Interreg CENTRAL EUROPE

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Rail4Regions

Green Paper

on financial and technical solutions to increase the attractiveness of single wagon transport

Version 1

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1. Introduction

The European Union has adopted a resolute goal of achieving climate neutrality by 2050. In order to achieve this, it is essential to implement policy measures that will facilitate a shift towards cleaner forms of transport and ensure that European transport is on the right track for a sustainable and smart future. This objective can be met by implementing a comprehensive green and digital transformation of all modes of transport within the European transport sector.

The transport sector is responsible for approximately 25% of all greenhouse gas emissions resulting from human activity within the European Union, representing a significant source of air pollution. Furthermore, the transportation sector is responsible for a number of additional negative externalities, including noise pollution, accidents, and congestion. The transition of traffic to more sustainable forms of transport and the greening of the transport sector present considerable opportunities for rail, although it must be acknowledged that rail currently faces significant competitive challenges compared to road in many areas.

The Rail4Regions project aims to increase the volume of goods transported by rail instead of road by helping transport planners to integrate regional rail lines into European freight networks. In order to achieve this goal, the project examines regional branch lines, sidings, and loading points with the aim of identifying potential solutions for their revitalisation and upgrade. The aforementioned topics are subject to overlap by single wagonload traffic, as regional lines, sidings and loading yards with low traffic volumes are, in the majority of cases, unable to handle and transfer block trains, due to a lack of sufficient freight or capacity at any given time. Therefore, it can be concluded that regional solutions require the maintenance and increase of single wagonload traffic.

In the preceding phase of the project, an analysis was conducted to identify the characteristics of single wagonload traffic in Central Europe. This entailed an examination of trends, infrastructure, rolling stock, human resources, and traffic management practices employed by railway companies engaged in single wagonload operations. Additionally, the study highlighted best practices that could be adopted by other railway operators to enhance operational efficiency.

In light of these findings, this document has been compiled with the objective of suggesting solutions to increase the volume of single wagonload traffic. In order to provide a comprehensive overview, the document presents solutions for a diverse range of stakeholders, including policymakers, infrastructure managers, railway undertakings, and customers. By taking gradual steps, all stakeholders can contribute to the growth of single wagonload traffic. However, it should also be noted that the majority of proposed solutions can be implemented within a medium to long timeframe, with their positive impact being observable and measurable over a longer period.

2. The situation of single wagonload transport in Europe

2.1. Trends in single wagonload transport

Single wagon traffic is a basic segment of rail freight transport. In single wagonload traffic, individually dispatched wagons are collected from dispatching stations to service points, from where they are transferred to shunting/marshalling yards and sorted into trains that take them to the next shunting/marshalling yard. In the end, the goods arrive at their destination in several trains, sorted several times.

