POLICY PAPER

STRENGTHENING INLAND NAVIGATION AND RIVER-SEA-SHIPPING IN EUROPE AND THE BALTIC SEA REGION

"THIS POLICY PAPER PROVIDES INSPIRATION AND CONTRIBUTES TO DISCUSSIONS OF POLICY BODIES IN THE EUROPEAN UNION AND ITS MEMBER STATES IN CHARGE OF INLAND NAVIGATION AND MULTIMODAL TRANSPORT POLICIES."

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Agenda

1 INTRODUCTION

The European Union aims to reduce emissions from all sectors by 80 % below 1990 levels until 2050. At the same time the transport sector is the second largest contributor of GHG emissions in the European Union. Freight transport continues to grow and road freight transport, in particular, is projected to increase by around 40 % by 2030 and by just over 80 % by 2050. Thus, in the coming years there is a need to develop measures to reduce GHG emissions from freight transport and at the same time handle the expected growth in transport volume. Here, inland navigation and river-sea shipping can play a crucial role and support this ambitious aim.

Decarbonisation and decongestion require sustainable transport policies, whereas the current transport system is not sustainable for the expected growth. Even though environmental considerations have become more important, they remain a secondary criterion in the decision-making after transport prices. The negative consequences of transport such as pollution, climate change, noise, congestion and accidents pose problems to the economy, health and well-being of the European citizens.

To meet these challenges the transport sector needs to shift to sustainable modes such as inland waterway and river-sea shipping, which can provide green, safe and congestion-free transport and logistics. Furthermore, the transport sector must efficiently utilise an integrated and intelligent multimodal network.

In the **Transport White Paper (COM/2011/144 final)** the European Union states examples of notable key elements and countermeasures. Amongst them are the following:

- Strengthening rail and **inland waterborne transport** (30 % of road traffic to be shifted by 2030 and more than 50 % by 2050) facilitated by efficient and green freight corridors.
- Connecting all core airports and seaports to the rail network.
- Establishing the framework for a **European multimodal transport information, management and payment system**.
- Moving towards full application of **“user pays” and “polluter pays” principles**.

According to the European Commission inland waterway transport and river-sea shipping are an alternative to road and rail transport. They offer an environmentally friendly alternative in terms of energy consumption and noise emissions. Their energy consumption per km/ton of transported goods is approximately 17 % of that of road transport and 50 % of rail transport. In addition, inland waterway transport ensures a high degree of safety, in particular when it comes to the transportation of dangerous goods. Finally, it contributes to decongesting overloaded road networks in densely populated regions.[1]

[1] European Commission, in: https://ec.europa.eu/transport/modes/inland_en, 13th July 2017.

Inland Waterway Transport (IWT) can also support socio-economic development in the European regions by e.g. linking ports with hinterland and centres of commerce and consumption, this way creating jobs and growth perspectives. A multifunctional use of inland waterways and its infrastructure contributes to regional and interregional development.

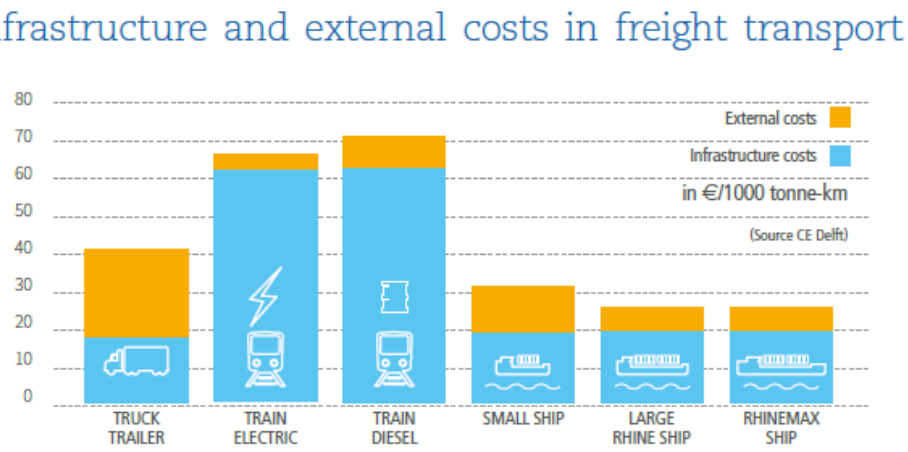

Figure 1 - Advantage of inland navigation in terms of external costs (€/1,000 tkm). Source: INE ANNUAL REPORT 2014, P.20.

However, the competitiveness of an environmentally friendly mode of transport such as inland navigation and river-sea shipping is still highly dependent on suitable waterway infrastructure conditions, maintenance and regeneration which lag behind rail and road infrastructure networks.

The EU financing plan for the new EU infrastructure policy tripled to € 24.05 billion for transport for the period of 2014–2020. The funds are made available to ensure the diminishment of bottlenecks, generate an infrastructure upgrade and streamline cross-border transport operations.[2] However, financing of possible measures to enhance inland navigation and river-sea shipping is under-represented compared to the allocation of funds towards infrastructure measures.

The share of road transport is constantly at a level of approximately 75 % in the European Union, whereas inland waterways represent 6 % of the total transport volume. However, remarkably higher share of inland waterways can be discovered in countries, which have access to river systems with a better infrastructure basis and well-developed inclusion of inland navigation into logistics chains such as the Netherlands (45 %), Rumania (29%), Bulgaria (27%) and Belgium (15%).[3]

A change is needed

European inland waterway policy must be better integrated with European and national transport and infrastructure policies and a holistic perspective on developing European inland waterways needs to be followed. This requires considering and further developing currently less used inland waterways that offer free capacity and a high potential for taking additional cargo flows.

The European infrastructure policy should be considered the backbone of the common European transport policy that supports all modes of transport. As a result, the transport and infrastructure policy of the Member States should build on and reinforce the strategy developed at the European

[2] Working paper, European Commission, 2014.
[3] Eurostat, table: Güterverkehr nach Verkehrszweig (tran_hv_frmod), 2018. Latest annual data available is 2016 (Road: 76.4%, Rail: 17.4%, IWT: 6.2%).

level. Only then a smooth and fully integrated European transport chain can be developed. Same applies to inland navigation and river-sea shipping, which can develop to their full potential if sufficient preconditions are set and implemented.

