Thematic Study

Sustainable public transport and logistics in the CENTRAL EUROPE Programme

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1 Summary

The present thematic study capitalises on CENTRAL EUROPE (CE) Programme achievements in the field of sustainable public transport and logistics against the background of the current and future EU transport and territorial policy framework. The results shall provide policy makers and thematic stakeholders with a precise picture on how CENTRAL EUROPE projects contribute to achieving policies formulated on EU level.

Thematic background and methodology

Past trends in transport

In central Europe, the share of sustainable passenger and freight transport has declined significantly over the last decade, whereas trends in EU-15 (AT, DE, IT) and EU-12 (CZ, HU, SK, SI, PL) member states within the CE region show a different picture. EU-12 member states are facing a tremendous **increase of passenger transport by car** on the cost of more sustainable modes as rail transport, which has significantly dropped in the last two decades. Freight transport demonstrates a similar trend. While sustainable modes lost market shares (especially rail), road transport tripled within 15 years. Regarding transport related greenhouse gas (GHG) emissions, EU-12 member states within the CE region show an increase which is higher than the average in the European Union, while transport related GHG emissions have stagnated in EU-15 member states.

Sustainable public transport and logistics in the CE Programme

The CENTRAL EUROPE Programme funds projects in six thematic fields with one of them addressing "Sustainable public transport and logistics". This theme comprises two further sub-themes which can be understood as **hypotheses** to be questioned in the frame of this study: the first one is dealing with passenger transport and the second refers to freight transport. In short, the two sub-themes imply that transnational cooperation in the frame of CENTRAL EUROPE contributes (1.) to **move people a greener and safer way** (sub-theme 1) and (2.) to **connect the regions and put freight on a greener track** (sub-theme 2). Projects have been assigned to either one of the sub-themes or to both if they are addressing aspects of passenger as well as freight transport at the same time.

EU Transport policy

Three **core policies of EU Transport policy** emerged from the analysis of the strategic framework: the "White Paper – Roadmap to a Single European Transport Area", the "Intelligent Transport System (ITS) Directive" and the "Trans-European Transport Network (TEN-T)". The White Paper sets a range of more specific targets involving among others modal shifts towards sustainable and energy efficient modes of transport as well as reduction goals in GHG, pollutants and oil consumption. To monitor these targets, the European Environment Agency (EEA) introduced **measurable indicators** in the Transport and Environment Reporting Mechanism (TERM) in 2011. With regard to the CENTRAL EUROPE sub-themes mentioned above, the indicator **TERM 12a/b "Passenger transport volume and modal split"** can be assigned to sub-theme 1, whereas sub-theme 2 is represented by **TERM 13a/b "Freight transport volume and modal split"**.

Based on the examination of the EU policy framework and the principal composition of projects, four topics of relevance for the two sub-themes have been identified.

1. Greenhouse gas emissions and energy efficient transport
2. Intelligent Transport Systems (ITS)
3. Trans-European Transport Network (TEN-T)
4. Environmental qualities and transport emissions

The analysis of the thematic programme achievements has been organised along these four topics.

Thematic achievements of CENTRAL EUROPE in the field of sustainable public transport and logistics

Greenhouse gas emissions and energy efficient transport

Projects within this topic concentrate on promoting **modal shifts in passenger and freight transport to energy efficient transport** modes such as non-motorised modes, public transport, rail or inland waterways.

This process is stimulated by the **exchange** of experiences and knowledge or public **awareness raising** activities. An important framework condition for a real impact in modal shift is the **institution-building** support, which is found in many CENTRAL EUROPE projects. Cooperation is moreover fostered by commonly developed **decision support tools** and **implementation strategies** (e.g. towards cleaner vehicles) with exemplary pilot and demonstration projects.

Intelligent Transport Systems (ITS)

Competencies bundling and the **promotion of cooperation among different interest groups** in ITS development processes are inherent elements for the strengthening of central Europe`s competitiveness on a European and global scale. The use of information and communication technologies and intelligent transport systems in particular, can facilitate **information exchange** in multimodal logistics chains (e.g. through multimodal platforms, eLogistics) and thereby enhance **interoperability** in logistics businesses.

In passenger transport, projects are aiming to enhance multimodal services and improve door-to-door mobility in connection with the use of **real-time traffic** information.

Most of the projects have a direct link to the actions of the ITS-Action Plan at EU level.

Trans-European Transport Networks (TEN-T)

Projects have actively participated in the **TEN-T revision process** but provide also **bottom-up** contributions for the ongoing development of the TEN-T core network respectively for the improvement of **specific corridors** (e.g. Baltic-Adriatic Corridor, South-North Axis, Central Axis etc.), which also involve the closure of the **missing links** on local and regional scale (e.g. “last mile” improvement).

The development of a **framework for institutionalised territorial cooperation** – including important **feasibility checks** for future infrastructure improvements - is considered essential for the sustainable TEN-T development in the long term.

Pilot actions with short-term infrastructure improvements (small-scale investments) create a perceptible **benefit for local population** as well as **local and regional economies**.

Environmental qualities and transport emissions

Through the promotion of **modal shifts** and the introduction of **new technologies** (e.g. zero emission vehicles), projects constitute first essential steps towards the implementation of principal goals at EU level (White Paper), as for example the decrease of conventionally fuelled cars in urban areas or the reduction of transport related emissions.

Some projects encourage the use of bicycles in urban areas and promote the use of new propulsion technologies in individual but also in public transport. In freight transport, multimodal platforms facilitating the **bundling in the logistics chain** and thereby improving efficiency imply a cost advantage for the involved businesses, but beyond also an environmental (and social) benefit at a larger scale.

Some projects are specifically promoting the institutionalisation of **functional cooperation between municipalities and the hinterland** with the aim to overcome the challenge of urban sprawl in land use management.

Conclusions

CENTRAL EUROPE transport projects are generally well aligned to the objectives of the European Commission policy in this field, with some projects even anticipating more recent objectives.

The European integration process is supported by the projects through institution building processes kicked off by establishing cooperation networks. This is achieved through the joint preparation of projects, mutual cooperation, the common setting of standards and the harmonisation of regulations as well as through the implementation of common transnational or cross-border pilot activities.

A number of projects demonstrate the principal feasibility of a modal switch in passenger transport, e.g. through pilot actions related to better cycling conditions in urban areas or through implementing zero emission vehicles. They provide a decisive **momentum in the right direction**. The overall effects may still appear small at present though taking into account that most projects are limited to pilot actions or preparatory work for an implementation at a larger scale. In this regard, it should be pointed out that the CENTRAL EUROPE Programme is not to be considered as an investment but as a cooperation programme.

In line with objectives at EU level, “modal shifts in long-distance freight transport from road to rail and waterborne transport” have been tackled within CENTRAL EUROPE projects through developing cooperation structures for better access to European sea ports or through establishing strategic cooperation between and within trans-European transport corridors. Important in this regard is the **preparatory work** (e.g. the implementation of feasibility studies or institution-building-processes with a clear transnational approach) for **future large scale infrastructure investments** (e.g. the TEN-T core network).The development of the TEN-T and other transport corridors fosters territorial cohesion and promotes a balanced allocation of economic benefits.

2 Introduction

Financed by the European Regional Development Fund (ERDF), the CENTRAL EUROPE (CE) Programme aims to make regions in central Europe more competitive, innovative, attractive and accessible. The current programme, which runs from 2007-2013, has an overall budget of EUR 231 million for co-financing EU transnational cooperation activities benefitting the objective 3 "European Territorial Cooperation" (ETC) of the regional policy in the European Union 2007-2013.

The programme area includes regions on a NUTS 2[1] statistical level from Austria, the Czech Republic, Germany, Hungary, Italy, Poland, the Slovak Republic, Slovenia and Ukraine (fig. 1). It covers about 1,050,00 square kilometers, an area that represents approximately a fifth of the EU landmass. About 148 million citizens or 28 percent of the EU population live in this area. Besides encompassing some of Europe's richest regions, the area also includes some of Europe's poorest ones.

Regarding their entry in the European Union, the programme area can be divided in regions belonging to EU-15 member states (entry before 2004: AT, DE, IT) and younger member states of the EU-12 (accession on 1st May 2004: CZ, HU, SK, SI, PL). Needless to say, there are spatial disparities between these two groups of CENTRAL EUROPE regions.

The CENTRAL EUROPE Programme aims to contribute to reducing these differences through cooperation between regions, working towards joint solutions to common problems and actions that harness the regions' potential. The programme should also help to strengthen the overall competitiveness by stimulating innovation and promoting excellence throughout central Europe.

Currently, the programme supports 124 territorial cooperation projects which can be assigned to six themes:

- Technology transfer and business innovation
- Sustainable public transport and logistics
- Environmental risk management and climate change
- Energy efficiency and renewable energies
- Demographic change and knowledge development
- Cultural heritage and creative resources

Reaching the final phase of the programme-period 2007-2013, the CENTRAL EUROPE management bodies intend to capitalise the programme achievements against the background of the current and future EU policy framework. The intention is to inform policy makers and thematic stakeholders about the way CENTRAL EUROPE projects contribute to achieving sectoral policies formulated on EU level.

Transnational projects are in many cases a starting point for tackling regional and transnational challenges. Strategies, concepts, tools and investments prepared in transnational partnerships need to be sustained, which means that projects in their capitalisation activities have to identify follow-up opportunities and to "open up doors" to ensure that results influence or become a part of policies, larger investments, as well as business and development opportunities.

In this context the aim of capitalisation activities is to demonstrate the thematic value of the CENTRAL EUROPE Programme to stakeholders in the regions, the Member states and the EU institutions.

[1] basic regional level for the application of regional policies

The present study aiming to feature thematic programme achievements in the field of sustainable public transport and logistics is the first synthesis of this vein.

Project achievements in clean public transport as well as in the improvement of international (freight) traffic flows will be highlighted against the background of the EU policy framework.

fig. 1 CENTRAL EUROPE Programme Area

source: CENTRAL EUROPE

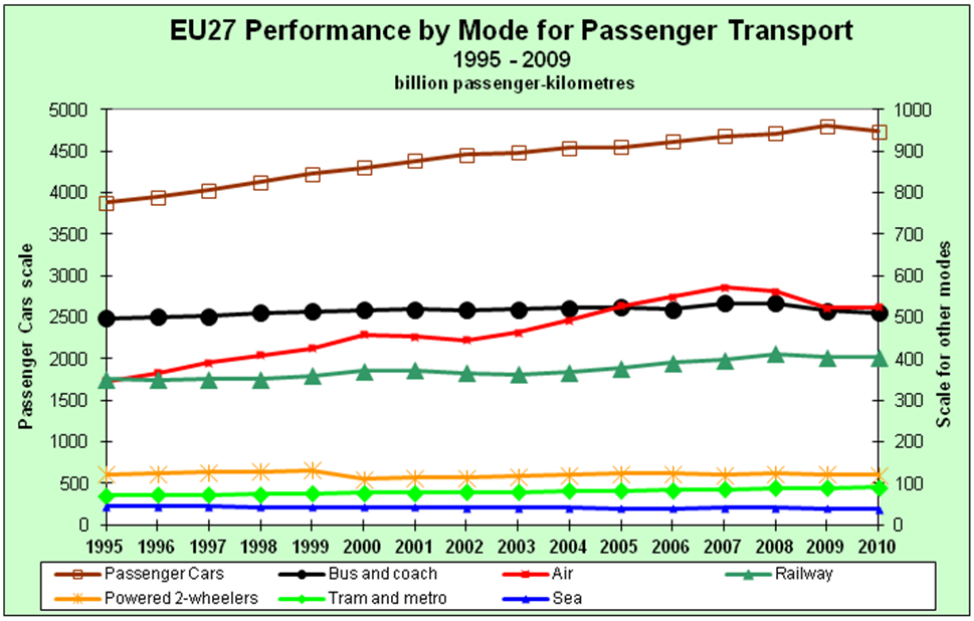
3 Thematic background and transport trends

3.1 Past trends in transport and environment in central Europe

To gain an insight in the needs for action in the field of transport, the following section provides hard facts regarding transport and environment development in the European Union as well as in the CENTRAL EUROPE (CE) programme area in particular.

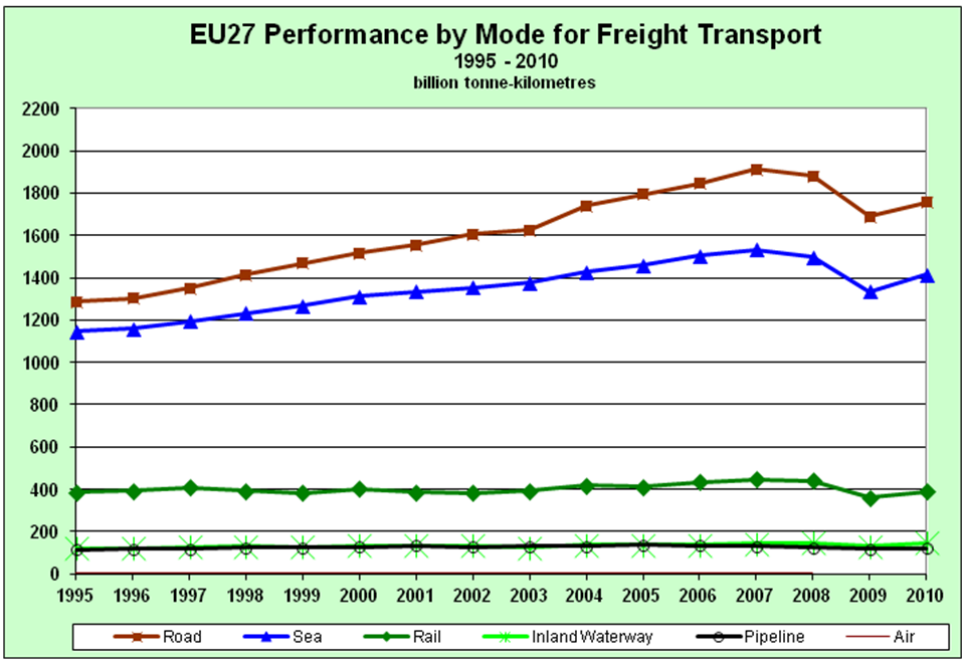
Over the past two decades, the transport development in the European Union and especially in the CE region shows an ambivalent picture. The share of sustainable passenger and freight transport has declined significantly in the CE region. This trend is contrary to the goals set within the programme for European Territorial Cooperation as well as in the recent papers published by the European Commission (White Paper "Roadmap to a Single European Transport Area", "A Roadmap for moving to a competitive low carbon economy in 2050").

fig. 2 Performance by Mode for Passenger Transport 1995 – 2009 in the EU 27



Source: European Commission, 2012a

fig. 3 Performance by Mode for Freight Transport 1995 – 2010 in the EU 27



Source: European Commission, 2012a

In order to obtain a more precise picture of transport development, the figures have been disaggregated in passenger transport and freight transport in a first step. Additionally, a distinction was made for the CE region between the EU-15 and the EU-12[2] (EU accession on 1st May 2004). This disaggregation was chosen since the new member states are going through the process of "transition economy" from a centrally planned economy to a free market economy, also called "countries in transition", after the fall of the Iron Curtain in 1989. Transport in general is linked inherently to economy, especially freight transport. This transition economy may be observed in the development of transport performance.

For this purpose, two indices were used to differentiate the CE development, explained in the following:

CE-1 (CZ, HU, SK, SI, PL).....EU-12 member states within the CE region

CE-2 (AT, DE, IT)..... EU-15 member states within the CE region

The data used for the analysis is on national level, comprising the whole country each,[3] since comparable data for the area was not available on a regional level.

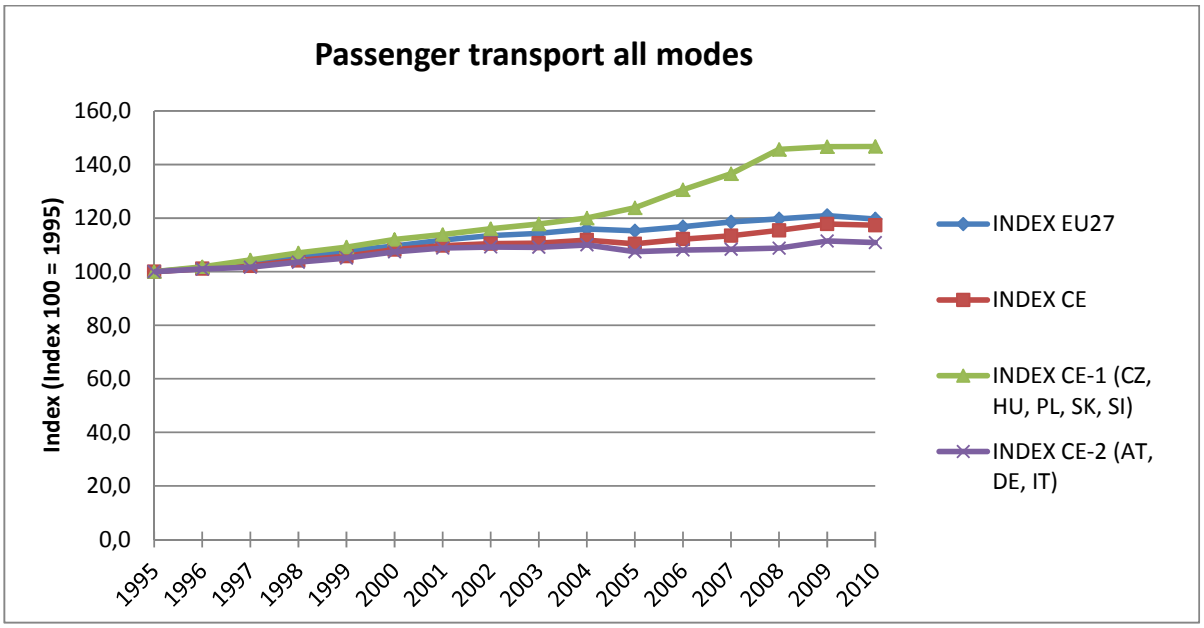
[2] EU-12 Member states: Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia. source: European Commission, 2011c

[3] Only parts of some countries are however covered by the CENTRAL EUROPE programme area.

3.1.1 Trends in passenger transport

Passenger transport for **all modes** generates a different picture in the EU-12 member states within the CE region compared to the EU-27: In the new member states within the CE region, the performance of passenger transport grew faster (CE-1: +47 percent in 15 years) than in the EU-15 member states of the CE region (CE-2: +11 percent in 15 years) and in the EU-27 (+20 percent in 15 years) in total (fig. 4).

fig. 4 Performance in passenger transport 1995 – 2010

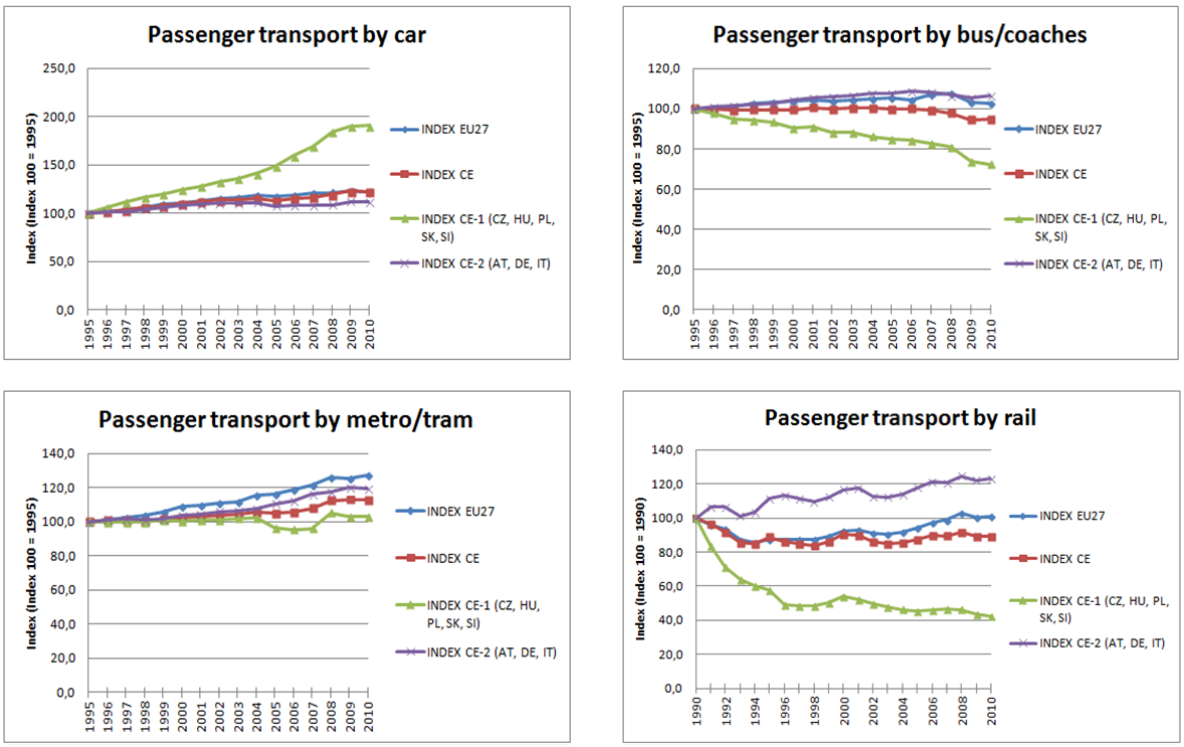


Source: European Commission, 2012a, own calculations

Passenger **rail transport** reveals the highest decrease in the CE region. The new member states within the CE region show a tremendous decrease over two decades: By 2010, the passenger kilometres dropped to 40 percent compared to 1990. In order to compare all transport modes, 1995 was used as the base year.