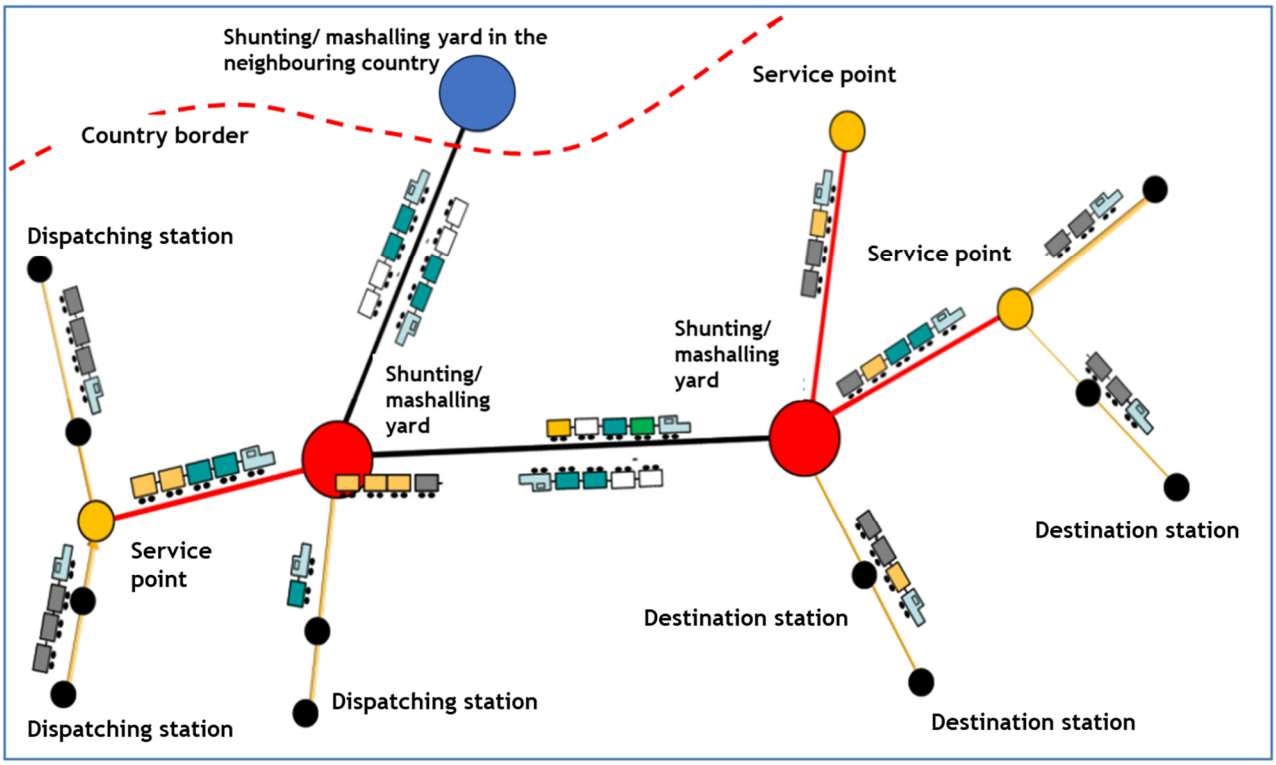

Figure 1: The SWL traffic system
Source: own edition

The study "Single Wagonload Traffic in Europe - challenges, prospects and policy options", commissioned by the European Commission and carried out by PWC and La Sapienza in 2015, contains a number of findings that remain pertinent in the present day.

Although single wagonload (SWL) is still an important segment of rail freight transport, its performance and share of rail freight transport are in decline. The principal reasons for this decline can be attributed to the following factors:

- a general reduction of the flows of some commodities that are “captive” for SWL services,
- the low or no profitability of SWL for the RU operating them, driving RUs towards the elimination or significant downsizing of the service (as experienced in UK, Italy, Spain) due to the urgent needs to improve their financial situation,
- the difficulty in coping market expectations in terms of quality of the service, in particular for international transport,

- the reliability of the system is perceived as not sufficient (the complexity of the production model amplify the delay of a train e.g. whether other groups of wagons shall wait its arrival in order to reach an acceptable train capacity utilization),
- the direct competition on small/medium shipments with road transport, the latter being able to constantly improve its efficiency (road transport is highly rated by shippers in terms of flexibility, and it is characterized by a large capacity of transport that make it very competitive in terms of prices),
- the limited effect on SWL of the liberalization process: due to the complexity and lower profitability of SWL, new entrants focused on the intermodal and full train markets, so that the beneficial effects of the market opening have not been observed for SWL.

The tendency to reduce the available infrastructure for SWL appears to be more an effect than a cause of the reduction of SWL traffic; Infrastructure Managers would like to avoid unexploited capacities because of the tight budget constraints they have, so they react by reducing the available train formation facilities and freight station as soon as the relevant traffic streams are declining.

The number of marshalling yards in operation have been in several countries significantly reduced in the last years. Countries pursuing SWL are the ones more oriented to the preservation of the SWL related infrastructures, while other countries are developing “marshalling-free” SWL service (requiring only limited shunting operations on flat yards) to combine wagons from different clients. In the medium term, however, such decisions – although justified in the short term – might hinder future re-launch of traffic, especially if the tracks in the yards or sidings or freight stations are removed, and the available land used for other purposes.