The overall goal should be the creation of a fully integrated European inland waterway system, which meets the demands of modern industry 4.0 applications. Consequently, this requires a viewpoint on the entire European inland waterway system and not only on single stretches such as the Rhine or the Danube waterways. Different waterway classes for navigation are acceptable, if their status does not exclude maintenance and modernisation measures nor underrepresentation in investment plans.

Inland navigation and river-sea shipping will hardly develop further without the political willingness and support to create same terms and care for all transport modes. The integration of more environmentally friendly transport modes in the logistics chains will help to achieve the goals set by the European Union in Paris or in strategies such as the Europe 2020.[4]

This policy paper should provide input to future discussions on how to strengthen inland navigation and river-sea shipping in Europe and especially in the Baltic Sea Region.

[4] https://ec.europa.eu/info/strategy/european-semester/framework/europe-2020-strategy_en

2 INLAND NAVIGATION AND RIVER-SEA SHIPPING: THE MODES OF TRANSPORT WITH GREAT POTENTIAL

Using inland navigation and river-sea shipping is a way to shift transport of goods from road to waterways in future. The navigable inland waterway network within the EU exceeds 40 000 km[5] and covers all important economic areas in Central Europe. Many industrial and population centres are located along inland waterways. Half of Europe's population lives close to the coast or to inland waterways and most European industrial centres can be reached by inland navigation and river-sea shipping.

FIGURE 2 - IMPORTANT ECONOMIC AREAS CONNECTED TO INLAND WATERWAYS. SOURCE: VIA DONAU, 2013, EMMA PROJECT 2018. REMARK FOR SWEDEN: INLAND NAVIGATION IS TIME BEING ALLOWED IN LAKE MÄLAREN AND LAKE VÄNERN INCLUDING GÖTA RIVER.

[5] Eurostat, Transport values of 2015 (Road: 75,8 %, rail 17,9 %, IWT 6,3 %).

Small inland ships generally carry up to 500 tonnes of bulk commodities, whereas medium and large ships carry up to 2 000 tons of dry bulk and up to 3 000 tons of liquid bulk. A pusher convoy with two barges can carry over 7 000 tonnes of dry bulk. This equals approximately 175 railway wagons of 40 tons each or 280 road trucks of 25 tons payload each. The largest inland container ships can today load over 400 TEUs. Large shipments make sense with a deliberate policy of bundling volumes driven by digitalisation and fed by sustainability concerns (better use of capacity of assets and land, decarbonisation, less energy use…). When it comes to smaller rivers, clean modular barges with higher frequency could supplement the European waterway network. By that inland navigation and river-sea shipping could help to save external costs, reduce emissions and decongest roads and railways.

River-sea shipping is a transport mode that combines advantages from short sea shipping and inland navigation by allowing transports on maritime and inland waterways use the same special type of ship: river-sea ships. River-sea shipping takes place on all major rivers in Europe having a connection to the open sea, the Russian Federation and the Baltic Sea as well.

Advantages of river-sea shipping include removal of transhipment costs in sea ports (time and cost savings) and quality benefits, since the goods are no longer transhipped in seaports and thus possible damage in reloading processes is excluded.

New vessels are often characterised by lower draught, and therefore are able to expand their operation area further inland making use of the inland waterways via river mouths.

Finnish stakeholders refer to **lake-sea shipping**, which is in context to this document a synonym for river-sea shipping**.**

A ship for every possible cargo

About 500 million tonnes of goods are transported annually by inland waterway transportation in the EU 28[6]. This transport volume is moved by a quite small fleet of about 16 000– 17 000 inland ship units. These vessels are subdivided into 11 500 units in the dry goods shipping sector (motor cargo vessels, lighters), 2 000 units in the tanker market and 2 600 units of pushed barges and tug navigation.[7]

This variety of inland waterway vessel types meets the inhomogeneous needs of European waterways. Thus, the European cargo fleet can reflect specific conditions of waterways. Therefore, the vessels utilised may vary from one waterway to another and at the same time can be used to transport any kind of goods.

The cargos of river-sea ships are mainly dry bulk cargos, steel and metals, coal, fertilizer, paper, agriculture products, forestry products, project and heavy goods as well as containers.

Inland navigation labour market in Europe and the gross value of the sector

Around 45 000 people are directly employed in the private inland navigation sector in Europe, without counting those working in the public sector. This includes all forms of employment (employed persons, self-employed, family workers). However, it needs to be considered that inland navigation is a part of the logistics chain and that the operation of inland navigation requires entities to be involved. This

[6] Eurostat (2017), data for 2015.

[7] CCNR in cooperation with EU COM (2016), in: Annual report 2016. Inland Navigation in Europe. Market Observation, p.48 f., in: http://www.ccr-zkr.org/files/documents/om/om16_II_en.pdf.

could be port authorities, handling facilities like ports, stuffing and stripping companies, tally-men, 3rd party logistics providers etc. The amount of people involved in this sector is consequently much higher and results in regional welfare by providing jobs and income.[8]

An increase in inland navigation activities in areas with a lower inland waterway transport share (such as the Baltic Sea Region) therefore provides potential for new jobs and welfare for regions. The latter also results in better multimodal network and with that increases the attractiveness of the region.

