

Trans-Regional Logistics in Carinthia: Perspectives and Vision on the Transport Infrastructure Development on the Business and Public Level

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Regional logistics development plans have become a key element for an effective – regional economy in Austria. Efforts to develop the region of Carinthia – which represents a substantial transport hub on the Baltic–Adriatic Axis – depend on targeted infrastructure investments combined with well-utilized and accessible modes of transport. As decisions on transport mode choice are made within companies, their involvement in planning processes is crucial. Therefore a more consistent approach to Carinthia’s logistics infrastructure developments is required. The view of regional businesses is considered a significant basis for further public and managerial decision making with regard to the importance of future logistics developments.

Key Words: industrial organization, industry studies, regional transportation, transport, transportation

INTRODUCTION

Recently, regional logistics development plans have become a key element for effective regional economy in Austria. Especially Carinthia, being a transit province, benefits from these kinds of regional expansion plans. When promoting and developing logistics visions, master plans or concrete infrastructure investments, local and regional authorities aim for value creation within the region (Hesse 2004; 2006). More specifically such actions lead to enhanced attractiveness of business locations, to optimized accessibility and utiliza-

[44] tion of infrastructure as well as to efficient land use. As potential regional economic gains within the logistics sector are currently of high political significance, regional business logistics plans – set by resident companies – are required to be integrated into logistics-oriented policies (Qiu, Lu, and Wang 2008). An increase in logistics network activities through regional integration and networking, with the additional use of positive impetus from economic dynamics in neighboring regions, e. g. Styria and Slovenia, is one of the main objectives in Carinthia (Office of the Carinthian Government 2009).

This claim manifests the following consistent approach: a coordinated set-up of regional logistics activities on a company level and infrastructure plans on a public level are essential to cope with existing as well as expected freight traffic volumes. Efforts to further develop Carinthia as a major transport hub along the Baltic–Adriatic Transport Axis (BAA) depend on reasoned infrastructure investments combined with well-utilized accessible modes of transport (Office of the Carinthian Government 2009). Apart from the Gross Regional Product (GRP) in 2011 of 15.3 billion Euros (equals a rounded 5.0 percent share of Austria’s total of €301 billion), Carinthia is involved in about a tenth of the overall evolving transport volumes (44.4 million tons out of a country-wide volume of 433.9 million tons). A dyadic modal-split shows a percentage ratio of 66.0 (road) to 34.0 (rail) of the transport performance in ton-kilometers, of a total of 8.07 million in Carinthia (including import and export volumes ‘to’ and ‘from’ Carinthia) (Statistik Austria 2013). As decisions upon transport mode choice are made within companies, their involvement in the public level planning process is essential in order to handle regional future transport volumes. Therefore, when developing trans-regional logistics networks, it is essential to consider companies’ perspectives and their corresponding logistics plans on how to utilize regional transportation infrastructure.

MOTIVATION

The region examined in this paper is Carinthia. This Austrian federal state is strategically well-located, because it links Western, Cen-



tral and South Eastern Europe. With its favorable geographical position in the heart of the Alps-Adriatic region, Carinthia is interesting as an enabler for fostering connections to the growth markets in Southern and South-East Europe on the one hand and due to its close proximity to key markets of Central and Western Europe on the other hand. Carinthia's economy is characterized by a strong mix of sectors in which numerous businesses have grown to become world or European market leaders.

[45]

Although the regions' existing infrastructure is described as an advanced infrastructure, regional politicians plan further developments (Office of the Carinthian Government 2009).

In detail, several regional projects in Carinthia are estimated to be highly important by EU politicians and characterize the current economic development of the region. The following list represents on-going initiatives in terms of logistics and transport (BMVIT 2010):

- Progress of the 'Semmering-Base tunnel' and 'Koralmbahn' projects to create an efficient rail infrastructure.
- Improvement of rail transport to improve its attractiveness as a mode of transport.
- Development of the dry-port terminal Villach/Fuernitz towards a more established transport hub, in order to establish the region Carinthia on the Baltic-Adriatic transport axis (BAA) connected with main transport routes from/to the Adriatic ports in the south to/from the Baltic area as well as Central and Western Europe.
- Raising awareness of the discipline 'logistics,' logistics excellence and processes in terms of a more strategic approach and more efficient infrastructure utilization.