The most critical issue is the reduction of the private sidings; rehabilitation or construction of sidings (and in some case their certification) is a significant expenditure and administrative burden for the companies owning the plants connected by the siding, and only some countries support with specific actions their survival and development. On the other hand, road connections to industrial plants are built and maintained at no cost for the companies.

Infrastructure downsizing is a key aspect threatening the SWL re-launching. There is very likely risk of a “vicious circle” where traffic reduction is driving the closure of some key facility, and the latter will generate further traffic drop.

In terms of cost structure, the complexity of the SWL production chain imply that also the cost structure is relatively complex. For a typical shipment, the main leg (intermarshalling yards trains) costs just 13% of the total, + 10% for charges for track access, in total 23%. Marshalling yards services in first and last marshalling yards are 15% of total costs. If we consider also the intermediate marshalling (7%), the total marshalling costs represent 22% of the total. Distribution costs (distribution trains + sorting at node stations) excluding marshalling yards services costs in first and last marshalling yards account for 25 % of total costs, commercial costs and overheads account for 20%, while the remainder represents wagon costs.

2.2. Regulation at EU level

The rail sector is to form the backbone of the climate-neutral transport transition in the European Union. The EU's goal is to create a single European market for rail transport services through bundles of measures (rail packages), directives and guidelines. Some of these are of particular relevance to single wagonload transport and are currently under revision.

2.2.1. TAC Guidelines

Track access charges are the main driver of infrastructure costs for rail operators in the rail transport sector, accounting for up to 88 percent of costs.[1] Infrastructure managers have to set the charges using the infrastructure at the costs directly incurred by the train service. Commission Implementing Regulation (EU) 2015/909 on the modalities to calculate direct costs provides details on how infrastructure managers should calculate their direct costs. The regulation provides cost categories that are not eligible. In particular, when infrastructure managers received funds they do not have to pay back, they are not allowed to include any costs derived from such payments into their infrastructure charges. Average direct unit costs can be modulated on the basis of vehicle, operational and infrastructure parameters. Traffic diversions at the instigation of the infrastructure manager should not increase charges. Alternatively to calculating average unit costs and modulating them, infrastructure managers may use cost modelling in accordance with best available international practice. Regulatory body may determine and apply a simplified control of direct costs if their values remain below certain thresholds.[2]

The Guidelines on Track Access Charges were be published in the first quarter of 2024 with the aim of clarifying the interpretation of existing rules and disseminating good practices. The Guidelines did not go into details but provided a few indications on how to define more precisely certain market segments and what type of methodology to apply for the calculation of TACs among others. Regarding freight, consideration were given concerning single-wagon load and the ability to pay between customers.

Evaluation of the TAC Guidelines in relation to SWL transport

Track Access Charges can play a role in supporting modal shift towards more sustainable modes of transport, adopting a sustainable TAC reduction throughout Europe with proper compensation to IMs and the railway sector. TACs have proven to ensure, at least under certain conditions, benefits for forwarders, infrastructure managers and rail operators. The examples currently available demonstrate that reducing TACs allowed a considerable lowering of freight rates and in return an increase in frequency and load factor of open access services.

In addition, action needs to be taken in freight traffic. The shift to rail in freight transport, as set in the Green Deal, is vulnerable. Here, special attention needs to be paid to single wagonload trains, which are very labour intensive and thus less competitive compared to other transport modes. The TAC for single-wagon load traffic, including pre- and post carriage, need to be lowered. Moreover, the possibility to introduce national measures in support of single-wagon load trains and combined transport should be expanded, e.g. by expanding the state aid framework.