One example regarding the socio-economic benefits of inland navigation is the river Elbe. A recent study identified a direct employment impact of 6 600 employees and an indirect employment impact of 5 300 employees that benefit from services acquired in order to carry out inland navigation transport. Another 2 500 jobs are created from investments therefrom. Lastly, there is the induced employment impact of 2 000 jobs. This brings the count to 16 400 employees on a regional level, generated from inland navigation along the river Elbe.[9]

Another example is the Port of Brussels which handles 6.5 million tonnes annually and counts 12 000 direct and indirect jobs.[10]

Final example is Duisport, located in Duisburg. A study carried out in 2011 found that more than 40 000 employees directly or indirectly depend on the inland port. More than 20 000 employees live in Duisburg and represent about 14 % of all jobs in Duisburg. The added value created from this employment is more than EUR 2.7 billion. It must be borne in mind that Duisport is the biggest inland port in Europe handling 130 million tons annually. The example clearly shows the potentials of logistics operations and transport for a region.[11]

[8] Source: CCNR in partnership with the EU COM, in: Annul Report 2016. Inland Navigation in Europe. Market Observation, p. 84 f, in: : https://www.ccr-zkr.org/files/documents/om/om16_II_en.pdf.
[9] Source: http://www.gesamtkonzept-elbe.bund.de/Webs/GkElbe/DE/Informationen/Studien/Elbschifffahrtsstudie.pdf?__blob=publicationFile&v=3, p. 54
[10] Source: http://www.port.brussels/fr/port-de-bruxelles/un-port-au-service-de-la-ville/economie-et-emploi
[11] Source: http://presse.duisport.de/en/newsroom/port-of-duisburg-is-a-jobs-engine-for-the-whole-region-79.html

3 Inland Navigation and River-Sea Shipping in the Baltic Sea Region

Inland navigation and river-sea shipping markets differ in the Baltic Sea Region which, to a great extent, depends on different IWW market developments, the geographical situation and weather conditions due to different climate zones. As the market development for IWW and river-sea shipping varies, same applies for national lobby structures in the Baltic Sea Region countries. As a result, the sector is often underrepresented at the European level.

While Poland and Germany have a dense waterway network (though the former is in a dilapidated condition), in Finland, Sweden and Lithuania it is only concentrated in a few regions, but offers potential for shifting cargo from road to waterways.

Scandinavian waterways include lake areas and have less draught challenges but the winter conditions are tougher in Scandinavia than e.g. in North-West Europe. This requires different characteristics on ships' hull (ice-classed vessels) to extend operation season and profitability of waterway-based logistic solutions.

River-sea shipping does play a role connecting Baltic Sea Region sea ports already. Due to less draught challenges, river-sea shipping is successfully integrated in national transport markets within Sweden (approx. 8 mil. tons annually), Finland (approx. 2 mil. tons annually) and Germany (approx. 1 mil. tons annually). The volume of cargo traffic in Russia along the Volgo-Balt accounted for 16.6 million tons in 2017. The volume of export cargoes from that area to EU BSR accounted for around 7 million tons, including 2 million tons of oil products to EU.

However, changing markets and infrastructural challenges caused by missing modernization and maintenance endanger a successful continuation of river-sea shipping in these markets. Especially the renovation of locks (Scharnebek in Germany, Göta river and Sodertalje in Sweden and Saimaa in Finland) needs to be highlighted in the Baltic Sea Region. North-East German and Baltic States' inland waterways include important free-flowing rivers like Elbe, Odra, Vistula and Nemunas which are less deep and partly poorly maintained. Nevertheless, shipping is possible and could contribute to decongesting road and rail infrastructure as well as to a greener transport system in future if investments will be done. Further river-sea shipping potentials could be utilized e.g. by connecting the Polish Port of Szczecin to the paper industry in Schwedt in Germany by making better use of the Odra river.

Market development for inland navigation has gained momentum in these days in the Baltic Sea Region. Less developed markets begin to rise and potentials of inland navigation could be exploited in future like examples from Sweden and Poland clearly show.

Sweden implemented the EU Directive 2006/87/EC (a set of rules and regulations dictating technical and operational requirements for ships engaged in inland waterway traffic) and by that opened the market for inland navigation. However, with no practical experience of the capacity of IWW and the competitive aspects related to IWW, the new legislation, worked out by the Swedish Transport Agency in 2012 - 2013, took its point of departure in SOLAS shipping. This became a major problem. As a result, it proved impossible to just bring in second hand tonnage from Europe, because the standard of these ships proved too low for the new Swedish legislation. In addition, Sweden is one of very few countries that have applied fairway dues for calling ships, with fees dependent on the size of the ship and the weight of the cargo carried. To complicate things further, regulations demand the use of pilots on board all ships with a length above 70 meters (Lake Vänern and Mälaren) respectively 60 meters (Göta

river), which comes at a cost that ruins all ordinary business plans.[12] These two examples show how newly introduced legislation defines IWW as another form of shipping and not as a means of transport in its own right, which competes with land transportation and not maritime shipping. Further the legislation did not consider that IWW is a competitor to trucking – a competitor that sees no fairway dues, no cargo dues and no needs for pilots on board larger trucks.

In Poland, several actions have resulted in the creation of an institutional and strategic framework for restoring the inland waterway transport sector. These include the establishment of the Ministry of Maritime Economy and Inland Navigation (in 2015), the adoption of the Assumptions for the development plans of inland waterways in Poland for 2016-2020 with perspective by 2030 (in 2016), joining the European Agreement on Main Inland Waterways of International Importance - AGN (in 2017) and the emphasis on the need of waterway transport development included in the new mid-term Polish Strategy of Responsible Development (2017).

In its most recent national transport plan, Germany included major works to maintain and/or replace the existing infrastructure for inland navigation such as locks.

However, an overall Baltic Sea Region and European strategy is missing to boost inland navigation on rivers, canals and lakes that still have free capacities.

The existing inland navigation fleet can principally operate on any European waterway. Specialized ship tonnage for less deep fairways or winter time is existing. However, framework conditions and regulations need to be harmonized and set accordingly to complete the single market for shipping.

The next logical step would be the linkage of the western and central European waterway system with the Russian waterway system to form a pan-European inland navigation market.

Enhanced cooperation and common planning between the member states is needed to support river-sea shipping and inland navigation in the Baltic Sea Region. Ideally the aim should be the development of a masterplan for enhancing inland navigation and river-sea shipping in the BSR. Such initiative might be driven and moderated by the Priority Area Coordinators Transport of the EU Strategy for the Baltic Sea Region.

4 Recommendations and Action Plan to Boost Inland Navigation in the Baltic Sea Region

Priority Area Coordinators for Transport of the EU Strategy for the Baltic Sea Region (PAC Transport BSRP) should support the political discussions and implementation processes with national ministries and EU institutions of recommendations below.

It is recommended to align this process with TEN-T Corridor Coordinators Forum's discussions and associations representing the inland navigation and river-sea shipping sector. Such associations play a crucial role in communicating challenges and possible solutions of the sector towards European and national legislation.

