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REGIONAL LOGISTICS & ICT PROFILE: THE SOUTHERN METROPOLITAN REGION OF HAMBURG, GERMANY

Wolfgang Kersten,
Meike Schröder,
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EXECUTIVE SUMMARY

This report is part of the Baltic Sea Region (BSR) INTERREG IIIB European Union funded project LogOn Baltic. The main aim of the project is to advance regional development in the fields of logistics and information and communication technologies (ICT) through the exchange of experiences and know-how.

Apart from two high number online-based surveys dealing with logistics and ICT, several expert interviews have been conducted and support initiatives as well as regional development projects have been described. The results have been summarised and will be published in separate reports.

The present report on the southern metropolitan region of Hamburg also forms an essential part of the project. The profile integrates the individual empirical studies with secondary data and covers the following topics:

- Description of the LogOn Baltic project
- General information about the region
- Economic importance of the region
- Public sector support for enterprises
- Logistics in the region (transport infrastructure, associations, industry characteristics)
- ICT in the region (infrastructure, characteristics)
- Human knowledge base (professions, further education and training)
- Analysis of strengths, weaknesses, opportunities and threats

In the first chapter, information will be given on the project in general, on the participating partners as well as on the present report. Chapter 2 will stress the importance of Hamburg in the Baltic Sea Region, and will describe location factors, the climate, regional administrative divisions, the relevant history for background knowledge as well as links to the BSR.

Hamburg's economy and international trade will be illustrated in chapter 3, while organisations on the different levels, types of support and logistics and ICT projects will be explained in the fourth section.

The fifth part will show Hamburg's road, railway, air transport and waterway connections which play a decisive role in logistics. Next,

transport sector administration and industry associations as well as trade unions on different levels, social programs and policies will be described. Furthermore, the logistics industry will be characterized and results from the logistics survey will be presented.

Chapter 6 will explain the general ICT infrastructure in the region and characteristics of the ICT industry that have resulted from the ICT survey as well as the sector's development and an outlook. The seventh part of the profile will focus on professions and their qualifications in the fields of logistics and ICT, education and training as well as on the development.

Finally, the strengths and weaknesses of the metropolitan region will be summarised from the expert interviews and Hamburg's needs will be pointed out.

EXECUTIVE SUMMARY

Der vorliegende Bericht zum Thema „Regionale Logistik und Profil der Informations- und Kommunikationstechnologien (IuK) in der südlichen Metropolregion Hamburg“ ist Bestandteil des länderübergreifenden EU-Projektes LogOn Baltic. Ziel dieses Projektes ist es, die regionale Entwicklung und Integration in den Bereichen Logistik sowie Informations- und Kommunikationstechnologien (IuK, Englisch: ICT) durch Erfahrungs- und Wissensaustausch voranzutreiben. Das Projekt ist Teil des Baltic Sea Region (BSR) INTERREG III B Programms der Europäischen Union.
Neben zwei großzahligen Online-Befragungen zum Thema Logistik und IuK wurden mehrere Experteninterviews geführt sowie regionale Förderungseinrichtungen in der Metropolregion Hamburg beschrieben und entsprechende Regionalentwicklungsprojekte aufgezeigt. Die ermittelten Ergebnisse wurden jeweils in Form eines Berichtes zusammengefasst und interpretiert.

Einen weiteren Hauptbestandteil des Projektes stellt dieser umfangreiche Bericht über die südliche Metropolregion Hamburg dar. Das Profil integriert die einzelnen empirischen Erhebungen sowie die gesammelten Sekundärdaten der Region. Seine Struktur beinhaltet folgende Themenbereiche:

- Beschreibung des LogOn Baltic Projekts
- Allgemeine Informationen zur südlichen Metropolregion Hamburg
- Wirtschaft der Region
- Unterstützung für Unternehmen in Logistik und IuK durch öffentliche Einrichtungen
- Logistik in der Region
- IuK in der Region
- Aus- und Weiterbildung im Bereich Logistik und IuK
- Analyse der Stärken, Schwächen, Chancen und Risiken

Im ersten Kapitel werden zunächst umfassende Informationen zu dem EU-Projekt sowie den teilnehmenden Ländern und Partnern gegeben. Anschließend werden im zweiten Kapitel eine Einordnung Hamburgs in die Baltische Region vorgenommen sowie allgemeine Informationen zu den Standortfaktoren, zum Klima, über die Bezirke

der Metropolregion, sowie zum geschichtlichen Hintergrund und der Verknüpfung mit weiteren Anrainerstaaten der Ostsee gegeben.

Kapitel 3 beinhaltet eine Beschreibung der Wirtschaft sowie des internationalen Handels. Im weiteren Verlauf werden in Kapitel 4 Förderungsmaßnahmen der öffentlichen Einrichtungen für Unternehmen aufgezeigt, die sich nach Organisation, Art der Unterstützung sowie konkreten Projekten bzw. Programmen klassifizieren lassen.

Kapitel 5 umfasst eine detaillierte Analyse der Logistik in der Metropolregion Hamburg. Neben der Infrastruktur werden Ministerien und bestehende Industrieverbände dargestellt sowie die Transportpolitik beschrieben. Darüber hinaus wird eine Charakterisierung der Logistik in der südlichen Metropolregion vorgenommen, in die die Ergebnisse der Logistikbefragung einfließen.

Kapitel 6 fokussiert die Informations- und Kommunikationstechnologien. Zunächst wird ein Überblick über die IuK Infrastruktur und Industrie gegeben. Im Anschluss wird der IuK Sektor anhand der Ergebnisse der IuK Befragung näher charakterisiert.

In Kapitel 7 werden mögliche Berufe und Aus- und Weiterbildung im Bereich Logistik und IuK sowie entsprechende Weiterbildungseinrichtungen vorgestellt. Kapitel 8 fasst die Stärken und Schwächen der Metropolregion zusammen und zeigt den Verbesserungsbedarf im Hinblick auf Logistik und IuK in der Region.

Kapitel 9 fasst die Ergebnisse des Reports zusammen und gibt einen Ausblick auf die künftige Entwicklung der südlichen Metropolregion Hamburg.

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1 INTRODUCTION

This study is a part of the LogOn Baltic project running from December 2005 until December 2007. The LogOn Baltic project was approved within the Baltic Sea Region (BSR) INTERREG III B Neighbourhood Programme, which is sponsored by the European Regional Development Fund (ERDF), as part of the Structural Funds, and co-financed by national project partners. In the following, the project, its regional partners as well as the regional profile will be described.

1.1 Project introduction – LogOn Baltic

The LogOn Baltic project was approved within the Baltic Sea Region (BSR) INTERREG III B Neighbourhood Programme, which is sponsored by the European Regional Development Fund (ERDF), as part of the Structural Funds, and co-financed by national project partners.

The purpose of LogOn Baltic is to present solutions to improve the interplay between logistics and Information and Communication Technologies (ICT) competence and spatial planning and strengthening Small and Medium-sized Enterprises (SMEs) competitiveness in the BSR. This is primarily done by the production and dissemination of information for regional development agencies on how to support enterprises in the participating regions in the field of ICT and logistics, thus improving regional development.

The following regions are participating in the project:

- South-West Finland
- Östergötland (Sweden)
- Denmark
- Southern Metropolitan Region of Hamburg (Germany)
- West-Mecklenburg (Germany)
- North-East Poland
- Lithuania
- Latvia
- Estonia
- St. Petersburg (Russia)

LogOn Baltic provides an overview of logistics efficiency and logistics information systems and their exploitation, in order to improve the interaction between SMEs and other public/private actors.

On the one hand, the empirical activities of LogOn Baltic compare the existing logistics services and infrastructure with the logistics needs in the participating regions, making it possible to develop perspectives and action plans for strengthening the logistics competence in the regions. On the other hand it describes the existing ICT infrastructure and services, revealing up to what extent they meet with the companies' needs for further development. In this way, LogOn Baltic focuses on:

a. identifying development agencies and evaluating their performance in each region
b. evaluating the level of logistics and ICT efficiency
c. suggesting concrete actions for regional and local public sector bodies

Data are gathered in each participating region using four tools: Development Measure Impact Analysis (DEMIA), Logistics survey, ICT survey and Expert Interviews; each of these is presented in a separate report. These results together with secondary data is presented in a regional report, that will describe the state of affairs in the region, with recommendations on what and how the region needs to develop. The regional reports are used as a basis for making an interregional comparison which is reported in an inter-regional report. All reports are available on the project homepage, www.logonbaltic.info.

1.2 Regional partner introduction

The **HSL Hamburg School of Logistics** was founded in 2003 as an innovative partnership between the Hamburg University of Technology (TUHH) and the Kuehne Foundation of Schindellegi (Switzerland). Its aim is to combat current shortfalls in the training of logistics managers. It provides appropriate further training and prepares young professionals within the logistics sector for their future tasks in senior management. The HSL vision is to become a top business and logistics school and a leading international competence centre for applied research in logistics.

The challenging program offered by the HSL includes three elements: in addition to the one-year full-time or two-year part-time MBA degree, which is targeted at highly-qualified young professionals,

the HSL also offers part-time training and a competence centre for practice-oriented research. A network of high-calibre academic and business partners ensure that training is both practice-oriented and academically sound. In the LogOn Baltic project the HSL participates as work package (WP) 3 leader due to its expertise in logistics research.

The regional partner of the HSL Hamburg School of Logistics is the **Wachstumsinitiative Süderelbe AG** (SAG). SAG was founded in December 2004 against the background of an increased need for regional cooperation between Hamburg and its surrounding region in regard to the growing international metropolis competition. Representing a new type of a regional development agency, the SAG cooperates with its partners in the form of a “private-public partnership” (PPP) in which the participation of the business sector is to the fore. With its cluster-oriented strategy, the SAG aims to achieve sustainable economic growth in the Southern Metropolitan Region of Hamburg by forming networks and accomplishing project-oriented cooperation between regional companies, service providers, scientific institutions and authorities, thereby crossing borderlines of municipalities, districts and federal states. For this innovative approach to action, the SAG was recently awarded the national “kommKoop Award” by the Federal Ministry of Transport, Building and Urban Development. According to the laudation, the SAG is “an outstanding and trend-setting example of inter-communal co-operation” in Germany.

1.3 Regional profile introduction

The Regional Logistics & ICT Profile (short form: Regional Profile) is one of the several support tools necessary for the analysis and description of the logistics and ICT competences in the region and the cross-national comparison.

Information from different areas of interest (i.e. economy, human resources, logistics infrastructure, ICT infrastructure, public sector, among others) together with the findings of the empirical activities carried out during the project converge into the Regional Logistics & ICT Profile, turning it into a reference document for the whole project.

All of the regions involved in the LogOn Baltic project are following the same content structure to help keep uniformity among the different Regional Profiles.

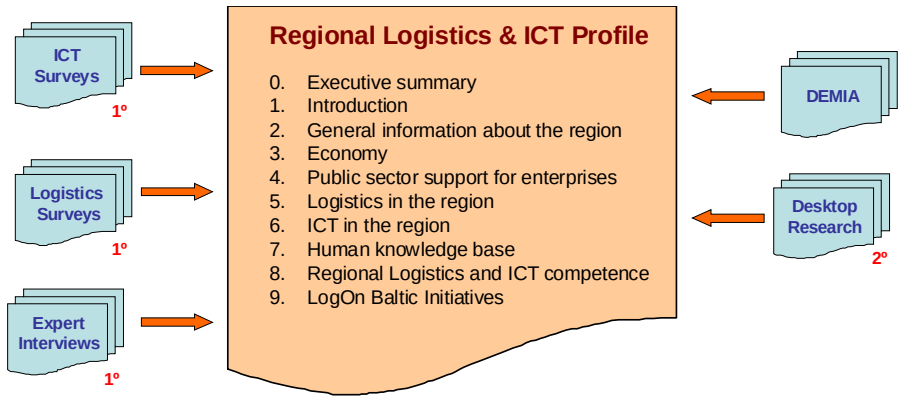


Figure 1 Tools used within the LogOn Baltic project

This tool is to be considered the main tool for secondary data collection, providing a comprehensive overview of the current situation and development in the logistics and ICT industry.

2 GENERAL INFORMATION ABOUT THE REGION

In the following, Hamburg and its position in the Baltic Sea Region (BSR), its main location factors and general climate conditions will be described. Furthermore, the regional administrative divisions, the historical background as well as the links to the BSR will be explained.

2.1 Hamburg in the Baltic Sea Region

Northern Europe, especially the BSR, is one of Europe's most dynamic economic regions. It is an attractive market with high purchasing power. The BSR consists of ten regions with around 75 million inhabitants and a commercial trade volume of about one third of Europe's total exports (Senat Hamburg 2007a). The project comprises Denmark, Sweden (Östergötland region), South-West Finland, Russia (St Petersburg region), Estonia, Latvia, Lithuania, North-East Poland and Germany (Southern Metropolitan Region of Hamburg and West-Mecklenburg) (see figure 2).

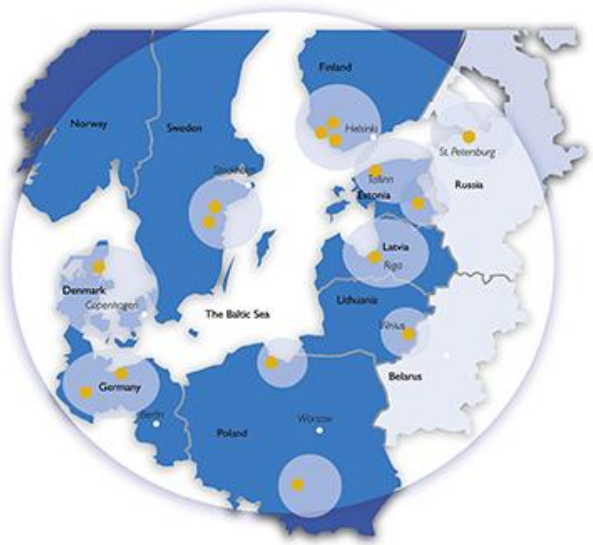


Figure 2 Map of the Baltic Sea Region. (Source: LogOn Baltic 2007)

Germany, officially called the Federal Republic of Germany, is situated in the centre of Europe and has nine neighbouring states: Austria, Belgium, the Czech Republic, Denmark, France, Luxembourg, the Netherlands, Poland and Switzerland. With over 82 million inhabitants, Germany has the largest population in Europe. The country covers 357,021 square kilometres and has a number of large cities, the most populous being Berlin, Hamburg, Munich, Cologne and Frankfurt/Main (Facts about Germany 2007). Germany is divided into sixteen federal states, thereof 13 area states and 3 city states.

Hamburg is the second largest city in Germany as well as a city state of its own. The full name “Free and Hanseatic City of Hamburg” refers not only to the former but also to the city's membership in the medieval Hanseatic League. The city is located in the north of Germany on the Elbe River between the North and the Baltic Sea.

Since the surrounding region has gained in importance for the logistics sector during the last decade, the INTERREG III B project LogOn Baltic focuses not only on the city state Hamburg but also on the Southern Metropolitan Region of Hamburg. The Southern Metropolitan Region of Hamburg covers a surface area of about 4,588 km² and embraces the federal state of Hamburg (755 km²) as well as the three administrative districts of Lower Saxony - Stade (1,266 km²), Harburg (1,244 km²) and Lüneburg (1,323 km²) (Metropolregion Hamburg 2007 and Statistikamt Nord 2007a). Figure 3 shows both the city state of Hamburg (white frame) and the mentioned administrative districts (marked in dark red).

The Southern Metropolitan Region of Hamburg has a population of 2,357,370 inhabitants (in 2005) with a density of 514 inhabitants/km² (in 2005). The federal state of Hamburg has 1,743,627 inhabitants and a population density of 2,309 inhabitants/km². Out of the three administrative districts of Lower Saxony, Harburg is the biggest one with 241,827 inhabitants followed by Stade with 196,475 inhabitants and Lüneburg with 175,441 inhabitants (Statistikamt Nord 2007b).

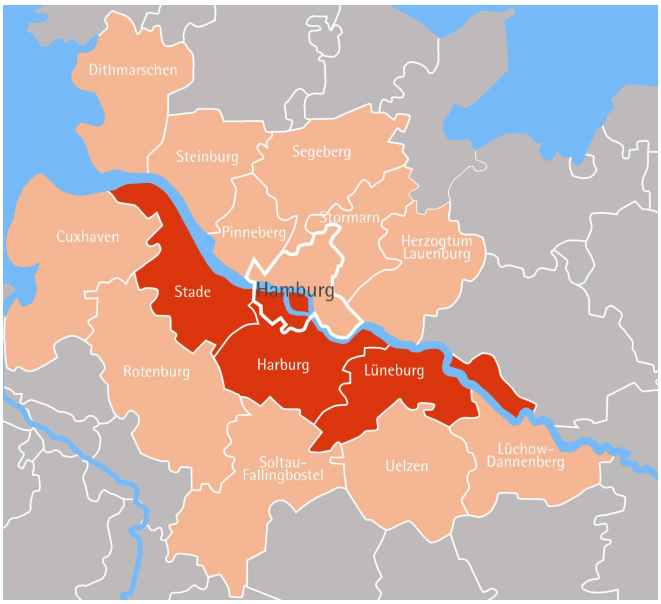


Figure 3 The geographical dimension of the Southern Metropolitan Region of Hamburg (Source: Süderelbe 2007c)

As figure 3 shows, the area is strategically well positioned. The region borders the southern side of the Elbe River all the way from the mouth of the Elbe River at the North Sea down to the main harbour area and even further down than the eastern border of the federal state of Hamburg.

2.2 Main location factors

Location factors can be classified into site characteristics, accessibility factors, and the socio-economic environment. Transport plays a very important role in this respect (Rodrigue, Comtois, Slack 2006, p.87). All kinds of logistics connections can be found in Hamburg; sea, road, air and rail transport, both nationally and internationally.

The city of Hamburg is not only considered as the most important centre for commercial export and logistics in Germany but also as the hub of the Baltic Sea region and central Europe (Senat Hamburg 2007a). Hamburg's advantage of location is the harbour. Measured by container handling, Hamburg port is the second largest one in Europe and ranks number nine in the world handling almost 135 million tons of cargo per year (Hafen Hamburg 2007). Although it is situated 110 km from the North Sea, it is considered as a sea port since it can handle

very large ships. Almost 25% of the trade is done with the Baltic Sea region. Around 156,000 jobs depend directly or indirectly on the port and there has been an increase in jobs of 11,000 since 2001 (Hamburg Business Development Corporation 2007 and Hamburg.de 2007a). Currently, a very modern commercial and business district is being built directly on the Elbe River, called "HafenCity" (port city). It will extend the area of the city of Hamburg by 40% (Hamburg.de 2007b).

Furthermore, Hamburg is connected by several motorways and is linked with major international and regional economic centres. Main and regional Deutsche Bahn railway lines intersect in Hamburg so that the important European economic centres can also be reached by train. While a very large and modern station for multi-modal transport is located in Hamburg-Billwerder, the largest European marshalling yards can be found in Maschen.

Hamburg Airport is one of the largest airports in Germany and offers flights to around 120 national and international destinations. It is currently being expanded to meet future needs. Soon a train will link the airport with the city. The modern air freight terminal is already in operation using the ELWIS electronic warehousing and goods information system that enables state-of-the-art cargo logistics (Hamburg Business Development Corporation 2007).

For passengers, nine mass transit routes across the city are the backbone of the city's public transport system. The U-Bahn (underground railway) comprises three lines and the S-Bahn (rapid transit system) makes up six lines. A light rail system, the AKN, connects to satellite towns in Schleswig-Holstein. Gaps in the mass-transit network are filled by bus routes, plied by single-deck, two-, three- and four-axle diesel buses (S-Bahn Hamburg 2007 and Hamburger Hochbahn 2007).

