interconnections to high class public transport that connects to the city they serve and they also have good interconnections to both local/regional and European road networks, while the interconnection LD train service is relatively poor. The passenger ferry ports have good interconnection to both local/regional and European road networks, while the interconnection to different modes of public transport often is relatively poor. The key European railway stations generally have good interconnections to the local/regional and European public transport networks, while it is difficult to access the stations by car.

The difference in the quality of the interconnections between nodes and modes probably shows that the nodes generally cater to different travel patterns. Travellers who use central railway stations in the big cities generally travel by foot, bike or public transport to and from the railway station, while there often is a big share of transport by car to and from the airports and the ferry ports.

The overall picture is that the nodes have good interconnections to both to local/regional and European transport networks, but the nodes are all missing some interconnections: for the airports it is the LD train service, for the railway stations it is the road transport and for the ferry ports it is the public transport network. Therefore if the your travel pattern is like most travellers you will experience good interconnections, but if you want to drive your car to the railway station in the central parts of London or use the train when getting of the ferry in Naples you will experience poorer interconnection.

3.3 THE TEN IN RELATION TO RAIL AND COACH SERVICES

This chapter addresses the consequences for effective interconnection of major rail terminals and of long-distance coach services if they are included in or excluded from the designated TEN.

If major rail terminals and long-distance coach services are excluded from the Trans-European Network, it would make these modes of transport/terminals less accessible on a European level. At the same time it would limit the users of these modes/terminals accessibility to the Trans-European Network. The lack of interconnections between these modes/terminals and the Trans-European Network could promote the use of private car in long distance passenger transport in the areas affected. The private car would probably get a bigger share of the long distance passenger transport work, both in the access to the affected areas from the Trans-European Network and in the local/regional access to the European Transport Network. The negative effects of the exclusion of the modes/terminals might include less accessibility for people who cannot afford a private car, congestion on roads from increased use of private car and higher CO_2-emmissions from the use of private car in long distance passenger transport. Subsequently the potential consequences can be more social inequality, more congestion and negative impacts on the environment. At the economic level the lack of accessibility to and from the affected areas could have a negative effect on the local business climate, making it unattractive for investments, location of business and as home for educated professionals.

If the major rail terminals and of long-distance coach services are included in TEN it might potentially have the opposite consequences, with better access in these areas between the Trans-European Network and local/regional transport network, and at the same time secure social equality, create less congestion and reduce the negative impacts on the environment.

3.4 EFFECTS OF THE OPEN SKIES POLICY ON INTERCONNECTIONS

This chapter addresses the consequences, for effective interconnection, of the de facto hub and spoke structure of European airports (with Heathrow, Charles de Gaulle, Frankfurt and Schiphol acting as the main hubs) and the possible impact of the new Open Skies policy on this structure; and the growth of low cost carriers using secondary airports which may have poor links to the cities and regions which they purport to serve.

The EU has implemented the first stage of an Open Skies Agreement with the US in March 2008[8] and is currently negotiating on the second stage of the agreement[9]. The agreement is a liberalization of aviation regulations between the EU and US. The central elements in the agreement is that it allows carriers from the EU and US to operate between any airport within the EU and any US airport and it also allows US carriers to operate internally in the EU. Furthermore the agreement widens the frame for co-operation between carriers.

In order to operate in and out of European airports and in the European airspace the carriers still have to obtain slots for landing and departure in the airport and these are scarce in the main hubs[10]. Subsequently the impact of the Open Skies Policy on the hub and spoke structure of the European airports will probably be limited due to the lack of available slots. It is unlikely that new big hubs for intercontinental flights would develop far away from the centres of international business and finance in the EU. At the same time the agreement may possibly cause some changes for the feeder airports in areas with available slots. Stronger competition between carriers and airports respectively leading to changes in service of the airports could have an effect on the airline passengers' choice of airport. These changes might be related to secondary airports attracting low cost carriers with available slots and low fees.

For the effective interconnections to the European airports it is important that the airports are served by high class public transport e.g. direct train or metro. The main hubs already have good interconnections to the underlying local/regional transport network, whereas some feeder airports have

8 http://en.wikipedia.org/wiki/EU%E2%80%93U.S._Open_Skies_Agreement
9 http://www.eubusiness.com/topics/transport/open-skies.2
10 *Open Skies, Open For Business?, Is it time to value slots and recognise them on balance sheet?, Deloitte 2008.*

lack of interconnections to their underlying local/regional transport networks e.g. Malmö-Sturup International Airport. This picture might worsen if more flights are operated out of secondary airports. It is generally more expensive to supply good interconnections to secondary airports with small numbers of passengers, compared to the big hubs. Therefore, a growth in the usage of secondary airports can lead to less interconnectivity between airports and the underlying local/regional network and the cost of creating good interconnectivity would grow.

Further, the growth of low cost carriers using secondary airports could increase the negative impact for the interconnectivity because the low cost carriers' business model relies on low operation cost and they are likely to close routes and change airports at short notice[11]. These conditions with a short time frame make it unattractive for local/regional governments and airports to invest in good interconnectivity.