Carinthia faces remarkable changes. In connection with the change in the European framework, the EU-membership of Slovenia and the Schengen-agreement, the foreseeable EU south-east enlargement also has an effect on the regional situation in Carinthia. Cross-border collaborations offer new opportunities for regional development. The fields of logistics and transport are considered as enablers in this matter (Office of the Carinthian Government 2009).

However, opportunities of a trans-regional cooperation between Carinthia and neighboring regions depend on the level of cross-border logistics cooperation combined with coordinated transport infrastructure utilization.

[46] The aim of this paper is to illustrate perspectives of major industrial companies in Carinthia, explaining their logistics plans and visions regarding regional transport infrastructure development for trans-regional logistics flows. Enlargement and internationalization processes generally mean a higher degree of interaction on the business sector in terms of visions and plans of logistics (Wang 2008; Wagner 2010).

Companies are obliged to build up networks and partnerships with an international focus on new member states in order to strengthen the logistics as a discipline and to enhance its importance on a policy level.

The motivation for setting up this paper is based on the need of providing a broader perspective on Carinthia's logistics infrastructure developments from the view of regional businesses. Following a bottom-up approach, requirements of local companies serve as a basis for public decision making in this field. It should provide answers to the research questions:

- 1 How can the future potential of Carinthia in terms of access to trans-national transport networks (e. g. through the dry-port concept Villach/Fuernitz or 'Koralmbahn') be evaluated?
- 2 How do regional companies evaluate the role of the Adriatic ports for their business and/or for the development of logistics in Carinthia?
- 3 What is the potential impact of logistics as a 'discipline' in terms of regional transport and logistics network developments?

METHODOLOGY

Due to a lack of respective studies, qualitative research has been defined as the methodological approach in this paper. Major companies located in Carinthia were surveyed by conducting (in-depth)



TABLE 1 Survey Scope: Trans-Regional Logistics in Carinthia

Industrial area	Business	(1)	(2)	(3)
1 Metal/steel industry	Aluminium profiles/ components	96	15.5	90
2 Mechanical engineering	Pumps and compressors	480	56.9	98
3 Automotive supply industry	Filter systems and fittings	1980	497.7	80
4 Metal/steel industry	Metal constructions	400	102.6	50
5 Metal/steel industry	Metal constructions	220	60.2	70
6 Fine mechanics and optics	Semiconductor/optical systems	290	80.4	80
7 Infrastructure operator	Intermodal rail/terminal services	n/a	n/a	n/a
8 Public administration	Development agency ser- vices	n/a	n/a	n/a

[47]

NOTES Column headings are as follows: (1) number of employees (2012), (2) turnover (million EUR, 2012), (3) export ratio (%).

expert interviews. In doing so, a well-structured interview guideline has been applied. Subsequently, interviews were transcribed and investigated by comprehensive content analyses. It has been used to identify how businesses perspectives and visions in Carinthia relate to logistics and to what extent transportation infrastructure development affects their trans-regional logistics network activities.

The survey scope involved six industrial businesses (with an export ratio from 50.0 to 90.0 percent of goods sold), selected from the top 25 exporting companies in Carinthia, as well as a local infrastructure operator and development agency service provider (table 1). The survey scope data in table 1 is in no specific sequence and without a reference to the related content. All content analysis results are represented in a summarized collective report (findings chapter) as a basis for public and managerial decision making procedures. The content of the findings chapter is based on in-depth interviews conducted between May and the end of June 2013.

The content of personal communication with strategic logistics managers, procurement managers and transport planners has been correspondingly summarized.

The results of this research represent a central part of the pro-

[48] posal for a Regional Action Plan in Carinthia, which is an essential output of the EU project 'Log4Green' (www.log4green.eu). Therein, analyses from Carinthia (Austria), Ruhr Area (Germany), Wallonia (Belgium), Normandy (France), Istanbul (Turkey), and Odessa (Ukraine) are performed in order to develop these logistics clusters by means of a joint action plan towards sustainable transport logistics systems (Log4Green 2012a). The overall objective of this project is to strengthen regional competitiveness and growth through creating innovative logistics solutions within the aforementioned European logistics regions (Log4Green 2012b).