Hamburg is known for being one of the most productive regions in Germany as well as in Europe. Not only the port is growing – as already mentioned – but also logistics in general and other industries. According to the forecast of a Regionomica survey, there will be 14,000 additional jobs in logistics by 2015. There are already 230,000 people employed in the logistics sector in the metropolitan region including port logistics (Hamburg Business Development Corporation 2007).

As a trade and transport metropolis, Hamburg has about 100 consulate generals and consulates. Furthermore, 460 companies solely from Asia have their European headquarters or a branch office in Hamburg. For further information on the economic importance of Hamburg, please refer to chapter 3.

2.3 General climate conditions

Since the whole German state is located in the temperate zone, neither temperatures nor precipitation levels are extremely high or low. Because of maritime influences, Hamburg's climate is milder and less volatile than further inland. It is not as cold in winter and not as hot in summer as in other places of Germany (Handbuch Deutschland 2007). In July and August - the warmest months in Hamburg - the temperature averages around 17.2 to 17.4 degrees Celsius (see figure 4). The coldest month is January at an average temperature of 1.3 degrees Celsius.

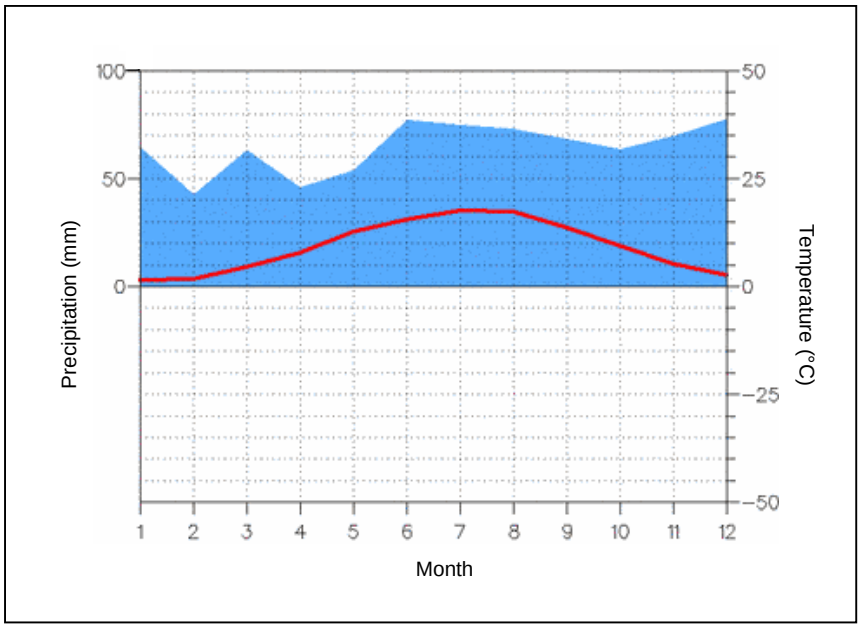


Figure 4 Temperature and precipitation chart of Hamburg. (Source: Klimadiagramme 2007)

In the course of the year, precipitation amounts to about 750 mm. It is higher in the second half of the year and varies between about 42 mm in February and approximately 78 mm in July and August (Citysam 2007).

Because of the mild temperatures compared to other big cities in the Baltic Sea Region, Hamburg can save on energy costs. However, although snowfall is limited, it still presents a challenge in terms of introducing winter-time road transportation complexities such as the need for special wheels on automobiles.

2.4 Regional administrative divisions

The Federal Republic of Germany is divided into 16 federal states. Thirteen of them are area states and have a capital, whereas Berlin, Bremen and Hamburg are city states.

Both the government and the parliament of Hamburg are based in the City Hall (Rathaus). The left wing of the building belongs to the parliament, while the state government has its seat in the right wing. The parliament of the Hanseatic City of Hamburg (Bürgerschaft) comprises 121 representatives, who are elected by the citizens every four years. The State Parliament mainly controls the Senate (government), elects the First Mayor (head of government), adopts the budget and passes state laws. The latter may be introduced by the Senate, the State Parliament, or by means of a petition for a referendum (Hamburgische Bürgerschaft 2007 and Hamburg.de 2007c).

The government of Hamburg is called the Senate. Its head is the First Mayor. The Senate sets the political guidelines and leads as well as supervises the administration. Furthermore, it represents Hamburg in matters with the other states, the Federal Government and other countries. The First Mayor also appoints and dismisses the other Senators (ministers) heading the nine departmental authorities. Currently, they comprise the following fields: finance, urban development and environment, municipal affairs, culture, social affairs, family, health and consumer protection, economy and work, science and research, education and sports as well as legal affairs. In order to assure that the administration is responsive to citizens' interests, Hamburg is divided into seven districts (Bezirke) (see figure 5). The districts are administered by a district authority as well as by local authorities. Elections to district assemblies as representatives of the citizens - each with 41 representatives - take place at the same time as elections to the state parliament (Hamburg.de 2007c and Hamburg.de 2007d).

Figure 5 Seven districts of Hamburg. (Source: Hamburg.de 2007e)

Area states are divided into administrative districts. Stade, Lüneburg and Harburg are all administrative districts of Lower Saxony. The State Parliament of Lower Saxony (Landtag) is an elected representative body. Like in Hamburg, it passes state-law legislation, elects the Prime Minister and adopts the budget. Furthermore, it is a controlling body, since it oversees the state government and its administration. Eventually, the members of the parliament elect the members of other state bodies (the state's government and Court of Audit, the State Constitutional Court, and Data Protection Officers) (Niedersächsische Staatskanzlei 2007a).

The state government of Lower Saxony (Landesregierung) consists of the Prime Minister and his team of ministers forming the cabinet. Again like in Hamburg they set the political guidelines, allocate tasks among the various ministries, and pass draft statutes to be disputed at the Landtag (Lower Saxony parliament).

The state government generates drafts for legislation on policy in the fields of schools and higher education, art and culture; moreover, it formulates codes of practice for the police force and guidelines on domestic security. Lower Saxony's Landtag elects the Prime Minister, who then appoints the remaining members of the state government. However, before they can hold their office, the Landtag needs to ratify (Niedersächsische Staatskanzlei 2007b).

The organs of the administrative districts Stade, Lüneburg and Harburg are the district committee, district administrator and district council. The latter consists of the district administrator and 52 delegates in the cases of Stade and Lüneburg. The district council of Harburg comprises 62 delegates. The district council is elected every five years; the last time was in September 2006 (Landkreis Harburg 2007a and Landkreis Stade 2007).

2.5 Historical background

The area known today as Hamburg was first settled in the 8th century between the Alster Lake and the Elbe River. In 830, a fortress named Hammaburg was erected as protection against invasions mostly from the north and east.

In 1189, the Emperor Barbarossa granted Hamburg the privilege of levying tolls on the Elbe River. At the same time, trade in the Baltic Sea Region and Northern Europe developed rapidly and led to the establishment of the Hanseatic League. This was a group of cities in the area, such as Riga, Tallinn, Turku and Wismar that were involved in diverse trading activities, especially with each other. Because of its power and influence over the strategically important Elbe River, Hamburg became what was known as a "Free City of the Empire". Its importance, not only as a European logistics hub but also as an international trade centre, started to become very pronounced in the last half of the 16th century, as regular sea routes to Asia and America came into use.

In the 19th century, the port at Hamburg expanded substantially to accommodate the increases in trade and demand for storage space in the city. This, combined with a free flow of large masses of goods and quick access to the Baltic Sea through the Kiel Canal built in 1895, caused Hamburg to achieve tremendous growth during the second half of the century. By 1900 the town had a population of one million.

The worst catastrophe of Hamburg's history occurred in February 1962: the Great North Sea Flood. The homes of about 60,000 people were destroyed and more than 318 lost their lives. Breaches along the coast and the Elbe River led to widespread flooding of huge areas of Hamburg. About 1/6 of Hamburg's residential areas (120km²) were significantly affected. For a long time all direct transport routes to the southern part of Germany were interrupted (Hamburg.de 2007f).

2.5.1 Harburg

From 100 BC to 400 AD, the Langobards lived in the area of Hamburg-Harburg. The first written tradition can be found in the French Royal annals. Karl the Great apparently set up a camp to trade with the Danish king in the area in what was then called Hollenstedt. While the Normans were plundering Hamburg, Bishop Ansgar looked for a safe place and found it in "Ramelsloh" in 840.

At the turn of the millennium, counties emerged that were owned and controlled by the church and familial entities. By the thirteenth century, amid local strife and vying for position among the relevant local entities, the area had internalized some well-known character traits and symbols that would last, and be recognized, until the present day.

During the 14th century Black Death and War of Succession as well as the 17th century Thirty-Year-War, the area was hit hard and many towns had been completely abandoned. The district gained its current form in the 19th century through Prussian land decrees. In 1872, the first railway bridge from Harburg to Hamburg, crossing the Elbe River was built, followed by a viaduct in 1899. In 1937, the city of Harburg was incorporated into Hamburg (Landkreis Harburg 2007b).

2.5.2 Lüneburg

Lüneburg was originally settled in 956 and ruled by the Herzog family. From the 9th century onwards, a naturally-occurring salt source was being exploited. The town became quite renowned for its high salt production quality between 1300 and 1600.

A general trading market emerged in the places where salt-production vehicles were being stored and driven. This eventually started to serve as a widely-used north-south traffic route. In 1273, the salt spring was bought by the monopolistic salt refinery. Between 1412 and 1430 two important waterways were opened up – a second link from the Elbe River to the Baltic Sea and a waterway carrying salt and wood to Lüneburg.

In 1593 conflict started due to certain financial dependencies of the county and to the salt trade. From 1600 to 1800, wars gripped the town intermittently and just after 1800, the town belonged to Napoleon for a short time. Prussia annexed the Kingdom of Hanover in 1866, and the Lüneburg district came into being soon after. In 1975 the side-channels of the Elbe River up to Lüneburg were opened up for traffic. This resulted in a specific industrial area in the area in and around the Lüneburg harbour (Lüneburger Geschichte 2007).

2.5.3 Stade

The first written history of Stade dates back to the year 994. By 1209, it had developed into a significant maritime trading post and received a

town charter. In the 17th century, the town was attacked during the Swedish conquest and changed significantly, having to adapt to a strong military presence. From 1645 to 1712, the town was under Swedish rule. It also became an administrative centre during this time but on May 26th 1659 “The Great Fire” destroyed two thirds of the buildings.

Stade started to trade in more industries in the 19th century as its borders expanded and fortifications were removed. In 1881, the town received a railway connection. In the 20th century, Stade saw more developments. In 1932, it became “Greater Stade.” In the 1960s, Stade regained an important position in the Hanseatic community as industries were developed along the Lower Elbe River and Stade acquired strategic maritime access to the Elbe River. The town spread out to include previously outlying areas (Stade Tourismus 2007).

2.6 Links to the BSR

The links to the BSR can be separated into historical origins and the current forms of co-operations and programs.

2.6.1 Hanseatic League

One crucial historical link to the BSR is through the Hanseatic League: Hamburg’s co-operations with states of the BSR have a long tradition, starting in the Hanseatic Time (Hansezeit). Already from the 12th to the 17th century, the region of Hamburg was involved in a large amount of trade. Most trade was due to the functioning of the Hanseatic League, an association that facilitated the flow of goods and relationship-building among major cities in the area (see chapter 2.5). During the heydays in the 13th-14th century, the Hanseatic League comprised about 200 towns, e.g. Tallinn, Riga, Turku, Kalmar, Novgorod which drove the trade and economic relations. Through co-operation with other German cities such as Lübeck and Wismar, Hamburg started to dominate trade around the North Sea and the Baltic Sea (Baltic Connections 2007).

2.6.2 The Hanseatic Parliament

Nowadays, the connections to the BSR are supported in a different way. One example is the Hanseatic Parliament, settled in Hamburg. It is a modern association of small and medium sized enterprises that promotes their sustainability, competitiveness, and market positioning in the Baltic Sea Region. It was founded in St. Petersburg in 2004 and has members of Chambers of Commerce and Industry, Chambers of Skilled Crafts and other institutions.

The Hanseatic Parliament has several goals. One is to develop knowledge management capabilities and opportunities and then to leverage these in and through a network of cities and clusters. Other projects include joint marketing campaigns such as trade fairs. On a more international level, the association attempts to help formerly disadvantaged Eastern European countries. These states can benefit from and contribute to the economic advantages of the Baltic Sea Region. As a whole, the Parliament's objective is to create a macro-economic environment in the region that will be conducive to SME development, sustainability, and success (Hanse Parlament 2007).

2.6.3 The Baltic Cooperation Forum

The Baltic Cooperation Forum is a flow-out from the Hanseatic Parliament that is primarily focused on helping SMEs to integrate themselves into mutually beneficial relationships. Internet-based, the platform allows companies to create profiles and use search functions to find partners. But the platform also allows users to access SME-relevant information regarding events, for instance trade fairs. In addition, information is displayed about significant developments in the region that are of interest to smaller companies are displayed. The Baltic Cooperation Forum is a free program that is partly funded by the EU and seeks to provide an easily accessible internet platform to facilitate the sharing and synergy of relevant knowledge and resources (Baltic Cooperation 2007).

2.6.4 Baltic Sea Chamber of Commerce Association (BCCA)

The Baltic Sea Chambers of Commerce Association (BCCA) is an organisation of altogether 50 Chambers of Commerce in Denmark,

Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Russia and Sweden. It was established on June 4, 1992 in Rostock-Warnemünde, Germany, to give the business community of the region a common voice for common concerns. Hamburg's chamber of commerce is also a member of the BCCA. The BCCA represents more than 450,000 companies which belong to all sectors of the Northern and North-Eastern European Market. The threefold task of the BCCA is to protect and uphold the interests of private entrepreneurship by advising politics in business related affairs, offering services to the business community and providing facilities for contacts, debates and meetings in the region (Baltic Sea Chambers of Commerce Association 2007).

2.6.5 The Baltic Development Forum (BDF)

The Baltic Development Forum is an independent non-profit network organisation. Major cities, research and media institutes as well as members of large companies, institutional investors and business associations are registered members. The mission of the BDF is to "promote the BSR as an integrated prosperous and internationally competitive growth region" (Baltic Development Forum 2007).

2.6.6 Council of the Baltic Sea States (CBSS)

The CBSS (Ostseerat) is a political forum for regional intergovernmental co-operation. The forum deals with issues concerning the BSR. Topics like the economy, civil society development, human rights as well as nuclear and radiation safety are discussed. From the German side Hamburg is also represented, but only after consulting Mecklenburg-Western Pomerania and Schleswig-Holstein (Council of the Baltic Sea States 2007).

2.6.7 Baltic Sea Forum e.V. - Pro Baltica

The Baltic Sea Forum is a non-profit organisation situated in Hamburg. It deals with the promotion and assistance in the coalescence of the Baltic Sea Region and supports the economical, political and cultural co-operation in the BSR (Baltic Sea Forum e.V. 2007).

2.6.8 The Baltic Sea States Sub-regional Co-operation (BSSSC)

The BSSSC is a political network of decentralized authorities, located in the Baltic Sea Region (Baltic Sea States Sub regional co-operation 2007).

3 ECONOMY

Both, the economic importance of the Hamburg region and the international trade will be explained in the following part of the profile.

3.1 Economic importance of the region

The Metropolitan Region of Hamburg plays a very significant role in the German economy regarding the service sector, manufacturing and industry as well as education. Hamburg's economy is dominated by the service sector. The following table summarises the basic economic data of Hamburg for 2005.

Table 1 Economic data of Hamburg (2005). (Source: Hamburg Business Development Corporation 2007)

GDP (€ bn.)	79.96
Gross value added (€ bn.)	72.19
of which accounted for by (€ bn.)	
Manufacturing	12.68
Trade, transport, hotels and restaurants	18.62
Public and private service sector	13.51
Gross employee earnings (€ bn.)	28.49
Earning per employee (€)	30,38
Gainfully employed persons in Hamburg (000s)	1,050.9
Gainfully employed persons by sector (000s)	
Manufacturing	160.9
Trade, transport, hotels and restaurants	308.7
Public and private service sector	298.7
Financial services, letting and leasing, corporate service provider	277.4

Around 100,000 companies and businessmen are currently registered with the Hamburg Chamber of Commerce. About 300,000 people from outlying districts commute to Hamburg each working day.

More than 70 of Germany's top 500 companies are from Hamburg. Hamburg's economy is hence characterized by internationally renowned company names such as Airbus, Beiersdorf, Hapag-Lloyd, Helm, Olympus, OTTO, Panasonic, Tchibo or the major German publishing companies. As a consequence, about 50% of Germany's nation-wide newspapers and magazines are produced in the region. The region's small and medium-sized enterprises also have international business relations and influence many global markets (Hamburg Business Development Corporation 2007).

As already mentioned, Hamburg's economy is dominated by the service sector. More than three quarters of the work force is employed in services. They work in the media industry, telecommunications and software providers, consulting firms, the event and tourism industry and consumer-oriented skilled trades e.g.

Despite the dominance of services, Hamburg is also a leading location for highly-specialized industries. The city ranks third after Seattle and Toulouse as most important locations of the civil aerospace industry worldwide. More than 30,000 people are employed at Airbus, Lufthansa Technik and Hamburg Airport. Moreover, there are around 300 SMEs operating in the aviation industry. The Airbus large-capacity aircraft A380 is partly built in Hamburg and Lufthansa Technik, a global player in maintaining and overhauling airplanes, is also located in the northern European city (Senat Hamburg 2007b).

The maritime industry embraces shipbuilding, the steel industry and metal construction amongst others. Europe's largest copper plant (Norddeutsche Affinerie AG with 3,200 employees) and several shipyards like Blohm + Voss are based in Hamburg (Norddeutsche Affinerie 2007). Besides, several well-known bio-technology and medical technology research institutes and companies operate from Hamburg, e.g. Philips Medizin Systeme, Olympus Optical and Eppendorf AG (HWF 2007a and Senat Hamburg 2007c).

Eventually, the IT and media sector provides around 70,000 jobs in Hamburg (Senat Hamburg 2007d). Three very large German publishing companies, Axel Springer AG, Gruner + Jahr and Heinrich Bauer Verlag are based in the city as well as some music companies (the largest one being Warner Music Germany) and Internet businesses (e.g. AOL, Adobe Systems and Google Germany). Banking and insurance are another important factor in Hamburg's economy.

3.2 International Trade

More than 10,000 of Hamburg's firms from trade and industry, transport, banking, insurance and other services have direct business relationships with businesses abroad. The Baltic Sea Region is of special interest regarding business relations for companies of the Metropolitan Region of Hamburg. There are several reasons for this:

- The geographical position ("in front of the gates of Northern Germany")
- The economic dynamics of the Baltic States
- The additional impulse caused by the expansion of the EU
- Cost-effective transport facilities crossing the Baltic Sea

About 400 firms from Denmark, Sweden and Finland are represented in Hamburg, and the Port of Hamburg has played a leading role in opening up world markets. But it is not just trading firms that have offices in Hamburg; banks and manufacturing firms as well as Scandinavia's highly advanced multimedia and telecommunications industries have entered the German market with bases in Hamburg. There has been a noticeable increase in the number and significance of firms from the states of the Baltic Sea Region. About 1/10 of Hamburg's entire foreign trade can be traced back to the Baltic States. Many companies use Hamburg as a hub of exports to western markets. However, the city is also a purchasing centre for various products, such as pharmaceuticals, medical equipment, spare parts and infrastructure components. The largest trade partners in terms of the value of the import goods are France (10.6 bn. € in 2006[1]), the United States of America (4.7 bn. €) and the Peoples' Republic of China (4.6 bn. €). For export goods, the most important trading nations are France, the Peoples' Republic of China and the United Kingdom (each about 2.2 bn. €). The total trade volume in 2006 was 56.1 bn € for import goods and 28.1 bn. € for export goods (Statistikamt Nord 2007c).