[11] http://business.timesonline.co.uk/tol/business/industry_sectors/transport/article6722585.ece
http://www.zimbio.com/member/Airobserver/articles/J5XYXOqmTDy/Ryanair+in+muy+caliente+water
http://www.cloudworks.co.uk/bmi_demonstrates_good_practice_over_route_closure

4 NATIONAL POLICY REVIEW

4.1 NATIONAL POLICIES

4.1.1 Austria

In Austria one relevant policy papers have been identified and reviewed: *Generalverkehrsplan Österreich 2002, Verkehrspolitische Grundsätze und Infrastrukturprogramm* (The National Transport Plan, 2002 by the Austrian Ministry of Transport, Innovation and Technology).

The only relevant part of the document mentions a new/improved interchange at Wien Airport. The interchange mentioned is a better connection between the airport and the airport train station. This is a result of a rebuilding of the airport train station and the extension of the airports "Pier Nordost".

There is no mention of TEN in relation to interconnection.

Table 4-1 Austria

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements							
New/Improved Links							
New/Improved Interchanges			1				
Infrastructure Pricing							
Integrated Ticketing and Pricing							
Information and Marketing							

4.1.2 Bulgaria

In Bulgaria only one relevant policy paper has been identified and reviewed; *The Sectoral Operational Programme on Transport 2007 – 2013.*

The program is made in collaboration between the Bulgarian Ministry of Transport and the EU. The objective of the Sectoral Operational Programme is the development of the railway, road, waterborne and combined transport infrastructure in conformity with the transport policy of the European Union and the established requirements for development of the trans-European transport network in order to achieve sustainability of the Bulgarian transport system. Hence, TEN and Bulgarian TEN-T projects are in focus in the document.

The document mentions actions taken regarding interconnectivity in the transport system of Sofia:

"The operation corresponding to the second goal "Development of multimodal mobility for passengers" will be related to the development of public rail transport for passengers in the capital by the extension of the metropolitan network, enabling new railway connections with key transport centers of national importance (airports, central railway stations, central bus stations, ports etc.) and other public transport modes."

There is no mention of TEN in relation to interconnection.

Table 4-2 Bulgaria

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements							
New/Improved Links			1	1	1		1
New/Improved Interchanges							
Infrastructure Pricing							
Integrated Ticketing and Pricing							
Information and Marketing							

4.1.3 Cyprus

In Cyprus one relevant policy paper has been identified and reviewed.

The document, *Analysis of the national transport policies of the New Member States and their impact on Community transport objectives,* is an analysis of the national transport policies of the New Member States and their impact on Community transport objectives. It is sponsored by the EU Commission and contains an analysis of the national transport policy in Cyprus. It presents a summary of the current situation and some overall guidelines/aims for the development of the national transport policy. In relation to the core elements of the Interconnectivity project, this paper mentions specific examples of improved links and integrated ticketing on intercity and urban bus routes:

"National measures already implemented, decided and/or planned:

- Interconnection of the intercity and urban bus routes
- Adoption of combined tickets (intercity/rural bus use), multiple use tickets, and season tickets"

There is no mentioning of TEN in relation to interconnection.

Table 4-3 Cyprus

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements							
New/Improved Links					1		
New/Improved Interchanges							
Infrastructure Pricing							
Integrated Ticketing and Pricing					1		
Information and Marketing							

4.1.4 Czech Republic

In The Czech Republic two relevant policy papers have been identified and reviewed.

The first paper is *The Transport policy for the Czech Republic for the years 2005 – 2013* (Only available in Czech). It deals with several transport modes and elements of the Interconnectivity

Project, for instance: "common ticket, timetables coordinated, comprehensive transportation information system and the corresponding Connecting multimodal terminals between modes". It emphasizes that TEN-T projects are to be prioritized. (This document has been reviewed and plotted in the matrix by a Consortium Partner)

The second paper, *Analysis of the national transport policies of the New Member States and their impact on Community transport objectives,* is an analysis of the national transport policies of the New Member States and their impact on Community transport objectives. It is sponsored by the EU Commission and contains an analysis of the national transport policy in the Czech Republic. It presents a summary of the current situation and some overall guidelines/aims for the development of the national transport policy. One highlighted measure is: "Improvement of the co-operation between transport modes so that the common elements of integration might operate to the advantage of passengers (common information systems, timetables, documents, etc.). This has happened in the region of Prague with the establishment of ROPID – a regional integrated traffic and tariff system."

A national measure already implemented, decided and/or planned is The Public Integrated Transport System. It associates several independent companies of bus transport operators and České dráhy, a.s. (Czech Railways) in the territory of an outlined region. It is characterised by important changing nodes in which various means of transport meet in order to enable the passengers to change the means and continue their journey.

There is no mentioning of TEN in relation to interconnection.

