



The Cost of Non-Europe in the Single Market in Transport and Tourism

II - Air, Maritime and Inland waterways

STUDY

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The Cost of Non Europe in Transport and Tourism

In May 2013 the European Parliament's Committee on Transport and Tourism (TRAN) requested a Cost of Non-Europe Report in the fields of transport and tourism. Cost of Non-Europe Reports are intended to evaluate the possibilities for economic or other gains and/or the realisation of a 'public good' through common action at EU level in specific policy areas and sectors.

In response to TRAN's request, the European Added Value Unit of the European Parliamentary Research Service (EPRS) has produced this Cost of Non-Europe Report, which seeks to analyse the costs for citizens, businesses and relevant stake-holders of remaining gaps and barriers in the Single Market in transports, as well as to examine the benefits from further action in the tourism sector. In doing so, the report focuses on those areas where liberalization has not been completed or where markets are not functioning effectively. For transports, the four major transport modes - road, railways, sky and maritime transports - as well as some cross-sectoral issues such as passenger rights are looked at. The analysis of the tourism sector concentrates on areas with biggest potential gains.

In addition to a general paper bringing together the research findings as a whole, the exercise comprises three studies commissioned from outside experts, which are published as separate documents:

I Cost of Non-Europe in Road Transport and Railways

Study by Steer Davies Gleave

The study - the first in a series- focuses on the potential benefits of completing the Single Market in the rail and road sectors. Firstly, it seeks to review how policy has evolved in the two sectors in recent years and identify what is still missing. Secondly, the study evaluates in qualitative and quantitative terms the impact of filling the remaining gaps in legislation in order to calculate the "cost of non-Europe". In doing so, it looks at both the short- and long term benefits.

II Cost of Non-Europe in Air and Maritime Transport

Study by MCRIT, OIVA and T33

The study - the second in a series- reviews European air and water transport policy and regulation, and identifies areas, where further legislative action is necessary to complete the Single Market in these sectors. In addition, the paper looks at the impact of the completion of the Single market in relation to intercontinental transport. Based on that, it quantifies the “Cost of non-Europe” by giving an estimate of the net benefits that rebalancing European intercontinental gateways, which would stem from the completion of the Single Market in these air and maritime transport areas, would produce for the whole European economy.

III Cost of Non-Europe in Tourism policy and Passenger Rights

Study by Richard Weston et al.

This study looks at the cost of non-Europe in European tourism policy and passenger rights legislation. For passenger rights, it analyses existing legislation and policy measures, identifying specific gaps where legislation or further initiatives at European level could be beneficial. In the tourism area, it quantifies in economic terms the potential for efficiency gains and identifies the main areas, in which EU action would further support the development of tourism and help realise the potential gains identified.

The Cost of Non-Europe in the Single Market in Transport and Tourism

- II -

Air, Maritime and Inland waterways

**Study
by MCRIT
with the support of OIR and
VVA & the co-ordination of T33**

Abstract

This paper reviews European air and water transport policy and regulation, and identifies areas, where further legislative action is necessary to complete the Single Market in these sectors. In addition, and complementary to previous assessments, which focused mainly on continental transport, this study looks at the impact of the completion of the Single market in relation to intercontinental transport. Based on that, it quantifies the “Cost of non-Europe” by giving an estimate of the net benefits that rebalancing European intercontinental gateways, which would stem from the completion of the Single Market in these air and maritime transport areas, would produce for the whole European economy.

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List of abbreviations

AGN	European Agreement on Main Inland Waterways of International Importance
ANS	Air Navigation Services
ANSP	Air Navigation Service Provider
ATM	Air Traffic Management
CCNR	Central Commission for the Navigation on the Rhine
CCS	Carbon Capture and Storage
CEF	Connecting Europe Facility. Co-financing instrument for TEN-T projects
CJEU	Court of Justice of the European Union
CMNI	Budapest Convention on the Contract for the Carriage of Goods by Inland Waterways
EC	European Commission
ECA	Emission Control Area
ECDIS	Electronic Chart Display and Information System
EEA	European Economic Area. EEA States consist of the members of the EU and EFTA countries (Iceland, Liechtenstein, Norway and Switzerland)
EIB	European Investment Bank
EMSA	European Maritime Safety Agency
EPRS	European Parliamentary Research Service
ETS	Emissions Trading Scheme
EU	European Union
EU	European Union
FAB	Functional Airspace Blocks
GHG	greenhouse gas
GSA	Global Shippers Association
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IMCO	Governmental Maritime Consultative Organization
IMO	International Maritime Organisation
ISA	Independent Supervisory Authorities (for aviation)
IPPP	Institutionalised Public Private Partnership
IRR	Internal Rate of Return
IWT	Inland waterway transport
IWW	Inland waterways
LCC	Low cost carrier

Mpax	Million passengers
MTEU	Million TEU
Mton	Million tonnes
MUAC	Maastricht Upper Area Control Centre
NPV	Net Present Value
NtS	Notice to Skippers
PPP	Public Private Partnership
RIS	River Information Systems
RPK	Revenue Passenger Kilometre (aviation pax · km)
RSS	Regular Shipping Service
SES	Single European Skies
SESAR	Single European Sky ATM Research
SGEI	Service of General Economic Interest
SSN	Safe Sea Net
SSS	short sea shipping
TEN-T	Trans-European Networks. Transport
TEU	Twenty-foot equivalent unit (unit of cargo capacity based on the volume of a 20-foot-long (6.1 meter) intermodal container)
TFEU	Treaty on the Functioning of the European Union
UIC	International rail gauge (1435mm)
UNECE	United Nations Economic Commission for Europe
US FAA	US Federal Aviation Administration
US FMC	US Federal Maritime Commission
VTT	Vessel Tracking and Tracing
WTO	World Trade Organisation

Glossary of main concepts in the document

Single Market	The single market is all about bringing down barriers and simplifying existing rules to enable everyone in the EU – individuals, consumers and businesses – to make the most of the opportunities offered to them by having direct access to 28 countries and 503 million people. The cornerstones of the single market are often said to be the “four freedoms” – the free movement of people, goods, services and capital. These freedoms are enshrined in the EC Treaty and form the basis of the single market framework. The single market is not merely inward-looking – virtually all single market policies have to some extent an international aspect. Despite its achievements so far, the single market is not yet complete. Important gaps remain in some areas. Pieces of legislation are missing. And administrative obstacles and lacking enforcement leave the full potential of the Single Market unexploited.
Legislative gap	Lack of a definite legal rule for the regulation of certain relations or complete absence of a legal rule, i.e., the law has no answer to a certain issue.
Cost of non Europe	The concept of the Cost of non-Europe dates from the 1980s, when the Albert-Ball and Cecchini Reports of 1983 and 1986 – which respectively identified and then sought to quantify the significant potential economic benefits from the completion of a single market in Europe - first brought the idea into mainstream political use. The central notion is that the absence of common action at European level may mean that, in a specific sector, there is an efficiency loss to the overall economy and/or that a collective public good that might otherwise exist is not being realised.
Costs	Cost refers to trade-offs that individuals and society must make between use of resources. This can involve money, time and other resources, or the loss of any potential benefit. Costs can be divided between internal (also called user) and external (also called social) costs.
Transactional Costs	A <i>transaction cost</i> is a cost incurred in making an economic exchange (restated: the cost of participating in a market). Transaction costs can be divided into different broad categories, for instance: search and information costs, Bargaining costs, Policing and enforcement costs are the costs of making sure the other party sticks to the terms of the contract, and taking appropriate action (often through the legal system) if this turns out not to be the case. We assume, consistently with similar studies
Transport Costs	<i>Internal transport costs</i> are borne directly by the consumer: the expenses involved in moving products or assets to a different place, which are often passed on to consumers as fees, the time devoted to travel and others (e.g. risk insurances). Additional to <i>internal</i> transport costs, <i>external</i> transport costs can also be considered (see <i>Externalities</i>).

Infrastructure Costs	Infrastructure expenditures can be classified according to the way they enhance the functionality and/or lifetime of infrastructure (asset approach). The following types of expenditures can be defined: <i>Investment expenditures</i> : expenditures on a) new infrastructure with a specified functionality and lifetime or b) expansion of existing infrastructure with respect to functionality and/or lifetime. <i>Renewal expenditures</i> : expenditures on replacing existing infrastructure, prolonging the lifetime without adding new functionalities. <i>Maintenance expenditures</i> : expenditures for maintaining the functionality of existing infrastructure within its original lifetime, <i>Operational expenditures</i> are infrastructure-related expenditures not relating to keep the infrastructure in operation (e.g. in case of difficult weather conditions). We do not consider infrastructure costs as such, but the budget allocated to Trans-European transport networks mostly for infrastructure investment and renewal just as a reference..
Core Trans-European Transport Networks.	The new TEN-T Guidelines define a dual layer approach to the trans-European transport network. The basic layer, or “ <i>Comprehensive Network</i> ”, should ensure accessibility of all regions of the Union. The second layer, the “ <i>Core Network</i> ” is constituted of the strategically most important parts of the Comprehensive Network, and on which project development and implementation will be supported with priority.
Operational Costs	Expenditures related to the use of vehicles to provide transport services; they include investment and maintenance of vehicles, energy consumption, crew. We assume that no additional vehicles are necessary, and therefore operational costs are crew salaries and energy consumption.
Cost of Travel Time	Travel time is one of the largest costs of transportation, and travel time savings are often the primary justification for transportation infrastructure improvements. The Value of Travel Time (VTT) refers to the cost of time spent on transport, including waiting as well as actual travel. It includes costs to consumers of personal (unpaid) time spent on travel, and costs to businesses of paid employee time spent in travel. We assume travel time in terms just in terms of actual travel, since differences on waiting time are uncertain and probably marginal compared to differences in actual travel.
Externalities	<i>External transport costs</i> are borne by others. Some costs such as traffic congestion and accident risk, or emissions, are external to individual users but largely borne by the sector (group) as a whole. We assume externalities just as CO ₂ emissions.
Savings	Difference between transport costs (operational costs, travel time) in the two different situations being evaluated: before and after regulatory measures are implemented. Savings are calculated for travellers doing the trip anyway, without considering the induction of new trips that may happen as result of the measure or policy being implemented.

Net Benefits	Difference in the savings produced by the implementation of a given measure or policy, and the costs associated with this measure. Savings are assumed to be savings on travel time, operational costs and externalities, and costs are assumed to be transactions costs.
Evaluation period	Number of years of evaluation: the period looked at here is 20 years for consistency with similar studies.
Discount Rate	The discount rate refers to the interest rate used to determine the present value of future cash flows (difference between costs and benefits). It is assumed to be 4%.
Net Present Value	The net present value (NPV) or net present worth (NPW) of a time series of cash flows, both incoming and outgoing, is defined as the sum of the present values (PVs) of the individual cash flows of the same entity.
Internal Rate of Return	It can be defined as the discount rate at which the present value of all future cash flow is equal to the initial investment or the rate at which an investment breaks even.
Stakeholders	A stakeholder is anybody who can affect or is affected by an organisation, strategy or project, it can be either travellers, non-travellers and citizens in general, private companies (transport infrastructure providers or managers, transport service operators, transport industry and related industries), associations of different kind, public institutions from different sectors and local, regional and national governments.

Executive summary

The development of the European Single Market is often perceived as a rather successful story for air transportation and also for maritime and inland waterways transportation. Under the framework of EU legislation, a significant part of airports and ports are currently owned or managed by public private partnerships, new markets have been opened up (e.g. regional airports mostly used by new low-cost carriers, ground handling services...), and increased competition has resulted in more consumer choice and lower transport costs.

However, it is also true that liberalisation has been uneven across countries and sectors, due to varying interpretations of and time lag associated with the implementation of new legislation in Member States. Additionally, there have been delays in reviewing and clarifying existing legislation. Many legislative gaps remain to be solved. Different reasons may explain this: stakeholders' opposition or just lack of interest (e.g. by national institutions, incumbent companies, unions), increasing technological complexity (e.g. air traffic management), or need for international agreements (e.g. within UN specialised agencies), as well as bureaucratic inefficiencies.

New policies and legislative initiatives are needed to ensure the consistency of decentralised and privatised infrastructure investments and technologic interoperability, to prevent discriminatory access to infrastructure, to clarify public service obligations and state-aid and cross-subsidies (to avoid unjustified market distortion), as well as to establish integrated traffic management. Concerning the inland waterway market, new legislation is needed or existing legislation has to be updated to increase the overall competitiveness of the sector. At a more strategic level, there is a need to advance in the overall regulation of ports and airports, in the internalisation of environmental externalities for the maritime and air transport, and in the further development of the Open Sky agreements; in this sense, a major future political and legislative challenge is preparing the gradual opening of European air and maritime markets to Trans-Atlantic and global competition.

There have been a number of impact assessments concerning the costs related to legislative gaps; most of these studies carried out detailed accounts of the potential marginal savings resulting from the implementation of concrete policies and/or legislation on continental transport flows. Complementary to these studies, in this research paper we assess the "cost of non-Europe" using a more strategic and aggregated approach for the air and maritime transport sectors, looking at intercontinental traffics.

Our fundamental assumption is that, in a more liberalised European transport market, those ports and airports enjoying a more favourable geographic location, ie. one that allows to shorten routes to Asia, Middle East, Africa or North and South America, will tend to capture a significant share of the growth on intercontinental passenger and freight traffics from/to Europe, now very much concentrated in few ports and airports located in the North Atlantic.

The analysis of intercontinental transport is indispensable when assessing the impacts of legislative gaps because of the radical change global air and maritime markets experienced during the latest decades, with the emergence of Asian markets. North-Atlantic trade is nowadays becoming relatively small in comparison to Asia and North-America's, and between Asia and Europe. This geostrategic change is already inducing important logistic changes in America (e.g. ports in the Pacific coast of America, from Canada to Peru, grow faster than ports in the Atlantic), in Africa (e.g. development of new ports, like Tanger-Med, in the Gibraltar Strait) and, needless to say, in Asia. In Europe, new global alliances and merges between larger European maritime and air carriers are being formed, but the European air and maritime hubs and gateways remain concentrated in the North Atlantic. This represents a serious gap in the European air and maritime markets and a major constrain for a more balanced distribution of traffic in the EU.

The cost of non-Europe is calculated in this research paper by comparing the performance of air and maritime transport sectors as they are today, with a future scenario in which transport operators take their business decisions in a fully liberalised and open European market, with most relevant legislative gaps solved, also in relation to social and environmental issues. Our hypotheses tend to be conservative: traffic forecasts are assumed lower than the forecasts made by transport operators² and we assume that (a) current hubs and gateways in Europe will maintain a dominant position anyway because they have large scale economies, and excellent roads, rail and inland waterway connections with their hinterlands, where most European population and economic activities are located, and (b) non-European gateways will also benefit of the de-concentration of European intercontinental traffics (e.g. the port of Tanger-Med, the airports of Istanbul, or Dubai...).

Concerning the trip legs taking place within Europe to reach intercontinental ports and airports we assume that freight among larger ports and logistic centers will increasingly be transported by rail as a result of rail investments under Trans-European Transport Network (TEN-T) investment plans, more interoperable long-distance rail corridors and harmonised transport costs (including energy costs, infrastructure fees and transport taxation). We also assume that the balance between longer and shorter air trips within the European air space to access new emergent hubs will be overall null in relation to today's balance.

Transaction costs are considered as 5% of savings generated (in line with other impact assessments related to the completion of the Single Market³). Total savings considered are reductions of travel times, operational costs, and GHG emissions as a result of the rebalancing of intercontinental traffic among European ports and airports.

² Airbus' *Global Market Forecast 2013-2032*; Boeing's *Current Market Outlook 2013-2032*; HWWI's *Maritime Trade and Transport Logistics - Strategy 2030*

³ See Steer Davies Gleave report on the Cost of non-Europe for the road and rail sectors, with transaction costs between 1% and 7% depending on the different legislative initiatives.

In addition, to illustrate the magnitude of such savings in politically meaningful terms, this report considers the TEN-T investments allocated to the maritime and the air sectors⁴ as reference for the comparison. TEN-T investments cannot be considered as a necessary cost for the completion of the Single Market because they will be carried out anyway, regardless of the successful completion or not of the Single Market, even though it is true they may positively contribute indeed to the rebalance of traffic (e.g. with ports' capacity increases, rail connections' upgrades...). Net benefit estimates in this report are therefore related to the cost of non-completion of the Single Market only, rather than the benefits of building the TEN-T.

The results obtained are as follows:

- **For the Air Transport Market:** cumulated net benefits derived from the completion of the Single Market over 20 years would amount between €18,200 million and €36,400 million⁵. This would imply yearly savings of **at least €910 million under the most conservative scenario**.
- **For the Maritime Transport Market:** the optimisation of ocean and inland logistic container routes thanks to the completion of the internal market could generate savings between €26,300 million and €52,600 million in the next 20 years⁶; this would imply yearly savings of **at least €1,315 million under the most conservative scenario**.

To understand the overall magnitude of savings considered above, these savings have been compared to TEN-T investments foreseen in the air and maritime sectors; the economic profitability of such hypothetical investments has then been estimated as follows:

- **For the Air Transport Market:** the economic return (IRR) of such investments in terms of travel time savings, reduced fuel consumption and spared emissions would range between 11.8% and 32.6%
- **For the Maritime Transport Market:** the economic return (IRR) in terms of travel time savings, reduced fuel consumption and spared emissions would range between 8% and 28.2%.

⁴ Estimates based on Steer Davies Gleave (2011) *Mid-term evaluation of the TEN-T Programme 2007-2013*, EC DG Move, EC 2010, and future budget allocations 2014-2020 as foreseen in the Connecting Europe Facility (CEF) Regulation 1316/2013, and its former proposal presented in 2011 (COM(2011)665).

⁵ Benefits are determined as economic savings derived from reductions in travel time, operational costs and spared GHG emissions minus transaction costs. All yearly savings and costs transferred to 2014 discounted (Net Present Value - NPV) considering a discount rate of 4% (yearly depreciation). The fork of results presented is based on alternative scenarios considered.

⁶ Benefits are determined as economic savings derived from reductions in travel time, operational costs and spared GHG emissions minus transaction costs. All yearly savings and costs transferred to 2014 discounted (Net Present Value - NPV) considering a discount rate of 4% (yearly depreciation). The fork of results presented is based on alternative scenarios considered.

These results mean that savings stemming from the completion of the internal market would be large enough to justify investments of a size comparable to the air and maritime TEN-T budgets respectively.

Although the distribution of savings would be uneven across companies and regions, European travellers and the economy as a whole would benefit because of price reductions and efficient transport services.

In environmental terms, the impact is expected to be positive because of the reduction of emissions resulting from shorter, more optimal travel routes and the increased use of sustainable modes like rail (especially in the maritime sector, where substantial parts of the maritime leg could be transferred to rail).

In terms of territorial cohesion, the rebalancing of traffic flows will result in a redistribution of economic opportunities across Europe, with ports and airports located in the periphery of Europe benefitting most, due to their favourable location in relation to global traffics.

Additionally, previous assessments on continental transport have estimated the costs of non-Europe derived from missing integration and harmonisation of the European transport system in €2,500 million yearly for the air sector (due to sub-optimal Air Traffic Control (ATM) systems⁷); and €1,000 million yearly for the maritime sector (due to the lack of full port competition⁸). These savings may or may not be based on similar assessment assumptions as those used in this paper (double counts are also possible), but provide an order of magnitude of savings for intra-European continental transport.

With all of these warnings, just for illustration purposes we may conclude that the total cost of non-Europe for aviation is about €3,400 million per year during 20 years and for maritime transport about €2,300 million.

The paper also includes summary tables illustrating how the benefits are likely to be perceived, across main air and maritime stakeholders.

⁷ Eurocontrol (2012); *US/Europe Comparison of ATM-Related Operational Performance 2010*

⁸ Commission Staff Working Document – Impact Assessment accompanying the document “Proposal for a regulation of the European Parliament and of the Council establishing a framework on the access to port services and the financial transparency of ports” SWD(2013)181

Methodology

This research paper has been based on the following methodology:

- **Extensive literature review**⁹ in relation to European transport legislation, to identify and classify legislative gaps.
- **Case-studies** covering the three (maritime, inland water and air) transport modes, and based on field-work¹⁰.
- **Qualitative assessment** of legislative gaps, based on literature review and case-studies.
- **Quantitative assessment** providing estimates of the cost of non-Europe for the air and the maritime markets, at aggregated level and in relation to legislative gaps. It follows a Cost-Benefit Assessment framework.
- **Stakeholder's analysis** illustrating how the benefits from completion of the Single Market are likely to be shared between the main stakeholders.

The core of the research paper is the quantitative assessment of the cost of non-Europe for intercontinental transport, both for freight and passengers.

The qualitative assessment follows a simplified Cost-Benefit Assessment (CBA) framework with realistic assumptions based on reliable sources. Complementary to previous assessments, we estimate the magnitude of net benefits that may result if intercontinental entry and exit gateways are rebalanced in Europe, as a consequence of the new geography of world flows, in a fully harmonised European Single Market, where consumers and producers take their transport decisions based on pure economic grounds.

The main assumptions are the following:

- Benefits for air transport are assumed to be savings on travel time for air passengers on intercontinental trips, savings on operational costs for air carriers and reduction on CO₂ emissions. Operational savings are calculated as just average wage and fuel savings. No indirect or induced benefits are considered.
- Benefits for maritime transport are assumed to be savings on operational costs for container carriers and emissions. Operational savings are calculated as the average wage and fuel savings per vessel. No indirect or induced benefits are considered.
- Costs are assumed to be just transaction costs (e.g. transport carriers transferring assets such as vehicles and personnel from one terminal to another).
- The very high efficiency of actual European gateways is well recognised in our assessment: we assume, first, that the process of geographic decentralization of

⁹ Sources are published on an online repository for open consultation (please see <http://81.47.175.201/sky-water/>). References are classified according to the transport mode, as well as the type of document.

¹⁰ The case-study of Barcelona port strategy illustrates how Mediterranean ports can become competitive for Asian trade; the case-study of regional airports illustrates the process of privatisation and decentralisation of regional airports; the study of the Danubian inland waterway introduces the impacts of enlargement.

flows will be gradual, and second that actual gateways will always remain the largest ones in Europe. An additional argument favouring a gradual process towards a partial decentralization is just the time required for the market to change according to new legislation, and the time for implementing infrastructure expansions.

- Therefore, in a completed Single Market the optimum geographic distribution of gateways in Europe will not be perfectly balanced, but more balanced than nowadays¹¹.
- In order to estimate how much transport may be reduced in Europe because of the gradual redistribution of intercontinental flows (in terms of passengers-km, and tons-km) European transport networks were modelled, and relative distances and times of routes among transport gateways were calculated, under hypothesis clearly defined in the paper.
- To compute the Net Present Value (NPV), the discount rate adopted is 4% and the period of evaluation 20 years, consistent with other assessments of the “Cost of non-Europe”.

¹¹ This approach follows a number of studies and discussions carried out recently, in line with the European Transport White Paper (2011), mostly on the maritime sector. For instance, the study *The Balance of Container Traffic amongst European Ports* (2011) by NEA (done for the ports of Rotterdam, Hambourg and Antwerp) analyses the extent to which economies of scope, scale and agglomeration of North Atlantic ports compensate for their poor competitive geographic location in relation to Asian traffics.

I. The European transport markets: Policy and regulation

1. The European transport policy

The 1957 Treaty of Rome already contained provisions for a common transport policy. Article 84 stated “the Council may, acting unanimously, decide whether, to what extent and by what procedure appropriate provisions may be laid down for sea and air transport”.

In the “French Seamen Case” of 1974, the European Court of Justice (ECJ) found that the rules of the Rome Treaty applied to maritime transport, and confirmed the EU policy-making authority in maritime matters. This is commonly considered as the point that marked the beginning of the Common Maritime Transport Policy (CMTTP)¹².

In 1985, the European Court of Justice concluded that all inland transport of goods and passengers should be open to all Community firms (1985).

The “Nouvelles Frontières” ruling of April 1986, the Court of Justice (ECJ) concluded that the EC Competition laws were to apply also on air transport. In 1987, soon after the judgement, the Council of Ministers approved a first package of rules regarding air transport deregulation¹³.

The development of the Common Transport Policy contributed from the Commission’s White Paper of 1985 on the completion of the internal market contributed to the, as well as from the Single European Act adopted in 1986.

The ECJ confirmed the Council’s inability according to the provisions of the Treaty of Rome to convert proposals to actions and ruled that the Commission was obliged to produce proposals for the establishment of a common transport market by 1992¹⁴

In 1993, the White Paper on Growth, competitiveness and employment¹⁵ emphasised transport as a key element of the Single Market.

¹² In the French seamen case (Case 167/73 Commission v. France (1974) ECR 359), the Commission took a test case to the ECJ attempting to resolve whether the provisions of the Treaty were applicable to the maritime mode. The ECJ confirmed the EU policy-making authority. This was a ruling with significant legal and political implications: it incorporated this mode in the process of European integration. The first EU enlargement (1973) of three maritime nations (Denmark, UK and Ireland) had increased the relative importance of sea transport, leading to the incorporation of maritime issues in the EU agenda as an integral part of the CTP. (Chlomoudis and Pallis 2005)

¹³ In the Nouvelles Frontières case (*Ministre Public v Asjes*, Cases 209-13/84), the travel agency Nouvelles Frontières queried the compatibility of the price-fixing arrangements in the French civil aviation code with the provisions on competition of the Treaty of Rome. In April 1986, the European Court of Justice (ECJ) confirmed that these provisions did apply to air transport and clarified the powers of the EC to enforce them. The Nouvelles Frontières judgement was an important step in efforts to liberalise air transport in Europe, as part of a common transport policy. (Teasdale 2012)

¹⁴ Case 13/83. European Parliament vs. Council of Ministers (1985) ECR 1513.

¹⁵ COM(93)700 *Growth, competitiveness, employment: the challenges and ways forward into 21st century*. White Paper.

In the air market, the liberalisation of the sector in 1996 has allowed new low cost carriers to enter the market and establish new direct services between European cities, inducing the reorganisation of full-service air carriers. The ownership and management of airports are nowadays open to a large variety of public-private partnerships in most of European countries. The impacts of liberalisation have been overall positive: increased competition has resulted in a more efficient market, with wider or larger consumer choice and lower prices. However, it is also widely accepted that further reforms are needed to make the European transport system efficient enough to compete at a global level.

Traffic management remains fragmented, and this represents an important cost for the sector. Open Sky agreements with the USA (2007, 2010) allow for flights from any EU-US airport pairs, but do not allow 7th freedom rights¹⁶ for passengers, neither 8th and 9th. Negotiations to extend the European Common Aviation Area and create a larger aviation market are still on-going. Regarding the EU specifically, the latest airport liberalisation¹⁷ package remains to be approved by the Council.

In the maritime market, deep-sea routes and short-sea shipping are liberalised, and many ports, especially in the north of Europe are very competitive. Several container terminals in large European ports are operated by non-European companies, having close links with leading world maritime shippers. Nevertheless, legislation promoting liberalisation of all ports¹⁸, nowadays being discussed at the European Parliament, is still missing.

In the inland waterway market, historic liberalisation of the Rhine and Danube has been to a large extent applied to the rest of inland waterways. Legislation needs to be updated and infrastructure improved to increase competitiveness of the sector. Overall, the sector shows low profitability.

In the **Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system** (2011)¹⁹, the Commission calls for an integrated, seamless transport system in Europe. From the Roadmap, it becomes evident that in order to ascertain the opportunity costs of a less than truly European transport system, specific issues such as interoperability of traffic management systems, physical, technical, operational and administrative barriers between and within transport modes, negative environmental impacts, including noise and air pollution, as well as possible impacts of climate change, are all struggles and inconveniences that need to be tackled.

¹⁶ The **freedoms of the air** are a set of commercial aviation rights granting a country's airlines the privilege to enter and land in another country's airspace, formulated as a result of disagreements over the extent of aviation liberalisation in the Convention on International Civil Aviation of 1944 (Chicago Convention). The first two freedoms concern the passage of commercial aircraft through foreign airspace and airports, the other freedoms are about carrying people, mail and cargo internationally. The 7th freedom of the air concerns the right to fly between two foreign countries while not offering flights to one's own country (e.g. a European company operating between the US and China), the 8th concerns the right to fly inside a foreign country, continuing to one's own country, and the 9th concerns the right to fly inside a foreign country without continuing to one's own country (http://en.wikipedia.org/wiki/Freedoms_of_the_air).

¹⁷ "Better airports" package proposal COM(2011)823, COM(2011)824, COM(2011)827

¹⁸ COM(2013)296

¹⁹ COM(2011)144

Trans-European Transport Networks²⁰ includes as “Core Networks” key multimodal corridors at continental scale, based on strategies such as facilitating intermodality, connecting major airports to high-speed train lines, or defining “Motorways of Seas” as short-sea shipping (SSS) services between ports connected to rail freight services. The scarcity of public resources and the already high public debt increases the need for Public-Private Partnerships to perform investments in infrastructure, hence, reinforce the need for transparency and accountability of public aid, fair pricing and sound financing schemes. Missing infrastructure needed to match traffic demand is estimated by the transport White Paper to require investment of €1,500 billion during the period 2010-2030, and an additional €1,000 billion is needed for vehicles, equipment and charging infrastructure.

During the latest two decades, parallel to the gradual development of the European Single Market, the world has experienced the rapid development of Asia, in particular China. This has a significant influence on global trade and traffic flows. Nowadays, North-Atlantic routes are no longer the world's most important ones, as the routes through the Pacific (linking Asia with the West coast of USA) and the routes through the Mediterranean to Europe (linking Asia to Europe) are becoming more significant. While in the USA global air and maritime flows were traditionally served mostly by gateways located in the North-Atlantic coast, such are now served by gateways in the Pacific coast, this process of geographic rebalancing has not happened yet in Europe.

2. The European Air Transport Market

The European aviation sector is one of the most important drivers for economic growth for the European Union. In 2012 it was estimated that more than 820 million passengers were transported by air in Europe²¹. With economic globalisation and increasing travel demand, up to a two-fold increase in air traffic is projected within the next 20 years²². As a strategically important sector that makes a vital contribution to the EU's overall economy and employment, aviation supports 5.1 million jobs and contributes €365 billion, or 2.4% to European GDP.

At global level, the International Civil Aviation Organisation was established in 1947 as the UN's specialised agency in charge of drawing-up the principles of international air navigation and of ensuring safe and orderly growth of international air transport. Linked

²⁰ On 7 January 2014, the European Commission approved the Regulation on TEN-T (Regulation 1315/2013) and related budget (Regulation 1316/2013).

²¹ More information available at:

<http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=ttr00012&plugin=1>

²² Eurocontrol (2010): Eurocontrol Long-term Forecast available at:

<https://www.eurocontrol.int/sites/default/files/publication/files/long-term-forecast-2010-2030.pdf>

to the United Nations Economic and Social Council, ICAO is responsible for setting technological standards at a global level.

Liberalisation of the European Air transport slowly started in 1983 with scheduled inter-regional air services for the transport of passengers, mail and cargo between Member States. Until then, aviation markets were protected and fragmented across Europe. National administrations controlled or approved fares, flying frequencies, airport access conditions and capacity rules for airlines. National flag carriers dominated the intra-European market. Airports were publicly owned, as well as air traffic control divisions. Economic regulation was the sole competence of national authorities.

Approved in 1980, the American Air Deregulation inspired similar deregulations worldwide, including in Europe. Unlike airline deregulation in the United States, liberalisation within the EU has been an extremely complicated process that involved the integration of a number of distinct national markets, previously interlinked by a web of bilateral air services agreements²³.

Key concerns in the course of liberalisation in Europe were related to the difficulties for national flag carriers to adapt to a more open trading environment, to the risk of putting jobs and air services under threat, as well as to the potential loss of essential but non-profitable services (as carriers turned their focus to more profitable routes). Concerns were also raised that tough competition would place pressure on airlines to cut corners in matters of safety and security, while removing control over traffic rights²⁴.