The decrease of passenger kilometres in the new member states within the CE region was contrary to the general development in passenger rail transport in the EU-27 with an increase of one third in the same period of time. In parallel, the performance of **passenger cars** in the new member states shows - with more or less a doubling of the passenger kilometres (!) - a high increase, whereas the performance of **metros and trams** remains at a stable level. The performance of metros and trams as a typical transport mode in medium-sized and large cities (in general more than 100.000 inhabitants for cities with a tram net, one million inhabitants for cities with a metro net) provides an indication that the market share of public transport in regional and intra-regional transport lost substantially, whereas in cities the decline has been less dramatic. In cities with metro and/or tram networks, the old member states Italy, Germany and Austria register a substantial growth of passenger kilometres by metros and trams. Nonetheless, it is evident that the market share of public transport in cities of the new member states is moving into the wrong direction, compared to the EU-15 member states.

fig. 5 Performance in passenger transport by modes

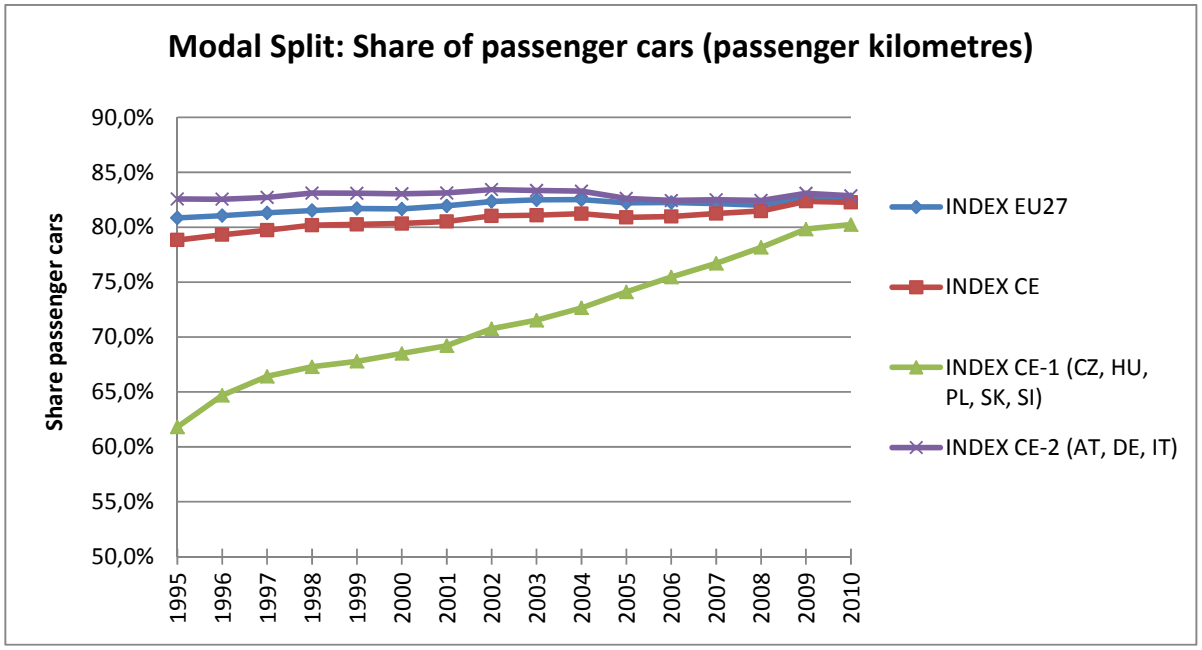


Source: European Commission, 2012a, own calculations

The modal split, based on passenger kilometres, changed completely within the considered period of time, the share of passenger cars in passenger transport is more or less equal in the region with around 80 percent (fig. 6).

The quite fast and tremendous switch from public transport to passenger cars in the new member states resulted in environmental and safety problems.

fig. 6 Modal split in passenger transport

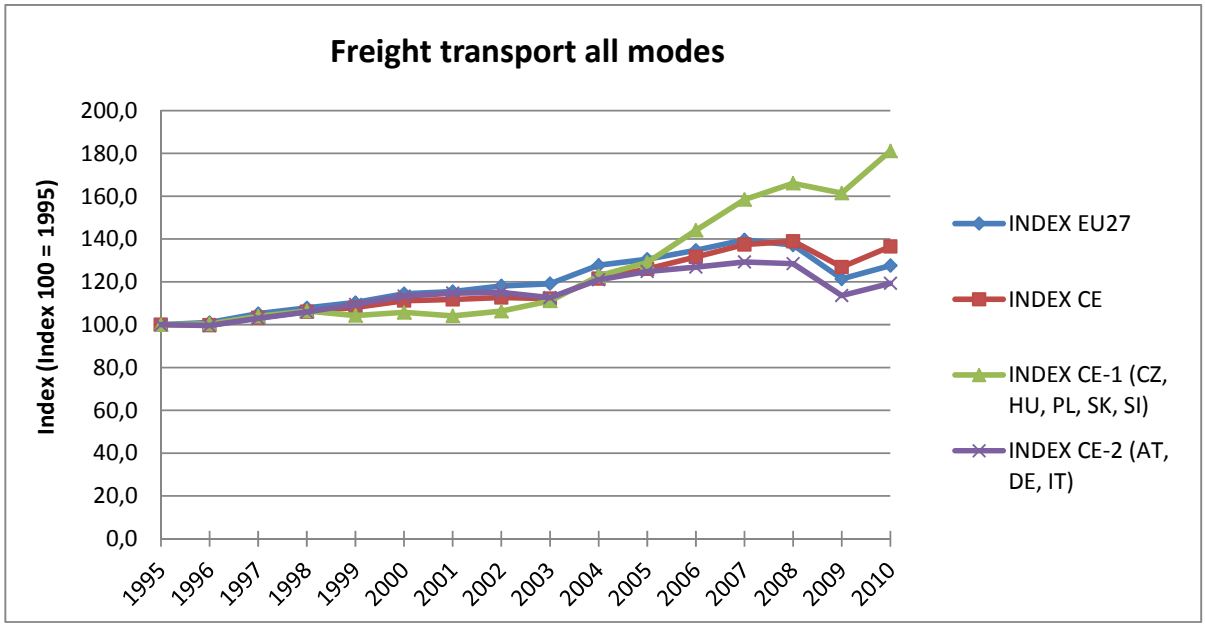


Source: European Commission, 2012a, own calculations

3.1.2 Freight transport

Freight transport shows a significantly different picture for **all modes** in the CE region compared to the EU-27: In the new member states, the performance of freight transport grew faster (CE-1: +81 percent in 15 years) than in the EU-15 member states (CE-2: +19 percent in 15 years) and in the EU-27 (+28 percent in 15 years) (fig. 7). This growth, which is about three times higher in the new member states can be mainly attributed to the tremendous increase of road transport in Poland and the less dramatic decline in general due to the economic crisis after 2007/2008 compared to the EU-15 member states.

fig. 7 Performance in freight transport 1995 – 2010

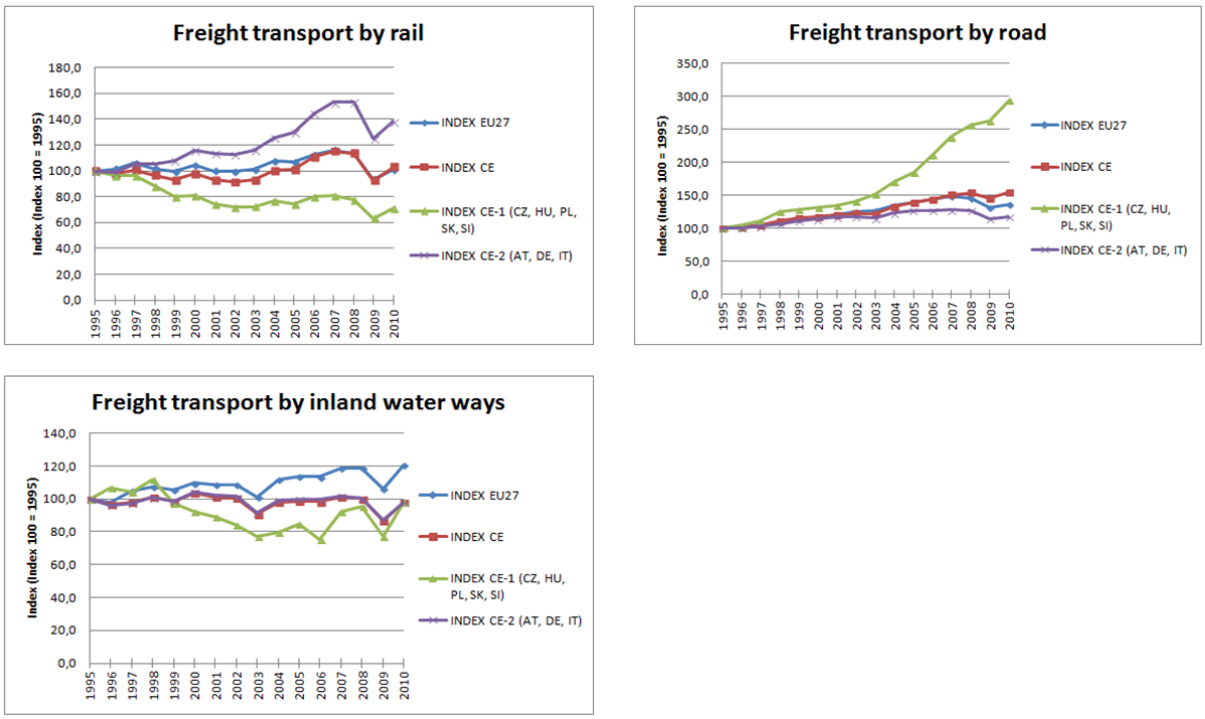


Source: European Commission, 2012a, own calculations

The picture of freight transport is again similar to the picture of passenger transport. Sustainable transport modes lost market share, whereas road transport tripled within 15 years. The gap between the new and the EU-15 member states in the CE region is particularly remarkable in **freight rail transport**: In the new member states, freight transport by rail dropped by 30 percent, whereas in the EU-15 member states freight rail transport increased by 38 percent. The gap in freight rail transport between the EU-15 and the new member states is continuously growing.

In the figure of freight transport by road it has to be considered that the data comprises the national and international haulage by vehicles registered in the reporting country. Therefore, this figure is not showing the total freight transport by road within the corresponding country only, but includes as well the international transports. This seems to be important to be kept in mind as some countries inside the EU export road transport services which might not be negligible.

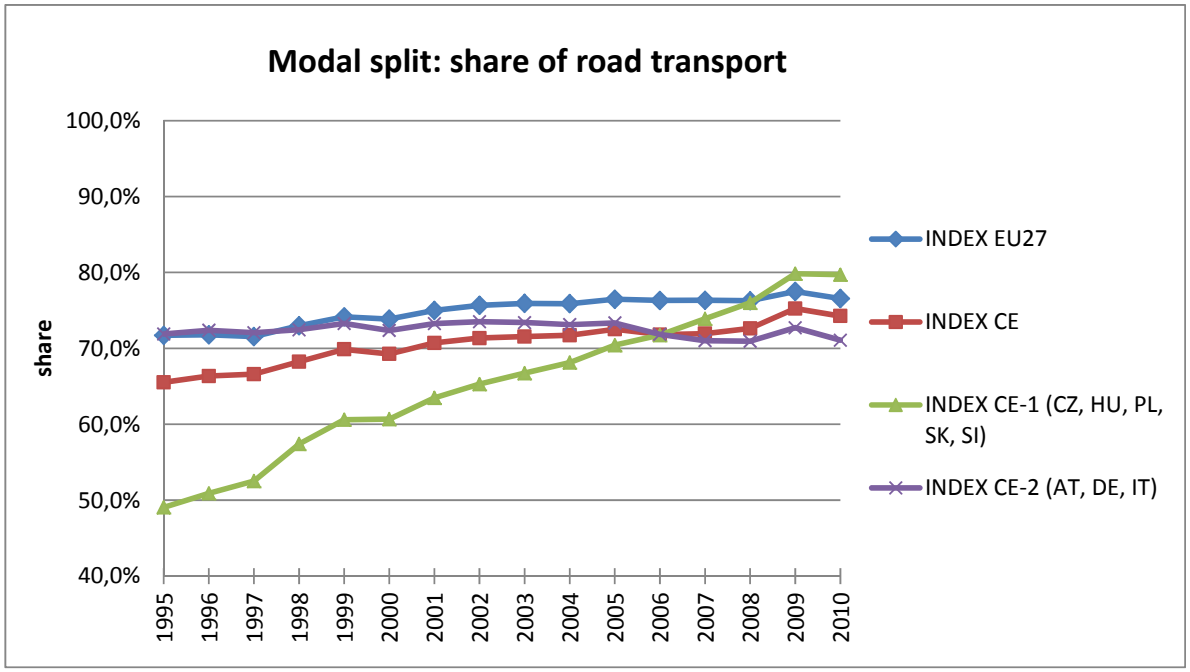
fig. 8 Performance in freight transport by modes 1995 – 2010



Source: European Commission, 2012a, own calculations

The share of road freight transport experienced a dramatic increase in the EU-12 member states within CENTRAL EUROPE from 50 percent in 1995 to 80 percent in 2010. On the contrast, road transport stayed a rather constant share in the EU-27 (slight increase from 72 to 77 percent). In the EU-15 member states within CENTRAL EUROPE it even displays a decreasing tendency (fig. 9).

fig. 9 Modal split in freight transport

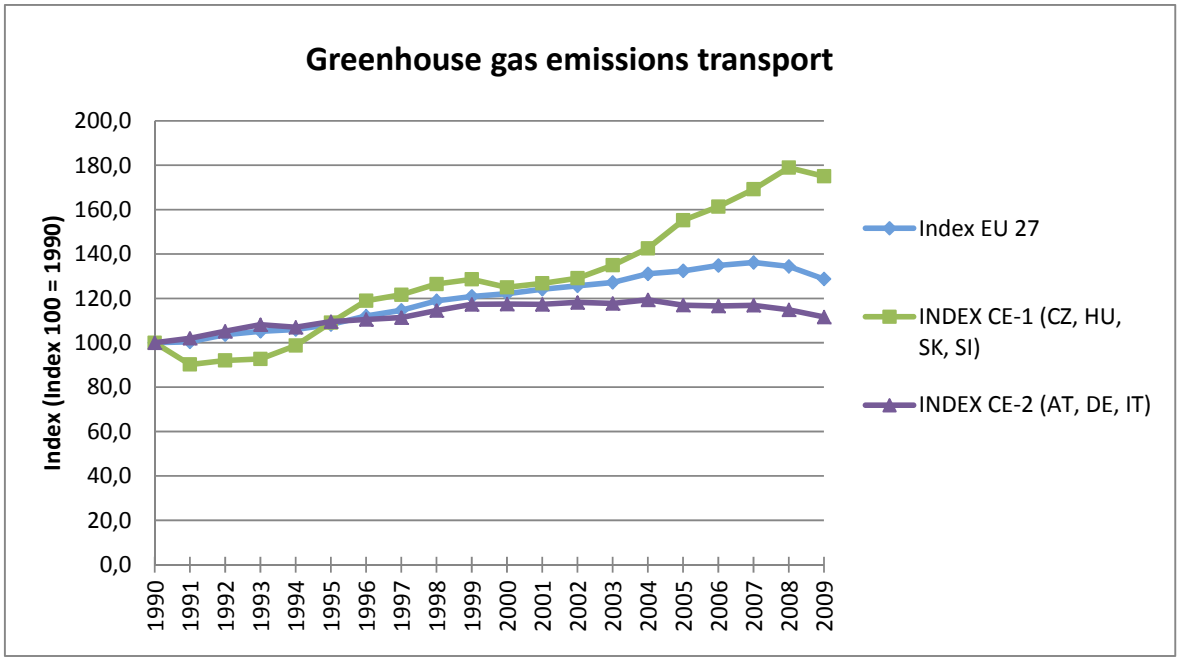


Source: European Commission, 2012a, own calculations

3.1.3 Greenhouse gas emissions in the transport sector

In parallel to the trends in transport, the emission of green house gases (GHG) shows a similar evolution and a two-fold development in the CE region: In the new member states, the growth of transport related GHG was substantially higher than the average in the European Union. In the EU-15 member states, however, we note more or less a stagnation of the transport related GHG emission with a peak around the year 2000. The gap in GHG emissions between new and EU-15 member states is high and amounts to 60 percent.

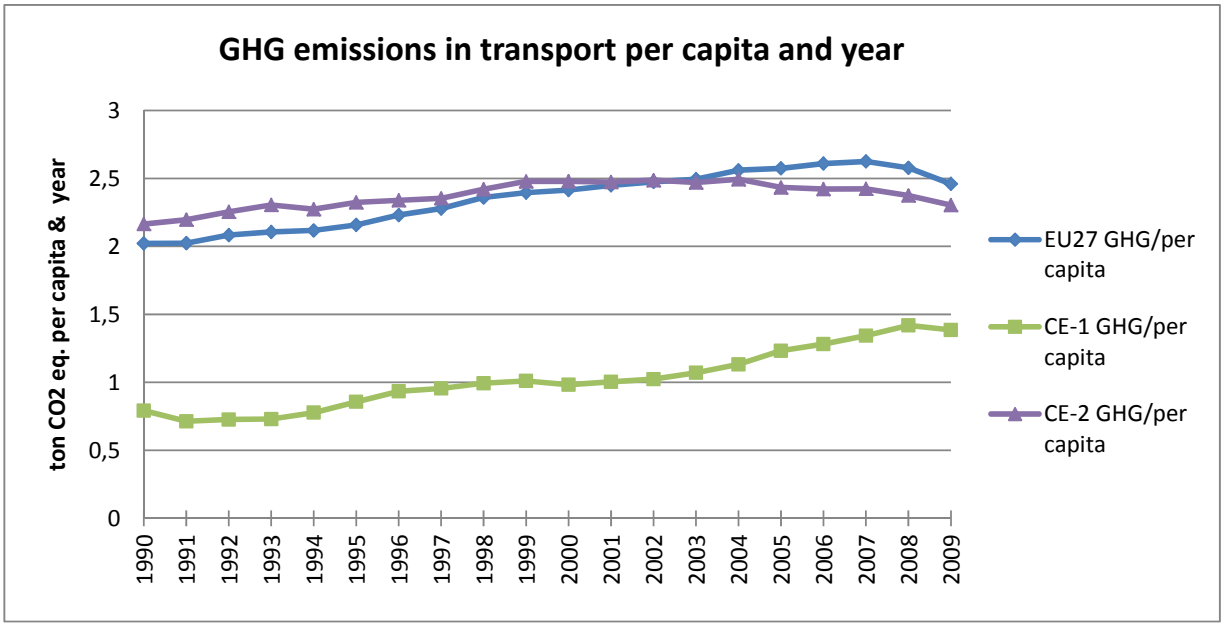
fig. 10 Greenhouse gas emissions of transport 1990 - 2009



Source: European Commission, 2012a, own calculations

Even if the trend is going in the wrong direction, especially in the new member states, the **transport related GHG emissions per capita** are still much lower than in the EU-15 member states: In 2009, the transport related GHG emissions per capita in the new member states amounts to 1,39 tons per year. In the EU-15 member states however the transport related GHG emissions per capita are much higher and reach 2,30 tons per year in 2009. This significant difference is reflected in the performance of passenger transport as well: In the year 2009, every inhabitant in the new member states travelled 8.795 km per year (air transport excluded). In the EU-15 member states on the contrary, the transport performance reaches 13.393 km per year, which is a difference of about 50 percent.

fig. 11 Transport related GHG emissions per capita and year



Source: European Commission, 2012a, own calculations

It is evident, that transport behaviour in the CE region appears more or less "harmonised" between the EU-15 and the new member states: the use of passenger cars in passenger transport and the use of heavy duty vehicles in freight transport are dominant. There is still a significant difference in passenger transport existing: the driven kilometres per capita and year are still much lower in the new member states than in the EU-15 member states.

This might also be a mirror of the spatial development and personal income within the CE region where we are facing the largest gap in regional gross domestic product inside the European Union.

3.2 Thematic background and policy framework

Based on the before presented characteristics and trends of the CENTRAL EUROPE programme area, the following chapter will specify the themes of interest of the present study in the field of sustainable transport and logistics and provide the reader with the relevant policy framework at EU level.

Against this thematic and political background, the thematic achievements of CENTRAL EUROPE projects will be contextualized later in this study in the chapter 4. In this chapter, the specific policy frameworks relevant for the certain topics will be presented in more detail.

3.2.1 Sustainable public transport and logistics in the CENTRAL EUROPE Programme

The present study is aiming to feature thematic programme achievements in the field of **sustainable public transport and logistics**.

For this purpose, 25 projects which are dealing with transport and accessibility in one way or another, being assigned to this theme have been further analysed.

It must be pointed out that since CENTRAL EUROPE is a programme in the framework of European Territorial Cooperation (ETC), the projects do not involve high investments in the programme area. Moreover, ETC is willing to cover specific niches against the background of pronounced investment programmes. The topical niches of CENTRAL EUROPE in the field of sustainable transport and logistics will be investigated in the present study. The emphasis lies on sustainable achievements in the long term aside from punctual small scale investments.

Against the background of the principal commitment to sustainable public transport and logistics, **two sub-themes** – one in the field of passenger transport, the other related to freight transport shall be highlighted. These sub-themes, presented below, can be understood as **hypotheses** to be questioned in the frame of the present study.

Aiming to analyse thematic achievements within CENTRAL EUROPE, the analysis will be undertaken against the background of these two sub-themes. The detailed analysis of project achievements, constituting the core section of the study, will be moreover structured on the basis of **thematic topics**, which can be regarded subordinate aspects of each sub-theme. In the conclusion chapter, which aims to highlight the overall contribution of the CENTRAL EUROPE Programme to the political framework on a general level, the two sub-themes will be picked up again in particular.

The following paragraphs provide a short insight in these two sub-themes and projects preselected either for one or the other sub-theme. Some projects, however, which support aspects of sustainable passenger as well as freight transport at the same time, are hence assigned to both sub-themes.