In 2006, the value of the foreign trade between Hamburg and the countries in the BSR (without Norway) amounted to nearly 7 bn. €. From 2005 to 2006, this has been a growth of 39%. The following chart illustrates Hamburg's export and import relations with the Baltic States for the period 2001-2006. Main trading partners for Hamburg in the BSR are Russia, Poland, Sweden and Denmark (Statistikamt Nord 2007c).

[1] All data for 2006 are preliminary data.

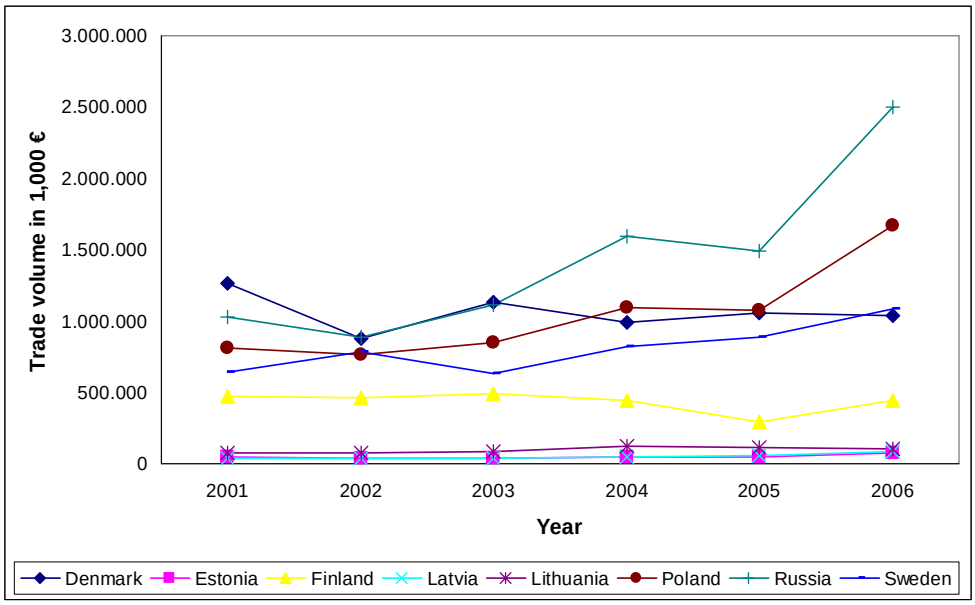


Figure 6 Trade volumes (import and export) of Hamburg with the BSR. (Source: Own illustration based on data from Statistikamt Nord 2007c)

The following table shows the major traded commodities (exported as well as imported) separated by the different countries from the Baltic States.

Table 2 Major commodities traded between Hamburg and the BSR in 2004. (Source: Handelskammer Hamburg (2007a))

Country	Export goods	Import goods
Denmark	Essential oils and fats, oilcake	Crude oil, natural gas, plastics, fish, shellfish
Estonia	Vegetable oil, oil cake, div. finished products	Food, hardware, furniture, petroleum products
Finland	Aircraft, engines, oil cake	Hoisting devices, paper/cardboard, petroleum products
Latvia	Vegetable oil, glass ware, chemicals	Crude oil, natural gas, petroleum products, milk, butter, clothes
Lithuania	Copper, half-finished products, chemicals, cosmetics	Milk and milk products, crude oil, natural gas, clothes, fertilizer
Poland	Vegetable oil, oil cake, petroleum products, hoisting devices, copper	Watercraft, radio, TV set, electro technology
Russia	Aircraft, vegetable oil, machines	Petroleum products, crude oil, copper, copper alloy, aircraft
Sweden	Aluminium, half-finished products, chemicals, aircraft	Petroleum products, paper, cardboard, chemicals

Table 2 shows that the major traded commodities imported from the BSR to Hamburg are petroleum products and paper/card board. This can be traced back to the available stock of natural resources, especially the big forest stands. The most exported goods to the BSR are vegetable oils and chemicals.

4 PUBLIC SECTOR SUPPORT FOR ENTERPRISES

In this chapter, the support offered for companies by the public sector will be described. First, the organisations and different support levels will be presented. Second, different types of support will be explained. Last, co-operation and partnership programs with respect to logistics and ICT will be shown.

4.1 Organisations

The regional profile of a high-technology location like Hamburg is influenced by the activities of many governmental institutions. Public authorities, administrations, research facilities and institutions for education and training all shape the technological and industrial landscape. It is important to take these activities into account when making a thorough analysis of the Hamburg region. In the following, the main organisations and projects related to logistics and information and communication technologies are introduced.

Due to the federal and decentralised structure of Germany, there are several political layers which are responsible for regional planning and support. The topmost is the support from the European Union, the second level is the support from the German government and the third layer is the support from regional government institutions. The last level is formed by local institutions.[2]

4.1.1 The European Union

The European Union (EU) offers support through several initiatives and funds. One of the aims of the EU is the economic and social cohesion between the European countries, mainly by correcting imbalances between the regions. Different kinds of funds represent instruments to

[2] For more information on the regional planning system and support, also refer to the report written by Benecke, Janina/Glaser, Jürgen/Seuthe, Rupert (2007).

achieve this goal, most importantly the so-called structural funds. The concrete objectives of these funds are

- Convergence
- Regional Competitiveness and Employment
- European Territorial Cooperation

One of the main funds is the European Regional Development Fund (ERDF). The areas related to infrastructure/transport and ICT are explicitly targeted by this fund (European Communities 2007).

Between 2000 and 2006, the city of Hamburg received more than 100 Mio. € from European funds, thereof 6,2 Mio.€ from the European Regional Development Fund for projects in specific areas and 97,5 Mio. € from the European Social Fund for qualification and employment projects (Euro-Informationen 2007).

4.1.2 The German government

The central contact in the field of public authorities and administrations is the Federal Ministry of Economics and Technology (BMWi). It offers a number of different support possibilities for SMEs. Other ministries and authorities offering support are the Federal Office of Economics and Export Control (BAFA), the Federal Ministry of Education and Research (BMBF), the German Office for Foreign Trade (BFAI) and the Federal Institute for Vocational Education and Training (BIBB).

In the following, their main support activities and projects are summarised. The major goal of the BMWi is to give support for start-ups as well as for established companies. In the logistics and ICT sector, their efforts can be roughly divided into five categories: support for business start-ups, support for investments, securities, research and innovation, and training, consulting and qualification services.

4.1.2.1 Support for business start-ups

The support for start-ups is done via state-backed credits and loans. SMEs can apply for very small loans called “Mikrodarlehen” and “Startgeld” respectively. These are very small loans between 25,000 and 50,000 €. More expensive and complex projects are supported through a series of loans by the “KfW-Mittelstandsbank”. The “equity for business start-ups” helps to get enough equity for the foundation of a company. With the help of other loans, the rest of the financing can

then be done. The important aspect of these credits are subordinated loans, i.e. they are absolutely liable and no securities are needed. Thus, they are very similar to cash-equity.

4.1.2.2 Support for investments

Investments are supported through tax benefits and bank loans. SMEs have the option to depreciate the investment in new movable equipment (such as machines or vehicles) not with the standard linear or declining depreciation, but to claim up to 20% of the costs additionally.

SMEs can also apply for a bank loan. This bank loan is granted for investments that need a long-term provision of money in order to attain sustainable economic success. These include property and buildings, construction measures, acquisition of equipment, acquisition of stock and the acquisition of other companies. The maximum amount of credit available are 10 mio. € and the “Unternehmerkredit” can cover up to 100% of the investment sum. It is granted for 10 years maximum and has a grace period of two years. The programs’ interest rate depends on the creditworthiness of the debtor and the recoverability of the securities. It is fixed for the whole duration of the loan.

The “KfW-Unternehmerkredit-Betriebsmittel” can be used to bypass temporary shortages in the cash flow or to finance operation resources respectively. SMEs can apply for these loans whose yearly revenues are less than 500 mio. € and which have good or very good future prospects. The maximum amount of credit available are 10 mio. € and it can cover up to 100% of the investment sum. The interest rate is risk dependent.

Established companies (i.e. companies that have been operating for more than 5 years) have also the possibility to apply for the “KfW-Unternehmerkapital: Kapital für Arbeit und Investition”. This program offers a complete financing package for activities that create or safeguard jobs. Again SMEs with no more than 500 mio. € annual revenues can apply. The loan is a combined loan, one half being a classical loan of the house bank of the borrower and the other half being a subordinated loan, for which no securities have to be provided. Both options have a duration of 10 years, but differ in the grace period.

4.1.2.3 Securities

In addition to loans, the state also offers support in terms of securities for bank loans through regional surety-banks. These are offered to entrepreneurs who have a convincing idea, but lack the typical securities required for a bank loan. The maximum amount of the loan is limited to 1 mio. €. The duration of the loan is limited to a maximum of 15 years and the guarantee agencies charge a fee.

4.1.2.4 Research and innovation

Aside from the general support the state also offers several programs to foster research and innovation. Explaining every program in detail is beyond the scope of this report, but the most important ones are introduced.

The “INSTI-Innovationsaktion” offers help for SMEs by offering services to create and foster innovation processes in these companies. The services include innovation workshops, technology consulting, development of new business segments and market-monitoring amongst others. These activities are subsidized with 25% of the billing amount.

Another program called “PRO INNO II – PROgramm INNOvationskompetenz mittelständischer Unternehmen” subsidizes cooperative projects as well as personnel exchange. Companies with less than 50 mio. € annual revenues or whose total assets are less than 43 mio. € and that have less than 250 employees are supported with up to 35% of the costs for these projects.

The last initiative that should be introduced here is the multimedia innovations program. This program supports R&D projects in a broad field of multimedia applications. B2B, B2C, B2G, C2G, e-learning and e-payment are just a few headwords of projects that are supported. The projects are usually selected through special topic idea competitions.

In addition to these programs, loans and venture capital for innovative companies are offered. These are special condition projects, where the state becomes a minority partner and offers a subordinated loan in form of venture capital. “ERP-Startfonds”, “High-Tech-Gründerfonds” and the “ERP-Innovationsprogramm” offer these loans.

4.1.2.5 Training, consulting and qualification services

The BMWi offers several consulting and training activities for SMEs. These include traditional business consulting and training courses as well as support for entrepreneurs and companies in difficult economic circumstances. The support is given in form of initial coaching as well as subsidies for further coaching. In case of training courses subsidies for the costs of the training are offered. Another form of SME support is to assist in the placement of apprentices or other employees.

4.1.3 Regional/local institutions

On the regional level, the organisations can again be separated by the area they cover. The highest levels of regional administration are the federal states. For this project, the federal states Hamburg and Lower Saxony are important. The next level is that of interregional organisations, which operate in a specific geographic region. The lowest level are organisations of the administrative districts Stade, Harburg and Lüneburg.

4.1.3.1 State organisations

In the city state of Hamburg several organisations offer support in the field of logistics and ICT.

The Ministry of Economy and Labour (“Behörde für Wirtschaft und Arbeit”) is responsible for setting the political framework, among others regarding regional economic policy, cluster policy and employment policy. The authority offers subsidies and consulting services in a range of different fields, e.g. for companies that want to operate new and innovative technology. The Ministry of Urban Development and the Environment (“Behörde für Stadtentwicklung und Umwelt”) also plays an important role in regional development.

One of the most important institutions for regional support is the Hamburg Business Development Corporation (“Hamburgische Gesellschaft für Wirtschaftsförderung“, HWF 2007b). HWF states its main goals as bringing in international companies, supporting local businesses, locational marketing and cluster management. This agency also encourages entrepreneurialism in the area of Hamburg.

The HWF is a private enterprise consulting agency. The shareholders are the city state of Hamburg, the Hamburg Chamber of Commerce, Hamburg Chamber of Skilled Trades and a consortium of leading commercial banks. The HWF provides its consultancy services free of charge. They offer a range of national and international services. The national service includes advice on locational factors as well as support in acquiring suitable property. Additional information is available through the HWF webpage, which offers advice on regulatory matters and subsidy programs. International companies get additional services, such as help in setting up a business in Hamburg.

In addition to the HWF, other institutions and administrations offer support for companies in the Hamburg area. The "Mittelstandsförderungsinstitut Hamburg" (MFI), a support agency for SMEs, acts as an agent between companies that are looking for support and sponsors. It offers a wide range of information and consulting services, aiming to simplify and accelerate the application process. They offer an archive of support and subsidy programs and help to apply them. The main focus of the MFI is on the three areas corporate foundations, corporate growth and technology & innovation. It co-operates with a number of public and private partners such as the local authorities, the chamber of commerce and HWF, and is part-financed by funds of the European Structural Fund (Innovationsstiftung Hamburg 2007).

The federal state Lower Saxony is responsible for the administrative districts of Harburg, Lüneburg and Stade. Through its Ministry of Economics, Labour and Transportation it offers a wide array of services for SMEs. Several programs to support medium-sized companies and innovations are offered. In the logistics sector one initiative stands out, the "Logistik Portal Niedersachsen" (LPN). This initiative has the aim to strengthen Lower Saxony's relevance as a location for logistics. It is targeted at building a transnational business network to foster the communication and exchange within the transport and logistics branch. It consists of three task groups: Logistics projects, location marketing and vocational training. Thus, the LPN acts as a one stop agency for start-ups and already established SMEs (Logistikinitiative Niedersachsen 2007).

4.1.3.2 Regional organisations

Many of the efforts of Hamburg's and Lower Saxony's logistics initiatives are executed by the Wachstumsinitiative Süderelbe AG. The Süderelbe AG was founded to provide local and international companies with a one-stop agency. Its goal is to boost the innovative and competitive potential of the southern Hamburg region, by providing sustainable enhancements to the economic performance. The Süderelbe AG is a public-private partnership project. The target audience are companies and investors that act in the southern Hamburg region. Its activities include:

- Development and implementation of cluster projects
- Consulting of companies in all phases of settlement
- Marketing of land and commercial property
- Networking between investors and users
- Advice on EU development schemes
- Promotion of further education and professional training

The three administrative districts of Stade, Lüneburg and Harburg all have their own economic development companies. These work as a central contact point for companies which operate and/or want to invest in the respective areas.

Also in the three districts south of Hamburg, business development agencies support companies in various ways: The "Wirtschaftsförderung Landkreis Stade GmbH" (WFS), the „Wirtschaftsförderungsgesellschaft mbH für Stadt und Landkreis Lüneburg", and the „Wirtschaftsförderungsgesellschaft im Landkreis Harburg" (WLH). Their services range from advice in general, economic, financial and regulatory affairs, to network building, help for business start-ups and promotion of innovative technologies.

4.2 Types of support

Public support is granted for many reasons. The most important objectives are foundation of new companies, creation of jobs, safeguarding jobs and support for special regions like the new federal states. The types of support can generally be structured into four categories.

4.2.1 Subsidies and grants

Subsidies and grants are very interesting for the recipients because they don't have to be paid back. Usually, subsidies are bound to specific terms and conditions and if the recipient does not fulfil these, the subsidy has to be paid back. Examples are the subsidies given by state authorities for vocational training and further education of employees, or funds from the European Structural Funds.

4.2.2 Loans with special conditions

The most common special conditions are interest rates below the market default. The difference is paid by the state. Another option is a longer grace period for the loan, which leads to a financial relief for the debtor. In many cases and especially when the borrower is a small or medium-sized enterprise, problems are the securities that need to be provided. In this case the state often provides loans with limited liability options for the borrower. Examples for these kinds of loans are the credits given by the KfW-Mittelstandsbank. They offer low interest rates, long grace periods and often have reduced liability requirements.

4.2.3 Securities given by state organisations

If a company cannot provide any securities, it is possible to get a surety from public authorities. In Germany this is done through surety-banks. These banks were created in every federal state and provide a surety for up to 80% of the credit volume.

4.2.4 Tax benefits

The last type of possible support from public authorities are tax benefits. These can come in many different kinds such as benefits when investing in new equipment or buying property. The biggest and most important difference to all other forms of support is that there exists a legal claim on tax benefits.

4.3 Logistics/ICT projects, cooperation programs and partnerships

On each of the levels described in the previous sections, a wide range of initiatives and projects has been started. In the following, initiatives from the EU and one project started in the city of Hamburg are described.[3]

The European Union (EU) offers support through several initiatives. The seventh general research supporting program (RP7) of the European Union (which is valid from 2007 to 2013), assists research activities through four subprograms. “Cooperation”, “Ideas”, “People”, and “Capacities” are the topics of these programs.

In the following, one large initiative that supports multinational projects shall also be introduced exemplarily.

The EUREKA initiative is a research and development network that “supports the competitiveness of European companies through international collaboration, in creating links and networks of innovation”. It was created in 1985 and now consists of 38 member countries. As of 2006 more than 700 projects are supported. The total budget for these projects is more than 1.7 bn €. More than 2760 organisations are involved; more than 1200 of these are SMEs. The goals of EUREKA are to provide member companies and project partners with fast access to knowledge, skills and expertise. In addition, it facilitates access to national public and private funding. The EUREKA label adds credibility to a project (Eureka 2007).

There are also several EU programs specifically aimed at improving logistic factors in the Baltic Sea Region, for example:

- ADOPT - This European Commission Project was primarily aimed at helping ship captains make better decisions by providing a Decision Support Tool. The main premise was the possibility to promote optimal decision-making possibilities by combining data from several scientific data sources into one powerful tool (Adopt 2007).
- EFFORTS - This acronym stands for Effective Operations in Ports. The project, however, also focuses on other issues affecting port operation such as navigational, environmental, and infrastructure challenges (Efforts 2007).

[3] For a broader discussion and evaluation of projects in the region, please refer to the report written by Benecke, Janina/Glaser, Jürgen/Seuthe, Rupert (2007).

On the regional level, one important project related to logistics and ICT is the “Logistics Initiative Hamburg” (LIH). This project’s overall goal is to enhance Hamburg’s position as the leading centre for logistics in northern Europe. It is aimed at building a network of business, academic and research partners. The initiative is organised around a central cluster management, which has the goal to affect the Hamburg logistics location with sustained, ground-level improvements. In addition, it has the task of safeguarding the labour potential for the logistics industry. It targets national and international logistics companies as well as companies from related industries. The LIH offers a wide range of support. It organises workshops, research groups and conventions. Companies are offered help in administrative and permit-related matters. They can apply for comprehensive consulting services, including communication with authorities. In addition, the LIH carries out promotional campaigns to enhance the profile of the Hamburg location, nationally and abroad (HWF 2007c).

5 LOGISTICS IN THE REGION

Through its geographical position, Hamburg is the trade and transport hub of northern Europe. In the following section, the transport, connections and infrastructure in Hamburg will be described. Next, the transport sector administration and industry associations (section 5.2) as well as social and environmental issues (section 5.3) will be addressed. Section 5.4 will deal with the logistics industry characteristics and the results of a survey conducted for the LogOn Baltic project. Last, an outlook on the future development of the region with respect to logistics will be given.

5.1 Transport, connections and infrastructure

In Germany, road transport traditionally plays a significant role in the logistics sector. Between 1980 and 2005, the modal split in Germany has changed considerably. More and more goods traffic is routed over roads. In addition, the distances that goods are transported via trucks also increases. Figure 7 shows the importance roads have gained over railways and waterways during the last 25 years. Ecological as well as economical reasons make it necessary to think about changing the modal split in Germany (also refer to section 5.3). Of course, these developments and considerations, also affect the transport situation in the Southern Metropolitan Region of Hamburg.