The first significant opening of the market resulted from the 1987, 1990 and 1993 Air Liberalisation Packages, ending up in 1997 with the freedom to provide “cabotage” services: the right for an airline of one Member State to operate a route within another

²³ In 2002 the Court of Justice of the European Union (CJEU) found that if an Air Services Agreement (ASA) between an EU Member State and a third country permits only the designation of airlines which are owned and controlled by nationals of that signatory EU Member State, such designation is discriminatory and is in breach of EU law. Consequently, every EU Member State is required to grant equal market access for routes to destinations outside the EU to any EU carrier with an establishment in its territory. The ASAs between EU Member States and third countries was therefore amended to reflect this legal requirement.

²⁴ Main related legislation :

- The Council Regulation No 9531 on **common rules for the allocation of slots at Community airports**. This Regulation has been amended by Regulations No 894 (2002), 1554 (2003), 793 (2004) and 545 (2009) of the European Parliament and of the Council.
- Council Directive No 6733 on **access to ground handling market at Community airports** initiated the gradual opening of ground handling services for competition which resulted in 2002 in its full liberalisation.
- **Directive 2009/2012 on airport charges**: charges should be transparent and non-discriminatory, which does not necessarily mean they must be the same for all airport users.
- Regulation No 78542 on **insurance requirements for air carriers and aircraft operators**.
- Directive No 3035 on the establishment of rules and procedures with regard to the **introduction of noise-related operating restrictions** at Community airports.

Member State²⁵. In 2008, the European Commission made a proposal to modernise and simplify the legal framework for the internal air transport market (Regulation 1008/2008).

The process of privatisation of airports is uneven across Europe. There are fully privatised airports in many countries, particularly in the UK, while in other countries, like Spain, all important airports remain public. While the general trend is towards public-private partnerships and privatisation, the vast majority of European airports still remain publicly owned: approximately 15% of airports is owned by mixed public-private shareholders and 10% is fully privatised. The approximately 80% of publicly owned airports only handle half of European total passenger traffic. This underlines the fact that private investors are to be found predominantly at larger airports such as London-Heathrow (BAA), Frankfurt (Fraport) and Moscow-Domodedovo (EastLine Group).

In the approved TEN-T Guidelines (Regulation 1315/2013), the Commission has identified 37 “core network” airports as a basis for allocation of community grants. One of the performance targets of the Connecting Europe Facility (CEF) as proposed in 2011 (COM(2011)665) was to increase the number of airports connected to rail, from 12 in 2010 to 18 in 2017 and 24 in 2020. Austerity policies have finally downsized the overall CEF budget and explicit targets in relation to airports were removed as a consequence.

Airport management is becoming privatised even in publicly owned airports, but the process is also uneven in Europe. In some countries management remains public and centralised (e.g. Spain, with the apparent paradox that Spanish private companies like Albertis, Ferrovial, in cooperation with AENA, manage British airports). The market for

²⁵ **1987: The First “package”** concerned intra-EU traffic and it limited the right of governments to object to the introduction of new fares. It gave some flexibility to airlines concerning seat capacity sharing. **1990: The Second “package”** opened up the market further, allowing greater flexibility over the setting of fares and capacity-sharing. It also gave all EU carriers the right to carry an unlimited number of passengers or cargo between their home country and another EU country. The second package allowed for some reduction in the thresholds for multiple designation, and a further loosening of capacity share restrictions. Route access was also significantly improved and a greater range of fares were subject to automatic approval. **1993: The Third “package”** introduced the freedom to provide services within the EU and, in April 1997, the freedom to provide “cabotage”: the right for an airline of one Member State to operate a route within another Member State. This single market has been extended to Norway, Iceland and Switzerland in the following years. Beyond market opening, the single market rests on stringent common rules in order to both ensure a level playing field and continuously improve standards, notably in safety and security. The “third package” included harmonised requirements for an operating licence for EU airlines (Council Regulation (EEC) No 2407/92), as well as an open access for all EU airlines with such an operating licence to all routes within the EU (Regulation (EEC) No 2408/92). At the same time, national governments have the possibility to impose public service obligations on routes which are essential for the regional development. The full freedom with regard to fares and rates was also introduced (Regulation (EEC) No 2409/92). Airlines are no longer required to submit their fares to the national authorities for approval. Safeguard measures may be introduced, but thanks to the good functioning of the market this has never been necessary in practice.

airport management is becoming global and both public and private. Under current legislation, each EU airport with annual traffic of 2 million passengers or more must have at least two suppliers of ground handling services, with at least one of these suppliers being entirely independent of the airport authority or the dominant air carrier at that airport.

Different measures have been developed to allow better access to airports for new entrants. The status-quo related to slot allocations did not change in many airports until 1998, when the “use-it-or-lose-it” rule was improved and a new code of transparency was established to limit the so-called “grandfather rights”. The dominant position that incumbent airlines enjoyed did not change much, however, because new low-cost carriers mostly used secondary regional airports. In 2008 secondary trading was recognised as an acceptable system of swapping slots among airlines, but it remains an unregulated area. *The Better Airports*²⁶ package under negotiation aims to clarify the operation of the secondary trade slot market.

Most services at medium-size and large airports have been liberalised since 1998. Harmonisation of airport charges is still incomplete, however. The Directive on airport charges, effective since 2011²⁷, establishes the need for Member States to create independent supervisory authorities (ISAs) to monitor the deployment of the directive and ensure more transparent fee-setting frameworks. In many states, ISAs have been granted to the national Civil Aviation Authorities. Lack of independence of the regulators or appeal institutions are perceived in several cases to weaken implementation of the Directive (particularly in Spain where the airlines association and IATA claim no independence of the ISA; Ireland, where some airlines claim ISA is subject to interference by Ministry of Transport; Hungary and Germany, where Federal States act as ISAs while being airport shareholders²⁸).

In Europe, differently from other continents, the market fragmentation at national level and the density of the rail networks are very high. This results in a scarcity of routes with origin-destination traffic sufficiently high to justify the entry of new operators. As a consequence, no major changes in the re-organisation of air services into hub and spoke systems²⁹ have occurred in Europe until now.

²⁶ Better Airports Package, COM(2011) 823 final “Airport policy in the European Union - addressing capacity and quality to promote growth, connectivity and sustainable mobility”.

²⁷ Directive 2009/12/EC on airport charges, transposed to Member States by March 2011. The objective of the Directive was to establish a common framework regulating the essential features of airport charges and the way they are set, applying to the busiest airport in every EU country and all airports with more than 5 million annual passengers.

²⁸ Steer Davis Gleave (2013) *Evaluation of Directive 2009/12/EC on airport charges* for DG Move, September 2013

²⁹ The Hub-and-spokes system, as opposed to point-to-point routing, consists on concentrating traffic to one airport (hub) from a number of smaller airports (known as the spokes) to then transport the gathered group of passengers to another major hub, and finally distribute them onto a second set of spokes.

The most important change in start-up activity has been the emergence of low-fare no-frills airlines that have taken a significant share of the total domestic and intra-EU market and are rapidly expanding. Liberalisation and the advent of low cost carriers (LCCs) have forced traditional flag carrier airlines to compete for the first time. LCCs are forecasted to grow at more than double the speed of other airlines in the coming years. LCCs' share of the intra-European passenger market may grow from 38% in 2010 to around 45% in 2020, even reaching more than 50% in 2030. LCCs have taken over several routes from both full-service and charter companies.

The development of LCCs has been followed by the emergence of a European network of regional airports. Uncertainties in the regulatory framework have resulted in wide-spread direct and indirect public subsidies. Around 100 regional airports have been investigated by the EC for allegedly receiving financing in breach of the EU antitrust regulation. The new *Guidelines on State aid rules to airports and airlines* (February 2014) will still allow the allocation of substantial state aid to regional airports.

Traditional or full-service carriers have needed public support, or have been forced to enter into consolidation processes to avoid bankruptcy. Three main multi-hub airline networks have resulted from this process, relatively comparable in size of their aggregate long-haul network: Air France-KLM network centred around Paris CDG and Amsterdam Schiphol, IAG network around London Heathrow and Madrid Barajas, and Lufthansa Group using various European hubs, mainly Frankfurt am Main, Munich and Zurich.

Case Study –Regional Airports in Spain

The new guidelines on State Aid to Airports and Airlines approved in 2014 limit state aid. Under the new guidelines state aid is available:

- for airport infrastructure for airports with annual traffic lower than 5 million passengers when a genuine transport need and positive externalities for a region can be established and when medium-term economic feasibility is assessed positively
- for airport operation during 10 years in airports where business plans pave the way towards full operating cost coverage at the end of the transitional period
- for the operation of airports under 700.000 passengers
- for the operation of SGEI airports
- for airlines in regional airports with fewer than 3 million passengers per year, for launching new routes

On the one hand the development of regional airports is important for economic growth and territorial cohesion, but on the other the proliferation of unused or not efficiently used regional airports has to be avoided.

With the dynamism of The Spanish economy and massive growth of tourism in the 2000s, National, Regional and Provincial administrations, as well as the private sector have invested in a number of regional airports. Most of them have proved unprofitable after 2007. Their low performance is partly due to over-optimistic traffic forecasts in the 2000s, to the decrease of tourism in non-consolidated destinations during the crisis,

competition by largest airports in Spain (having spare capacity after enlargements in the 2000s) and new high-speed rail competing with domestic air services over many routes³⁰.

Under the new rules, most of these airports would still be in position to receive public aid according to the new 2014 *Guidelines on State aid rules to airports and airlines*, because of their low air traffic figures, below 700,000 passengers per year, and due to the lack of an arbitration body in Spain in position to assess the reliability of mid-term business plans for regional airports.

³⁰ Some of the paradigmatic cases are as follows:

- The Girona airport went from 0.65 million passengers in 2000 (Mpax) to 5.5Mpax in 2007. During this period of growth, AENA invested €114 million to modernize infrastructure. In 2010, the new Barcelona T1 terminal raised airport capacity from 32Mpax to 55Mpax, but air traffics fell from 32Mpax to 28Mpax due to the impact of the high speed rail Madrid-Barcelona. Commercial strategy of Barcelona airport aimed then at attracting LCC related to tourism, and in late 2009 Ryanair established a base in Barcelona, withdrawing circa 50% of the routes originally set up in Girona. Consequently, traffics in Girona dropped down to 2.7Mpax in 2013.
- San Javier airport is the airport of Murcia, owned by the army but managed by the civil ANSP AENA since 1995. San Javier went from 0.16Mpax in 2000 to 2Mpax in 2007 driven by strong development of residential tourism in Murcia. With boosting traffics, AENA invested €70 million to adapt San Javier to a civil airport, whereas the regional Government of Murcia promoted in parallel the construction of an independent airport at a cost €265 million, which was finalized in 2012 but which has never entered in service. Since 2007, traffics in Murcia airport have dropped 50% to 1Mpax.
- Ciudad Real conceived an airport 220km south of Madrid in the 90s, envisaged to offer an alternative to the then saturated Madrid-Barajas airport. Delays in legal authorisations, administrative requests on environmental issues, and several administrative disputes allowed Ciudad Real only to begin operating in December 2009, with severe crisis in Spain and with a new 35 million passenger capacity T4 terminal at Barajas in service since 2006. Ciudad Real ceased operation in 2012 due to low traffics. The airport had been promoted under the private initiative (€500 million) but partly financed by Regional Savings Bank of Castilla la Mancha which was rescued under public capital by FROB (Fund for Orderly Bank Restructuring). The airport is currently for sale at an approximate price of €140 million.
- Castelló Airport was promoted by the Valencia and Castelló regional governments to attract seasonal tourism linked to real estate developments on the Castelló coast. The Master Plan envisaged 1.6Mpax in 2030. Public investments amounted €150 million, but delays in the construction of the airport related to environmental impact, safety and institutional disputes allowed only the finalisation of the infrastructure in 2009, in the middle of the crisis and with real estate business fully stopped. The airport has never operated. It has recently been conceded to the private sector of 20 years, with a subsidy of €25 million by the public sector.
- León airport went from 25,000pax in 2001 to 167,000pax in 2007, then dropped down to 30,000pax in 2013. The Airport Master Plan had envisaged 500,000pax by 2012. Based on these forecasts, investments were deployed to modernise infrastructure at a cost of €80 million between 2006 and 2012.
- Huesca Airport in the Pyrenees was upgraded in the 2000 by AENA (€60 million) to attract ski tourism to nearby ski resorts (circa 200km of ski domains). The Airport Master Plan had envisaged increased airport traffic up to 160,000 passengers per year. The traffic peak was in 2009, with 6,000 passengers, and in 2011 the airport ceased the operations.

SES II was a step forward in establishing targets in key areas: safety, network capacity, effectiveness and environmental impact. Additionally, under the SES initiative Eurocontrol took over responsibility for network capacity planning, becoming the Network Manager of the European ATM network.

Functional Airspace Blocks (FABs) are defined under SES II legislative package as airspace blocks based on operational requirements, established regardless of State boundaries, in which the provision of air navigation services and related ancillary functions are optimised and/or integrated. FAB definitions evolve according to the needs to improve performance of the European air traffic management network. There are currently 9 FABs, with varying degree of implementation.

The SESAR project is the European air traffic control infrastructure modernisation programme. SESAR aims at developing the new generation of air traffic management system capable of ensuring the safety and fluidity of air transport worldwide over the next 30 years.

Absence of a single integrated European airspace management has significant negative repercussions on airspace users. It results in aircrafts flying unnecessary detours rather than direct routes and suffering from air traffic delays, which produce significant economic and environmental damage³¹. The Single European Sky has not been achieved as some national players have not been able to fully connect with the objectives of the initiative. SES targets should be linked with high policy goals but also targets should be transferred into a wider economic perspective that all stakeholders can connect to.

Most regulatory measures on noise and air pollution impose minimum standards, but make little use of market-driven mechanisms. As a result, few airports apply emissions charges. The Greening Transport Package adopted in 2008 included aviation in the Emission Trading Scheme (ETS). The 2011 White Paper on Transport includes the target of 40% for the use of sustainable low carbon fuels in aviation. If the established goal of reducing emissions is achieved, the increase on fares could be, according to the EC, from €0.2 to €9.0 for a round trip.

Following the Open Skies ruling by the European Court of Justice in 1992, Member States cannot negotiate bilateral agreements with non-EU countries. The international agenda of the EU external policy is to achieve agreements with major regions of the world, by

³¹ The Maastricht Upper Area Control Centre (MUAC), operated by EUROCONTROL on behalf of four States, provides air traffic control for Belgium, the Netherlands, Luxembourg and north-west Germany. According to MUAC, in 2009 a flight's route was on average 47.6 km too long (5.4%) due to sub-optimal airspace design, civil-military airspace sharing inappropriate flight planning and route utilisation or route restrictions. The FRAM project, launched in 2009 by MUAC, is a specified airspace within which aircraft operators may freely plan a route between a defined entry point and a defined exit point. Within this airspace, flights remain subject to air traffic control, but aircrafts can fly without reference to the ATS route network, subject to airspace availability. MUAC estimates that FRAM brings a direct yearly savings to airlines of €62 million due to reduced flight distances (fuel, maintenance, fleet, crew costs)

supporting ICAO own initiatives. The first Open Skies agreement with the USA was signed in 2008, opening up European airports to flights from EU to USA operated by USA carriers.

The 2011 White Paper on Transport explicitly proposes the completion of a European Common Aviation Area of 58 countries and one billion inhabitants by 2020.

3. The European Maritime Transport Market

Almost 90% of the EU external freight trade is seaborne. Short sea shipping represents 40% of intra-EU exchanges in terms of ton-kilometres. Each year, more than 400 million passengers use European ports. Overall, maritime industries are an important source of employment and income for the European economy³².

Different to other transport modes, maritime law has its roots in the ancient times, when trade and commerce through sea routes became a flourishing business, well before modern European states were formed. In 1948 an international conference in Geneva adopted a convention formally establishing the Inter-Governmental Maritime Consultative Organization (IMO). The goal was to encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and the prevention and control of marine pollution from ships.

Maritime transport regulation in Europe begun in 1986 with a Council Regulation giving member state nationals (and non-Community shipping companies using ships registered in a Member State and controlled by Member State nationals) the right to carry passengers or goods by sea between any port of a Member State and any port or off-shore installation of another Member State or of a non-Community country³³.

³² Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on "Strategic goals and recommendations for the EU's maritime transport policy until 2018" (COM(2009)8)

³³ Main maritime legislation :

- Council Regulation (EEC) No 4055/86 of 22 December 1986 applying the principle of freedom to provide services to maritime transport between Member States and between Member States and third countries
- Regulation (EEC) No 4056/86: Application of the competition rules in maritime transport
- Regulation (EEC) No 4057/86: Unfair pricing in maritime transport
- Regulation (EEC) No 4058/86: Free access to ocean trades
- Council Regulation (EEC) No 3577/92/EEC of 7 December 1992 applying the principle of freedom to provide services to maritime transport within Member States (maritime cabotage) [Official Journal L 364 of 12.12.1992].
- Directive 2002/6/EC of the European Parliament and of the Council of 18 February 2002 on reporting formalities for ships arriving in and/or departing from ports of the Member States of the Community
- Council Directive 95/64/EC of 8 December 1995 on statistical returns in respect of carriage of goods and passengers by sea
- Council Directive 98/41/EC of 18 June 1998 on the registration of persons sailing on board passenger ships operating to or from ports of the Member States of the Community

Short-Sea Shipping (SSS) was not an explicit subject of European policy until the first Communication on SSS in 1995. But the 2001 White Paper identified SSS as a key alternative to road transport, setting as the objective the shift of traffic from road to rail and sea. By the mid-2000s the opening up of national markets to shipping was largely completed. However, three main constraints still hamper the full competitiveness of SSS: the complex administrative procedures, the enhancement of port competitiveness and the necessary intermodal infrastructure connections in ports.

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- Directive 2002/59/EC on Vessel Traffic Monitoring and Information Systems
 - Regulation (EC) No 789/2004 of the European Parliament and of the Council of 21 April 2004 on the transfer of cargo and passenger ships between registers within the Community and repealing Council Regulation (EEC) No 613/91
 - Regulation 1419/2006 25 September 2006 repealing Regulation (EEC) No 4056/86 laying down detailed rules for the application of Articles 85 and 86 of the Treaty to maritime transport, and amending Regulation (EC) No 1/2003 as regards the extension of its scope to include cabotage and international tramp services (Official Journal L 269, 28.9.2006, p. 1–3
 - Council Regulation (EC) No 246/2009 of 26 February 2009 on the application of Article 81(3) of the Treaty to certain categories of agreements, decisions and concerted practices between liner shipping companies (consortia) (Codified version), OJ L 79, 25.3.2009, p. 1.
 - Directive 2010/65/EU of the European Parliament and of the Council of 20 October 2010 on reporting formalities for ships arriving in and/or departing from ports of the Member States and repealing Directive 2002/6/EC.
 - Regulation (EU) 177/2010 of 2 March 2010 amending regulation (EEC) 2454/93 laying down provisions for the implementation of Council Regulation (EEC) 2913/92 establishing the Community Customs Code.
 - Access to occupation of carriers of goods by waterway in national and international transport (Council Directive 87/540/EEC);
 - Minimum requirements of vessels (Council Directive 93/75/EEC);
 - Common rules and standards for ships inspection and survey organizations (Council Directive 94/57/EC);
 - Enforcement of international standards for ship safety, pollution prevention and shipboard living and working conditions (Council Directive 95/21/EC);
 - Establishing a common model for an identity card for inspectors carrying out port State control (Commission Directive 96/40/EEC);
 - The harmonization of the conditions (Council Directive 96/50/EC); t
 - The safety rules and standards for passenger ships (Council Directive 98/18/EC);
 - Registration of persons sailing on board passenger ships (Council Directive 98/41/EC);
 - The system of mandatory surveys for the safe operation of regular ro-ro ferry and high-speed passenger craft services (Council Directive 1999/35/EC);
 - The rules on ship-source pollution and on the introduction of penalties for infringements (Directive 2005/35/EC).
 - EU rules on port subsidies. The authorisation of State aid to seaports is based on Article 107 TFEU. The Commission allows investment in public infrastructure, provided it is open to all users. In contrast, investment in superstructure (warehouses, workshops, offices) often favours certain operators and is not allowed.
 - Regulation 1177/2010 concerning rights of passengers when travelling by sea and inland waterway (adopted on 24 November 2010, provisions apply as from 18 December 2012)
 - Regulation 392/2009 on liability of carriers of passengers by sea in the event of accidents (adopted on 23 April 2009, applies as from 31 December 2012); deals specifically with the rights of passengers in case of loss or damage resulting from an accident

The **Marco Polo (I and II)** programme (2004) aims to shift a substantial part of the expected increase in international road freight traffic to short-sea shipping, rail and inland waterways, or to a combination of modes of transport in which road journeys are as short as possible. This modal shift should reduce environmental impacts. The programme financed projects that stimulate modal shift or traffic avoidance, promote cooperation and knowledge sharing, as well as innovative actions to improve synergies between modes, and "motorways of the sea". The goal of the programme is to shift 12 billion tonne-km (I) and 54 billion (II) of freight per year. The cost of the programme was €102 million (I) and €450 million (II) respectively. According to EC assessment studies, this would benefit society through avoiding social and environmental costs, estimated at €1.400 billion. Future programmes to support SSS may increase its effectiveness if non-European ports (e.g. North African coasts) are eligible and supported, in line with the MEDA MoS project.

Ports are not yet specifically regulated at EU level. Few ports are cost-effective enough to enable the operation of SSS. Almost half of the cost of these services is directly related to port handling costs. Ports working with container shipping are challenged by the reduction of port calls by individual vessels. In 2001 the Commission published a communication on the quality of port services together with a draft directive on market access to port services³⁴. The directive aimed at the liberalisation of three types of services: technical nautical services (pilotage, towage and mooring), cargo handling, and passenger services. A controversial issue was raised by the 'self-handling' procedure, i.e. the option for a shipping company to provide certain port services, normally provided by the port, using its own land-based personnel. After three years of unfruitful negotiations, the Commission withdrew its proposals (the **First Port Service Package**). The **Second Port Services package**³⁵ (2004) proposed to allow self-handling for cargo and passenger operations, but not for short-sea shipping and motorways of the sea. In spite of the changes, the package was never approved.

In 2013, the EC provided a **new proposal for a Regulation** establishing a framework on market access to port services and financial transparency of ports³⁶, currently under negotiation. The aim of the regulation is to improve the transparency of port finance and governance, and port efficiency, while simultaneously reducing the administrative burden: this implies simplifying access to the port services market, preventing market abuse by designated service providers, improving coordination mechanisms within ports, ensuring transparent port charges, enforcing transparent financial relations between public authorities, port authorities and providers of port services.

In the TENT Guidelines, the Commission has identified 82 "core network" ports as a basis for the functioning of European logistics. The efficiency of these ports, together with

³⁴ "Reinforcing Quality Service in Sea Ports: A Key for European Transport" Communication and Proposal for a Directive of the European Parliament and of the Council on Market Access to Port Services. COM(2001)35 - 2001/0047(COD)

³⁵ "Proposal of the EP and of the Council on market access to port services" COM(2004)654

³⁶ COM(2013)296

the rest of commercial ports (up to 319) is critical to avoid congestion and environmental costs that may hamper future economic growth (the EC has estimated that total cargo may increase by 50% by 2030, and even more in relation to containers). There is, in this sense, a structural performance gap in the European port system, since not all ports are able to compete efficiently, resulting in traffic detours, longer sea and inland trips and more emissions. To improve port efficiency, there is a need to first liberalise port activities (the lack of transparency in management may reduce the attractiveness of potential private investments on ports), second, to provide for the necessary infrastructure (in terms of maritime terminals, as well as rail and road connections), and third, to support administrative simplification and apply environmentally differentiated port charges.

Most ports remain publicly owned. States, i.e. national governments, and municipalities represent the two most important forms of ownership. Other forms of government are less present while private ownership, be it in the form of industrial companies (e.g. oil refineries or forest industries), logistics companies (e.g. shipping lines, terminal operators or shippers) or financial suitors, remains marginal. The category 'other' is however significant and includes ownership by independent trusts (specific to the UK), natural persons, private companies other than the categories listed, employees and former employees, and individual shareholders on the stock exchange.

The number of non-European port terminal operators is on the rise. The 1990s saw these merge with major shipping lines to invest in and take control of a large number of terminals all over the world. The global carriers have sought to secure a competitive position by concluding long-term contracts with dedicated container terminals in major, strategically located ports. They argue that they need to control all stages of the transport chain to remain competitive. These efforts to establish integrated transport chains pose a challenge for port authorities in their relations with the larger carriers.

Case Study – Port of Barcelona

The port of Barcelona decided in the early 2000s an ambitious strategy to enlarge the port capacity for container traffic (from less than 2 to 11.2 million standardise containers) necessary to handle growing traffic from Asia. The investment of a major Chinese container terminal operator (Hutchinson), engaged in a €500 million investment program, confirms the strategy. Road and rail connections to the hinterland, including an international gauge UIC rail link to France, are partially constructed. The strategy of the Port of Barcelona to expand its hinterland to the South of Europe requires to increase the productivity of the port's activities (reducing costs and extending working hours, reducing tariffs), establishing commercial agreements (e.g. with international rail operators) and other investments (e.g. in logistic centres outside Spain). These factors are currently constrained by the public and centralised status of the Spanish port authority.

The Port Authority is not free to develop commercial strategies on its own and depends on the Spanish central port authority to approve infrastructure plans and establish common criteria for tariffs, as well as to allocate the benefits generated by the port (it is now under discussion that the benefits generated by the port of Barcelona should be

transferred to other Spanish ports, even if this favours private operators competing against those located in Barcelona). In this context, the capacity of Spanish ports to carry on independent commercial policies and compete against each other and with European or African ports is very limited³⁷.

Competition between global maritime carriers is intense. Swelling investments in the new generation of container vessels are a sign of the growing magnitude of the sector. To fill these vessels, the carriers try to secure local control and coordination over inland cargo haulage and feeder operations. In this way, they secure their market share and meet perceived service needs. With larger ships calling at fewer hub ports the frequency of cargo arrival will put many ports to the test. The rate at which cargos flow into a port must match the rate at which they leave so that the port avoids occupying large tracks of land and avoid congestion. Port operators prefer steady streams of traffic. With large vessels and more specialised cargo handling equipment tied up with each vessel, any port downtime could significantly affect the ability of the port to earn enough revenue to make infrastructure investment financially sustainable.

The **European Maritime Policy** (regulations and regulation proposals) aims at simplifying administrative and customs formalities for intra-EU maritime services, reducing CO₂ emissions and pollution due to shipping (it supports the creation of the Motorways of the Sea/Short-sea shipping networks), and promoting a new ports policy, taking account the multiple roles of ports and the wider context of European logistics.

³⁷ The Spanish port system of “general interest” consists of 46 ports of state ownership, managed by 28 port authorities, of which their coordination and control of efficiency corresponds to the Public Authority “Puertos del Estado”, which reports to the Ministry of Public Works and has allocated the execution of the central Government's ports policy.

The Port of Barcelona is one of these general interest ports. It acts as landowner, managing of the port infrastructure. This public infrastructure is concessioned to private operators. The Port Authority of Barcelona charges taxes for the use of the port, taxes being defined by the council of Ministers of Spain for all ports of general interest. According to these general criteria, the port of Barcelona happens to be more expensive than any other, because the property value of the land surrounding the port is more expensive.

Despite the central coordination, the ports are managed by decentralised authorities that to some extent compete against each other. Such is the case of the port of Barcelona and of the port of Tarragona just at 100 km distance from Barcelona. The competition of these two ports, located at such a short distance, results in excessive infrastructure investments and it is a paradox (the centralised Spanish planning of ports, should in principle avoid this kind of unproductive competition and reinforce cooperation whenever it makes economic sense).

Each port has however the capacity to reach specific agreements with private concessionaires (e.g. container terminals, cruise operators, yacht services...) including the period of concession, the activities and the co-financing of the infrastructure investments required.

The capacity of the port to have more active commercial policies is heavily constrained. Whenever it is engaged in foreign activities, complicated legal settings are needed to create and manage specialised public-private partnerships either for freight rail management (e.g. between Barcelona and Lyon), logistic infrastructure (e.g. in Perpignan), cruise management (e.g. in Singapur) or just port cooperation (e.g. with Tanger-Med).

The **Blue Belt, a Single Transport Area for shipping** establishes an area where vessels can operate freely within the EU internal market with a minimum of administrative burden while safety, security, environmental protection as well as customs and tax policies are enhanced by the use of maritime transport monitoring and reporting capabilities (processes, procedures and information systems).

Sulphur oxides and nitrogen oxides represent the most serious environmental by-effects of maritime transport. A Directive³⁸ was adopted by the European Parliament and the Council to limit maximum sulphur content at 1.5% for maritime fuels in the Baltic, North Sea, English Channel and waterway and coastal routes, in line with EC environmental policies.

4. European Inland Waterways

Legislation of inland waterway navigation dates back to the 19th century. The Rhine Navigation Act 1968 (or Mannheim Convention) and the Belgrade Convention of 1948 (with its foundation in the Paris Conference of 1956), regulate the navigation on the Rhine and Danube, the main European inland waterways. Both Conventions give vessels of signatory states the freedom to navigate and oblige these States to maintain their waterway stretches in a status suitable for the purpose of inland navigation.

Following the Rhine Navigation Act (Mannheim Convention) the Central Commission for the Navigation on the Rhine (CCNR) becomes the body entitled to ensure the compliance to the Mannheim Convention and, among others, develops the law of inland navigation on the Rhine. For the Danube, the Danube Commission was established in order to observe the compliance of the Belgrade Convention and to harmonize the normative documents etc. regulating the navigation on the Danube. European legislation for inland navigation built on these existing international agreements and introduced further actions to harmonize the market. Not all European states operating on EU inland waterways are members of the EU, e.g. Serbia, Ukraine and Russia are not. Thus the United Nations Economic Commission for Europe (UNECE), as larger pan-European organization, has set up a harmonized regulation system for Inland Waterway Transport (IWT) as well.

In order to ensure a consistent framework for the maintenance, extension and the economic utilization of the inland waterway network, the UNECE adopted the "European Agreement on Main Inland Waterways of International Importance" (AGN).³⁹ The AGN is a commitment to ensure the IWT quality and calls for actions in order to eliminate existing bottlenecks and missing links. Further, the "Recommendations on harmonized Europe-wide technical requirements for inland navigation vessels" (Resolution No. 61) of UNECE harmonize technical standards.

³⁸ Directive 2012/33/EU of the European Parliament and of the Council amending Directive 1999/32/EC as regards the sulphur content of marine fuels.

³⁹ UNECE (1996): European Agreement on Main Inland Waterways of International Importance (ECE/TRANS/120/Rev.1), (Annex III, item II).

Inland waterways do not form an integrated network, and are only used in some European countries: the Netherlands, Germany, Belgium, France, Austria, Hungary and the Danubian countries. Transport by this mode heavily depends on the river and channel maintenance conditions. Fleets tend to be much older than other modes (large part was built in the nineteenth and early twentieth centuries) and most vessels are owned by a single operator.

Major efforts to improve the market conditions are made by the European action programme on the Promotion of Inland waterway transportation NAIADES (2006-2013), endorsed by the European Parliament⁴⁰ and PLATINA⁴¹, the platform for the implementation of NAIADES. Both NAIADES and PLATINA involved several initiatives with the aim to harmonize and improve market conditions, also in terms of legislation.

Case-Study: The Danube

The enlargement of the European Union has had major effects on the Danube transportation network and on the harmonization of the inland waterway market. At present, seven out of ten Danube riparian countries are EU Member States, and Serbia holds accession status since the beginning of 2012.

The waterway axis Rhine/Meuse-Main-Danube is object of the priority project 18 of the TEN-T, and projects associated to it can apply for EU-funding. This is of high importance, as the Danube Region is characterised by high socio-economic differences between countries. Due to the lack of financial and human resources, the majority of the Danube countries require international funding in order to finance the general problems regarding river navigation, water management, flood prevention and environmental protection.

Furthermore, the EU Strategy for the Danube Region focuses on exploiting the potential of the Danube navigation. The objectives lie in eliminating existing bottlenecks and other obstacles, and raising the transport volume on the Danube by 20% until 2020.

In the Danube, the fall of cabotage limitations for road transport for Eastern European countries in 2004 led to shifts from rail and Danube transportation to road transportation. Disappearing customs examinations accelerated cross border road transports to a pace, Danube shipping could not follow.