Table 4-4 Czech Republic

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements			1	1		1	
New/Improved Links				1,2	2		
New/Improved Interchanges							
Infrastructure Pricing			1	1		1	
Integrated Ticketing and Pricing				1	1		
Information and Marketing			1	1		1	

4.1.5 Denmark

In Denmark 5 relevant policy papers have been identified and reviewed and they represent different interest. Two of them are from government institutions; *Danish Aviation 2015 – possibilities and challenges*, by The Ministry of Transport and Energy and *Transport Plan for the Railway 2008-2018*, by The Public Transport Authority. The other three are by two regional institutions and a commission appointed by government, the documents are; *The Öresund Committee's joint traffic proposal for the governments of Sweden and Denmark*, by The Öresund Committee[12], *Denmark's Transport Infrastructure 2030 - Report 1493*, by The Infrastructure Commission and *Regional development plan – Denmark's capital region - an international city region with high quality of life and growth*, by The Capital Region of Denmark.

The documents focus on different modes of transport and have different perspectives, and in general the documents do not work with many of the core elements of the INTERCONNECT Project. Two things stand out though, all the documents touch upon/work with the core element of New/improved links and *The Transport Plan for the Railway* by working with 5 of the 6 core elements within the rail field/area.

[12] Represents The Capital Region of Denmark and Region Skåne

EU Policy and TEN are not in focus in the Danish policy documents. The only document that mentions TEN and EU policy (White Book 2001), is *Denmark's Transport Infrastructure 2030 - Report 1493*, and it's only the general policies for different modes of transport and not in relation to any actual projects.

Country highlight: *In connection to the building of the Øresund Bridge the access to Copenhagen Airport has been improved substantially by upgrading road and train access and the airport is now an efficient intermodal transport hub. It is next to the motorway connecting Copenhagen and Malmø and trains run every 10 minutes.*

Table 4-5 Denmark

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements				2			
New/Improved Links			1,3, 4,5	1,2,3,5		1,5	
New/Improved Interchanges				2			
Infrastructure Pricing							
Integrated Ticketing and Pricing				2			
Information and Marketing				2			

4.1.6 Estonia

In Estonia one relevant policy papers have been identified and reviewed.

The paper, *Analysis of the national transport policies of the New Member States and their impact on Community transport objectives,* is an analysis of the national transport policies of the New Member States and their impact on Community transport objectives. It is sponsored by the EU Commission and contains an analysis of the national transport policy in Estonia. The paper does not contain elements that correspond directly to the core elements of The INTERCONNECT Project. But there is a mentioning of strengthening the co-operation of railway and road connection with ports

There is no mentioning of TEN in relation to interconnection.

Table 4-6 Estonia

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements							
New/Improved Links				1		1	1
New/Improved Interchanges							
Infrastructure Pricing							
Integrated Ticketing and Pricing							
Information and Marketing							

4.1.7 Finland

In Finland two relevant policy papers have been identified and reviewed. Both documents are authored by The Ministry of Transport and Communications in Finland. Both report are only available in Finnish and in the short English abstracts there and they both refer to interconnection at a general level with public transport interconnections and an integrated comprehensive public transport service.

The objective of the first study, *Basic level of service for long-distance traffic 2007, by the Ministry of Transport and Communications,* was to define the national basic level of service for long-distance traffic and to examine how this level is achieved today. A literature study, various interviews and a questionnaire study were conducted to examine the needs relating to long-distance traffic. The document mentions the fluency of travel chains, public transport interconnections and communication as the most important areas to be improved

The second document is The Public Transport Action Plan 2009–2015. The goal of the public transport action plan is to increase the importance and status of public transport policy and to define concrete short and medium-term measures with which such players as the state, municipalities and transport operators can increase the attractiveness of public transport and enhance the standard of passenger service. The action plan can be used in the development of an integrated comprehensive public transport service that will be easy to use for all traveller groups.

It is not possible to plot the two documents in the matrix on the basis of the short English summaries.

4.1.8 Germany

In Germany 2 relevant policy papers have been identified and reviewed; *The National Transport Plan 2003* by The Federal Ministry of Transport, Building and Urban Affairs and *The Federal Plan for the Airports 2009*, by the German Federal Government.

The national transport plan has a general approach to transport of both people and goods. There is no reference to interconnection, and intermodality is only mentioned in regards to goods transport. The only thing that relates to interconnection is a small passage about improving road and rail connections to the airports.

The airport plan doesn't mention interconnection, but several places in the papers there is focus on IC related subjects, for instances better interconnections between airport and both rail and road. It is also mentioned that the government has a role in making a good setup for co-operation between different stakeholders, to help, for instance integrated ticketing and pricing and check inn and baggage drop at the train stations.

EU Policy and TEN are not a big focus in the German policy documents. The airport plan mentions the EU focus on intermodality, but not interconnection and in the national transport there is no mentioning of TEN in relation to interconnection.

Table 4-7 Germany

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements			2	2			
New/Improved Links			1, 2	1,2		1, 2	
New/Improved Interchanges							
Infrastructure Pricing							
Integrated Ticketing and Pricing			2	2			
Information and Marketing							

4.1.9 Greece

In Greece one relevant policy paper has been identified and reviewed

The paper, *Operational Program "Railways, Airports, Public Transport, Community Support Framework 2000-2006"*, is one among 11 Sector and 13 Regional Programs that constitute the Third Community Support Framework in Greece. The main objectives of the Program are: Developing the international interconnections of Greece, Developing the national interconnections within Greece and integrating different transport modes into combined transport systems.

