

Position paper on multimodal and interoperable supply chains Short Paper

Work Package 2 | Activity 3

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Purpose

This position paper summarizes the work in the activity 'Enhanced Supply Chains through multimodal integration' of the INTERREG BSR Project Platform BSR Access. The paper illustrates best practice examples of interoperability and integration of multimodal transport in supply chains, with a focus on untapped potential ensuring a better modal choice for business decisions. [Please refer to the long version of this paper for concrete descriptions of actions, outputs and links.](#)

These project and business success stories attend the TEN-T Issue Papers' desire to create durable, streamlined, and capitalized actions and illustrate potentials to optimize interoperable and intermodal transports as part of the supply chain. In addition, this position paper features input from inland waterway transport (IWT), and rail transport.

Strengthening multimodal and interoperable transport solutions

The transport sector is currently the second largest producer of greenhouse gas emissions in the European Union (EU). To overcome these challenges and to meet the targets set by the [Transport White Paper](#) (2011), the [European Green Deal](#) (2019), and [EU Strategy on Sustainable & Smart Mobility](#) (2020), it is of great importance that the sector shifts to sustainable modes of transport such as railway, inland waterway and river-sea shipping. This can ensure environmentally friendly, safe, and congestion-free transport and logistics, while at the same time upgrading the existing infrastructure and fleet. It is also essential for the transport sector to make efficient use of an integrated and intelligent multimodal network. Especially inland navigation will hardly develop further without the political willingness and support to create same terms and conditions for all transport modes. At the same time, these transport modes have a lot of potential to substantially contribute to greening transport chains.

However, despite many European, national and regional initiatives rail as well as waterborne transport have not reached their potential yet – as past EU funded projects and several other organizations or initiatives (public & private) have repeatedly proven. When looking at the development of rail and inland waterway infrastructure in the BSR specifically, there is still a vast gap in different countries and transport is still predominantly organized via trucks and semi-trailers.

A level playing field needs to be achieved between road and rail as well as inland waterways to be able to shift cargo to the more environmentally friendly transport mode. To make the intermodal/multimodal transport chain more attractive, easy availability and accessibility need to be guaranteed as well.

Improved investment coordination among corridors

As stated in the White Paper, the [TEN-T core network](#) should be developed to ensure efficient multimodal connections, ports, airports, and key land border crossings – with a focus on completing missing links (e.g. cross-border sections, bottlenecks and bypasses). Unfortunately, the implementation process for the Core Network Corridors (CNCs) faces several challenges, which may threaten the accomplishment of goals in the set time perspective (2030). This was confirmed by the European Court of Auditors, who found that most of

the six so-called Transport Flagship Infrastructures (TFIs) are behind schedule and not all rail TFIs will be compliant with the minimum requirements of the TEN-T Regulation for rail freight by 2030

Among the challenges are possible implementation delays for vital infrastructure projects on the corridors caused by weak cross-border coordination of investment planning and lower priorities assigned by the Member States in terms of national funding. Although cross-border projects usually demonstrate a high European added value, their direct economic effects might be less obvious – compared to purely national projects. The lack of a coherent approach in planning the corridor investments does not only manifest itself across the administrative borders. The Issues Papers point at the still pre-dominant silo-thinking and low level of synergies with existing initiatives as a drawback in delivering the large infrastructure investments on corridors.

Several of the in the full report examined projects conclude that especially stakeholder interaction process must go beyond the final approval of the infrastructure construction. If stakeholder involvement is seen as a burdensome but necessary means of "enforcing" an infrastructure project, its true potential will not be realized. It is evidently not enough to only invest in new infrastructure along the TEN-T CNCs to automatically shift more goods to rail/IWT as for instance the case of the Fehmarnbelt tunnel shows.

Improved connectivity by linking rail and inland waterways to multimodal hubs

The overall long-term European goal is to create an interconnected and interoperable rail system that connects Central- and Eastern Europe with Scandinavia, the Commonwealth of Independent States and China. Additionally, capacity and bottleneck challenges in hinterland connections of ports are to be solved.

Rail Baltica is one key project on the path to achieving these aims in the BSR. Its effective connections to the wider 1520 mm railway network will help to create new industrial zones and communication nodes, to create conditions for emerging business opportunities, and will affect the development of distribution centers in national markets. A network of cooperating multimodal (or at least) intermodal terminals covering the CNCs should be designed, and an integrated and coordinated strategy for terminal development considered. This is possible only in close partnerships between public and private actors in transportation sector across national borders.