Re-structuring of the industry (from basic industrial to advanced technologies and knowledge based production) shifts the nature of transport from bulk good to high-value products, i.e. the transport market for the Danube shrank. Danube navigation is attractive for the transportation of bulk goods (metal ores, agricultural products, coke and refined petroleum products, basic chemical products, fertilizers and basic metal products.)

⁴⁰ A 6-2009/2006.

⁴¹ Funded by the EU 7th Framework Programme on research, technological development and demonstration activities.

Containers with high value goods are only occasionally transported on the Danube- in contrast to the Rhine. In order to bring containers on the Danube an expansion of the utilization of river information system (RIS) for logistic purposes is necessary, in addition to the basic requisite of upgrading the fairway conditions.

Shallow waters are a second constraint to the competitiveness of river transportation. Contrary to the existing international agreements of AGN and the Danube Commission, dredging of the fairway was neglected for years in the Eastern European countries, leading to shallow water sections with little precipitation. The declaration of European transport ministers in 2012⁴² may help in this regard. The economic effect of shallow water sections on the shipping industry is well-known. The relation between water depths to the cost covering freight rate is relevant for several types of ships. Assuming an already very low transport price of 7 EUR/ton, all ship types experience losses at a fairway depth below 2.0 m. At a fairway depth of 2.0 m or below the loading capacity is too little to cover the total costs of the vessel/ton loaded (investment costs or amortization, operating costs for crew, fuel, etc.). Starting with 2.5 m or more fairway depths there is a favourable gain for the shipping company. Contrary to the Rhine with 3.5 m of fairway depth, some Danube stretches include several shallow water sections, where fairway depths below 2.5 m may occur during 1/3 of the year (e.g. in Austria, East of Vienna in 2011). One has to consider that low loading capacities due to low fairway depth not only leads to unfavourable economic conditions for the shipping companies, but also reduces the environmental advantages of shipping (transporting of high cargo volumes with less fuel consumption than trucks or trains).

In recent years an important step to a harmonized transport market was made by the EU Regulations concerning the technical specifications of river information services (RIS).⁴³ The RIS Regulations define a set of standards in terms of the Inland Electronic Chart Display and Information System (ECDIS), the Vessel Tracking and Tracing (VTT), the

⁴² Danube Ministers Meeting (2012): Declaration on effective waterway infrastructure maintenance on the Danube and its navigable tributaries Danube Ministers Meeting, Luxembourg 7 June 2012

⁴³ Namely,

- Commission Regulation 414/2007 of 13 March 2007 concerning the technical guidelines for the planning, implementation and operational use of river information services (RIS) referred to in Article 5 of Directive 2005/44/EC of the European Parliament and of the Council on harmonised river information services (RIS) on inland waterways in the Community.
- Commission Regulation 415/2007 of 13 March 2007 concerning the technical specifications for vessel tracking and tracing systems referred to in Article 5 of Directive 2005/44/EC of the European Parliament and of the Council on harmonised river information services (RIS) on inland waterways in the Community.
- Commission Regulation 416/2007 of 22 March 2007 concerning the technical specifications for Notices to Skippers as referred to in Article 5 of Directive 2005/44/EC of the European Parliament and of the Council on harmonised river information services (RIS) on inland waterways in the Community.

Notice to Skippers (NtS) as well as the Electronic Reporting⁴⁴. The feedback after the implementation of RIS was positive from all stakeholders. Administrations and shipping companies approve the more efficient and quicker locking procedures, while the captains appreciate the better overview on the traffic situation. There are on-going projects to expand the RIS functionality on the European inland waterways, e.g. enhance cross-border Information services (IRIS Europe II) or the provision of tracing and tracking services to the shipping industry and their clients. The joint extension of RIS functionalities will be vital for the market competition of Inland waterway transport (IWT) as it enables to better embed IWT into logistic chains and to provide new logistic concepts.

The amendment of Directive 96/50/EC on boat master certificates, i.e. the recognition of national boat masters certificates issued pursuant to EU law as valid certificate for the Rhine navigation, will have a positive effect on the job situation in IWT. The free movement of boat masters across Europe is thus no longer hampered. Lessening the shortage of qualified crew is a main prerequisite for the competitiveness of the industry.

Apart from EU regulations, a new regulation limiting international working time and resting time of ship crew and other staff was reached in discussion with the social dialogue partners and led to better social situation of the workforce.

Further legislation already amended or being rectified is an attempt to fill the gaps in international contract standards agreed in CMNI (Budapest Convention on the Contract for the Carriage of Goods by Inland Waterways)⁴⁵, such as issues related to the communication and exchange of data for the international hazardous goods transport marked. A comprehensive funding guide for IWT in Europe was developed within the project PLATINA, informing about funds and state aid schemes.

⁴⁴ EU Project homepage of Platina (funded by the European Union (DG-TREN) under the 7th Framework Programme for RTD.) <http://www.naiades.info/good-practices/in-depth-analyses/river-information-services-%28ris%29.html> (19.02.2013)

⁴⁵ See link (19.02.2013)
<http://www.unece.org/fileadmin/DAM/trans/main/sc3/cmnicnf/cmnicnf/finalconf02e.pdf>

II. Main legislative gaps

In this section a summary of main legislative gaps identified is presented. Legislative gaps are of different natures: implementation delays of existing legislation, ambiguous legislation that needs clarification or further development, legislation that needs updating, and missing legislation because of a failure in the process.

It is worth mentioning that important regulations on port and airport liberalisation have been developed after decisions made by the **European Court of Justice**⁴⁶

Main reasons for the gaps:

- **The Member States use different legal terminology and schemes, and transposition is not free from interpretation. And what about implementation?** According to the European Commission's 2013 Internal Market Scoreboard, the level of incompleteness of the Single Market due to lack of transposition remains at 5%, which means that 73 directives are not producing their full effect in the EU.
- **Strong opposition of Stakeholders.** European trade union associations block ports' liberalisation, full-service carriers on extending the Common Aviation Area, industry. In some cases, rather than active opposition, stakeholders show a lack of interest.
- **Technological complexity** Air traffic control systems, Functional Airspace Blocks (FABs), Maritime eCustoms, Vessel Traffic Monitoring –SafeSeaNet-, River Information Systems, Single Window for reporting formalities, bring delays in legislation drawing and deployment.
- **Enlargement of the EU** Enlargement of the European Union had the strongest effect on Danube transportation and the harmonization of the inland waterway market in the past. At present, seven out of ten Danube riparian countries are EU Member States, and Serbia holds accession status since the beginning of 2012.
- **International multi-party agreements.** Concerns in relation to unfair competition and market distortions caused by non-European companies receiving state-aid by respective governments.

⁴⁶ The European Commission (EC) referred Spain to the Court of Justice of the European Union (CJEU) in July 2013 over the existing rules on hiring port labour in locations including Barcelona, Algeciras, Valencia and Bilbao. Currently, cargo handling companies hire port workers through private companies owned by employers in each port, rather than hiring them freely. The EC argues that cargo handling providers from other EU Member States wishing to establish themselves in Spanish ports might be discouraged by the current recruitment situation and that this hinders the exercise of the freedom of establishment.

1. Implementation problems and delays

The fragmentation of the European airspace remains one of the most urgent and costly issues. Such fragmentation is associated with very slow progress on the implementation of the existing legislative frameworks, rather than specific legislative gaps.⁴⁷ Threats to national security systems remain an issue and are partially responsible for the slow progress in the liberalisation of the European airspace. Member States reluctantly give up powers in this area of air traffic management to the centralised entity in Brussels. Without tackling this issue, a full liberalisation in the airspace will not be achieved. SES initiative has encouraged cooperation between civil and military authorities⁴⁸. The role of Network Manager was also emphasised as an important driver for change and evolution of how air navigation services are performed in Europe.

Reporting Formalities for Maritime Transport⁴⁹. The reporting formalities Directive 2002/6/EC⁵⁰ was a first step towards simplifying administrative procedures (it harmonised reporting procedures across Europe using standardised IMO FAL forms), and was later repealed by Directive 2010/65/EU⁵¹ ("Reducing Formalities Directive" - RFD) forcing EU countries to accept electronic reports via a single window (NSW) at the latest by 1 June 2015. Member States are struggling to comply with the Directive due to (i) the budgetary impact of RFD implementation, (ii) a large amount of stakeholders and authorities involved in its implementation process, (iii) legal difficulties regarding the exchange of confidential information, (iv) lack of sufficient technical specifications at EU level, (v) and the tight deadlines for implementation (1.06.2015)⁵². The simplification of

⁴⁷ In terms of the development of Functional Airspace Blocks (FABs), only two out of nine have been fully established in advance of the December 2012 deadline. In November 2012, the European Commission said that there was little evidence of FABs contributing towards an integrated and defragmented airspace and warned that Europe was still a long way from creating a single airspace. (*Annual Analyses of the EU Air Transport Market 2012*, EC December 2013)

⁴⁸ The Single European Sky initiative was launched in the late 1990s. A first package of measures called SES1 was adopted in 2004 (SES package integrated by Regulations (EC) 549/2004 *The framework Regulation*, 550/2004 *The Service Provision Regulation*, 551/2004 *The Airspace Regulation*, 552/2004 *the Interoperability Regulation*), but as it did not produce the desired results, an updated version known as SES2 was initiated in 2009 (SES2 package integrated by Regulations (EC) 1070/2009 *Improving Performance of the European Aviation System*, 1108/2009 *extending EASA remit airports, ATM and ANS*). The SES2 introduced amendments to improve performance and sustainability of the European aviation system, reinforced the role of NSA, fostered implementation of FABs, addressed fair cost allocation to users, freedom of movement within EU air space, fostered implementation of ATM Master Plan, and addressed unnecessary administrative burden. The SES2+ proposal (COM(2013)408final) is intended to accelerate the reform of air navigation services as there are still significant delays in the implementation.

⁴⁹ Maritime transport must comply with tedious reporting formalities, even for intra-EU transport and when the cargo consists of goods in free circulation.

⁵⁰ Directive 2002/6/EC on reporting formalities for vessels arriving in and/or departing from ports in the EU Member States

⁵¹ Directive 2010/65/EU of the European Parliament and of the Council of 20 October 2010 on reporting formalities for ships arriving in and/or departing from ports of the Member States and repealing Directive 2002/6/EC

⁵² Inefficiencies at ports, however, go well beyond NSW for reporting duties, involving poor infrastructure, non-flexible working hours, lack of IT/IS adapted to SSS, terminal congestion, unnecessary costs and poor hinterland connections (EC 2006). For instance, a typical Portuguese

procedures also needs to involve vessel crew, in issues related to visas and shore leave. On a longer term, the European Customs Code will need to be adjusted⁵³.

The investment programs associated to TENTs. The TEN-T programme is intended to increase co-ordination in the planning of infrastructure projects by the Member States, but progress in the TEN-T implementation has been relatively slow due to i) lacking budget (EU grants represent no more than 5-6% of the total investments needed on the TENTs), ii) difficulty to coordinate undertakings due to diverging interests among Member States; iii) poor project preparation and non-optimal institutional settings⁵⁴. Air and maritime Horizontal Packages for traffic management in the air and maritime sectors represented 7.3% of European budget on transport between 2007 and 2010, mostly allocated to SESAR (€350 million) and Motorways of the Sea (€135 million), and to a lower degree ATM-FABs (€30 million) and River Information Systems (€25 million). The missing infrastructure needed to match the traffic demand is estimated at €1.5 billion for the 2010-2030 period, with €1 billion additional for vehicles and equipment.

2. Legislation to be further developed

Ensuring shipping competition (antitrust regulation). Regulation 1419/2006⁵⁵ introduced detailed rules for the application of Articles 81 and 82 of the EC Treaty on maritime transport (non- distortion of competition within the internal market). A block exemption was applied to liner conferences allowing ship-owners to jointly organise services until 2008 (cooperate in price- and capacity-fixing arrangements). Regulation (EC) 906/2009 bans collective pricing through conferences, because it prevented price competition, but allows to form vessel-sharing consortia to use common services (e.g. ships) provided that market shares remain below 30%. Larger alliances are not necessarily unlawful, but self-assessment is then required to ensure there is no abuse of dominant positions⁵⁶. This block exemption is due to be renovated in 2015. Some experts

port was controlled by five different authorities while Italian ports did not allow ship unloading until all paperwork was completed (EC, 2004b). Compulsory local pilotage, even if the shipmasters are certified to carry out the job themselves, has raised complaints by ferry service operators in many ports (for instance in Poland or Spain). In Antwerp, until recently, Flemish regulations stated that ship operators should pay a whole loading gang from the pool of dockworkers even though only some of them were required to handle the cargo, while, on the other hand, tariffs for SSS were not negotiable. (Ng, Saurí, Turró, 2013)

⁵³ Tactebel Engineering (2013) *Study on Reporting Obligation Resulting from Directive 2010/65/EU*, for EC DG Move, December 12, 2013.

⁵⁴ ECORYS (2007) *Ex ante evaluation of the TEN-T Multi Annual Programme 2007-2013* for the EC. Steer Davies Gleave (2011) *Mid term evaluation of the TEN-T Programme 2007-2013* for the EC DG Move

⁵⁵ Regulation 1419/2006 repealing Regulation 4056/8655, and amending Regulation (EC) 1/2003 as regards the extension of its scope to include cabotage and international tramp services. Regulation 1/2003 corresponds to the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty.

⁵⁶ The proposed P3 vessel-sharing alliance among Maersk, MSC and CMA CGM, approved by the US FMC (US Federal Maritime Commission) in March 2014 and likely to be allowed by the EU regulator in 2014, will gather more than 40% of Asia-Europe and trans-Atlantic trade and 24% of the trans-Pacific market. Some have claimed it will change the structure and competitive state of

argue that the rules should be renewed, and the threshold raised to 50% to bring it in line with other jurisdictions. Others claim block exemptions should be fully removed⁵⁷. Following the public consultation launched by the EU in 2014 the Commission extended the validity of the special competition regime for liner shipping consortia until April 2020.

Ensuring air transport competition (antitrust regulation). Regulation 1105/2002 renewed the block exemption for passenger conferences for the purpose of interlining until 30 June 2005, initially found in Regulation 1617/93. The block exemption applies to IATA only. Most EEA airlines (including all flag carriers) are members of IATA and take part in twice-yearly conferences where they agree fares for interline journeys⁵⁸.

Cross-subsidies and market-distorting state-aid are forbidden by Article 107 TFEU in any form which distorts or threatens to distort competition by favouring certain undertakings. State aid to carriers or airports and ports may hamper the development of competition in favour of incumbent operators which in practice abuse their dominant position⁵⁹.

In the **maritime transport sector**, subsidies are rarer now than in the past, but may still include protection against failure of Member States to require financial sustainability of

the global container market, and could effectively eliminate competition in the world's main liner trades. P3 is envisaged to deal with overcapacity through an agreement to share ships and engage in related cooperative operating activities, under a common management, while retaining individual commercial status and control of consignments. New vessels ordered before the economic downturn having flooded the market and driven rates on the main route between Asia and northern Europe to loss-making levels.

⁵⁷ e.g. The P3 Network Vessel Sharing Agreement between Maersk, MSC and CMA-CGM will concentrate well beyond 30% of market share in many shipping routes amongst the most busy at global level. Scrutiny by European and US regulators has granted permission to operate in their respective waters, and permission is still being studied by the Chinese regulator (May 2014). Some stakeholders have raised concerns on this alliance and its likely impact on competition in the shipping sector. The Global Shippers Association (GSA) has raised concern over the fact that even if the agreement will not allow common commercial strategies nor fares fixing, with increasingly shared costs among the 3 shipping corporations, P3 partners need to demonstrate how they are going to ensure price competition.

⁵⁸ DG Competition consulted in 2002 whether the benefits of these tariff conferences outweigh their restrictive effects and therefore whether a continued exemption can be justified. Most contributions to the DG COMP consultation in 2002 argued that the IATA tariff conferences secure an important benefit in the form of passenger interlining, and that this benefit was unlikely to be replicated by any alternative, less restrictive system. The small number of opposing respondents argued that the conferences are likely to have wider restrictive effects because carriers might use IATA fares as a reference price and the benefits of interlining might be exaggerated, in particular in thick markets. *Competition Policy Newsletter num.3 October 2002.*

⁵⁹ - Case T-443/08 and T-455/08 (*Freistaat Sachsen and Others v Commission*) Aid for Leipzig/Halle Airport – Funding of investments relating to the construction of the new southern runway

- Case C-615/11 P (Complaint - State aid allegedly granted to Italian airlines)

- Case C-287/12 P (*Ryanair Ltd v European Commission*) State aid - Loan granted by the Italian Republic to the airline company Alitalia

port authorities (recover operating and labour costs and finance investments); state aid to port authorities for strategic investments; predatory pricing to increase port throughput; inappropriate use of marginal cost pricing for capital intensive activities whose assets will eventually require replacement⁶⁰

In the **air transport sector**, it is prohibited for a Member State to give financial aid to an ailing company or an airport, except when it fits on exemptions allowed under Article 107 (2) or (3) of TFEU:

- if a company is in “difficulty” and it would be detrimental for the market if this company went out of business⁶¹; given the ambiguous character of the concept, cases are to be evaluated on a case by case basis, resulting some of the cases on state aid being approved and others deemed to run against free market competition⁶².
- cross-subsidies between economic and non-economic activities at airports are not allowed according to EC Guidelines on State aid to airports and airlines⁶³. Each Member State is to define the non-economic aspects of airport operations and, despite the fact that Member States must treat all airports in their territory in the same way, subsidy regimes across Member States are likely to finally differ from one to another⁶⁴.
- subsidies can be granted to unprofitable regional airports and to commercial airlines operating new routes from financially non-viable airports. The new 2014 EC Guidelines to state aid rules for airports and airlines⁶⁵ (to be adopted

⁶⁰ PwC, Panteia (2013) *Study aimed at supporting an impact assessment on: “Measures to enhance the efficiency and quality of port services in the EU”* for the EC DG Move Unit B3 Ports&Inland Navigation, July 2013.

⁶¹ State aid to individual companies in difficulties is assessed under Article 107(3)(c) TFEU and the Community Guidelines on State aid for rescuing and restructuring companies in difficulty (“R&R Guidelines”). In 1994 the EC adopted Guidelines on the application of the State aid rules to air transport (the “1994 Guidelines”), still valid.

⁶² Significant cases of state-aid to carriers subject to approval/refusal after liberalisation in 1993 include Sabena (1991), Iberia (1993-1995), TAP (1994), Air France (2001), Alitalia (2001), Olympic Airlines (2003), Cyprus Airways (2008), Austrian Airlines (2009), Ryanair, Malén (S.Truxal, 2013)

⁶³ Official Journal 2014/C 99/03

⁶⁴ Ph.Nicolaides (2014) *State aid uncovered: The New Guidelines on State Aid to Airports and Airlines* <http://www.lexxion.eu/training/stateaidblog/2014/02/28/109-the-new-guidelines-on-state-aid-to-airports-and-airlines-part-1>.

⁶⁵ *State aid rules to airports and airlines* IP/14/172 and MEMO/14/121 (consultation on draft guidelines launched on 3 July 2013; Guidelines adopted on 20 February 2014; O.J. C99 4 April 2014). Motivated by the view that the development of regional airports is important for economic growth and territorial cohesion, but aware of the risk of proliferation of inefficient regional airports, the new guidelines by the EC state:

- Airport infrastructure: airports with traffic below 5 million passengers a year are allowed to receive state aid if a genuine transport need and positive externalities for a region can be established, if medium-term economic feasibility is assessed positively, and if the region is not already served by another airport or other modes of transport, for example a high speed train or train connections to other airports; maximum levels of aid (“aid intensity”) ranging from 75% to 25% of eligible costs depending on the size of the airport. For airports with annum

by Member States in their existing aid schemes before April 2015, 12 months from OJ publication) introduce improvements and clarify criteria to grant subsidies, but 5 year exemptions for airports below 700.000 passengers per annum have been introduced during the negotiation stage (circa 45% of all European airports). Such airports are not required to justify their character of general interest to keep benefiting from state aid, or to perform appraisals of the magnitude of social and economic impacts of state aid to airports on local communities and territorial cohesion.

Public-Private Partnerships and Community law on public contracts and concessions.

The public consultation on the Green Paper on Public-Private Partnerships and Community law on public contracts and concessions⁶⁶ showed that there was a considerable need for clarification on the application of rules, especially the so-called "institutionalised" PPP (IPPP).

Integration of the European maritime area. Traffic between European port pairs is technically considered to take place outside the Union if ships exit territorial waters⁶⁷, and therefore requires customs processes at destination. A facilitation mechanism for vessels that call in third-country ports is needed. The planned revision of Directive

traffics above 5 million passengers, state aid to investments will only be allowed where a clear market failure exists.

- Operation of airports below 5 million passengers a year: these will be allowed to receive aid under certain conditions for a transitional period of 10 years, where business plans pave the way towards full operating cost coverage at the end of the transitional period. The operating aid amount should be established ex ante as a fixed sum covering the funding gap resulting from expected operating costs determined on the basis of an ex ante business plan, with a maximum permissible aid amount limited, for each year of the transitional period, to 50% of the initial operating funding gap calculated as the average of the funding gaps (the amount of operating costs not covered by revenues) during the five preceding years (2009 to 2013).
- Operation of airports below 700.000 passengers a year: a maximum state aid of up to 80% of initial funding gap will be provided for a period of 5 years, without a compulsory phasing-out of operating subsidies. The Commission will then reassess the need for a continued specific treatment of airports below 700.000 passengers per annum and the future prospects for full operating cost coverage.
- Operation of SGEI airports: state aid is subject to case-by-case assessment the overall management of an airport can be declared SGEI (Service of General Economic Interest), if part of the area potentially served by the airport would be, without the airport, isolated from the rest of the EU to an extent that would prejudice its social and economic development.
- Airlines in regional airports with fewer than 3 million passengers per year: they can receive start-up aid for up to 3 years for increasing the connectivity of a region by launching a new route. The aid may cover maximum 50% of the airport charges and should be allocated on a non-discriminatory basis. An ex ante business plan of the routes should show that the route will become profitable for the airline after the start-up period.

⁶⁶ Green Paper on public-private partnerships and Community law on public contracts and concessions [COM(2004) 327 final]

⁶⁷ When a ship sails from Antwerp to Rotterdam, it leaves the EU's Customs Territory because the ship sails more than 12 miles away from the coast. Consequently, all goods are considered non-EU goods and must be subjected to all the necessary customs procedures (unless the vessel is travelling under a Regular Shipping Service (RSS) scheme).

2002/59/EC on Vessel Traffic Monitoring and Information Systems and the implementation of the Reporting Formalities Directive will address this issue, and support the implementation of an expanded Blue Belt⁶⁸. In 2011, a pilot initiative was issued in cooperation with the European Maritime Safety Agency (EMSA), and demonstrated the potential to reduce administrative burden of SafeSeaNet (SSN)⁶⁹, the information system for vessel traffic monitoring.

Harmonisation of port charges is still incomplete. To promote fair port competition, the EC produced the White Paper on Fair Payment for Infrastructure Use in 1998⁷⁰, proposing a system based on short term marginal social costs (including external costs), aimed at recovering costs of new investments, operating and external costs, and thereby ensuring fair port competition (Strandenæs and Marlow, 2000). Most of the time, this system does not provide sufficient revenue to allow financial coverage of upfront investments on infrastructure, and it has in practice not been implemented in Europe⁷¹. Excessive port tariffs commonly come from a lack of competition; abuse of monopoly power (cross-subsidization of high competition services by monopolistic ports; price competition for terminal concessions, which are sometimes overbid in the knowledge that high concession fees can be recovered subsequently from users); imperfect knowledge of costs; inheritance of past tariff structures. Although subsidies are now relatively less predominant, they may still account for sub-optimal port pricing⁷².

Incomplete harmonisation of airport charges. Directive (EC) 2009/12 on airport charges mainly aimed at improving the transparency of costs and related charges. The Directive

⁶⁸ The Blue Belt communication (COM (2013) 510 final) was presented in 2013 to further elaborate on the European single shipping area aimed at increasing the efficiency of intra-EU maritime transport services and decreasing their costs. A key element still to be solved is the issue on formalities for traffics within the EU calling at third country ports or in free zones (this requires the involvement of several DG, at least DG TAXUD, DG MOVE).

⁶⁹ SafeSeaNet is a system established by Directive 2002/59/EC as amended, hosted and technically developed by EMSA which puts a reporting and notification obligation on Masters, operators or agents of ships enabling Member States to provide and receive information on ships and their hazardous cargoes. It provides, among others, the identification, position and status of a ship; times of departure and arrival; incidents reports, details on hazardous cargoes. The SSN system currently allows for the collection of limited types of messages and their exchange among only the core maritime user group, but the implementation of already adapted or planned EU legislation require that the SSN system should be extended to handle up to 14 message types. The Suboptimal use of the current SSN system is hindering the better return on the investments made both at EU and national level ; authorities responsible for defence, border control, customs, marine pollution, fisheries control, maritime safety and security, vessel traffic management, accident and disaster response, search and rescue as well as law enforcement (the different user groups) are collecting information for their own purposes, often repeatedly creating a great deal of administrative burden (Roadmap for the Revision of Directive 2002/59/EC, DG MOVE 2012)

⁷⁰ White Paper on Fair Payment for Infrastructure Use: a phased approach to a common transport infrastructure charging framework in the EU (European Commission, 1998)

⁷¹ A.K.Y.Ng, S.Sauri and M.Turró (2013) *Short Sea Shipping in Europe: Issues, Policies and Challenges*, Chapter 8 of "Regulating Transport in Europe", Edward Elgar, Cheltenham.

⁷² PwC, Panteia (2013) *Study aimed at supporting an impact assessment on: "Measures to enhance the efficiency and quality of port services in the EU"* for the EC DG Move Unit B3 Ports&Inland Navigation, July 2013.

requires airport operators to present to their users/publicise their cost-allocations and hence justify the calculation of airport charges), and explicitly prohibits discrimination between users (airlines receiving the same service at a given airport in Europe have to pay the same charge). The Directive applies to any European airport with over 5 million passenger movements. This leaves a majority of European airports exempted from the Directive. Security charges are not included either as they are ruled under aviation security Regulation (300/2008), and despite that a Directive proposal⁷³ (COM (2009) 217 final) on security charges was approved by the Parliament in 2010, the Council has not yet taken a formal position. Member States were given 36 months to transpose the Directive 2009/12 into national law and to take all the necessary measures for its implementation (March 2013).

Consumer rights on market transparency in relation to the proliferation of tariffs. There is a welldeveloped body of legislation on consumer rights⁷⁴. To protect consumers, Regulation 1008/2008 bans price discrimination on the basis of the place of residence, the nationality of the customer or the place of establishment of the travel agent (for the same product there should be no price differences based on the place of residence or the nationality of the passenger). Price transparency is improved by clarifying that the final price must include all applicable fares, charges, taxes and fees, so as to avoid misleading advertising. Regulation 261/2004 in relation to denied boarding, cancellation and delay has been the source of more litigation, especially linked to the interpretation of the “extraordinary circumstances” defence⁷⁵, or on the clarification of terms such as delay or cancellation (e.g. whether a change of reservation to another flight constitutes denied boarding). This issue has given rise to a significant number of court cases before Member States' courts as well as the ECJ⁷⁶.

⁷³ Security charges are set in most Member States at the level of airports and without sufficient safeguards ensuring non-discrimination, transparency, cost-relatedness and consultation of airport users.

⁷⁴ Council Regulation 295/91 provided basic common rules for a denied boarding compensation system in scheduled air transport. Then, in 2004, the Regulation 261/2004 of the European Parliament and of the Council established more sophisticated rules on compensation and assistance to passengers in the event of denied boarding and of cancellation or long delay of flights. Special rights for persons with reduced mobility and handicapped passengers at European airports have been added, based on the Regulation 1107/2006 of the European Parliament and of the Council concerning the rights of disabled persons and persons with reduced mobility when travelling by air.

⁷⁵ The Regulation obliges the carrier (in addition to rerouting or refunding the passenger, and providing necessary care) to pay the passenger compensation of an amount varying between €250 and €600 depending on the length of the flight. However, the carrier is not obliged to pay such compensation if it can prove that the cancellation is caused by “extraordinary circumstances which could not have been avoided even if all reasonable measures had been taken”.

⁷⁶ J.Balfour (2010) *Recent developments on Air Passenger Rights in the EC* whoswholegal.com/news/features/article/27574/recent-developments-air-passenger-rights-ec

3. Delays in legislation updates

Non-discriminatory terms concerning Slot Allocation Regulation (SAR) of airports⁷⁷. Analysis on Slot Regulation performance⁷⁸ has suggested that the allocation system currently in place prevents optimal use of the scarce capacity at busy airports. Slot allocation in airports is based on the principle that slots used by one carrier are reallocated to the same carrier over the next period if they are used for over more than 80% of the season, but are lost if not used (the airport package under negotiation proposes to increase this threshold to 85%). Aiming at a better use of the existing airport capacity and better access conditions of new entrants, secondary slot trade was introduced in 2008 but is not yet formally regulated⁷⁹. The proposal by the Commission in 2011⁸⁰ reached a consensus at the European Parliament, but the regulatory package is halted over the issue of how best to liberalise ground handling services and has not yet been brought forward.

Ground handling services. Directive 96/67 on access to the ground handling market at European airports forced airports to offer airlines a real choice of providers of ground handling services, at least 2 for each ground activity (i.e. baggage handling, ramp handling, fuel and oil handling, freight and mail handling), and at least one has to be independent of the airport or the dominant airline at that airport. The Better Airports package aims to further increase competition and quality standards in ground handling services by raising the number of minimum ground handling operators and introducing the possibility of self-handling by air carriers⁸¹ (repealing Directive 96/67). The package

⁷⁷ The Council Regulation No 95/93 on **common rules for the allocation of slots at Community airports** established a code of conduct guaranteeing the transparent, efficient and non-discriminatory allocation of slots for civil aviation at European airports (based on the IATA Worldwide Scheduling Guidelines and the "grandfather rights" principle where a carrier would be granted the continuous use of its slots if they had been used at least 80% of the summer/winter season over the previous period). The 2001 transport White Paper proposed allowing more transparent exchanges of slots, immediate penalties in the event of non-use of slots and clearer criteria for allocation priorities, and Regulation 95/93 was amended in 2004 [Regulation (EC) 793/2004] on this dimension. Amendments were introduced in 2007 and 2008 to introduce further clarification on Slot allocation mechanisms. The "use it or lose it" rule have temporarily been suspended (so-called waiver) several times following the events of September 11th 2001 (Regulation (EC) 894/2002), on the occasion of the Iraq war and the SARS epidemic in 2003 (Regulation (EC) 1554/2003), in 2009 due to the intensity of the economic crisis (Regulation (EC) 545/2009).

⁷⁸ Steer Davies Gleave study on the European slot coordinator (July 2013); Steer Davies Gleave study on the impact assessment of revisions to Regulation 95/93 (May 2011); Mott MacDonald study on the impact of the introduction of secondary trading at Community airports (November 2006); NERA study to assess the effects of different slot allocation schemes (January 2004)

⁷⁹ Market based mechanisms for the trading of slots between airlines in a transparent way and measures to ensure that existing capacity is used by airlines - by raising the threshold on the "use it or lose it rule" from 80:20 to 85:15. The proposed measures on slots would allow the system to handle 24 million more passengers a year by 2025, and would be worth €5 billion to the European economy over the period 2012-2025 (Impact Assessment by Steer Davies Gleave).

⁸⁰ "Better Airports Package", COM(2011) 823 final

⁸¹ The main elements of the new proposals in relation to service provision are as follows:

1- Self-handling: Air carriers are to be able to carry out their own ground handling operations.

was approved by the European Parliament in April 2013⁸², but is pending Council approval.

Admission rules for inland waterways vessels in the European Union (Directive 2006/87/EC). The coexistence of various technical regulations on navigable waterways in the Community has long obstructed the free movement of vessels. With the progress of the technical state of the art, amendments of the technical specifications are coming up. Instead of translating these amendments into law, the Commission decided to change the admission rules into framework law, meaning that the Annexes of this regulation will hold the technical specifications. It was decided that these technical specifications would further be decided by a Joint Working Group. However, decisions – even if jointly agreed by the Working Group – lack the legal background to be translated into European law. Consequently, no amendments of technical specifications have yet come to fruition.