[12] Exemptions are obtainable, after tests and exams by the Maritime Agency. For a longer fairway, like the Göta River, the cost comes to about EUR 10 000 for each navigator the first time: www.transportstyrelsen.se/sv/Om-transportstyrelsen/Avgifter/Sjofart/Avgifter-for-personliga-tillsstand/Lotsdispenser.

4.1 IMPROVEMENT OF THE REGULATORY FRAMEWORK

Business conditions for logistics services need to be seen in a truly global perspective. A precondition for fair competition is the harmonisation of the competitive conditions between transport modes. On the European scale, harmonisation has come a long way but has not been universally achieved.

The completion of the single market for shipping as well as creation of equal parameters for all transport modes is needed:

The internal market is one of the most celebrated successes of the European Union. Its completion is a continuous exercise and a central element on the European growth agenda. However, the single market remains incomplete and dysfunctional in some sectors. This is especially true for shipping including river-sea shipping and inland navigation.

When it comes to rules and regulations, the challenging market conditions of barge transportation should be better considered. Examples of these are increasing requirements regarding engines or (mainly relevant in Scandinavian countries) ship classifications and admission of ship types in certain areas. Compared to other modes of transport IWT also lacks funding support in different areas, such as infrastructure.

In many cases, goods transported by river-sea shipping between two EU seaports lose community status as soon as they leave the port. This entails a heavy administrative burden, involving several authorities and intermediate parties. Procedures and requirements are not only complex but also repetitive, resulting in productivity losses and unnecessary workload and stress for ship crews.

The electronic cargo eManifest with information on the status of goods is considered a practical solution to achieve this. It is a harmonised instrument to achieve further facilitation of maritime transport for vessels calling at EU and at third country ports. Goods carried on such ships could therefore be treated in the same way as those carried on land, and deemed to be Union goods unless identified otherwise.

Many administrative formalities related to the arrival of the ship are outdated, unnecessary and repetitive. This applies both to cargo and crew-related documentation. They should be further streamlined and rationalised to alleviate the administrative burden, e.g. by also developing towards a real European Single Window application.

External costs of different transport modes are not fully considered in taxation yet. This makes inland navigation and especially river-sea shipping more expensive compared to other inland modes. In many BSR counties, these modes suffer from paying heavy costs for using the waterway infrastructure compared to road and rail transport. This leads to unequal competition.

Inland navigation must be an integrated part of the total transport system connected to the land-based modes of transportation. Efficient financial policy instruments need to be evaluated and established to move cargo from road to inland navigation. This must be taken into account when amending the actual Directive 92/106/EC which is not really tailored to the needs of our sector.

The national regulatory frameworks are clearly a challenge. Inland navigation and river-sea shipping ar too often regulated by national legislation and therefore disparities between the countries of the Baltic Sea Region arise. The inland navigation in e.g. Sweden and Finland is heavily affected by pilot dues. However, these pilot dues do not occur in many other Baltic Sea Region countries and therefore they decrease the competitiveness of inland navigation in Sweden and Finland. A free navigation on all inland waterways should be aimed at by keeping safety at high level. There have been significant technical developments in electronic navigation in the last 20 years. Also here Automatic Identification System (AIS) and Vessel Traffic Service (VTS) systems could play a role in future.

Sweden has established inland waterway zones, but from a European perspective these zones are like isolated islands. Such initiatives should be avoided in future as they hinder market developments. UNECE has previously been discussing extending resolution 61 with rules for river-sea shipping, where inland navigation vessels may sail outside the traditional inland waterway zones with some additional safety requirements. This extension of inland waterway transport with river-sea shipping may, from a Baltic perspective, close gaps between areas classified as zone 3 to 1 and facilitate growth of transport volumes between hubs.

EMMA pilot in Sweden – Development of inland navigation market

A technologically and economically viable concept for bulk transports within the Stockholm area and the Lake Mälaren was developed. Investigations whether it is possible to shift the distribution from road transportation to a sea-based logistics solution on inland waterways was added. This resulted in a test run of container transport by barge from Gothenburg via Göta Älv canal towards the lake Vänern. The Swedish pilot activities included the elaboration of a technical concept for an inland barge prototype that is adjusted to the Swedish conditions.

Experiences are used to enhance inland navigation and to work on the improvement of Swedish regulations for inland navigation.

When it comes to seaport-hinterland transport (one of the most important inland navigation market segment) barges are not treated in the same way as trucks and trains in some BSR countries. One example of this are unequal terminal handling charges (THC) and operational deficits such as long waiting times of barges in seaports. This hinders the competitiveness of inland navigation. Terminal handling charges are sometimes twice as high as for road and rail. Cost of waiting times in terminals increase the cost of inland navigation significantly. Both factors have an enormous influence on the competitiveness of inland navigation.

Recommendations:

EU COM, EP: To further support the aim of the White Paper on Transport to establish the framework for a European multimodal transport information, management and payment system as well as move towards full application of “user pays” and “polluter pays” principles.

EU COM, EP: Develop the eManifest further and bring the National Single Window initiative of the EU towards a new level by creating a real European Single Window. With this solution, Union goods will benefit from the internal market, and this even for voyages with calls in third country ports, while non-Union goods will be subject to the same full compliance requirements that exist today. Customs authorities will be able to devote more resources to risk assessment and clearance of non-Union goods while Union goods can circulate more freely.

EU COM, EP: The abolishment of higher user fees for public infrastructure or handling costs in ports is urgently needed. Also stimulate the equal treatment of barges in supply chains and seaports.

BSR Member States, PACs Transport EUSBSR: A unification of legislation is urgently needed in the BSR. Good framework conditions for IWT are missing. Just to give one example: Even though Sweden implemented the directive “Technical requirements for inland waterway vessels” (2006/87/EC), most requirements other that strictly technical issues for inland navigation and ships used are still based on IMO/SOLAS convention. This is just one example where incomplete regulations have negative effects on the IWT markets and private actors hesitate to start up new business. The legislation issues limit the growth of the entire inland navigation sector.

EUSBSR, EU COM, EP: Verification of the current laws for navigation of river-sea ships on inland waterways. An updated maritime legislation including river-sea specifics is needed.