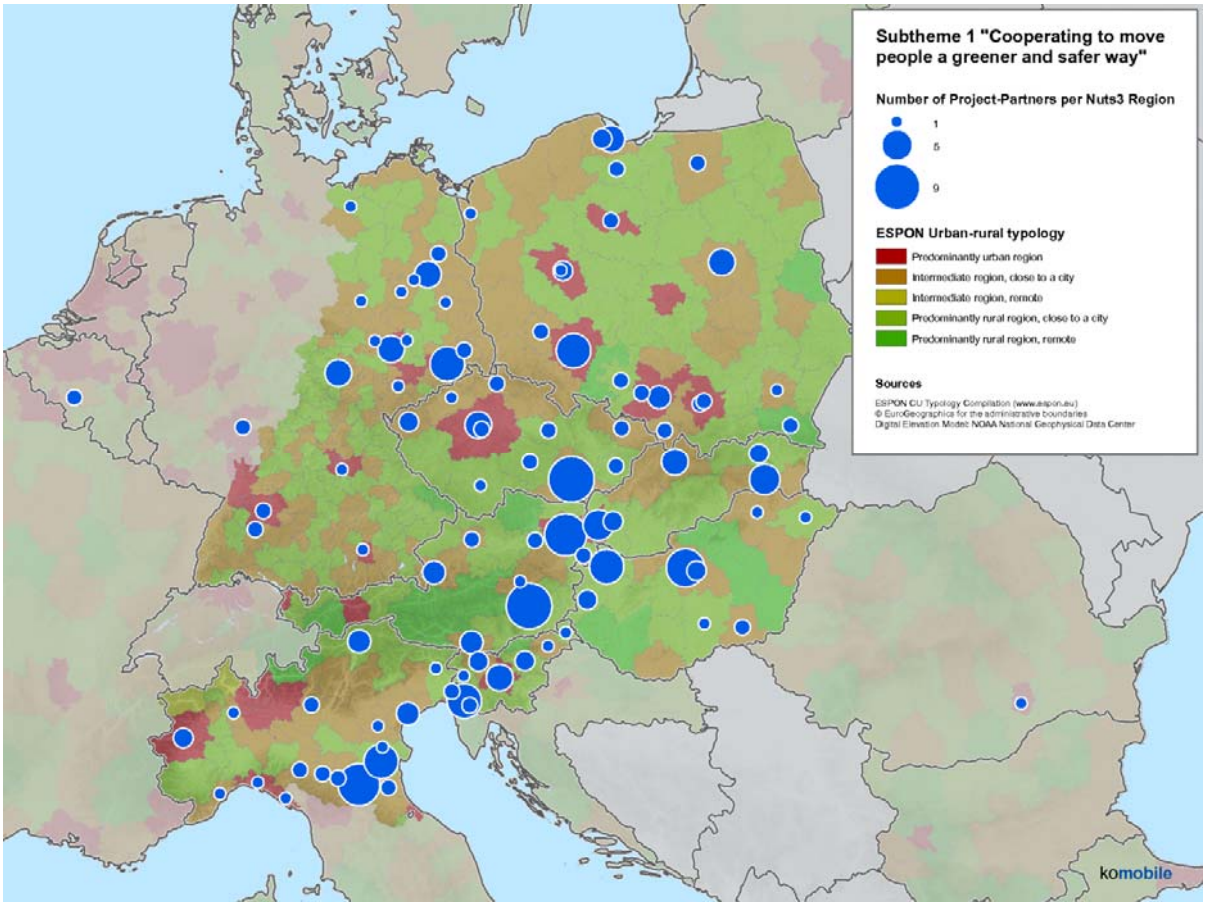
Cooperating to move people a greener and safer way (Sub-theme 1)

CENTRAL EUROPE Thesis: Transnational cooperation for **clean public transport** contributes to **a safer and smarter mobility - with positive effects on the environment, regional businesses and tourism.**

From the 25 projects assigned to this sub-theme, 15 projects involving 188 partners in total are dealing with the first sub-theme:

CENTROPE CAPACITY, Via Regia +, BICY, CHAMPIONS, GUTS, INTER-Regio-Rail, REZIPE, SOL, TROLLEY, Central MeetBike, SPES, RAILHUC, airLED, CITY REGIONS, EDITS

fig. 12 Project Partners "Cooperating to move people a greener and safer way"



MapSources: ESPON CU Typology Compilation (www.espon.eu), © EuroGeographics for the administrative boundaries, Digital Elevation Model NOAA National Geophysical Data Center

Although the majority of the projects are dealing with urban public transport, a significant high number of partners are situated in regions which are not classified as "predominantly urban".

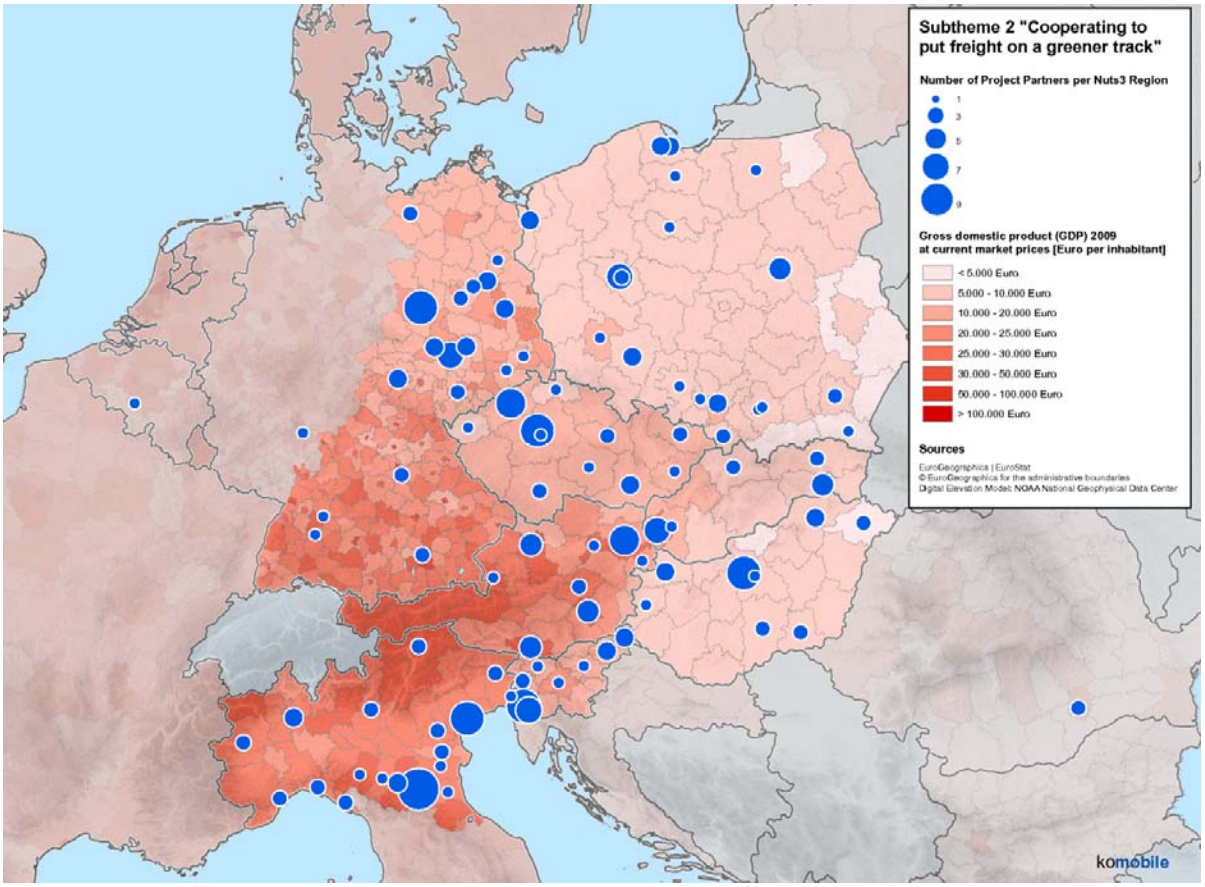
Cooperating to connect the regions and put freight on a greener track (Sub-theme 2)

CENTRAL EUROPE Thesis: **Accessibility to regions** is facilitated **by improving international traffic flows and encouraging intermodal transport through transnational cooperation**, thereby helping to take freight off the road and shift it to greener and safer means of transportation.

Against the background of the second sub-theme, 10 projects assigned to this sub-theme involving 156 partners in total will be further analysed:

ChemLog, KASSETTS, SoNorA, BATCo, FLAVIA, EMPIRIC, LOGICAL, INWAPO, ChemLog-T&T, ESSENCE

fig. 13 Project Partners "Cooperating to connect the regions and put freight on a greener track"



MapSources: Eurostat, © EuroGeographics for the administrative boundaries, Digital Elevation Model NOAA National Geophysical Data Center

A slight concentration of project partners can be observed in areas with a medium GDP level (e.g. seaside regions of Slovenia, regions in East Germany or in the Czech Republic).

However, a higher number of project partners can also be found in regions with a higher GDP (e.g. capitals of Austria, North Eastern Italy) as well as in economically weaker areas in parts of Hungary, Slovakia or Poland. We face a relatively balanced distribution of partners over the programme area.

3.2.2 EU transport policy framework

Against the background of the above described (sub-)themes of interest defined by the CENTRAL EUROPE Programme, a detailed analysis of the current and future policy framework by screening recent strategic papers at European level has been carried out. Out of these, three core strategic areas of the European territorial and transport policy could be identified, as presented in the following overview. A more detailed policy background will be provided theme wisely in the relevant sections of chapter 4 "CENTRAL EUROPE thematic achievements".

Strategic area 1: In the "White Paper" [4] describing the foundations of a future EU transport policy, objectives are set for specific fields in transport, as urban or regional transport, passenger or freight transport.

Strategic area 2: Within the Directive for the deployment of Intelligent Transport Systems (ITS)[5], four priority areas and actions were identified aiming to enhance the implementation of information and communication technology (ICT) for a more efficient and sustainable transport in Europe.

Strategic area 3: The Trans-European Transport (TEN-T) Network is regarded as a fundamental base to an efficient economy in the European Union. A multi annual financial network (31.7 bn in the period 2014 – 2020) under the Connecting Europe Facility has been proposed by the Commission.[6] Beside horizontal topics such as Galileo, ERTMS or SESAR[7], 30 TEN-T priority projects have been defined. The objective is to remove bottlenecks, upgrade infrastructure and streamline still fragmented cross border transport operations to a European network. In the new EU core transport network, core network corridors have been defined (see below). In the European Territorial Cooperation (ETC), large infrastructure as core network corridors may not be financed, but the preparation and planning phase may be part of an ETC project.

While **TEN-T** and **ITS** (and ICT in general) constitute well-definable topics on their own, the **White Paper** includes several secondary topics in the field of sustainable transport and logistics. The following aspects of this major strategic document of the European Commission can be highlighted in closer reference to the present study.

[4] European Commission, 2011a

[5] Council, European Parliament, 2010

[6] European Commission, 2011b

[7] Galileo: European satellite navigation; ERTMS: European Rail Traffic Management System; SESAR: Single European Sky ATM Research Programme

Goals set in the White Paper "Roadmap to a Single European Transport Area":

Recently, a couple of papers, directives and initiatives related to transport in the European Union have been launched by the Commission. The Commission proposes in the White Paper "Roadmap to a Single European Transport Area" and in "A Roadmap for moving to a competitive low carbon economy in 2050" a clear quantitative target for the reduction of carbon dioxide (CO_2): minus 60 percent compared to 1990 by 2050 for the transport sector and minus 80 percent compared to 1990 by 2050 for all other sectors together. Both documents concentrate on the overall policy strategy. The focus is clearly set on climate change and how to cope with it. Therefore, relevant transport targets have been set by 2050 with interim achievements by 2020 respectively 2030. The relevant transport targets are:[8]

- Greenhouse gas emissions (GHG) in transport: minus 60 percent compared to 1990 by the year 2050 including aviation
- Use of conventionally fuelled cars in urban transport (cars with internal combustion engine): minus 50 percent by 2030, minus 100 percent by 2050
- CO_2-free logistics in major urban centers
- Shift of medium-distance passenger transport to rail up to 2050
- Shift of road freight transport over 300km to rail an waterborne transport up to 2050
- 70 percent reduction of transport oil consumption from today
- Limit values for the atmospheric concentrations of main pollutants (SO_2, NO_x, PM, CO, C_6H_6, O_3)
- Reduce number of people exposed to and disturbed by traffic noise levels which endanger health and quality of life

These main transport targets determined by the White Paper at European scale, are generally represented in the **"Core Set of Indicators (CSI)"** proposed by the European Environment Agency (EEA) in the "Transport and Environment Reporting Mechanism" (TERM). The CSI describes the objectives and the future assessment of the measures to reach the objectives set in the different policy documents. The use of precise indicators like these enables an accurate assessment of the strategic White Paper.

The principal sub-themes of the present study are notably expressed by indicator TERM 12a/b: "Passenger transport volume and modal split within the EU"[9] (Sub-theme 1) and indicator TERM 13a/b: "Freight transport volume and modal split within the EU" [10] (Sub-theme 2).

[8] EEA, 2011, p.10f

[9] TERM 12a/b refers to the EU policy aim that by 2050 the majority of medium-distance passenger transport should be undertaken by rail (European Commission, 2011a).

[10] According to TERM 13a/b, a total of 30 percent of road freight over 300 km should be shifted to other modes such as rail or waterborne transport by the year 2030 and more than 50 percent by 2050, facilitated by efficient and green freight corridors (European Commission, 2011a).

Both indicators are hence particularly focusing on optimizing transport demand and obtaining a more sustainable modal split in passenger (sub-theme 1/ TERM 12a/b) and freight (sub-theme 2/ TERM 13a/b) transport.

fig. 14 TERM: Core Set of Indicators

TERM 01	Transport final energy consumption by mode
TERM 02	Transport emissions of greenhouse gases
TERM 03	Transport emissions of air pollutants
TERM 04	Exceedances of air quality objectives due to traffic
TERM 05	Exposure to and annoyance by traffic noise
TERM 12a/b	**Passenger transport volume and modal split**
TERM 13a/b	**Freight transport volume and modal split**
TERM 20	Real change in transport prices by mode
TERM 21	Fuel prices and taxes
TERM 27	Energy efficiency and specific CO2 emissions
TERM 31	Uptake of cleaner and alternative fuels
TERM 34	Proportion of vehicle fleet meeting certain emission standards

source: EEA 2011

4 CENTRAL EUROPE thematic achievements

4.1 Methodology

Taking account of the programme`s themes of interest, a selection of relevant specific topics was worked out from the EU transport policy framework, which will define the structure of the analysis of CENTRAL EUROPE project achievements.

4.1.1 Identification of topics

With the purpose of deriving single meaningful and significant topics for a detailed analysis of CENTRAL EUROPE projects, the before described principal strategic areas (see chapter 0) have been further subdivided. **Trans-European Transport Networks** and **Intelligent Transport Systems**, however, clearly considered as single subject areas with an extraordinary relevance to the current demands in transport development, remain as single topics each.

For the **identification of further topics** within the frame of the White Paper, the TERM Core Set of Indicators[11] has been consulted. The relevance of the single projects for each indicator (short: TERM) has been identified and highlighted in a matrix (see Annex). Most of the projects match with more than one indicator.

It should be pointed out, however, that a number of indicators refer to targets on type-approval emissions for road vehicles (cars, vans etc.) or on renewable energy shares in the transport sector which are not directly linked to territorial aspects. Thus, for the categorization of projects indicators linked directly or indirectly to territorial aspects have been selected.

Against this background, two topics in addition to the above presented topics were derived from the most relevant objectives addressed by the projects. The project achievements will hence be analyzed within **four topics**, which are:

1. **Green house gas emissions and energy efficient transport** (10 projects)

   This topic corresponds to the TERM 27: “Energy efficiency and specific CO_2 emissions”, which is related to monitoring the targets of the average emissions of new cars. TERM 27 might also be seen in a larger approach as an indicator on the efficiency of the total vehicle fleet or in the transport efficiency as a whole reflecting the modal share and the average distance driven per year.

2. **Intelligent Transport Systems (ITS)** (8 projects)

   All projects focusing on access to information and communication technologies (ICT) in the field of transport, implementing multimodal information systems, travel management system or facilitating information exchange in logistics are assigned to this indicator which is based on the thematic fields of DIRECTIVE 2010/40/EU (ITS).

[11] EEA, 2011, p.10f

3. **Trans-European Transport Networks (TEN-T)** (9 projects)

   This topic comprises projects, which are contributing to Trans-European Transport Network or address specific corridors.

4. **Environmental qualities and transport emissions** (13 projects)

   Local/regional environmental targets: Air quality and noise. This topic corresponds to the TERM 04: "Exceedances of air quality objectives due to traffic" and TERM 05: "Exposure to and annoyance by traffic noise", which is related to monitor the targets in ambient air concentrations of pollutants.

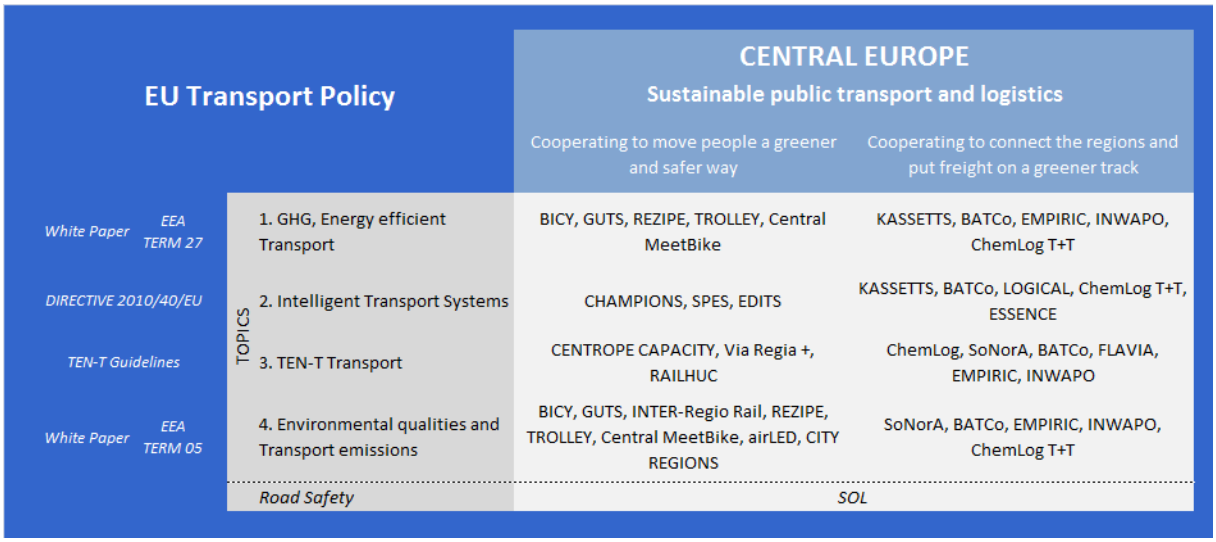
Each topic comprises projects which either address sub-theme 1, sub-theme 2 or both sub-themes. The specific topical relevance can hence be analyzed in both sub-themes equally.

fig. 15 Sustainable public transport and logistics in the CENTRAL EUROPE Programme

CENTRAL EUROPE Sustainable public transport and logistics	
SUBTHEME 1 Cooperating to move people a greener and safer way	**SUBTHEME 2** Cooperating to connect the regions and put freight on a greener track
1. GHG, Energy efficient Transport	
2. Intelligent Transport Systems	
3. TEN-T Transport	
4. Environmental qualities and Transport emissions	

As shown above, the generation of the topics is primarily conducted by principal thematic blocks/areas of interest of the current and future European territorial and transport policy taking equally account of the two pre-defined sub-themes of sustainable transport and logistics.

fig. 16 Embedment of CENTRAL EUROPE transport projects in the overall EU transport policy framework



Being addressed by one project (SOL) only, road safety was not included in further topic wise analyses.

4.1.2 Analysis of project achievements

The **collection of project data** (project application forms, progress reports, core outputs) and the programme data (programme evaluation reports, annual implementation reports and statistics of the Programme Monitoring System) have been provided by the Joint Technical Secretariat (JTS). The first step in the analysis comprises the **screening of all 25 projects** with general relevance for the theme "Sustainable transport and logistics" in order to get an overview and to find out which of the above described **indicators** they are addressing (see matrix in the annex).

Within the four defined topics, the analysis of projects later on concentrates on the main project achievements and contextualizes them against the topical political framework. The relevance of the project thematic achievements and their embedding in the current and future policy framework for the theme are highlighted.

The textual analysis will be supported by geographical maps in order to give a clear and readable picture of the **spatial distribution of the CENTRAL EUROPE partnerships**. Special attention will be given to outputs and results, especially to main pilot actions and measurable indicators like investments and potential pre-investment activities.

With regard to the assessment of project achievements, some issues should be mentioned. As most of the projects have not yet been finalized and some are still in their earlier or mid-phases, the analysis of the project results and achievements is primarily based on the Application Forms since this is the only comparable format. Additionally, as far as possible, available selected core outputs and websites of more advanced projects have been screened. In the overview table (Annex) as well as in the project table within each topic, the mentioned core outputs shall be understood as the projected outputs of the projects according to the Application Form. It cannot be guaranteed at this stage, that all of those outputs have been realized yet. In the analysis of project achievements in chapter 4, however, various available sources (e.g. publications, web and other media appearances) have been used to highlight certain good

practices. It goes without saying that through this procedure some more advanced projects might be put forward against others.

Within each topic, a short budget overview provides an insight in the allocated funds. It has to be pointed out that the sum of the budgets per topic does not depict the correct sum of budgets by the 25 projects analysed, since most of the projects are assigned to more than one topic.

4.2 Topic "Greenhouse Gas Emissions, Energy Efficient Transport"

4.2.1 Specific policy background

Global and European policies in transport related to greenhouse gas emissions (GHG)

Oil dependency and climate change will continuously cause high costs in the longer run. The "Stern Review on the Economics of Climate Change"[12] quoted that the costs of "Doing Nothing" will be higher than the costs of reducing oil dependency and investments in a low carbon economy.[13] In the same light, the Organisation for Economic Co-operation and Development (OECD) reports in its recent environmental outlook until 2050 that the costs and consequences of inaction are significant, both in economic and human terms. The OECD further suggests more precisely, that if actions start now, "there is still a change of global GHG emissions peaking before 2020 and limiting the world`s average temperature increase to 2°C", which "would make the costs of adaption and mitigation much more affordable". [14]

The "United Nations Framework Convention on Climate Change" (UNFCCC) decided in the frame of the conferences in Copenhagen 2009 and in Cancun 2010 to limit the increase of global temperature to below 2°C based on the pre-industrial level.[15]

The 2°C target implies an overall 50 percent reduction in greenhouse gas emissions compared to 2005 at a global level taking into account that the reduction in the industrialized countries must be higher than in developing or emerging countries of the world. Therefore, the GHG reduction target in industrialized countries is bound to 80 percent. As a consequence, a strategy was presented at EU level in 2011 involving the 80-95 percent reduction in greenhouse gas emissions by 2050 compared to 1990. While this general target refers to a "global" reduction by all sectors, specific reduction targets for the different sectors were refined: for the transport sector a 60 percent reduction goal in GHG is set by 2050 compared to 1990 with an intermediate target of 20 percent reduction in GHG emissions by 2030 compared to 2008.[16]

In order to meet these objectives, numerous single measures have been proposed, mostly involving individual targets. Selected measures are:[17]

- EU CO_2 emissions of maritime bunker fuels: minus 40 percent compared to 2005 by the year 2050
- Use of conventionally fuelled cars in urban transport: minus 50 percent by 2030 and minus 100 percent by 2050
- CO_2-free city logistics in major urban centers in 2030

[12] Stern Report, 2006

[13] The costs of „Doing Nothing" are estimated at 5percent to 20percent of the worldwide GDP and would seriously threaten the welfare in Europe as well. The estimation of the costs of „Doing Nothing" are higher than the costs of measures preventing climate change.

[14] OECD, 2012, p.24

[15] UNFCCC, 2009

[16] European Commission, 2011d

[17] European Commission, 2011a

- Road freight over 300 km shift to rail/waterborne transport: 30 percent shift until 2030, 50 percent shift until 2050
- 10 percent share of renewable energy in the transport sector, final energy consumption for each Member State in 2020
- Target average type-approval emissions for new passenger cars: 130g CO_2/km in 2012-2015, 95 g CO_2/km in 2020
- Target average type-approval emissions for new light vans (light duty vehicles (LDV)): 175g CO_2/km in 2014-2017, 147 g CO_2/km in 2020

The OECD highlights the importance of economic instruments such as environmental taxes and emissions trading schemes in order to make activities that pollute and damage the environment more costly than greener alternatives.[18] This applies to various emitting sectors and industries but to the transport sector, which is responsible for around a quarter of total GHG emissions in the European Union[19], in particular.