The Commission guidelines on Track Access Charges should consider the following:

a. A cross-modal subsidy mechanism from road to rail, with a specific mark-up on the toll for road transport, may finance TAC reduction.

b. The TACs reduction on the cross-border segment must not increase the cost of the TAC for other railway services. To avoid this, full compensation by the State is required.

c. A fair balance between the demands of passenger and freight transport is needed to reach an optimum in cutting CO2 emissions. This is especially true for Member States where the rail network serves both passenger and freight traffic.

d. Recommendation of adjustable TACs or operational guidelines to accommodate seasonal changes in freight demand.[3]

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[1] Schöne, Andreas & Kunz-Kaltenhäuser, Philipp, 2022. "**Track access charges in the European Union railroad sector: A consideration of company organization and institutional quality**," Ilmenau Economics Discussion Papers 164, Ilmenau University of Technology, Institute of Economics.

[2] https://transport.ec.europa.eu/transport-modes/rail/infrastructure/infrastructure-charges_en

[3] https://www.cer.be/images/publications/positions/231121_CER_Position_Paper_TAC_Guidelines.pdf

2.2.2. Capacity Regulation

In July 2023, the European Commission tabled a package of three proposals for the greening of freight transport. One of these proposals focuses on improving the use of rail infrastructure capacity. The goal of the changes is to enhance the management of rail infrastructure capacity and traffic as a way to ensure improved service quality, optimised railway network usage, increased traffic capacity and the possibility for the transport sector to contribute to decarbonisation.

Current rules on capacity management are decided on an annual basis and at national level. The rules on the management and operation of railway infrastructure and the principles and procedures applicable to the allocation of railway infrastructure capacity for domestic and international rail services are set out in Directive 2012/34/EU. Meanwhile, Regulation (EU) No 913/2010 provides for the establishment of rail freight corridors and one-stop shops to facilitate requests for infrastructure capacities for international rail freight services. According to the Commission, the current approach has led to delays at borders; meanwhile delays due to congestion caused by uncoordinated maintenance work are also common. A number ofthe shortcomings in EU capacity management rules were identified in the evaluation of Regulation (EU)No 913/2010. The evaluation concluded that the regulation's impact was too limited to contribute to a modal shift from road to rail, and that cross-border cooperation between Member States and infrastructure managers in the management of the rail infrastructure was still ineffective. It also suggested that managing the capacity on rail freight corridors and on the rest of the network separately is inefficient. It pointed out that there are no requirements to use digital tools and there are shortcomings in the monitoring of rail freight services to help improve performance.

The Commission's proposal on Capacity Regulation specifically includes:

- general rules for capacity management in three stages: i) strategic capacity planning; ii) scheduling and allocation of capacity; and iii) adaptation and rescheduling of capacity;
- obligations on infrastructure managers to work jointly to develop a European framework for capacity management, with specific provisions for the management of scarce infrastructure capacity and in cases of restrictions relating to work on infrastructure and degraded infrastructure;
- obligations concerning traffic management, disruption and crisis management and related cross-border coordination;
- a performance review framework, with monitoring tasks for the European Network of Infrastructure Managers (ENIM), and a new performance review body;
- the deployment of digital tools enabling better capacity and traffic management.

The new rules will provide the grounds for an efficient capacity management and will address the lack of harmonisation, synchronisation and coordination of the capacity allocation processes. The rail sector welcomes the rolling-planning concept as a crucial principle for maintaining flexibility in capacity requests, and it also welcomes the changes to incentivise efficient use of the available infrastructure.

Evaluation of the Capacity Regulation in relation to SWL transport

The Regulation is a timely and necessary piece of legislation to optimise the use of existing rail infrastructure, boosting the efficiency of capacity and traffic management and thereby improving the quality of rail services and contributing to the achievement of a Single European Rail Area. It will improve the coordination among Infrastructure Managers (IMs) and Allocation Bodies (ABs), increase dialogue with their customers (Railway Undertakings (RUs) and other Applicants) and other stakeholders, and help drive the establishment and interconnections of relevant digital tools to optimise and implement international processes. Moreover, it will provide the needed flexibility to the freight operators. The rail sector is aware that improvements in the Regulation can help achieve a 4% increase of capacity.[4]

[444] https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/754599/EPRS_BRI(2023)754599_EN.pdf

The aforementioned positive effects also serve to encourage the utilisation of single wagonloads. The expansion of rail capacity, accompanied by enhanced regulatory oversight and greater predictability, collectively enhance the quality and, consequently, the appeal of rail transport services.