EUSBSR, EU COM, EP: Verification of the national pilot systems for inland navigation and river-sea ships towards safe navigation without pilots**.**

4.2 Enhancement of Administrative and Branch Associations' Structures

Due to emerging inland navigation markets not all BSR countries have an adequate administrative structure including inland navigation responsibilities. From e.g. the Swedish and Finnish perspective there is no official department appointed to be responsible for the development of inland navigation, nor the Swedish state has any interaction with other EU countries on this issue.

The knowledge of strengths and weaknesses as well as benefits and risks of inland navigation and river-sea shipping by governments, administration, international organizations, charters, forwarding agents, ports, logistic companies etc. is not sufficient. This affects technical development and development of new logistics concepts in a negative way. An improvement of this issue would help to increase their support to develop the sector further.

A clear vision as well as benefits and needs of the sector towards the governmental level must be communicated by the inland navigation and river-sea shipping sector. This is a precondition to start a dialogue on developing competitive conditions for the sector. However, having only a (very) small inland navigation sector available leads to missing functional national and international lobby structures. It is essential to discuss and develop functional market framework conditions with administrative levels.

EMMA project's analyses demonstrated insufficient administrative and associational structures linked to inland navigation in the Baltic Sea Region

The national regulatory framework conditions must often consider European rules and regulations which are discussed and set by the European institutions. Thus it is important for the national level to be a part of the European structures as well.

Especially the CESNI committee should be considered by national IWW stakeholders from the BSR, which are clearly underrepresented in this important committee.

Further, analyses clearly proved the lack of members from the Baltic Sea Region (besides Germany and to some extent Poland) represented in IWW associations in Brussels. This is often due to the fact of missing national branch associations. Thus, it can be stated, that the national drawback is also influencing sector's representation on the European level.

Since October 2017 special attention has to be called on the newly formed "Comité européen pour l'élaboration de standards dans le domaine de la navigation intérieure" (CESNI). The CESNI committee was established by the Central Commission for the Navigation of the Rhine (CCNR), by adopting a resolution creating a European committee for drawing up common standards in the field of inland navigation. CESNI is a very integrated legal regime referred to in EU directives on technical requirements and professional qualifications and with a new focus on RIS regulations. CESNI promotes the development of uniform, modern, user-friendly requirements and by that directly influences European legislation procedures for inland navigation and river-sea shipping. As such it should be specially considered by national IWW stakeholders from the BSR, which are clearly underrepresented in this important committee.

Recommendations:

PACs Transport EUSBSR, BSR Member States: A joint inland navigation and river-sea shipping BSR think tank (or similar BSR wide entity) should be established based on participants from all concerned BSR member states. Further it should include experienced stakeholders and associations from the IWT

sector. This think tank could be a starting point for first market movers to successfully be represented on national and European levels.

BSR Member States: Should consider strengthening or building up their administrative levels focusing on inland navigation and river-sea shipping. The involvement of national and/or international experts to consult administrations and focus areas to strengthen IWT could be a starting point.

BSR Member States: Should asked for- and the European Commission should support - the better inclusion of BSR's administrations in charge for inland navigation into European committees like CESNI. It should be ensured that all member states and their interest groups are covered by the CESNI committee. Regional and market specifics of the BSR should be considered in order to reflect on the competitiveness of inland navigation and river-sea shipping in the Baltic Sea Region.

BSR Member States: To ensure participation at European committees in charge of inland navigation and river-sea shipping, such as CESNI, to bring in regional specifics, needs and solutions.

EU COM: To develop the CESNI committee further and to work on additional topics tackling inland navigation and its enhanced integration into supply chains by creating equal market conditions for all transport modes.

National and European IWT associations: To align forces and to support emerging inland waterway transport markets where an administrative and branch association structure is not yet fully developed to reach the joint aim of enhancing inland navigation in Europe.

4.3 DIGITALISATION

In transport, digitalisation can significantly improve traffic and transport management through more accurate information on traffic and infrastructure conditions and on the location of vehicles and goods. Better access to and sharing of digital transport data for both public and private stakeholders along the supply chain can foster seamless information flows and open up a wide range of new business opportunities.

Inland navigation needs to be competitive to be integrated into multimodal transport chains. Telematics systems have been used in air, sea and road transportation for years but the inland navigation is lagging behind other transport modes. Further digitalisation as well as better integration of the inland navigation and river-sea shipping in multimodal supply chains are considered critically important to increase efficiency and profitability. This is especially important for cross-border and multimodal integration. Also, the reduction of administrative burden requires further increase of digitalisation in shipping. It will also open up future opportunities in the field of semi- and fully-autonomous inland shipping.

Even though digitalisation and electronic navigation have come a long way, inland ships and river-sea ships travel with great expense. The obligatory use of sea, river and estuary pilots increases prices. Adequate electronic navigation systems could support navigation without pilot obligations by keeping high safety standards and pave the way for future trends like autonomous ships.

EMMA pilot in Northern and North-East Germany: Linking available IWW information on a map-based web application

A map-based web application links real-time RIS information (e.g. RIS Index, NtS), infrastructure status and general traffic information. By that a digital information platform for IWW stakeholders links all available digital data to inform e.g. skippers about latest information on a specific voyage.

EMMA project's analysis in Finland compares RIS and VTS services to deliver input to a potential Saimaa Information Portal

The analysis was executed to tackle the challenge bridging RIS and VTS systems. It guides on how to build-up a "Portal" (a kind of one-stop-shop) for navigational information in the Saimaa Region.

The analysis is linked to the German pilot application to benefit from the experience made.

River Information Services (RIS), Sea Traffic Management (STM), Smart Fairway and RIS Corridor Management concepts as well as corresponding infrastructure are being developed further by the CEF projects CoRISMa, RIS Comex, RPIS, MONALISA, MONALISA 2.0 and STM Validation[13]. Especially corridor management aims to realize support for route and voyage planning as well as transport and traffic management. These initiatives are the first step towards remote traffic control systems and autonomous sailing. Pilot activities have already started in some parts of Europe. It is vital that the inland transport industry is interoperable to provide unrestrained access and competitive services. In Central Europe implementation of interoperable RIS will provide information for navigation and operations. However, one must consider that e.g. in Scandinavia no RIS services neither infrastructure exist but similar Vessel Traffic Services (VTS) systems, Automatic Ship Identification (AIS) and single window data sharing systems are in operation. These systems are used in marine traffic. In some BSR countries, such as the Nordics, inland waterways are connected to sea rather than other inland

[13] CEF funding Project cofinanced by the EU, Project Numbers: 2012-EU-21007-S, 2010-EU-21109-S, 2014-EU-TM-0206-S, 2015-EU-TM-0036-W, 2015-EU-TM-0038-W.

waterways. Seagoing vessels like river-sea ships are used in addition to inland barges. A separate RIS system for inland navigation is probably not being installed, especially as river-sea shipping plays a more dominant role in these waterways and duplication of similar systems is not productive. Therefore, regulations and operational practices should take interoperability of both sea and inland waterway systems (RIS/VTS) into account.