LIMITATIONS

Although this research approach was specifically prepared and dedicated to answer the stated research questions, there are limitations to be taken into account, in terms of (1) time aspects, (2) survey scope/sample & method and (3) regional context characteristics. The research work comprised qualitative data collection from May to the end of June 2013 and displays only a current reflection of investigated aspects with no longitudinal character. The scope of interviews is limited, with six in-depth interviews of respondents (logisticians) in regional businesses, as well as one of each with an infrastructure operator and a public development agency service provider – with no permission to generalize the stated opinions of interviewees for other target groups. Due to the survey method, a certain degree of subjectivity is unavoidable. Due to the regional character of the analysis in hand, all given results have specific regional reference, dependent on the conditions and nature of trans-regional logistics in the area of Carinthia.

FINDINGS AND RESULTS

When economic challenges in business areas meet framework conditions and regional development trends in the transport and logistics sector, important dynamics needs to be to mention: First, the level of usability/accessibility regarding existing transportation infrastructure. Second, the systemic logistical network environment. Third, the strategic orientation and interest towards (sustainable) logistics on a business and public level.



This paper reports on the authors' survey on the basis of in-depth expert interviews and comprehensive content analyses. The subject of this survey are ongoing regional transportation infrastructure measures and their opportunities related to accessibility, transport utilization and modal shift potential (increasing number of rail transports) within the transport corridor area on industrial business level. Furthermore, this paper reflects the companies' view on Carinthia's role as a transport hub. In particular, the concept of developing a dry-port which enables a powerful hinterland connection between the Baltic area and the southern ports (Venice, Trieste, Ravenna, Koper and Rijeka) is investigated. Additionally, the paper provides insights into how regional companies in Carinthia currently handle transport volumes and which logistics strategies are aligned with regional transport infrastructure developments. Moreover, results may suggest how the increased awareness towards the discipline 'logistics' can influence sustainable strategies and foster continuous intermodal and trans-regional freight transport processes.

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Finally, the elaborated findings could illustrate a region-specific basis for public and managerial decision making. Based on that, concluding statements and parameters for a logistics master plan, which aims at strengthening the discipline 'logistics' as well as enhancing the usage of transportation infrastructure throughout Carinthia (as a region with a central hub function in the Alps-Adriatic area), are prepared.

When considering the above mentioned dynamics through regional and trans-regional logistics developments, three core topics determine the research findings in order to answer the stated study/research questions. In addition to the *effect of the discipline 'logistics' on regional transport development*, the study evaluated *regional development and logistics potentials* and explored *strategic trends in sustainable transport logistics?*

Tendencies towards Sustainable Transport Logistics Strategies

Companies questioned the claim that green and sustainability issues in terms of transport logistics seem certainly relevant, but their integration in strategic and operative processes varies. Most of lo-

[50] cal businesses organize their logistics processes through their own shipping and logistics departments. These companies usually cooperate with one logistics service provider and several regional freight forwarders for physical transport handling. While outsourcing all logistics processes is mostly not considered, businesses expect best transport utilization and cost efficiency to be realized by the assigned service provider.

Predominantly, economic issues are most relevant in the companies' field of logistics and transportation planning. In fact, 'time' and 'security of delivery' are identified to be considerably more important than 'sustainability concepts.' The *compliance with requirements and commitments to customers* is considered as the priority issue. Further objectives concern (1) the best possible utilization of trucks, (2) management of bundled transports according to target regions and destinations as well as (3) modal-shift of transport volumes from road to rail. Finally, for economic reasons: the motivation to set realizable measures for cost reduction is important.

Aside from internal structures and strategic characteristics in the businesses interviewed, sustainable transport logistics strategies and efforts are negatively influenced by three decisive external factors:

- 1 Customer-driven *short-term but tight supply horizons combined with inconstant quantities* that result in imbalanced transport streams and in high numbers of handling activities.
- 2 *Lack of regional service provision and unsuitable runtime schedules for rail services;*
- 3 Mainly *non-existent infrastructure/supra-structure* (closed regional rail sidings on company sites) for using alternative modes of transport.

Additionally, customs processes and subsequent transport planning methods increase in complexity. Economies of scale are often no longer achievable and each handling stage constitutes additional defects potential. This is a reason why infrastructure operators which define their offered additional services (e. g. transshipment and storage activities) have recently gained in importance.