The report states that one of six priority axes is: The development of a suburban railway system connecting the region of Attiki and the new Athens Airport to their neighbouring regions. And at the same time the improvement of the intercity and suburban rail network, will enhance interconnectivity with the Trans-European Network.

Table 4-8 Greece

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements							
New/Improved Links			1	1			
New/Improved Interchanges							
Infrastructure Pricing							
Integrated Ticketing and Pricing							
Information and Marketing							

4.1.10 Hungary

In Hungary one relevant policy paper has been identified and reviewed.

The paper is *The Transport infrastructure development in Hungary* (2006) authored by Ministry of economy and transport, which presents some overall features of the national transport policy.

One of the mentioned priorities for the development of rail transport are: the construction of the fast train link to Ferihegy airport.

There is no mentioning of TEN in relation to interconnection.

Table 4-9 Hungary

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements							
New/Improved Links			1	1			
New/Improved Interchanges							
Infrastructure Pricing							
Integrated Ticketing and Pricing							
Information and Marketing							

4.1.11 Ireland

In Ireland four relevant policy papers have been identified and reviewed.

The first is *Statement of Strategy 2008-2010,* by the Department of Transport. It sets out different objectives, strategies and key performance indicators for the national transport policy of Ireland.

One of the stated objectives is: Better Integration - To develop a more integrated transport system so that the different transport modes complement each other through improved interfacing of infrastructure, services, information and payment systems. And one of the Key Performance Indicators is: Intermodal efficiency of the transport chain, especially in the context of surface access links to ports and airports.

The second document, *A Sustainable Transport Future - A New Transport Policy for Ireland 2009 – 2020,* by the Department of Transport. It deals with the Government's vision for sustainability in transport.

Among the key goals of the government is: to maximize the efficiency of the transport network and to improve accessibility to transport.

The primary relation to actual elements of the INTERCONNECT project is the issue of integrated ticketing.

It is stated in the paper that "We will create a national travel information portal offering an on-line integrated journey planner involving passenger information in real time, as appropriate, for all public transport services."

It is also mentioned that "There are already integrated ticket arrangements in place for some transport services throughout the country based on magnetic strip technology. These need to be transformed to stored value smart cards."

The third document, *The National Development Plan 2007-2013: Transforming Ireland 2007* is funded by the Irish Government and part financed by the European Union under the National Development Plan. It is not specifically a transport plan, but covers plans for big infrastructure expenditure.

The paper mentions the development of the Dublin-Belfast rail line as an aim in part of an integrated rail network. It is argued that the "integration of the Dublin-Belfast Enterprise fully into the urban transport networks will further enhance the service, reduce journey times and minimise delays for travellers. Both Governments are working to do this in Dublin and Belfast. In Dublin this will focus on integration with other rail and light rail services including, in due course, integration with the proposed Metro to Dublin Airport, as well as with the bus networks."

The last Irish paper is*, A Platform for Change, Final Report: An integrated transportation strategy for the Greater Dublin Area 2000 to 2016, November 2001,* by The Dublin Transportation Office. It stresses the necessity to create an integrated public transport network. It sets out to improve the integration and attractiveness of the public transport network, including park and ride facilities, bus feeder services to rail-based public transport in cities, integrated fares and ticketing, quality interchange facilities and improved passenger information.

There is no mentioning of TEN in relation to interconnection.

Table 4-10 Ireland

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements							
New/Improved Links			1,3	3	3,4	3	1
New/Improved Interchanges							
Infrastructure Pricing							
Integrated Ticketing and Pricing				1,2,4	1,2,4		
Information and Marketing							

4.1.12 Italy

In Italy three relevant policy papers have been identified and reviewed.

It covers two papers containing some overall transport plans authored by the Ministry of Transport and one Regional Plans from the Emilia-Romagna region. The documents are only available in Italian.

The first document, *Transport and Logistics General Plan, 2001*, by the Ministero dei Trasporti, is focusing on the development of a highly interconnected network system and this includes:

- Identifying a transport network at national and international level (SNIT) and fully integrate SNIT and local networks.
- Devise a clear scheme of responsibility among different levels of public authorities
- A special attention should be given to the first and last segment of a trip (as for instance trips to/from airports and city centers).
- To be successful intermodal platforms should be conceived to minimize discomforts connected to modal change.
- Each actor of the transport system should use the same technological platform. The development of new services (information, booking, payment and so on) beside the traditional operators should be supported.

The second document, *National Operational Plan for the Transport Sector, September 2001*, by the Ministero delle Infrastrutture e dei Trasporti is a document that stems from the Community Support Framework (CSF), which is the document approved by the European Commission, in agreement with the Member State of interest, on the basis of the evaluation of the Plan presented by the Member State itself. The document mentions some relevant areas, as:

- Reinforcement of networks and service nodes (networks and service nodes
- Development of main network and corridor in Southern Italy: The aim is to strengthen the linkages of local nodes and terminals with the national network, in order to facilitate the freight flows, the financial and human resources from and to Southern Italy.
- Development of links between nodes/main corridors and local areas: The aim is to strengthen and to improve the interconnection of local networks, improving the services quality and increasing the use of existing transport infrastructures.