Council Directive 82/714/EEC lays down technical requirements for inland waterway vessels as well as the technical specifications for **river information services (RIS)**. In particular, ship owners of new vessels or adapted vessels who would like to get the admission of a ship which is not completely in line with the current technical specifications, but can provide the equivalent technical and security standards by other measures, are forced to request admissions from Rhine and thus face significant time delays for vessel admissions. In other words, ship owners cannot claim for equivalent security standards by addressing European legislation, but have to detour to Rhine regulations. Innovative adaptations or the construction of new vessels are not a feasible solution within an appropriate time horizon.

4. Failure to legislate

Free access to and competition in port services. The strong opposition of groups such as dock labour unions and short-term national positions have already twice blocked the approval by the Parliament of the Port Package on liberalisation measures. Despite the support of ship owners, freight forwarders, ship agents and shipbrokers as well as cargo owners, the strong opposition by trade union's led to blocking the proposal⁸³. "Self-

2- Minimum number of ground handling service providers from 2 to 3 at large airports (>15 Mpax or >200,000 tonnes of freight per year).

3- Minimum standards for operational performance at large airports (e.g maximum waiting time for check-in and baggage claim).

⁸² Many of the debates at the Parliament's TRAN Committee related to increasing the minimum number of ground handling operators at airports and its consequences for employment, in relation to the threat that increased competition of the sector might result not only to higher work pressure on employees of the sector but also to an increase of collective dismissals and transfer of staff processes, without being counterbalanced by enough other advantages (except maybe for the airlines, which may have expected to benefit from better prices as a result of the increase of the number of competitors). (D.de Bournonville (2013) *Groundhandling at European airports*, www.kennedys-law.com)

⁸³ A directive on market access to port services of a commercial nature was proposed by the EC in 2001 with the aim to improve efficiency and reduce the cost of certain port services and to ensure

handling” activities, aimed at addressing labour monopolies at ports, are the main issue preventing the approval of legislation on port market access liberalisation, i.e. the option for a shipping company to provide certain port services, normally provided by the port, using its own land-based personnel. Self-handling activities in ports are not likely to be included into the port’s regulation. Liberalisation of port services has also been discussed at WTO level since the Uruguay Round (1986-1994) with little progress⁸⁴.

5. Missing legislation

Liberalisation of Airports and Air Navigation Service Providers. Air Navigation Service Providers (ANSPs) will need to respond to increasing market liberalisation in the European air field, allowing increased competition for Air Traffic Control (ATC) service provision at airports as well. Different countries have already implemented different legal models (e.g. not-for-profit model in Canada, government-owned corporations in Australia, New Zealand, Germany, public-private partnership models in the UK, Spain and Sweden) having driven efficiencies in costs and performance and ensuring safety standards. Functional Airspace Blocks (FABs) enable ANSPs to provide common services, which is one response to market liberalisation (e.g. the Entry Point North Training centre which is a joint venture of the Swedish, Danish and Norwegian ANSPs)⁸⁵. The liberalisation of Air Space Management has been claimed to be responsible for ANS costs having turned on a downward trend, with real en-route unit costs having dropped from €60.1 per service unit in 2009 to €53.9 (in constant 2009 prices), and forecasted to keep decreasing to €51.5 by 2014. Liberalisation of the ATM was one of the recommendations of the High Level Group for the *Future Aviation Regulatory Framework* (2007) to the EC, but no formal legislation exists yet forcing Member States to address the issue.⁸⁶.

that future port planning would be undertaken in a more integrated (EU-wide) way (1st port services package). In 2003, the European Parliament and the Commission could not agree on a common position and the proposal for a directive was withdrawn. In 2004, the Commission brought forward a new draft directive (2nd port services package), but this was again rejected and the Commission withdrew its proposal. In 2007 the Commission produced a Communication on ports policy announcing soft measures to be implemented as guidelines and enhanced cooperation among stakeholders. In 2012, Transport Commissioner announced a review of the current policy framework for ports.

⁸⁴ During the Uruguay Round, considerable attention was given to maritime auxiliary services including cargo handling and storage services, and providing services to ships while in their berths, as well as access to and use of port services covering all other services provided to ships while accessing and berthing in ports, e.g. towage. It was recognized that these were sectors with considerable scope for liberalization. Negotiations on maritime transport services at WTO aimed to improve commitments in international shipping, auxiliary services and access and use of port facilities, leading to the elimination of restrictions within a fixed time scale. Although negotiations were scheduled to end in 1996, little progress has been achieved (S.Togan, 2007). Participants failed to agree on a package of commitments. As of 2005 some commitments exist in some countries' schedules covering the three main areas of the maritime services (Parameswaran, 2004).

⁸⁵ See S.Leighton (2012); *Market Liberalisation in ATM: opportunity or threat?*

⁸⁶ The High Level Group deemed to adapt the regulatory framework and governance structures to stimulate management to deliver improved performance, and where possible, facilitate the application of market principles by the unbundling and liberalisation of ANSP services and

Network coherence at national level of the infrastructure investment (e.g. because of territorial cohesion), and maintenance of services of public interest (e.g. to islands, ultra peripheral territories) need planning coordination, as well as local and regional networks giving access to TEN-Ts. Such coordination requirements are not explicitly considered by European regulations yet⁸⁷. Planning processes are generally performed for each transport mode independently, resulting in poor interconnectivity between the different transport modes (e.g. rail connections at airports, road and rail connections at ports).

Full internalisation of environmental externalities. It is one of the most important legislative gaps, common for both Air and Water Transport sector. The gradual internalisation of environmental externalities will result in dramatic changes in the industry, making carriers more sensitive to shorten the lengths of their services, both in the air and maritime sectors. The application of taxes on emissions throughout the EU would induce air and maritime carriers to adjust their hub and spoke networks, particularly for intercontinental services and would have an impact on modal shift by incentivising the use of rail roads. The application of the Eurovignette on roads may favour a shift towards short-sea shipping, inland waterways and rail. But the internalisation of externalities in maritime transport (marine fuels are currently taxed), especially for SSS, will increase competition from road freight transport⁸⁸. Directive No 2008/101 set up the inclusion of all flights taking off and landing at EU airports in the EU Emissions Trading Scheme (ETS) from January 2012, but application of the Directive has been postponed to allow for a negotiation aiming at a common ICAO⁸⁹ positioning on this matter⁹⁰.

introduce economic regulation to drive performance improvement in the monopoly elements of ANSP activities.

⁸⁷ Even though improving rail interconnections at airports and ports is a goal in the 2011 transport White Paper, and a number of projects are included in the TEN-Ts, integrated planning is included in the regulation.

⁸⁸ "Whilst a policy exists to encourage short sea shipping, a general aim of the EU's transport policy has been to ensure that the transport costs for all transport modes fully reflect relevant externalities such as air pollution. Short sea shipping will face stronger competition from road freight transport as a result of increased marine fuel costs due to operations in a SECA despite the fact that road fuels are heavily taxed (unlike marine fuels). Short sea shipping will experience increased costs and competition from road, rail and deep sea shipping. This will impact especially those shipping lines that already today are least competitive, for example due to relatively high fuel consumption. Based on the information available today, it seems however that the impacts are not as imposing as suggested by the industry. At the same time, given the large range in predictions, there is a clear level of uncertainty to what might happen and the European Commission will therefore be keeping a close eye on the consequences and look for solutions in case of disproportional impacts." *Commission Staff Working Paper. Impact Assessment Accompanying the Proposal for a Directive of the European Parliament and of the Council amending Directive 1999/32/EC as regards the sulphur content of marine fuels.* SEC(2011)918.

⁸⁹ ICAO - International Civil Aviation Organisation

⁹⁰ The most controversial of all the EU environmental and economic pressures on airlines is to bring aviation into the **EU Emissions Trading Scheme (ETS)**, as part of the market based measures. This idea was put into practice by the Directive No 2008/101, adopted by the European Parliament and the Council in 2008, including aviation activities in the scheme for greenhouse gas emissions trading within the Community. Consequently, carbon dioxide emissions from all flights taking off

International agreements related to 7th and 8th freedoms of the air⁹¹, to open up European markets to non-European companies. The right to fly between two foreign countries, or to fly internally between two airports in a foreign country (cabotage) is extremely rare outside the EU internal market. Despite the success of airline deregulation in the domestic markets, Europe still limits cooperation and deregulation with third countries. The EU-U.S. Open Skies Agreement is one of the most significant open skies agreements concluded in recent years⁹² but does not include broad passenger 7th freedom of the air for EU carriers between US airports or for US carriers between EU airports (only between the EU and Norway); the Asian market remains relatively regulated at present, although the phased introduction of the ASEAN open skies agreement covering ten countries in Southeast Asia from 2008 has prompted major Asian markets (including Japan, China and India) to consider similar initiatives.

Further integration with the Neighbourhood. Services between Europe and North-African ports were not eligible for the Marco Polo programme. Including maritime legs to North-African ports would improve the competitiveness of Short-Sea Shipping routes in Europe, with less burdensome shipping services between the EU and the neighbourhood, and an opportunity for Mediterranean ports to further grow as European gateways in a more balanced port system, in line with the European Transport White Paper goals.

and landing at EU airports are to be traded within the EU ETS from January 2012. Under the ETS legislation adopted by the European Parliament and member states in 2008, all flights landing or taking off at EU airports had to pay, from 1 January 2012, for all the CO₂ emitted during each flight. However, after an outcry from China, Russia, India and the United States, the EU agreed to 'stop the clock' for the duration of 2013 on applying the scheme to flights entering or leaving EU airspace, to give the International Civil Aviation Organisation (ICAO) time to reach a deal. By September it was clear that prospects for a deal were remote, so the Commission offered permanently to exempt the portion of a flight outside EU airspace, if the ICAO agreed to aim for a global mechanism to reduce aviation emissions by 2020. If the law remains unchanged by then, airlines would technically be liable for all emissions.

⁹¹ The freedoms of the air are a set of commercial aviation rights granting a country's airlines the privilege to enter and land in another country's airspace, formulated as a result of disagreements over the extent of aviation liberalisation in the Convention on International Civil Aviation of 1944, known as the Chicago Convention.

⁹² EU-US "Open Skies" Air Transport Agreement (2008). It allows flights by EU carriers originated in the EU to continue beyond the United States towards third countries ('5th Freedom'); it also allows the possibility by EU carriers to operate all-cargo flights between the United States and any third country without the service starting or ending in the EU ('7th Freedom'); EU carriers can also operate direct passenger flights between the US and Norway, despite Norway not being an EU member country ('7th Freedom').

III. Cost of Non-Europe: Results from previous assessments

This section presents a summary of assessments of the benefits related to the further development of the Single Market in Transports carried out in the past. Most of these studies are based on the analysis of marginal benefits of closing specific gaps ⁹³.

1. Air Transport

The cost of Air traffic management fragmentation has been estimated in between **€1.5 billion and €5.0 billion per year** by different sources, by summing up a large number of marginal costs. According to Eurocontrol, the additional cost of the European system in relation to the USA is in the range of additional **€2-3 billion every year**⁹⁴. IATA reports that in monetary terms the failure to implement the SES in 2012 resulted in **€4.5 billion in costs from flight inefficiencies and 7.8 million tonnes of wasted CO₂**⁹⁵.

The costs of air navigation services account for over 50% of the total air traffic control-related costs. Unless the situation changes, the increase of costs will continue. Furthermore, once shortages of air navigation services are reduced and flight routes are optimised, the volume of emissions and the quantity of fuel used would fall along with the duration of flights. Both Europe and the US have similar air spaces and a similar number of air traffic divisions and airports; however the air space en-route in Europe is under the control of 38 service providers, whereas the US uses only 1 service provider. The costs of ATM in the US are 34% lower than in the EU (measured as ATM unit costs per operating flight-hour)⁹⁶.

The “**Open Skies Agreement**” between Europe and the United States from 2008, is a first step in the process to liberalise Trans-Atlantic air transport. The benefit of the establishment of a single aviation market has been estimated above **€2.4 billion per year**⁹⁷. The **EU – US Open Aviation Area (OAA) Agreement** is significant being the EU and the US the two largest air transport markets in the world, accounting together for more than half of all global scheduled passenger traffic and 71.7% of the world’s freighter fleet.

⁹³ All references, papers and reports analysed in this chapter can be accessed through the website <http://81.47.175.201/sky-water>.

⁹⁴ Eurocontrol (2012); *US/Europe Comparison of ATM-Related Operational Performance 2010*

⁹⁵ Commission Staff Working Document – Draft Impact Assessment accompanying the document “Legislative proposal to update the regulations on Single European Sky – SES2+” SWD(2013)206final

⁹⁶ Eurocontrol Performance Review Commission

⁹⁷ Booz Allen Hamilton (2007), *The Economic Impact of an Open Aviation Area between the EU and USA*, Directorate General Energy and Transport, DGTREN, Brussels

2. Maritime Transport

Full port competition will generate savings in port costs of the order of **€1 billion per year** (so €10 billion in total until 2030), according to the Impact Assessment of the proposal for market access to port services and the financial transparency of ports (2013)⁹⁸. **The savings in total port cost would be in the range** of 2% to -7.9% (from €318.15 million to €1,245.21 million) depending on the scenario considered. Annual external cost savings would be in the range of €69 million and €46 million.

As regards costs generated by time spent on administrative procedures related to goods identification, inspection, customs, the advantages of eliminating all remaining administrative procedures including customs and other procedures could be estimated at **€70 million per year**, always according to impact assessments⁹⁹ carried out by the European Commission.

Marco Polo II (2007-2013), a €450 million program to improve Short-Sea Shipping (maritime transport among European ports) competitiveness is expected to shift 57 billion tonne-kilometres from road to SSS. This shift, if produced in seven years, would result in a social and environmental benefit of **€300 million per year**, according to EC¹⁰⁰. However, in reality, this shift from road to Short-Sea Shipping has not yet taken place.

3. Inland waterways

No assessment of overall costs of inland waterway transport has been made public until now. Inland waterway transport is negatively impacted by the limited renewal of the Danube vessel fleet, which causes higher fuel demand and thus higher emissions and higher operation costs. Another cost is the one derived from insufficient water depth in inland waterways, as illustrated in the next graph.

The shipping industry has to make important efforts to respect regulations linked to long delays for vessel certificates and ship inspection. In particular, ship owners of new or adapted vessels who would like to get the admission of a ship which is not completely in line with the current technical specifications, but can provide the equivalent technical and security standards by other measures are forced to request admissions from Rhine and thus face significant time delays for vessel admissions. In other words, ship owners cannot claim equivalent security standards by addressing European legislation, but have to detour to Rhine regulations. Innovative adaptations or the construction of new vessels are not a feasible within an appropriate time horizon.

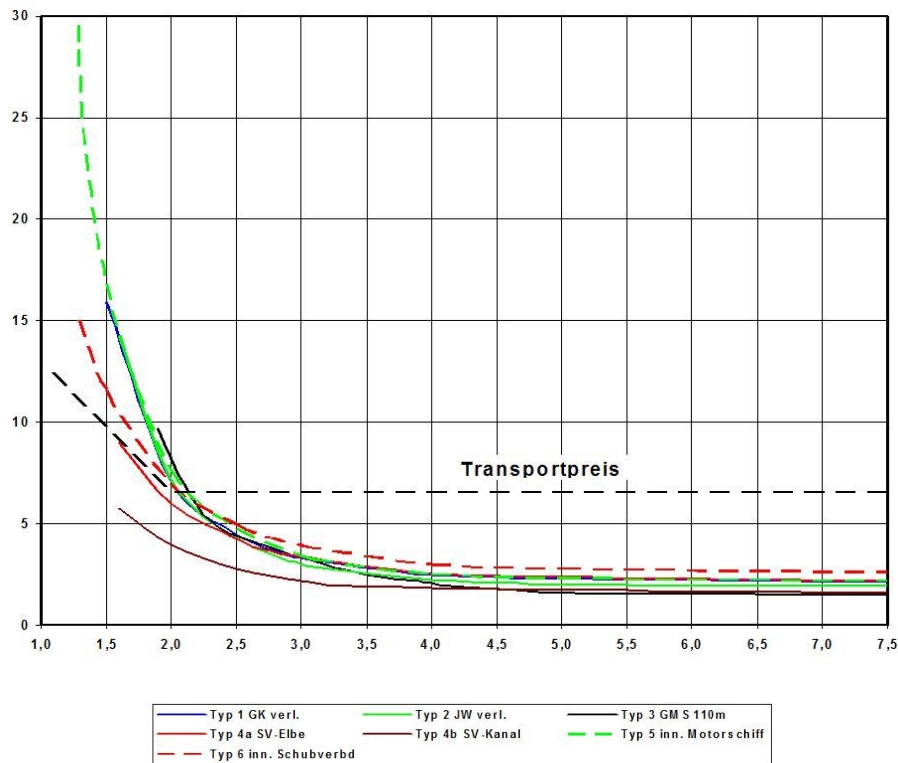
⁹⁸ Commission Staff Working Document – Impact Assessment accompanying the document “Proposal for a regulation of the European Parliament and of the Council establishing a framework on the access to port services and the financial transparency of ports” SWD(2013)181

⁹⁹ Commission Staff Working Document – Impact Assessment accompanying the document “Proposal for a regulation of the European Parliament and of the Council establishing a framework on the access to port services and the financial transparency of ports” SWD(2013)181

¹⁰⁰ Ecorys Transport (2004) *Ex-ante evaluation of Marco Polo II (2007-2013)*, document prepared for EC DG TREN.

New vessels are needed for economic, ecologic and safety reasons: adaptation of the vessels to new freight demands (new products e.g. container transport), introduction of energy efficiency measures, adaptation of propulsion systems to existing and tightened emission standards, installation of LNG-engines, introduction of cost efficiency measures (reduction of crew, etc.). The Danube fleet is in average 34 years old¹⁰¹. It is estimated that about 20% of the Danube fleet's engine power and 30% of the loading capacity are put 'off-duty'.¹⁰² Instead of renewing the fleet, existing motorized vessels were re-engineered in order to make the ships compatible with the current rules and regulations (2006/87/EC, Rhine Rules, harmonised Romanian legislation), to increase the power of the engines, to reduce the vessel's crew, to decrease operational costs and to keep or improve reliability. This is mainly due to the lack of profitability of the sector suffering from insufficient transport demand because of weak infrastructure and missing financial resources for reinstatement work (see section on specific issues of the Danube).

Graphic 1 Relation of water depth and transport costs for shipping industry for different ship types (cost covering freight rate [EUR / ton] versus fairway depth [m])



Source: DST (2011): Energy efficiency of inland water ships - and how to improve it, Dipl. Ing. Thomas Guesnet. Workshop Inland Navigation CO₂ emissions. Typ 1: Gustav König; Typ 2 Johann Welker, Typ 3 motor vessel S 110m, Typ 4a vessel+barge on the Elbe, Typ 4b vessel+barge in canal, Typ 5 motor vessel, Typ 6 vessel+barge.

¹⁰¹ Danube Commission (2008): Statistical Yearbook 2006.

¹⁰² CCNR (2012): Market Observation 2012-1, p. 28

IV. Cost of Non-Europe:

Strategic assessment of intercontinental transport

Complementary to previous impact assessments, which have estimated the marginal benefits of closing gaps mostly for continental transport, the “**cost of non-Europe**” has been estimated in this paper by considering the impacts on intercontinental transport of a fully integrated and liberalised market that entails the internalisation of environmental externalities in all transport markets and the opening up of European markets to non-European air and maritime transport companies.

Our fundamental assumption is that a European liberalised and integrated market would not only tend to improve the actual organisation of transport services but also induce a more balanced and cost-efficient distribution of entry and exit of intercontinental flows.

This approach is in line with the European Transport White Paper (2011) policy aim regarding the gradual geographic rebalancing of intercontinental freight transport in Europe, further extending the same logic to intercontinental passenger transport. More and efficient entry points into European markets will avoid unnecessary traffic crossing Europe. A European infrastructure policy for ports and airports should therefore pay particular attention to ensuring the availability of intercontinental ports and airports well connected to the continental transport system along the entire EU territory with the necessary regulatory changes to facilitate higher efficiency on ports and airports enjoying the most competitive geographic location to serve intercontinental traffic.

Maritime transport to Asia is currently four times bigger than traffic to North-America (30 MTEU¹⁰³ Europe-Asia against 7 MTEU Europe-North-America in 2010). Larger ports in Europe are concentrated in the North-Atlantic (e.g. around 50% of the container traffic in western and central Europe enters or leaves through one of the four major hubs: Antwerp, Rotterdam, Hamburg, Bremerhaven, when routes from Asia cross the Mediterranean).

Intercontinental air trips to North-America are still larger than to Asia (from 170 Mpax in intercontinental trips from European Union abroad, 58 Mpax¹⁰⁴ travel to North-America, and 35 Mpax already travel to Asia) but their importance has decreased. As happens in the maritime sector, air traffic is concentrated in few gateways (e.g. 60% of intercontinental Revenue Passenger Kilometres (RPK) are today served in merely four European hubs: London Heathrow, Paris CDG, Frankfurt Main and Amsterdam Schiphol).

¹⁰³ MTEU stands for “million standardised containers” (Twenty-foot Equivalent Unit) and is a measure of maritime freight transport volume.

¹⁰⁴ Mpax stands for million passengers

In our calculations, hypotheses are generally adopted in a conservative approach:

- Traffic forecasts are assumed lower than more optimistic forecasts by reference to transport operators¹⁰⁵
- Current North-Atlantic hubs and gateways in Europe are assumed to retain a large part of non-Atlantic trade because they have very large economies of scale and excellent roads, rail and inland waterway connections with their hinterlands, where large concentrations of population and economic activities are located.
- The rebalancing process of intercontinental flows in Europe is assumed to follow a gradual evolution:
 - For the air sector, the hypothesis is of 50% of optimisation implemented by 2024 and full optimisation by 2034. This would involve between 17.5% and 35.0% of intercontinental passengers in Europe by 2034, depending on the future scenario considered (55.3 and 110.2 million respectively). These would be passengers having changed their travel routes in favour of more convenient airports in Europe located in the periphery.
 - For the maritime sector, we expect the changes to take place much faster with 75% of flows redirected already by 2024 and 100% by 2034 (between 18% and 36% of the European intercontinental freight traffics (in tonnes) would be handled in a Southern port rather than a North Atlantic port).

For the trip legs taking place within Europe to reach intercontinental getaways (e.g. from regional airports to hubs, from inland regions to maritime ports), the following assumptions are taken:

- Freight will increasingly be transported by rail as a result of progressively interoperable long-distance rail corridors
- Harmonised transport costs (including energy costs, infrastructure fees and transport taxation)
- The aggregated total length (RPK) of intra-European air trips to access new emergent hubs from all other European airports compared to today's itineraries will have an overall null balance, implying that extra lengths in some trips will be compensated by shorter trip lengths in other trips.

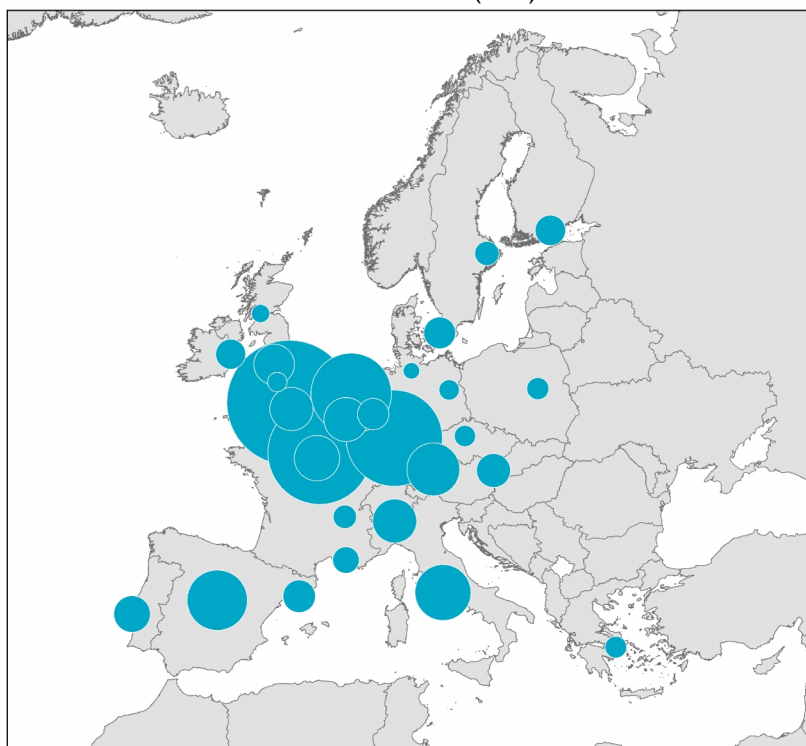
¹⁰⁵ Airbus' *Global Market Forecast 2013-2032*; Boeing's *Current Market Outlook 2013-2032*; HWWI's *Maritime Trade and Transport Logistics - Strategy 2030*

1. Cost of Non-Europe in the Air Transport

The air liberalisation in Europe has not affected much the distribution of intercontinental services among hubs. This is explained by the still dominant role of European full-service carriers on intercontinental services, as well as the relative importance of domestic markets within Member States and the growing importance of high-speed rail services serving relations below 600 km. Instead of major changes on hub and spoke services, the most evident impact of liberalisation has been the creation of new point to point direct services served by Low Cost companies, often at regional airports.

Approximately 60% of intercontinental RPKs¹⁰⁶ are today served in only four European Hubs: London Heathrow, Paris CDG, Frankfurt Main and Amsterdam Schiphol, all of them located in the same geographical area. For trips to Asia, Africa, Middle East or Eastern Europe, other airports located in the north-east of Europe and in the south-east of Europe may be more competitive, just for mere geographical reasons. For links to North-America, London is relatively well situated (just like Dublin or Lisbon) and has an optimal geographic position. In relation to South-America, Lisbon and Madrid airports have the best geographical locations in Europe.

**Illustration 1 Map of intercontinental air passengers in EU airports.
Present situation (2014)**



¹⁰⁶ RPK (Revenue Passenger-kilometres) is the basic measure of airline passenger traffic, calculated by multiplying the number of revenue-paying passengers aboard the vehicle by the distance traveled. It is the basic unit of production of an airline.

The likely entry of Low Cost companies in the intercontinental market, the gradual opening of the market to non-European air carriers, through Open Sky agreements and the full internalisation of environmental externalities, will likely lead to a reorganisation of the actual hub and spoke system, with geographically distributed intercontinental hubs.

Table 1 Initial Situation Passenger traffic EU-rest of the world 2014

Intercontinental Transport. Annual Indicators	Present situation (2014)
Total transport (million RPK)	1,101,673.2
Total transport fuel consumption (Mton)	39.6
Total transport emissions (MtonCO ₂)	124
Total fuel cost (€ million)	38,228
Passenger time cost (€ million)	32,688
Total CO ₂ emissions cost (€ million)	672
Total costs (€ million)	71,588

A more balanced distribution of intercontinental hubs in Europe would represent a more efficient air transport system, with shorter routes and lower operational costs (e.g. lower travel time, fuel consumption, aircraft maintenance) and much lower congestion costs (traffic routes could be optimised in terms of length effectively cutting the flying costs, and redistribution would avoid the concentration of routes on the same geographical areas diminishing the congestion of airports and air corridors).

To evaluate the economic impact of a more balanced distribution of traffics, this report attempts to estimate the yearly savings in travel time, energy consumption and CO₂ emissions derived from decreases in passenger RPKs.

The calculations are based on a number of conservative assumptions based on most recent data available. Hypotheses and results are further detailed in the annex.

Table 2 Main assumptions considered

Topic	Assumption	Reference/Rationale
Intercontinental air traffic growth	4.0% 2014-2024 and 2.0% 2024-2034 in average.	Based on Boeing and Airbus global aviation forecasts until 2024. Conservative assumptions 2024-2034. (growth rates 50% lower)
Distribution of intercontinental traffics on European airports	European airports will keep at least 35% of their current intercontinental passenger traffic	At least 65% of demand of intercontinental trips remains captive in airports catchment area.
Impact on intra-European traffics	No substantial change. Access time and distance from other airports to actual intercontinental hubs and to new hubs to be developed will not change significantly.	Own calculation based on GIS modelling
Value of travel time (VOTT)	€26.3 per pax-hour	Business and tourist value of time based on HEATCO FP6 and contrasted by US DOT references. All prices updated to 2014. Average traveller determined considering a 40% of RPK for business and 60% for tourists.
Operation Cost savings	€0.0347 per RPK	From British Airways ptc (2013) Annual Report and Accounts, only considering savings on fuel consumption (35% of operating costs of an average plane).
Aircraft technology	Average aircraft cruise speed and capacity based on analysis of Airbus A330, A340 and A380, and Boeing 747, 767, 777	Airbus and Boeing specifications
CO ₂ emissions	113gr CO ₂ /RPK, maintained over time, assuming no change on technology.	LIPASTO - Traffic Emissions Calculator by VTT Technical Research Centre of Finland
Price of CO ₂	€20.0 per tonne CO ₂	Estimated cost of Carbon Capture and Storage (CSS) technologies ¹⁰⁷

¹⁰⁷ "In 2010, the price for a carbon credit lied between 12 and 18 euros per ton CO₂; the crisis impacted on the price of carbon credits, which by 2014 had dropped to approximately 5 euros per ton CO₂. The cost estimates from the IPCC for a pulverized coal power plant are shown to be between 30 to 70 dollars per ton CO₂ or 20 to 50 euros. In 2007, the environmental agency of the

Topic	Assumption	Reference/Rationale
Transaction costs	5%	Aligned with “cost of non-Europe” studies for road and rail sectors
Achievement of savings over time	It is defined by periods. 0% of achievement in 2014 50% of achievement in 2024 Full achievement in 2034 (100%)	Own assumption, based on a gradual rebalancing of intercontinental services among hubs
Discount rate for NPV	4%	Aligned with “cost of non-Europe” studies for road and rail sectors
Evaluation period	20 years	Aligned with “cost of non-Europe” studies for road and rail sectors

Source: MCRIT

The final savings/benefits would depend on the final extent of the redistribution of traffics. Three scenarios are considered in the evaluation: Baseline, CN37 and Optimal.

- The **Baseline Scenario** is the continuation of the current situation for the next decades, where circa 60% of intercontinental flights are served by four airports, all of them located at a relatively close geographic situation (Heathrow, Paris CDG, Amsterdam Schiphol and Frankfurt am Main).
- The **CN37 Scenario** (core network 37) assumes a redistribution of intercontinental traffics originated in European core airports to others in position to offer better travel conditions for intercontinental flights (basically shorter trips). This scenario considers that about 17.5% of the intercontinental traffic currently originated in TEN-T Core Network airports will be redirected to optimal airports by 2034 (55.3 million passengers).
- The **Optimal Scenario** assumes that the redistribution of intercontinental traffic originated in European core airports affects 35.0% of intercontinental traffic nowadays originated in TEN-T Core Network airports, meaning that 110.2 million passengers would be redirected to more favourable airports by 2034.

Rijnmond Region (Netherlands), in which a pilot CCS facility was planned, calculated that it would be possible to capture and store up to 20 million tons of carbon emissions from the Rotterdam region annually for only 24 euro per ton of CO₂". <http://www.theoildrum.com/node/6409>

It is considered that the rebalance of passengers between airports in Europe takes place as follows: 50% of final estimation on traffic's shift is achieved by 2024, and 100% achievement in 2034.

- **CN37 scenario:** average annual net benefits¹⁰⁸ in fuel consumption, travel time and GHG emissions worth €910 million (€499 million savings in operational costs, €426 million savings in travel time, €32 million savings in CO₂ spared emissions, €48 million transaction costs). For the overall 20 years period, total benefit would be €18,2 billion.
- **Optimal scenario:** average annual net benefits¹⁰⁹ in fuel consumption, travel time and GHG emissions worth €1,820 million (€997 million savings in operational costs, €853 million savings in travel time, €65 million savings in CO₂ spared emissions, €96 million transaction costs). For the overall 20 years period, total benefit would be €36,400 million.