A high number of those measures as well as economic instruments mentioned above can only be tackled at European (EU-) level, for instance the GHG emission standards for new road vehicles. On the other side, several measures are clearly territorially bound, as for example to urban areas. Seen in this light, the CENTRAL EUROPE projects have been allocated to the topic "GHG energy efficient transport" if they are aiming to influence modal shifts, supporting the introduction of zero emission vehicles or energy efficient vehicles or generally promoting at higher load factors.

It shall be considered that through these measures the projects might also have an indirect impact or influence on the transport costs through optimization or efficiency gains generally for one specific mode.

4.2.2 CENTRAL EUROPE projects on GHG and energy efficient transport

From the Core Set of Indicators (CSI) in the "Transport and Environment Reporting Mechanism" the indicator "transport emissions of greenhouse gases" (TERM 27) was chosen as a level rod to allocate the projects according to their description in the Application Form (AF) and to describe the (planned) outcome of the projects and the available core outputs.

The present topic "GHG, energy efficient transport" comprises hence ten CE projects which address thematic contents defined by this indicator.

Table 1: CENTRAL EUROPE projects dealing with GHG, energy efficient transport

KASSETTS	KASSETTS is an ICT focused project with the objective of developing and implementing ICT tools to improve logistics and raise the **energy efficiency** of transport.

[18] OECD, 2012, p.28

[19] European Commission, 2011f

BATCo	Main goal of the BATCo project is the joined development of the Baltic-Adriatic Transport Corridor with special consideration of **energy efficient transport** and logistics through transnational institutional and business cooperation and the development of information platforms for harmonized traffic management along the axis.
BICY	BICY aims at reducing car traffic by promoting the replacement of car by bicycle for shorter - especially urban - trips, by promoting bike as a complement transport mean of public transport, raising awareness for bicycle planning, policy and use and enabling know-how-transfers. Thus vehicles with internal combustion engines will be replaced by **human powered vehicles**.
GUTS	GUTS aims at creating a solid knowledge base for the development of sustainable and **energy efficient urban public transport** systems. Core output is a Green Public Transport Resource Centre (PTRC) for the permanent cooperation within the partnership and beyond.
REZIPE	REZIPE supports the transition from conventionally fuelled to zero **emission vehicles** in public administration by creating policy tools, developing action plans and by testing innovative approaches having public vehicles or joint PPP campaigns in pilot actions.
TROLLEY	TROLLEY aims at promoting trolleybuses as cheap, clean and **energy-efficient form of public urban transport**. Three fields of intervention have been defined: **optimising energy use**, increasing public transport efficiency and improving the image of trolleybuses. Among other outputs, the project cooperation results in a joint declaration for Electric Trolleybus Mobility.
Central MeetBike	Central MeetBike seeks to improve conditions for cycling in urban areas in the CE area based on the transnational experience exchange, technical planning and in public awareness raising for using bicycles for short distances as well as in combination with public transport. Higher shares of cyclists have an **impact on energy consumption** in transport.
EMPIRIC	EMPIRIC foresees the preparation of investments and the definition of common tools to enhance the attractiveness **of energy-efficient multimodal transport** services and infrastructures compared to mere road freight transport. The objective is to enhance sustainable multimodal services, especially rail and inland waterways.
INWAPO	INWAPO aims to increase the relevance of unexploited **energy-efficient waterborne transport** in regional and international transport by enforcing intermodality of inland waterways and seaports.
ChemLog T+T	ChemLog T+T is a project dealing with the application and the intelligent use of ICT for the development of **energy efficient traffic management** and information systems for transnational transport of dangerous goods through an efficient information platform for tracking and tracing.

In the following, the total sum of budgets and investments for the topic "GHG, energy efficient transport" are regarded as well as the composition of the project partnerships.

Budget and Investments

The projects within this topic have a **budget of 27.242.515 EURO** in total. This budget sum includes direct **pilot investments** (budget line investments) in an amount of **1.463.260 EURO**.

Investments range from purchase of electric vehicles, power charging stations and other energy facilities for setting up e-bike rental systems or electric trolleybus operations (e.g. new energy storage "super caps" in Parma in the frame of *TROLLEY*), development or improvement of bicycle infrastructure at railway stations for facilitating multimodal transport (e.g. *BICY* and *Central MeetBike*) etc. Beside these passenger transport oriented measures, there are also investments in the field of logistics, such as port infrastructure improvements (*INWAPO*).

Despite immediate local effects, area-wide impacts of small scale investments are limited on the long-run. More important is the fact that during project implementation, future investments at a larger scale are already being prepared through CENTRAL EUROPE projects.

The **investment preparations** amount to **139.500.000 EURO** (the fivefold value of the projects` total budget) according to the forecasts. These preparations mainly concentrate on feasibility studies, for instance on the implementation of reconstructed trolleybus-systems (*TROLLEY*) or investment plans for ports (*INWAPO*). Besides, pilot studies, for example on renewable energy systems, build the basis for concrete further investments, e.g. in energy efficient transport infrastructure (*REZIPE*).

Project Partnerships

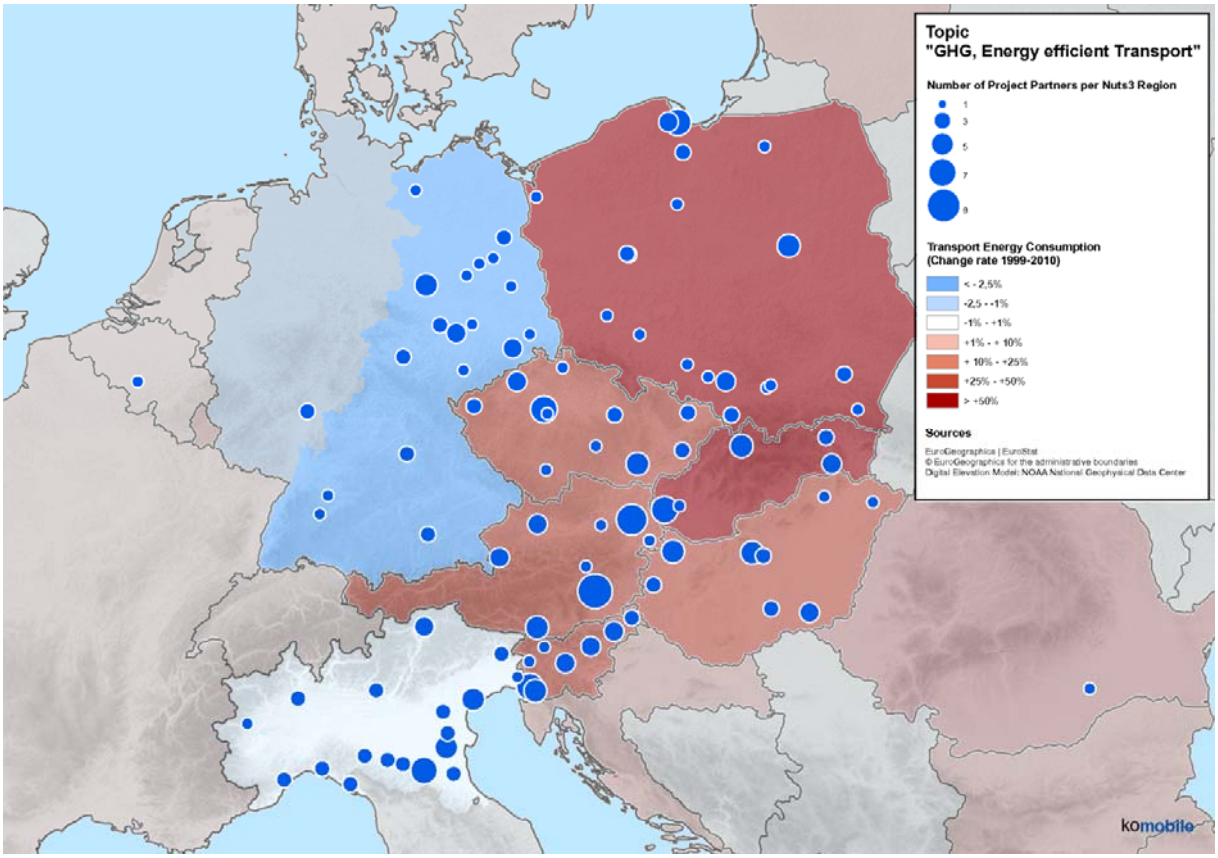
The project partnerships within the topic "Energy efficient Transport" comprise 120 partners in total. Regarding the legal status the partnerships consist of public authorities or equivalent bodies (82 percent) and private institutions (18 percent). Functionally, the cooperation is slightly dominated by public sector administration bodies (46 percent) cooperating with research and technology development (28 percent) and some infrastructure providers or operators (12 percent).

All geographic levels[20] are represented approximately to the same extent, with a slight concentration on the **local and regional scale**. These levels of action are particularly relevant for projects with a focus on measures for **sustainable and non-motorized passenger transport**. Bicycle transport development, for example, needs a very strong commitment by the local public authorities and politicians.

The spatial distribution of project partners in the programme area and beyond is displayed in the map below.

[20] according to the partnership self-assessment in the Application Forms

fig. 17 Project Partners within the Topic "Energy efficient Transport"



MapSources: Eurostat, © EuroGeographics for the administrative boundaries, Digital Elevation Model NOAA National Geophysical Data Center

The map illustrates the spatial distribution of project partners combined with the allocation of the change rate of energy consumption by transport between 1999 and 2010[21].

Contributing project partners within the topic “GHG, energy efficient transport” are spread all over the CE Programme area with less geographical concentration compared to other topics. Partners are equally situated in regions characterised by a notable decrease (Germany), a heavy (Poland, Slovakia) or remarkable increase as well as regions with more or less unchanged energy consumption (Italy) in transport. The dispersion of partner locations enables a comprehensive area-wide approach in improving energy efficiency considering different initial situations and experiences. This seems to be a good starting point for efficient common efforts and a progressive exchange of experiences within the programme area and beyond.

[21] Eurostat, 2012 (note: Final energy consumption by transport, 1 000 tonnes of oil equivalent, data 1999 - 2010; calculated Change rate 1990 – 2010)

4.2.3 Project achievements

Projects focussing on sustainable transport in urban areas

Half of the projects (five out of ten: *BICY, GUTS, REZIPE, TROLLEY, Central MeetBike*) are focussed on urban areas. Thus, the gravity centre lies on promoting non-motorised transport means (*BICY, Central MeetBike*) such as for example bicycles in everyday life, on promoting public transport and combining modes like cycling as a complement to public transport. A second core topic is the promotion of clean vehicles, for instance the introduction of electric busses (trolley-busses) in public transport and the operation of clean and zero emission vehicles in public administrations. Four projects *(BICY, GUTS, TROLLEY, Central MeetBike)* of the above mentioned five are dealing with passenger transport, both cycling as well as public transport. Three of them (*GUTS, REZIPE, TROLLEY*) aim to implement cleaner vehicles in urban areas, whereas two are clearly committed to public transport (*GUTS, TROLLEY*).

Apart from energy efficiency, those projects have also an impact on ambient air quality (see topic "Environmental qualities and Transport emissions" in chapter 4.5).

Non-motorised modes

Non-motorised modes as cycling and walking account for approximately 13 percent of the passenger kilometres in urban areas in the EU.[22] Cities in the Netherlands and in Denmark show today already much higher shares in cycling. On the other side, the shares in cycling are lower in central Europe. Schemes encouraging modal switch away from passenger car to non-motorised modes by promoting cycling, introducing public bicycles or adapting master plans for cycling have been taken up by the European Commission in the "White Paper". The feasibility of achieving the challenging targets set out by the European Commission is similarly demonstrated by different projects like those in the frame of ETC. Thus, first indicative figures of public bicycles schemes in Europe, of which several hundred schemes[23] have already been installed all over Europe, show a modal shift from car and public transport to cycling; in Paris 46 percent of users of public bicycles report lower private car use.[24] Under these premises, projects dealing with cycling as *BICY and Central MeetBike* and - beyond non-motorised transport - also projects dealing with public transport are of particular importance in ETC Programmes.

The CENTRAL EUROPE Programme is aiming to strengthen territorial cohesion, to promote internal integration and to enhance the competitiveness of central Europe. In this light, measures like the elaboration of a general strategy recommendation for national strategies promoting cycling as demonstrated in the *Central MeetBike* project make a contribution to the programme goals in strengthening the territorial cohesion by elaborating recommendations for a common strategy towards an integrated national cycling policy and in internal integration in central Europe by removing barriers trough common strategy recommendations in three neighbouring countries (PL, CZ, SK). The scientific partners of the Central Meet Bike project from the Czech Republic, Slovakia and Poland completed an analysis of

[22] EEA (2011), p. 49

[23] See also: Beroud A. Clavel R., Le Vine S. (2010), Perspectives on the growing market for public bicycles, Focus on France and the United Kingdom, presented at the European Transport Conference, Glasgow: 436 schemes are mentioned by 2010. Midgley P. (2011), Bicycle sharing schemes: Enhancing sustainable mobility in urban areas, United Nations, Department of Economic and Social Affairs, Commission on Sustainable Development, Nine teenth Session, New-York, May 2011: 375 schemes in 33 countries are quoted by 2010.

[24] Beroud A. Clavel, R., Le Vine S. (2010), Perspectives on the growing market for public bicycles, Focus on France and the United Kingdom, presented at the European Transport Conference, Glasgow.

deficiencies and knowledge gaps in integrated bicycle planning for their specific countries with the aim to constitute a first framework for a national cycling masterplan. General recommendations regarding for example standards, policies, and strategies, road safety, legal situation, quality management, cycling facilities and networks, financing or tourism and leisure cycling have been provided. The exchange of good practice closes this common approach.

Public transport

In public transport the further development of a trolley bus net in central Europe's cities, which are characterized by a long lasting tradition of trolley bus nets compared to the EU-15, is based on an exchange of know-how in order to reshape the image of trolley buses and most notably in common technical approaches in ameliorating the energy efficiency of trolley buses, as demonstrated by the *TROLLEY* project. Through this common approach a **critical mass on a niche market** like trolley buses may be reached with positive effects on the market power of the public transport companies in the involved cities. Further, sharing common implementation strategies increases again the customer`s market power. Thus a common strategy might influence the price of new vehicles. A common implementation strategy provides the opportunity to share new technologies not obtainable for a single (small/medium) city. The project results in a common "Declaration for Electric Trolleybus Mobility" signed by eight stakeholders and mayors responsible for public transport in their city. The aim of this declaration is to enlarge unexploited potential of trolley busses in central and eastern Europe as a promising urban transport mode of the future and most efficient alternative to vehicles powered by combustion engines. A second asset of a common declaration is a stated commitment for a secured development beyond the project duration and a further step towards integration.

Projects focussing on freight transport

Five projects (*KASSETTS, EMPIRIC, BATCo, INWAPO, ChemLog T+T*) are focussing on freight transport, whereas three of them (*EMPIRIC, INWAPO, ChemLog T+T)* are clearly oriented towards the improvement of **multimodal transport chains** respectively combined transport. One project, however, is aiming to enhance the load factor in order to reduce vehicle kilometres. In pilot applications, up to 18 percent of the CO_2 emissions could be reduced (*KASSETTS*)[25]. Estimation in improving logistics in the chemical industry in central Europe shows a potential of 4.3 billion tons to be shifted from road to other modes along the pan-European transport corridors II[26] (East-West) and III[27] by 2025. The impacts on CO_2 emissions of freight transport are not negligible looking at the extrapolation of the potentials identified in the pilot actions and studies (*ChemLog T+T*).

Measures facilitating multimodality by improving for example the connectivity between port and railway or inland waterways are considered highly relevant against the background of the topic "GHG, Energy efficient Transport" taking into account their **positive contribution to modal shifts** from road transport to sustainable and multimodal transport services. This influence is, of course, also related to transport costs. Improving interoperability in freight transport and enhancing intermodality contribute to optimize transport costs especially for multimodal transport chains and thereby help to increase competitiveness of multimodal freight transport.

[25] According to KASSETTS Final Report.

[26] corridor II: Berlin - Poznań - Warsaw - Brest - Minsk - Smolensk - Moscow - Nizhny Novgorod

[27] corridor III: Brussels - Aachen - Cologne - Dresden - Wrocław - Katowice - Kraków - Lviv – Kiev/Berlin - Wroclaw

As an example, the *EMPIRIC* project supports the initiation of new multimodal transport chains within the Baltic-Adriatic Corridor with particular attention to railway and inland waterway services. The package of measures comprises among others the improvement of technological instruments – there under specific ICT tools – to develop more effective and sustainable transport solutions. Beyond that *EMPIRIC* aims to prepare initial conditions for infrastructural investments to new alternative multimodal platforms and services taking into account the linkage of North Adriatic Ports with the central European region. Regarding the latter issue in particular as well as the scale of the area, the transnational approach is considered appropriate to achieve striking modal shift effects in logistics.

One target set by the European Commission in freight transport is a shift from road over 300 km to waterborne and rail transport. Two projects (*BATCo, INWAPO*) connected to this objective are dealing with the upgrading of rail and inland waterway corridors in central Europe. A high performance rail link from the Baltic to the Adriatic Sea as well as increasing the attractiveness of the waterborne transport by improving the efficiency of the river- and sea-ports act and promote the strategic importance of the Danube river, Elbe waterways and Oder waterways as basis reaching this ambitious objective. A more in-depth look on the projects in relation to TEN-T is provided within topic "TEN-T" in chapter 3.4.

Lessons learned

CENTRAL EUROPE projects within the topic "Greenhouse gas emissions, energy efficient transport" concentrate on modal shifts in passenger and freight transport to energy efficient transport modes as non-motorized modes, public transport, rail or inland waterways. This process involves the exchange of experiences, building a knowledge basis, sharing technical documents, working on public awareness raising and image-building for a better understanding of sustainable mobility in general.

The **institutionalization** and the common elaboration of **decision support tools** can be highlighted as inherent issues in several projects analysed in this topic. This approach is helping all involved partners to learn from each other and to build up a long lasting partnership which is not limited to the project duration. A second asset of this vein is the elaboration of common **implementation strategies**, for instance towards cleaner vehicles, including exemplary pilot and demonstration projects.

The areawide spread partnerships, involving among others research & technology institutes, public authorities and transport operators, are providing framework conditions (e.g. through the provision of platforms, tools, new services) for effective cross-regional and cross-border cooperation in logistics and thereby strengthen the competitiveness of central Europe as a whole.

Measures aiming at higher efficiency in (freight) transport and in reducing of operational costs in (road) freight transport in **bundling transport flows**, e.g. in reducing empty runs or trying to use the full loading capacity of a vehicle, have a second positive effects in reducing also (specific) energy consumption, greenhouse gas emissions and emission of pollutants. But this positive effect might also conduct to an adverse effect making road transport more attractive and cost-effective and outweigh the positive effect in energy consumption and environmental load.

Facilitating and making multimodal transport chains more efficient have an impact on the cost-efficiency as well and thereby highly contribute to the competitiveness of sustainable multimodal transport against road transport.

4.3 Topic "Intelligent Transport Systems"

4.3.1 Specific policy background

Recent goals set in Information and Communication Technology (ICT) and Intelligent Transport Systems (ITS) by the European Commission

"Intelligent Transport Systems" is another topic notably addressed by CENTRAL EUROPE projects, which benefits both sustainable passenger and freight transport. Information and Communication Technology or Telematics are gaining popularity among the public in different areas of life, especially in mobility. End-users in passenger transport profit from integrated transport information systems or real-time traffic information making travelling easier and more efficient. On the other hand, intelligent freight-transport and logistics systems are essential to reduce emissions from transport by making freight traffic flows more efficient.

Intelligent Transport Systems (ITS) mainly build on the application of information and communication technology (ICT). The directive on the framework for the deployment of ITS in the field of road transport and for interfaces with other modes of transport[28] is based on the application of ICT in transport in order to optimize the transport flows, to enhance the safety in transport and reduce the negative impacts of transport. For reaching these objectives, four priority areas including specific actions have been defined in the directive:

1. Priority area I: Optimal use of road, traffic and travel data
2. Priority area II: Continuity of traffic and freight management ITS services
3. Priority area III: ITS road safety and security applications
4. Priority area IV: Linking the vehicle with the transport infrastructure

These areas have been further refined in priority actions, especially in the provision of EU-wide multimodal travel information services and real-time traffic information. As expressed in the title, the Directive is focusing on road transport. Further actions in terms of ICT/ITS have been set by the Commission through launching the **European Rail Traffic Management System (ERTMS)** supported by the "European Deployment Plan"[29]. With the aim to enhance the interoperability of rail traffic through Europe, major elements of this TEN-T originated project are related to the topic ICT/ITS. Six ERTMS corridors trough Europe have been defined under this initiative, resuming only 6 percent of the rail network but 20 percent of rail freight. Four of them are passing through or touching the CE region:[30]

- Corridor B: Stockholm – Naples
- Corridor D: Budapest – Valencia
- Corridor E: Dresden – Constanta

[28] European Commission, 2010a

[29] Commission of the European communities,2009

[30] VINCK, 2009, p.7 and European Commission, 2010, p.126ff

- Corridor F: Aachen – Terespol

ERTMS consists of two ICT components: The European Train Control System (ETCS) and the Global System for Mobile Communications (GSM).

With regard to inland water ways, the European Commission published a Directive on harmonized **River Information Services (RIS)**, a further action in ITS/ICT. In the CE region the DoRIS (Donau River Information Service) has been implemented in 2006 as a service in this vein.[31]

Both, ERTMS and RIS are principal TEN-T implementation projects in the responsibility of the TEN-T Executive Agency, with a particular reference to ITS and ICT. It goes without saying that there is a strong link between the two topics "ITS" and "Trans-European Transport networks" in the present study (chapter 4.4).

4.3.2 CENTRAL EUROPE projects on ITS

Projects were allocated to this thematic topic if "Intelligent Transport Systems" (ITS) or "Information and Communication Technologies" (ICT) are definitely addressed in the application form and/or addressed in the description of the work packages. Therefore **eight projects** can be listed here (see Table 2).