- Development of rail infrastructures links to nodes: Development of road infrastructures links to nodes, development of links between TEN corridors and urban areas.
- Development of main connection/nodes: To create and to improve the connections between local nodes and the national and international networks (connections between cities and airports, and connections of developing areas and capital cities to the national railway network.

The third document, *Emilia-Romagna region Integrated Transport Plan 1998-2010,* promotes the reorganization of regional railway services and by providing a public transport service (by bus) highly interconnected with the railway system both in terms of scheduling and of integrated ticketing and fares. This regional transport system will be also highly interconnected with the long-distance railways. More generally it addresses the integration between transport modes as its main objective and it recognise the need to improve passenger interchanges at nodes:

- By improving general interchange accessibility
- By the reduction of waiting, boarding and alighting times
- By providing additional services (parking lots, shops, etc.)

The documents only refer little to the specific modes of transport, but has quite a lot of parts related to interconnection.

Table 4-11 Italy

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements							
New/Improved Links	1,2		1,2	1,2,3	3	1,2	
New/Improved Interchanges	1,2		1,2	1,2		1,2	
Infrastructure Pricing							
Integrated Ticketing and Pricing				3	3		
Information and Marketing							

4.1.13 Latvia

In Latvia no relevant policy documents has been identified.

4.1.14 Lithuania

In Republic of Lithuania one relevant policy paper have been identified and reviewed:

The document is the *Long-term Strategy (until 2025) of Lithuanian Transport System Development, June 2005,* by the Government of the Republic of Lithuania. The focus of the policy paper is primarily on improving the different modes and "the transport system", as opposed to the interconnection of them. One of the long-term priorities of passenger transport is: "to create a system of joint (intermodal) services, improve interoperability of different transport modes used for passenger transport, build joint service terminals of different transport modes, introduce a conceptual framework of a "single e-ticket" for passengers' convenience" and "to harmonise a ticket distribution system with the advance booking system of the whole continent and to get integrated into it".

It is not possible to plot the document in the matrix, since there is no mentioning of specific modes of transports and there is no mentioning of TEN in relation to interconnection.

4.1.15 Malta

In Malta no relevant policy documents has been identified.

4.1.16 The Netherlands

In The Netherlands one relevant policy paper have been identified and reviewed. It is 'Nota Mobiliteit' - *Towards reliable and predictable accessibility*, a national traffic and transport plan based on the Traffic and Transport Planning Act (Planwet Verkeer en Vervoer, 1998) and is the successor to the current Traffic and Transport Structure Plan (Structuurschema Verkeer en Vervoer, SVV-2).

The document does not mention interconnection specifically, but has a lot of focus on access between modes of transport and how to improve it and there is also mentioning of the TEN.

"Improve the main links between the national urban networks and core economic areas, including the mainports… ….as well as improving links to Schiphol airport and to the hinterland…… … The regional governments pay explicit attention in their spatial planning policy to multi-modal connections…….In addition to its primary function, regional and local public transport also performs an important secondary function, i.e. pre/post transport of train passengers, the line service feeder function. Good alignment of public transport schedules makes the chain more attractive for passengers. Distinctions between transport methods are irrelevant, in principle, to passengers….. Transport companies and decentral governments must therefore view the transport network as an entirety and must align schedules and traveller information and must jointly develop and offer products in the context of their individual responsibilities. A joint approach forces them to think more carefully about the issues involved, e.g. connections and uniform tariffs. The introduction of a chipcard for the entire public transport network is one step towards presentation of public transport as a single product……..A public transport chain with closely aligned links is important to passengers. Co-operation and joint alignment by governments and, in particular, the different transport companies is essential. This is one of the reasons that the central government has anchored the position of decentral governments in train services that feed into the network in their tendering and contract requirements. A limited number of carefully chosen junctions for transfers to trains, cars, busses and bicycles is another prerequisite for a properly functioning public transport network.

The main corridors must connect the most important core economic areas and be connected to the regional rail network and the trans-European rail network….. The state will strive for proper harmonisation and further development of (connecting) TEN corridors….."

Table 4-12 The Netherlands

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements				1	1		
New/Improved Links		1	1	1	1		
New/Improved Interchanges							
Infrastructure Pricing							
Integrated Ticketing and Pricing				1	1		
Information and Marketing				1	1		

4.1.17 Norway

In Norway seven relevant policy papers have been identified and reviewed. Most of them are authored by public authorities jointly; the public administrations of respectively road, rail, airborne and waterborne transport.