Table 3 Yearly savings derived from air transport rebalance in Europe, and NPV totals and yearly average (in million euros and discount rate 4%)

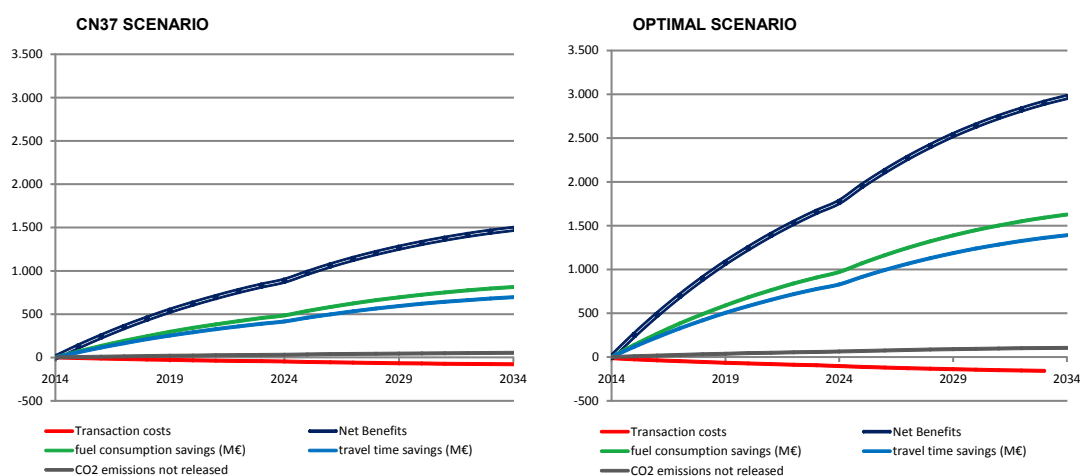
		Discount Rate		4%							
		Transaction costs		5%							
CN37 Scenario							OPTIMAL Scenario				
Air traffics (passengers)		fuel consumption savings (M€)	travel time savings (M€)	CO2 emissions not released	transaction costs	Net benefits	fuel consumption savings (M€)	travel time savings (M€)	CO2 emissions not released	transaction costs	Net benefits
2014	170,263,721	0		0	0	0	0		0	0	0
2015	178,815,511	75	64	5	-7	136	149	128	10	-14	273
2016	187,367,300	149	128	10	-14	273	299	256	19	-29	545
2017	195,919,090	224	192	15	-22	409	448	383	29	-43	818
2018	204,470,879	299	256	19	-29	545	598	511	39	-57	1,091
2019	213,022,669	374	320	24	-36	682	747	639	49	-72	1,363
2020	221,574,459	448	383	29	-43	818	897	767	58	-86	1,636
2021	230,126,248	523	447	34	-50	954	1,046	895	68	-100	1,909
2022	238,678,038	598	511	39	-57	1,091	1,196	1,023	78	-115	2,182
2023	247,229,827	673	575	44	-65	1,227	1,345	1,150	88	-129	2,454
2024	255,781,617	747	639	49	-72	1,363	1,495	1,278	97	-144	2,727
2025	261,683,797	858	734	56	-82	1,565	1,716	1,467	112	-165	3,131
2026	267,585,976	969	828	63	-93	1,767	1,937	1,657	126	-186	3,534
2027	273,488,156	1,079	923	70	-104	1,969	2,159	1,846	141	-207	3,938
2028	279,390,335	1,190	1,017	78	-114	2,171	2,380	2,035	155	-228	4,341
2029	285,292,515	1,301	1,112	85	-125	2,372	2,601	2,224	169	-250	4,745
2030	291,194,695	1,411	1,207	92	-135	2,574	2,822	2,413	184	-271	5,149
2031	297,096,874	1,522	1,301	99	-146	2,776	3,044	2,603	198	-292	5,552
2032	302,999,054	1,632	1,396	106	-157	2,978	3,265	2,792	213	-313	5,956
2033	308,901,233	1,743	1,490	114	-167	3,180	3,486	2,981	227	-335	6,359
2034	314,803,413	1,854	1,585	121	-178	3,381	3,707	3,170	241	-356	6,763
NPV		9,974	8,528	650	-958	18,194	19,947	17,056	1,299	-1,915	36,387
Average yearly net savings		499	426	32	-48	910	997	853	65	-96	1,819

Source: MCRIT

¹⁰⁸ Benefits are determined as economic savings derived from reductions in travel time, operational costs and spared GHG emissions minus transaction costs. All yearly savings and costs transferred to 2014 discounted (Net Present Value - NPV) considering a discount rate of 4% (yearly depreciation).

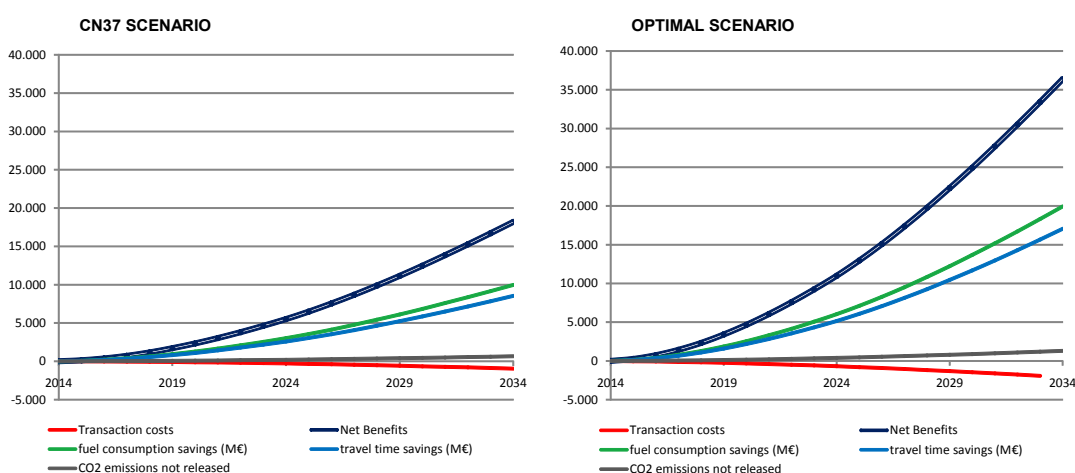
¹⁰⁹ Benefits are determined as economic savings derived from reductions in travel time, operational costs and spared GHG emissions minus transaction costs. All yearly savings and costs transferred to 2014 discounted (Net Present Value - NPV) considering a discount rate of 4% (yearly depreciation).

**Graphic 2 Yearly evolution 2014-2034 of air savings in NPV
(in million euros, discount rate 4%).**



Source: MCRIT

**Graphic 3 Cumulated evolution 2014-2034 of air savings in NPV
(in million euros, discount rate 4%).**



Source: MCRIT

To illustrate the magnitude of such savings in politically meaningful terms, this report has considered the TEN-T investments allocated to the maritime and the air sectors¹¹⁰ as reference for the comparison of the magnitude of total savings. TEN-T investments cannot be considered as a necessary cost for the completion of the Single Market because they will be carried out anyway, regardless of the successful completion or not of the

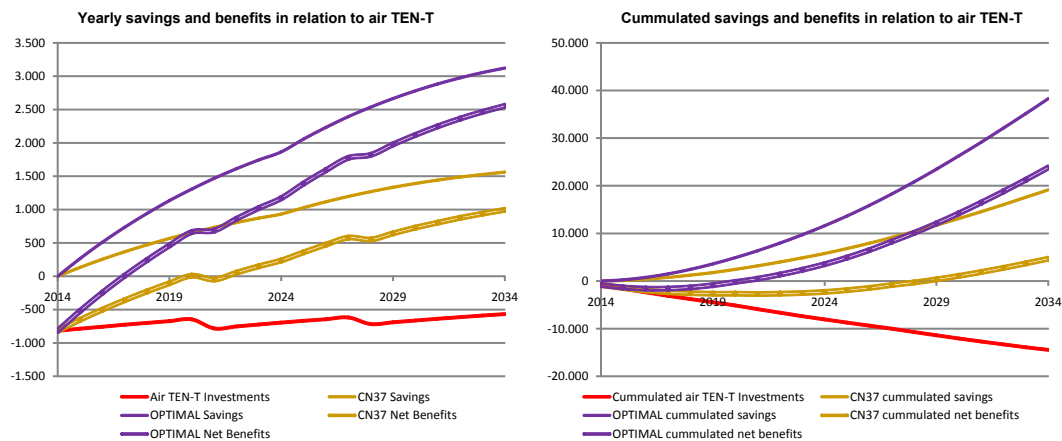
¹¹⁰ Estimates based on Steer Davies Gleave (2011) *Mid-term evaluation of the TEN-T Programme 2007-2013*, EC DG Move, EC 2010, and future budget allocations 2014-2020 as foreseen in the Connecting Europe Facility (CEF) Regulation 1316/2013, and its former proposal presented in 2011 (COM(2011)665).

Single Market, despite the fact that they may positively contribute to the rebalance of traffics (e.g. with ports' capacity increases, rail connections' upgrades...). But by contrast, they provide a good order of magnitude of the size of savings.

TEN-T investments in the air sector are considered as €850 million in the current 2014-2020 budgetary period, €1,070 million for the 2021-2027 budgetary period, and €1,290 million in the 2028-2034 budgetary period¹¹¹.

If the above values are considered as reference, the IRR of such investments based on the savings presented above would be 11.8% for the CN37 scenario and 32.6% for the Optimal Scenario. These results mean that savings deriving from the completion of the internal market would be large enough to justify investments of a size comparable to the air TEN-T budget.

Graphic 4 Yearly and cumulated NPV savings and benefits in relation to air TEN-T (in million euros, discount rate 4%).



Source: MCRIT

¹¹¹ These estimates correspond to: €850 million per year investments derived from available Connecting Europe Facility budget (CEF), considering current capacity of EU funding to mobilise public and private capital in Member States. €1,070 million per year investments correspond to the budget in the initial proposal of the CEF by the EC in 2011, before parliamentary debate; €1,290 million represents a proportional increase for the next period.

2. Cost of Non-Europe on Maritime Transport

Historically, Transatlantic routes have been prominent, but if current trends persist, the Suez based traffic will increase. European transport policy can be adapted to this trend and, in order to maximise the economic and external benefits, promote a more balanced distribution of entry and exit ports.

Major ports in Europe are located in the North Atlantic since the 19th century, when the major maritime routes linked Northern Europe with North America. These ports, mostly owned by local institutions, are competitively managed, have good infrastructure and important expansion plans¹¹². Being located in the more industrialised area of Europe, they enjoy high economies of scale that compensate for their distant location from current major maritime routes.

During the last twenty years, emerging Asian economies have completely redefined world maritime trade and today trade between Europe and North-America amounts to a quarter in relation to trade with Asia.

The route from the Far East to the centre of Europe passes today through the major Northern European ports of Rotterdam, Antwerp or Hamburg (75% of total freight passing Suez is bound to the European northern rim), using big containerships (of more than 10,000 TEU) and railways from the port to the hinterland region. The alternative route through any Mediterranean port is on average 15% shorter than through the north of Europe, and therefore would represent net savings in terms of resources consumed (e.g. fuel, vessel operation, time...) and a significant reduction in environmental impacts. The preference for the routes using Northern ports, instead of using Southern ports with shorter routes can be explained by different factors.

First, the relatively low level of traffic that concentrates on Mediterranean ports implies using smaller and slower container vessels (with higher costs and CO₂ emissions per transported ton) and often moving via roads to the hinterland.

Also, the price charged by using the northern route is usually similar to that of the Mediterranean port (e.g. €2,500 /container from Shanghai to Rotterdam, and the same price to Trieste, Genoa or Marseille even though the trip is on average 15% longer through Rotterdam). On the other hand, the inland trip usually uses more rail services in the North (due to better rail infrastructure and services) and in the case of road usage the price per km

¹¹² - Port of Rotterdam. Present capacity 15MTEU. With the completion of Maasvlakte-2 the capacity will be around 32MTEU in 2020

- Port of Antwerp. Present capacity 15MTEU. No substantial enlargement foreseen in the short term.

- Port of Hamburg. Present capacity 10MTEU. With the completion of several projects, the capacity is expected to be 18MTEU in 2020

- Port of Bremerhaven. Present capacity 7MTEU. Plans to increase capacity to 9MTEU in 2020

- Port of Le Havre. Present capacity 4MTEU. With the completion of Porte Océane the capacity will be around 6MTEU in 2020

in the North tends to be lower than in the South as the concentration of loads in the North allows avoiding empty returns by truck.

At global level, distribution of port traffic has adapted to the changing maritime trade patterns. In the USA, ports in the Pacific are growing faster than ports in the Atlantic due to the increase in exchanges USA-Asia against a low growth or even stagnation of USA-Europe traffic.

Illustration 2 Map of maritime imports/exports in European ports for the baseline scenario, represented in container traffic (2014)

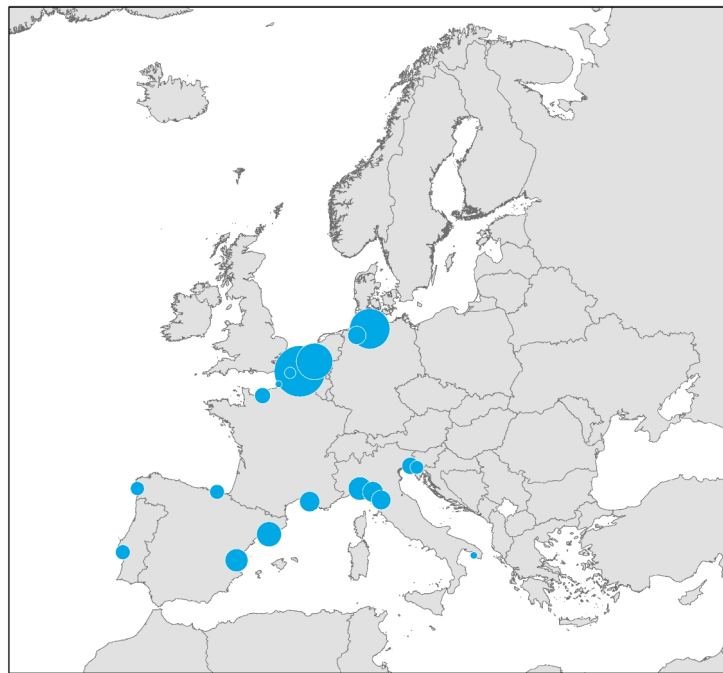


Figure 1: Key indicators in the initial situation (2014)

Intercontinental Transport. Annual Indicators	Present situation (2014)
Total intercontinental transport (Mton-km)	2,801,182
Road and rail transport (Mton-km)	97,439
Maritime transport (Mton-km)	2,703,743
Total transport fuel consumption (Mton)	15.9
Fuel consumption inland transport (Mton)	0.8
Fuel consumption maritime transport (Mton)	15.2
Total transport emissions (Mton CO ₂)	50.1

Intercontinental Transport. Annual Indicators	Present situation (2014)
Emissions inland transport (Mton CO ₂)	2.5
Emissions maritime transport (Mton CO ₂)	47.6
Total transport cost (€ million)	21,080
Inland transport cost (€ million)	4,872
Maritime transport cost (€ million)	16,208
Total CO ₂ emissions cost (€ million)	270
Total costs (€ million)	21,350

A gradual rebalancing of the trade between Northern and Southern ports will make European transport more cost-effective by reducing congestion on the transport system of the northern rim and by shortening the average trip distances. For this to happen, a number of changes in European regulations and policies are needed, as discussed in the previous chapters.

As for the air transport sector, we estimate the economic impact of the likely redistribution of trade among European ports by considering the potential savings on energy consumption and reduced GHG emissions.

The calculations are based on a number of conservative assumptions, based on most recent data available that are further detailed in annex.

Table 4 Main assumptions considered

Topic	Assumption	Reference/Rationale
Intercontinental maritime traffic growth	8% yearly 2014-2024 6% yearly 2024-2041	Based on Maritime traffic forecast 2010-2030 made by Hamburg Institute of International Economics ¹¹³
Distribution of intercontinental traffics on European ports	Baseline assumes current maritime port structure. Optimal	Modelling by SIMPORT Freight Transport model ¹¹⁴ (Barcelona

¹¹³ HWWI

http://www.hwwi.org/fileadmin/hwwi/Publikationen/Partnerpublikationen/Berenberg/Strategy_2030_Maritime_Trade_and_Transport_Logistics.pdf

¹¹⁴ SIMPORT, a transport model based on TRANSTOOLS networks (road, rail and inland waterways) and completed with worldwide maritime shipping lines, has been used to assign the maritime trade volumes in the European transport network. Shipping lines are obtained from Alphaliner <http://www.alphaliner.com/>, an online database with the worldwide regular container shipping services. Road, rail and inland waterway networks (<http://energy.jrc.ec.europa.eu/transtools/>) include data of each link in the network such as

Topic	Assumption	Reference/Rationale
(maritime and inland legs)	scenario assumes growth of those ports, which allow to minimise global transport costs provided that inland and maritime costs become harmonised across Europe (shortest cost path).	Port Authority 4 step model of ports hinterland and foreland in Europe).
Modal split of inland traffics between ports and hinterlands	70% rail 30% road	Estimation based SIMPORT model
Inland transport cost	€0.050 per tonne·km	Estimate based on Korniek et Sourdin (2009) ¹¹⁵ , and iContainers.com ¹¹⁶
Maritime transport cost	€0.006 per tonne·km	Estimate based on Korniek et Sourdin (2009), and iContainers.com
CO ₂ emissions	Inland leg, 25,4 gCO ₂ /tonkm Maritime leg, 17,6 g CO ₂ /tonkm	Estimation based on EcoCalculator of Barcelona Port Authority ¹¹⁷
Price of CO ₂	€20 per tonne CO ₂	Estimated cost of Carbon Capture and Storage (CSS) technologies ¹¹⁸
Transaction costs	5%	Aligned with “cost of non-Europe” studies for road and rail sectors
Achievement of optimisation savings over time	It is defined by periods. 0% of achievement in 2014 75% of achievement in 2024 Full achievement in 2034 (100%)	Own assumption, based on a gradual rebalancing of intercontinental services among hubs
Discount rate for NPV	4%	Aligned with “cost of non-Europe” studies for road and rail sectors
Evaluation period	20 years	Aligned with “cost of non-Europe” studies for road and rail sectors

Source: MCRIT

speed, typology, capacity, or number of lanes/tracks. The model is calibrated for the year 2010. The relative attractiveness of the ports is calibrated by using a transport cost function that is included in a logit formulation. After the calibration process the total volume going through each port for every external region of the world is the same as the one given by the Eurostat statistics. The global origin-destination flows are finally assigned to the transport network .

¹¹⁵ J.Korniek et P.Sourdin (2009), Maritime Transport Costs and their Impact on Trade <http://www.etsg.org/ETSG2009/papers/korinek.pdf>

¹¹⁶ iContainers is the lead on-line international transport firm in Spain. <http://www.icontainers.com/>

¹¹⁷ The following unit emission factors per TEU and per mode are considered, based on the EcoCalculator: Road: 0,612 gCO₂/TEU·km; Rail: 0,101 gCO₂/TEU·km; Maritime: 0,176 gCO₂/TEU·km. It is assumed an average weight of 10tons per TEU <http://planol.portdebarcelona.cat/ecocalc/index.html?idioma=2>

¹¹⁸ see footnote 107.

Three scenarios are considered in the evaluation:

- The **Baseline scenario** is the continuation of the current situation for the next decades.
- In the **Optimal Scenario**, all maritime container flows between EU and the world are reassigned to ports based on minimising the costs, assuming uniform transport costs in all of Europe due to increase in competitiveness and the construction of the essential infrastructure (e.g. rail accesses to ports). A requirement for achieving this scenario is the full internalisation of environmental costs, as this would incentivise the use of shorter transport routes. This is the ideal and less likely scenario in the short term, as it requires a major change in the logistic chains of the shipping companies as well as major investments in hinterland infrastructures.
- The **Improved/Half Scenario** is a mid-point between the base and the optimal scenarios, where only half of the flows are rerouted to the optimal logistic chain. This would represent a scenario where harmonisation of transport costs thanks to increased competitiveness and infrastructure development is not totally complete.

Table 5 Yearly savings derived from maritime transport rebalance in Europe, and NPV totals and yearly average
(in million euros and discount rate 4%)

Discount Rate	4%
Transaction costs	5%

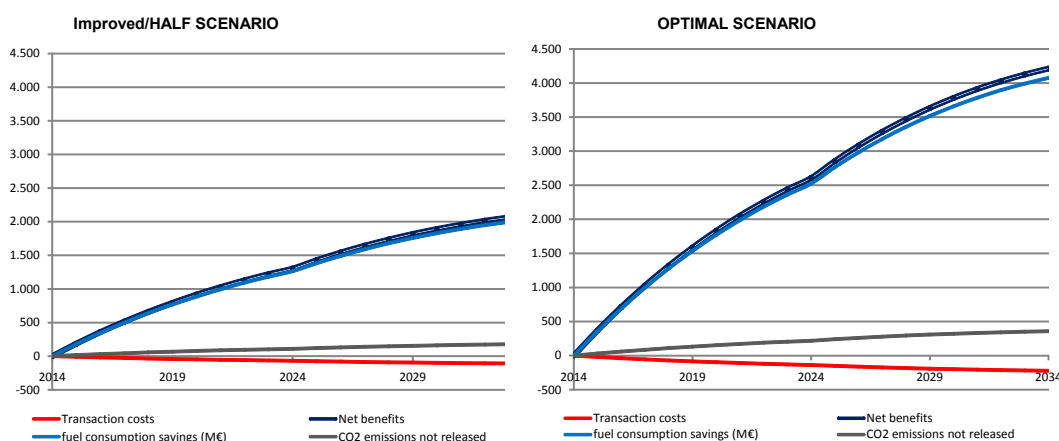
	Freight traffics (in million ton km)	Improved/Half Scenario					OPTIMAL Scenario				
		% of inland transportation (rail+road) / maritime in ton-km					% of inland transportation (rail+road) / maritime in ton-km				
		fuel consumption savings (M€)	CO2 emissions not released	Transaction costs	Net benefits		fuel consumption savings (M€)	CO2 emissions not released	Transaction costs	Net benefits	
2014	2,801,181.7	3.6%	0	0	0	0.0	3.6%	0	0	0	0.0
2015	3,078,892.5	3.7%	194	17	-11	200.7	3.8%	389	34	-21	401.4
2016	3,356,603.3	3.7%	389	34	-21	401.4	3.9%	777	68	-42	802.7
2017	3,634,314.0	3.8%	583	51	-32	602.0	4.1%	1,166	101	-63	1,204.1
2018	3,912,024.8	3.8%	777	68	-42	802.7	4.2%	1,555	135	-84	1,605.5
2019	4,189,735.6	3.9%	972	84	-53	1,003.4	4.4%	1,944	169	-106	2,006.8
2020	4,467,446.4	4.0%	1,166	101	-63	1,204.1	4.5%	2,332	203	-127	2,408.2
2021	4,745,157.1	4.0%	1,361	118	-74	1,404.8	4.7%	2,721	236	-148	2,809.5
2022	5,022,867.9	4.1%	1,555	135	-84	1,605.5	4.8%	3,110	270	-169	3,210.9
2023	5,300,578.7	4.1%	1,749	152	-95	1,806.1	5.0%	3,499	304	-190	3,612.3
2024	5,578,289.4	4.2%	1,944	169	-106	2,006.8	5.1%	3,887	338	-211	4,013.6
2025	5,999,610.4	4.2%	2,214	193	-120	2,286.1	5.2%	4,427	386	-241	4,572.3
2026	6,420,931.3	4.2%	2,484	217	-135	2,565.5	5.2%	4,967	434	-270	5,130.9
2027	6,842,252.3	4.2%	2,754	241	-150	2,844.8	5.3%	5,507	482	-299	5,689.6
2028	7,263,573.2	4.3%	3,023	265	-164	3,124.1	5.4%	6,047	530	-329	6,248.2
2029	7,684,894.2	4.3%	3,293	289	-179	3,403.4	5.4%	6,587	578	-358	6,806.8
2030	8,106,215.1	4.3%	3,563	313	-194	3,682.7	5.5%	7,127	626	-388	7,365.5
2031	8,527,536.1	4.3%	3,833	337	-209	3,962.1	5.5%	7,667	674	-417	7,924.1
2032	8,948,857.0	4.3%	4,103	361	-223	4,241.4	5.6%	8,207	723	-446	8,482.8
2033	9,370,178.0	4.4%	4,373	385	-238	4,520.7	5.7%	8,747	771	-476	9,041.4
2034	9,791,498.9	4.4%	4,643	409	-253	4,800.0	5.7%	9,286	819	-505	9,600.1
NPV											
		25,452	2,227	-1,384	26,295		50,904	4,454	-2,768	52,591	
Average yearly net savings (discounted)											
		1,273	111	-69	1,315		2,545	223	-138	2,630	

Source: MCRIT

It is considered that the rebalance of freight transport between ports in Europe takes place for all scenarios as follows: 75% of objectives set up by scenarios are accomplished by 2024, and full achievement in 2034.

- **Improved/Half scenario:** the scenario supposes average annual net benefits¹¹⁹ in fuel consumption and GHG emissions worth €1,315 million (€1,273 million savings in operational costs, €111 million savings in CO₂ spared emissions, €69 million transaction costs). For the overall 20 years period, total benefits would amount to €26,300 million.
- **OPTIMAL scenario:** the scenario supposes average annual net benefits¹²⁰ in fuel consumption and GHG emissions worth €2,630 million (€2,545 million savings in operational costs, €222 million savings in CO₂ spared emissions, €138 million transaction costs). For the overall 20 years period, total benefits would amount to €52,600 million.

**Graphic 5 Yearly evolution 2014-2034 of maritime savings in NPV
(in million euro, discount rate 4%).**

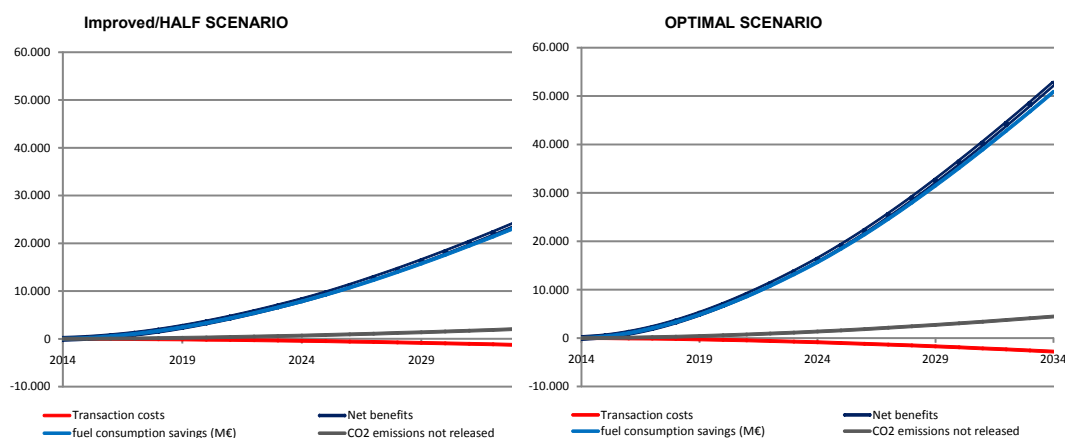


Source: MCRIT

¹¹⁹ Benefits are determined as economic savings derived from reductions in travel time, operational costs and spared GHG emissions minus transaction costs. All yearly savings and costs transferred to 2014 discounted (Net Present Value - NPV) considering a discount rate of 4% (yearly depreciation).

¹²⁰ Benefits are determined as economic savings derived from reductions in travel time, operational costs and spared GHG emissions minus transaction costs. All yearly savings and costs transferred to 2014 discounted (Net Present Value - NPV) considering a discount rate of 4% (yearly depreciation).

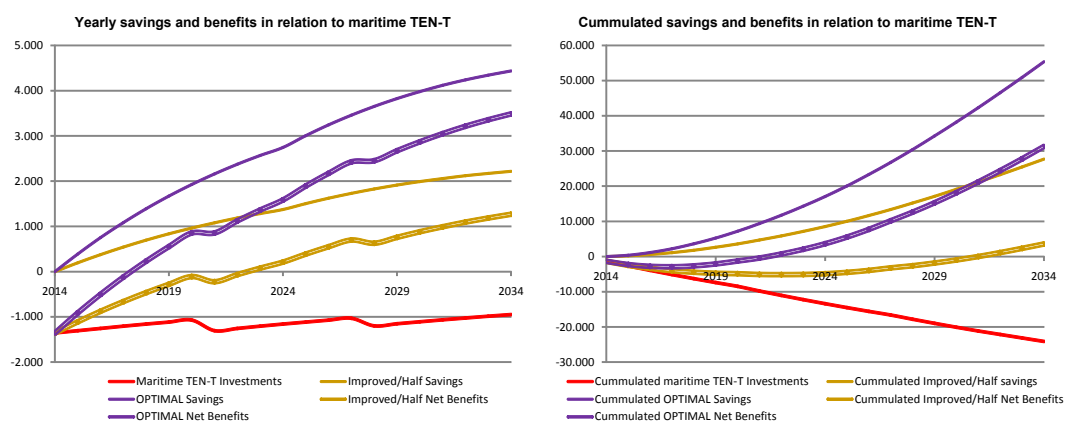
**Graphic 6 Cumulated evolution 2014-2034 of maritime savings in NPV
(in million euros, discount rate 4%).**



Source: MCRIT

TEN-T investments in the maritime sector are considered as €1,411 million in the current 2014-2020 budgetary period, €1,786 million for the 2021-2027 budgetary period, and €2,161 million in the 2028-2034 budgetary period¹²¹.

If these hypothetical investments were considered the IRR of such investments based on the savings presented above would be 8.0% for the Improved/Half Scenario and 28.2% for the Optimal Scenario. These results mean that savings deriving from the completion of the internal market would be large enough to justify investments of a size comparable to the **maritime** TEN-T budget.



¹²¹ These estimates correspond to: €1,411 million per year investments derived from available Connecting Europe Facility budget (CEF), considering current capacity of EU funding to mobilise public and private capital in Member States; €1,786 million per year investments correspond to the budget in the initial proposal of the CEF by the EC in 2011, before parliamentary debate; €2,161 million represents a proportional increase for the next period.

V. Assessment by stakeholders

The perception of the “costs of non-Europe” in relation to transport is diverse across different stakeholders, sometimes even contradictory, given their differing interests.

A methodology for the analysis of impacts of transport policy and transport projects across stakeholders was proposed by the European Bank of Investment in 2005, with the publication of the Railway Project Appraisal Guidelines (RailPAG, EIB 2005); the method is based on a synthesised stakeholder-effects matrices (SE) discussing the economic and financial flows generated by transport investments across stakeholders, shedding light on the direct and indirect impacts benefitting or disadvantaging each of them.

Five main dimensions for stakeholders are proposed, namely the user dimension (traveller/shipper), the operator dimension (service provider), the government dimension (executive), the regulator dimension (legislative), and the external dimension or the vision of non-users (externalities, environmental impacts). Each of these dimensions responds to different specific issues, reflecting the variety of interests of involved stakeholders, but the set of criteria includes in any case the aim for seamless travel, efficient transport systems, social profitability of investments, respect for the legality in force, the possible need for ad hoc approaches, and the minimisation of externalities of transport.

- *Users* tend to obtain the benefits of a transport project not included in the cash flows: time savings, safety, reliability. Users being usually poorly organised tend to have a modest influence in decision-making, their interests being mostly defended by the operators, public administrations, governments, and trade unions.
- Competing *operators* try to obtain the best deals from investments and policies, to the extent that they reduce transport costs or create new business opportunities, and will expect new solutions not to bring in additional organisational difficulties.
- The tendency of *governments* to look at their own financial interests should not detract from their ultimate goal, which is to promote the interests of society at large. Their ultimate mission should be to obtain a maximum level of social benefit for a minimum level of investment. The distribution of costs and income among different administrative levels is politically sensitive and an essential component of the decision-making process.
- The *regulator* is an important player in the transport system, being the enabler of transport practices, and the ultimate arbiter.
- *Non-users* are essentially affected by externalities, notably environmental and social (noise, pollution, landscape impact). These are not easy to quantify but can have an important weight in decision-making. The opposition of non-users concerned about the external impacts of projects can be an important reason for blockage and should not be underestimated.

The following tables analyse advances in the regulatory framework as perceived by main European stakeholders.