Aligned with the CNCs, **Rail Freight Corridors** (RFCs) are tasked with the work to level the playing field compared to other modes of transport and set similar standards throughout the EU. Despite their efforts, fragmentation in the European railway sector has not been overcome yet and there have been many calls for updating the already ten year old initiative. Nevertheless, having a joint EU co-financed platform has proven to be of vital importance, since the relative cost competitiveness of road transport versus rail transport is likely to increase, driven by fast innovation cycles of the trucking original equipment manufacturers. Capacity increase, platooning and autonomous driving are expected to reduce the specific cost of road transport by substantial double-digit percentages by 2030. In rail, asset replacement cycles are up to ten times longer, which naturally limits the rate of innovation uptake, in the context of a relatively small rail freight supply market. The same applies to inland navigation where asset replacement cycles are even longer compared to rail.

Considering the challenges that the individual transport modes still face along the TEN-T corridors, it is also no surprise that the level of multimodal integration has not reached its full potential. The CNCs and the RFCs represent the main axes for the development of intramodality and multimodality across the EU and therefore the BSR. It is equally important that the whole EU territory is given the same opportunity to be connected by rail, following the principle of cohesion and accessibility policy. The distance that needs to be covered, and the associated costs, of the road haulage that occurs before and after transport on another mode are amongst the main barriers to multimodal transport. So-called first mile corridor areas have to be taken into account the same way as the last mile, since they feed freight (and passenger transport) flows into the CNCs through the corridor access infrastructure (secondary road, rail and/or inland waterway links, and regional airports)

connecting to the nearest corridor hub/urban node. However, they are rarely considered in regional or national transport planning.

Another important aspect is the improvement of information flow in several directions. A survey conducted by one INTERREG BSR project shows that shippers, forwarding agents etc. have no knowledge about intermodal and multimodal transport. In particular, many of them do not know about specific train schedules and opportunities to overcome the first / last mile and door-to-door solutions. This can be improved by marketing activities for logistic service providers or other intermodal transport stakeholders. The same gap in knowledge that can be observed for rail transport in multimodal supply chains can also be observed for IWT. Waterways are often not considered in the logistics chain because there is a lack of knowledge on the part of the decision-makers of logistics operators regarding the inland waterway vessel as a reliable means of transport.

A study by another project concludes that a modal shift in freight transportation in the EU28 is not able to decrease total GHG emissions of the transport sector to meet the set targets. Even under very optimistic modal shift scenarios and constant total freight volumes, the emission reduction would only be 6.5 % in 2030 (compared to 2017). As a reduction of trade volumes seems unlikely, the remaining option would be to reduce the specific emissions of the transport modes. In turn, this requires the implementation of additional policies targeted at internalizing the social costs of emissions for companies in the transport sector.

Improved utilization of information and communication technology (ICT)

Digitalization has the potential to overcome some of the inefficiencies derived from the fragmentation of European rail freight and facilitate the monitoring of performance, improve the management of capacity by better coordinating the allocation of existing capacity, and empower, for instance, the RFCs to manage traffic, both under regular conditions but also when disruptions emerge. Without the **European Rail Traffic Management System** (ERTMS), though, the European rail sector cannot make further steps in digitalisation.

However, while investment into digital innovation in the rail sector is essential to dramatically increase infrastructure capacity and improve efficiency, digitalization should also not be seen as a replacement of infrastructure investments. Taking into account the EU's modal shift objectives, while considering the congestion levels in large parts of the EU network today, one cannot realistically expect that digitalization alone will be the sole solution for congestion issues and that volumes will increase sufficiently. Investments into the maintenance of the existing rail network, especially on RFCs, will thus continue to be necessary.

Digitalizing IWT and waterways must be a future priority in Europe to boost greening the entire transport sector. Some European initiatives are on the right track as the largest CEF funded project **RIS-COMEX** demonstrates. Even though this provides a basis, further extensions are needed to address the gaps between the existing systems and the services data requirements of the various stakeholders (e.g. ETA, ETS projections and real-time notifications as well as slots for locking). Inland-AIS technically enables sharing of positioning and tracking data, however the protection of data (privacy and commercially sensitive data) is not yet solved in a transparent way. One Interreg BSR project developed a prototype to overcome this challenge and by that support vessel masters, fleet- and cargo managers to demonstrate the feasibility of using modern information technology. This is achieved by collecting and aggregating different data sources from existing RIS. This data is then presented using an integrated web application called ELIAS.

Modal shift is a priority for the Green Deal and cannot do without multimodal transport management systems – this is the case for both waterborne and railway transport. Interoperability is the first condition for successful multimodal smart and connected transport. Standardisation is not enough as it leaves too many operational aspects untouched. Binding rules on interoperable standards between existing information systems across borders and modes would make the TEN-T Regulation much stronger by enabling the coherent deployment of digital technologies across the TEN-T network and boost synchro-modal transport. The development of a common European mobility data space in full compliance with data protection rules and according to the

highest standards for cybersecurity is very much welcomed to stimulate data accessibility, the use of data and demand for services enriched with data. All the synergies between transport and digital policies should be enhanced. To foster system innovation, the new common data spaces should not be isolated bubbles. For waterways and waterway transport as well as railway transport, there is a direct added value to develop connections between the common European data spaces for Mobility, Energy and Industry.