The first document, *ITS – Intelligent Transport Systems – Overview, Visions and Possibilities Part of National Transport Plan 2010–2019, November 2006* by Avinor, The Norwegian Public Roads Administration, the Norwegian National Rail Administration and Norwegian Coastal Administration, is about the use of Intelligent transport systems and states some multi modal initiatives recommended to be carried out in period of the National Transport Plan: Travel planner/travel information service with real time info which is accessible for everybody; Coordinated electronic ticketing (payment system); Park n' ride (traffic management and coordinated traffic information)

The second document, *Sector Plan for Avinor – Perspectives towards 2040) Part of National Transport Plan 2010-19, 2006,* by Avinor, points out the imprtance of improving of the feeder system to airports: acces and connections by both road and railway.

The third document, *Transport to/from Oslo Airport in a long term perspective 2007,* by Avinor, The Norwegian Public Roads Administration and the Norwegian National Rail Administration, is investigating the Transport to/from Oslo Airport in a long term perspective and points out the special interest concerning if there is sufficient rail capacity, in order to meet the target of a big share of public transport in feeder transport and even increase it. The work must identify possible bottlenecks, when they might appear and possible measures to counter the effects of the bottlenecks. The work is part of the National Transport Plan.

The fourth document, *Design of public transport hubs and places of exchange 2005,* by PROSAM, is a guide containing a list of criteria for designing public transport hubs and places of exchange and a series of project examples. The guide is about promoting a way of thinking more than a precise template for the design.

The fifth document, *Status paper No.16 National Transport Plan 2010-19, September 2008,* by Det Kongelige Samferdselsdepartement, is authored by the Government and stresses the importance of interconnectivity for the international competitiveness of the Norwegian businesses. It does not mention specific cases, but stresses the importance of choices in feeder transport to the airports, railway stations and other hubs.

The sixth document, *Proposal for National Transport Plan 2010-19, January 2008,* by Avinor, the Norwegian Public Roads Administration, the Norwegian National Rail Administration and Norwegian Coastal Administration, makes recommendation for the transport infrastructure in Norway. And it points out the importance of developing intermodal hubs for both passenger end freight and that the feeder system for the airport has to be upgraded.

The seventh document, *Proposal for National Transport Plan 2002-11, 1999,* by Avinor, the Norwegian Public Roads Administration, the Norwegian National Rail Administration and Norwegian Coastal Administration, also emphasizes the airport and their feeder transport systems, the need to develop to meet the growing demand. It also states that in long distance rail, where aeroplane is the main competitor, the travel time should be reduced close to the aeroplanes, including access and egress time from the city centre to the airport and waiting time at the airport.

There is no mentioning of TEN in relation to interconnection.

Table 4-13 Norway

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements							
New/Improved Links			2,3,5,6,7	2,5,7		2	
New/Improved Interchanges			3,6,7	7			
Infrastructure Pricing							
Integrated Ticketing and Pricing							
Information and Marketing							

4.1.18 Poland

In Poland no relevant policy documents has been identified.

4.1.19 Portugal

In Portugal one relevant policy statement has been identified.

In The Ex Post Evaluation of Cohesion Policy Programmes 2000-2006. Work Package 5A: Transport, section 2.6 it is mentioned that the Portuguese transport programming strategy is based on four policy principles and one of them are; *development of interconnectivity and intermodality.* This is the only part relevant to interconnection.

There is no mentioning of TEN in relation to interconnection.

4.1.20 Romania

In Romania no relevant policy documents has been identified.

4.1.21 Slovakia

In Slovakia no relevant policy documents has been identified.

4.1.22 Slovenia

In Slovenia one relevant policy paper has been identified and reviewed.

The paper, *Analysis of the national transport policies of the New Member States and their impact on Community transport objectives,* is an analysis of the national transport policies of the New Member States and their impact on Community transport objectives. It is sponsored by the EU Commission and contains an analysis of the national transport policy in Slovenia. It presents a summary of the current situation and some overall guidelines/aims for the development of the national transport policy. The conclusion of the review is: *"The modal shift in passenger traffic is always a topic at the conceptual level. The very new Slovenian transport policy document mentions this task as the one of the most important. But at the moment no real action or policy is taken."*

There is no mentioning of TEN in relation to interconnection.

Table 4-14 Slovenia

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements							
New/Improved Links			1	1			
New/Improved Interchanges							
Infrastructure Pricing							
Integrated Ticketing and Pricing				1	1		
Information and Marketing							

4.1.23 Sweden

In Sweden one relevant policy paper have been identified and reviewed. It is Förslag till Nationell plan för transportsystemet 2010–2021. The document only mentions interconnection in regards to freight transport, but has a lot of focus on access between modes of transport and how to improve it and there is also mentioning of the TEN.

"More coordination between the systems for booking, information and combined purchase of travel required ... ... Furthermore, sould be combined trips by bike and train or bus be supported, e.g. by making it possible to cycle to the station / bus stop and then take the bike on the train / bus or by bicycle to station / bus stop, park your bicycle there and go ahead with the train / bus, without the bike. Both of these types of combined travel should be encouraged and facilitated ... ... Attractive collective connections from airports to tourist facilities ... ... A rail connection to Malmö-Sturup Airport is of strategic importance of ... ... Few commuters parking in strategic locations for increased co-modality ... .. The local and regional bus network can be connected with the railways in a single hub, which also provides functions such as commuter parking and better service to travelers. The measure also includes upgrading of existing platforms, conversion of tracks to allow more trains leaving the station at the same time and to secure connections to the new platforms ... ...