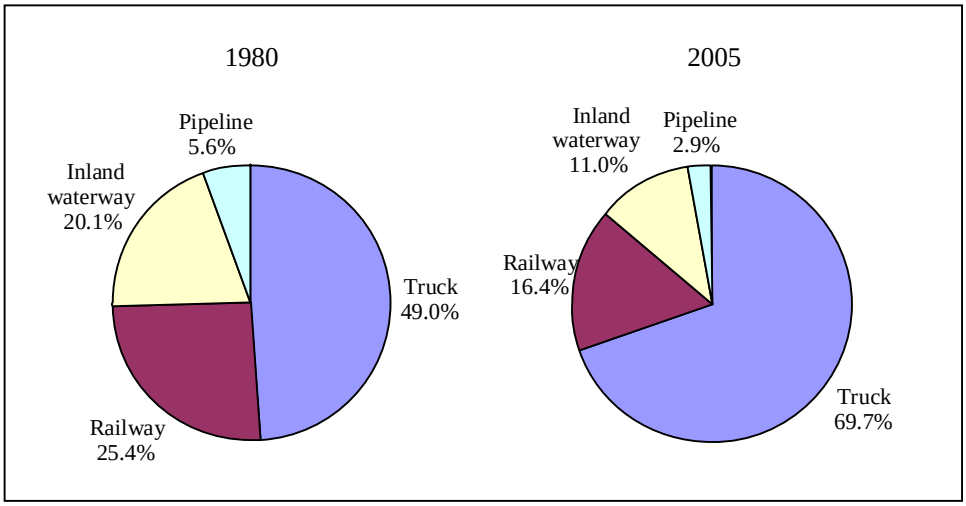


Figure 7 Modal Split (in ton kilometre) in Germany, 1980 and 2005[4] (Source: Bundesministerium für Verkehr, Bau- und Stadtentwicklung 2006)

The major planning tool for infrastructure in Germany is the **Federal Transport Infrastructure Plan (FTIP)**. It is a framework investment plan, but not a funding plan or programme. The latest version was adopted by the Federal Cabinet in 2003. The FTIP defines and prioritises infrastructure projects (modernisation, upgrading, construction) concerning the German road, rail and waterway modes. According to the FTIP 2003, the total level of funding available for these three modes for the period from 2001 to 2015 is around 150 bn. €. In the following, the main facts for each transport mode in the Hamburg region will be described. For regional infrastructure projects, the state or district government is the main responsible authority (Bundesministerium für Verkehr, Bau und Stadtentwicklung 2007b).

5.1.1 Roads and road transport

The road network in Germany covers about 231,500 km. As of 2006, the federal network of trunk roads includes more than 12,000 km of motorways (Bundesautobahnen, marked with a capital A and a number, e.g. A1 or A255) and roughly 41,000 km federal highways

[4] Without air transport

(Bundesstraßen, marked with a capital B and a number, e.g. B1 or B96). The main part of transport traffic is routed via these roads (Statistisches Bundesamt Deutschland 2007).

The region of Hamburg is superbly connected to the motorway network via the A1 and the A7, which run directly through the city. The A7 is the longest motorway of Germany and runs on a north-south axis through whole Germany. It connects Hamburg with Flensburg to the north and Hannover to the south. The A1 crosses the A7. It runs from the southwest to the northeast through Hamburg and connects the latter to Lübeck and Bremen. In addition, two smaller motorways connect Hamburg to other parts of Germany. The A24 connects Hamburg to the capital city, Berlin. In addition, Hamburg offers five smaller interstates, which run in and around Hamburg. The A250, A252, A253, A255 and A261 connect Hamburg to its outer regions and the bigger motorways. In addition to motorways, a big part of the traffic runs through federal highways.

In order to handle the increasing traffic and to avoid bottlenecks, however, an expansion of the road infrastructure in and around Hamburg is crucial to the further development of the logistics sector. Examples are a connecting motorway from the A1 to the A7 through the harbour or the use of more modern traffic management systems.

5.1.2 Railways

The rail network in Germany is owned by the Deutsche Bahn AG. With more than 34,000 kilometres, it is the biggest one in Europe. Trains can stop at more than 5,700 railway stations (Deutsche Bahn AG 2007b). Hamburg is connected to all bigger German cities and to the Baltic Sea. From Flensburg and Puttgarden trains use ferries to get to Aarhus and Copenhagen in Denmark.

Hamburg has four big long-distance railway stations used for passenger transportation, namely Hamburg Hauptbahnhof, Hamburg Dammtor, Hamburg-Altona, and Hamburg-Harburg. In addition, there is a long-distance station in Lüneburg. Regarding logistics, the Hamburg region offers four goods stations: Eidelstedt, Billwerder, Moorfleet and Waltershof. A special by-passing track connects these railway stations. It was created to release the main tracks of goods traffic. It leads from Hamburg Eidelstedt, over Hamburg-Rothenburgsort to Hamburg-Harburg.

In the region of Hamburg-Harburg, Europe's biggest switching yard station is situated, the marshalling yard Maschen. It was built between 1970 and 1977 and covers an area of 7km x 700m with over 300 km of rails. More than 800,000 carriages are handled every year. The complete bimodal hinterland traffic from the ports in Hamburg and Bremerhaven is bundled here and transported to 13 destinations (Deutsche Bahn AG 2007a).

The "Hamburger Hafenbahn" - a harbour railway - is also of special importance. The railway service is maintained by the port of Hamburg connecting the whole port area with the German and European railway network. 30% of the total goods at the harbour and 70% of the containers are handled by the Hafenbahn (Hamburg Port Authority 2007).

5.1.3 Air transport

Hamburg has one big airport, the "Hamburg Airport" which lies about 8.5 kilometers north-west of the city centre. It is connected to Hamburg via the A1 and A7 motorways. Shuttle buses run between the airport and the U- and S-Bahn station Ohlsdorf. A new S-Bahn line is also under construction, which will be finished in 2008 and will directly connect the airport to the city's public railway system.

Hamburg airport is mainly used for passenger travels. It is the 4th biggest passenger airport of Germany with a capacity of 16 million passengers per year. In 2006 nearly 12 million passengers were served during about 170,000 flights (Flughafen Hamburg GmbH 2007a). The airport has two terminals, which are served by 70 airlines. More than 120 destinations are approached on direct flights (Flughafen Hamburg GmbH 2007b).

Regarding goods transport and handling Hamburg airport only plays a minor role. The cargo centre with an area of 30,000 m² has a capacity of 110,000 tons per year. In 2006 around 77,000 t of air goods were handled at the airport (Flughafen Hamburg GmbH 2007c).

5.1.4 Waterways, maritime transport and ports

Hamburg is well connected to all main waterways in Germany. It is the central hub for sea-based trade and shipping of goods. Managed by the Hamburg Port Authority (HPA), the Hamburg Port - also called

“Hamburg’s gate to the world” - is Germany’s biggest harbour and the 2nd biggest in Europe after Rotterdam. For certain goods such as coffee and carpets it is the world’s topmost harbour. It is connected by waterways to both the North and the Baltic Sea. The Elbe River is the main water connection and links the harbour through Cuxhaven to the North Sea and the North-Baltic-Sea-Canal to the Baltic Sea (see figure 8).

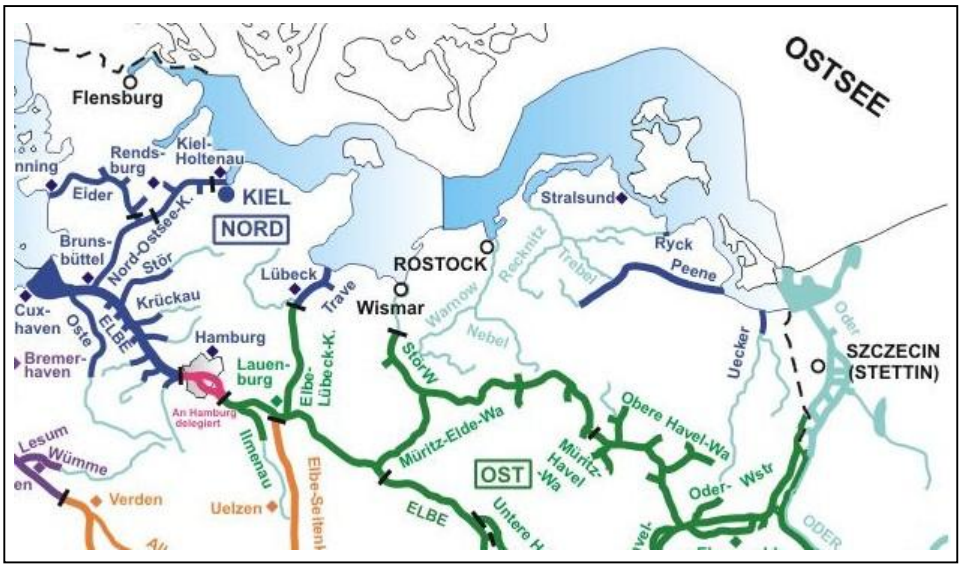


Figure 8 Waterways in northern Germany. (Source: Bundesministerium für Verkehr, Bau und Stadtentwicklung (2004))

The port of Hamburg lies around 110km from the mouth of the Elbe River into the North Sea. This is both a favourable and an unfavourable position. It is situated quite far inland; however the main issue is that the Elbe River is not deep enough for the new generation of container ships. There are plans for the deepening of the river, but currently there is a public discussion due to ecological reasons.

The harbour area encompasses about 7,200ha, of which 3,000ha are water area (Hafen Hamburg Marketing 2007a). In 2006, cargo handling amounted to more than 134.9 Mio. tons in total, thereof 89.5 Mio. tons in containers. Four of the ten largest countries for container trade with Hamburg are in the Baltic Sea Region, namely Russia (ranked 3rd), Finland (ranked 4th), Sweden (ranked 5th) and Poland (ranked 7th). The main trade partners are China and Singapore (Hafen Hamburg Marketing 2007c). Nearly 12,000 ship movements were registered. The degree to which containers are used is constantly

increasing. In 2006, 8.8 Mio. containers were handled (Hafen Hamburg Marketing 2007b). In Hamburg Port, four container terminals with a total capacity of almost nine million TEU are operated by the Hamburger Hafen und Logistik AG (HHLA, three terminals) the Eurogate GmbH & Co. KgaA (one terminal).

5.2 Transport sector administration and industry associations

When discussing the transport sector in Hamburg and the transport sector administration, the Federal Ministry of Transport, Building and Urban Affairs has be to be mentioned first on the highest, namely the federal level. In addition, the Senate of Hamburg and mainly two ministries, the Ministry of Economy and Labour, and the Ministry of Urban Development and the Environment are the relevant administrative institutions in the city state. The roles of these institutions have already been explained in the previous chapter on industry support.

On the side of industry associations, there is a very high number of different kinds of institutions. On a cross-industry level, the chamber of commerce is the representing association for most companies. On the level of the transport industry, associations exist on the federal, state and regional level. Getting an overview of the network and the structure of all associations is rather complex, and the aims, objectives and activities of many associations are often similar. On the one hand, this might be confusing for companies looking for support; on the other hand, there is a wide range of support for all needs companies might have. Many of the associations are also members of European (European Logistics Association) or International (e.g. International Federation of Freight Forwarders Associations) transport associations (see Benecke et al. 2007). There are other, often industry specific associations that are less relevant for Hamburg because they mainly operate on a national level. An example is the association of German airports, ADV. The most relevant associations for the Southern Metropolitan Region of Hamburg are introduced and briefly described in the following.

The **Bundesvereinigung Logistik** (BVL) e.V. and its regional groups serve as a neutral platform for communication between logistics managers and experts and have around 7,500 members from the top echelons of industry, trade, services and science. It generates stimuli and ideas for cross-sector, future-oriented logistics concepts to secure

the competitiveness of companies both in Germany and abroad. Through its contacts to organisations with a similar focus, BVL is the key forum for the national and international exchange of logistics ideas and experience between management executives. Each year, the BVL organises a logistics conference, which is the biggest in Germany. The BVL is also a member of the European Logistics Association (BVL 2007).

The **Deutscher Speditions- und Logistikverband** is a combination of specialists in all categories of traffic, who are active in science, economics and administration. It is a neutral platform for the knowledge and the exchange of experience between theory and practice in traffic development. It orients towards tasks of a lasting traffic development (Deutsche Speditionsgesellschaft mbH 2007).

The Association Materials Management, Purchasing and Logistics (AMMPL), **Bundesverband Materialwirtschaft, Einkauf und Logistik** (BME), is the business leading association for purchasing and logistics in Germany and Europe respectively. Founded in 1954, the Association now has 6,000 members. The BME welcomes members from all industrial and service sectors, including distributive trade, banking, insurance and public institutions. Membership encompasses not only Germany's top 200 companies; it also includes numerous medium-sized firms and various associations. The association is involved as an active partner in joint projects undertaken with government ministries at the federal and state levels, business federations, universities and other research institutions. The BME is also a member of the Institute of German Business, the European Council of Purchasing and Supply (ECPS), the European Logistics Association (ELA) and the International Federation of Purchasing and Supply Management (IFPSM) (Bundesverband Materialwirtschaft Einkauf und Logistik e.V. 2007).

The **Deutsche Verkehrswissenschaftliche Gesellschaft e.V.** is an association of experts from all areas of transport, representing about 3,500 individuals and corporate members. It is oriented towards a sustainable transport development. An important aspect of its work is to support young people by the foundation of a so-called "young forum" (Deutsche Verkehrswissenschaftliche Gesellschaft e.V. 2007).

The **Bundesverband Güterkraftverkehr Logistik und Entsorgung (BGL)** is an umbrella association. It represents more than 11,000 companies via its regional organisations, existing in all federal states. In Hamburg, the corresponding regional organisation is the **Landesverband Straßenverkehrsgewerbe Hamburg e.V. (LSH)**

(Bundesverband Güterkraftverkehr Logistik und Entsorgung (BGL) e.V. 2007). In this association, again several other associations are organised, among them the Verband Straßengüterverkehr und Logistik Hamburg e.V. (VSH) and the Verein Hamburger Spediteure (VHSp).

The **Verband Straßengüterverkehr und Logistik Hamburg e.V. (VSH)** deals with the concerns of the transportation of goods by road, logistics entrepreneurs and trade policy for approximately 60 years in Hamburg. Its members are transportation companies from all sectors: Short-distance freight traffic, long-distance haulage, container traffic, disposal, heavy transports, towing-services, courier enterprise, international land operate, danger property goods etc. (Verband Straßengüterverkehr und Logistik Hamburg e.V. (VSH) 2007).

The Verein Hamburger Spediteure (VHSp), Hamburg Freight Forwarder Association belongs to 350 firms with 10,000 employees. It represents the interests of Hamburg's freight forwarders in relation to the senate and all authorities in the region. It refers to relevant land laws and other federal state regulations, goods transportation by road, ship, environmental law, regional customs regulations, taxes, and local payment regulations. Beyond that the office stands for the authorities' advisory. VHSp is member of Landesverband Straßenverkehrsgewerbe Hamburg e.V. (LSH) and cooperate with Bundesverband Logistik e.V. and the International Federation of Freight Forwarders Associations FIATA (Verein Hamburger Spediteure e.V. 2007).

5.3 Social and environmental issues in the transport sector

This subchapter comprises descriptions of the trade unions, social programs and policies.

5.3.1 Trade Unions

In the following, the European Trade Union Confederation, the Baltic Sea Trade Union Network as well as the Confederation of German Trade Unions will be illustrated.

5.3.1.1 European Trade Union Confederation

The European Trade Union Confederation (ETUC) was founded in 1973 in order to demonstrate the interests of working people at European level and to represent them in the EU institutions. The ETUC has 60 million members in total through 81 National Trade Union Confederations from 36 European countries, as well as 12 European industry federations, and observer organisations in Macedonia and Serbia in addition.

The challenge for the ETUC is nowadays to speak collectively with one voice and to coordinate activities and policies across Europe in order to successfully defend and bargain for their members at national level. The ETUC is one of the European social partners and is also considered as the only representative cross-sectoral trade union organisation at European level by the European Union (European Trade Union Confederation 2007).

5.3.1.2 Baltic Sea Trade Union Network

The Baltic Sea Trade Union Network (BASTUN) was established in Helsinki in 1999 to be able to more strongly influence political decision makers. The network has about 12 million trade union members in trade union confederations in all the 10 countries in the Baltic Sea Area and consists of 19 organisations. All BASTUN member organisations, except for the Russian FNPR, are members in the ETUC (European Trade Union Confederation) (Baltic Sea Trade Union Network 2007).

5.3.1.3 The Confederation of German Trade Unions

The Confederation of German Trade Unions (Deutscher Gewerkschaftsbund, DGB) is an umbrella organisation for eight German trade unions. More than 6.5 million people are members of the Confederation which was founded in Munich, on 12th October 1949.

The DGB coordinates joint demands and activities within the German trade union movement. It represents the member unions in contacts with the government authorities, the political parties and the employers' organisations. However, the umbrella organisation is not itself involved in collective bargaining and does not conclude pay agreements.

The union's structure is characterized as democratic and bottom-up. Its delegates elect committees for 9 districts, 88 regions and the federal centre. The DGB has its headquarters in Berlin with branches and institutions in other federal states, cities and districts. It is a member of the European Trade Union Confederation (ETUC) and the International Confederation of Free Trade Unions (ITUC) (Deutscher Gewerkschaftsbund 2007).

5.3.2 Social and regional Programs

The regional partner of the HSL Hamburg School of Logistics, Wachstumsinitiative Süderelbe AG, works in the fields of logistics, mechanical engineering and vehicle manufacturing, chemistry, maritime systems and food industry. Furthermore, the cross section topics are settlement and space management, innovation and further education (Süderelbe 2007a). The following selected projects have been started:

- Logistics 50+: The objective of the project is to integrate older unemployed persons at the age of 50 and up into the regional logistics job market again. The project is promoted by the Federal Ministry of Labour and Social Affairs. Project partners apart from the Wachstumsinitiative Süderelbe AG are the job centre of the district of Harburg, a driving school, the advanced training centre port of Hamburg, Grone schools and the Hamburg School of Logistics.
- Regional cluster management: The cluster management of logistics targets on the improvement of information and communication, organises qualification offers, promotes cross-linking and the co-operation between enterprises and mechanisms for research and development, markets the region Süderelbe and supports the development of new markets.
- Logistics parks: The development of logistics parks, e.g. with direct port binding, is aimed at being advanced. These make personnel-intensive "value-added services" available beyond storage and freight transport (Süderelbe 2007b).

5.3.3 Policies

The transportation system and therefore also transport policies are of very high importance to a society with respect to the economic growth, employment and prosperity. Transport brings up questions concerning security, public safety, the environment and the control of monopolistic tendencies (Rodrigue, Comtois, Slack 2006, p. 228-229). For a long time, the European Community was either not able to or not willing to implement the transport policy that had been agreed upon by the Treaty of Rome. Later on, in 1985 the European Court of Justice decided that the Council did not succeed to act and the Treaty of Maastricht highlighted the importance of a common transport policy so that the first White Paper on European Transport Policy was released in 1992. Its objective – opening-up the transport market – has been achieved in general except for in the rail sector (European Commission 2001, p. 10).

Since Germany is a transit country in the middle of the enlarged European Union, its transportation system is of utmost importance. The development of the transportation system has only partly kept up with the increasing demand for mobility (Bundesministerium für Verkehr, Bau und Stadtentwicklung 2007a). The German transport policy aims at an integrated and comprehensive policy in order to optimize the total system. The Federal Transport Infrastructure Plan allows for a finance volume of 150bn € for the years 2001 until 2015 and the three carriers road, rail and waterways (see chapter 5.1). Approximately 83bn. € are scheduled for the maintenance of the existing nets while 66bn. € are planned for the new building of railway systems, roads and waterways. The priorities of projects are determined with the help of a cost-benefit analysis (Bundesministerium für Verkehr, Bau und Stadtentwicklung 2007b).