Recommendations:

PACs Transport EUSBSR, BSR Member States, EU COM, EP: River information services, smart fairway and sea navigation systems (e.g. VTS, AIS) must be interoperable in the BSR. Newly developed RIS systems should not prevent e.g. sea-river ships to enter inland waterways and vice versa. While developing RIS services further, interfaces to link VTS services needs to be considered. Otherwise some regions in the BSR cannot benefit from enhanced services developed on the European level.

PACs Transport EUSBSR, BSR Member States: To ensure to keep track of RIS service developments and to align VTS accordingly. Existing VTS monitoring should be developed further into a more active traffic control and route planning.

BSR Member States: To set up adequate infrastructure to enhance further digitalisation and to develop ITS systems further to increase efficiency and safety as well as prepare for autonomous shipping in future.

BSR Member States: To support data exchange and set-up of easy to use information platforms as well as one-stop-shop platform to provide navigational, operative and administrative information on inland waterways. Availability and usage of open data is a precondition and should be sought by all stakeholders. Links between RIS, eTools and other digital applications should ensure future compatibility**.**

4.4 Waterway Infrastructure and its Maintenance

Transport policies and linked investments are too often focused on road and rail transport in the Baltic Sea Region. Benefits of inland navigation in respect of external costs for society have not been considered sufficiently. Thus, missing links and bottlenecks limit the overall efficiency of inland navigation and river-sea shipping in the Baltic Sea Region. Because of this, there are areas where these modes can only compete in a limited way with the dominating rail and road transport modes. Investments in waterways offer the advantage to serve other purposes besides shipping (transport) as well, like leisure activities and white fleet business. This increases the social return on investments. This should be considered when planning for more investments.

Inland waterway transport is often border-crossing transport, in some cases even multi-corridor transport. A holistic corridor perspective is essential to develop and execute smooth transport. However, TEN-T corridors do not cover all relevant inland waterways in Europe. It is especially important to ensure the connection between Baltic Sea Regions' inland waterways and TEN-T inland waterways.

From a Swedish perspective more waterway areas must be classified for barge traffic in national waters. An active program to take inventory on and to remove hurdles from existing fairways and waterways is necessary. It is crucial to extend the inland waterway zones to achieve a cost-efficient trading area in Sweden.

Especially private investments are particularly hindered by lack of maintenance and rehabilitation as well as regeneration measures in river basins and infrastructure, which result in unstable navigational conditions. This uncertainty in economic viable inland navigation also causes the absence of modernisation and innovation in the fleet. Investments are undertaken by the private sector only if a return on investment is foreseen. To put it in a nutshell: The unclear future of navigational possibilities in some countries or river basins of the Baltic Sea Region hinders private investments.

EMMA project executed a bottleneck analysis and identified measures to sustainable enhance inland navigation in the Baltic Sea Region

The focus was on the identification of infrastructure measures with considerably high impact on the modal split, thus increasing the share of inland navigation in the Baltic Sea Region.

EMMA project supported a cost-benefit-analysis of the modernisation of Saimaa locks in Finland

The CBA investigates transport effects and socio-economic costs, which bigger locks in the Saimaa region would bring along the route Joensuu-Dusseldorf-Joensuu. Due to wood industry, river-sea shipping potential in the region is high, but efficient shipping of products requires adequate infrastructure.

EMMA project enabled a location study for an intermodal platform connected to inland waterway in Poland

A new river port with a logistics centre is planned near Bydgoszcz to lift inland navigation potential along the Vistula river. In future, the river could potentially connect the Polish seaports Gdynia and Gdansk with Warsaw. The study presents an analysis of environmental, hydrological, technical and infrastructural determinants in the area between Bydgoszcz and Solec Kujawski. The study can act as a common learning action for other regions planning similar investments in future.

The use of inland waterway infrastructure must take place in full respect of the European and national environmental legislation. However, too often the European environmental legislation is used as a tool to constantly challenge permit granting procedures. Regulations and their implementation should be more balanced between environmental protection and competitiveness of inland navigation and river-

sea shipping. Especially different ways of implementing regulations at a national level create challenges and sometimes even hinder IWT developments to an unacceptable degree. In many BSR regions, such as border crossing Elbe and Oder region, investments in the infrastructure are difficult to realise.

Recommendations:

BSR Member States: To maintain, rehabilitate and improve infrastructure conditions for inland navigation in the same way as regards road and rail, where it makes good economic sense. External costs need to be considered in weighing relevant factors for decision making processes, compared to rail and road infrastructure projects.

PACs Transport EUSBSR, BSR Member States: To stimulate discussions on extending the TEN-T inland waterway network and include BSR waterways in core network corridors. It is especially important to ensure the connection between Baltic Sea Region's inland waterways and TEN-T inland waterways.

PACs Transport EUSBSR, EU COM, EP: To enable the Connecting Europe Facility (CEF) to finance maintenance and rehabilitation projects. To strengthen the importance of inland waterway infrastructure in European transport plans and respective white papers on transport.

BSR Member States, PACs Transport EUSBSR, EU COM, EP: To decide on clear rules for the permit granting procedures on how and within which time limits infrastructure projects must be agreed on. Given approvals should not be questioned afterwards.

BSR Member States: To develop jointly with ecological organizations a best practice guide for the implementation of investments on inland waterways. Such a guide could result in recommendations for the investors that plan to build, maintain and rehabilitate infrastructure on how to best respect the European and national environmental legislation.