AIR	Market opening to global competition	Completion of the internal market	Antitrust regulation	Full internalisation of externalities
Travellers	+++	+++	+++	-
Non-traveller Citizens	+	+	+	+++
Labour Associations	--	--	--	-
Service Operators: Flag carriers	---	-	--	--
Service Operators: LCC	++	+++	++	---
Service Operators: Charter	+	+++	+	---
Service Operators: Cargo	-	++	+	---
ANSPs (air traffic management)	-	--	--	-
Airport Managers	+++	++	+	-
Airport Owners	+++	++	+	-
Aeronautical Industry	+	+	---	+
"Hub regions"	--	-	+	+
"2nd Tier Regions"	+++	+++	++	+++
Member States	-	+	+	+
European Institutions	+	+++	++	++
UN and International Organisations	+++	+	+	++

WATER	Market opening to global competition	Completion of the internal market	Antitrust regulation	Full internalisation of externalities
Freight transport users	+++	+++	+++	-
European citizens (non-users)	+	+	+	+++
Labour Associations	--	---	-	+
Service Operators: Large Shipping Companies	-	--	---	---
Service Operators: Small and medium sized shipping companies	-	-	+++	---
Service Operators: Cruise operators	-	-	-	---
Service Operators: Ferry operators	-	-	-	---
Service Operators: Terminal operators	+++	+++	+	-
Port Authorities	+++	++	+	-
Port Owners	+	+	+	-
Shipbuilding industry	-	+	-	++
"Hub regions"	--	-	+	++
"2nd Tier Regions"	+++	+++	++	+++
Member States	++	+++	+	+
European Institutions	++	+++	+++	+++
UN and International Organisations	+++	++	++	+

Transport users (air passengers and freight exporters/importers) perceive enhanced regulation as an opportunity to benefit from better services (e.g. more frequent, more specialised by type of transport and destination) and lower fares. There is empiric evidence that in Europe more liberalisation and prevention of monopolies has resulted in better service both in the air and maritime sectors.

Non-users benefit from regulation if external costs are internalised (less noise, less pollution, lower environmental footprint), and transport companies become increasingly effective in reducing their environmental footprint. In 2012, Directive No 2008/101 set to include aviation emissions in the EU ETS. But for global aviation emissions to be included in the EU ETS scheme, more time was necessary for negotiations to reach a conclusion under the auspices of the ICAO. In 2012 EU ETS requirements were suspended for flights to and from non-European countries. This means that meanwhile potential positive impacts of the regulation are not being capitalised. For the period 2013-2016 the legislation has also been amended so that only emissions from flights within the EEA fall under the EU ETS. Exemptions for operators with low emissions have also been introduced.

Labour associations oppose liberalisation because, in many cases, liberalisation implies more competition in the management of port and airport infrastructures. Working conditions and acquired labour rights under the previous status quo may be threatened (e.g. two different packages by the Commission on port liberalisation have been overturned mostly because they allowed self-handling of cargo by liner shippers; the approval of the Better Airports package is also being delayed for the lack of a common agreement at Council level on self-handling of ground services by air carriers). Any new legislation should take into account these concerns and address the social costs of liberalisation.

Service operators with market dominance (e.g. fair flag carriers, main shipping corporations) may perceive regulation as a risk threatening their position, and their competitiveness against non-European operators (e.g. the three largest European maritime companies are involved in a merger process, accepted by American authorities but recently rejected by Chinese maritime authorities). Smaller carriers (e.g. ferry operators) are at risk from increased competition within Europe, also from other transport modes.

New entrants on service operations (e.g. LCC, medium sized shippers) are likely to benefit from liberalised markets based on increasingly balanced and fair competition grounds.

Air Navigation Service Providers (ANSPs) are expected to be reluctant to market liberalisation, as new regulation may force them to restructure their business structures.

Infrastructure managers are expected to benefit from market openings, as this is likely to increase the size of their market. However antitrust regulation may suppose a risk to long-time established activities and governance structure for specific service providers (e.g. ground handling at airports, land services at ports).

The aircraft/vessel industry is likely to benefit from regulation promoting increased traffics, but increased control on antitrust activities, cross-subsidies and public funding may be a risk (e.g. the Airbus and Boeing cases at the WTO exemplify the control over direct / indirect public funding of the aerospace industry).

Regions with a dominant market role (i.e. having a consolidated intercontinental hub) are likely to perceive regulation as a potential risk to the status quo, whereas second tier regions may perceive increased liberalisation as an opportunity to attract new entrant operators (e.g. Mediterranean ports for Asian traffics, secondary hubs for new intercontinental flights)

The Shipbuilding industry in Europe has suffered from competition from third countries in the last decades and it is today on a retroceding path. Market opening beyond the EU is considered as a potential threat.

The European Union institutions promote liberalisation aiming at enhancing the robustness of the internal market and providing fair grounds for competition, as stated by the articles 107 and 108 of the Treaty on the Functioning of the European Union. To face globalisation challenges more efficiently, there is a need to develop stronger common European Institutions and deepen the Single Market.

Conclusions

The development of a European Single Market is often presented as successful for most network industries. Regarding Air and Water Transport, there has been a clear opening of national markets to European competition, resulting in welfare increases both for producers and consumers, in terms of improved efficiency and enhanced consumer choice: more transport services are available now at lower prices, and often provided by new companies entering in the market.

In the Air Transport sector, the more obvious impact has been the increasing number of airports owned or managed by private and public-private partnerships, the development of Low Cost Carriers and the traffic increase in regional airports, as well as the mergers and new alliances formed by full service carriers. These impacts are however not changing the basic hub and spoke system.

The main areas where legislative gaps or implementation problems need to be further addressed in the Air Transport sector are the following:

- State direct aid to carriers and industry (and indirect aid through infrastructure investments, taxation framework, R&D contributions...);
- Public financing of service of general interest and clarification of SGEI criteria and competitive tendering;
- Right to establishment and competition on the provision of ground services at airports (airport regulation, ground handling);
- Access for carriers to airports on non-discriminatory terms (criteria for slot allocation and clarification of secondary slot trade);
- Integration of the European air traffic management;
- Opening of the European sky to third countries (7th and 8th freedom rights' agreements);
- Environmental externalities: emission's taxation;
- Airport planning, when infrastructure investments may create market distortions.

Previous studies have estimated certain impacts of a complete Single Market in the Air transport sector. According to Eurocontrol, the European system costs an additional €2-3 billion every year compared to other similar systems, namely in the US, due to the current fragmentation of the European air traffic management.

The "Open Skies Agreement" between Europe and the United States from 2008, is a first step in the process of liberalising Trans-Atlantic air transport, including access to domestic routes. The benefit of the establishment of a single aviation market between the EU and the US has been estimated by the European Commission at €12 billion over a 5 years period¹²², so about €2.4 billion per year.

¹²² Booz Allen Hamilton (2007), The Economic Impact of an Open Aviation Area between the EU and USA, Directorate General Energy and Transport, DGTREN, Brussels.

In the Maritime Transport sector, the impacts of liberalisation are less evident. On the one hand, deep-sea transport was always a global market, dominated by large shipping companies and container terminal operators; on the other hand short-sea shipping has not managed to capture the traffic from roads to the extent it was expected. The entry and exit maritime gateways remain the same, since Southern ports have not been competitive enough to capture a part of the growing traffic from Asia.

Main areas where legislative gaps or implementation problems need to be tackled are the following:

- State direct aid to terminal managers and maritime companies (indirect aid through infrastructure investment, taxation, R&D);
- Port Regulation (liberalisation and transparency, cargo handling...);
- Reducing reporting formalities, removing administrative and custom costs (via initiatives like: "European Maritime Transport Space Without Barriers", "Blue Belt", "eCustoms");
- Association of non-European ports to Motorways of the Seas;
- Environmental externalities: emission's taxation;
- Block exemptions for Shipping Consortia (antitrust regulation);
- Port planning, when infrastructure investments may create market distortions.

According to different impact assessment studies developed by the European Commission, full port competition and reinforced port authorities would generate savings in port costs of the order of €1 billion per year. It would bring additional short sea shipping traffic of around 13.3 billion tonne-kilometres (an increase of up to 6.5% on a number of routes). This will lead to increased port activities, which will create direct and indirect port-related jobs.

The elimination of administrative procedures in ports, including customs, has been estimated by the European Commission at about €2.1 billion within the time frame 2009-2040, so approximately €70 million per year.

Inland Waterways are today fully liberalised, including cabotage rights. The Rhine was already liberalised since 19th century, as well as international shipping on the Danube, and since the 2000s, all inland waterways are open to competition. Areas in which problems remain are the following:

- Administrative and regulatory barriers, due to harmonisation gaps (in vessel insurance, ship certification, mutual recognition of boat masters' certificates);
- Missing capacity regulation (due to the tendency to overcapacity);
- Environmental externalities: emission's taxation.

Neither Air nor Water Transport apply taxes on CO₂ emissions. The attempts to introduce an Environmental Trade for Emissions on the Air sector, for carriers taking off or landing at European airports, failed so far, due to concerns to avoid damaging the

competitiveness of European carriers in relation to non-European carriers. It is clear that environmental taxes have to be harmonised at global level.

The gradual internalisation of environmental externalities is likely to result in dramatic changes in the industry, making carriers more sensitive to shortening the lengths of their services, both in the air and maritime sectors. This in turn will contribute to a more efficient geographic distribution of hubs over the continent.

Air and Maritime Transport operate at a global scale. In the last two decades, parallel to the gradual development of the European Single Market, the world has experienced the rapid development of Asia, in particular China and, to a lesser extent India. This has significantly affected global trade. Opening European markets to the rest of the world is a major legislative challenge for the coming years.

Complementary to existing assessment studies, which have evaluated the benefits of legislation that has been passed but where difficulties of implementation persist, and new legislation currently being discussed, this research paper has attempted to estimate the strategic “cost of non-Europe” of the non-completion of the Single Market in Transport.

The fundamental assumption in our assessment is that a European liberalised and fully integrated market would tend not just to optimise the actual organisation of transport services but to move towards a more balanced distribution of entry and exit flows, a goal which is stated in the 2011 EC White Paper.

Under realistic assumptions, we estimate¹²³:

For the Air Transport Market:

- Average yearly benefits would be at least €910 million under a conservative scenario
 - Average yearly savings on operational costs would be €499 million
 - Average yearly savings on travel time would be €426 million
 - Average yearly savings on spared GHG emissions would be €32 million
- Total benefits cumulated in 20 years would amount to between €18.2 billion (conservative scenario) and €36.4 billion (optimistic scenario).

For the Maritime Transport Market:

- Average yearly benefits would be at least €1,315 million under a conservative scenario
 - Average yearly savings on operational costs would be €1,273 million
 - Average yearly savings on spared GHG emissions would be €111 million
- Total benefits cumulated in 20 years would amount to between €26.3 billion (conservative scenario) and €52.6 billion (optimistic scenario).

¹²³ All results presented under NPV, discount rate 4%.

If TEN-T investment costs were used as a reference to illustrate the relevance of savings derived from integration of the single market:

- **For the Air Transport Market:** the IRR of a hypothetical investment programme of the same size as the TEN-T in the air sector, that would provide the previously considered savings, would range between 11.8% and 32.6%, depending on the scenario.
- **For the Maritime Transport Market:** the IRR of a hypothetical investment programme of the same size as the TEN-T in the maritime sector, that would provide the previously considered savings, would range between 8.0% and 28.2%, depending on the scenario.

These results indicate that rebalancing intercontinental air and maritime traffics, as a result of the increasing liberalisation and harmonisation of European transport market as well as the internalisation of environmental costs, would itself justify economically the interest of the TEN-T investments, regardless of other important benefits TEN-T have for intra-European traffics.

The benefits from achieving these savings will be uneven across companies, groups and regions. Overall, transport users (passengers and stakeholders importing or exporting merchandises) will be the ones to mostly benefit from price reductions and more efficient services, but new entrants to the air and maritime markets are also likely to benefit from increased opportunities in a market with fairer competition conditions.

In environmental terms, the impact is expected to be very positive because of the reduction of emissions, particularly CO₂, resulting from shorter and more optimal travel routes and from the increased use of sustainable modes like rail (especially in the maritime sector, where substantial parts of the maritime leg could be transferred to rail).

In terms of territorial cohesion, the rebalancing of traffic flows will result in a redistribution of economic opportunities across Europe, with ports and airports located in the periphery of Europe benefitting most, due to their favourable location in relation to global traffics.

Therefore, our assessment confirms that the completion of the Single Market will favour *a more balanced distribution of entry and exit ports and airports, further adapting the geographic location of European gateways to global traffics*¹²⁴, as the European Transport White Paper (2011) states, and provides a realistic estimate of the savings that rebalancing European gateways may represent for the whole European economy.

¹²⁴ This geographic rebalancing of intercontinental ports and airports is already happening in North and South America, where ports on the Pacific are already capturing most of the traffic growth nowadays and/or have the largest expansion projects.

Annexes

Cost of Non-Europe for Air Transport: detailed hypotheses

Passenger flows

Base passenger flows are based on EUROSTAT statistics for extra-EU passengers per airport and world zone, for the year 2012 (data extracted in January 2014).

The forecast of air passenger trips for the short term (for the first 10 years) is based from the yearly world air traffic forecast by BOEING (Current Market Outlook 2013-2032¹²⁵). The forecast is done at the level of main global transport flows between macro regions (in annual growth rate of RPK). Beyond 2024, growth rates are laminated using more conservative hypotheses. Forecasts have been contrasted to Airbus's Global Market Forecast 2013-2032.

Table 6: Specific growth rates for trips to EU adopted per world zone.

	Annual Growth 2014-2024	Annual Growth 2024-2041
Africa	4,8%	2,4%
Middle East	4,8%	2,4%
North America	3,2%	1,6%
Northeast Asia	5,0%	2,5%
South America	4,8%	2,4%
South Asia	3,5%	1,8%
Southeast Asia	4,2%	2,1%
Within Europe	4,8%	2,4%

Source: MCRIT based on different sources (Boeing for 2014-2024).

This forecast is based on the correlation between economic growth and air traffic. Growth in air travel, measured in revenue passenger-kilometres (RPK), has historically outpaced economic growth, represented by GDP. At the global level, the relationship is $RPK(\text{growth}) = GDP(\text{growth}) + f(t)$ where $f(t)$ is a time-varying function that typically centres around 2 per cent. Studies suggest that as the relative openness of a country's bilateral air service rises from the 20th to the 70th percentile, the resulting increase in traffic can boost air travel demand by 30 per cent. Often, improved air services directly and indirectly stimulate economic growth, creating a virtuous circle that leads to further air transport

¹²⁵ http://active.boeing.com/commercial/forecast_data/index.cfm

growth, which in turn leads to added economic growth, and so on. Although individual regions may exhibit signs of slowing due to maturing markets, other regions continue or begin to grow vigorously. Current global percentages do not indicate that the world aviation market is nearing maturity in aggregate.

Passenger RPKs

The calculation of flying distances is done using a GIS model with the location of the main European airports (with at least 1 Million intercontinental passengers in 2010) and nodes representing the different geographical zones of the world (10 in total). This graph of air paths is used to select the nearest European airport to each zone outside EU.

It is assumed that on each airport, passengers originating in the hinterland of the airport will not change hub. No more than 50% of total passengers in a hub can be transferred to other European hubs.

For passengers changing intercontinental hub, it is assumed that the overall impact on total RPK and hours travelled is null. Longer paths to access new hubs are overall compensated by shorter paths for other airports. This hypothesis has been validated based on GIS analysis of intra-EU air legs of intercontinental flights.

Travel time

Reducing flight distance across Europe will impact on reduced travel times for passengers. Assuming an average aircraft speed of 885km/h¹²⁶, the total amount of hours saved on travel time can be determined.¹²⁷

The average value of travel time savings is assumed €26,3/pax hour. This value of travel time is obtained as a weighted average of tourist and business travel times. It is assumed that 60% of passengers are tourists and 40% are business passengers. Tourists logically have a lower value of travel time than business travellers.

Unit values of travel time per tourist and business passenger are based on the proposal by the HEATCO FP6 project (2006), co-financed by the EC, updated to 2012 euro values: €40,4/h per business passenger and €16,8/h per tourist. These values are in line with US DOT proposal (2011) of €40,3/h per business passenger and €22,5/h per tourist.

¹²⁶ Based on technical specifications by Airbus and Boeing on A330, A340, A380, B747, B767 and B777 (cruising speed)

¹²⁷ Hypotheses based on:

- IER (2006) Proposal for Harmonised Guidelines, deliverable 5 of HEATCO FP6 project (Developing Harmonised European Approaches for Transport.
- Costing and Project Assessment), co-financed by the EC. http://heatco.ier.uni-stuttgart.de/HEATCO_D5.pdf
- US Department of Transport (2011), Revised Governmental Guidance on Valuation of Travel Time in Economic Analysis. www.dot.gov/sites/dot.dev/files/docs/vot_guidance_092811c.pdf

Fuel consumption

Reducing flight distance across Europe will mainly impact on decreased fuel consumption, regarding aviation operational costs¹²⁸.

Average fuel costs for aviation are assumed at €0,0347 per RPK¹²⁹.

Emissions

Average emissions per RPK are assumed at 113g CO₂ / RPK¹³⁰.

Emissions costs are assumed at €20 per tonne CO₂. This cost is considered as an average between current € costs in the ETS and the cost of CCS technologies.

"In 2010, the price for a carbon credit lied between 12 and 18 euros per ton CO₂; the crisis impacted on the price of carbon credits, which by 2014 had dropped to approximately 5 euros per ton CO₂. The cost estimates from the IPCC for a pulverized coal power plant are shown to be between 30 to 70 dollars per ton CO₂ or 20 to 50 euros. In 2007, the environmental agency of the Rijnmond Region (Netherlands), in which a pilot CCS facility was planned, calculated that it would be possible to capture and store up to 20 million tons of carbon emissions from the Rotterdam region annually for only 24 euro per ton of CO₂". <http://www.theoil Drum.com/node/6409>

Reference TEN-T investments

As an order of magnitude, savings derived from liberalisation and redistribution of traffics have been contrasted in size with the programmed investments in European TEN-T air system.

To undertake this task, the TEN-T budget over the next 20 years has been estimated. The associated hypotheses to this budget are based on current TEN-T budget in airports (via the Connecting Europe Facility, CEF) and the observed capacity of EU funds to mobilise other resources, namely private capital, National funds, EIB loans included¹³¹.

¹²⁸ Hypotheses based on

- British Airways Annual Report and Accounts 2012
- IATA (2006) "Airline cost performance", (IATA Economic Briefing 5, 2006)
- £ to € exchange rates for 31/12/2011 and 31/12/2012 (www.xe.com)

¹²⁹ According to latest available British Airways accounts (year 2012), fuel consumption represented a 35,2% of total operating costs in 2012. In 2012, fuel costs amounted £3,7 billion for a total 126,4 billion RPK (158,2 billion ASK); in 2011, fuel costs amounted £3,2 billion for a total 117,3 billion RPK (150,1 billion ASK).

The average fuel costs 2012-2011 results on £0,0274 per RPK, in euros €0,0347 per RPK.

¹³⁰ Hypotheses based on LIPASTO Traffic Emissions Calculator¹³⁰

<http://lipasto.vtt.fi/yksikkopaastot/henkiloliikenne/ilmaliikenne/ilmae.htm>

¹³¹ Hypotheses based on

- Proposal of Regulation establishing a Connecting Europe Facility (COM(2011)665),
- Regulation establishing a Connecting Europe Facility (No 1316/2013),
- Regulation on TEN-T Guidelines (No 1315/2013),
- Transport White Paper (COM(2011)/0144)),

The available funds for the development of TEN-T Core Networks for the 2014-2020 period amount to €26.3 billion (EC budgetary instrument CEF, approved by the EP in 2013). For the period 2021-2027, the assumption is that available funds could be €31.7 billion (corresponding to the original CEF proposal by the EC in 2011). For the period 2028-2034, a proportional increase is considered.

Table 7 Investments on TENs 1993-2013 and hypothesis 2014-2034

	1993-1999	2000-2006	2007-2013	2014-2020	2021-2027	2028-2034
Total yearly cost (€ billion / year)	4.7	13.4	22.0	28.2	35.7	43.0
Total TEN-T investment (€ billion)	32.7	93.7	154.0	197.5	250.0	301.0
Communitary Grants	6.6	14.6	22.4	26.3	31.7	36.3
TEN-T Executive Agency	1.4	2.8	5.4	N/A	N/A	N/A
Cohesion Funds	3.8	7.0	12.3	N/A	N/A	N/A
ERDF	1.5	4.8	4.7	N/A	N/A	N/A
EIB loans	9.8	16.1	25.0	33.0	41.8	50.3
Other Resources (Member States)	16.2	63.0	106.6	138.2	176.5	214.4
% EU grants	20.3%	15.6%	14.6%	13.3%	12.7%	12.1%
% EIB loans	30.0%	17.2%	16.2%	16.7%	16.7%	16.7%
% Other Resources (National)	49.7%	67.2%	69.2%	70.0%	70.6%	71.2%
Yearly investment in the Air sector	N/A	0.40	N/A	0.85	1.07	1.29

Source: MCRIT based EC, SGD and ECORYS

Considering a capacity of EC grants (TEN-T EA, CF and ERDF together) to mobilise investments for transport infrastructure (national MS funding, EIB loans and private initiative together) at a rate of 1 to 7.5, the CEF can be estimated to have a capacity to generate investments within the 2014-2020 programming period of up to €197.5 billion. The 1 to 7.5 ratio represents an increase respect to the ratio estimated for 2007-2013 and the ratio observed during the period 2000-2006, justified in the increasing trend of participation of other resources by Member States, private capital (project bonds initiative) and loans by the EIB.

- Steer Davies Gleave (2010) "Ex-Post Evaluation of Cohesion Policy Programmes 2000-2006. WP5A-Transport" for EC DG Regio

Considering an allocation of investments to the air sector of 3%¹³² among projects supported by EU funds, the total investments dedicated to infrastructure in airports during the 2014-2020 programming period amounts to €5.9 billion, €850 million yearly. It is assumed that these investments are fully allocated to the airports integrated in the TEN-T Core Network. The total investments dedicated to infrastructure in airports after 2020 amount to €7.5 billion up to 2027, €1.070 million yearly, and €9.0 billion up to 2034, €1,290 million yearly.

Table 8: Contrast TEN-T investments

Period	Investment	Rationale
2014-2020	€850 yearly	Considering: CEF budget approved by EP in 2013 (€26.3 billion), 3% TEN-T budget allocation to air mode, and 7.5 private to public investment ratio.
2020-2027	€1,070 yearly	Considering: CEF budget proposed by EC in 2011 (€31.7 billion), 3% TEN-T budget allocation to air mode, and 7.9 private to public investment ratio.
2028-2034	€1,290 yearly	Considering: Same increases in budget between budgetary periods

Source: MCRIT based on different sources (EC, SDG)

¹³² According to Steer Davies Gleave (2010)'s Ex-post assessment of the Cohesion Policy programmes 2000-2006, total investments on transport infrastructure (TEN-T priority projects, other TENs and connections to TENs) backed up with ERDF funding allocated to the air mode amounted to €0,898billion, that represented a 3% of total funding available (€33,844 Bn). See table below.

Overall the ERDF allocated €123 billion of funding to Objective 1 and Objective 2 regions over the period 2000-2006 through 226 operational programmes. Transport measures were included in 154 operational programmes, and were assigned €34 billion, i.e. some 27.5% of the total ERDF allocation given to Objective 1 and Objective 2 programmes. 95% of the funds allocated to transport were given to 18 Member States.

Cost of Non-Europe for Air Transport: detailed results

Annual Performance Indicators

Performance indicators in 2014, 2024 and 2034 include transport production (RPK), fuel consumption, GHG emissions, economic costs and savings in relation to Baseline.

Table 9: Annual Performance Indicators for Baseline, CN37 and Optimal Scenarios

	2014			2024		
Annual indicators	Baseline	CN37	Optimal	Baseline	CN37	Optimal
Total transport (million RPK)	1,101,673.2	1,101,673.2	1,101,673.2	1,631,780.3	1,610,240.1	1,588,699.8
Total transport fuel consumption (Mton)	39.6	39.6	39.6	58.7	57.9	57.2
Total transport emissions (Mton CO ₂)	124	124	124	184	182	180
Total fuel cost (€ million)	38,228	38,228	38,228	56,623	55,875	55,128
Passenger time cost (€ million)	32,688	32,688	32,688	48,417	47,778	47,139
Total CO ₂ emissions cost (€ million)	2,490	2,490	2,490	3,688	3,639	3,590
Total costs (€ million)	73,406	73,406	73,406	108,728	107,292	105,857
Savings in relation to Baseline (€ million)	-	0	0	-	1,435	2,871
<i>Average savings per RPK (€)</i>	-	0.00000	0.00000	-	0.00089	0.00181
<i>Average savings per passenger and trip (€)</i>	-	0.0	0.0	-	5.6	11.2

		2034	
Annual indicators	Baseline	CN37	Optimal
Total transport (million RPK)	1,993,925.6	1,940,505.8	1,887,086.0
Total transport fuel consumption (Mton)	71.8	69.8	67.9
Total transport emissions (Mton CO ₂)	225	219	213
Total fuel cost (€ million)	69,189	67,336	65,482
Passenger time cost (€ million)	59,162	57,577	55,992
Total CO ₂ emissions cost (€ million)	4,506	4,386	4,265
Total costs (€ million)	132,858	129,298	125,739
Savings in relation to Baseline (€ million)	-	3,559	7,119
<i>Average savings per RPK (€)</i>	-	<i>0.00183</i>	<i>0.00377</i>
<i>Average savings per passenger and trip (€)</i>	-	<i>11.3</i>	<i>22.6</i>

Source: MCRIT

Yearly Savings, Costs and Benefits derived from liberalisation, and 2014-2034 aggregates

The results presented below include savings derived from reductions in fuel consumption, travel time, and unreleased GHG emissions. Transaction costs are considered as 5% of total savings. Net benefits are obtained from the subtraction of costs to savings, for each year. Net present values based on 4% discount rate.

All results presented in million euros.

Table 10: CN37 Scenario. Yearly Savings, Costs and Benefits derived from liberalisation, and 2014-2034 aggregates.

	Air traffic (passengers)	Fuel consumption savings (M€)	Travel time savings (M€)	CO ₂ emissions not released (M€)	Transaction costs (M€)	Net benefits (M€)
2014	170,263,721	0	0	0	0	0
2015	178,815,511	75	64	5	-7	136
2016	187,367,300	149	128	10	-14	273
2017	195,919,090	224	192	15	-22	409
2018	204,470,879	299	256	19	-29	545
2019	213,022,669	374	320	24	-36	682
2020	221,574,459	448	383	29	-43	818
2021	230,126,248	523	447	34	-50	954
2022	238,678,038	598	511	39	-57	1,091
2023	247,229,827	673	575	44	-65	1,227
2024	255,781,617	747	639	49	-72	1,363
2025	261,683,797	858	734	56	-82	1,565
2026	267,585,976	969	828	63	-93	1,767
2027	273,488,156	1,079	923	70	-104	1,969
2028	279,390,335	1,190	1,017	78	-114	2,171
2029	285,292,515	1,301	1,112	85	-125	2,372
2030	291,194,695	1,411	1,207	92	-135	2,574

	Air traffic (passengers)	Fuel consumption savings (M€)	Travel time savings (M€)	CO ₂ emissions not released (M€)	Transaction costs (M€)	Net benefits (M€)
2031	297,096,874	1,522	1,301	99	-146	2,776
2032	302,999,054	1,632	1,396	106	-157	2,978
2033	308,901,233	1,743	1,490	114	-167	3,180
2034	314,803,413	1,854	1,585	121	-178	3,381

NPV	9,974	8,528	650	-958	18,194
Average yearly net savings	499	426	32	-48	910

Source: MCRIT

Table 11: OPTIMAL Scenario. Yearly Savings, Costs and Benefits derived from liberalisation, and 2014-2034 aggregates.

	Air traffic (passengers)	Fuel consumption savings (M€)	Travel time savings (M€)	CO ₂ emissions not released (M€)	Transaction costs (M€)	Net benefits (M€)
2014	170,263,721	0	0	0	0	0
2015	178,815,511	149	128	10	-14	273
2016	187,367,300	299	256	19	-29	545
2017	195,919,090	448	383	29	-43	818
2018	204,470,879	598	511	39	-57	1,091
2019	213,022,669	747	639	49	-72	1,363
2020	221,574,459	897	767	58	-86	1,636
2021	230,126,248	1,046	895	68	-100	1,909
2022	238,678,038	1,196	1,023	78	-115	2,182
2023	247,229,827	1,345	1,150	88	-129	2,454
2024	255,781,617	1,495	1,278	97	-144	2,727
2025	261,683,797	1,716	1,467	112	-165	3,131
2026	267,585,976	1,937	1,657	126	-186	3,534
2027	273,488,156	2,159	1,846	141	-207	3,938
2028	279,390,335	2,380	2,035	155	-228	4,341
2029	285,292,515	2,601	2,224	169	-250	4,745
2030	291,194,695	2,822	2,413	184	-271	5,149
2031	297,096,874	3,044	2,603	198	-292	5,552
2032	302,999,054	3,265	2,792	213	-313	5,956
2033	308,901,233	3,486	2,981	227	-335	6,359
2034	314,803,413	3,707	3,170	241	-356	6,763
NPV		19,947	17,056	1,299	-1,915	36,387
Average yearly net savings		997	853	65	-96	1,819

Source: MCRIT

Illustration of the magnitude of savings from liberalisation by contrast with TEN-T investments

The scale of savings obtained from market liberalisation and integration is translated into politically meaningful terms.

The tables below include yearly savings derived from liberalisation, programmed TEN-T air investments (which for contrast purposes are in this exercise considered as hypothetical costs for the obtaining of savings), and the balance between savings and “costs” (associated to benefits for contrast purposes).

All values are expressed in million euros.

**Table 12: Contrast of savings from liberalisation with TEN-T budget.
CN37 and Optimal Scenarios.**

	Yearly savings derived from liberalisation (as determined in previous tables)		TEN-T air investments (associated to costs for contrast purposes)	Savings – Investments (associated to benefits for contrast purposes)	
	CN37	OPTIMAL		CN37	OPTIMAL
2014	0	0	-850	-850	-850
2015	144	287	-850	-706	-563
2016	287	574	-850	-563	-276
2017	431	861	-850	-419	11
2018	574	1,148	-850	-276	298
2019	718	1,435	-850	-132	585
2020	861	1,722	-850	11	872
2021	1,005	2,009	-1,070	-65	939
2022	1,148	2,296	-1,070	78	1,226
2023	1,292	2,583	-1,070	222	1,513
2024	1,435	2,871	-1,070	365	1,801
2025	1,648	3,295	-1,070	578	2,225
2026	1,860	3,720	-1,070	790	2,650
2027	2,073	4,145	-1,070	1,003	3,075
2028	2,285	4,570	-1,290	995	3,280
2029	2,497	4,995	-1,290	1,207	3,705

2030	2,710	5,420	-1,290	1,420	4,130
2031	2,922	5,844	-1,290	1,632	4,554
2032	3,135	6,269	-1,290	1,845	4,979
2033	3,347	6,694	-1,290	2,057	5,404
2034	3,559	7,119	-1,290	2,269	5,829

NPV	3,309	23,849
IRR	9.8%	32.6%

Source: MCRIT

Cost of Non-Europe for Maritime Transport: detailed hypotheses

Freight flows

Base freight flows are taken from Eurostat and COMEXT database.

Eurostat data on container traffic volume per port and foreland country, and the COMEXT database on external trade for the European Union are the main source of information for 2010, as base year. Trade data from COMEXT contains all flows between countries by type of freight (according to NSTR2 classification) and transport mode. For the analysis, only the container maritime flows are taken into account since other types of flows have a limited role in terms of competitiveness among European ports. COMEXT external trade matrix is disaggregated into the NUTS3 regions of Europe based on population and GDP data. The regionalised matrix is used to analyse foreign trade routes in Europe, especially in relation to the port used the import/export flow.