Sustainable transport processes are closely linked with professional handling and optimized distribution practices. Hence, all the respondents consider modal shift – from road to rail – and cooperative use of transport resources as an environmentally friendly and sustainable contribution within the logistics sector? [51]

Development agencies perceive high-performing transport logistics processes and advanced on-site-services (e. g. cargo handling, storage and distribution) in Carinthia as key factors towards expanding location quality and long-term development of a major logistics hub. Sustainable services in transport are connected with strategic requirements along the transport corridor and the coordination towards Adriatic ports.

Although tendencies for sustainable transport activities exist, potential in improving coordination and service processing between actors of the logistics and transport sector can still be recognized.

Evaluation of Regional Development and Logistics Potentials

Transport infrastructure development refers to location-specific aspects, trans-national access/connections, freight and transportation characteristics and expected effects through investments and developing projects. Respondents preponderantly mentioned the location of Carinthia as being favorable in terms of road and rail connections as well as its near-by location to important transport corridors and Adriatic ports. In contrast to that, regional restrictions in transport planning, such as the closure of rail sidings, are assessed to be disadvantageous for several local companies. In case of on-site railway sidings, a modal shift from road to rail is feasible. However, owing to the present high cost of rail transport and the inflexibility of the railway system, a trend of a reversal to road transport was identified. Economic reasons (e. g. high operating costs) and principally small regional transport infrastructure resulted in a discontinuation of train services within the province of Carinthia. The infrastructure operator argues about the limited use of on-site rail sidings and about prioritizing road transport by the companies – resulting in the lack of necessity to keep unprofitable rail services. In turn, companies claim that they use rail less because of cost and

inflexibility. Any further shift would be dependent on enhanced developed and consistent rail connections and services.

[52] The projects 'Koralmbahn' and 'domestic dry port Villach/Fuernitz' are not considered as essential and strategically important by respondents. In fact, companies question the nonexistent volumes on the transport axis. There are only limited doubts about the transfer of traffic from corridors located outside Austrian borders into the Austrian transport network links. While opportunities for bundling and enlarged road and rail track use are expected, an increased transit character is not anticipated by respondents.

Due to Carinthia's topography, regional differences in logistics services offered are identified, characterized by the increasing shortage of services in peripheral regions?

The dry port concept (a marshaling yard including a handling center for wagonload traffic and a container terminal for intermodal traffic) is set to initiate a potential location setup for the integrated combination of freight distribution and material management (city logistics) for Upper and Lower Carinthia. Companies identify a domestic dry port – appropriate services implied – as an opportunity to strengthen the main transport corridor connection (axis destinations and ports) and to shorten transport time. Although cost-benefit calculations of this project regarding freight transport are widely unclear, study respondents expect purposeful management decisions and concepts to enhance the route use and to enable a modal shift from road to rail. The closures of regional railway sidings – in this context – appear rather counterproductive for ongoing infrastructure developments. If companies are cut off from infrastructure networks, potentials for businesses through an efficient connection to the axis and dry port route no longer seem obvious.

In terms of trans-national cooperation (between various rail companies in international rail transport) existing communication and information deficits require further coordination and common ground for future perspectives. For international transport matters, a powerful connection between the hinterland to the Adriatic ports is considered beneficial. Since the European Economic Area will increasingly be supplied with raw materials by sea in the future, the



southern ports gain importance. Based on the derived research material, it is necessary to ensure that port operators and ship owners provide the equipment needed (which is actually not the case) to handle transferred delivery volumes.

The ultimate vision would be a set-up of the appropriate service portfolio, which is beneficial for the development of the ports, the transport-hub and the corridor. Expectations of the regional development service agency involve complementary logistics service, the potential of which is recognized along the trans-regional transport axis. Within its developing process, Carinthian policy objectives are affected by specific framework conditions at European and national level. Conditions refer to the relevance of growth and employment efforts as well as mechanisms for internationalization, location promotion, SME-support and infrastructure (road and rail) investments (Habsburg-Lotharingen and Dinges 2006). Regional infrastructure development symbolizes one evolutionary factor in systemic transport networks. A second factor is the 'mindset in logistics' itself that enables changes in both transportation planning and decision on transport modes. Using the collected study material, any registered impacts through the discipline 'logistics' are portrayed as follows.