Concerning roads, especially the highways and in particular motorways are relevant for the transport system and are therefore to be considered as urgent. Since 2005, heavy trucks are charged a toll for using the motorways. A large share of the toll raised is used to finance the traffic infrastructure (Bundesministerium für Verkehr, Bau und Stadtentwicklung 2007c and 2007d). Railways are planned to play a more decisive role in the integrated transportation system and means are provided to achieve this aim. In addition, the EU awards grants for building up a Trans-European Network (TEN). The same applies to waterways, which show great advantages with respect to costs and the environment. Bottlenecks are to be eliminated in order to improve

efficiency (Bundesministerium für Verkehr, Bau und Stadtentwicklung 2007e and 2007f).

5.4 Logistics industry: characteristics

The logistics industry plays a main role for Hamburg's economy. In the following section, some general figures about the logistics industry in Hamburg are presented. In the second section, the results of a survey conducted for this project are summarised.

5.4.1 General facts about the logistics industry

As of 2006, about 12,500 companies are registered in Hamburg in the transport industry, 67.8% of which belong to the freight transportation, and 32.2% to the passenger transportation sector (Handelskammer Hamburg 2007c).

Together, they generate 11.7% of the gross value added of Hamburg (the average in Germany is only 6.1%). These numbers show the importance of the industry for the region. The following figure demonstrates the structure of the transport industry.

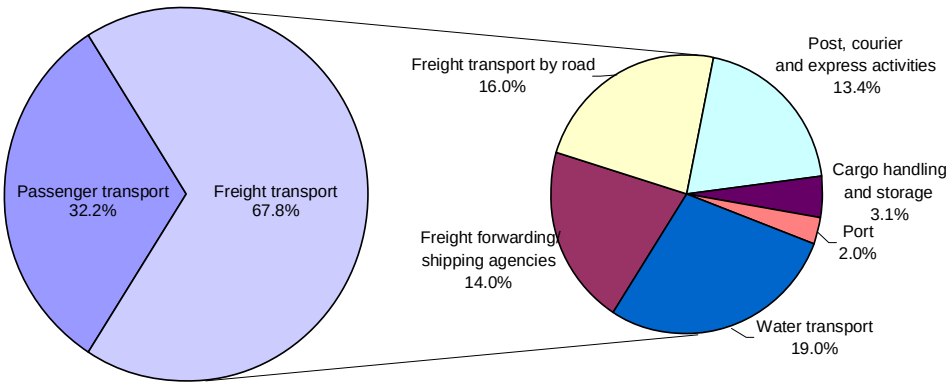


Figure 9 Hamburg Transport Industry: Sectoral breakdown by number of companies in Hamburg's transport industry (2006). (Source: Handelskammer Hamburg 2007c)

5.4.2 Results of the logistics survey

As described in the introduction of this report, four tools were used for data collection in the LogOn Baltic project. One of them was a high number logistics survey conducted in all regions. The survey aimed at measuring the current status and needs of logistics in the business community in the region. Different topic areas were covered in the survey, ranging from logistics costs and outsourcing to performance evaluation and logistics competence. In the following, the results of the survey are summarised.

Three versions of the survey have been used, focusing on three types of companies: manufacturing, trading, and logistics companies. 119 respondents took part in the survey, two thirds of them representing SMEs. Thus, as the majority of respondent companies are SMEs, the distribution of participants supports the objective of the LogOn Baltic project to evaluate the needs and to strengthen the competitiveness of SMEs in particular. 24% of the respondents represent the manufacturing industry, 29% belong to the trading industry and 46% are logistics service providers. Thus, all main industries where logistics plays an important role are covered. As the questions for manufacturing and trading companies were very similar, they will be covered together in the next section. The results from logistics service providers will be described in section 5.4.2.2.[5]

5.4.2.1 The results from the manufacturing and trade industry

The first main topic of the survey was logistics costs. Figure 10 shows the main components of these costs for manufacturing companies.

[5] For more information on the methodology and the results, pleaser refer to Kersten et al. 2007d.

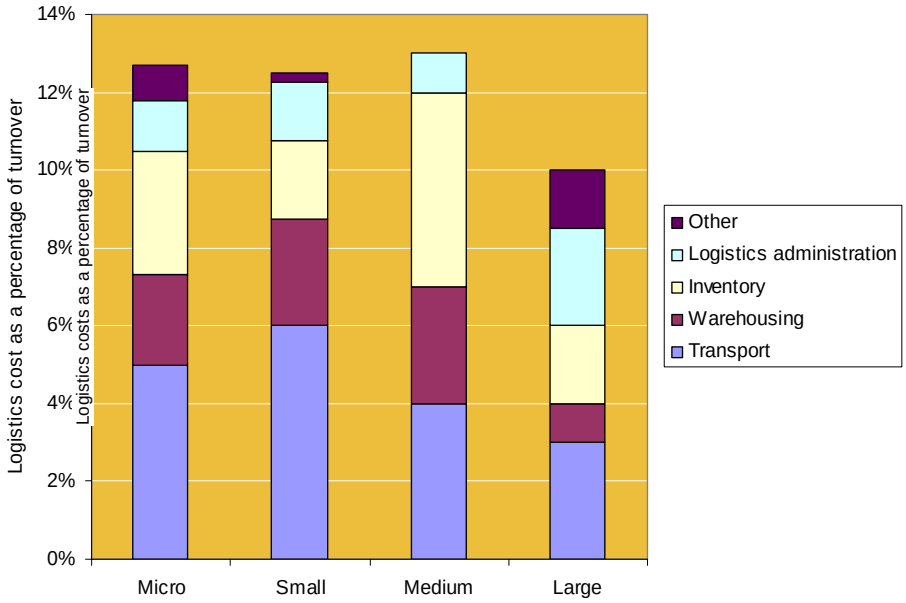


Figure 10 Logistics costs as a percentage of turnover in manufacturing companies

The four major logistics cost elements examined in the survey are transport, warehousing, inventory and administration. All costs are given as a percentage of turnover. For each category, a drop down menu was used, ranging from 0-40% in 1%-intervals. Companies indicating a sum of costs equal to 0% or greater than 40% were removed from the sample for plausibility reasons.

The overall logistics costs in the manufacturing industry vary from 10% in large companies to more than 12% in micro companies. While large manufacturing companies in total have the lowest logistics costs, there are no significant differences in the sum of costs between micro, small and medium-sized companies. The distribution of logistics costs, however, depends more on the company size. For instance, large companies seem to have their cost advantages mainly in transport and particularly warehousing costs, whereas administration costs are higher for them. One reason could be that logistics departments in SMEs are relatively small and hence easy to manage. From a certain size of a company onwards, the need for coordination and administration increases.

For the future, the majority of companies anticipate an increase in costs for three out of five cost categories. For example, 70% of the respondents expect an increase in transportation costs, making up the

largest part of costs for companies from all sizes. The remaining 30% expect neither a decrease nor an increase. There are several reasons for the estimated rise in transportation costs, such as the oil price, tolls or smaller batch sizes and more frequent shipments of goods. As figure 11 indicates for trading companies, logistics costs also depend significantly on the company size.

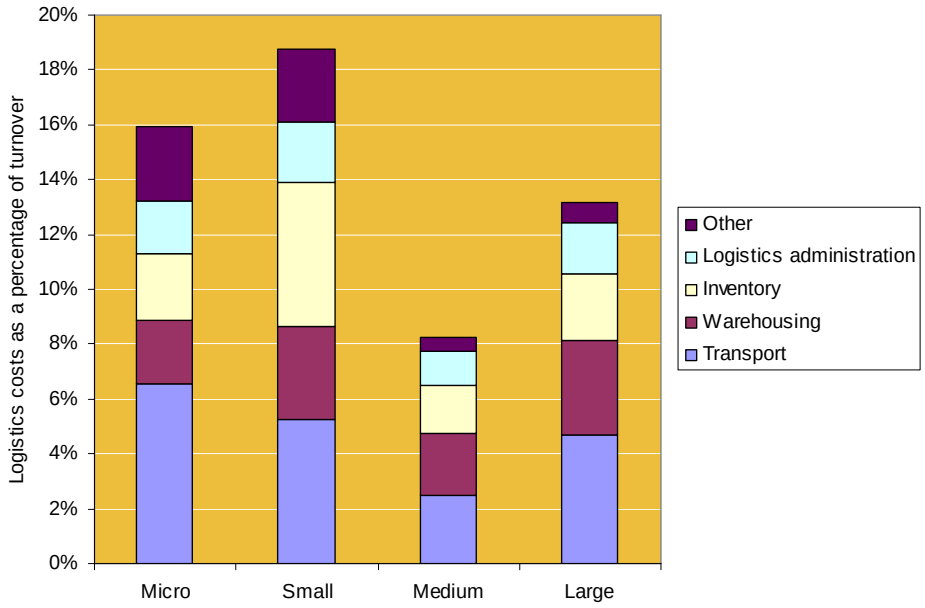


Figure 11 Logistics costs as a percentage of turnover in trading companies

According to the responses, overall logistics costs vary from slightly over 8% of the turnover in medium-sized companies to more than 18% in small companies. Thus, there is no general correlation between company size and the level of costs. One reason could be that the medium-sized companies which answered the survey are mainly from an industrial sector that requires less expenditure, e.g. because the goods are easy to handle. Regarding the structure of the costs, trading companies consider transport costs as the biggest part of their logistics costs, similar to the manufacturing industry. Medium and large companies estimate their warehousing costs as almost equally important as transport costs, whereas for small companies, inventory costs seem to be higher.

Regarding cost development, trading companies are slightly more optimistic in their expectations compared with manufacturing companies. The following questions targeted on outsourcing.

International and domestic transport, reverse logistics and freight forwarding are considered as the most commonly outsourced logistics operations in manufacturing and trading companies (see figure 12). In these areas, manufacturing companies generally do not see their core competence and thus they do not lose any know-how when outsourcing them. In addition, transportation, freight forwarding, and reverse logistics are areas that have a long history of expertise in the world of logistics service providers (LSP). In contrast, manufacturing and trading companies prefer to keep control of their own operations with respect to functions such as inventory management, invoicing and order processing.

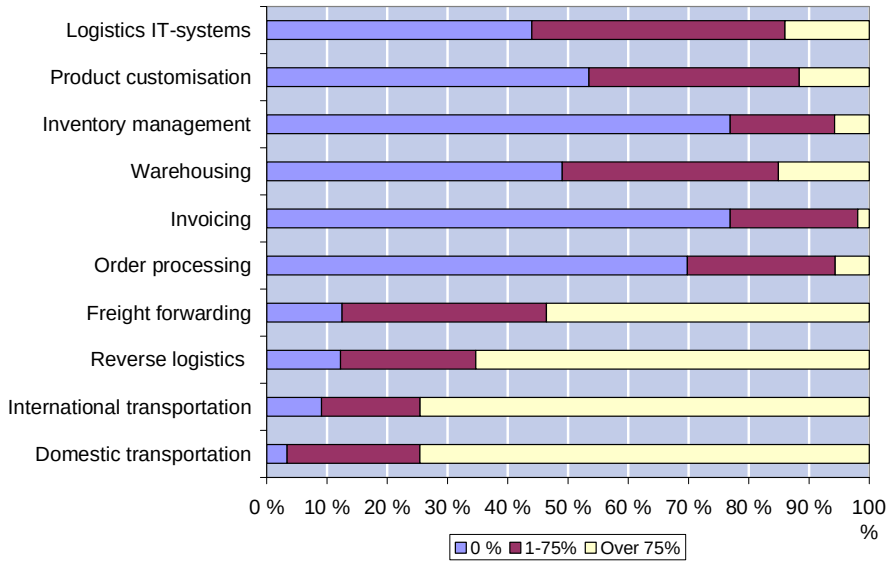
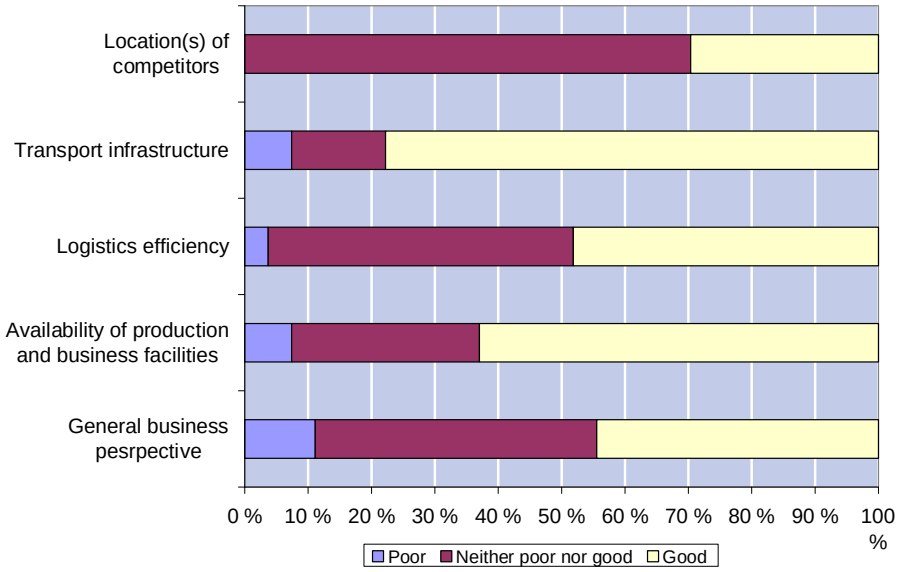


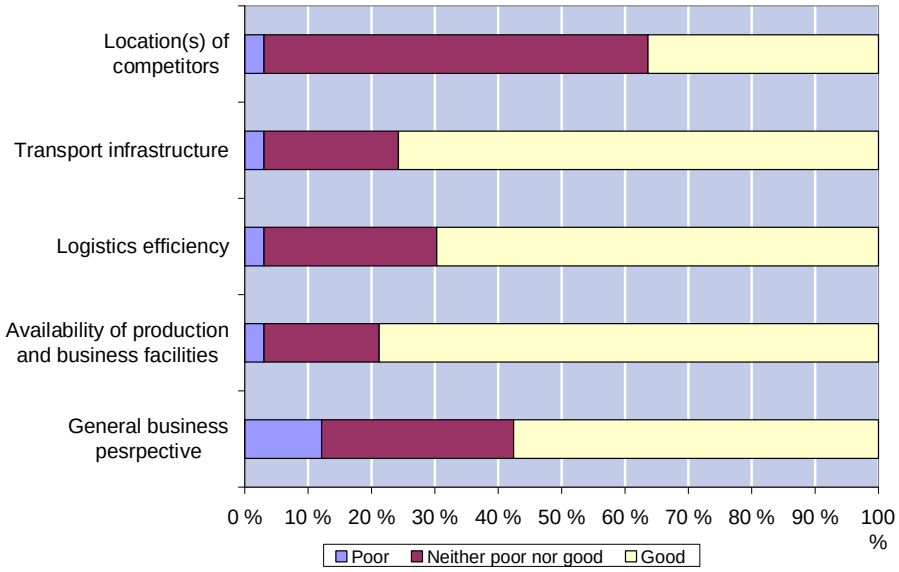
Figure 12 Outsourcing of different logistics functions, manufacturing and trading companies

Another important aspect of the survey was the companies' opinion on their operating environment. While trading companies were generally more satisfied with respect to all points interrogated in the survey, the majority (90-95%) of both manufacturing and trading companies consider their operating environment as "good" or "neither good nor poor" with respect to all points (see figures 13 and 14). Companies are most satisfied with the current transport infrastructure. More than 75% of the respondents estimated the transport infrastructure in their operating environment as good or very good.



Please note: Companies were also able to tick ”no response”.

Figure 13 Manufacturing companies’ opinions about their operating environment



Please note: Companies were also able to tick ”no response”.

Figure 14 Trading companies’ opinions about their operating environment

The remaining topics covered in the survey shall only be summarised here very briefly:

One aspect was the assessment of the importance of areas for staff development. Manufacturers mainly consider basic logistics skills and supply chain strategy as the main areas for development needs of their personnel, while trading companies prioritise inventory management, which is usually one of their core competences.

Manufacturing and trading companies were then asked to assess their own performance and costs. Most companies use internal and on a limited scale also external monitoring and performance evaluation measures, realizing the benefits of logistics on their profitability and customer service. However, logistics does not always have top management priority. Still, the majority of companies consider themselves as better or much better when it comes to logistics performance, particularly with respect to customer orientation. Internal and external collaboration and information sharing also seem to be an important aspect in the companies' business; although practice shows that there is often a number of deficits in this area.

Last, manufacturers were asked what the most important future logistics development need is from their perspective. The answers point out that cutting logistics costs is still the main issue.

5.4.2.2 Results from the logistics service providers

In this section, the results of the survey regarding logistics service providers (LSPs) are described. The topics covered were the structure of turnover and market development, logistics competence, development needs and threats of the future, operating environment, and self assessment of the companies.

First, logistics service providers were asked to estimate the distribution of the turnover for different types of services for the years 2006 and 2010. Currently, more than 40% of the turnover of the respondents is gained from transport services only; however, another 34% of the turnover is generated by customised service packages. Warehousing services and standardized service packages only contribute to roughly 10% each.

For 2010, a similar distribution of turnover is predicted, meaning only a small trend away from transportation services to customized services and therefore more complex solutions, since manufacturing and trading companies aim at saving costs in order to remain globally competitive. There are no significant changes in warehousing and standardized service packages.

The respondents were also asked to estimate the increase in demand for certain services by 2010 (see figure 15).

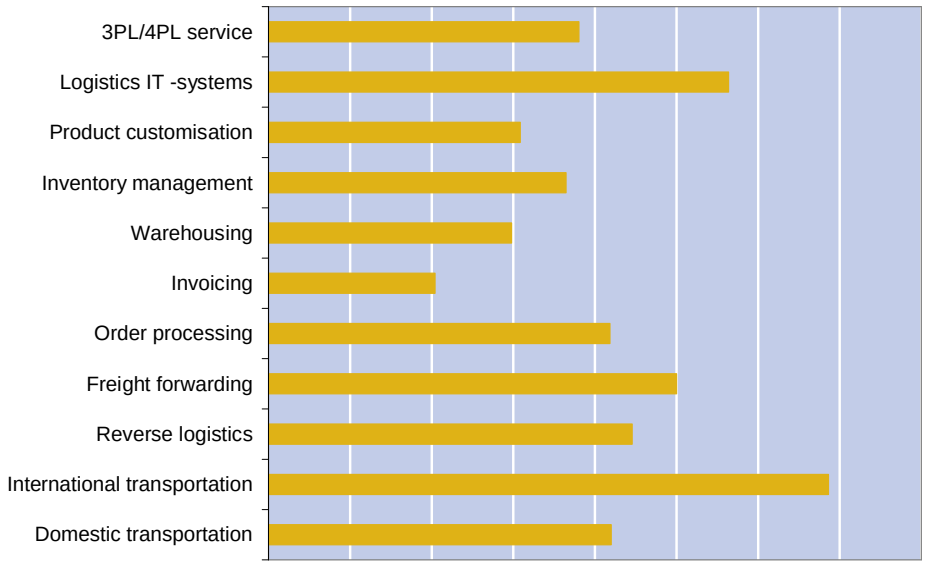
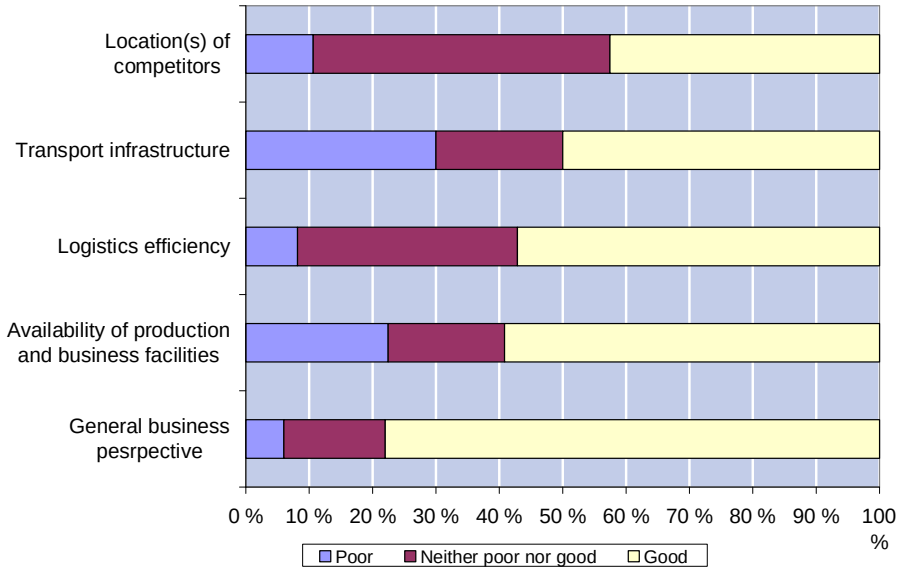


Figure 15 Increase in demand by 2010, logistics service providers

Figure 15 corresponds to the one in the manufacturers and traders section where they were asked to specify the areas that are being outsourced the most, i.e. transportation, freight forwarding, and reverse logistics. However, manufacturing and trading companies do not see a further trend for these areas in the next years. As the logistics service providers see an increasing demand here until 2010, there might be a mismatch between supply and demand if all companies use these expectations as a basis for planning. Logistics service providers also consider order processing and particularly logistics IT-systems as one main area for outsourcing. For the field of IT-systems, however, manufacturing and trading companies do not expect a noticeable outsourcing trend.