2.2.3. CountEmissions EU Regulation

In addition to capacity regulation, the package of proposals presented by the European Commission in July 2023 includes a proposal for a common methodology for greenhouse gas (GHG) emissions from transport services, referred to as CountEmissionsEU.

The initiative covers both freight and passenger transport. It aims to ensure that the GHG emissions data provided regarding transport services are reliable and accurate, to allow fair comparison between transport services. It establishes a methodological framework but does not govern where it has to be used. Nonetheless, if an organisation decides to calculate and disclose information on GHG emissions from transport services it needs to use the methodology provided. To avoid extra red tape for small and medium-sized enterprises, the proposal exempts these companies from mandatory verification of adherence to the rules.[5]

The quality and reliability of the data needed to calculate emissions are as important as the calculation methodology itself. To maximise the reliability of calculations, CountEmissions EU will prioritise the use of primary data, that is data obtained during actual carrying out of a transport operation. However, primary data is often unavailable or too expensive to generate for certain stakeholders, especially for SMEs. Therefore, CountEmissionsEU also allows the use of secondary data, including default values and modelled data.

Evaluation of the CountEmissionsEU Regulation in relation to SWL transport

A common methodology and harmonised set of default values are needed for reliable and accurate GHG emissions data, and to allow a fair comparison between various transport services. More transparency of GHG emissions data can influence the decisions of transport users and create incentives to use more sustainable transport options. Industry experience shows that this can drive innovation and behavioural change – both among the transport service organisers and their customers.

The Regulation will also cover digital mobility services, as well as digital navigation services and journey route planning services, and lays out rules to ensure that the most environmentally friendly option would be displayed first, as well as providing an easy comparison between different modes on offer, empowering consumer awareness and choice.[6]

If the Regulation is introduced for more modes of transport, it will be more favourable to rail freight. It could lead to a more competitive situation in terms of prices and charges compared to road freight. The introduction of the Regulation will significantly improve the situation of SWL.

2.2.4. Weights and Dimensions Directive

The third element of the package of proposals presented by the European Commission in July 2023 was the Weights and Dimensions Directive (WDD). The Weights and Dimensions Directive 96/53/EC (WDD) sets out maximum permitted weights and dimensions (length, width, height) for heavy-duty vehicles (HDVs), such as lorries and buses, which circulate on EU roads.

A 2022 evaluation of the current directive found that, while it is effective in promoting road safety, protecting road infrastructure and facilitating the use of road vehicles in containerised intermodal transport, it falls short on ensuring fair competition and encouraging the use of zero-emission and energy-saving

[5] https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2023)757562

[6] https://www.cer.be/cer-press-releases/rail-sector-welcomes-latest-step-in-countemissions-eu-regulation

technologies and devices. The national derogations allowing the circulation of longer and/or heavier vehicles have also resulted in a patchwork of diverging rules, hindering smooth cross-border HDV traffic in the EU and leading to loss of operational and energy efficiency. This mix of EU and national requirements, as well as bilateral arrangements, coupled with legal uncertainties, has also led to ineffective and inconsistent enforcement, especially in cross-border transport.

The common standards set by the new directive aim mainly at ensuring the free movement of goods and fair competition among road transport operators within the Single Market. The Commission's intention with the directive is to enhance road safety and prevent damage to road infrastructure. It will also promote the utilisation of zero-emission vehicles and energy-efficient solutions including those of an aerodynamic cab design, while facilitating intermodal transport.

The revision addresses three key issues: the environmental performance of road freight transport, cross-border transport operations within the Single Market, and enforcement.

One of the policy measures proposed would allow extra weight and length for zero-emission HDVs. This would not only compensate for the weight of the zero emission powertrains, but also enable extra loading capacity. This should incentivise the uptake of zero-emission HDVs.