4.5 SUSTAINABILITY AND INNOVATION

Increasing sustainability is one of the main challenges in transport business, also when it comes to inland navigation. The **uptake of alternative fuel technology** in inland navigation and river-sea shipping is a complex process. For example, the greening at the level of engines does not necessarily require entirely new ships. As far as the life cycle is concerned, the long lifetime of ships' hull means less carbon emissions at the production level in comparison with the short lifetime of trucks.

Hybrid engines (such as diesel-electric) or the use of alternative fuels such as liquefied natural gas (LNG) and liquefied bio gas (LBG) could play an important role in next engine technologies due to environmental, technical and business-economic considerations. Fully electrical and hydrogen drives for smaller vessels and in short-distance transport might also be a solution.

The transformation process requires actions in various fields, from the development of regulations and standards to the establishment of infrastructure and building of new engines as well as adequate funding for the sector. On the one hand, there is still the challenge of financing new engine and propulsion systems for the inland navigation sector. On the other hand, the new infrastructure is needed in ports to enable the ships run on alternative fuel technologies which requires investments and minimised investment risk as well.

Inland navigation and river-sea shipping could be used to bring alternative fuels cost-effectively from the seaports to the customers in industrial areas along the inland waterways.

EMMA study on retrofitting diesel-powered barges into LNG/LBG propelled barges by Lithuanian and Swedish partners

Lithuanian and Swedish partners are jointly investigating possibilities to retrofit propulsion system of a standard diesel-driven barge into LNG/LBG. The study is focused on investment costs as well as profitability of retrofitting a barge to learn about possibilities.

EMMA study on innovative barge designs for extending navigational season in Scandinavian waterways

The northern countries have to deal with stronger winter conditions and the resulting effects on inland navigation. However, solutions to extend the operation period are on the way. A design study investigated retrofitting of a class III inland barge to better resist the impact of ice and to operate on the Lake Mälaren during ice conditions.

To make the market introduction successful, these interdependent actions need to go hand in hand. Active informing about the status of actions in different fields creates confidence for public administrations and shipping industry to decide on new investments and speed up the transition process. This is essential, taking into account the high investment costs of new solutions.

Innovative ship design might play a role in improving the competitiveness of inland navigation. This applies especially in regions with challenging water or weather conditions. Solutions for light weight vessels, push-barge convoys and ice-classed vessels should be looked into more deeply. Commercial concepts to either upgrade or build new vessels are needed for aged inland navigation and river-sea shipping fleet. Experience exists, but the exchange of experience on tested solutions is missing in Europe.

Further, new building programs as well as investments in new technology (e.g. RIS applications) depend to a great extent on shipowners' financial and technical resources and their possibilities for investments and innovation. The promotion of innovation in all involved areas and specifically in greening of the fleet needs to come along with adequate instruments to support shipowners in investments.

Logistics concepts play a crucial role in innovation. Apart from large fairways in the Baltic Sea Region,

a range of smaller waterways that connect cities could benefit from multimodal concepts for pallets, big bags, parcels, waste etc. IWT solutions should be considered in supply chains and also in city logistics (e.g. transport by smaller units) and linked with (urban) land use to counter congestion and land fragmentation. Water taxis and waterbuses for public transport should be a part of city logistics concepts to benefit from inland waterways in the best possible way.

Recommendations:

PACs Transport EUSBSR, BSR Member States, EU COM, EP: To develop and support one European Inland Waterway Transport Knowledge and Innovation Platform. Such platform should involve member states, research institutions, industry and sectoral European and regional IWT associations. The platform would combine knowledge and experience and share it within the sector, e.g. in the field of ship design, alternative propulsion systems and fuels, digitalisation etc. A first step in the right direction was announced by the European Barge Union (EBU) and the European Skippers' Organisation (ESO) which set up an inland waterway transport platform. Further support and ensuring a single window for information towards sector's stakeholders is needed and should be discussed.

PACs Transport EUSBSR, BSR Member States, EU COM, EP: To set up a discussion forum with industry representatives and sector's associations to agree upon a strategy for investment and sector-wide deployment of alternative fuels for inland navigation and river-sea shipping in the BSR.

PACs Transport EUSBSR, BSR Member States, EU COM, EP: To support research and pilot activities to test alternative propulsion systems and filling procedures at inland and sea ports as well as new ship designs to meet regional inland waterway specifics. Further, to support the development of an alternative fuel concept for inland navigation and river-sea shipping and work together as regards European agreements such as coordinated planning of a bunker station network.

To support innovation in the sector utilising funding instruments both at the European and national level.

PACs Transport EUSBSR, BSR Member States, EU COM, EP: To support and pilot new logistic concepts aiming to better integrate IWT in supply chains and city logistics if inland waterways are available.

4.6 Tailor-Made Support Instruments to Boost Inland Navigation and River-Sea Shipping

High investment costs and difficult access to private and public sources of finance have often proven to be a barrier to the establishment of new services, the renewal or modernisation of inland navigation and river-sea shipping fleet as well as maintenance, rehabilitation and investment in inland waterway infrastructure.

At the same time inland navigation and river-sea shipping face the necessity to renew and/or modernise its fleet as well as keep track of investments for new technologies. The IWT market is neither characterised by big profit margin nor ensured return on investment, especially in the Baltic Sea Region. This unfavourable situation is reflected in the administrative side too, which often hesitates to make e.g. infrastructure invest in a sector that is not as innovative or big as others and faced with budget constraints - a classical hen and egg problem.

However, there is a clear benefit to develop inland navigation and river-sea shipping sector further:

Inland navigation and river-sea shipping can provide green,
smart and congestion-free transport and logistics!

Thus, more effort must be put in research and development of new and profitable technology. Electrified barges, autonomous navigation and intelligent fairways are some future areas for inland navigation. River Information Systems (RIS) and Vessel Traffic Services (VTS) have the potential to increase efficiency, profitability and safety in shipping and connect inland navigation and river-sea shipping better with other stakeholders as well as information flows in supply chains.

To reach the ambitious goals, tailor-made European funding and financial instruments for inland navigation and river-sea shipping are needed.

Recommendations:

PACs Transport EUSBSR, BSR Member States, EU COM, EP: To agree with the industry and their associations on tailor-made support instruments to develop inland navigation and river-sea shipping further.