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*Logistics as a Discipline and its Impact on the Regional
Transport and Network Development*

Efforts in logistics projects – intended for strategic progress in this specific field of management – have become common within companies in recent years. In fact, respondents confirmed this development aspect in the interviews. Both, internal and company-wide processes (e. g. optimization in supply process, production or cargo handling), underlie process analysis noticeably to pursue logistics strategies. The main reason for this approach is related to plans to overcome dynamics in economic environment, supply and demand. A registered imbalance is the root cause of challenges: companies and their logistics service providers are struggling with this matter. A more flexible demand combined with ambitious logistics concepts (e. g. just-in-time/sequence – with smaller loads and shorter

[54] supply streams) will support a more efficient coordination of processes. Therefore, closer cooperation is desirable for companies involved (e. g. shippers, logistics service providers, freight carriers) in order to alleviate the effects of imbalance. With regards to the services required, companies evaluate logistics as an important parameter for (1) reducing process costs and cycle times, (2) focusing on customer requirements and (3) meeting the desired quality at the lowest possible cost level. Quality demands (regarding delivery time, quantity and quality aspects) of the end customers are considered more and more as a key criteria. Businesses questioned a report on dramatically changed and optimized processes (including time reports and process control). Changes in logistics-mindset are becoming tangible and the discipline 'logistics' is considered as an enabler of solutions.

A discipline 'logistics' incorporates decisions in strategic processing as well as in transport planning. This research study illustrated that transport *infrastructure development* and *logistical decision making* in combination, influence the realization of potential. This is a fact, which the surveyed companies preponderantly try to consider in their day-to-day operations. Coordinated logistics realize the use of infrastructural connections and lift modal shift potentials. It is the specific awareness of a suitable combination of strategic and operational logistics decision-making, both on a business and on a public level. Transport infrastructure investments without any investment in the discipline 'logistics' (as a strategic topic) is expected to be ineffective. Operational logistics is a very technical profession that requires a combination of a theoretical knowledge base (logistics strategies, analysis methods, key-drivers regarding process quality and costs), practical experience and skill. Respondents complained about the quality of logistics education on a professional training level, which makes it more difficult to find motivated logistics staff. It is certainly common that companies therefore establish their own concepts for further training and practicing facilities offered to educate logistics staff. On the academic education level, businesses remarked on the difficulties of finding suitable personnel at a (top) management level. This might be related to the lack of



international education orientation in Carinthia. As logistics is to be understood in an international context, a certain development potential is evident in this matter.

Regional development agents note that the term 'logistics' is currently often regarded as just a phase of transport from one place to another. Key characteristics, such as 'an integrated process view,' 'global-reach thinking' or 'involvement of cooperation partners' seem to be unconsidered. Therefore, logistics in its entirety is not understood by the population and even by responsible business staff. It is still the responsibility of political decision-makers to prioritize logistics issues and to foster knowledge in this regard. All potentials that are expected with any physical investments strongly depend on concepts and mindsets of involved decision makers. Based on these study findings, transport infrastructure utilization, modal-shift potentials or trans-regional corridor networks are – up to a certain extent – also dependent on to what extent the discipline 'logistics' is characteristic for the region.

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CONCLUSION

Three major, regional and trans-regional specific issues, have been elaborated in this research study. Firstly, the identification of the region's potential through the development of ongoing transport network concepts. Secondly, the evaluation of regional infrastructure and transport access options. Thirdly, the reflection of respondents' sensitivities towards the term 'logistics' as a type of discipline and its conceivable impact, strengths and requirements on a businesses and public level.

Except for respondents' positive views on regional developments, uncertainties towards the level of use and access as well as benefit enhancement through transport infrastructure changes can be recognized. The connection stability between the transport hub, the Adriatic ports and transport axis as well as their level of utilization is currently not assessable for the surveyed businesses. It will depend on how public decision makers reach a consistent cooperation agreement between all stakeholders involved – starting on a regional basis before moving on to trans-regional relationships (see

[56] figure 1). An essential aspect is *the clear holistic view of the system including all stakeholder groups*. The task can first be considered on a regional level, but as soon as trans-regional transport flows are concerned – and this is undoubtedly the case – the regional view turns into a complex system or a network structure.

Several actors within the relevant (inter)national transport network need to be convinced in order to develop a strong basis: the government(s), the transport service provider(s), the state federal railways (private railway organizations), the partner-state railways (including all partner states along the corridor), the shipper(s), the consignee(s), the port operator(s) and the ship owner(s).