Table 2: CENTRAL EUROPE projects dealing with ITS

KASSETTS	KASSETTS is a project on ICT with the objective of developing and implementing **ICT tools and services to support networking and planning by logistic brokers**.
BATCo	Main goal of the BATCo project is the joined development of the Baltic-Adriatic Transport Corridor. Among the transnational tools, developed within the project, is the **BATCo Information Pool**, a harmonised data basis for transnational /regional and local decision makers and other key players in order to manage harmonised future activities along this corridor.
CHAMPIONS	CHAMPIONS is primarily aiming to enhance accessibility of regional airports. In terms of ITS, the implementation of **innovative passenger information systems and info kiosks** to enable faster processing of passengers towards public transport is foreseen.
LOGICAL	LOGICAL`s objective is to improve efficiency of logistics through **cloud computing** (e.g. enabling collective cargo transport by ITS supported enhanced interoperability of logistics businesses of different sizes) and to deliver innovative **ICT solutions for the logistic sector**.
SPES	SPES is a project on **telemedicine** in order to enable patients to access medical services remotely. Among others, the requirements for 4 **eHealth regional/national platforms** are identified.
ChemLog T+T	ChemLog T+T is a project dealing with the application and the intelligent use of **ICT** for the development of efficient traffic management and information systems for

[31] European Commission, 2005

	transnational transport of dangerous goods through an efficient information platform for tracking and tracing.
EDITS	EDITS focuses on the improvement of interoperable and multimodal **real time traffic and travel information services** and supports the single traveller before and during his journey by the use of multimodal Real Time Traffic and Travel Information services.
ESSENCE	ESSENCE aims at implementing an **eService platform providing SMEs with preferred ICT functions** for daily business activities (Business, eNetworking and eLogistics).

The following boxes provide an overview on the total sum of budgets and investments for the topic "ITS" as well as the composition of the project partnerships.

Budget and Investments

The projects within this topic have a **budget of 18.710.759** EURO in total. This budget sum includes pilot **investments** (budget line investments) in an amount of almost **586.850 EURO** in total.

The kinds of investments cover among others the building up of information systems including IT equipment and devices (*ESSENCE*).

As an example, the establishment of new passenger information systems at the airports of Poznan and Wroclaw in the frame of the CHAMPIONS project can be mentioned. Within SPES, IT equipment for home care of patients is provided in the frame of pilot activities in the cities Ferrara, Brno, Kosice and Vienna. The EDITS project enables the purchasing of IT equipment for passenger information systems in the CENTROPE region. Beside the direct investments, preparation work for future investments is done by pre-investment studies - e.g. as a preparation for concrete pilot investments on cloud computing systems at airports (*CHAMPIONS*) - or business plans which aim to ensure the durable operation of the introduced transport and logistics information systems (*LOGICAL*).

Project Partnerships

The project-partnerships comprise 106 partners in total. Regarding the legal status, the partnerships consist of public authorities or equivalent bodies (84 percent) as well as private institutions (15 percent). Functionally, the cooperation is slightly dominated by public sector administration (41 percent) cooperating with research technology development (29 percent) and infrastructure providers or operators (12 percent).

All geographic levels are represented in the partnership self-assessment[32] from international to local scale but with a clear focus on the **regional level**. The partnership structure comprise regional public sector as

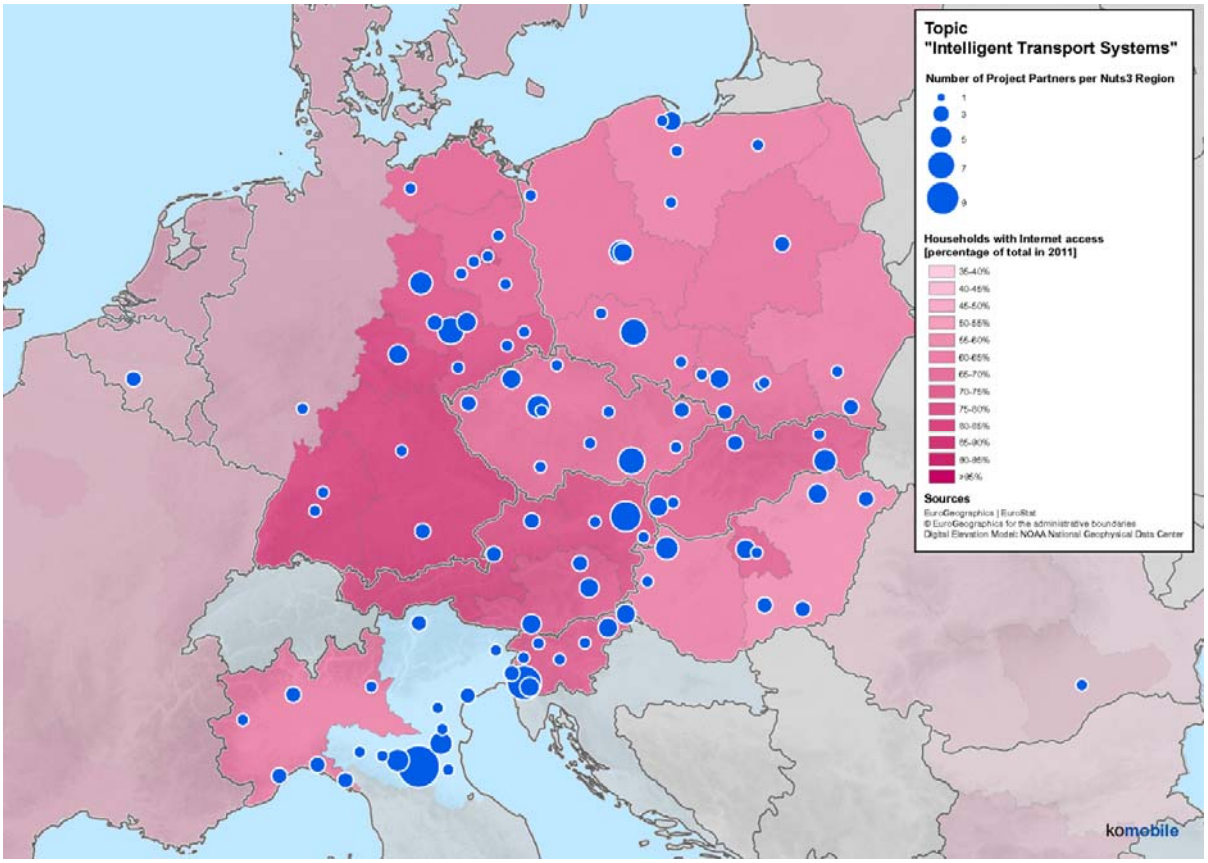
[32] according to the Partnership description in the Application Forms

Laender, Laender ministries, Regional and Provincial administrations to regional development agencies. The infrastructure providers encompass ports, airports and (public) **transport associations** as Verbund or Azienda but with a clear dominance in the fields of **ports and airports**.

According to the nature of this topic, universities and (mostly public or public equivalent) research and technology agencies are important players.

The spatial distribution of project partners in the programme area and beyond is displayed in the map below.

fig. 18 Project Partners within the Topic "Intelligent Transport Systems"



MapSources: Eurostat, © EuroGeographics for the administrative boundaries, Digital Elevation Model NOAA National Geophysical Data Center

Regarding the preconditions for the application of ICT and ITS, the existing internet access supply has been analysed. A significant number of project partners can be noticed in regions with medium or good internet access-rates among households, but still with room for improvement.

4.3.3 Project achievements

Priority areas of the ITS Directive

The first step of screening the projects achievements results in an assignment to the priority areas as defined in the Directive on ITS (s. chapter 3.3.1., p. 41). Hence, five projects can be allocated to the priority area II: *KASSETTS*, *LOGICAL, ChemLog T+T, EDITS* and *ESSENCE*. Four projects can be assigned to the priority area I, *KASSETTS*, *CHAMPIONS, LOGICAL* and *ESSENCE. ChemLog T+T* is the only project also dealing with themes addressed in the priority areas III and IV of the ITS Directive. As already mentioned above, the Directive on ITS mainly focuses on road traffic and the ICT linked to road transport.

Sticking strictly to the four priority areas of the ITS Directive of the European Commission, two projects (*BATCo and SPES*) within the present topic may not clearly be assigned to any of the mentioned strategic priorities. *BATCo* envisages the elaboration of a harmonised up-to-date transport related data basis for the use in ICT tools as transport model and green transport decision support model, which is an important tool in planning process.

The projects on ICT/ITS in the CE region influence in their entirety the sustainable development of both, freight and passenger transport. Freight transport benefits from enhanced interoperability of logistic systems, whereas projects in the field of passenger transport notably provide improved information services for passengers which facilitate multi-modal trips and make the use of sustainable means of transport more attractive.

ICT/ITS in passenger transport

Two projects (*CHAMPIONS and EDITS*) are dealing with ICT/ITS application in passenger transport and follow a clear **multimodal approach**. In this vein, *EDITS* may be highlighted pursuing the objective of installing interoperable **cross-border multimodal real-time traffic and travel information systems** in pilot actions. The challenge encompasses not only the necessary interfaces for interoperability but also the adaptation of the applications for the end-users with a different cultural and lingual approach.[33] *EDITS* is linked to the *CENTROPE CAPACITY project,* which focuses on the same transnational/transregional territory (see chapter 4.4.3.). *EDITS* is in line with the initiatives presented in the "White Paper", notably initiative no. 22 "Seamless door-to-door mobility"[34] by establishing framework conditions for the promotion of the development and use of intelligent systems for interoperable and multimodal scheduling and information and real-time traffic information.[35]

Considering accessibility in a broader sense, also the *SPES* project dealing with telemedicine shall be mentioned here.

In collaboration between software developers and users, telemedicine solutions are developed which are supposed to save time, costs and travel expenses for patients and their families on the one hand side. In four different geographical areas, the project investigates strategies for facilitating the implementation of

[33] The project *EDITS* has been approved in the 4th call, therefore no results available yet as the project just started.

[34] European Commission, 2011a, Annex I, p.23

[35] EC (2011a), p. 24

a telemedicine solution able to respond to single local needs, but with recommendations for a telemedicine solution deployable at transnational level as well.

Guaranteeing access to eHealth services, the *SPES* project can certainly contribute to reduce transport necessities with marginal effects on general transport volumes. However, it might have a much stronger effect on the **social cohesion** in central Europe.

ICT/ITS in freight transport

Four projects (*KASSETTS, LOGICAL, ChemLog T+T, ESSENCE*) focus on ICT/ITS application in freight transport. Additionally, though not directly assignable to one of the priority areas of the ITS Directive, the *BATCo* Info Pool providing a standardized axis-wide logistics data basis shall be mentioned here as well.

ICT/ITS projects in the field of freight transport are dealing with various topics thereunder eLogsitics, ITS applications for small and medium enterprises (SME) or the optimization of information exchanges in multimodal transport chains. **Multimodality** is clearly tackled in one project dealing with freight transport (*ChemLog T+T*). In other projects, however, the multimodal approach is to some extent indirectly considered (*LOGICAL, ESSENCE*), notably through the enhancement of the **interoperability** in logistics businesses or hubs enabling multimodal solutions instead of a single transport, mostly by (small) lorries.

Some further projects (*KASSETTS* and *ESSENCE*) have a clear focus on the accessibility of SMEs in order to support more **efficient freight transport solutions and interoperability in logistics**. Positive economic and ecologic effects are generated by the introduction of higher load factors (in relation to mass, surface or volume) which reduce empty kilometers and fuel consumption. The access of SMEs to **eLogistics** solutions has a positive impact on the competitiveness of SMEs in the CE region and hence supports their participation in the international market and in the European Single Market.

Among the projects dealing with freight transport (e.g. *KASSETTS*) another focus is also set on the optimization of road freight transport, especially in small consignment volumes. The pilot action in testing the ITS application shows a substantial reduction in CO_2 emission (indirectly also in fuel consumption inherently linked to CO_2 emissions).[36] Regarding such high benefits also in relation to fuel consumption and fuel costs per vehicle kilometer, we have to question why such a powerful instrument has not been implemented yet through commercial applications assuming the investments being likely amortized in the short term due to significant savings in fuel costs.

On the other hand, raising the attractiveness of optimized road freight transport systems stacked up against other more sustainable transport modes might be considered critical with a view to a sustainable transport development.

Lessons learned

CENTRAL EUROPE projects within the topic “Intelligent Transport Systems” concentrate particularly on bundling competencies and **promoting cooperation** within the whole programme area in order to foster central Europe`s competitiveness on the European and even global scale.

[36] CENTRAL EUROPE Programme (Ed., 2012), Project Stories from the CENTRAL EUROPE Programme, Vienna, p. 25

All eight projects allocated to the topic ITS have a **transnational** character, thus exposing a contribution to European integration. Seen in this light and compared to the above mentioned Action Plan for ITS (four priorities)[37], lots of efforts are being undertaken at national scale.[38] Having six projects linked to the actions of the ITS-Action plan, no project approaches directly the ERTMS or the RIS initiatives. However, it has to be considered that these two TEN-T originated projects are mostly implemented by other programmes (ITS action plan, ERMTS corridors).

Due to the characteristics of selected ICT applications (e.g. cloud computing or optimizing logistics processes), ICT/ITS applications may be applied at continental level as well. For such applications, the territorial or regional context consists in the accessibility of SMEs or in testing specific approaches at regional level. Thus the territorial context is due to the approach chosen in the topic ICT for some projects weak, for others of relevance.

[37] European Commission, 2008a and as an example for national reports: BMVIT, 2011

[38] e.g. BMVIT, 2011

4.4 Topic "Trans-European Transport Networks"

4.4.1 Specific policy background

Against the background of the Lisbon strategy[39] for employment, economic reform and social cohesion, the establishment of an efficient Trans-European Transport Network (TEN-T) covers the whole European area is an indispensable precondition for economic development. It will be equally important for implementation of the Europe 2020 Strategy, which has been launched by the European Commission in 2010 for the strategic development of the next decade.[40] Building (new) infrastructures to support economic growth, environmental and climate aspects have to be similarly taken into account by following an environmentally sustainable and resource efficient approach. These aspects are particularly considered in the Europe 2020 strategy. The European Regional Development Fund is only one of several financial instruments of the European Union that promote the TEN-T implementation.

Thirty priority axes are building the TEN-T, there under eight axes passing through or located in the CENTRAL EUROPE programme area.

(1) Railway axis Berlin – Verona/Milano – Bologna – Napoli – Messina – Palermo

(6) Railway axis Lyon – Trieste – Divaca/Koper – Divaca – Ljubljana – Budapest – Ukrainian border

(7) Motorway axis Igoumenitsa/Patra – Athina – Sofia – Budapest

(17) Railway axis Paris – Strasbourg – Stuttgart – Wien – Bratislava

(18) Rhine/Meuse-Main-Danube Inland waterway axis

(22) Railway axis Athina – Sofia – Budapest – Wien – Praha – Nürnberg/Dresden

(23) Railway axis Gdansk – Warszawa – Brno/Bratislava – Wien

(25) Motorway axis Gdansk – Brno/Bratislava – Wien

In total, the CE Programme area is related to five railway axes, two motorway axes and one inland waterway axis.

Within the TEN-T, ten major implementing transport corridors are building the focused EU core transport network to be completed by 2030[41]. Pre-identified projects on the core network in the field of transport related to the CE programme area are:[42]

(1) Baltic – Adriatic Corridor

(2) Warszawa – Berlin – Amsterdam/Rotterdam – Felixstowe – Midlands

[39] European Parliament, 2000

[40] European Commission, 2012b

[41] in reference to European Commission, 2012c

[42] European Commission, 2011e

(3) Mediterranean Corridor Algeciras – Madrid – Tarragona – Barcelona – Perpignan – Lyon – Torino – Milano – Venezia – Ljubljana – Budapest – Ukrainian border

(4) Hamburg – Rostock – Burgas – Turkish border

(5) Helsinki – Valetta

(10) Strasbourg – Danube corridor

Beside the corridors, horizontal topics are addressed in the EU strategies related to Trans-European networks. Priority projects with horizontal aspects are linked to ICT/ITS with special reference to ERTMS or RIS and have therefore already be mentioned in the topic "ICT/ITS".[43]

4.4.2 CENTRAL EUROPE projects on "TEN-T"

The present topic "TEN-T" comprises **nine CE projects**, addressing the thematic field of TEN-T networks or dealing with a specific corridor in connection with TEN-T. The following table provides a short overview on the particularly addressed contents of the CE projects in this topic.

Table 3: CENTRAL EUROPE projects dealing with TEN-T

ChemLog	The goals of ChemLog are **strengthening rail and waterway transport for chemical goods**. In this the development of logistical centres for intermodal transport, facilitating the connection of pipelines, the harmonisation of regulations, and inputs to the coordinated infrastructure planning.
SoNorA	SoNorA aims at developing **S-N multimodal infrastructure network** based on pre-investment studies, tools and new logistic services as well as updating regional transport planning approaches and policies.
Via Regia +	In Via Regia + the objective is to enhance accessibility of the cities along the East-West Corridor Erfurt/Berlin – Lviv/Kosice and to develop the **infrastructure and transport needs in transnational respective cross-border passenger transport.**
BATCo	The main goal of the BATCo project is the **joined development of the Baltic-Adriatic Transport Corridor** including the harmonised advancement of the Baltic-Adriatic transport axis (Gdansk – Warszawa – Vienna – Klagenfurt – Trieste – Bologna)[44] as part of the TEN-T core network.
FLAVIA	FLAVIA aims to **improve the intermodal freight transport flows** between central and south east Europe by putting the focus on logistic process oriented approaches (e.g. benchmarking, **accessibility analyses**, running time und **bottleneck analyses, pre-feasibility studies**) instead creating new

[43] VINCK, 2009, p.7 and European Commission, 2010, p.126ff, European Commission, 2005 and chapter 3.3.

[44] Baltic-Adriatic Corridor: Helsinki – Tallinn – Riga – Kaunas – Warszawa – Katowic; Gdynia – Warszawa – Katowice; Katowice –Ostrava –Brno –Wien; Katowice – Žilina – Bratislava – Wien; Wien –Graz –Klagenfurt –Villach – Udine – Venezia – Bologna – Ravenna

	infrastructure.
EMPIRIC	Within EMPIRIC, the preparation of investments and the definition of common tools to enhance the attractiveness of **multimodal transport services and infrastructures** were foreseen. The objective is to enhance multimodal services, especially rail and inland waterways.
INWAPO	Aim of the INWAPO project is to strengthen the relevance of unexploited **waterborne transport** in regional and international transport by enforcing intermodality of inland waterways and seaports.
RAILHUC	RAILHUC intends to enhance long distance (transnational) rail passenger transport by improving the **accessibility of the rail hubs at TEN-T corridors** at three levels (regional and local rail transport and non-rail transport modes).
CENTROPE CAPACITY	CENTROPE CAPACITY represents a comprehensive institution-building and strategy-implementing lead project of 16 regions and cities. It aims at elaborating **integrated development strategies** in the CENTROPE area, connecting regions in Austria, Czech Republic, Hungary and Slovakia. Core outputs comprise specific instruments as a toolbox, therunder the CENTROPE Regional Development Monitor or the CENTROPE Infrastructure Needs Assessment Tool.

In the following, the total sum of budgets and investments for the topic "TEN-T" are regarded as well as the composition of the project partnerships.

Budget and Investments

The projects within this topic have a **budget of 30.92.631** EURO in total. This budget sum includes **262.000 EURO for pilot investments** (budget line investments in the Application Forms).

Among others the pilot investments cover IT tools, equipment and devices for implementing pilot activities in logistics operations (*FLAVIA, RAILHUC*) as well as infrastructural improvements in logistic hubs, for example in ports (*INWAPO*), in order to improve the handling capacity.

An amount of about **103.000.000 EURO** of **future investments** is **prepared** through the projects according to the forecasts in the Application Forms. These preparations mainly concentrate on feasibility studies (e.g. feasibility studies on pipelines, intermodal transport, railway and waterway transport to prepare investments for the chemical industry (*ChemLog*)). Case studies on best practice solutions and recommendations based on experiences from pilot activities provide a further decision support regarding future investments. Thereby, among others investments in rail and waterway terminal development (*FLAVIA*), in the development of a Po river information service and the activation of new railway services (*EMPIRIC*) or in services for tri-modality for ports (*INWAPO*) are being prepared.

Project Partnerships

The project-partnerships comprise 136 partners in total. Regarding the legal status of partner institutions, the partnerships consist of public authorities or equivalent bodies (83 percent) and private institutions (17 percent). Functionally, the cooperation is dominated by public sector administration (60 percent) cooperating with research technology development (14 percent) and some infrastructure providers or operators (13 percent).

All geographic levels are represented in the partnership self-assessment[45] from international to local scale but with a clear focus on the **regional level**. Apart from a noticeable number of transport infrastructure providers, the partnerships are dominated by public sector administration bodies on the regional (Laender, regions), but also on the local scale (provinces, cities, municipalities).

To a higher extent than within other topics, also **private** service providers, notably transport operators, are involved.

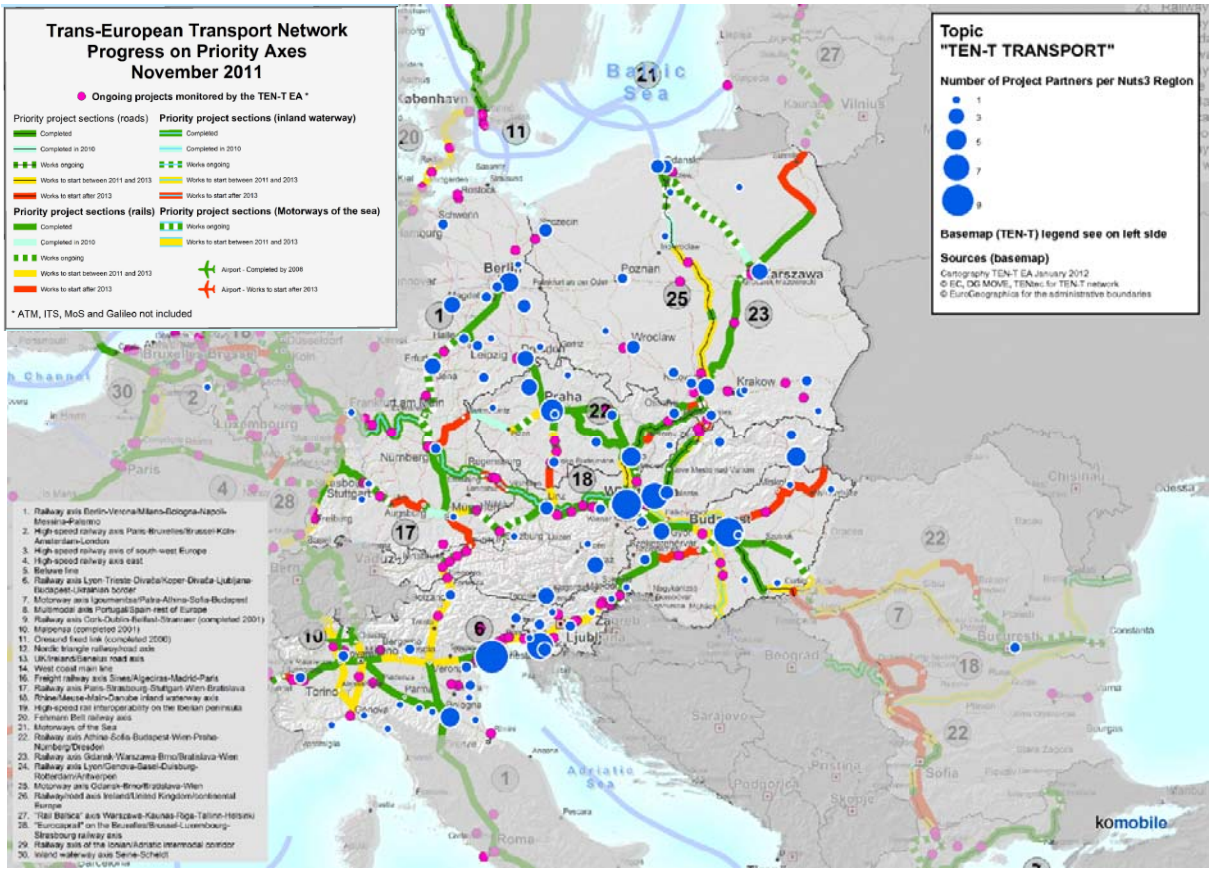
Besides, regional development agencies, NPOs, universities and research and technology agencies (mostly public or public equivalent) are equally represented in the topic "TEN-T".