PACs Transport EUSBSR, BSR Member States, EU COM, EP: To better consider regional waterway market specifics in national as well as European funding schemes. The discussion about the next multiannual financing framework (MFF) should give more space for the funding and financing of inland navigation after 2020 through the Connecting Europe Facility (CEF). NAIADES II and INTERREG Programme instruments providing funding for knowledge exchange and innovation in the sector should be continued and developed further. Since inland navigation is developed differently in the Member States, funding programmes should consider regional specifics, challenges and needs to reach a coherent common network standard in future.

PACs Transport EUSBSR, EU COM: To better promote and inform the business sector about existing funding and incentive schemes to stimulate further market expansion and innovation. An easily accessible and comprehensive funding handbook, as developed in the Platina initiative and further shaped by the European Inland Barging Innovation Platform (EIBIP) should be permanently updated and intensively promoted to the sector.

PACs Transport EUSBSR, BSR Member States, EU COM, EP: To consider incentive scheme to stimulate shippers to modernise their fleet, making greening of inland waterway transport a joint responsibility of the entire logistics chain.

4.7 Development of an IWT Masterplan for Europe and the Baltic Sea Region

The competitiveness of inland navigation depends to a large degree on waterway infrastructure standards. The standards define the maximum vessel sizes and thus affect the per-unit costs. 75 % of inland waterway transport is cross-border and the weakest stretch of the transport route has considerable effects on the overall competitiveness of inland navigation. Seamless infrastructure is essential for green and smart services as a part of the EU decarbonisation strategy.

While investing in new inland waterway transport infrastructure, a transnational network perspective was missing in most member states. This resulted either in the assumption of different vessel standards during construction phases of infrastructure (nowadays bottlenecks), or that only a few isolated bottlenecks were addressed without consideration for corridor and maintenance aspects.[14]

The future aim is to create a well-integrated European inland waterway network rather than to concentrate on well-functioning network segments such as e.g. the Rhine corridor. National programs for the development of inland waterways need to be aligned and put into a European perspective.

An IWT masterplan for the development of inland navigation and river-sea shipping is needed, which should include a holistic perspective of the sector. Such masterplan should provide the strategy and the instruments to pave the way for a well-functioning internal single market for inland navigation and river-sea shipping, in which a green and future-oriented fleet supports the European goals as set in the White Paper on Transport.

An Inland Waterway Transport Masterplan for Europe should:

- Respect the different characteristics of waterways, e.g. canals, free-flowing rivers and lake districts as well as consider regional specifics such as winter conditions in the Nordic countries.
- Respect that transition points between different waterway CEMT classes must be interlinked in the best possible way and work together much better as today. An integrated network will help to foster the role of inland navigation in the entire logistics chain.
- Respect different market developments and varied administrational or associational structures, especially in the Baltic Sea Region.
- Include **river-sea shipping** in all its considerations as this mode uses the same infrastructure as inland navigation.
- Include **a clear strategy for the uptake of alternative fuel technology**. When developing and implementing such strategies, the border-crossing perspective is required, e.g. when it comes to the location of alternative fuel filling stations.
- Include **a clear Intelligent Transport System (ITS) strategy** based on River Information Services (RIS) and Vessel Traffic Services (VTS). Especially their interoperability is a key for well-functioning river-sea shipping services. Further improvements such as the eManifest as well as technologies such as blockchain and 5G need to be considered.
- Include the **improvement of (national) regulatory frameworks** towards a real single market in inland shipping within the EU.

[14] EU COM, in: European Structural and Investment Funds: https://cohesiondata.ec.europa.eu/themes/7#, 13.07.2017

- Include a **long-term and stable EU investment framework** to create good navigation status and to boost greening and digitalization. Tailor-made instruments to support regional development of the sector should be included. A three billion EUR funding scheme for clean vessels would reduce external costs by 22 billion EUR; public investment plans to create bottleneck-free EU waterways amount to 15 billion EUR.
- Include the establishment and long-lasting support of one **European Inland Waterway Transport Knowledge Platform.** Such platform should involve member states, research institutions, the industry and sectoral European and regional IWT. The platform would combine knowledge and experience and share it within the sector, e.g. in the field of ship design, alternative propulsion systems and fuels, digitalisation etc. A first step in the right direction was announced by the European Barge Union (EBU) and the European Skippers' Organisation (ESO) which set up an inland waterway transport platform. Further support and ensuring a single window for information towards sector's stakeholders is needed and should be discussed.
- Be **integrated into Trans-European Transport Network (TEN-T) strategy** of the European Union. Efficient and safe barge transport would be ensured by an implementation of a Good Navigation Standard (GNS), in particular on a certain number of days per year, a minimum fairway depth and width, a bridge clearance as well as maximum lock waiting times, reliability standards and minimum service levels. This standard might distinguish between free-flowing rivers, canals and lakes.

Recommendations:

IWT Associations: To ask for an IWT Masterplan for Europe and the Baltic Sea Region to enhance inland navigation and river-sea shipping. To contribute to a successful development and implementation of the IWT Masterplan.

PACs Transport EUSBSR: To contribute to the IWT Masterplan and to align it with the EUSBSR. Further, to involve member states and key stakeholders to discuss and develop the EUSBSR as well as the Baltic Sea Region Programme further, supporting the development and implementation of an IWT Masterplan.

BSR Member States: To ask for an IWT Masterplan for Europe and the Baltic Sea Region to enhance inland navigation and river-sea shipping. To contribute to a successful development and implementation of the IWT Masterplan.

EU COM, EP: To start a dialogue with IWT associations and BSR Member States in order to develop an IWT Masterplan for Europe and the Baltic Sea Region to enhance inland navigation and river-sea shipping.

5 Involved Associations Supporting this Policy Paper

European Barge Union (EBU)	www.ebu-uenf.org
European Federation of Inland Ports (EFIP)	www.inlandports.eu
European Skippers' Organisation (ESO-OEB)	www.eso-oeb.org
European River-Sea Transport Union (ERSTU)	www.erstu.com
Inland Navigation Europe (INE)	www.inlandnavigation.eu
Association for inland navigation and navigable waterways in Europe (VBW)	www.vbw-ev.de/en

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