The single European transport network TEN-T which includes a horizontal networks (railways, roads, inland waterways, combined transport)."

Table 4-15 Sweden

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements							
New/Improved Links			1	1	1		
New/Improved Interchanges				1		1	
Infrastructure Pricing							
Integrated Ticketing and Pricing					1		
Information and Marketing							

4.1.24 UK

For the UK overall, two relevant policy papers have been identified and reviewed.

The first document, *Delivering a Sustainable Railway – White Paper CM 7176 2007 by the Department for Transport***,** is a White Paper that plans for the growth and development of railways in England and Wales and sets these plans in the context of a long-term strategy for the next 30 years. The priority is not to create new connections, but to improve the performance of existing networks. In relation to interconnection there is a focus on improving accessibility for access and egress modes t the rail stations, along with simplifying ticket system and improving real time information on train operations.

The second paper, *The Future of Air Transport, December 2003 by the Department for Transport,* is a White Paper that sets out a strategic framework for the development of airport capacity in the United Kingdom over the next 30 years, against the wider context of the air transport sector.

In relation to interconnection there is a focus on improving access to the airports with bus, rail and car. And there is an assessment of the need of improving access for each airport.

There is no mentioning of TEN in relation to interconnection.

Table 4-16 UK

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements				1			
New/Improved Links			1,2	1,2	1,2	1,2	
New/Improved Interchanges				1			
Infrastructure Pricing							
Integrated Ticketing and Pricing				1			
Information and Marketing							

Scotland

In Scotland four relevant policy papers have been identified and reviewed.

Two of the documents are general plans for national transport; "*The Scottish Planning Assessment, Part 2 Summary Report*" (SPA) which summarises the final conclusions arising from the SPA, and the "*National Transport Strategy" (2006)* which sets out how the challenges of transport in Scotland will be addressed through three strategic outcomes which will set the context for transport policy making for the next 20 years.

The NTS is supported by a number of other documents including "*Scotland's Railways, December 2006*" and "*Bus Action Plan, December 2006*", which are both reviewed here as well.

In the NTS of 2006 there is a general focus on Improving integration by making journey planning and ticketing easier and working to ensure smooth connection between different forms of transport. And in the bus and rail plans there are more specific interconnect related elements, as;

- Provide access to inter-urban services through high quality interchange stations that link with feeder rail services from intermediate stations and offer easy transfer from car, bus, tram, subway, ferry, cycle and walking
- Information on connecting bus routes
- Improving access to stations by increasing car parking capacity and improving interchange to other modes. At certain key stations, facilities should be improved to encourage travellers to interchange between services.
- Integrated ticketing
- Multimodal timetables.

In the SPA the only part that relates to interconnection is about the provision of dedicated bus feeders to rail, where surrounding population densities are well suited. Other solutions, such as rail taxis, may be more efficient for rural rail heads.

There is no mentioning of TEN in relation to interconnection.

Table 4-17 Scotland

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/ Coach terminals	Roads	Ports
Legal and Organisational Arrangements							
New/Improved Links			2	2,4	3,4	2	
New/Improved Interchanges			2	2,3	3	2	
Infrastructure Pricing							
Integrated Ticketing and Pricing				2			
Information and Marketing							

4.2 RESULTS OF THE REVIEW

4.2.1 Overview

At the national level 67 policy documents has been reviewed and there has been identified 40[13] documents, which mentions areas relevant to INTERCONNECT. The general picture is that there is little mentioning of interconnection and interconnectivity. Further, access and egress to long distance passenger travel modes are not the primary focus area of the reviewed policy documents.

Most of the documents reviewed are from the year 2000 and onwards, and large part of the documents concerning the new member states has been commissioned by the EU. In these EU commissioned documents the mentioning of interconnections are only at a general level and not related to access and egress or to any special modes or terminals/stations.

4.2.2 Interconnection in National Policy Documents

In this section the level of focus on interconnection in national policy documents will be assessed on the basis of the 40 documents that have mentioning of areas relating to interconnections.

[13] The national policy documents from Finland, Lithuania and Portugal has not been possible to plot in table of mentioning interconnection based on short summaries in English

Table 4-18 Number of documents from the countries

	Documents	TEN mentioning
Austria	1	
Bulgaria	1	
Cyprus	1	
Czech Republic	2	
Denmark	5	X
Estonia	1	
Finland	2	
Germany	2	X
Greece	1	X
Hungary	1	
Ireland	2	
Italy	3	
Latvia	0	
Lithuania	1	
Malta	0	
The Netherlands	1	X
Norway	7	
Poland	0	
Portugal	1	
Romania	0	
Slovakia	0	
Slovenia	1	
Sweden	1	X
UK	6	

Table 4-18 shows the number of documents with mentioning of interconnections that we have identified for each country and if the Trans-European Network is mentioned in any of the documents. The overall picture is that each country has 1.6 documents that mention areas in relation to INTERCONNECT at an average. Two countries and one region stand out in focus on interconnectivity in national policy: Norway, Denmark and Scotland with 7, 5 and 4 documents respectively, whereas in Latvia, Malta, Romania and Slovenia no documents of relevance has been identified. Regarding the mentioning of the Trans-European Network (TEN) it has only been found in five documents.