Single projects, however, such as *CENTROPE CAPACITY* are built on the **cooperation of public administration authorities** on the local and regional scale only. This can be highlighted as an example for developing a **common political base** for future cross-border projects.

The spatial distribution of project partners in the programme area and beyond is displayed in the map below.

[45] according to the Partnership description in the Application Forms

fig. 19 Project Partners within the Topic "TEN-T Transport"



[*figure in larger size in the Annex]*

MapSources: Cartography TEN-T EA January 2012, © EC, DG MOVE, TENtec for TEN-T network, © EuroGeographics for the administrative boundaries

It appears in the map that project partner locations concentrate on TEN-T hubs, which equally represent urban agglomerations. Notably, the majority of project partners are situated within TEN hubs and nodes. Not only do these areas benefit from the advantages of a better connectivity, but also negative effects of transport are concentrated therein. Besides, a minor number of partners is located within a greater distance from the transport axes. Through the participation in transnational projects, partner institutions located in more peripheral regions might seek for better connection with the main transport corridors, which is commonly considered as an asset.

4.4.3 Project achievements

From the nine projects in the CE region allocated to the topic TEN-T, four projects (*ChemLog, SoNorA, EMPIRIC, INWAPO*) have a clear focus on (intermodal) freight transport, two (three including *CENTROPE CAPACITY*) have a clear focus on passenger transport (*Via Regia +, RAILHUC*). *BATCo* and *FLAVIA* have an influence in both, passenger as well as freight transport.

Three projects are concentrating on one specific axis, *BATCo* on the Baltic-Adriatic corridor[46], *SoNorA* on the South-North axis[47], *Via Regia* + on the Central Axis[48].

Corridors

The projects which are directly linked to the improvement or development of selected TEN-T Corridors (*BATCo, Via Regia* +) or nodes (*RAILHUC*) clearly focus on feasibility studies, pre-studies for investments etc. within the corridor areas[49]. Thus, future investments are prepared, which could not be tackled in "European Territorial Cooperation" (ETC) Programmes within the ERDF framework. However, precious institution-building and preparation work leads to accelerated transnational planning processes in the future promotion of further investments in the beneficial areas.

Furthermore, valuable contributions have been made to the improvement of "last mile" offers in transnational transport chains to access the TEN-T network.[50] In the White Paper the Commission proposed in Measure 22 "Seamless door-to-door mobility" in order to provide transport offers for further integrating different passenger transport modes.[51]

Several projects (especially *BATCo, SoNorA, ChemLog* and *Via Regia* +) are providing strong inputs to the TEN-T policy revision process. As a considerable achievement of European-wide political initiatives the *BATCo* project, in terms of TEN-T development in the CENTRAL EUROPE area, the adoption of the Baltic-Adriatic Corridor shall be highlighted. In October 2011 the **Baltic-Adriatic Axis** extended by "Rail Baltica" (Warsaw – Helsinki) was included as Baltic-Adriatic Corridor[52] in the "Proposal for a regulation of the European Parliament and of the Council on Union Guidelines for the development of the trans-European transport network"[53] issued by the European Commission.

Transnational co-operation and institution-building

CENTROPE CAPACITY is somehow outstanding as the project`s main objective is a comprehensive **institution-building** and a strategy for the promotion of a **transregional integration process** on an equal footing. The central European Region CENTROPE finally, in the end of the project, dispose of a sound transnational decision-making process with institutions geared towards the complexities of the four-

[46] see footnote 44

[47] link between the Adriatic and Baltic Seas

[48] former Pan European Transport corridor III reaching from EU centre to Ukraine

[49] S. European Parliament (2010): Outline of the Trans-European Transport Network and the Union guidelines for the development of the trans-European transport network in their recast version.

[50] S. Railhuc (2012), newsletter no1. As the project started recently, no results are yet available.

[51] European Commission, 2011a, Annex I, p.23

[52] Baltic-Adriatic Corridor: Helsinki – Tallinn – Riga – Kaunas – Warszawa – Katowice; Gdynia – Warszawa – Katowice; Katowice –Ostrava –Brno –Wien; Katowice – Žilina – Bratislava – Wien; Wien –Graz –Klagenfurt –Villach – Udine – Venezia – Bologna – Ravenna

[53] European Commission, 2011h

country area (AT, HU, SK, CZ). The *CENTROPE* **"Infrastructure Needs Assessment"** as one of the three pilot activities comprehends essential preparation and implementation steps towards TEN-T. In particular, it comprises the development of a co-ordinated transport strategy, a work plan towards a transnational (public) transport association ("Verkehrsverbund"), the proposition of a transnational multimodal traffic information system (see *EDITS* in the chapter ICT/ITS[54]) and the detection of the deficits of the transport infrastructure.[55]

Passenger transport

In the last decade, European political commitments in the field of passenger transport have been characterized by a clear orientation in public transport - especially in rail - towards inland market and (inland) metropolitan areas, neglecting cross-border or transnational offers and thereby disregarding the desired progressive European integration. In the face of this absurd development caused by various reasons (e.g. tariff problems), the projects under the umbrella of the European Territorial Cooperation programmes might highlight better transnational and cross-border public transport offers in selected regions, thus ameliorating the accessibility, sustainable transport and social cohesion.

Seen in this light the pilot actions as tackled in *Via Regia* + with the objective to enhance accessibility of the cities along the East-West Corridor Erfurt/Berlin – Lviv/Kosice (former "Pan-European Corridor III") and resulting in integrated development of infrastructure and transport needs in passenger transport, the development of **cross-border respective transnational** offers in intercity rail links between the cities located along the East-West Corridor, cross-border coordinated investment in road scheme and the development of integrated fixed-scheduled transport offers in interregional rail combined with a cross-border tariff scheme in the border triangle Czech Republic, Germany and Poland to cite only some of the pilot actions set in *Via Regia* +.[56] All pilot actions are clearly transnational with a focus on **cross-border rail links**. By 2050, the objective set by the European Commission in the White Paper foresees that "most of medium-distance passenger transport should be covered by rail"[57]. Thus the project anticipates the objectives recently proposed by the Commission. The rail links in the mentioned corridor are classified as conventional lines in the Trans-European Network Outline Plan (2020 horizon).[58]

Another project in the field of passenger transport with a strategic character is *RAILHUC*, which aims to strengthen rail transport by improving the feeding functions on rail of major hub-cities and related regions. Joint strategies - supported by public participation - in due consideration of explored potentials and bottlenecks for the better integration of urban and regional rail transport with intercity transport will constitute an essential preparation for legislation for the further development of Trans-European rail networks.

[54] The objective in EDITS is the installation of a cross-border multimodal real-time traffic and travel information system in the same area.

[55] CENTROPE, 2011

[56] City of Wroclaw, LP in Via Regia plus (2011, Ed.), Sustainable Mobility and Regional Cooperation along the Pan-European Transport Corridor III, edited in German

[57] EC (2011a), p. 7, EEA (2011), p.10

[58] European Parliament (2010), Decision No 661/2010/EU of the European Parliament and the Council of 7 July 2010 on Union guidelines for the development of the trans-European transport network, in Official Journal of the European Union, L204/1

Multimodal freight transport

In freight transport, road freight transport gained high market shares over the past two decades, especially in the new EU-member states, at the cost of more sustainable modes as rail or inland waterways. This development is also the adverse face of a coin regarding the tremendous changes in the economic structures involving a lower share of bulks with a high affinity to rail or inland waterways. Thus all projects focussing on freight transport under this topic (*ChemLog, SoNorA, BATCo, FLAVIA, EMPIRIC, INWAPO*) are dealing with **multimodal approaches**, trying to enhance the services of combined transport, tackling questions on requirements for certain commodities (e.g. dangerous goods for the chemical industry) and making some propositions for new infrastructures. In the frame of the CE Programme, this is mainly realized through feasibility studies as an important preparatory work in order to close gaps, to eliminate bottlenecks as well as to improve the quality (e.g. electrification of railway lines) or capacity of the infrastructure (e.g. addressed in *FLAVIA, SoNorA, INWAPO, ChemLog*).

The activation of new transport services along the Danube river with a system of river ports (Vienna, Budapest, Bratislava, Komarno and Sturovo) as pursued in *INWAPO* as one of three main systems of waterways[59] can be highlighted against another important European strategic framework, the "EU Strategy for the Danube region"[60], there under priority I "To improve mobility and multimodality - inland waterway transport" in particular.

The *FLAVIA* project is not addressed to one specific corridor but focussing on the trunk net of rail links and terminals in CENTRAL EUROPE. In this light, in *FLAVIA* numerous measures (e.g. extension to two tracks on the line Linz – Summerau, reconstruction of highway D1 Prague – Brno, optimization of block intervals between Stendal – Magdeburg, construction of a second track Szabad-battyán – Kotoriba, etc.) for removing the present and future bottlenecks in rail infrastructure and in terminals (road-rail-terminals (RRT)) have been elaborated. Detailed proposition of integrating rail links and core bi/tri-modal terminals in the TEN-T core network in the respective countries for the CENTRAL EUROPE area (DE, AT, PL, CZ, SK, HU, RO) are presented to the ministerial group of the countries involved. The proposed complements of the TEN-T core network are based on present and future transport flows and constraints in the rail or terminal infrastructure. In the light of the intended integration process in Europe, the measures proposed in removing the bottlenecks in cross-border processes, licence, legislation and interoperability issues have to be highlighted. Concrete measures in e.g. procedures for technical inspection of rolling stock, certification procedures of locomotives, qualification of employees or in different safety equipment systems have been elaborated. Some measures as safety equipment are linked to other European programmes as ERMTS and the introduction of ECTS on trunk rail links (s. Topic ITS, chapter 3.3)

The *ChemLog* project follows a similar approach but with a focus on chemical logistics. Based on a joint transnational strategy and action plan for chemical logistics, a "Central and Eastern European Chemical Logistics Network" with a joint management will facilitate intermodal logistics including rail and waterway. Through this joint management and the bundling of demands, sustainable intermodal logistics can become **more energy- and cost-efficient** in comparison to road transport.

[59] Besides, the project focuses on the Northern Adriatic ports (Venice, Trieste and Koper) and the Czech and Polish inland waterways (Elbe, Vistula and Oder systems).

[60] approved by the European Council on 24 June 2011

Lessons learned

Transnationality in this context involves the promotion of transnational and cross-border competencies as well as the encouragement of **institution-building and strategy implementation** in **transnational co-operation** and transregional integration.

CENTRAL EUROPE projects within the topic "TEN-T" concentrate particularly on bottom-up contributions for the ongoing development of the TEN-T core network on regional level in the framework of a transnational approach in CENTRAL EUROPE (e.g. *BATCo, SoNorA*). Closing the missing links on local and regional scale, enabled by institutionalised territorial cooperation (such as the CENTROPE region), or getting closer to hubs on TEN corridors (e.g. *Via Regia +*) are further achievements to be mentioned.

The **preparation work** (e.g. feasibility studies, institution-building-processes) for **infrastructure investments** (TEN-T core network) is another achievement worth to be mentioned.

Actions on local and regional scale are considered to be important in this context as improvements on this tangible level create a perceptible **benefit for local population, local and regional economies**.

4.5 Topic "Environmental qualities and Transport emissions"

4.5.1 Specific policy background

Recent goals set in environmental qualities by the European Commission

Emission of pollutants

In the TERM[61] process key transport-related targets have been set, especially concerning the ambient air quality and the emissions of pollutants. In the emission targets, which exist for total oxides of nitrogen (NO_x), for oxides of sulphur (SO_2), for non-methane volatile organic compounds (NMVOC) and ammonia (NH_3), precise ceilings have been fixed. Transport contributes to the emissions of the mentioned pollutants in different shares: e.g. 56 percent to NO_x emissions, 17 percent to SO_x emissions (mainly through international shipping) or 18 percent to NMVOC emissions.[62] The emission ceiling targets based on the Directive 2001/81/EC[63] concern all sectors, no particular targets have been set for the transport sector.

Ambient air quality

A number of limit values (e.g. hourly, 8-hours, daily and yearly limit values) have been set in the Directive 2008/50/EC on ambient air quality and cleaner air for Europe.[64] It is evident that transport related emissions of NO_x and PM are to a high level significant for ambient air quality in urban areas. However, no specific air quality targets have been set up for transport related affected areas.

The EU air quality directive (2008/EC/50) sets the limit annual mean value for particulate matter (PM_{10}) to 40 micrograms per cubic metre ($\mu g/m^3$) and the annual mean value for Nitrogen dioxide (NO_2) to 40 micrograms per cubic metre ($\mu g/m^3$) by 2010.

Noise

Based on the Directive 2002/49/EC on environmental noise[65], the reduction of the number of people exposed to noise levels, which endanger health and quality of live, has been fixed. Member states are obliged to monitor the noise exposition and declare the number of people exposed to noise levels[66] above 55 $dB(A)_{day}$ and 50 $dB(A)_{night}$ at regular intervals.

The obligations for member states according to the Directive further involve the determination of environmental noise exposure through **noise mapping** by common assessment methods and the adoption of national **action plans** which take account of noise-mapping results. These action plans shall include

[61] Transport and Environment Reporting Mechanism (EEA, 2011); The Transport and Environment Reporting Mechanism has been installed by the EEA and Commission in order to monitor the European transport and environment policy. A respectable number of indicators should help to monitor if the targets set in the different fields will be attained or not.

[62] EEA, 2011, p. 29

[63] European Commission, 2001 (note: for Austria the emissions of NOx is limited to 103 Kilotonnes by 2010)

[64] European Commission, 2008b

[65] European Commission, 2002

[66] regulation of noise levels in: European Commission, 2002 (ANNEX VI, related to Art.10 of the Directive 2002/49/EC)

considerations regarding the prevention or reduction of environmental noise particularly in areas where the exposure levels can affect human health and how environmental noise quality can be preserved on the other side.

Again, a large number of measures are necessary to meet the ceiling targets or the targets defined under the Directive 2001/81/EC and the UNECE Framework on Long-Range Transboundary Air Pollution (LRTAP)[67]. A couple of measures can only be tackled at European (EU-) level, for instance the emission standards for new road vehicles. On the other side, several measures are, however, clearly territorially bound, as for example ambient air quality in urban areas. Seen in this light, the CENTRAL EUROPE projects have been allocated to the topic "Environmental qualities / Transport related emissions" if they are aiming to influence modal shifts at urban, regional or transnational level, supporting the introduction of zero emission vehicles or "Enhanced Environmentally Friendly Vehicles" (EEV).

4.5.2 CENTRAL EUROPE projects on Environmental qualities and transport related emissions

Projects were assigned to this thematic topic if thematic contents defined by the indicator "Environmental qualities / Transport related emissions" are definitely addressed in the project Application Forms. Applying this approach, **13 projects** can be allocated to the topic (see Table 4).

In some cases, the projects allocated to this topic have been as well allocated to the topic "Greenhouse gases, energy efficient transport". Projects aiming at reducing energy consumption, bearing in mind that energy in transport is over 95 percent based on fossil fuels, have also an impact on the environment, nota bene on ambient air quality and on noise. The same aspect counts for projects aiming at alternative propulsion systems compared to internal combustion engines.

Table 4: CENTRAL EUROPE projects dealing with Environmental qualities / Transport related emissions

SoNorA	SoNorA aims at increasing intermodal accessibility in freight transport and promoting multimodal passenger transport along the S-N axis. The intended modal shifts assume a better integration of **sustainable transport modes with fewer emissions of pollutants**.
BATCo	The main goal of the BATCo project is the joined development of the **Baltic-Adriatic Transport Corridor** with special consideration of the promotion of institutional and logistics **cooperation** for improved **efficiency in transport and logistics**.
BICY	BICY aims at **reducing car traffic** by promoting the replacement of car by **bicycle** for shorter (especially urban) trips, promote bike as a complement transport mean of public transport thus having an impact on noise an ambient air quality.
GUTS	GUTS aims at creating a solid knowledge base for the **development of sustainable and clean urban public transport systems**.
INTER-Regio-Rail	INTER-Regio-Rail is objective is to gain **new user groups in regional rail transport** apart from commuters and tourists.

[67] UNECE, 1979

REZIPE	The goal of REZIPE is to support the transition to **zero emission vehicles** in public administration.
TROLLEY	TROLLEY aims at promoting **trolleybuses as local emission free, cheap, clean and energy-efficient form of public urban transport**.
Central MeetBike	Central MeetBike seeks in **improving conditions for cycling in urban areas** in the CE thus having an impact on noise an ambient air quality.
EMPIRIC	In EMPIRIC, the objective is to enhance **multimodal freight transport services, especially rail and inland waterways with lower specific emission of pollutants**.
INWAPO	INWAPOs main aim is to improve the relevance of unexploited **waterborne transport** in regional and international freight transport by enforcing intermodality of inland waterways and seaports.
airLED	airLED`s objective is to position airports into regional development strategies and integrate airport areas into **urban respective spatial development strategies**, considering (amongst others) **environmental issues**.
ChemLog T+T	ChemLog T+T is a project dealing with the application and the intelligent use of ICT for the development of efficient traffic management and information systems for **multimodal transnational transport of dangerous goods** through an efficient information platform for tracking and tracing.
CITY REGIONS	CITY REGIONS aims for an enhancement and durable institutionalisation of functional cooperation between the municipalities of the urban centre and smaller cities and towns located in the hinterland in order to mitigate urban sprawl, to enhance transport infrastructure and to prevent social segregation process.

In the following, the total sum of budgets and pilot investments for the topic "Environmental qualities / Transport related emissions" are regarded as well as the composition of the project partnerships.

Budget and Investments

Projects within the topic "Environmental qualities and transport related emissions" have a total overall **budget of 34.455.327 EURO** including an amount of **1.032.140 EURO for pilot investments** (budget line investments in the Application Forms).

Pilot investments range from the purchase of (e-)bikes (e.g. *BICY, Central MeetBike, REZIPE*), green electricity charging stations and other energy facilities for setting up e-bike rental systems (e.g. in *REZIPE*) or electric trolleybus operations (*TROLLEY*), development or improvement of bicycle routes or parking facilities (e.g. in *BICY, Central MeetBike*) etc. Beside these passenger transport oriented measures, there are also investments in the field of logistics, such as port infrastructure improvements (*INWAPO*).

Despite immediate local effects these small scale investments may have, viewed realistically their impacts on an area-wide scale are limited on the long-run. All the more important is the fact that during project

implementation, future investments at a larger scale are already being prepared through CENTRAL EUROPE.

Within the topic "Environmental qualities /Transport related emissions » the **future investments** amount to **143.500.000 EURO**[68] (which is the fourfold total budget sum). These preparations mainly concentrate on **feasibility studies**, for instance on the implementation of new transport services or for example reconstructed trolleybus-systems (*TROLLEY*) as well as investment plans for ports (*INWAPO*). Besides, **pilot studies**, for example on renewable energy systems, build the basis for concrete further investments, e.g. in energy efficient transport infrastructure (*REZIPE*).

Project Partnerships

The project partnerships on the topic "Environmental qualities / Transport related emissions" cover **164 partners** in total. Regarding the legal status the partnerships consist of public authorities or equivalent bodies (85 percent), and private institutions (15 percent).

Functionally the cooperation is dominated by public sector administration authorities, notably on local scale represented by **cities/municipalities** but also on regional scale. These authorities are cooperating with a similarly high number of **transport providers** and operators.

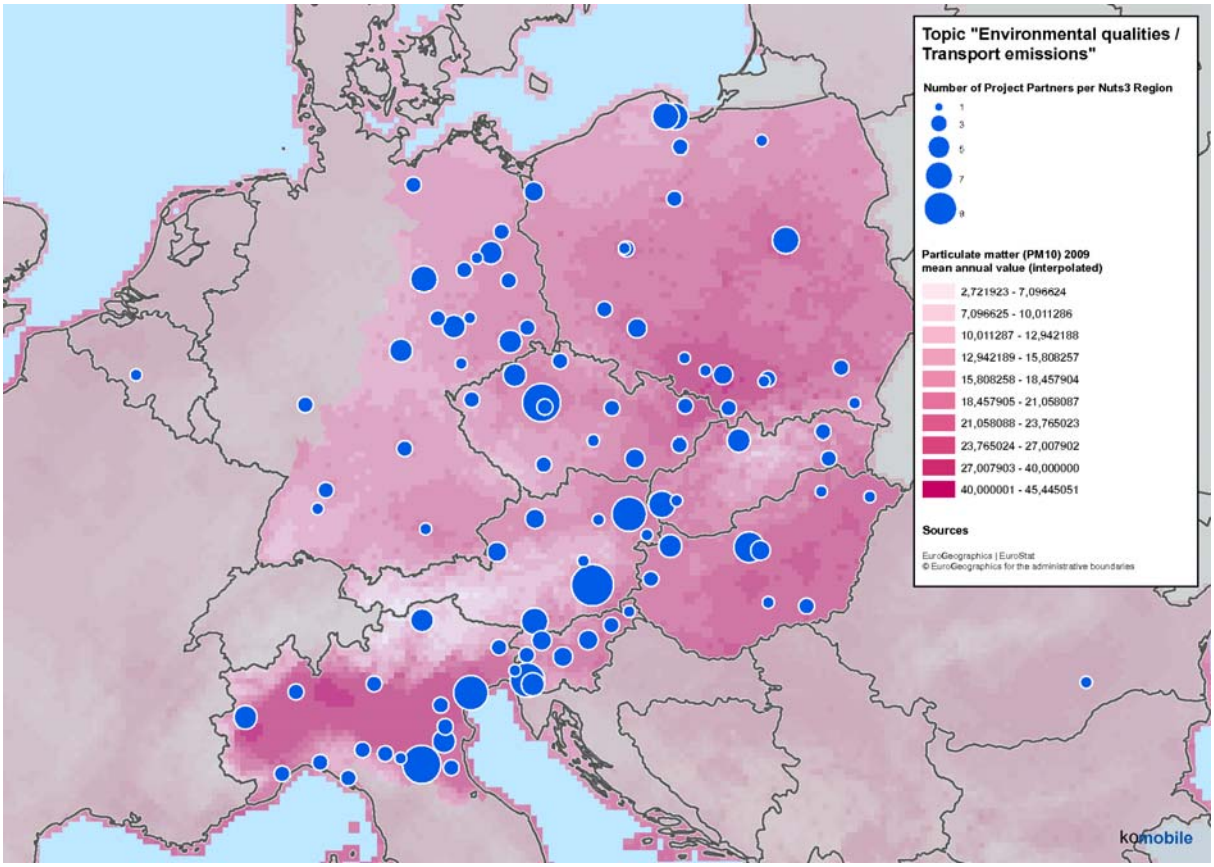
Many projects dealing with environmental qualities and transport emissions are supported by **research & technology** organisations which ensure a profound scientific background for measurable negative impacts and outcomes.