Just like manufacturing and trading companies, logistics service providers evaluated their business environment (figure 16):



Please note: Companies were also able to tick ”no response”.

Figure 16 Logistics service providers’ opinions about their operating environment

One of the most important aspects for logistics service providers is transport infrastructure, as their business depends on the strengths of the infrastructure. It was evaluated as poor by 30% of the service providers compared to other regions. 20% consider it neither poor nor good. The question has to be raised of whether this is proportional and appropriate taking into account Hamburg’s position as a logistics hub - although not all infrastructure projects are realised or not as fast as it would be beneficial for the economy – compared with the infrastructure of other European regions.

Staff competence was also another aspect covered in the survey for LSPs. Here, the companies regard service provision planning, transport management and supply chain flows and networks as the main fields for developing competence of personnel. The most important development needs for their business were seen in customer-oriented aspects such as improving customer service quality, extending the range of services and increasing service provision capacity. Increasing costs, decreasing demand and tightening competition were seen as the largest threats to their business.

The self assessment of LSPs formed the last part of the survey. Compared to manufacturing and trading companies that evaluate their own performance very positive, LSPs have a similar perception of

theirs, following a very customer-oriented approach. Correspondingly, performance evaluation measures are frequently used with the exception of benchmarking the benefits which do not seem to have been fully realized so far. Internal and external collaboration and information sharing is also used as a tool to create more transparency and better coordinated processes.

5.5 Logistics sector development and outlook

In the foregoing sections, it has become clear that the Southern Metropolitan Region of Hamburg offers a geographically optimal position, good infrastructure connections, particularly to the Baltic Sea Region, and a high number of programs and associations to support SMEs in the region. Nevertheless, due to the dynamic environment, the region has to develop itself with respect to all aspects.

Development and trends were also the topic of the expert interviews conducted for the LogOn Baltic project. 10 experts from different company groups, institutions and local authorities were interviewed on the current and future situation of the region with respect to logistics and ICT.[6] The most-mentioned trends in logistics affecting the region but also the interviewed organisations are still the internationalisation, the EU enlargement and movement of companies towards Eastern Europe, but also the development of Hamburg as a logistics hub, and the corresponding capacity problems due to transport sector growth rates.

Regarding the first issue, the internationalisation, several issues arise although this is not a completely new phenomenon. Language problems, a lack of standards, differences in business attitudes and mental barriers are the consequences. These are certainly areas where support for companies from the public sector is possible, but also the companies themselves have to manage their business proactively instead of only reacting and training their personnel accordingly.

The second issue, infrastructure problems, also have to be addressed. A number of infrastructure projects, such as the connection of the motorways A7 and A1 through the harbour, the deepening of the

[6] For more information on the methodology used and the results of the expert interviews, please refer to Kersten et al. (2007e).

Elbe River and the adjustment of port capacities are only a few keywords. Here, companies often criticize long planning horizons.

Another issue particularly raised by the companies in the logistics survey are increasing logistics cost, especially the transport costs. The most-mentioned logistics development need for manufacturing companies is to cut logistics costs. Due to higher costs on the one hand and cost pressure by the clients on the other hand, the question has to be asked whether this will change the structure of the companies in the transport sector considerably and a tighter competition will lead to a faster consolidation. Simultaneously, logistics service providers aim at expanding their range of services and improving customer service quality.

In conclusion, there is a number of trends and developments that will change the way how company do business, the structure of the companies and the Southern Metropolitan Region of Hamburg as a whole providing challenges for the region but also opportunities.

6 ICT IN THE REGION

In the following part of the profile, the general ICT infrastructure in the region, characteristics of the ICT industry as well as the ICT sector development and outlook will be described.

6.1 General ICT infrastructure in the region

Economic development and ICT are closely linked in today's era of globalisation. ICT can contribute significantly to the economic development of a region by providing adequate information in minimum time and at low cost, thereby enhancing productivity in different sectors of an economy. The management of logistics networks is connected with new challenges for enterprises. The requirements and needs of customers have to be identified and satisfied. Companies have to handle the increasing complexity of supply chains in time. Here the use of ICT plays a main role.

The following chapter summarises some general information about the use of Information and Communication Technologies (ICT) in Germany and the Southern Metropolitan Region of Hamburg.

The ICT industry is not only the biggest but also the most dynamic industrial sector in Germany. It is the only one which has been showing a continuous increase in its part of the German gross value added (GVA) since the eighties. Moreover, the ICT industry represents the most dynamic employment trend in the German economy. Although the total number of employees in Germany has been decreasing for years, the German ICT industry has created approximately 113,000 new jobs between 1998 and 2004. Nowadays, 4% of all jobs in Germany are in the ICT industry while 5% of all employees work in related sectors. It is responsible for 40% of the German economic growth in the last years (Kersten et al. 2007a).

In 2006, more than 7,280 IT companies were located in Hamburg, 2,095 were officially listed in the Commercial Register (Handelskammer Hamburg 2007b). Software consulting and development represent the largest IT division in the Metropolitan Region of Hamburg. Not only the leading companies such as Adobe

Systems Engineering GmbH, IBM Deutschland GmbH, Lufthansa Systems GmbH, Microsoft Business Solutions, SAP AG, Siemens AG, CoreMedia AG and Gentleware AG, but also Dakosy Datenkommunikationssystem AG for logistics, HanseCom Gesellschaft für Informations- und Kommunikationsdienstleistungen mbH for commuter transport, HS-Hamburger Software GmbH & Co. KG for standard corporate PC programs and Steinberg Media Technologies GmbH for music software are located here. The number of IT companies that belongs to manufactures of hardware equipment and parts amounts to 133 (cp. Figure 17). Among these, there are e.g. the European head offices of Sharp Electronics (Europe) GmbH and Yashica Kyocera GmbH as well as the Philips GmbH and Panasonic Deutschland GmbH, a subsidiary of Hewlett-Packard GmbH or OLYMPUS Deutschland GmbH and Telindus GmbH.

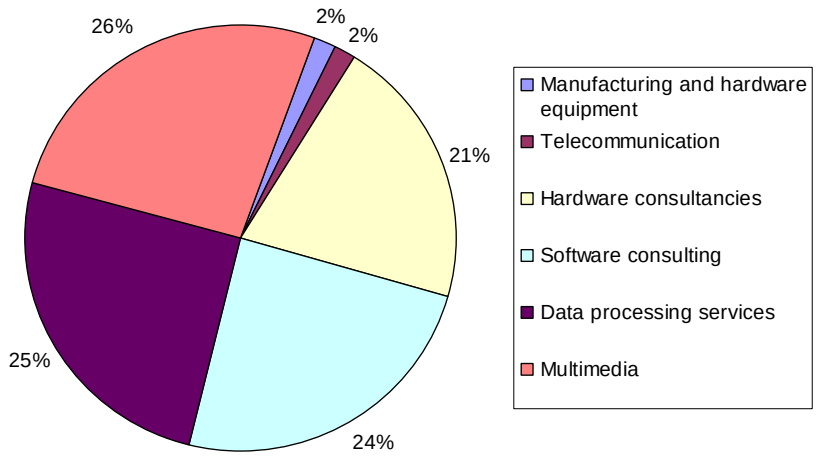


Figure 17 Structure of the branch of Hamburg's 7,280 IT companies. (Source: Handelskammer Hamburg 2007b)

The hardware consultancies, as another field of IT, rose during the past year. More than 1,700 companies offer their services in the Metropolitan Region of Hamburg; among them is ECS Electronic Computer Service AG, responsible for the technical installation and project supervision of the world's fastest Intel data processor (64-bit system) or e.g. Basis AudioNet GmbH. About 1,800 companies have chosen Hamburg as their business location to provide data processing services. Leading data-processing providers who made the same decision are e.g. GbD Gesellschaft für beleglose Dokumentenbearbeitung mbH, a leading outsource supplier for

electronic voucherless data recording, processing and filing, as well as GFT Solutions GmbH, a leading data management supplier.

In the telecommunication sector, about 170 suppliers are listed. Mobile communication, therefore, becomes a very important area of business in Hamburg. The region belongs to the leading German cities in terms of wireless internet access and even the seventh-largest WLAN metropolis worldwide.

Another increasing sector that has almost doubled since 2000 is the multimedia market with more than 1,900 companies. Leading agencies like SinnerSchrader AG, the fourth largest Internet service provider in Germany or Fittkau & Maaß Consulting GmbH and Nasa 3.0 GmbH as well as Schadelohr GmbH, a 3-D provider of real-time animation, and Netzpiloten AG (web tours) or AOL Deutschland GmbH & Co. KG and freenet.de AG can be found in Hamburg.

With slightly over 50 million users, Germany has the 4th highest number of internet users of all countries in the world following the United States, China and Japan, the internet penetration rate in Germany currently only lies between about 60%[7] to 61%, depending on the source and methodology used to gather these data (Internet World Stats 2007 and TNS Infratest 2007, p. 10). That means with respect to the penetration rate, Germany only holds rank 25. The penetration rates of leading countries Iceland, Sweden and New Zealand are 86.3%, 75.6% and 74.9% respectively. Between 2000 and 2007, the Internet use has increased by 110.1% (Internet World Stats 2007). After Berlin, the city state Hamburg has the second highest penetration rate with 64.3% of all federal states in Germany (TNS Infratest 2007, p. 11).

Regarding companies, 40% of the industrial enterprises use high ICT application in Germany. Thus, they obtain productivity increases which improve their international competitiveness. Hamburg is the location for a very broad spectrum of IT companies, ranging from software consulting and development to hardware consulting and the manufacturing of hardware equipment as well as parts, and from data processing services to telecommunications and multimedia. (HWF 2007a).

An increasing number of companies is now starting to focus on services instead of on manufacturing operations. The trend towards service orientation comes along with the need for a good ICT infrastructure.

[7] Percentage of the population above 14 years using the internet

The availability of telephone lines and other fixed cost telecommunication investments are the backbone of ICT infrastructure. However, it is important to realize that ICT infrastructure development should not only be concerned with the “hardware“ component of the system. It allows basic communication to take place but does not offer a significant competitive advantage itself. In order to differentiate itself as an instrument for enhancing synergies and productivity, the actors in the system need to be aware of the hardware structure. To truly create value however, they also need to understand the roles of different actors in the functioning of systems. In addition, managers for ICT systems and other stakeholders in the infrastructure can orient themselves in a way that promotes the stability and productivity of the system.

An important tendency in the ICT world in Hamburg is connected to the relatively new phenomenon and presence of a CIO (Chief Information Officer) in the company boardroom. Much of the current activity surrounding ICT infrastructure development in the Hamburg area is focused on defining and developing the role of this person. The development of the position “CIO” illustrates crucial factors that are important to anyone who would like to effectively use existing ICT infrastructures. These positions are intended to allow designated senior officers to also become a part of the infrastructure. This is especially important when seen in the light of Hamburg's current ICT situation.

The use of ICT is also increasing as a modern support for the management of public issues. The Southern Metropolitan Region of Hamburg e.g. is becoming more intensively developed with **E-Government,** electronic governing and administration. Therefore E-Government is also a main project of Hamburg, being crucial in the context of countries seeking co-operation and contributing to a modern public administration. Furthermore, it is both economically meaningful and recommendable from the political point of view (Hamburg.de 2007g).

The German population makes greater use of e-government sites on the Internet than their European neighbours: 31% of the German population searched the websites of public agencies for information in the first quarter of 2004, while the European average was only 25% (Kersten, et al. 2007a).

Both the purchases and sales of enterprises via the **Internet (e-commerce)** have increased considerably. After 22% in the whole year of 2002, a total of 37% of all enterprises ordered products via the Internet in 2003. In the same year, about 10% of the enterprises

received orders via the Internet (in 2002: 8%). Compared to 2002, their turnover via the Internet doubled. On the whole, enterprises achieved about 1% of their turnover via the Internet (Federal Statistics Office Germany, 2004).

E-ComHamburg is a competence centre for electronic business. It mainly aims at introducing small and medium-sized businesses to the diverse possibilities of electronic commerce. 13 partners, among them the Chamber of Commerce and Chamber of Trade, eight industrial associations and other institutional partners are sponsors of this campaign.

6.2 ICT industry: characteristics

As already mentioned before, one of the tools for primary data collection used in the LogOn Baltic Project is the ICT survey. This survey – with nine investigated regions by far the largest survey carried out in the Baltic Sea Region – intends to analyse and to describe the existing ICT infrastructure and services in the participating regions, revealing up to what extent they meet with the companies' need for further development (Kersten et at. 2007b).

The survey that was conducted in all participating Baltic Sea Regions covers the topics: use of ICT systems and use of internet as well as e-commerce/e-business and general assessment of ICT usage. It was mainly conducted as a web-based survey, but mailings have also been used. More than 160 companies took part in the survey, among them 80% represent SMEs. Regarding industry, 27% of the respondents belong to the manufacturing industry, 22% are logistics service providers, 16% belong to the trading industry and the rest represents other industries (Figure 18).

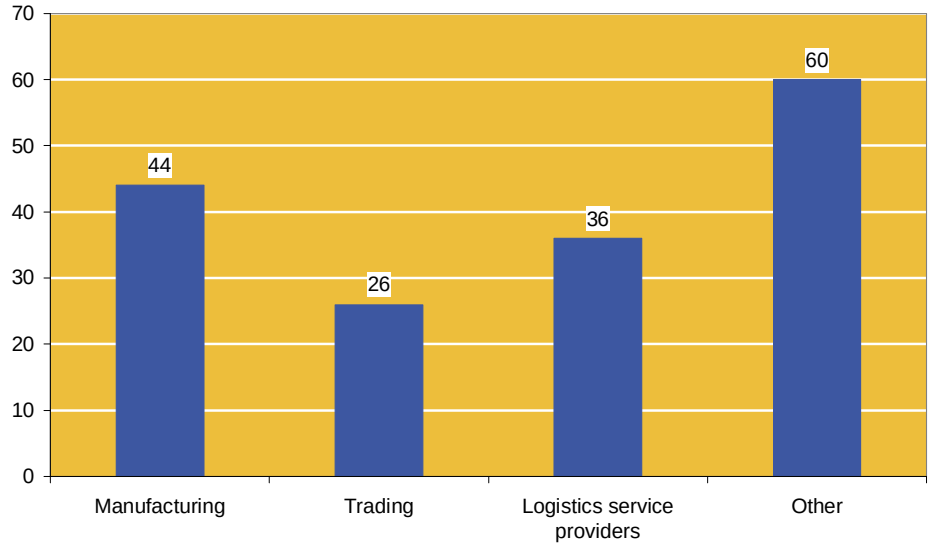


Figure 18 Number of respondents according to main industry

In the following, some of the key results of the ICT survey are extracted. Additional information about the ICT survey and especially the detailed analysis of results as a whole are summarised in a separate regional report of the Southern Metropolitan Region of Hamburg (see Kersten et al. 2007b) as well as in an aggregated ICT report in which the key results are analysed and compared among the Baltic Sea Regions.

The results of the survey show that the use of ICT is already widely spread in the Southern Metropolitan Region of Hamburg. The majority of the companies, around two thirds, have access to internet and a few more agree that their staff also have an e-mail account. They benefit from the Internet with the range of information available at very low cost and at high speed. The closer a company gets to the manufacturing industry, the less Internet and e-mail are normally used by employees. For service providers, however, Internet and e-mail become more and more important to ensure seamless and smooth communication with customers.

Although ICT systems are widely used in other fields, finance and accounting, marketing/sales and sourcing are the functions where ICT systems are used most often. In business areas like production, production planning and logistics, ICT systems are often applied as well and their usage is still increasing. Companies in the Southern Metropolitan Region of Hamburg seem to have realized that today's information technology very often leads to greater accuracy, more

economy, higher speed and visibility, immediate availability, higher productivity and to a tighter customer focus.

In most companies, the estimated costs for personnel, software and hardware account for 0-2.5% of the turnover each. Figure 19 shows that companies spend quite different proportions of their turnover on IT. The majority mainly expect the costs for all three categories to remain constant in the near future.

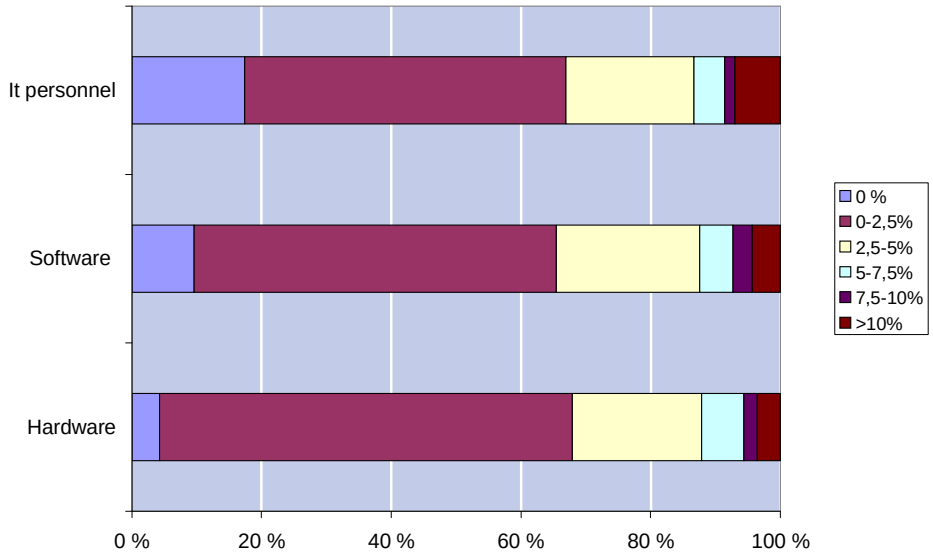


Figure 19 ICT expenses as a percentage of company turnover. (Source: Kersten et al. 2007b)

Regarding the analysis of data security measures, it can be observed that a number of measures such as the usage of passwords, virus protection applications, firewalls and employee trainings are already implemented to a high degree in the companies, but the usage rate can be further improved. In addition, only about one third of the companies regularly updates its security programs.