To promote intermodal transport, extra height will be allowed to accommodate high cube containers, and lorries, semitrailers and trailers will also be considered as intermodal loading units that could benefit from the same weight allowance as vehicles carrying containers in intermodal operations.

To ensure smooth cross-border operations by longer/heavier vehicles, such as vehicles carrying indivisible loads or car transporters, the application process for permits for the carriage of these loads will be streamlined, and the length of overhanging loads for car transporters will be harmonised.

To strengthen enforcement, the proposal will set a common minimum level of controls for compliance with weight limits, and for the mandatory installation in road infrastructure of weighing mechanisms to help detect overloaded vehicles while they are moving.

Operating longer and/or heavier vehicles, such as EMS or 44t vehicles between Member States whose operational (infrastructure) and technical (weight and dimensions allowances) standards are appropriate and compatible will therefore remain possible.

The infrastructure standards and operational conditions vary between Member States. Therefore, the Directive's revision will maintain the current flexibility of Member States to permit higher weight and dimension limits for HDV in national traffic. The revision makes it clear that such vehicles can be used in international operations between neighbouring Member States who allow their circulation on their territories. However, the weights and dimensions of those vehicles must be compatible with the national limits applicable in the Member States involved in such international operations.

The Weights and Dimensions Directive encompasses a series of technical and monitoring requirements, designed with the objective of ensuring the safety of all road users. The enforcement of these requirements will ensure the safe and efficient operation of HDVs on the road network. The enforcement of road transport rules is mainly the Member States' responsibility. To ensure consistency and effectiveness of checks across the EU, the revision establishes the minimum requirements for the number and types of controls to be carried out.

Evaluation of the Revision of Weights and Dimensions Directive in relation to SWL transport

The proposals tabled by the European Commission as part of the Greening Freight Transport Package include the revision of the Directive on the Weights and Dimensions of commercial road vehicles. However, a more detailed examination of these measures suggests that they may not be entirely effective in achieving the objective of promoting combined transportation.

For zero-emission vehicles, the proposal allows for additional 4 tonnes of gross weight, which will also be applicable to conventional combustion vehicles during a transitional period until 2035. Without the need for further agreements, the cross-border circulation of longer vehicles is intended to be allowed between

countries where such vehicles are permitted in domestic operations. These measures result in interoperability risks between road and rail freight transport.

In order to facilitate capacity gains for intermodal transport, an extension of the weight allowance of 44 tonnes to non-containerised units, the possibility to further increase the weight allowance for Combined Transport, and an increase of height limits to facilitate the transport of high cube containers on the road legs are proposed.

However, the analysis shows that these measures are partially impractical and ineffective.

- None of the longer combinations according to the European Modular System can be handled in Combined Transport without increased complexity – in operations, transshipment, and terminal access.
- Most extended semi-trailers (> 13.6m) are technically not compatible with Combined Transport assets and for those that are, only about half of the existing fleet of intermodal pocket wagons is compatible.
- A further increase in the gross weight allowance poses operational challenges for the access to terminals, the handling limits of equipment and the composition of trains.
- Opportunities for Combined Transport due to the allowance of additional weight and dimensions are outweighed by compatibility risks, an undermining of standards and greater complexity.

The measures for road transport are justified with their greenhouse gas emission reductions potential, which appears to be below 10 %. This is marginal compared to the potential of combined and rail transport that rises up to 90 %. Yet, the latter modes are threatened by the cost savings potential of 7 % to 25 % per tonne or m3 for road, due to the utilisation of heavier or longer vehicles depending on the transport case.

The measures involve externalities, where the situation is multifaceted. More axles potentially reduce the stress on the road infrastructure, but also result in higher unladen weight and lower efficiency per tonne of freight. There is also a considerable risk that axle loads increase and cause disproportionate deterioration of infrastructure. 10 trucks with 44 tonnes gross weight are more damaging than 15 trucks of 40 tonnes.