Besides, almost all projects involve at least one non-profit organisation.

The spatial distribution of project partners in the CE Programme area and beyond is shown in the map below.

[68] according to the forecasts in the Application Forms

fig. 20 Project partners within the topic "Environmental qualities/Transport emissions"



MapSources: Eurostat, © EuroGeographics for the administrative boundaries

The spatial allocation of contributing project partners is mapped in combination with the average annual mean value of PM_{10} (particular matter). Although partners from all over the programme area are contributing in the relevant projects, a concentration can be seen in areas with higher environmental stress. These are typically urban regions with major institutions situated there. Only few partners originate from the heavily affected northern Italian Po valley.

4.5.3 Project achievements

The projects of this topic are somehow more thematically diversified than in the other topics. By clustering the thirteen allocated projects, we come across a total number of six projects in passenger transport of which five are devoted to passenger transport in urban areas. Four projects previously described under the TEN-T topic can be allocated to “Environmental qualities” as well, as all of them have a clear objective in modal shifts in freight transport towards sustainable transport modes (rail, inland water ways and combined transport using for the longer part of the transport chain sustainable transport modes). Together with those four projects (*SoNorA; BATCo, EMPIRIC and INWAPO*) and looking at the project *ChemLog T+T*, in total 5 projects in this topic have their main focus on sustainable freight

transport. Two projects are focussing on regional and urban development following an integrated transport and urban development strategy.

Passenger transport

In all six projects (*BICY, Central MeetBike*, *TROLLEY, REZIPE, GUTS, INTER-Regio-Rail)* dealing with passenger transport, the focus is clearly on **urban passenger transport**. In total, four projects work on public transport and cycling, thus aiming at a modal shift towards sustainable transport modes. As already discussed in the chapter on topic "Energy efficient transport", the impact through modal switch in urban areas is two-fold, namely on reduction of transport related GHG emissions and on the reduction of the emission of pollutants. It is evident that the intended modal shifts towards public transport and non-motorized transport modes conduct to a reduction of the environmental load in ambient air quality and in environmental noise in general and especially in heavy loaded urban areas.

In line with the objective of reducing the emission of air pollutants in transport with a positive contribution to ambient air quality, the modal switch to human powered vehicles as bicycles (*BICY, Central MeetBike*) and the introduction of new propulsion technologies as foreseen in three projects, especially toward "local zero emission vehicles" as electric vehicles, mostly in urban areas (*TROLLEY, REZIPE*) or in the introduction of EEV in urban public transport (*GUTS*).

Replacing all short urban car trips[69] by extensively using bicycles would have a significant contribution to reducing air pollution in urban areas with great positive effects on health and living conditions. Following this approach, the *BICY* project aims to raise awareness for **cycling in urban areas** and create a cooperation framework for future cycling development in central Europe. Although tangible activities in *BICY* are often bound to the local level of a city or region (e.g. small scale investments in bicycle infrastructure, local cycling awareness campaigns etc.), the involved partners benefit from the transnational experience and knowledge exchange and use common dissemination channels in order to raise awareness for the topic at a wider transnational scale. Against this background, a critical mass of visible measures strengthens the relevance of bicycling in urban areas of central Europe. To foster the transnational impact in the long term, the project will finally generate a **transnational cycling strategy**.

In the *INTER-Regio-Rail* project the focus is set on the optimization of (cross-border) regional rail services, especially by improving the legal framework, financing of regional rail infrastructure and services and optimizing the organisation and services of regional rail transport.

It is demonstrated how to attract new customers for these services, based on studies and pilot projects as examples of better infrastructure and tailored services. On the other hand, important questions about governance are addressed, e.g. related to the realization of competitive cross-border services of regional passenger rail transport, which faces different obstacles or problems with tendering of cross-border services in regional rail. In particular distinctions in funding, the missing cross-border coordination of traffic plans, integrated tariffs schemes, the necessary permits for railway vehicles and the traffic companies in the countries concerned, hinder attractive cross-border services in rail transport between states.

Through *INTER-Regio-Rail* a comprehensive **institution-building** in cross-border regional rail services and a strategy for the promotion of a **transregional integration process** may be achieved. This may be reached

[69] trips less than 5 kilometres

through a dialogue with transport companies, passenger associations, regional authorities and external experts. Enriched with experiences gained from these regional projects, a further objective is to approach policy makers at regional, national and European level and argue in favour of improving the framework conditions governing the organisation and financing of regional rail services.

Needless to say, that a higher use of regional railways encompasses a modal switch mainly from cars towards public transport thus reducing the emission of pollutants.

Freight transport

In total, five projects (*INWAPO, SoNorA, BATCo, EMPIRIC, ChemLog T+T*) are dealing with **freight transport** promoting multimodal solutions as well as optimizing freight transport flows. The projects on freight transport have a transregional and transnational focus in common, supporting long-distance transport flows and local transport flows addressed in the feeder flows to multimodal hubs. Again, these projects are preparing first steps towards another measure with a faraway horizon of 2050 addressed in the White Paper: The **shift of road freight transport** over 300 km to rail and waterborne transport. In order to reach this ambitious goal, first pilot actions need to start now.

In the *INWAPO* project, which may be allocated to different topics ("GHG, Energy efficient transport", "TEN-T" or "Environmental qualities and transport emissions"), the better utilization of waterborne transport in freight transport is intended by increasing the attractiveness of the waterborne transport. This can be achieved by improving the efficiency of the river- and sea-ports, fostering the freight traffic along waterways and strengthening the integration of the port infrastructure in the logistics chain. This objective involves an improved coordination among different actors involved, especially at national level as well as multimodal logistics cooperation. Thus, an **institution-building** process integrating port authorities, national, regional and local institutions is attained.

One step in the *INWAPO* project is fostering freight transport along waterways, and strengthening the integration of port infrastructure in the logistics chain. By promoting the strategic role of the Northern Adriatic ports to serve a wide hinterland (northern Italy, via the inland waterway Venice–Mantova/Cremona, the central and eastern European regions), the project intends to contribute to the development of multimodal platforms. The "environmental advantage" of this multimodal approach is likely to become a cost advantage when environmental external cost will be internalized, coherently with the "EU2020 Strategy" and EU decarbonisation policy as well as the **reduction of greenhouse gas emissions and transport related emission of pollutants**. Promoting the strategic importance of the Danube River, Elbe waterways and Oder waterways is equally important for the economic strengthening and competitiveness of the whole area.

Small scale investments in pilot actions include investments in cranes (port of Bratislava), in waterside infrastructure for efficient container handling (port of Vienna) and in infrastructure of two cargo ship quays (port of Budapest).

Pursuing a comprehensive approach for a certain corridor with positive effects in both, sustainable passenger and freight transport, the *SoNorA* project can be highlighted for the South-North axis development. A couple of measures in the *SoNorA* project are supporting the improvement of rail transport and thereby promoting modal shifts taking passenger and freight transports off the road.

Regional planning

Another small group of projects (CITY REGIONS, airLED) is tackling questions of **regional planning** aiming to share and exchange experiences about handling the conflicting situation of **urban sprawl** especially in the vicinity of large and medium scale cities including transport as a predominant theme. After 1989, the changes in land use in the hinterland of larger cities occurred in a much shorter period in central Europe as we observed in the EU-15, where these changes took a longer period of time.

Again, in the project *CITY REGIONS,* an **institution-building** process aiming at a durable institutionalisation of functional cooperation between the municipalities of the urban centre and smaller cities in the hinterland is a key objective. Even if a common regional/urban and transport planning strategy is not directly promoted, the spirit of this approach seems nevertheless being inherently addressed. The challenge is to improve per-urban cooperation, to mitigate urban sprawl and to manage land use jointly, which shall be reached through mutual learning and exchange of experiences between partners and networks, analysis of good practises and joint assessment of their transferability. In a second stage, pilot initiatives are planned.[70]

Positive impacts on the **environmental quality** are expected through better integration of land use and transport thus supporting non-motorised transport modes or public transport.[71]

Lessons learned

Most of the projects are in line also with goals proposed in the recent papers of the European Commission and represent first steps in the right direction. It can be highlighted as well, that some of the projects, especially in freight transport, are following a holistic - in the sense of "A-S-I" (Avoid-Shift-Improve)[72] – approach: "Avoid" by bundling demands through logistics cooperation, "Shift" by promoting the use of more sustainable modes of transport and "Improve" by introducing new (propulsion) technologies and optimizing multimodal transport chains.

These measures are furthermore considered first steps towards the selected goals set in the **White Paper "Roadmap to a Single European Transport Area"** which comprise, among others, "substantially reducing the use of conventionally fuelled cars in urban areas" or "decreasing transport greenhouse gas emissions". Especially in cities, ambient air quality and environmental noise are primarily affected by traffic. The projects` focus on urban areas is hence consequential.

Evidently, pilot actions can in their entirety reveal only marginal effects on ambient air quality or environmental noise, but show movements towards an implementation at larger scale by gaining and capitalising experiences from new or innovative approaches.

A number of projects are dealing with regional planning and related transport issues without directly addressing environmental targets. However, they are indirectly expressing significant impulses in urban and regional planning towards a better environment and living quality.

[70] City regions just started, no results are available at the present stage.

[71] Regarding the full range of CENTRAL EUROPE projects, there are two further projects dealing with air quality (*TAB, UFIREG*) pursuing a more environmental focus, which have however not been assigned to the „Sustainable public transport and logistics" theme.

[72] GIZ, 2011

A high share of the considered projects is developing common problem solving strategies trying to build up common tools or sharing know-how. Building up transnationally harmonized strategies, transnational common tools or common approaches might be fruitful only to some extent, as a not negligible number of problems and solutions are located at local scale and need to be solved by taking care of the local situations and the general conditions in the specific areas. However, the development of these common approaches involves a transnational learning process, wherein project partners and regions with different framework conditions learn from each other's experiences, exchange ideas and knowledge. Together with the commitment for future cooperation, these common activities provide an added value beyond the immediate results during the project implementation.

5 Conclusions and Recommendations

CENTRAL EUROPE project achievements have been analysed within four specific topics against the background of main pillars of EU Transport policy. In this chapter their relevance for the current and future policy framework at programme level will be summarised.

In particular, lessons learned from the single topics shall be synthesized against the background of the two superordinate hypotheses concerning "Sustainable Public Transport and Logistics". These hypotheses are, expressed as sub-theme 1 ("Cooperating to move people a greener and safer way") and sub-theme 2 ("Cooperating to connect the regions and put freight on a greener track") in the present study, in line with the objectives at programme and EU level.

The present chapter therefore provides general conclusions and recommendations according to the four horizontal topics for each of the two sub-themes. The figure below illustrates the hierarchical relationship between the four topics and the two principal subthemes.

CENTRAL EUROPE Sustainable public transport and logistics	
SUBTHEME 1 Cooperating to move people a greener and safer way	**SUBTHEME 2** Cooperating to connect the regions and put freight on a greener track
1. GHG, Energy efficient Transport	
2. Intelligent Transport Systems	
3. TEN-T Transport	
4. Environmental qualities and Transport emissions	

Sub-theme 1: "Cooperating to move people a greener and safer way"

This subtheme implies that transnational cooperation through CENTRAL EUROPE projects contributes to principal EU transport policies in passenger transport, expressed for instance by the TERM CSIs 12a/b "Passenger transport volume and modal split within the EU". The main objective at EU level allocated to this indicator is that "most of medium-distance passenger transport should be covered by train". Other objectives and initiatives in this subtheme are "no use of conventionally fueled cars in urban transport by 2050", "Integrated urban mobility" or "Promoting more sustainable behaviour".

The CENTRAL EUROPE transport projects are generally in line with recent objectives set for passenger transport by the European Commission, among others in the "White Paper - Roadmap to a Single European Transport Area"[73] or "A Roadmap moving to a competitive low carbon economy in 2050"[74].

[73] European Commission, 2011a

[74] European Commission, 2011d

The majority of the projects within this subtheme - 15 in total - deal with modal shifts towards public transport or non-motorized modes, with optimizing public transport or with applying new propulsion technologies. The focus is on urban areas, which is in harmony with the initiatives on integrated urban mobility. Those projects dealing with TEN-T are in their majority focusing on sustainable freight transport; however, within a number of projects rail passenger transport is as well tackled. This orientation fits into the EU objective of shifting medium-distance passenger transport towards rail.

In comparison to the trend over the past decades within the whole programme region, rail passenger transport dramatically lost market shares in the new member states. The modal split of car passenger transport in the new member states has risen to 80 percent and reached the same share as in the old member states. One significant difference can still be observed: the CO_2 emissions in transport per capita remain much lower in the new member states than in the old member states (cf. chapter 3). In this light, all projects under the subtheme "Cooperating to move people a greener and safer way" are counteracting the trends observed.

As observed within a number of projects, the overall EU policy aims (e.g. reduction of greenhouse gases) can be regarded as long-term objectives only. Thus for example, in terms of modal shifts towards more sustainable modes in urban passenger transport, observation periods necessary to perceive real effects exceed the average project duration. Even if this finding might disappoint at first, the measures and pilot actions show the principal feasibility e.g. of a modal switch and provide in selected cases a decisive **momentum in the right direction**. We might not see the impact right now as a high share of projects are still ongoing and changes in behaviour take a longer period to be identified and measured. The overall effects may thus appear small at present taking into account that most projects involve pilot actions or preparatory work for an implementation at a larger scale.

In the frame of CENTRAL EUROPE projects, a number of pilot actions have been implemented or started. These actions range from pilot investments at small-scale to public awareness programmes. Small-scale investments in a considerable number of actions have a pilot character for applying new technologies or new planning approaches. But some of these, for instance regarding bike infrastructure, have immediate local effects as well.

In passenger transport, transnational cooperation supports national strategies promoting cycling and demonstrates the feasibility of everyday cycling in urban areas through numerous measures from infrastructure to awareness-raising (cf. Chapter 4.2. and chapter 4.5.). A further niche of transnational cooperation lies in the development of clean public transport in urban areas. The remarkable achievement regarding clean urban public transport is the building-up of critical mass on a niche market for new approaches and technologies (s. chapter 4.2.).

In the field of ICT/ITS, passenger transport applications may be highlighted with the further objective of installing interoperable cross-border multimodal real-time traffic and travel information systems (s. chapter 4.3.).

The development of transnational services in intercity and regional rail links is a further unique contribution enabled through cooperation (s. chapter 4.5.). The White Paper foresees that "most of medium-distance passenger transport should be covered by rail"[75] by 2050.

Pilot actions can contribute to a reduction of atmospheric concentration of pollutants in cities, but the potential of reducing greenhouse gas emissions is low considering the direct interdependency with driven vehicle kilometres. Looking at the past trends, the highest growth rate in car traffic is most probably

[75] EC (2011a), p. 7, EEA (2011), p.10

linked to suburban and regional traffic rather than to urban areas, where tram and metro lost market share even if less than passenger transport by rail (expressed in transport performance [pkm], see figure 5 in chapter 3). Regarding the past trend in passenger rail transport, which faces dramatic losses, it has to be mentioned that three out of fifteen projects are dealing with aspects of rail transport, one of them addressing the hubs in urban areas and the interfaces between rail and urban transport. It seems that suburban and regional traffic is not seen as a major problem to be addressed.

The hypothesis formulated in "Cooperating to move people a greener and safer way" may be confirmed as all the projects objectives and outcomes so far run in the right direction. Remembering the core set of indicators which were consulted for the grouping of projects, all the projects are in line with the long term objectives described at European level in recent programmes (e.g. White Paper, Roadmap to a Single European Transport Area or Low Carbon Economy Roads Map).

It has to be kept in mind that only selected indicators related to modal shift, indicators referring to urban areas such as CO_2-free city logistics in major urban centers and a targeting share in the use of conventionally fueled cars in urban transport have a clear territorial component and can thus be addressed at project level efficiently. Other indicators mentioned in European programmes involving for instance target average type-approval emissions for cars can only be tackled at European level and not at programme level in European Territorial Cooperation.

Sub-theme 2: "Cooperating to connect the regions and put freight on a greener track"

The second sub-theme entails that transnational cooperation, as demonstrated by CENTRAL EUROPE, can contribute to EU policies in the field of sustainable freight transport. The correlating EU policy is expressed by TERM CSIs 13a/b: "Freight transport volume and modal split within the EU". The clear objectives at EU level related to this indicator are "road freight over 300 km shift to rail/waterborne transport by 50 percent by 2050" and "Optimizing the performance of multimodal logistic chains, including by making greater use of more energy-efficient mode".

Linked to these objectives is a fully functional and EU-wide multimodal TEN-T 'core network' by 2030, with a high quality and capacity network by 2050 and a corresponding set of information services[76]. The majority of projects dealing with TEN-T focuses on sustainable freight transport and is thus in line with the objectives of the "White Paper". Preparatory projects in the frame of European Territorial Cooperation programmes are facilitating accessibility of regions for (transnational) traffic flows and encourage intermodal transport. Thereby they contribute to take freight off the road and shift it to greener and safer means of transportation.

In comparison to the EU-wide trend over the past decades, rail freight transport and inland waterways dramatically lost market shares, especially in the new member states. The growth rates of road freight transport have been far above the European average; the actual share of road freight transport in the new member states is above the share of road freight transport in the old member states.

The majority of projects has developed measures facilitating multimodality. These measures cover e.g. improving the connectivity between port and railway, improving transport infrastructure (TEN-T) or improving interoperability for multimodal transport chains in freight transport through better information systems. Thus a positive contribution to modal shifts from road transport to sustainable and multimodal transport services is noted.

[76] European Commission, 2011a

In accordance with the objectives at EU level, "modal shifts in long-distance freight transport from road to rail and waterborne transport" have been tackled within CENTRAL EUROPE projects as well as developing cooperation for the access to European sea ports or establishing strategic cooperation between and within Trans-European transport corridors. The overall effects of the pilot actions on the indicators chosen may still appear small. We have to be aware however, that despite the comparatively low overall budgets and the limited project timeframes, important pilot actions and **preparations for a future implementation** at a larger scale (see above) could be achieved so far. The pilot actions are a proof of feasibility of the selected measures, revealing the impacts and effects and helping to understand the mechanism. Experiences and lessons learned from pilot activities can be profitably applied on future projects at a larger scale.

With regard to the investments realised within the CENTRAL EUROPE projects, due to the comparatively low budgets, their potential impact is limited, at least considering a trans-national level. Worth to be mentioned is the **preparatory work** (e.g. through the implementation of feasibility studies or institution-building-processes with a clear transnational approach) for **future large scale infrastructure investments** (e.g. TEN-T core network).

Considerable achievements of CENTRAL EUROPE projects (e.g. SONORA, CHEMLOG, BATCO) for the development of the relevant EU policy framework as the definition of the TEN-T core network during the past revision process have to be mentioned.

The development of the TEN-T and other transport corridors fosters territorial cohesion and promotes a balanced allocation of economic benefits. Peripheral regions profit from a better **connectivity** to the TEN-T core network and to TEN-T nodes (such as urban agglomerations, ports, airports or intermodal platforms). The connection with economically strong centres can help to improve conditions for disadvantaged and socially marginal areas. The relevance of the development of the TEN-T core network changes over time, it should be kept in mind that during CENTRAL EUROPE Programme implementation the process of revising the TEN-T was ongoing.

Beside the social dimension also environmental aspects have to be considered when it comes to transnational activities in the field of transport. Promoting sustainable mobility aims at reducing environmental burdens arising from traffic (for example through sharing experiences on the preparation and implementation of sustainable transport solutions).

The hypothesis formulated in the title of the sub-theme "Cooperating to connect the regions and put freight on a greener track" can be confirmed as the majority of the projects' objectives and outcomes so far underline this. Looking at the core set of indicators referring to this sub-theme, emphasis is put on the objectives at European level (e.g. White Paper, Roadmap to a Single European Transport Area or Low Carbon Economy Roads Map). As already mentioned above the majority of the projects may be allocated to the objectives "Road freight over 300 km shift to rail/waterborne transport by 50 percent by 2050" and "Optimising the performance of multimodal logistic chains, including by making greater use of more energy-efficient mode".

Institutional building

Transnational and transregional cooperation is essential, especially in the development of transnational and cross-border transport infrastructure and transport offers. Therefore, institution-building supported by several CENTRAL EUROPE projects within both sub-themes can be regarded as a horizontal (cross-sectoral) effect and a further niche of programmes in the frame of European Territorial Cooperation.

The European integration has a social, economic and territorial dimension. An important aspect in the integration process is the building-up of mutual cooperation. Connecting regions with each other and with urban areas supports the **exchange of experience and the promotion of innovation** between cities or regions. Those aspects have been addressed in a number of projects, especially in projects within the sub-theme "Cooperating to move people a greener and safer way" focussing predominantly on urban or regional levels.

Some projects initiate long-term **institution-building processes** principally based on experience sharing and a joint problem-solving approach, which enable institutionalised territorial cooperation beyond the project duration. These initiatives foster sustainable cooperative decision making which cover e.g. transnational cross-border activities or planning processes, dealing with **Trans-European Transport Networks** (TEN-T) or dealing with interregional respective cross-border transport infrastructure and transport offers.

General observations and recommendations

In some projects, pilot actions are targeted to optimize road freight transport. It has to be stated that optimizing road freight transport might have positive effects in reducing vehicle kilometers by higher load factors, less empty trips etc. On the other hand, higher efficiency may implicate lower costs of road transport as well and thereby increase the competiveness against other more sustainable modes (e.g. rail freight transport or inland waterways). This might be crucial as we are still facing a significant distortion in the transport market looking at the external costs caused in road freight transport compared to other transport modes. Projects targeting an efficiency increase of road freight transport potentially have an adverse effect by strengthening road versus other modes.

Beside optimized road freight transport, better accessibility of (regional) airports by public transport also involves adverse ecological effects compared to sustainable transport modes for the whole transport chain.

In some projects, the territorial aspect seems to be less prominent than in others. This is also linked to issues dealt with in the projects (e.g. introduction of zero emission vehicles (ZEV), which are also addressed in other European programmes (e.g. in energy programmes launched by DG Energy) or in specific action plans such as the ICT/ITS action plan. Despite the above described appreciable achievements of CENTRAL EUROPE for instance in the field of ICT/ITS, some issues can be considered ambivalent as the approaches chosen are inherently not necessarily linked to a specific territory or region (e.g. applications in ICT for specific logistic processes or cloud computing). In such cases, the territorial aspect can be found in the testing and demonstration of ICT applications to improve regional place-based policies or regional economic initiatives. However, this intention could in general be more emphasized in the project outlines and outcomes.