The HWWI forecast for world trade is based on an incremental gravity model, a standard model used to explain bilateral flows of trade that makes it possible to quantify the influence of geographic, historic and economic factors on trade generation between two countries. Therefore, in addition to income levels, other factors considered are the geographical distance between the trade partners, any shared borders, access by sea to the trade partners, population size, economic-political alliances like monetary or customs unions, and historical components such as colonial relationships, and numerous other factors. To estimate future volumes of sea trade on the basis of the predicted trade volume, it is assumed that the relative shares of cargo conveyed by the various modes of transport will remain constant in the long term. Historical observations substantiate this assumption for the timeframe of the forecast.

The specific growth rates adopted per world zone are the following:

Table 13 Growth hypothesis for maritime traffic to/from Europe by world zone

	Annual Growth 2014-2024	Annual Growth 2024-2041
Latin America	7,20%	5,40%
South Asia	8,40%	6,30%
Sub-Sahara	7,40%	5,55%
Transition countries	6,90%	5,18%
East Asia+Pacific	9,20%	6,90%
Middle East+North Africa	6,70%	5,03%
Industrial countries	5,90%	4,43%
EU	6,00%	4,50%

Transport infrastructure

There is a need to implement the rail infrastructures already included in the Trans-European Core Networks in order to link Southern ports to their hinterlands and to the Central and Northern regions. Most of these ports and infrastructures are already integrated in the TEN-T network, such as the Mediterranean corridor.

Evening out the transport prices, and optimising transport routes is necessary in order to reduce CO₂ emissions.

Transport costs

Average transport costs for shipping are assumed at €0,006 per ton - kilometre.

Average transport costs for inland transport (including road and rail legs) are assumed at €0,050 per ton - kilometre.

Emissions

Average transport emissions for shipping are assumed at 25,4 grams CO₂ per ton - kilometre.

Average transport emissions for inland transport (including road and rail legs) are assumed at 17,6 grams CO₂ per ton - kilometre.

Emissions costs are assumed at €20 per tonne CO₂. This cost is considered as an average between current costs in the ETS and the cost of CCS technologies.

"In 2010, the price for a carbon credit lied between 12 and 18 euros per ton CO₂; the crisis impacted on the price of carbon credits, which by 2014 had dropped to approximately 5 euros per ton CO₂. The cost estimates from the IPCC for a pulverized coal power plant are shown to be between 30 to 70 dollars per ton CO₂ or 20 to 50 euros. In 2007, the environmental agency of the Rijnmond Region (Netherlands), in which a pilot CCS facility was planned, calculated that it would be possible to capture and store up to 20 million tons of carbon emissions from the Rotterdam region annually for only 24 euro per ton of CO₂ "¹³³.

Reference TEN-T investments

To put figures into perspective, savings derived from liberalisation and redistribution of traffics have been contrasted with the programmed investments in European TEN-T maritime system.

To undertake this task, the TEN-T budget over the next 20 years has been estimated. For full methodology, read previous Annex section on Air transport. Allocation of

¹³³ <http://www.theoildrum.com/node/6409>

investments to the maritime sector is considered at 5%¹³⁴ of projects supported by EU funds.

Table 14 Investments on TENs 1993-2013 and hypothesis 2014-2034.

	1993-1999	2000-2006	2007-2013	2014-2020	2021-2027	2028-2034
Total yearly cost (€ billion / year)	4.7	13.4	22.0	28.2	35.7	43.0
Total TEN-T investment (€ billion)	32.7	93.7	154.0	197.5	250.0	301.0
Communitary Grants	6.6	14.6	22.4	26.3	31.7	36.3
TEN-T Executive Agency	1.4	2.8	5.4	N/A	N/A	N/A
Cohesion Funds	3.8	7.0	12.3	N/A	N/A	N/A
ERDF	1.5	4.8	4.7	N/A	N/A	N/A
EIB loans	9.8	16.1	25.0	33.0	41.8	50.3
Other Resources (Member States)	16.2	63.0	106.6	138.2	176.5	214.4
% EU grants	20.3%	15.6%	14.6%	13.3%	12.7%	12.1%
% EIB loans	30.0%	17.2%	16.2%	16.7%	16.7%	16.7%
% Other Resources (National)	49.7%	67.2%	69.2%	70.0%	70.6%	71.2%
Yearly investment in the Maritime sector	N/A	0.67	N/A	1.31	1.79	2.16

Source: MCRIT based EC, SGD and ECORYS

Table 15: Contrast TEN-T investments.

Period	Investment	Rationale
2014-2020	€1,411 yearly	Considering: CEF budget approved by EP in 2013 (€26.3 billion), 5% TEN-T budget allocation to air mode, and 7.5 private to public investment ratio.
2020-2027	€1,786 yearly	Considering: CEF budget proposed by EC in 2011 (€31.7 billion), 5% TEN-T budget allocation to air mode, and 7.9 private to public investment ratio.
2028-2034	€2,161 yearly	Considering: To maintain same increases in budget between budgetary periods

Source: MCRIT based on different sources (EC, SDG)

¹³⁴ According to Steer Davies Gleave (2010)'s Ex-post assessment of the Cohesion Policy programmes 2000-2006.

Cost of Non-Europe for Maritime Transport: detailed results

Annual Performance Indicators

The tables below outline the performance indicators for the years 2014, 2024 and 2034. They include transport production (RPK), fuel consumption, GHG emissions, economic costs and savings in relation to the Baseline.

Table 16: Annual Performance Indicators for Baseline, Half and Optimal Scenarios

		2014			2024	
Annual indicators	Baseline	Half	Optimal	Baseline	Half	Optimal
Total transport (Mton-km)	2,801,182	2,801,182	2,801,182	6,067,770	5,578,289	5,088,809
Road and rail transport (Mton-km)	97,439	97,439	97,439	202,031	224,541	247,051
Maritime transport (Mton-km)	2,703,743	2,703,743	2,703,743	5,865,738	5,353,748	4,841,759
Total transport fuel consumption (Mton)	15.9	15.9	15.9	34.5	31.8	29.1
Fuel consumption inland transport (Mton)	0.8	0.8	0.8	1.6	1.8	2.0
Fuel consumption maritime transport (Mton)	15.2	15.2	15.2	32.9	30.0	27.1
Total transport emissions (Mt CO ₂)	50.1	50.1	50.1	108.4	99.9	91.5
Emissions inland transport (Mt CO ₂)	2.5	2.5	2.5	5.1	5.7	6.3
Emissions maritime transport (Mt CO ₂)	47.6	47.6	47.6	103.2	94.2	85.2
Total transport cost (M€)	21,080	21,080	21,080	45,264	43,320	41,377
Inland transport cost (M€)	4,872	4,872	4,872	10,102	11,227	12,353
Maritime transport cost (M€)	16,208	16,208	16,208	35,162	32,093	29,024
Total CO ₂ emissions cost (M€)	1,001	1,001	1,001	2,167	1,999	1,830
Total costs (M€)	22,081	22,081	22,081	47,432	45,319	43,207
Savings in relation to Baseline (M€)	-	0	0	-	2,112	4,225
<i>Average savings per tonkm (€)</i>		0.00000	0.00000		0.00035	0.00070
<i>Average savings per TEU (€)</i>		0	0		31	63

		2034	
Annual indicators	Baseline	Half	Optimal
Total transport (Mton-km)	10,979,720	9,791,499	8,603,278
Road and rail transport (Mton-km)	353,867	410,215	466,563
Maritime transport (Mton-km)	10,625,852	9,381,284	8,136,715
Total transport fuel consumption (Mton)	62.4	55.9	49.4
Fuel consumption inland transport (Mton)	2.9	3.3	3.8
Fuel consumption maritime transport (Mton)	59.6	52.6	45.6
Total transport emissions (Mt CO ₂)	196.0	175.5	155.1
Emissions inland transport (Mt CO ₂)	9.0	10.4	11.9
Emissions maritime transport (Mt CO ₂)	187.0	165.1	143.2
Total transport cost (M€)	81,391	76,747	72,104
Inland transport cost (M€)	17,693	20,511	23,328
Maritime transport cost (M€)	63,697	56,237	48,776
Total CO ₂ emissions cost (M€)	3,920	3,511	3,101
Total costs (M€)	85,311	80,258	75,206
Savings in relation to Baseline (M€)	-	5,053	10,105
<i>Average savings per tonkm (€)</i>		<i>0.00046</i>	<i>0.00092</i>
<i>Average savings per TEU (€)</i>		<i>41</i>	<i>83</i>

Source: MCRIT

Yearly Savings, Costs and Benefits derived from liberalisation, and 2014-2034 aggregates

The results presented below include savings derived from reductions in fuel consumption, travel time, and unreleased GHG emissions. Transaction costs are considered as 5% of total savings. Net benefits are obtained from the deduction of costs from savings, for each year. Net present values based on 4% discount rate.

All results are presented in million euros

Table 17: Half/Improved Scenario. Yearly Savings, Costs and Benefits derived from liberalisation, and 2014-2034 aggregates.

	Freight traffics (in million ton·km)	% of inland transportation (rail+road) / maritime in ton·km	Fuel consumption savings (M€)	CO ₂ emissions not released (M€)	Transaction costs (M€)	Net benefits (M€)
2014	2,801,181.7	3.6%	0	0	0	0.0
2015	3,078,892.5	3.7%	194	17	-11	200.7
2016	3,356,603.3	3.7%	389	34	-21	401.4
2017	3,634,314.0	3.8%	583	51	-32	602.0
2018	3,912,024.8	3.8%	777	68	-42	802.7
2019	4,189,735.6	3.9%	972	84	-53	1,003.4
2020	4,467,446.4	4.0%	1,166	101	-63	1,204.1
2021	4,745,157.1	4.0%	1,361	118	-74	1,404.8
2022	5,022,867.9	4.1%	1,555	135	-84	1,605.5
2023	5,300,578.7	4.1%	1,749	152	-95	1,806.1
2024	5,578,289.4	4.2%	1,944	169	-106	2,006.8
2025	5,999,610.4	4.2%	2,214	193	-120	2,286.1
2026	6,420,931.3	4.2%	2,484	217	-135	2,565.5
2027	6,842,252.3	4.2%	2,754	241	-150	2,844.8
2028	7,263,573.2	4.3%	3,023	265	-164	3,124.1
2029	7,684,894.2	4.3%	3,293	289	-179	3,403.4
2030	8,106,215.1	4.3%	3,563	313	-194	3,682.7
2031	8,527,536.1	4.3%	3,833	337	-209	3,962.1
2032	8,948,857.0	4.3%	4,103	361	-223	4,241.4
2033	9,370,178.0	4.4%	4,373	385	-238	4,520.7
2034	9,791,498.9	4.4%	4,643	409	-253	4,800.0
NPV			25,452	2,227	-1,384	26,295
Average yearly net savings			1,273	111	-69	1,315

Source: MCRIT

Table 18: OPTIMAL Scenario. Yearly Savings, Costs and Benefits derived from liberalisation, and 2014-2034 aggregates

	Freight traffics (in million ton·km)	% of inland transportation (rail+road) / maritime in ton·km	Fuel consumption savings (M€)	CO ₂ emissions not released (M€)	Transaction costs (M€)	Net benefits (M€)
2014	2,801,181.7	3.6%	0	0	0	0.0
2015	3,078,892.5	3.8%	389	34	-21	401.4
2016	3,356,603.3	3.9%	777	68	-42	802.7
2017	3,634,314.0	4.1%	1,166	101	-63	1,204.1
2018	3,912,024.8	4.2%	1,555	135	-84	1,605.5
2019	4,189,735.6	4.4%	1,944	169	-106	2,006.8
2020	4,467,446.4	4.5%	2,332	203	-127	2,408.2
2021	4,745,157.1	4.7%	2,721	236	-148	2,809.5
2022	5,022,867.9	4.8%	3,110	270	-169	3,210.9
2023	5,300,578.7	5.0%	3,499	304	-190	3,612.3
2024	5,578,289.4	5.1%	3,887	338	-211	4,013.6
2025	5,999,610.4	5.2%	4,427	386	-241	4,572.3
2026	6,420,931.3	5.2%	4,967	434	-270	5,130.9
2027	6,842,252.3	5.3%	5,507	482	-299	5,689.6
2028	7,263,573.2	5.4%	6,047	530	-329	6,248.2
2029	7,684,894.2	5.4%	6,587	578	-358	6,806.8
2030	8,106,215.1	5.5%	7,127	626	-388	7,365.5
2031	8,527,536.1	5.5%	7,667	674	-417	7,924.1
2032	8,948,857.0	5.6%	8,207	723	-446	8,482.8
2033	9,370,178.0	5.7%	8,747	771	-476	9,041.4
2034	9,791,498.9	5.7%	9,286	819	-505	9,600.1
NPV			50,904	4,454	-2,768	52,591
Average yearly net savings			2,545	223	-138	2,630

Source: MCRIT

Illustration of the magnitude of savings from liberalisation by contrast with TEN-T investments

The scale of savings obtained from market liberalisation and integration, is translated into politically meaningful terms.

The tables below include yearly savings derived from liberalisation, programmed TEN-T maritime investments (which for contrast purposes are in this exercise considered as hypothetical costs for the obtaining of savings), and the balance between savings and “costs” (associated to benefits for contrast purposes).

All values are expressed in million euros.

**Table 19: Size contrast of savings from liberalisation with TEN-T budget.
Half/Improved and Optimal Scenarios**

	Yearly savings derived from liberalisation (as determined in previous tables)		TEN-T maritime investments (associated to costs for contrast purposes)	Savings – Investments (associated to benefits for contrast purposes)	
	CN37	OPTIMAL		CN37	OPTIMAL
2014	0	0	-1,411	-1,411	-1,411
2015	211	422	-1,411	-1,199	-988
2016	422	845	-1,411	-988	-566
2017	634	1,267	-1,411	-777	-143
2018	845	1,690	-1,411	-566	279
2019	1,056	2,112	-1,411	-354	702
2020	1,267	2,535	-1,411	-143	1,124
2021	1,479	2,957	-1,786	-307	1,172
2022	1,690	3,380	-1,786	-96	1,594
2023	1,901	3,802	-1,786	115	2,017
2024	2,112	4,225	-1,786	327	2,439
2025	2,406	4,813	-1,786	621	3,027
2026	2,700	5,401	-1,786	915	3,615

	Yearly savings derived from liberalisation (as determined in previous tables)		TEN-T maritime investments (associated to costs for contrast purposes)	Savings – Investments (associated to benefits for contrast purposes)	
2027	2,995	5,989	-1,786	1,209	4,203
2028	3,289	6,577	-2,161	1,128	4,416
2029	3,583	7,165	-2,161	1,422	5,004
2030	3,877	7,753	-2,161	1,716	5,592
2031	4,171	8,341	-2,161	2,010	6,180
2032	4,465	8,929	-2,161	2,304	6,768
2033	4,759	9,517	-2,161	2,598	7,357
2034	5,053	10,105	-2,161	2,892	7,945

NPV	3,578	31,258
IRR	8.0%	28.2%

Source: MCRIT

Annex of Additional Tables, Figures and Maps

Table 20 Airport ownership structures in a number of European countries.

Country	Public	Mixed public-private	Private
Austria	Austrian airports (except Vienna) are owned by province governments and city councils	Vienna airport is owned 50% by private enterprises, 10% Employees of Flughafen Wien AG, 20% Vienna City Council and 20% province of lower Austria	
Bulgaria	Sofia Airport and PLOVDIV AIRPORT owned by the State		Bourgas Airport and Varna Airport owned by Fraport.
Croatia	Croatian airports are owned by the State (55%) and by local governments (city councils and counties)		
Czech Republic	Regional governments own airports, except Prague Airport.		Prague airport is owned by stock company Český Aeroholding, privatised since 2011
Finland	Finavia (State owned enterprise)		
Germany	Majority of airports are owned by public administrations (State, regional and local authorities). Exceptions: Düsseldorf, Frankfurt, Friedrichshafen, Hamburg and Hannover	Düsseldorf, Frankfurt, Friedrichshafen, Hamburg and Hannover are owned by public authorities (regional and local) and private companies (HOCHTIEF, Morgan Stanley)	
Greece	Hellenic Civil Aviation Authority (State owned enterprise, which manages 44 airports, except Athens International Airport)	Athens International Airport (55% public and 45% private concessions, such as Hochtief AirPort	
Hungary		Mixed ownership, majority private (75%): Hochtief AirPort, Caisse de depot et placement de Québec, Malton Investment Pte Ltd, Aero Investment S.á.r.l, Hungarian State owns 25%.	
Ireland	State owns 100% of Dublin, Cork and		Ireland West

Country	Public	Mixed public-private	Private
	Shannon Airport. Galway is owned by regional and local authorities.		Airport/Knock is owned by Horan International Airport trust
Malta		Mixed ownership, majority private (80%) and 20% State owner	
Netherlands	Schipol Group		
Poland	Polish Airports State Enterprise (PPL) owns a percentage of capital of Polish Airports. The rest of the capital is owned by communes, provinces and city councils.		
Portugal		Aeroportos de Portugal, SA is owned by 95% VINCI Concessions and 5% Participações Públicas, SGPS, S.A. ANA privatization took place in 2013	
Spain	Aeropuertos Españoles (AENA)		
Sweden	Swedavia (state owned group)		

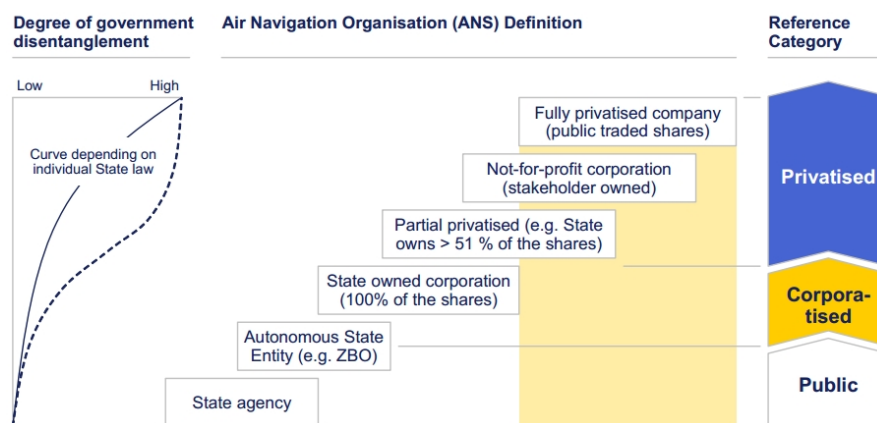
Source: MCRIT based on "The ownership of Europe's airports 2010". Airports Council International (<https://www.aci-europe.org/component/downloads/downloads/72.html>)

Table 21 Air Alliances

Alliance	Member Airlines	EU Hubs
One World	AirBerlin, American Airlines, British Airlines, Cathay Pacific, Finnair, Iberia, Japan Airlines, LAN, Malaysia Airlines, Qantas, Qatar Airways, Royal Jordanian, S7 Airlines	London, Düsseldorf, Berlin, Helsinki, Madrid
Sky Team	Aeroflot, Aerolíneas Argentinas, AeroMéxico, Air Europa, Air France, Alitalia, China Airlines, China Eastern, China Southern, Czech Airlines, Delta, Kenya Airways, KLM, Korean Air, Middle East Airlines, Saudia, TAROM, Vietnam Airlines, Xiamen Airlines	Madrid, Paris CDG, Paris Orly, Lyon, Rome, Prague, Amsterdam Schiphol, Bucharest
Star Alliance	Adria Airways, Aegean Airlines, Air Canada, Air China, Air New Zealand, ANA, Asiana Airlines, Austrian, Avianca, Brussels Airlines, Copa Airlines, Croatia Airlines, EGYPTAIR, Ethiopian Airlines, EVA Air, LOT Polish Airlines, Lufthansa, Scandinavian Airlines, Shenzhen Airlines, Singapore Airlines, South African Airways, SWISS, TAM Airlines, TAP Portugal, THAI, Turkish Airlines, United, US Airways	Lisbon, London, Brussels, Frankfurt, Ljubljana, Zagreb, Vienna, Athens, Warsaw, Copenhagen and Helsinki

Source: MCRIT based: www.klm.com/corporate/en/about-klm/air-france-klm

Figure 2. Steps towards ANSP liberalisation



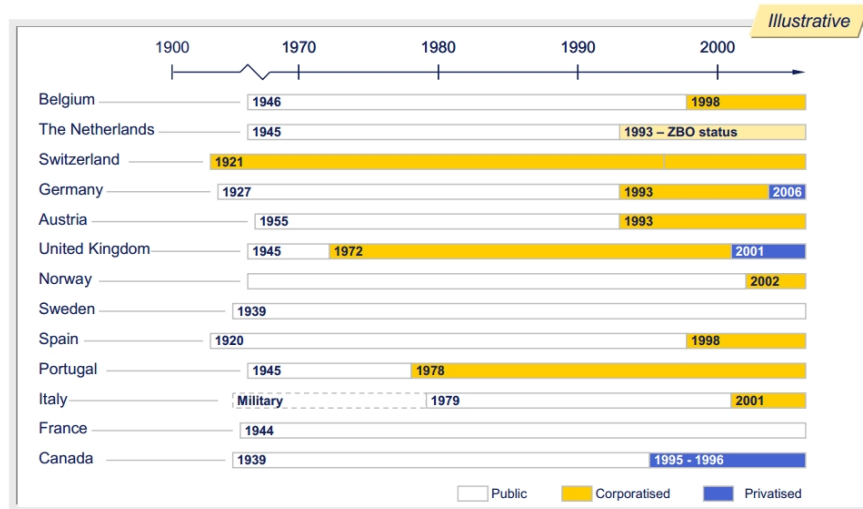
Source: Arthur D. Little, 2006

Table 22 Low Cost Carriers

	Airport Hub	Shareholder (air companies which owns part of the low cost companies)
EasyJet	London – Luton	-
Jet2.com	Leeds Bradford Airport	-
Norwegian Air Shuttle	Oslo (main hub). Secondary hubs: Alicante, Copenhagen, Gran Canaria, Helsinki and London Gatwick	-
Ryanair	Dublin Airport	-
Sverige Flyg	Stockholm-Bromma	-
Transavia.com	Amsterdam Schiphol; Rotterdam-The Hague Airport	KLM – AirFrance (100%)
Vueling	Barcelona	IAG
Wizz Air	Budapest	-
Air Berlin	Berlin – Tegel and push at Düsseldorf International Airport (intercontinental flights)	Etihad Airways (29%)
Monarch Airlines	London – Luton	-
Germanwings	Cologne - Bonn	Lufthansa (100%)

Source: MCRIT based on different sources

Figure 3. ANSP Corporatisation and privatisation time lines

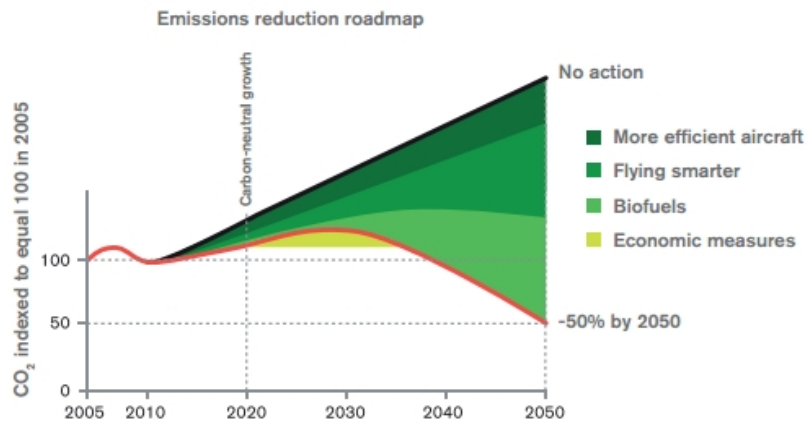


Source: Arthur D. Little, 2006

Figure 4. ANSP Strategies in Europe (Source: Arthur D. Little, 2006)



Figure 5: IATA Emissions reduction roadmap.



Source: Annual review 2013, IATA. www.iata.org/about/Documents/iata-annual-review-2013-en.pdf

Figure 6: Functional Airspace Block initiatives in Europe (Source: EUROCONTROL)

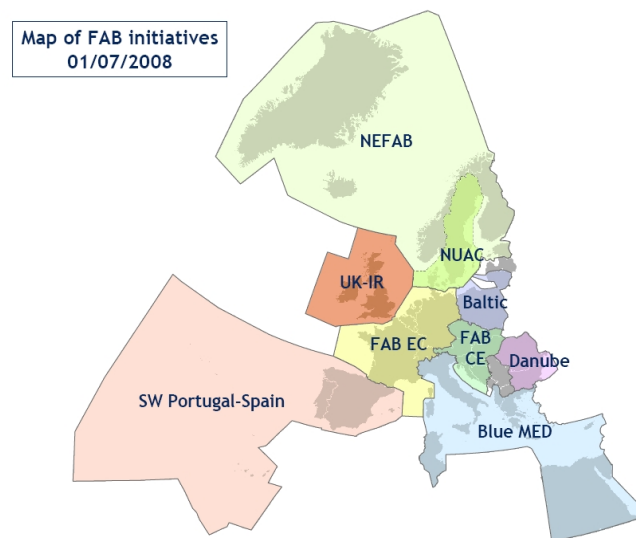


Figure 7. Intercontinental flights in leading European airports (Source: Eurostat 2011)

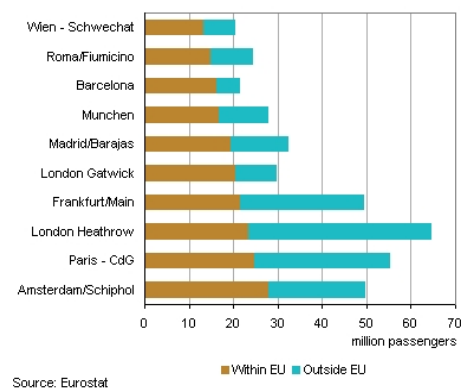
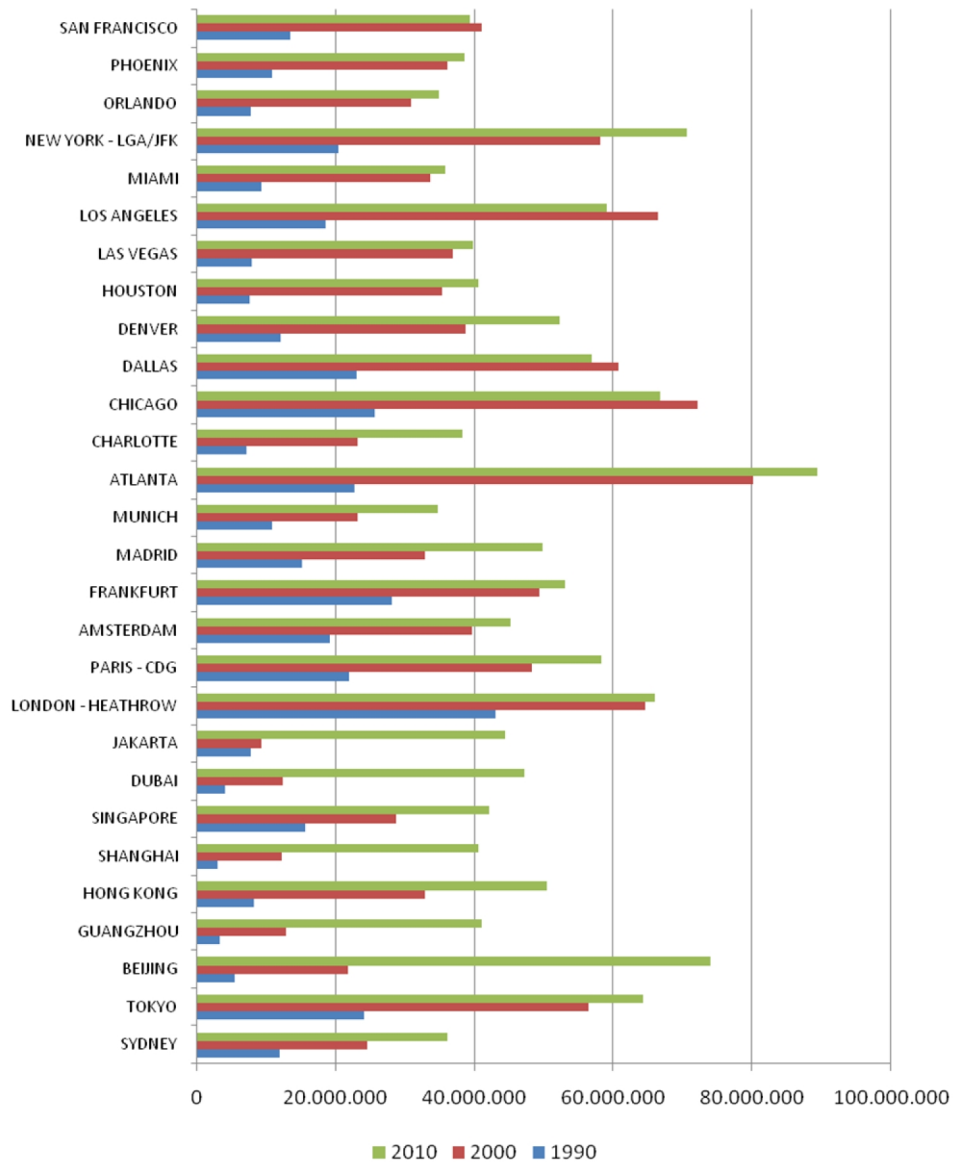
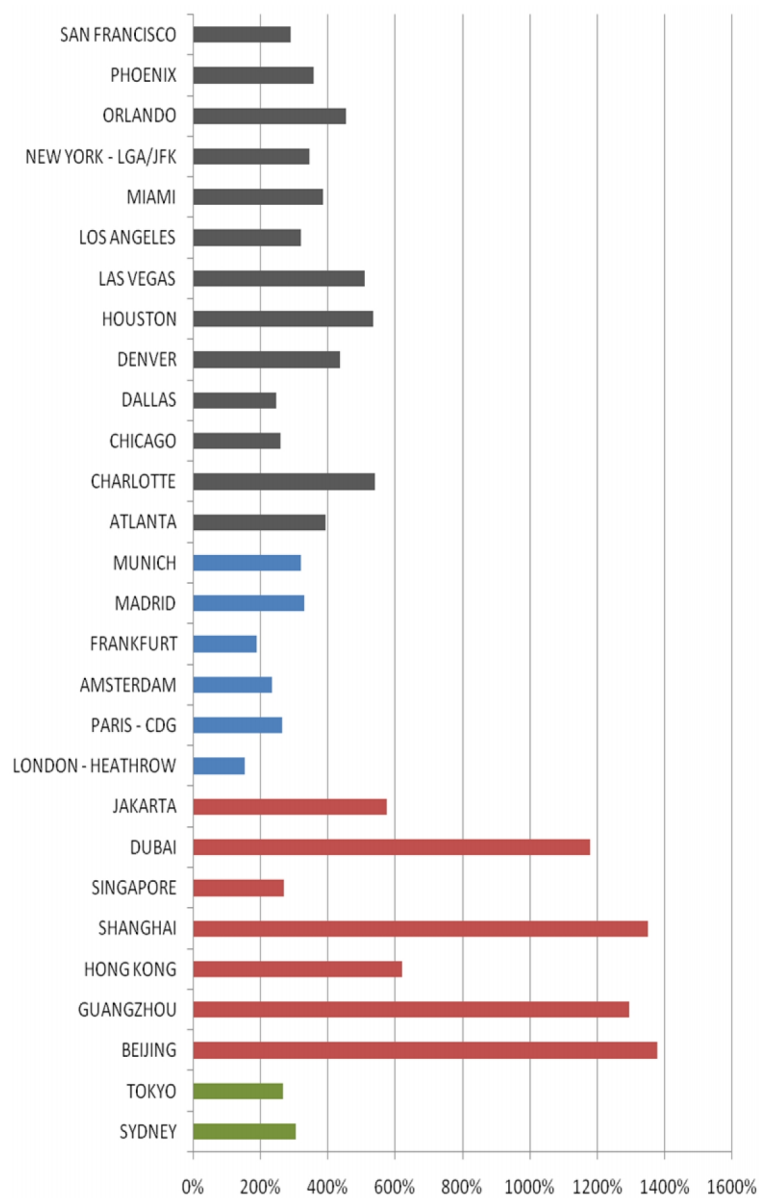


Figure 8: Airport passengers in selected World airports in 1990, 2000 and 2010



(Source: MCRIT based on data from Airports)

**Figure 9. Cumulated growth 1990-2010 of passenger traffic in main World airports
(% of passengers)**



Source: MCRIT based on data from Airports

Table 23 Boeing - Growth of air traffics per main global air flows

ID	Traffic flow	2012 to 2032
1	Africa to and from Europe	4,8%
2	Africa to and from Middle East	7,5%
3	Africa to and from North America	5,8%
4	Africa to and from Southeast Asia	6,7%
5	CIS to and from International	4,9%
6	Central America to and from Europe	4,5%
7	Central America to and from North America	4,2%
8	Central America to and from South America	6,5%
9	China to and from Europe	6,1%
10	China to and from North America	6,3%
11	China to and from Northeast Asia	4,8%
12	China to and from Oceania	6,4%
13	China to and from Southeast Asia	7,5%
14	Europe to and from Middle East	5,0%
15	Europe to and from North America	3,5%
16	Europe to and from Northeast Asia	3,2%
17	Europe to and from South America	4,8%
18	Europe to and from South Asia	7,2%
19	Europe to and from Southeast Asia	5,0%
20	Middle East to and from North America	6,4%
21	Middle East to and from South Asia	7,5%
22	Middle East to and from Southeast Asia	6,6%
23	North America to and from Northeast Asia	2,2%
24	North America to and from Oceania	4,2%
25	North America to and from South America	6,1%
26	North America to and from Southeast Asia	6,5%

27	Northeast Asia to and from Oceania	3,5%
28	Northeast Asia to and from Southeast Asia	4,9%
29	Oceania to and from Southeast Asia	5,1%
30	Rest of World	7,7%
31	Southeast Asia to and from South Asia	8,4%
32	Within Africa	6,3%
33	Within CIS region	4,5%
34	Within Central America	4,6%
35	Within China	6,9%
36	Within Europe	3,6%
37	Within Middle East	5,7%
38	Within North America	2,3%
39	Within Northeast Asia	2,5%
40	Within Oceania	4,5%
41	Within South America	7,4%
42	Within South Asia	9,6%
43	Within Southeast Asia	7,5%
44	Within the Asia Pacific Region	6,6%
45	Within the Latin America Region	6,9%
46	World Total	5,0%

http://active.boeing.com/commercial/forecast_data/index.cfm

Table 24 Eurocontrol - Growth of air traffics in 4 alternative scenarios under capacity constraints of the European airport system

	IFR Movements (million)			Annual Growth			AAGR 2050/ 2012	Traffic Multiple 2050/ 2012
	2012	2035	2050	2012	2035/ 2012	2050/ 2035		
A: Global Growth	9.5	17.3	26.1	-2.4%	2.6%	2.8%	2.7%	2.7
C: Regulated Growth	-	14.4	18.6	-	1.8%	1.8%	1.8%	2.0
C': Happy Localism	-	13.8	17.7	-	1.6%	1.7%	1.6%	1.9
D: Fragmenting World	-	11.2	10.5	-	0.7%	-0.4%	0.3%	1.1

Source: *European Air Traffic in 2050*, Eurocontrol 2013

Table 25 Eurocontrol – Additional growth of air traffic if no capacity constraints are assumed, in 4 alternative scenarios

	Unaccommodated IFR Flights (million)
	2050
A: Global Growth	15
C: Regulated Growth	4.4
C': Happy Localism	3
D: Fragmenting World	0.5

Source: *European Air Traffic in 2050*, Eurocontrol 2013

Table 26 Eurocontrol - Additional growth of air traffic if no capacity constraints are assumed, per ESRA region.