The increase in the permissible gross weight and the authorisation of EMS would lead to a reverse modal shift of up to 21% on average for all rail segments and 16 % for Combined Transport. This results in up to 10.5 million additional truck journeys, 6.6 million tonnes of additional CO2 emissions and a tripling of external costs.[7]

The impact of the directive on different rail freight segments, such as single wagonload and full trainload traffic, threatens a potential reverse modal shift of up to 21%.

2.2.5. Combined Transport Directive

The Combined Transport Directive (92/106/EEC) is one of the key EU legal instruments that directly aim at reducing the negative externalities of freight transport, such as CO2 and other emissions, congestion, noise and accidents, by supporting a shift from long-distance road transport to rail, inland waterways and maritime transport.

The Commission first issued a legislative proposal to revise the directive in 1998. Since no agreement could be reached during the interinstitutional negotiations, the Commission withdrew the proposal in 2001. After a 2016 REFIT evaluation, the Commission proposed a second proposal to amend the directive in 2017. In early 2019, trilogue meetings froze on the issue of the cabotage exemption in international combined transport. The Commission withdrew the proposal in 2020. The latest Commission proposal to amend Council Directive 92/106/EEC was published on 7 November 2023. The proposal updates the current directive as part of the Greening Freight Package, the bulk of which was adopted in July 2023. The initiative aims to:

- re-establish the conditions for support and proof of compliance. Changes to the conditions under which intermodal operations fall within the scope of the directive, such as geographical scope,

[7] https://uic.org/IMG/pdf/study_weightsdimensions_-_phase_ii_v1_1-2.pdf

loading units and external cost savings, aim to cover a larger share of intermodal transport, eliminate ambiguities and establish a clear basis for compliance decisions.

- strengthen the support framework for intermodal transport. The proposal introduces a new exemption from weekend, night and holiday driving bans applying to heavy goods vehicles only. It also presents obligations for Member States to analyse their existing measures and extend or establish new national policy frameworks to support the uptake of intermodal transport. The proposal further introduces a target to reduce costs for combined transport (overall 10 % reduction) in each Member State, to: i) facilitate technological upgrades relevant to intermodal transport, and ii) establish new connections between terminals.
- improve market transparency. The reporting clauses for the Commission would remain in place, but with updated data and reporting periods, as well as Member State transparency obligations. Under the initiative, links to all national policy frameworks and measures would be published in a central gateway managed by the Commission.
- introduce common transparency requirements for terminals ensuring that all terminals make data publicly available on terminal facilities and services, complementary to the proposed revision of the TEN-T Regulation.[8]

The proposal provides a support framework for intermodal and combined transport operations.

Intermodal transport is a type of multimodal freight transport, in which goods are carried within a closed loading unit such as container, swap-body or semi-trailer, and the closed loading unit is transhipped between different transport modes without the goods themselves being handled.

Combined transport is a type of *intermodal transport* that meets specific conditions set out in this Directive; in particular it concerns operations that reduce by 40% the negative externalities compared to road-only operations. This essentially means operations for which the major part of a transport operation is carried out by rail, inland waterways or sea (short sea shipping), while the much shorter initial and final road legs act as feeders for the loading units between and place of loading/unloading and the terminal.

The proposal includes three provisions for promoting intermodal transport in general:

- It reiterates that similarly to unimodal transport; all intermodal transport is free of authorisations and quotas.
- It establishes a new obligation on Member States to adopt a national policy framework for facilitating the uptake of intermodal transport.
- It establishes a transparency requirement for intermodal transhipment terminals to ensure that potential customers can easily find out which services and facilities are available.

For the combined transport specifically, the proposal includes two additional support measures:

- It establishes a new EU-wide exemption from weekend, holiday and night driving bans for the short road legs of combined transport to ensure better use of terminal and non-road infrastructure capacity.
- It establishes a target for Member States to reduce the average door-to-door cost of combined transport operations: a reduction by at least 10% within 7 years.

All existing EU-wide regulatory measures that are today applicable to combined transport will also remain in force. This includes the ban on quotas and authorisations, equivalent treatment of international combined transport with international road transport as regards use of non-resident hauliers, special definition of own-account transport on road legs, and a ban on price regulation.