Few regions seem to be intensively involved in the CENTRAL EUROPE Programme, appearing in various transport projects. In view of the upcoming programme period 2014-2020, it may be considered as a recommendation to enforce the **involvement of a broader variety of different project partners**, with a focus on disadvantaged and economically weak cities and regions.

Looking at the distribution of the project partners, partners in rural, remote or isolated areas are less active compared to partners from central areas. This is also due to the fact that a high share of the partners are central institutions like ministries which are located in the capitals. The majority of the projects having ministries as partners, concentrate on the TEN-T core network or other corridors more

than tackling the accessibility of remote areas. This aspect is linked to the recent review process of the TEN-T core network at European level.

Regarding the current focus on urban transport, the modal shift or the use of clean vehicles in public transport (e.g. Enhanced Environmentally Friendly Vehicles (EEV) electric busses) promotes the reduction of atmospheric concentration of pollutants in cities. However, the overall potential of reducing GHG emissions of such pilot actions is low due to the fact that this phenomenon is directly linked to the driven vehicle kilometres. Here, it has to be considered that the aim of ETC programmes and projects is to improve policies, raising regional or local attention on a topic showing the way how to solve it and promote changes in mobility patterns rather than to implement large scale investments.

Looking at the past trends, the highest growth rate in car traffic is most probably linked to **suburban and regional traffic** rather than to urban areas, where tram and metro lost market share even if - expressed in transport performance [pkm] - less than passenger transport by rail. Starting from this fact, suburban and regional traffic will be – beside urban transport and environment problems – one of the most challenging topics to tackle in future.

Cooperation between urban and intermediate regions promotes the **comprehensive implementation of public transport services**, which are not limited to central urban areas. According to their needs, intermediate and even rural areas shall be equally provided the appropriate framework conditions for developing sustainable passenger mobility. In the interaction between urban and peri-urban areas, a need is expected to realise to also prevent urban sprawl and support sustainable transport modes in a complex environment. Thus, a focus may be set on **more regional aspects** as well.

Resuming all projects in the field of urban transport, it should be noticed that rather few projects are dealing with non-motorized transport modes; the exception being projects focusing on cycling. Pedestrians as a predominant mode in cities are not tackled. It is worth mentioning that a high share of trips made by pedestrians in cities is crucial for achieving the goals at EU level proposed by the Commission in the “White Paper”. For the next programming period 2014 – 2020, pedestrians as a transport mode may be addressed as such projects are very well in accordance with the overall objectives of European Territorial Cooperation.

Transnational aspects of non-motorized transport may be found in common transnational action plans or in the exchange of experiences as well as in small-scale investments. Such strategies are in accordance with the objectives of European Territorial Cooperation programmes and their limited budgets allowing no large scale investments. Therefore, non-motorized modes could be more prominently addressed in the future period.

After the revision process of TEN-T, aspects on secondary respective feeder transport infrastructure to the TEN-T net and the integration of hubs in the local and regional transport schemes (“last mile”) may be worth to tackle in the future funding period.

6 List of figures

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9 Annex

I. List of all analysed CENTRAL EUROPE projects with a short general description including the core outputs:

CENTROPE CAPACITY	CENTROPE CAPACITY aims at a comprehensive institution-building and strategy-implementing project of a transnational co-operation and transregional integration of 16 regions and cities in four countries. • Infrastructure Needs Assessment Tool
ChemLog	The objective of ChemLog is a joint strategy and action plan for the optimization of infrastructure towards a Chemical Logistics Network. The goals are strengthening rail and waterway transport for chemical goods, the development of logistical centres for intermodal transport, facilitate the connection of pipelines for an effective Central and Eastern European Chemical Logistics Network and supporting the realisation of Trans-European Traffic routes and harmonisation of regulations and coordinated planning of infrastructure and the use of Structural Funds. Core Outputs: • **SWOT** analysis of chemical logistics in Central and Eastern Europe • **Best Practice** Solutions in chemical logistics in Central and Eastern Europe • Joint Strategy and Action Plan Feasibility Studies on the improvement of (framework conditions of) chemical logistics alongside important Corridors • Improvement of chemical rail logistics in Hungary in the context of Corridor V • Cross-border gas pipeline for improving the logistics in Central and Eastern Europe • Improvement of framework conditions for chemical transports alongside the Pan European Corridor 5 • Combined transport in Central and Eastern Europe • Improvement of framework conditions for chemical transports alongside the Pan European Corridor 5 • Strengthening the Danube Waterway in Austria as Part of Corridor VII for the Chemical Industry • Improvement of Conditions for the River Transport in central Europe (Mainly on the Elbe River)
KASSETTS	KASSETTS is a project on ICT with the objective of developing and implementing ICT tools to help manufacturing SMEs optimising their transnational logistic traffics. The main objective is the development of broker software and pilot actions. Core Outputs: • Strategy & roadmap for stakeholders to promote transnational **collaboration in logistics** • Suite of ICT tools & ICT services to support networking & planning by **logistic brokers** • Network of 7 logistic brokers to promote innovation in the user companies

SoNorA	SoNorA aims at developing pre-investment studies, tools and new logistic services as well as updating regional transport planning approaches and policies in order to increase intermodal accessibility along the S-N axis as a basis for regional development. Core outputs: • Joint central Europe strategy for the development of **S-N multimodal infrastructure network** • Policy documents and action plans regarding TEN-T • Transnational tools considering future scenarios model, alternative financing, environment sensitive planning, business plan development • **Network-node** evaluation • LoCCS **start-up tools** implemented • Action plans and guidelines addressing critical intervention areas, overcoming persistent problems and priority node readiness
Via Regia +	In Via Regia +, the main goal is the strengthening of corridor nodes as "motors" of development along the Central Axis (former Pan European Transport Corridor III from Brussels – Kiev). Improving accessibility and activating touristic potentials are further objectives. Core outputs mainly focus on **action frameworks** in the field of • Improving long-distance and cross-border transport • Sustainable transport in agglomeration areas • Efficient land use management and regional cooperation • Tackling demographic change and attracting human capital • Activating potentials for tourism These thematic analyses flow into a **Memorandum and action plan** for development / improvement of joint transnational strategies and action plans.
BATCo	The main goal of the BATCo project is the joined development of the Baltic-Adriatic Transport Corridor including the extension of the Transport Corridor VI from Gdansk to Bratislava, Vienna, Trieste, Venice and Bologna. Core outputs: • Joint transnational strategy & action plan for **Institutional Cooperation** • Action Plan for **Transnational Business Cooperation** Alliance and its implementation Transnational tools (to be provided to key players along the axis): • **Decision Support Model**"Green Transport – Impacts on Environment" • Establishment and Pilot implementation of a **Transnational Logistics Centre Incubator** (cooperation mechanism) • **BATCo Information** Pool (harmonised data basis for transnational /regional and local decision makers & other key players in order to manage harmonised future activities along the axis)
BICY	BICY aims at reducing car traffic by promoting the replacement of car by bicycle for shorter (especially urban) trips, promote bike as a complement transport mean of public transport, raise awareness for bicycle planning, policy and use and enable know-how-transfers. Core outputs: • the definition of a **trans-national strategy** for promoting cycling (roadmap

	for the diffusion of cycling in Europe) • the **compendium** of the implementation action results
CHAMPIONS	The objective of the project is the enhancement of the accessibility of regional airports. In terms of ITS, the implementation of innovative passenger information systems and info kiosks to enable faster processing of passengers towards public transport is foreseen. Core outputs: • **Joint transnational strategy** based on studies for better public transport services to and from airports • Transnational tool **"Air Accessibility Guide"** (contains applicable procedures to improve regional accessibility by air) • Pre-Investment Studies for consequent pilot investments at the two airports Poznan and Wroclaw • innovative **bus concept** • pre-investment study for **rail access**
FLAVIA	FLAVIA aims to improve the transport flows between Central and South East Europe by putting the focus on intermodal freight flows and process oriented approaches (e.g. benchmarking, accessibility analyses, running time und bottleneck analyses, pre-feasibility studies) instead creating new infrastructure. Core outputs: • web based "Intermodal Wikipedia" • policy paper "Impacts on TEN-T" and "Procedures to harmonise national transport investments" • tool for the evaluation of intermodal accessibility of terminals/regions • **pro-rail alliances** concept • "Corridor terminal alliance" • Lessons learned pre-feasibility studies on intermodal rail, intermodal inland waterway and terminal development (strategy papers) • permanent cooperation structure between CE and Black Sea / TRACECA actors
GUTS	GUTS aims at creating a solid knowledge base for the development of sustainable and clean urban public transport systems. Core outputs: • Master Studies on governance and financial & technical feasibility • CENTRAL **Green Public Transport Resource Centre** (PTRC) for the permanent cooperation within the partnership and beyond • **Transnational Strategy on Clean PT** Solutions/Systems (decision making support tool)
INTER-Regio-Rail	INTER-Regio-Rail is aiming to involve other potential user-groups of regional rail transport (RRT) apart from commuters and tourists, as there are elderly people, intermodal and interregional travellers. Main outcomes of the projects are on the one hand side pilot actions for the improvement of RRT through preparing investments (e.g. rolling stock, infrastructure), on the other hand sharing experiences and know-how regarding the legal, organizational and financial framework conditions for the potential customer-oriented improvement of RRT. Core outputs: • synthesis reports of pilot projects ("Removing technical barriers to RRT")

	• adaptation of a used railcar as "rolling laboratory" considering especially the needs of cyclists • Joint strategy and action plan development for "Removing barriers to Regional Rail Transport: Need for joint action"
REZIPE	The goal of REZIPE is to support the transition to zero emission vehicles in public administration by creating policy tools, developing action plans and by testing innovative approaches having public vehicles or joint PPP campaigns in pilot actions. Core outputs: • website containing the ZERO portal with 3 transnational tools: o Mapping of recharging spots o CEUS transfer toolbox (featuring helpful tools for implementing zero emission mobility from renewable sources) o Show case database • Transferability study including results from pilots actions and investments preparation activities
TROLLEY	TROLLEY aims at promoting trolleybuses as cheap, clean and energy-efficient form of public urban transport. Three fields of intervention have been defined: optimising energy use, increasing public transport efficiency and improving the image of trolleybuses. Core outputs: • Joint Declaration for **Electric Trolleybus Mobility** • E-learning Modules • Transnational Manual on Advanced Energy Storage • Guideline on Detailed Diesel to Trolleybus Conversion Principles • Central European Trolleybus Knowledge Centre • Investment Preparations: o Reference Guide on Trolleybus-Tram Network Use o Trolleybus Intermodality Compendium o Transnational Take-up Guide on Diesel Bus Replacement
Central MeetBike	Central MeetBike seeks in improving conditions for cycling in urban areas in the CE based on the transnational experience exchange, technical planning and in public awareness raising for using bicycles for short distances s well as in combination with public transport. Core outputs: • Analyses of national deficiencies, lack of knowledge for strategy documents • Strategy documents with general recommendations at local, regional and national level • "**Bike to work**"- campaign • Good practise fact sheets • Capitalisation of lessons learned from pilot actions
EMPIRIC	In EMPIRIC, the preparation of investments and the definition of common tools to enhance the attractiveness of multimodal transport services and infrastructures are foreseen. The objective is to enhance multimodal services, especially rail and inland waterways. Core outputs: • Knowledge management procedures (defining standard tools to build up an

	overall methodoLOGICAL approach) • Impact analyses • Handbook of CE incentive • Business cafès • **"Logistics operators and users Common Position"** on incentives policies for the promotion of multimodal service
LOGICAL	LOGICAL`s objective is to improve efficiency of logistics through cloud computing (e.g. enabling collective cargo transport by ITS supported enhanced interoperability of logistics businesses of different sizes) and to deliver innovative ICT solutions for the logistic sector. Core outputs: • **Transnational cloud architecture** as universal concept to enhance the interoperability in logistics • **Business plans** for the durable operation of each location's data cloud • **Showcase** of the applied cloud tool for demonstration to the public
SPES	SPES is a project on telemedicine in order to enable patients to access medical services through a remote way. Core outputs: • Requirements analysis report for 4 eHealth regional/national platforms • Pilots evaluation report • "SPES Metrics for success " handbook • Production of the "White Paper" (roadmap)
INWAPO	INWAPOs main aim is to improve the relevance of unexploited waterborne transport in regional and international transport by enforcing intermodality of inland waterways and seaports. Core outputs: • Strategy and Action plans for seaports and for river ports based on the findings of the Pilot Actions • Methodologies for quantifying waterborne potential for sea and river ports • Detailed studies for each ports regarding the waterborne transport volume analysis and definition of investment needs and innovation gaps in services for tri-modality Testing of new services by pilot actions and feasibility studies
RAILHUC	RAILHUC intends to enhance rail transport by developing models, concepts, measures, harmonised strategies and policy actions with the target to improve intermodal connections and feeder lines in TEN-T railway hub cities. Core outputs: • Joint strategy towards a model/concept for **hubs integration** into local/regional/TEN-T transport systems • **RAILHUC manifesto** including action plan for long term sustainability
airLED	airLED objective is to position airports into regional development strategies in order to improved the economic development of the airport catchment areas with a focus in logistics and transport and in business and investment development. A further goal is integrate airport areas into urban respective spatial development strategies, considering (amongst others) environmental issues.

	Core outputs: • Transnational strategy for **„Airport City**" development • 4 Regional **roadmaps for endorsement** (integral parts of the airLED strategic framework) for guaranteeing sustainability after project lifetime • **Good practice** collection based on Open Living Lab results • Development and pilot implementation of 3 **tools**: o Statistical and decision-making support model developed (spatial and economic development) o Simulation tool methodology developed for transnational use (territorial marketing) o One-stop shop (OSS) methodology for transnational use (for investors, industry and business actors)
ChemLog T+T	ChemLog T+T is a project dealing with the application and the intelligent use of ICT for the development of efficient traffic management and information systems for transnational transport of dangerous goods through an efficient information platform for tracking and tracing. Core output: Development of a **joint transnational action plan** for the **tracking and tracing of dangerous goods** in the partner regions/countries with concrete implementation steps for the promotion of T&T.
CITY REGIONS	CITY REGIONS aims for an enhancement and durable institutionalisation of functional cooperation between the municipalities of the urban centre and smaller cities and towns located in the hinterland in order to mitigate urban sprawl which leads to a reduction of natural and open areas, to develop jointly strategies towards external investors, to enhance transport infrastructure and to prevent social segregation process. Core outputs: • Policy study on **governance options in urban region** in view of the next generation of Operational Programs for the implementation of EU structural funds • Position Paper outlining how **European urban regions** should position themselves with regard to current strategies • **Strategic recommendations** to the five partner regions regarding their positioning in and towards macro-regional strategies • Durable cooperation agreements for each urban region
EDITS	EDITS focuses on the improvement of interoperable and multimodal real time traffic and travel information services and support the single traveller before and during his journey by the use of multimodal Real Time Traffic and Travel Information services. Core output: • EDITS **stakeholder recommendation report** as a basis for a further uptake and enhancement of the EDITS system • Specifications of the EDITS **GIP and interface** (for the setup of the regional EDITS GIPs and the definition of the EDITS data and information exchange interface) • Pilot demonstration as a basis for interoperable cross-border and transnational **traveller information end-user services**
ESSENCE	ESSENCE aims at implementing a service platform serving SMEs with preferred ICT functions for daily business activities (Business, eNetworking and eLogistics).

	Core outputs: • Joint strategy for **network shaping and empowerment** for SMEs • Suite of eServices and knowledge base for SMEs to support network building provided via an **eService platform**
SOL	SOL is focused on a CENTRAL EUROPE contribution to the aim of the European Road Safety Program to halve the number of lives lost on our road until 2010. The project intends to develop a transnational road safety strategy, replicable tools and a multi-sector network at the transnational level using experience of local pilot projects (road safety networks) in order to support the regions to catch up with the highest EU standards. Core outputs: • Road safety guidelines for experts and decision makers • Manual for Road Safety campaigns • Road Safety data collection and survey tools • Materials for Road Safety train-the-trainer workshops • Implementation of local and regional Road Safety action plans and pilots • Transnational Road Safety strategy and action plan • Transnational multi-sector Road Safety network

II. CENTRAL EUROPE projects in the field of Sustainable public transport and logistics - Matrix

PROJECTS	GROUPS OF PROJECTS – Subthemes: 1 "Cooperating to move people a greener and safer way"	2 "Cooperating to connect the regions and put freight on a greener track"	Topics: "Energy efficient Transport"	"Intelligent Transport Systems"	"TEN-T Transport"	"Environmental qualities / Transport emissions"	Project allocated to No. of Clusters	THEMATIC FIELDS ADDRESSED - as outlined in AF (project summary!) – TERM Core Set of Indicators: TERM 01: Transport final energy consumption by mode	TERM 02: Transport emissions of greenhouse gases 5)	TERM 03: Transport emissions of air pollutants 5)	TERM 04: Exceedances of air quality objectives due to traffic	TERM 05: Exposure to and annoyance by traffic noise	1) TERM 12a/b: Passenger transport volume and modal split	2) TERM 13a/b: Freight transport volume and modal split	TERM 20: Real change in transport prices by mode	TERM 21: Fuel prices and taxes	TERM 27: Energy efficiency and specific CO2 emissions	TERM 31: Uptake of cleaner and alternative fuels	TERM 34: Proportion of vehicle fleet meeting certain emission standards	others: TERM 09: Transport accident fatalities	TEN: TEN-T / Corridors	ITS: ITS	3) Priority Areas 4): I. Optimal use of road, traffic and travel data	II. Continuity of traffic and freight management ITS services	III. ITS road safety and security applications	IV. Linking the vehicle with the transport infrastructure	OTHERS: Regional Development	intermodality
1 CENTROPE CAPACITY	x				x		2			x			x								x						x	
1 ChemLog		x			x		3		x	x				x	x						x							
1 KASSETTS		x	x	x			4		x	x				x	x		x					x	x	x				
1 SoNorA		x			x	x	4			x	x			x	x						x							x
1 Via Regia +	x				x		2		x	x			x								x							
2 BATCo		x	x	x	x	x	5		x	x	x		x	x			x				x	x	x					x
2 BICY	x		x			x	3		x	x	x		x				x											
2 CHAMPIONS	x			x			2		x	x			x									x						x
2 FLAVIA		x			x		2		x	x				x							x							x
2 GUTS	x		x			x	3	x	x	x	x		x				x											
2 INTER-Regio Rail	x					x	2		x	x	x		x															x
2 REZIPE	x		x			x	4		x	x	x	x	x	x	x		x		x									
2 SOL	x						1		x	x			x							x								
2 TROLLEY	x		x			x	4		x	x	x		x		x		x											
3 Central MeetBike	x		x			x	3			x	x		x				x											
3 EMPIRIC		x	x		x	x	5		x		x			x	x		x				x							x
3 LOGICAL		x		x			2		x	x				x								x		x				
3 SPES	x			x			2		x	x			x									x						
3S INWAPO		x	x		x	x	4			x	x			x			x				x							x
3S RAILHUC	x				x		2		x				x								x							
4 airLED	x					x	2		x				x														x	
4 ChemLog T+T		x	x	x		x	5		x	x	x			x	x		x					x						x
4 CITY REGIONS	x					x	2			x			x														x	
4 EDITS	x			x			2		x	x			x									x	x			x		
4 ESSENCE		x		x			3		x	x				x	x							x		x				
COUNT	15	10	10	8	9	13																						

1) equals subtheme "moving people the green way"

2) equals subtheme "put freight on a green track "

3) DIRECTIVE 2010/40/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport

4) see Article 2 in 3)

5) explicitly adressed by project - as outlined in AF (project summary!) OR described as adressed environmental indicator in AF (section 2.1.)

III. Project Partners within the Topic "TEN-T Transport"

Trans-European Transport Network
Progress on Priority Axes
November 2011

● Ongoing projects monitored by the TEN-T EA *

Priority project sections (roads)
- Completed
- Completed in 2010
- Works ongoing
- Works to start between 2011 and 2013
- Works to start after 2013

Priority project sections (inland waterway)
- Completed
- Completed in 2010
- Works ongoing
- Works to start between 2011 and 2013
- Works to start after 2013

Priority project sections (rails)
- Completed
- Completed in 2010
- Works ongoing
- Works to start between 2011 and 2013
- Works to start after 2013

Priority project sections (Motorways of the sea)
- Works ongoing
- Works to start between 2011 and 2013

- Airport - Completed by 2008
- Airport - Works to start after 2013

* ATM, ITS, MoS and Galileo not included

1. Railway axis Berlin-Verona/Milano-Bologna-Napoli-Messina-Palermo
2. High-speed railway axis Paris-Bruxelles/Brussel-Köln-Amsterdam-London
3. High-speed railway axis of south-west Europe
4. High-speed railway axis east
5. Betuwe line
6. Railway axis Lyon-Trieste-Divača/Koper-Divača-Ljubljana-Budapest-Ukrainian border
7. Motorway axis Igoumenitsa/Patra-Athina-Sofia-Budapest
8. Multimodal axis Portugal/Spain-rest of Europe
9. Railway axis Cork-Dublin-Belfast-Stranraer (completed 2001)
10. Malpensa (completed 2001)
11. Öresund fixed link (completed 2000)
12. Nordic triangle railway/road axis
13. UK/Ireland/Benelux road axis
14. West coast main line
16. Freight railway axis Sines/Algeciras-Madrid-Paris
17. Railway axis Paris-Strasbourg-Stuttgart-Wien-Bratislava
18. Rhine/Meuse-Main-Danube inland waterway axis
19. High-speed rail interoperability on the Iberian peninsula
20. Fehmarn Belt railway axis
21. Motorways of the Sea
22. Railway axis Athina-Sofia-Budapest-Wien-Praha-Nürnberg/Dresden
23. Railway axis Gdansk-Warszawa-Brno/Bratislava-Wien
24. Railway axis Lyon/Genova-Basel-Duisburg-Rotterdam/Antwerpen
25. Motorway axis Gdansk-Brno/Bratislava-Wien
26. Railway/road axis Ireland/United Kingdom/continental Europe
27. "Rail Baltica" axis Warszawa-Kaunas-Riga-Tallinn-Helsinki
28. "Eurocaprail" on the Bruxelles/Brussel-Luxembourg-Strasbourg railway axis
29. Railway axis of the Ionian/Adriatic intermodal corridor
30. Inland waterway axis Seine-Scheldt

Topic
"TEN-T TRANSPORT"

Number of Project Partners per Nuts3 Region

1
3
5
7
9

Basemap (TEN-T) legend see on left side

Sources (basemap)

Cartography TEN-T EA January 2012

komobile