Table 4-19 Interconnection in National policy documents

	Mobility plans	Spatial Planning	Air/ Airports	Rail/Rail stations	Coach/Coach terminals	Roads	Ports	Total
Legal and Organisational Arrangements	0	0	2	5	1	1	0	9
New/Improved Links	2	1	24	26	12	12	3	80
New/Improved Interchanges	2	0	7	8	1	4	0	22
Infrastructure Pricing	0	0	1	1	0	1	0	3
Integrated Ticketing and Pricing	0	0	1	11	8	0	0	20
Information and Marketing	0	0	1	3	1	1	0	6
Total	4	1	36	54	23	19	3	140

Table 4-19 summarises the areas in which interconnection has been mentioned in the national policy documents with regards to the six core elements of WP3 and the related modes of transport/terminal, mobility plans and spatial planning.

The documents have been reviewed for the mentioning of the six core elements of WP3.

The six core elements are:

- Legal and Organisational Arrangements
- New / Improved Links
- New / Improved Interchanges
- Infrastructure Pricing
- Integrated Ticketing and Pricing
- Information and Marketing.

Table 4-20 Mention of WP3 core elements

Rank		Total	Percent
1.	New/Improved Links	80	57
2.	New/Improved Interchanges	22	16
3.	Integrated Ticketing and Pricing	20	14
4.	Legal and Organisational Arrangements	9	6
5.	Information and Marketing	6	4
6.	Infrastructure Pricing	3	2
	Total	140	100

Table 4-20 shows how often each of these core elements has been mentioned in the document and their share in percents. “New/Improved Links” are clearly the biggest area of focus in the policy documents with 80 out of 140 mentionings (57%), while number two and three, “New/Improved Interchanges” and “Integrated Ticketing and Pricing” have 16% and 14% respectively and at the

bottom end with little focus in the policy documents are “Legal and Organisational Arrangements”, “Information and Marketing” and Infrastructure Pricing” all under 10%.

Table 4-21 Mention of mode of transport/terminal and planning elements

Rank		Total	Percent
1.	Rail/Rail stations	54	39
2.	Air/ Airports	36	26
3.	Coach/Coach terminals	23	16
4.	Roads	19	14
5.	Mobility plans	4	3
6.	Ports	3	2
7.	Spatial Planning	1	1
	Total	140	100

Table 4-21 shows the number of mentioning modes of transport/terminal and mobility plans and spatial planning documents. “Rail/Rail stations” and “Air/ Airports” clearly stands out as the biggest areas of focus in the policy documents with 39% and 26% respectively. After these “Coach/Coach terminals” and “Roads” comes in with 16% and 14%, and at the bottom end with little focus in the policy documents are “Mobility plans”, “Ports” Spatial Planning” all with 3% or less.

4.2.3 Summary of National Policy Review

In general there is little mentioning of areas related to INTERCONNECT in the EU member states’ national policy based on the review of national strategic policy documents. At an average there has been identified 1.6 documents of relevance pr. country and only five of the 40 documents of relevance mentions TEN.

When it comes to the core elements of WP3 - the specific areas of interconnections “New/Improved Links” are very dominant with almost 60% of all mentioning with regards to the six elements. This is a good picture on the level of focus on interconnection in the national strategic policy documents, “New/Improved Links” are mainly physical improvements of transport infrastructure and not as complicated as e.g. “Legal and Organisational Arrangements” or “Infrastructure Pricing”.

Looking at the focus on modes of transport/terminal, mobility plans and spatial planning documents in the national strategic policy documents “Rail/Rail stations” and “Air/ Airports” accounts for 65% of all mentioning, while “Ports” account for 2%. This could show that there is more focus on interconnections in the bigger hubs of air and rail, while ferries play a very limited role in passenger transport.

4.3 THE CONSEQUENCES OF DIFFERENCES IN INTERCONNECTIVITY POLICIES

The review of national strategic policy documents clearly shows that there is little focus interconnections in the EU member states national policies. It also shows that there are some differences in interconnection policy between the member states, but based on the general level of focus on interconnection in the reviewed documents these differences are minor. The general picture shows that there is little or close to no focus on interconnections in the policy documents.

This lack of focus on interconnections in policy can have some negative effects on the passenger transport between neighbouring states and European wide passenger transport. Missing interconnections between different modes of transport and different layers of transport networks

reduces accessibility at each level of network as well as between the networks. At the local/regional level this would not only have a negative impact on people's ability to access local/regional destinations, but it would also reduce access to European and intercontinental destinations and it would have similar effects for people coming from higher levels of transport networks trying to access local/regional destinations.

This lack of accessibility can potentially have negative effects on the economy and social cohesion, both at local/regional level and at the EU level.

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