A large number of companies use the possibility of monitoring and evaluating their ICT costs and performance internally and together with their suppliers and/or customers in order to identify areas for improvements and cost savings. Benchmarking activities, however, are not implemented by most companies.

95% of the companies stated that they have their own website. More than 80% of the companies use the website to present information on the company itself and on the products/services offered. About two thirds also offer contact and feedback forms which allow their clients to

directly communicate with them. Websites of public organisations and institutions are mostly used for the retrieval of information and the download of forms (see Figure 20).

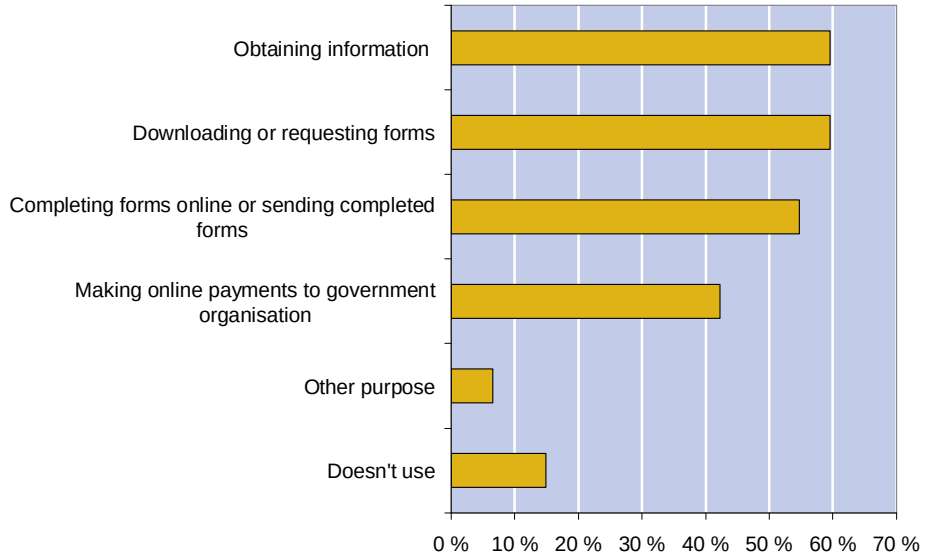


Figure 20 Different purposes companies use the Internet for to interact with public authorities and government organisations

The possibility of making payments online is also adopted by more and more companies. The analysis of the usage of communication methods shows that the vast majority of companies no longer make any difference between traditional methods such as fax and telephone on the one hand and email on the other hand. Personal visits, however, still have the highest priority in order to stay in contact with customers, suppliers and other business partners.

51% of the companies' websites are designed and administered by an IT service provider, although the costs for occupying IT services from an IT service provider can be very high. 48% of the companies' websites are designed and administered by the company's own IT department or certain employees.

The results of the ICT survey indicate that the increased application of modern information and communication technologies also finds its way into SMEs. The growing importance of e-commerce and e-business has to be realized and will be increasingly incorporated into the business strategy in the future. With the help of e-business, companies are able to link their internal and external data processing

systems more efficiently and more flexibly. They can work more closely with suppliers and partners, and can better satisfy the needs and expectations of their customers.

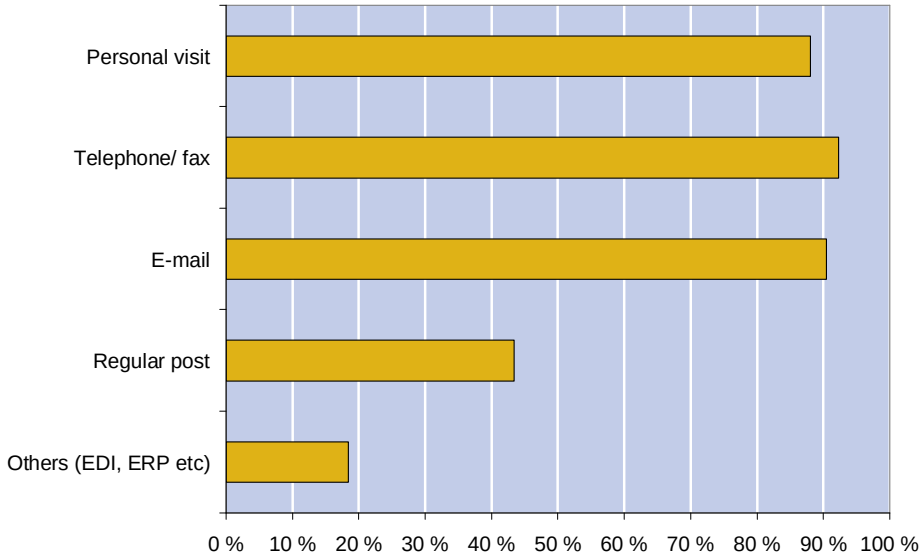


Figure 21 Used types of communication methods for the communication with customers and suppliers

Regarding the types of communication methods used for communication with customers and suppliers, figure 21 shows that about 85% of the companies visit their customers and suppliers personally. A reason for this high number can be that the respondents belong to SMEs in the Metropolitan Region of Hamburg. The most used type of communication other than personal contact is telephone and fax. About 90% of the companies make use of them. More than 40% of the companies use regular post for important documents, e.g. for legal contracts, invitations etc. E-mail is the commonly used e-commerce method of 90% of the surveyed companies. The use of other communication methods such as EDI and ERP is still very rare in the surveyed companies of the region (18%).

The analysis of the different types of business processes between the companies and their customers and/or suppliers which are handled electronically shows that electronic orders made by customers are expected to remain stable in the next three years. However, there would be a slight decrease of about 10% in the order placement for products or services by suppliers. On the other hand, payment

possibilities, tracking orders and after sales support will show an increase in the next three years for both customers and suppliers.

Regarding the development of usage of e-commerce in the next years, the results show that companies plan to increase the usage rate. 73% of the companies believe that the share of e-commerce for business with their customers will increase. About 26% expect that it will remain the same in the near future. The situation for interactions with suppliers is even clearer: 79% of the companies believe that the share of e-commerce with their suppliers will increase. About 21% think that it will remain the same and not a single company expects a decrease. In general, companies believe that E-commerce is useful for their firms.

The analysis of the different barriers on the use of Internet, e-commerce and ICT normally shows that security concerns are by far the most important barriers to the use of the Internet. The cost aspect does not seem to have a relevant negative effect.

6.3 ICT sector development and outlook

As described before, there is a clear trend towards the use of information and communication technologies. The region shows a high tendency to its implementation. Both, in the private and in the public sector its use is strongly represented. Companies in the Southern Metropolitan Region of Hamburg have realized the trend of the increasing use of ICT and have adapted to offer their public services more electronically.

ICT is not only common in private households as reflected by the increased penetration rate of the Internet and the increase in Internet users, but also in public institutions. E-Government becomes more and more a part of services and therefore a strategic orientation of public authorities and companies. The use of ICT becomes ubiquitous. Logistics companies are forced to join in the trend.

As the empirical results of the LogOn Baltic project show, the use of ICT becomes even more important and serves as a precondition for remaining competitive. Many logistics companies have realized that the implementation of efficient ICT systems very often leads to greater accuracy, more economy and higher speed. Moreover, they create transparency as well as immediate availability, higher productivity and a tighter customer focus.

Most of the companies have already realized the need for integrating ICT as an inherent part of the strategic management instruments. Information and communication technology forms the backbone of many business activities. By speeding up business processes and facilitating the use, ICT becomes more important nowadays. In modern management environments an excellent ICT system is therefore a sine qua non for any kind of business success. (Kersten et al. 2007a).

That is why public institutions should broaden and reinforce the awareness of ICT as a supportive and efficient management instrument. It is their task to offer regional development activities that aim at supporting logistics companies in implementing new IT systems and at creating platforms. By offering workshops and congresses, experiences can be exchanged and networking can be reinforced, so that logistics companies can consequently see that the implementation of new technologies in the daily business can add value for them.

7 HUMAN KNOWLEDGE BASE

Germany has a so-called dual education system. This system is a combination of a practical apprenticeship in a company and a vocational education at a vocational school in one program. Doing an apprenticeship is the usual starting point of the working life for young people who do not want to study after high school.

In the following section, jobs that require an apprenticeship will be presented. All apprenticeship profiles and degrees will be defined and structured by regulations of the chamber of commerce. The second section will focus on possibilities for further education, particularly at universities.

7.1 Professions and their qualifications

In the following, jobs that require training in the field of logistics and ICT are described. There is a wide range of education opportunities in these two fields. More than 20 apprenticeship programs are even offered only in the logistics area. The jobs are grouped into different categories: harbour and navigation, storage and delivery, air traffic, road and rail as well as ICT. There are, of course, also several general apprenticeship programs that enable the apprentice to work in different industries including the logistics and ICT industry, for example the Office Management Assistant (Kaufmann für Bürokommunikation). Furthermore, there are several jobs in logistics that do not require a formal apprenticeship, but training on the job. These are not listed here.

7.1.1 Logistics

7.1.1.1 Harbour and navigation

INLAND BOATMAN (Binnenschiffer)
Inland boatmen play an important role in the transportation of goods and the conveyance of people on European waterways and lakes. They work on watercrafts such as dry ships, tankships, ferries, cabin, trip and special ships. They are part of the crew and work in all areas of the ship to guarantee a secure and frictionless progress on board. For instance, they participate in ship control (support docking and take-off manoeuvres), implement servicing and maintenance, control shipments and unload ships.

HARBOUR BOATMAN (Hafenschiffer)
These boatmen support the skipper in goods and passenger transportation and cargo handling and work on different kinds of ships. In detail, their job includes the handling and supervision of the tug equipment, the supervision of tug operations, the appropriate handling and maintenance of the drive line as well as all equipment and devices on board.

TRAINED ASSISTANT FOR HARBOUR LOGISTICS (Fachkraft für Hafenlogistik)
These employees work in terminals for cargo handling as well as in warehouses for bulk and general cargo in sea and inland harbours. Their responsibilities include, for example, acceptance of export and import goods and control of accompanying documents; goods control on quantity, quality, etc.

SHIPPING AGENT (Schifffahrtskaufmann)
Shipping agents organise transportation of all kinds of goods by sea. They work in line trade, tramp navigation or ship agent companies. Merchants are in contact with customers, suppliers and ship crews all over the world and communicate with service providers of the maritime traffic and harbour economy.

MARITIME GOODS CONTROLLER (Seegüterkontrolleur)
These workers are responsible for the fast and smooth movement of incoming and outgoing goods in the harbour. Their tasks include weighing, sampling and marking as well as tarring goods. The controllers repair defective packages, write reports and prepare goods for shipping and customs clearance.

7.1.1.2 Storage and delivery

TRAINED ASSISTANT FOR COURIER, EXPRESS AND POST SERVICES (Fachkraft für Kurier-, Express- und Postdienstleistungen)
These service employees work in companies that plan, organise, supervise and conduct the transport of small-sized and time-critical consignments as well as other logistical services. They mainly work in functions such as order acceptance, cargo handling and delivery.

MANAGEMENT ASSISTANT FOR COURIER, EXPRESS AND POST SERVICES (Kaufmann für Kurier-, Express- und Postdienstleistungen)
These service employees work in companies that plan, organise, supervise and conduct the transport of small-sized and time-critical consignments as well as other logistical services. They mainly work in the fields of managing and controlling goods and services, order processing and sales as well as human resources.

TRAINED ASSISTANT FOR WAREHOUSE LOGISTICS (Fachkraft für Lagerlogistik)
These employees work in industrial and trading firms as well as in forwarding agencies and other logistics service providers. Their tasks include all operations in warehouse logistics.

PROFESSIONAL WAREHOUSEMAN (Fachlagerist)
These employees work in industrial and trading firms as well as in forwarding agencies and other logistics service providers. Their responsibilities lie in the fields of cargo handling and storage.

7.1.1.3 Air traffic

MANAGEMENT ASSISTANT FOR AIR TRANSPORT SERVICES (Servicekaufmann im Luftverkehr)

These management assistants work in air transport companies, mostly in areas that are close to the customer such as air traffic, airport and handling companies; thus being important representatives of their companies. They can work in all operating functions and consult and care for the passengers both on ground and in the air.

7.1.1.4 Road and rail

MANAGEMENT ASSISTANT IN FREIGHT FORWARDING (Kaufleute für Spedition und Logistikdienstleistung)
This apprenticeship allows people to work in the area of national as well as international transport, usually in companies which organise, manage, control and handle transport and other logistics services. They mainly have responsibilities in the fields of service provision, order processing and sales and work mainly independently on the basis of instructions of their company, laws and regulations and coordinate with their business partners. Persons with this apprenticeship are deployed not only in the area of road and railway, but also in any kind of company that deals with logistics.

PROFESSIONAL DRIVER (Berufskraftfahrer)
Professional drivers accomplish their tasks independently on the basis of technical documents and orders. They plan and coordinate their tasks, also together with clients and members of the supply chain. Furthermore they take measures to improve quality, security and health protection as well as environmental protection. In addition, they document their activities and draw up accounts.

RAILWAYMAN (Eisenbahner im Betriebsdienst)
Railwaymen work in railway companies for passengers and/or cargo transportation or infrastructure companies. As locomotive driver or movement inspectors, they are responsible for a smooth and safe transport.

MANAGEMENT ASSISTANT FOR TRAFFIC SERVICE (Kaufmann für Verkehrsservice)
For this apprenticeship, there are two fields of specialization. Management assistants with a focus on sales and service are deployed in local service and sales agencies (e.g. service points and travel centres) or they attend to travellers during transportation (e.g. as a train

guard). Management assistants with a focus on security/safety and service mainly work in traffic facilities (e.g. train stations) and in the means of transportation.

SERVICE DRIVER (Service Fahrer)
Service drivers work in companies which offer services to customers such as maintenance of devices, restocking of inventory, replacement of products and selling goods. They mainly have tasks in areas such as textile rent service, work wear garment service, hygiene service, catering, technology service as well as courier, express and post services. (Handelskammer Hamburg 2007d)

7.1.2 ICT

The following section describes the apprenticeships in the ICT field. As shown by the number of selected descriptions, the different kinds of professions are more limited than in the logistics sector itself.

IT SPECIALIST (Fachinformatiker)
IT specialists are trained in the field of application development or system integration. They implement subject-specific requirements in hardware and software systems. Their responsibilities also include: analysis, planning and realisation of technical information and telecommunication systems, implementation of new and modified systems of the information and telecommunication techniques, and user support and training.

MANAGEMENT ASSISTANT FOR INFORMATICS (Informatikkaufmann)
Management assistants for informatics work in commercial functions in their industry, for example manufacturing industry, trading industry, banks, insurance or hospitals. Their responsibilities include the planning, adjustment and implementation of information and telecommunication systems, training and support of employees regarding the use of ICT systems to fulfil their specific tasks, and system administration. Thus, they are intermediaries between the requirements set by the operating departments and the implementation of ICT systems.

INFORMATION ELECTRONIC TECHNICIAN (IT-System-Elektroniker)
This new occupational image replaces radio and television engineering as well as office information electronics. The functions include the setup of radio and television components software, equipment and cross linked systems of the information and communication technique, support of these systems and components, adjustment of the hardware and software to the specific requirements of companies, training and support of the system user, and maintenance, control and supervision of technical equipment.

MANAGEMENT ASSISTANTS IN IT SYSTEMS (IT-Systemkaufmann)
These management assistants mainly work in companies that develop and offer information and communication systems. Their task is to provide information and communication solutions for customers. They are responsible for projects regarding the implementation and upgrading of information and communication infrastructure with respect to commercial, technical and organisational aspects. Mainly working in the areas of sales or consulting, their responsibilities include to act as a contact person for customers and provide services to them; to monitor the market for ICT systems and to perform marketing activities (Handelskammer Hamburg 2007e).

7.2 Education and training

In today's dynamic business environment, requirements for employees are changing and increasing. Employees face several new tasks and take over more responsibility in the day-to-day business. This is true for blue collar employees but even more for white collar employees and managers. Most employees in the logistics sector have a practical background and several years of work experience. The new requirements in the logistics sector, however, make it necessary to maintain, to adjust and to broaden one's professional skills and one's knowledge after the first occupational training. Higher-level education and advanced training are the keywords. According to recent studies, many companies still lack sufficiently qualified employees, although there is a relatively high number of offers regarding logistics education in Hamburg (Kersten, Böger & Schröder, 2006).

Four universities (three in Hamburg and one in Lüneburg), two universities of art, one university of applied sciences for full-time students, several smaller distance universities, schools, academies

and institutions for cooperative education are located in the Metropolitan Region of Hamburg. They offer a wide range of different programs. Examples are the Hamburg School of Shipping & Transportation (HST), Fortbildungszentrum Hafen Hamburg (FZH, English: Advanced Training Centre Port of Hamburg), the Forschungsgemeinschaft Logistik (FGL) or the Akademie Hamburger Verkehrsfachwirtschaft (AHV). While the universities are public, other institutions can be either public, private or public-private partnerships such as the HSL. An overview of these institutions in the field of logistics can be found on the education web portal of the Logistics Initiative Hamburg and the Chamber of Commerce Hamburg (Handelskammer Hamburg 2007f).

There are specialised study programs for logistics/ICT as well as more general programs, e.g. in the business or engineering field, which enable students to choose logistics or ICT as an elective subject. In the following tables, only the specialised programs are introduced.

Table 3 Logistics Study Programs in Hamburg

Name of the program	Degree	Duration	University
Logistics Management (Co-operative study course)	Bachelor of Arts	3 years	HSBA Hamburg School of Business Administration
MBA in Logistics (Full-time and part-time MBA)	Master of Business Administration (MBA)	1 year (full time), or 2 years (part time)	HSL Hamburg School of Logistics
International Business and Logistics	Master of Business Administration (MBA)	3 semesters	HAW Hamburg University of Applied Sciences
Logistics – technical business studies	Bachelor of Arts	7 semesters	HAW Hamburg University of Applied Sciences

Table 4 ICT Study Programs in Hamburg

Name of the program	Degree	Duration	University
Informatics/Business Informatics	Bachelor of Science	6 semesters	Leuphana University Lüneburg
Computer Engineering	Bachelor of Science	6 semesters	Hamburg University of Technology
Information Technology	Bachelor of Science	6 semesters	Hamburg University of Technology
Information and Communication Systems	Master of Science	4 semesters	Hamburg University of Technology
Information and Media Technologies	Master of Science	4 semesters	Hamburg University of Technology
Software Technology	Master of Science	3 semesters (full time), or 5 semesters (part time)	Leuphana University Lüneburg
Web and Media Informatics	Bachelor of Science	7 semesters	FOM Study Centre University of Applied Sciences Econometrics and Management
Business Informatics	Bachelor of Science	7 semesters	FOM Study Centre University of Applied Sciences Econometrics and Management
Informatics	Bachelor of Science	6 semesters	University of Hamburg
Business Informatics	Bachelor of Science	6 semesters	University of Hamburg
Informatics	Master of Science	4 semesters	University of Hamburg
Applied Informatics	Bachelor of Science	6 semesters	HAW Hamburg University of Applied Sciences
Computer Engineering	Bachelor of Science	6 semesters	HAW Hamburg University of Applied Sciences
European Computer Science	Bachelor of Science	6 semesters	HAW Hamburg University of Applied Sciences
Informatics	Master of Science	4 semesters	HAW Hamburg University of Applied Sciences
Information Engineering	Bachelor of Engineering	7 semesters	HAW Hamburg University of Applied Sciences
Information Engineering	Master of Engineering	3 semesters	HAW Hamburg University of Applied Sciences

Not only in Germany in general, but also in Hamburg, there is a wide range of offers regarding ICT programs which makes it difficult to keep an overview and to compare all programs. Regarding logistics, the German education system still has to catch up, but more and more programs are being developed.