Considering the interests of all the above mentioned stakeholders into a wide network community, this will obviously not be a trivial task. It requires strong communication efforts and might enable a change in short-sighted plans dramatically. These plans concern business at least as much as the public level *whereas* logistics is possibly the most helpful tool for combining both strategic interests. It is necessary to consider possible risks that can accompany the development of one transport logistics master plan, in favor of a trans-regional transport network involving Adriatic ports, the regional hub and the Carinthian connection to the BAA. One risk might unfold *fluctuations in transport volumes along the transport axis* – through facilitating several kinds of transport operations (e. g. through container traffic as well as integrated single-wagon transport). Another risk may affect the *acceptance of shippers, consignees and transport service providers regarding technical and supra-structural premises* due to smaller port-sizes (compared to northern ports). A third risk might concern the *uncertain stability of economic trends, processes and conditions* that are not even easy to comprehend with supporting IT-network-systems and intelligent communication techniques. All energies for setting the relevant infrastructural standards need to be aligned with a strategic logistics mentality and control of the relevant influential framework conditions.

The importance of logistics on the political level in Carinthia is regularly limited to infrastructure issues. On the one hand, it seems that logistics is often perceived as a contributory cause of traffic



congestion and environmental pollution. On the other hand, local businesses experience politics involving themselves only in the case of deciding on night driving restrictions or dangerous goods regulations. It has been reported that precedent-setting decisions have often been delayed and that infrastructure projects have simply been taken for election campaigning purposes. Often, far-reaching strategies as to how infrastructure can deal with the increasing volume in transport in the coming years, are lacking. Without a targeted *logistics master plan* and without a sufficient *trans-regional cooperation concept*, all previous efforts that stand behind a high-performing transport region – and its infrastructural development – are clearly endangered.

[57]

Some recorded study results have indicated that there are strong opinions in terms of logistical aspects: Carinthia and its current state of a characterizing logistics portfolio are described as a ‘transport region’ and as a ‘region of freight forwarders.’ This fact shows high relevance in the field of logistics and verifies expectations regarding competitiveness.

OUTLOOK

The stated imbalance in demands and transport volumes, the increase of complexity of supply processes and the internationalization in planning and coordination activities – these are the original challenges of logistics in the last few years. Strategies and relevant physical framework conditions need to be combined wisely to cope with upcoming dynamics in transport business. Due to the growth of buying markets in the Far East and the Middle East, changes in global freight flows have been determined. The increased demand for goods from (South East) Asia upturns numbers and volumes of trade flows to Europe significantly. As expected, this structural change affects the need to redesign the European Economic Area, the infrastructure and transport network systems. While the northern ports are faced with capacity constraints and an invariable return to original volumes, the southern ports have opportunities in terms of ‘new markets.’ With the establishment of the NAPA (North Adriatic Ports Association) and the Association of Strategic Adri-

[58] atic ports of Koper, Trieste, Venice, Ravenna, Rijeka, a milestone developing the significance of this transport connection has been set. NAPA is the collective goal towards improving the situation in the North Adriatic region and strengthening connected trans-regional transport corridors (www.portsofnapa.com).

The trend-setting redesign of the European Economic Area, caused by the aforementioned transport flows, stresses the importance of NAPA and its contents. Due to the strong partnership between Carinthia and the Adriatic ports already, there is a high potential in terms of further establishing the hub-location Villach/Fuernitz as a basis for further cooperative activities for the hinterland connections as well as shared synergies in the transport system along the Baltic–Adriatic Axis.

Reconsidering sustainable utilization of transport corridors and intermodal transport units, a regional logistics master plan and intra-regional agreements are necessary to foster three decisive aspects in transport logistics:

- 1 The individual improvement measures – to increase attractiveness of the hinterland connection to regional and trans-regional trade and procurement markets – as a key requirement for operation on the corridor (BAA).
- 2 The collective, strategically agreement for a consistent transport flow through the Adriatic ports, the regional transport hub Villach/Fuernitz and along the Baltic-Adriatic Corridor.
- 3 The increased awareness of the need for a conjoint effort and network system in which stakeholders – from the transport service provider to the ship owner at the port – stand for one combined trans-national transport chain.

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