	ESRA NW				ESRA East				ESRA Mediterranean			
	Difference in movements (000s)		% unaccomm		Difference in movements (000s)		% unaccomm		Difference in movements (000s)		% unaccomm	
	2035	2050	2035	2050	2035	2050	2035	2050	2035	2050	2035	2050
ScA	1,523	7,218	11%	31%	377	2,406	11%	29%	2,954	10,004	29%	49%
ScC	635	1,639	6%	12%	179	482	7%	12%	1,647	3,508	23%	32%
ScC'	388	955	4%	8%	146	415	6%	10%	1,281	2,681	19%	28%
ScD	96	83	1%	1%	60	64	4%	3%	591	540	12%	11%

Source: *European Air Traffic in 2050*, Eurocontrol 2013

Table 27 British Airways Operating Costs and Account of Operations 2011-2012.

British Airways Plc
Financial review continued

Operating costs

£ million	2012	2011	Better/(worse)
Employee costs	2,345	2,153	(8.9)%
Restructuring	36	12	nm
Depreciation, amortisation and impairment	720	683	(5.4)%
Aircraft operating lease costs	98	73	(34.2)%
Fuel, oil and emission costs	3,712	3,246	(14.4)%
Engineering and other aircraft costs	625	543	(15.1)%
Landing fees and en route charges	726	691	(5.1)%
Handling charges, catering and other operating costs	1,213	1,052	(15.3)%
Selling costs	466	436	(6.9)%
Currency differences	(1)	13	nm
Accommodation, ground equipment and IT costs	613	567	(8.1)%
Total Group expenditure on operations*	10,553	9,469	(11.4)%
Total Group expenditure excluding fuel*	6,841	6,223	(9.9)%

*Stated before exceptional items.
nm = not meaningful

	2012	2011	Better/(worse)
CONTINUING OPERATIONS			
Available seat kilometres (ASK) (m)	158,247	150,152	5.4 %
Revenue passenger kilometres (RPK) (m)	126,436	117,348	7.7 %
Passenger load factor (%)	79.9	78.2	1.7pts
Passenger revenue per ASK (p)	6.00	5.81	3.3 %
Passenger revenue per RPK (p)	7.51	7.43	1.1 %
Non-fuel costs per ASK** (p)	4.32	4.14	(4.3)%

**Stated before exceptional items

Source BA Plc 2013

Figure 10 Accessibility to US (left) and Asian (right) markets from EU ports (TRT 2012)

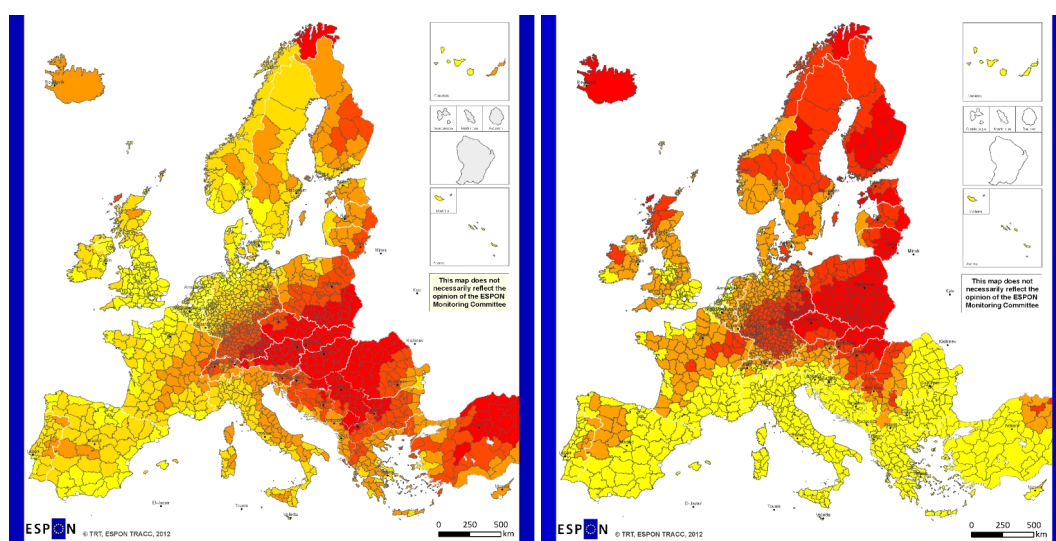
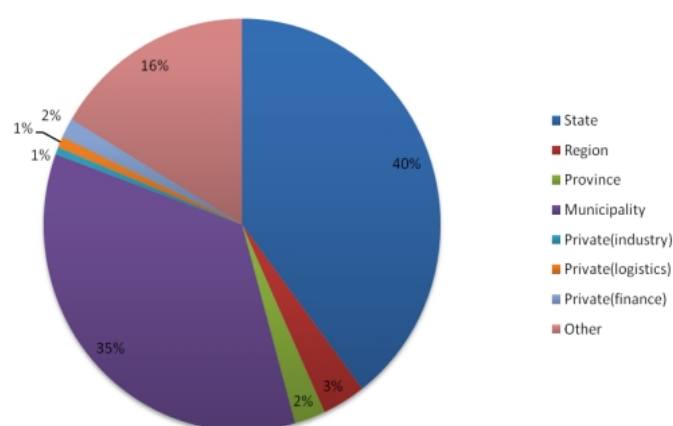


Figure 11. Ownership of port authorities



Source: Report of an enquiry into the current governance of European Seaports.
European Sea Port Organization, 2010

Table 28 Ownership of port authorities by region and port size

	All	Hanse	New Hanse	Anglo-Saxon	Latin	New Latin	Small	Medium	Large
State	39.6%	6.4%	71.3%	35.3%	64.4%	87.3%	28.9%	51.7%	43.3%
Region	3.5%	2.4%	0.0%	0.0%	7.9%	0.0%	5.3%	2.1%	0.0%
Province	2.5%	4.3%	0.0%	0.0%	2.6%	0.0%	3.7%	1.6%	0.0%
Municipality	34.8%	82.7%	12.8%	11.8%	0.0%	3.3%	48.8%	15.2%	46.7%
Private (industry)	0.6%	1.6%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	0.0%
Private (logistics)	0.9%	2.4%	0.0%	0.0%	0.0%	0.0%	1.8%	0.0%	0.0%
Private (financial)	1.6%	0.0%	0.0%	8.8%	0.7%	0.0%	0.9%	0.6%	10.0%
Other	16.4%	0.0%	15.9%	44.1%	24.3%	9.4%	9.6%	28.1%	0.0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

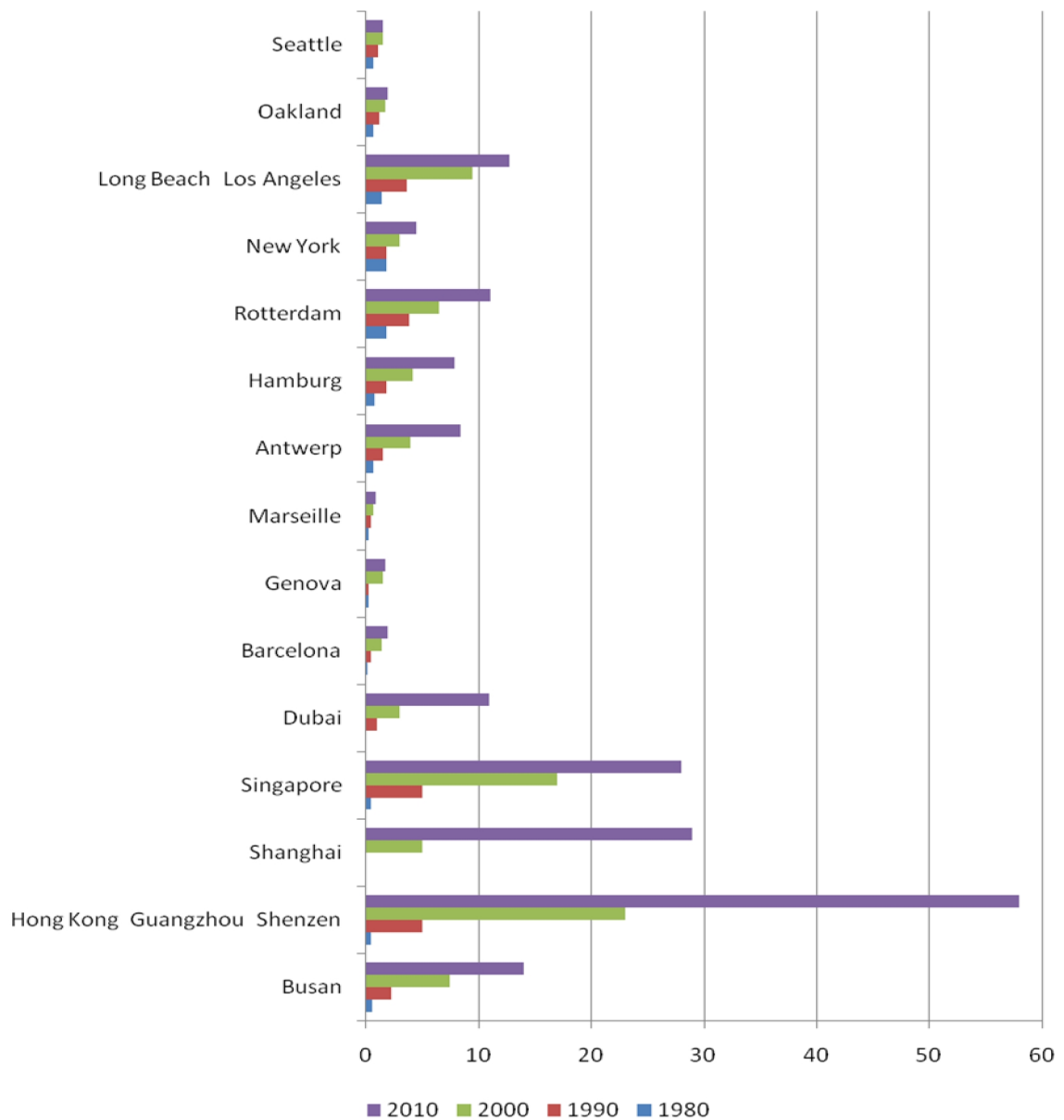
Source: Report of an enquiry into the current governance of European Seaports.
European Sea Port Organization, 2010

Table 29 Main Logistic Operators at World Ports

Name	Type of services	Ownership	Ports in Europe where operates	Share of world throughput (2012)
PSA International (Singapore)	Container terminal	Temasek Holdings, an investment company owned by the Government of Singapore	Sines (Portugal), Antwerp (Belgium), Voltri and Southern European Container Hub (Geonova), Venice, UK	8,2%
Hutchison Port Holdings (Hong Kong)	Container terminal	Hutchison Whampoa Limited	Barcelona Europe South Terminal (Sapin), Taranto Container Terminal (Italy), Gdynia Container Terminal (Poland), TCT Belgium, DeCeTe Duisburger Container Terminal (Germany), Container Terminal Frihamnen (Sweden), Amsterdam Container Terminals, Moerdijk Container Terminals, Rotterdam ECT City Terminal, Rotterdam ECT Delta Terminal, Trimodal Container Terminal Venlo (Netherlands), Port of Felixstowe, Harwich International Port, London Thamesport (UK).	7,2%
APM Terminals (Denmark)	Container terminal	Maersk	Algeciras (Spain), Genoa, Goia Tauro, Cagliari (Italy), Marseille-Fos, Aarhus (Denmark), Oslo (Norway), Gothenburg (Sweden), Helsinki, Kotka (Finland), Tallin (Estonia), Bremerhaven, Wilhelmshaven (Germany), Rotterdam, Maasvlakte II (Netherlands), Zeebrugge (Belgium), Dunkirk, Le Havre (France),	5,4%
DP World (UAE)	Container terminal general cargo terminal, bulk cargo terminal, ro-ro vessels terminal and passenger terminal (in UAE and Argentina)		Tarragona (Spain), Antwerp, Delwaide (Belgium), Fos, Le Havre (France), Garmersheim (Germany), Constanta (Romania), Southampton and London Gateway (UK)	5,4%
COSCO Group (China)				2,7%
Terminal Investment Limited (TIL)	Container Terminals	MSC	MSC Home Terminal – Port of Antwerp (Belgium), Terminaux de Normandie MSC – Port of Le Havre (France), MSC Gate – Port of Bremerhaven (Germany), Klaipėdos Smeltė (Lithuania), Delta MSC Terminal – Port of Rotterdam (Netherlands), FOS2XL Terminal (Port of Marseille), Sines Container Terminal (Portugal), Operaciones Portuarias Canarias - Port of las Palmas, MSC Terminal Valencia (Spain)	2,2%
China Shipping Company				1,4%
Hanjin Shipping (South Korean)	Container Terminal	Shipping Holdings co	Algeciras (Spain) and Antwerp (Belgium)	1,3%
Evergreen				1,2%
Eurogate (German)	Container Terminal	BLG Logisitcs and Eurokai	Bremerhaven, Wilhelmshaven and Hambourg (Germany), La Spezia, Ravenna, Salerno, Goia Tauro and Cagliari (Italy), Lisbon (Portugal)	1%

Source: <http://www.maritime-executive.com/pressrelease/Drewrys-Annual-Review-of-Global-Container-Terminals-Operators-2013-08-27/>

**Figure 12. Container traffics in World main ports 1980, 1990, 2000 and 2010
(in million TEU)**



Source: MCRIT based on data form Port Authorities

Figure 13. Main Shipping Carriers.

Name	Country	Major Hubs in Europe	Share of world container transport (2012)
A.P. Moller – Maersk Group	Denmark	Algeciras, Felixtowe, Gioia Tauro, Rotterdam, Bremerhaven	14,7%
MSC- Mediterranean Shipping Company	Switzerland	Antwerp, Cyprus	13,8%
CMA CGM	France	Marsaxlokk, TangerMED, Algeciras, Havre, Zeebrugge, Rotterdam, Bremerhaven, Hamburg, Southampton	8,4%
Evergreen	China	Taranto	4,8%
Hapag-Lloyd	Germany	Bremerhaven	4,3%
COSCO	China	Pireaus, Felixtowe	4,2%

Source. MCRIT 2014

Capacity allocation of container traffic in the World in 2014

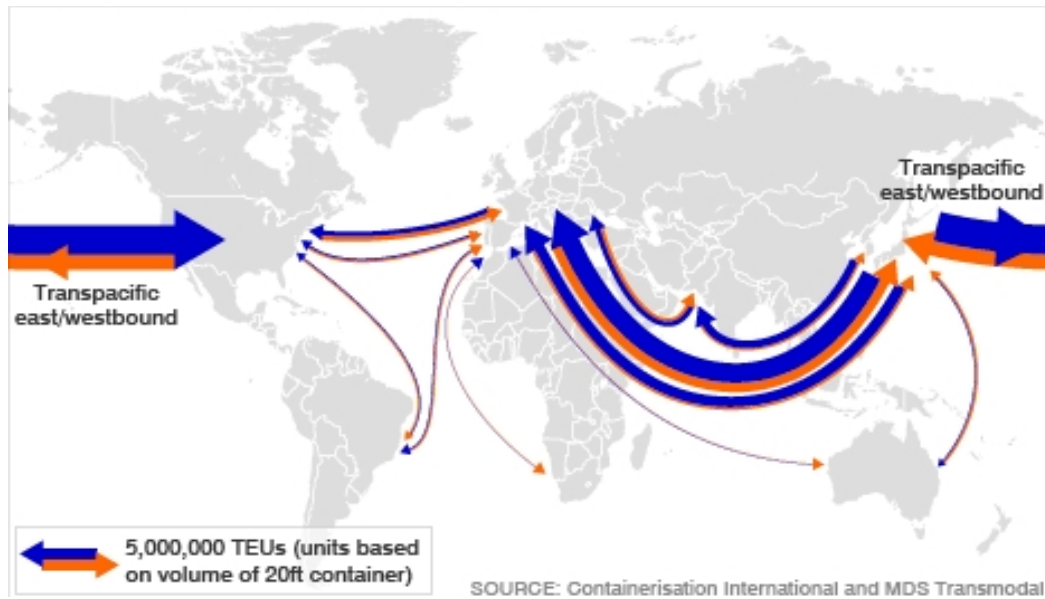
THE TOP 100 LEAGUE

> The percentage shown on the left of each bar represents the operator's share of the world liner fleet in TEU terms.
> The light coloured bar on the right represents the current orderbook (firm orders).

Rnk	Operator	Teu	Share	Existing fleet	Orderbook
1	APM-Maersk	2,665,413	14.7%		
2	Mediterranean Shg Co	2,429,398	13.4%		
3	CMA CGM Group	1,526,097	8.4%		
4	Evergreen Line	866,536	4.8%		
5	Hapag-Lloyd	769,216	4.3%		
6	COSCO Container L.	764,064	4.2%		
7	APL	638,466	3.5%		
8	CSCL	616,868	3.4%		
9	Hanjin Shipping	604,676	3.3%		
10	MOL	598,329	3.3%		
11	Hamburg Süd Group	490,101	2.7%		
12	NYK Line	478,896	2.6%		
13	OOCL	473,134	2.6%		
14	Yang Ming Marine Transport Corp.	390,654	2.2%		
15	Hyundai M.M.	374,858	2.1%		
16	PIL (Pacific Int. Line)	366,271	2.0%		
17	K Line	350,562	1.9%		
18	Zim	326,420	1.8%		
19	UASC	275,834	1.5%		
20	CSAV Group	241,409	1.3%		
21	Wan Hai Lines	177,694	1.0%		
22	HDS Lines	88,608	0.5%		
23	X-Press Feeders Group	87,890	0.5%		
24	KMTC	77,133	0.4%		
25	NileDutch	75,120	0.4%		
26	SITC	69,559	0.4%		
27	UniFeeder	57,147	0.3%		
28	Simatech	56,164	0.3%		
29	Arkas Line / EMES	52,630	0.3%		
30	CCNI	47,903	0.3%		

Source: Alphaliner. <http://www.alphaliner.com/top100/>

Figure 14. Container Traffic at world level



Source. Containerisation international and MDS Transmodal

Figure 15. Maersk Line Asia - North Europe service network



Figure 16. CMA-CGM, North European Service – French Asia Line 1 (FAL1)



Figure 17. CMA-CGM, Adriatic Service, Phoenician Express



Figure 18. CMA-CGM West Mediterranean Service, Mediterranean Club Express



**Table 30 Recommended travel time values (in € from 2002)
per country, mode and trip purpose**

Table 0.3 Estimated VTTS values – work (business) passenger trips (€₂₀₀₂ per passenger per hour, factor prices)

Country	Business		
	Air	Bus	Car, Train
Austria	39.11	22.79	28.40
Belgium	37.79	22.03	27.44
Cyprus	29.04	16.92	21.08
Czech Republic	19.65	11.45	14.27
Denmark	43.43	25.31	31.54
Estonia	17.66	10.30	12.82
Finland	38.77	22.59	28.15
France	38.14	22.23	27.70
Germany	38.37	22.35	27.86
Greece	26.74	15.59	19.42
Hungary	18.62	10.85	13.52
Ireland	41.14	23.97	29.87
Italy	35.29	20.57	25.63
Latvia	16.15	9.41	11.73
Lithuania	15.95	9.29	11.58
Luxembourg	52.36	30.51	38.02
Malta	25.67	14.96	18.64
Netherlands	38.56	22.47	28.00
Poland	17.72	10.33	12.87
Portugal	26.63	15.52	19.34
Slovakia	17.02	9.92	12.36
Slovenia	25.88	15.08	18.80
Spain	30.77	17.93	22.34
Sweden	41.72	24.32	30.30
United Kingdom	39.97	23.29	29.02
EU (25 Countries)	32.80	19.11	23.82
Switzerland	45.41	26.47	32.97

Table 0.4 Estimated VTTS values – non-work passenger trips (€₂₀₀₂ per passenger per hour, factor prices)

Country	Commute-Short Distance			Commute-Long Distance			Other-Short Distance			Other-Long Distance		
	Air	Bus	Car, train	Air	Bus	Car, train	Air	Bus	Car, train	Air	Bus	Car, train
Austria	11.98	5.78	8.03	15.40	7.42	10.32	10.05	4.84	6.73	12.91	6.22	8.65
Belgium	11.44	5.51	7.67	14.68	7.07	9.84	9.59	4.62	6.43	12.31	5.93	8.26
Cyprus	11.83	5.70	7.93	15.18	7.32	10.18	9.92	4.78	6.65	12.74	6.14	8.53
Czech Republic	8.57	4.13	5.75	11.00	5.31	7.38	7.19	3.46	4.82	9.23	4.45	6.18
Denmark	12.64	6.09	8.48	16.23	7.82	10.88	10.60	5.11	7.11	13.61	6.56	9.12
Estonia	7.44	3.58	4.99	9.55	4.60	6.40	6.24	3.01	4.18	8.01	3.86	5.36
Finland	11.31	5.45	7.58	14.52	7.00	9.73	9.48	4.57	6.36	12.17	5.87	8.16
France	16.34	7.87	10.95	20.97	10.11	14.06	13.70	6.60	9.18	17.58	8.47	11.79
Germany	11.99	5.78	8.04	15.40	7.42	10.32	10.05	4.85	6.74	12.91	6.22	8.65
Greece	10.34	4.98	6.93	13.28	6.40	8.90	8.67	4.18	5.82	11.14	5.37	7.46
Hungary	7.53	3.63	5.05	9.68	4.66	6.48	6.31	3.04	4.23	8.11	3.91	5.44
Ireland	12.51	6.03	8.39	16.07	7.74	10.77	10.49	5.06	7.04	13.48	6.49	9.03
Italy	15.16	7.31	10.16	19.47	9.38	13.04	12.71	6.12	8.52	16.32	7.86	10.94
Latvia	6.79	3.27	4.55	8.72	4.20	5.85	5.69	2.74	3.82	7.31	3.52	4.90
Lithuania	6.62	3.19	4.43	8.49	4.09	5.69	5.55	2.67	3.72	7.12	3.43	4.77
Luxembourg	17.77	8.60	11.91	22.82	11.00	15.30	14.90	7.18	9.99	19.13	9.22	12.83
Malta	9.73	4.69	6.53	12.50	6.02	8.37	8.17	3.93	5.47	10.48	5.05	7.02
Netherlands	11.59	5.59	7.77	14.88	7.17	9.97	9.72	4.68	6.52	12.48	6.01	8.37
Poland	7.36	3.55	4.94	9.46	4.56	6.34	6.17	2.97	4.14	7.93	3.82	5.32
Portugal	9.97	4.81	6.69	12.81	6.18	8.59	8.36	4.03	5.61	10.74	5.17	7.20
Slovakia	6.87	3.31	4.60	8.82	4.25	5.91	5.76	2.78	3.86	7.40	3.57	4.96
Slovenia	12.00	5.78	8.04	15.40	7.42	10.33	10.06	4.85	6.74	12.92	6.22	8.66
Spain	12.72	6.12	8.52	16.33	7.87	10.94	10.66	5.13	7.15	13.69	6.59	9.18
Sweden	12.24	5.90	8.20	15.71	7.57	10.53	10.26	4.94	6.88	13.17	6.35	8.83
United Kingdom	12.44	5.99	8.34	15.97	7.69	10.70	10.43	5.02	6.99	13.39	6.46	8.98
EU (25 Countries)	12.65	6.10	8.48	16.25	7.83	10.89	10.61	5.11	7.11	13.62	6.56	9.13
Switzerland	16.74	8.06	11.22	21.49	10.36	14.41	14.03	6.76	9.40	18.02	8.69	12.08

Source HEATCO FP6 Study

Table 31 Recommended hourly values of travel time savings (in US\$2009)

Table 4 (Revision 2 - corrected)

Recommended Hourly Values of Travel Time Savings (2009 U.S. \$ per person-hour)		
Category	Surface Modes* (except High-Speed Rail)	Air and High-Speed Rail Travel
Local Travel-		
Personal	\$12.00	
Business	\$22.90	
All Purposes **	\$12.50	
Intercity Travel -		
Personal	\$16.70	\$31.90
Business	\$22.90	\$57.20
All Purposes **	\$18.00	\$42.10

Truck Drivers	\$24.70
Bus Drivers	\$24.50
Transit Rail Operators	\$40.40
Locomotive engineers	\$34.30
Airline Pilots and Engineers	\$76.10

Source US DOT 2011

Table 32 Financing the priority TEN-T network, 1996-2013

Table 2: Financing the priority TEN-T network, 1996–2013

TEN-T Priority projects	1993/96–1999 EU 15	2000–2006 EU 25	2007–2013 EU 27
Cost (EUR billion)			
TEN-T 30	32.65	93.7	154
- EU 10 / EU 12 Member States			16
- EU 15 Member States			138
Community / Union contribution (EUR billion)			
TEN-T Programme	1.35	2.80	5.4
Cohesion Fund	3.83	7.0	12.3
ERDF	1.46	4.81	4.7
EIB Loans and guarantees	9.78	16.1	25
Total Community / Union contribution (EUR billion)			
Grants	6.64 (20.3 %)	14.61 (15.6 %)	22.4 (14.5 %)
Grants and loans	16.42 (50.3 %)	30.71 (32.8 %)	47.4 (30.8 %)
Other resources (national)	16.32 (49.7 %)	63 (67.2 %)	106.6 (69.2 %)

Source: European Commission 2010c

Source EC 2010

Table 33 ERDF allocation by transport mode

TABLE 3.6 ERDF ALLOCATION BY TRANSPORT MODE (% & ABSOLUTE VALUE)

MS	Rail	Roads	Motorways	Airports	Ports	Urban transport	Multimodal transport	Others	Uncategorised	Total allocation (€ M)
AT	33%	0%	0%	32%	32%	0%	2%	0%	0%	4
BE	2%	3%	0%	0%	0%	1%	2%	0%	92%	46
CY	0%	100%	0%	0%	0%	0%	0%	0%	0%	2
CZ	14%	55%	0%	2%	2%	19%	1%	7%	0%	267
DE	20%	60%	16%	0%	1%	0%	0%	1%	1%	3,513
DK	0%	0%	0%	0%	0%	0%	0%	0%	100%	4
EE	2%	53%	0%	6%	31%	0%	0%	9%	0%	33
ES	31%	56%	2%	3%	5%	1%	1%	0%	0%	10,307
FI	0%	43%	0%	0%	0%	0%	22%	0%	35%	31
FR	5%	32%	1%	4%	23%	2%	11%	2%	21%	1,078
GR	24%	19%	43%	2%	5%	5%	0%	1%	1%	6,736
HU	4%	85%	0%	0%	4%	3%	4%	0%	0%	276
IE	0%	69%	0%	0%	0%	31%	0%	0%	0%	1,134
IT	35%	22%	9%	8%	9%	8%	7%	0%	2%	3,810
LT	23%	41%	0%	8%	2%	24%	0%	2%	0%	142
LU	0%	0%	0%	0%	0%	0%	0%	0%	100%	2
LV	0%	52%	0%	0%	4%	32%	0%	0%	13%	94
MT	0%	89%	0%	0%	11%	0%	0%	0%	0%	12
NL	6%	14%	0%	0%	11%	26%	14%	31%	0%	46
PL	17%	41%	5%	0%	1%	16%	2%	19%	0%	2,172
PT	5%	54%	0%	0%	2%	16%	15%	1%	6%	3,229
SE	0%	0%	0%	0%	0%	0%	0%	0%	100%	75
SI	0%	0%	0%	0%	0%	0%	0%	0%	100%	8
SK	28%	69%	0%	2%	0%	0%	0%	2%	0%	243
UK	12%	29%	10%	5%	10%	20%	12%	0%	1%	579
Total	7,670	14,594	4,217	898	1,702	2,204	1,163	604	791	33,844
<i>Total</i>	23%	43%	12%	3%	5%	7%	3%	2%	2%	
Obj. 1	7,487	14,245	4,205	884	1,439	2,113	923	562	495	32,353
<i>Obj. 1</i>	23%	44%	13%	3%	4%	7%	3%	2%	2%	
Obj. 2	183	350	12	14	263	90	240	42	296	1,491
<i>Obj. 2</i>	12%	23%	1%	1%	18%	6%	16%	3%	20%	

Note: The "Others" category includes: waterways, intelligent transport system, cycle tracks. Investment in ports in Austria refers to inland waterway ports Source: Country reports and Work Package 1.

Source Steer Davies Gleave 2010

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This particular study - the second in a series - reviews European air and water transport policy and regulation, and identifies areas, where further legislative action is necessary to complete the Single Market in these sectors. In addition, the paper looks at the impact of the completion of the Single market in relation to intercontinental transport. Based on that, it quantifies the "Cost of non-Europe" by giving an estimate of the net benefits that rebalancing European intercontinental gateways, which would stem from the completion of the Single Market in these air and maritime transport areas, would produce for the whole European economy.

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