7.3 Development and outlook

In total, there is a relatively wide range of offers for vocational and further education in the area of logistics and ICT. Also the results of the

expert interviews conducted for this project show that companies and institutions are mostly satisfied with the level of qualification in the region. Ten experts were asked to evaluate the level of qualification on a five-item scale. For the logistics field, 6 out of 8 experts who answered the question evaluated the level of qualification in the region as “high” or “very high” for all groups, namely blue collar workers, white collar workers and management. All experts, however, also agreed that further education in a company will become more important in the future. This is equally true for soft skills as for hard skills, external and internal training measures.

This result also shows that there is still room for improvements on all stages of the education system. The deficit in basic skills such as reading, writing and mathematics is one of the main problems for companies planning to recruit high school students after their graduation.

On the next stage of education, there is a wide range of possibilities for apprenticeships and study programs. The content of the apprenticeships has been changed very often in the last years to meet the requirements of the dynamic business environment. An example is the education profile of the “Management Assistant in Freight Forwarding” (Speditionskaufmann), which was changed in 2004. Skills in areas such as information and communication technologies, customer service, planning/organisation, controlling and supply chain management are integral parts of the new education profile in addition to the traditional areas such as forwarding, inventory management and accounting.

The demand for more practice-orientation in higher education has also led to the development of new offers. The number of institutions offering co-operative studies is increasing as well as the number of companies that support these study programs. At many universities and particularly universities of applied sciences, internships and practical trainings have been integrated into the study course and are compulsory for all students.

At all stages of education, there is often a lack of offers that are specific to the respective environment. In addition, for students and employees it is often difficult to find out the best solution for their specific interests. The Metropolitan Region of Hamburg has started activities to improve the situation with regard to these two aspects. For instance, there are several websites which collect information on

institutions and their offers[8]. In order to prepare employees for the requirements specifically in the Hamburg and the Baltic Sea Region, the Authority for Education and Sports supports a European Union-funded project throughout the Baltic Sea region with the working title “Hanselogistiker” (Hanseatic Logistician) in co-operation with the “Koordinierungsstelle Weiterbildung und Beschäftigung e.V. Hamburg”, the University of Technology, the Advanced Training Centre Port Hamburg, the Forschungsgemeinschaft Logistik and the Hamburg School of Logistics. The project emphasises on further education in logistics on all qualitative levels in the port and port hinterland logistics. One issue is to give a certificate with the degree “Hanselogistiker” on the occupation levels from the trained worker up to the university level (FGL 2007).

[8] See, for instance, http://www.logistik-lernen-hamburg.de/ and http://www.lernende-metropole.de/

8 REGIONAL LOGISTICS AND ICT COMPETENCE

In this chapter, the current situation and the future development needs regarding logistics and ICT will be discussed. In the following section, the strengths, weaknesses, opportunities and threats of the region with respect to logistics and ICT will be presented. Based on that, the needs of the region will be analysed in chapter 8.2.

8.1 Analysis of strengths and weaknesses

In this section, the results of the expert interviews regarding strengths and weaknesses of the region are presented.[9] The experts were asked where they see strengths and weaknesses with respect to logistics and ICT. Some experts also came up with more general issues. The answers of the experts are brought together and categorized in the following table:

Table 5 Strengths and weaknesses of the region

Strengths of the region	Weaknesses of the region
Geographical position • The harbour is the most important North European harbour for the Baltic Sea traffic • The proximity to markets and customers **Existing infrastructure** • A high number of logistics hubs (waterways, roads, railway) • The Hamburg Port with its container terminals, logistics areas, established trade connections particularly to Eastern Europe and	**Extension of infrastructure** • Planning and extension of infrastructure projects are often very slow. Examples include: deepening of the Elbe River, connection between the motorways A1 and A7, railway adjustment • Allocation of space problematic **Education development** • Training is often done “learning by doing”, very few employees have a specialised apprenticeship or

[9] For more information on the methodology used and the results of the expert interviews, please refer to Kersten et al. (2007e).

Scandinavia • Logistics areas and properties (particularly in the surrounding region) **Company clusters** • A high number of logistics companies but also other related industries (e.g. the maritime cluster with shipping companies, shipping agents, ship financing companies etc.) • Hamburg is a meeting point for companies, even those which are not resident in Hamburg • Competence networks in the field of ICT (e.g. Dakosy, Hamburg@work) **Education** • High competence of employees due to concentrated know-how • Several universities with a wide variety of offers • Several other institutions for further education **Others** • Attractiveness of the city for managers • High economic power (large catchment area and population)	academic background in logistics • Problems to get sufficient qualified staff **Cost situation** • High property costs • High renting costs • High taxes • High labour costs **ICT systems** • A lot of systems exist in parallel • Very few ICT providers which are specialised in logistics **Others** • No bundling of activities • Interest in logistics still very low from policy makers • Focus is often too much on the harbour • Lack of service orientation of the local authorities towards interested companies

The geographical position of Hamburg is the most important strength that nearly all experts mentioned. Located 110km from the North Sea, it is the logistics hub of Northern Germany and well connected to Northern Europe, but also to Middle and Eastern Europe. The infrastructure is closely linked to the geographic position. Hamburg combines junctions of waterways, railways and the road network and is a logistics hub of great significance for Northern Germany. The harbour, of course, is the dominant infrastructure point in Hamburg.

Simultaneously, however, the infrastructure is not only seen as a strength, but also as a weakness. While the basic conditions for infrastructure are good, new infrastructure projects or the extension of existing infrastructure are often realized very slowly, the planning horizon is very long. The consequences can already be seen today: Traffic jams, lower capacities of the harbour railway, problems to transport containers via waterways to the hinterland etc.

A third important strength is the development of industry clusters in logistics and particularly in the maritime industry. It is one of the largest accumulations of shipping companies, operators in combined transport, freight forwarders, ship financing companies, etc. in Germany.

The same problem that applies for infrastructure is also true for the field of education: it can simultaneously be regarded as a strength and weakness. While some experts see the high competence level in Hamburg and the concentrated logistics know-how as a strength, others criticize the lack of sufficiently qualified employees. Both perspectives are justifiable: On the one hand, there is a high number of employees in the field of logistics, with most of them having long-time experience in the logistics sector. Thus, the competence level which has grown over the years is quite high. On the other hand, only a small percentage of these persons have a specialised apprenticeship or even an academic background. The main reason for this is that until some years ago, there were hardly any education programs with an explicit focus on logistics.

In addition to these four areas, some more general aspects were named by the experts, for instance the attractiveness of the city or the high economic power.

With respect to weaknesses, other issues that were considered important are high taxes and costs (especially property and labour costs) and ICT systems. The experts criticize that there are a lot of ICT systems, but many of them exist in parallel and it is difficult for companies to choose the right one and to harmonize their systems with others. Another problem is that there are hardly any specialised ICT companies for logistics so that most companies lack the competence to develop specific systems.

Furthermore, an area of concern is that logistics still neither gets sufficient attention from policy makers nor from the public. Although a growth in logistics often comes along with new jobs, the disadvantages such as environmental issues often more than compensate the positive aspects. Hence, the support for the logistics industry is not always in the focus of interest. Another weakness, which might partly be a consequence of this, is that there are a lot of individual activities in the field of logistics, but that there is still a need to better harmonize them. The logistics initiative is a good starting point for this bundling of activities.

Apart from the strengths and weaknesses, the opportunities and threats are considered. This will be done by taking into account the current trends that the experts proposed with respect to logistics and

ICT. They may provide chances but also challenges to the logistics and ICT companies in the region and the region itself. These trends are (cp. chapters 5 and 6):

Table 6 Opportunities and threats for the region

Opportunities to the region	Threats to the region
Further globalisation and EU enlargement • Growing trade volumes leading to higher demand for logistics services • Harmonized trade regulations leading to lower transportation costs and times • Better access to new buying and selling markets for companies • Better co-operation possibilities with resident companies	**Further globalisation and EU enlargement** • Lack of harmonized standards leading to security problems • Different laws and taxes leading to possible distortion of competition • Tighter competition due to differences in labour and property costs • Other regions can still grow, Hamburg operates at its capacity limit if no investments are made
Development of cost and turnover • Higher turnover due to new businesses • Decreasing costs due to facilitated trade within the European Union • Decreasing costs due to new businesses and economies of scale	**Development of cost and turnover** • Lower turnover due to more competitors • Increasing transport costs due to higher petroleum taxes, tolls, fuel prices etc. • Increasing costs due to environmental regulations • Increasing costs for property and labour • Low costs in other regions put pressure on the wages in Hamburg
Outsourcing • More demand for advanced logistics services • More demand for better IT systems and system integration	**Outsourcing** • Dislocation of jobs to other countries
Building of competence clusters • Advantages in time for the Hamburg region because of its already existing cluster • Long-time experience in logistics	**Building of competence clusters** • Clusters in other regions grow faster and may overtake Hamburg • Better education in other regions that boost innovations and efficiency
Automation and system integration • New technologies such as RFID facilitate the logistics business and may reduce its costs • More demand for companies from the ICT sector	**Automation and system integration** • Other regions might be faster in developing and implementing new technologies

Others	**Others** • Increased traffic leading to emissions and accidents • Environmental regulations leading to limitations in the logistics industry

8.2 Analysis of the region's needs

Based on the SWOT analysis of the region, the development needs to improve strengths, take advantage of opportunities, and to overcome the weaknesses and threats are analysed in this section. The following needs were identified and suggestions for improvement were made by the experts:

8.2.1 Infrastructure development

The infrastructure of Hamburg is crucial for handling the increasing transport volumes, particularly in times of faster transport chains and just-in-time-production. Therefore, the improvement of the infrastructure is one of the key factors to remain competitive and to achieve economic growth in the next years. An important issue certainly is to increase the capacity of the harbour, i.e. to build new terminal facilities, also in the hinterland, better connections in order to remove the goods from the harbour to the hinterland, and a fast allocation of space for the storage of containers. If the port also wants to handle the biggest container ships in the future, a deepening of the waterways is necessary. Several concrete infrastructure projects have already been mentioned above, such as the harbour railway or the connection between the two motorways A1 and A7.

8.2.2 Network and cluster building

Although clusters were already classified as strengths of the Hamburg region, experts see a further need to develop the formerly mentioned clusters, attract more companies, expand competence networks and support network building in general. Here, it is important to have a better coordination of the different actors involved in logistics and/or

ICT. The interface between ICT and logistics can be further improved, which is a task of local authorities and support initiatives, but particularly of companies from the private sector to establish more contact points and expand own networks. This could be done by joining initiatives and networks such as the Logistics Initiave, research groups etc., or initiating cooperation projects. Regional benchmarking activities would help to learn from each other and could be supported by the authorities. This can also be done on a cross-sectoral basis, i.e. not only with direct competitors from the logistics industry, but also with the retail industry that faces similar challenges. For ICT, different systems needs to be linked and their integration should be supported. For local authorities and support initiatives, the task should be to support these networks, to market logistics as an attractive industry in Hamburg, to attract existing companies and to fasten the process to establish a new company. The activities and projects that takink place should be better disseminated, as many experts stated they hardly know of any regional development projects. Moreover, the whole region should act stronger and should be better marketed as a regional union.

8.2.3 Improving logistics and ICT competence

In this area, the aim should be to have a higher degree of utilisation and to further develop the local know-how. Like network building, this is a task for the private as well as for the public sector. In the private and public sector, more training measures that are specific to the industry and the company should be offered to the employees.

Local authorities and support initiatives should support the establishment of new education programs that offer basic knowledge, e.g. in the field of business administration, but with specialisation in logistics or even more focused topics. This can be achieved on the academic level, but also through further education for persons with apprenticeships or who learned their skills on the job. Another suggestion the experts came up with is to boost innovations and new technologies and to set up more research establishments in Hamburg, e.g. a Fraunhofer Institute. For companies, particularly SMEs, co-operations could be initiated that help them where they see barriers in certain fields, such as the implementation of RFID. Last, it is important to create transparency about these programs for young people but also for persons with long-time experience. A good starting point is the web portal by the Logistics Initative which provides an overview of the offers

in Hamburg is. The qualification of young people can also be promoted by scholarships or other measures.

8.2.4 Other needs

Other needs or possibilities of improvement mentioned by the experts either focus on companies or the public sector. Regarding companies, the following needs were identified:

- Focus more on streamlining logistics processes and their optimisation
- Better develop and push modern IT systems
- Increase efforts for integral thinking in complex processes, better integrate external and internal processes
- Be more flexible and allow for short response times
- Try to jointly develop systems that boost efficiency and better use resources instead of only expanding capacity

Regarding the local authorities and support initiatives, the following needs were acknowledged:

- Focus on important current issues and methods of resolution
- Be more market-oriented
- Better define specific targets and pursue the strategy to achieve this targets, for example regarding cluster management or the identification of logistics space
- Create an IT platform for the import of goods
- Streamline and shorten administrative processes
- Improve the appearance on the international level (“think big”)
- Push the European Union to harmonize laws and prevent from distortion of competition
- Create more value in Hamburg: Hamburg should act not only as an intermediary for containers, but containers should also be opened and processed in the region

In conclusion, developments and trends provide opportunities, but also challenges to the Southern Metropolitan Region of Hamburg. Local authorities, support agencies but also companies have to address these issues and co-operate more closely than before to remain competitive and get a competitive advantage as a region in the future.

9 CONCLUSION

The aim of this report was to integrate the results of the empirical data and the secondary data collected for the LogOn Baltic project in order to give a comprehensive overview of the current situation and the development in the logistics and ICT industry in the Southern Metropolitan Region of Hamburg. Thus, it provides a thorough background for the cross-regional analysis which will be the next step of the project.

Different topic areas were included in the report. Following on the introduction, some general information (geographic situation, main location factors, climate conditions, administrative and historic data, and links to the Baltic Sea Region), basic economic facts and the public sector support for enterprises were described in the first chapters of the report.

Hamburg is the second largest city in Germany with a population of 1.7 Mio, and is located about 110km down the River Elbe from the North Sea. Not only the city of Hamburg was considered in the project but also the three districts south of Hamburg, namely Stade, Harburg and Lüneburg. Together, they were called “Southern Metropolitan Region of Hamburg” in the report.

Often, Hamburg is not only regarded as the most important centre for commercial export and logistics in Germany, but also as the hub to the BSR and Northern Europe. Being the second largest port in Europe, Hamburg port plays an important role for the logistics industry, but also for the economy in general. The GDP of Hamburg amounts to 79.96 bn. €. 70 out of 500 Germany’s largest companies are headquartered in Hamburg. The city’s economy is dominated by the service sector. Besides logistics, other important industries are the civil aerospace industry, the maritime industry and the IT and media sector.

Starting 600 to 700 years ago in the Hanseatic league, there have always been several links to the BSR on the private as well as on the public level. Nowadays, institutions such as the Hanseatic Parliament based in Hamburg, the Baltic Sea Chamber of Commerce Association or the Council of the Baltic Sea States guarantee for a close cooperation between Hamburg and other cities in the BSR. About 10% of Hamburg’s foreign trade can be traced back to the BSR. In 2006, the

value of the trade goods with the BSR (without Norway) was nearly 7 bn. €, with Russia being the largest trade partner in the BSR and meaning a growth rate of 39% compared to 2005. Four of the ten largest countries for container trade in the harbour are located in the BSR: Russia, Finland, Sweden and Poland.

Following on this general part, two chapters in the report focused specifically on the logistics and the ICT industry respectively. In the transport industry, more than 12,000 companies are registered in Hamburg, more than two thirds belonging to the freight transport sector. 11.7% of the gross value added are generated in the transport sector (average in Germany only 6.1%). Although Hamburg's logistics sector is dominated by the harbour, road transport in Germany traditionally plays a significant role. The modal split (in ton kilometres) shows that nearly 70% of all goods are transported via road. Hamburg is connected to the road network by mainly two motorways (Autobahnen), the A1 and the A7. Also the railway network with 16.4 % plays a minor, but still important role for transport in Germany. In the Southern Metropolitan Region of Hamburg there are five long-distance stations for passenger transportation, and four goods stations. In addition, Europe's biggest switching yard is based in the region. Hamburg's airport is the fourth largest in Germany. In 2006, about 12 mio. passengers and 77,000t cargo were processed. Besides the federal and local authorities, the transport sector is administered and supported by a number of industry associations such as the German Logistics Association or the Association Materials Management, Purchasing and Logistics.

The results of a high number survey conducted for the LogOn Baltic project were also discussed. Logistics costs, outsourcing and the operating environment and logistics development were the main topics. Manufacturing and trading companies expect that inventory management, invoicing and order processing will be outsourced the most in the next years, while transport and freight forwarding are already outsourced to a large degree. Logistics service providers see a growing demand particularly in international transportation and logistics IT-systems. It turned out that cutting logistics costs is still one of the major issues in logistics management.

In the ICT sector, more than 7,280 companies are located in Hamburg. Multimedia companies, data processing service providers, software consultants and hardware consultants each represent more than 20% of these. Like in Germany in general, ICT is a very dynamic sector, 4% of all jobs in Germany are in the ICT and 5% in related

industries. Although companies and private ICT users have realized the advantages of ICT systems, it is not wide-spread everywhere. Regarding the penetration rate of private internet users, Germany only holds rank 25. Hamburg's user rate with 64.3% is the second highest in Germany (average about 60%). Like in the logistics industry, a survey was conducted specialised on ICT covering the use of ICT systems and internet, e-commerce/e-business and general assessment of ICT usage and its barriers. The results show that technologies such as e-mail have caught up with more traditional communication technologies such as mail or telephone. Other communication means such as EDI, ERP etc., however, are still rarely used. Regarding problems, companies see security concerns by far as the most important barriers to the implementation of ICT. The cost aspect only plays a very minor role.

Next, information on the human knowledge base in the region with a specific focus on ICT and logistics was given. In Germany and also in Hamburg, four apprenticeship programs are offered in ICT, while more than 20 programs are offered in all fields of logistics, such as harbour & navigation, storage & delivery, road & rail, and air traffic. Regarding further education, there is a high number of universities, universities of applied sciences, schools, academies etc. Specialised study programs on ICT are very popular in Hamburg, while there are only four programs at universities and universities of applied sciences specialised on logistics. For persons who did an apprenticeship, several possibilities for further education focus on logistics. Although experts rate the logistics competence level in the region mostly as "high" or "very high" there is still room for improvement on all stages of the education system. More practice orientation in university education, the incorporation of soft skills into apprenticeship programs and co-operative projects such as the "Hanse Logistician" are good starting points to a modern kind of education.

Last, a SWOT analysis and an evaluation of the region's development needs was done based on the expert interviews conducted for this project. Although experts regarded the geographic position, the infrastructure, the competence cluster and the concentrated know-how in logistics as the main strengths of the region, they also criticised the currently very slow development with respect to infrastructure extensions and lack of sufficiently qualified employees. In addition, a lack of appropriate ICT systems and the cost situation were named as weaknesses. Regarding future development, the globalisation and EU enlargement, cost development, outsourcing,

building of competence clusters and automation/system integration were identified as the most important trends meaning opportunities, but also threats for the region. Consequently, the region's development needs were stated as selective infrastructure development (harbour railway, motorway connection, deepening of waterways); more intense network/cluster building; better integrated marketing activities of the region; improving the logistics and ICT competence by supporting promising new programs; and increasing transparency about regional development activities and education programs.

While the aim of this report was to integrate the first results of the surveys and expert interviews conducted Southern Metropolitan region of Hamburg, more detailed analyses on the data will be done in the future. Interpretations of the results will mainly concern two main areas. The first is a deeper analysis of the Hamburg results. An even more important aspect is the cross-regional comparison of these results with the data of other regions in the Baltic Sea Region.

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