Improved utilization of decarbonation potential

As several projects and other organizations have shown, just shifting to a more sustainable mode of transport or just implementing the right infrastructure or ICT tool is not enough anymore to hit the targets set by the Green Deal. Only by ensuring smooth cross-sectoral and cross-border cooperation as well as investing in clean fuel supply every step along the supply chain – from first-mile areas to upgrading the long leg covered by trains or barges to the last-mile delivery – there is a fighting chance in reducing emissions in the transport sector. Nonetheless, the overall picture is scattered when it comes to the deployment of clean fuel, even though the AFI Directive has been in place since 2014.

The IWT and Short Sea Shipping (SSS) sectors are challenged like all modes of transport to meet the 2050 zero emission goals and have play a significant role across transport corridors and industries if the climate targets are to be met. Due to road traffic congestion and climate-friendly waterways, the inland waterway sector already is an interesting alternative - also for combined transport.

Modernizing the engines of inland waterway- and SSS vessels makes sense in terms of environmental policy, but often not in terms of an operator's bottom line. Conversion of the IWT fleet to zero emission is a challenging task as inland ships have extremely long lifecycles. Technologies for near zero tank-to-wake emissions are theoretically available but Technology Readiness Levels and costs do not favor short-term mass roll-out for most, (IWT, RSS & SSS) vessels and their operational profiles will require different solutions, as there is no 'one-size-fits-all approach', and to achieve ambitious emission reduction targets all available means (financial, regulatory, economic) must be deployed.

To speed up the deployment to reach the emission reduction goals in the IWT sector it is therefore of highest importance to provide the technical solutions, create and authorize specific aid schemes and fiscal incentives. The IWT sector therefore needs:

- Available and affordable technology to broadly deploy innovation in the sector
- Flexible goal based regulatory framework avoiding long term permission processes for innovative solutions
- Tailor made and dedicated funding combining national and EU funding schemes for engine renewals, retrofitting of engines in existing vessels with electric drive or propulsion (to make the energy source exchangeable for future green solutions) and innovative vessel design to reduce energy consumption and to make the fleet resilient towards climate change.

Clean onshore power and refueling along the network must be made available by 2030 in order to make significant progress towards climate neutrality on water and along shore. The clean energy transition is only starting, and it is not yet clear which alternative fuel will be the best solution. Most probably, the future is multi-fuel as well as multi-user and a technology and restriction to only one mode of transport lock-in should be avoided at all cost. The switch should be supported with appropriate technical regulations and the right taxation incentives. Binding targets for GHG and pollution across the whole transport sector are needed to achieve a long-term shift and incentives to switch to greener fuels.

Vision for a multimodal and interoperable supply chain

Many of the challenges in the multimodal sector today are due to the very complex and silo divided railway and waterway systems across Europe. Different standards for rail tracks, train systems and waterways create huge barriers for creating efficient and effective multimodal business models. The most feasible way of reducing costs and improving profits are for companies to create synergies and economies of scale making their supply chain as efficient as possible. Further integration of waterways with other modes should not only be pursued more strongly for international and inter-regional flows, but also in urban environments where most of the negative externalities are generated.

Freight transport over short and medium distances (less than about 300 km) – which relies heavily on trucks right now – should be incorporated into multimodal supply chains. In an ideal situation, trucks running on clean fuels would only be needed for the first- and last mile. Making clean onshore power and refueling infrastructure available along waterways and railway tracks requires a network approach. Clean energy and refueling infrastructure need to be available and well accessible at berths along waterways, at major train hubs, in ports and dry port facilities. The European corridors (incl. RFCs and Motorways of the Sea) are the most suitable instrument to undertake coordinated planning in and between corridors using a smart mix of fixed and mobile facilities.

The future network must be equipped with fast mobile broadband coverage to sustain a smart digital infrastructure that is planned, managed and organized by using open data. All modes of cross-border transport are paperless and data are interoperable across transport modes on a “one record, once only” basis making railway transport and IWT easy-to-use in synchro-modal operations.

Multimodality can provide a sustainable solution in finding the right transport mix, with the additional option of integrating light rail and bus, walking and cycling. The European Commission has strongly promoted and will continue to promote the implementation of Sustainable Urban Mobility Plans (SUMP) as successful tools for sound policy coordination in the context of sustainable urban development. These plans are most effective when they integrate both passenger and freight mobility needs into the broader urban and territorial development strategy.

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