[8] https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747446/EPRS_BRI(2023)747446_EN.pdf

A significant increase in combined transport performance may indirectly lead to an increase in SWL traffic. A 100% increase in combined transport performance will be coupled with a 10-15% increase in SWL traffic.

2.3. Existing state aid/support

The legislative basis for obtaining state aid can already be found in the Treaty on the Establishment of the European Community (hereinafter the Treaty), where in Article 87 par. 1 of the Treaty states that "aid granted by Member States which may distort competition by favouring certain undertakings or productions is, in principle, incompatible with the common market in so far as it affects trade between Member States". In article 87 par. 3 of the Treaty, however, the situations in which the aid may be compatible with the common market are listed, some of which also apply to the transport sector.

2.3.1. MS state aid overview

The extremely high cost of single wagonload traffic makes it unprofitable in any European country. That is why the European Union allows its Member States to promote single wagonload traffic through public subsidies to keep freight on the railways in an environmentally friendly way.

State subsidy can take several forms. One possibility is public support through network access charges, which could take the form, for example, of a reduction in train path charges, a reduction in the use of marshalling yards or a reduction in the charges for shunting services provided by the infrastructure manager. Although this form of support is simpler and involves a much lower administrative burden, it is less efficient in terms of SWL traffic. It is conceivable that these discounts may be utilised by railway undertakings not only for SWL traffic but also for the organisation of block trains. Alternatively, the railway undertaking may lose the discounts if it does not utilise the shunting services of IM.

In contrast, the provision of targeted state aid represents a more effective approach. In the EU, state aid must be notified to and approved by the EU Commission. In its "Guidelines", the Commission sets out the criteria it uses to determine whether a subsidy is compatible with the EU Single Market. For EU Member States, the guidelines are the central point of reference when establishing a subsidy. A notification procedure, including preparatory work, takes several months because the Member State has to provide detailed evidence that the aid is necessary and proportionate.

Guidelines are not legally binding. This means that aid which is not defined in the guidelines or which is defined according to different parameters can also be notified to the Commission for assessment and thus be designed "freely" by the Member State. However, the effort required by the Member State to demonstrate the compatibility of such aid is immensely higher, which is why Member States rarely go beyond the guidelines in practice.

Guidelines therefore have a certain incentive effect: the clearer and more needs-based the types of aid are regulated, the greater the chance that Member States will introduce such aid.

In accordance with the Community guidelines on State aid for railway undertakings (2008/C 184/07), state aid may be granted for the coordination of rail freight transport, which may manifest in a number of forms, including:

- **aid for rail infrastructure use**, the eligible costs are the additional costs for infrastructure use paid by rail transport but not by a more polluting competing transport mode
- **aid for reducing external costs**, the eligible costs are the part of the external costs which rail transport makes it possible to avoid compared with competing transport modes

- aid supporting interoperability to the extent that it corresponds to the need for transport coordination,
- aid supporting the strengthening of security, the elimination of technical obstacles and the reduction of noise,
- aid for research and development corresponding to the needs of transport coordination.

The provision of aid for the use of rail infrastructure and aid for reduction of external costs may prove beneficial in supporting the SWL segment.

The Commission considers that there is a presumption of necessity and proportionality of the aid when the intensity of the aid stays below the following values:

- for aid for rail infrastructure use, 30 % of the total cost of rail transport, up to 100 % of the eligible costs
- for aid for reducing external costs, 30 % of the total cost of rail transport, up to 50 % of the eligible costs

Both for aid for rail infrastructure use and for aid for reducing external costs, the Member State has to provide a transparent, reasoned and quantified comparative cost analysis between rail transport and the alternative options based on other modes of transport. The methodology used and calculations performed must be made publicly available.

The figure below shows countries with a state subsidy scheme for single wagon traffic, as well as countries where incumbent railway companies have ceased single wagonload traffic in order to avoid losses in the absence of state aid.

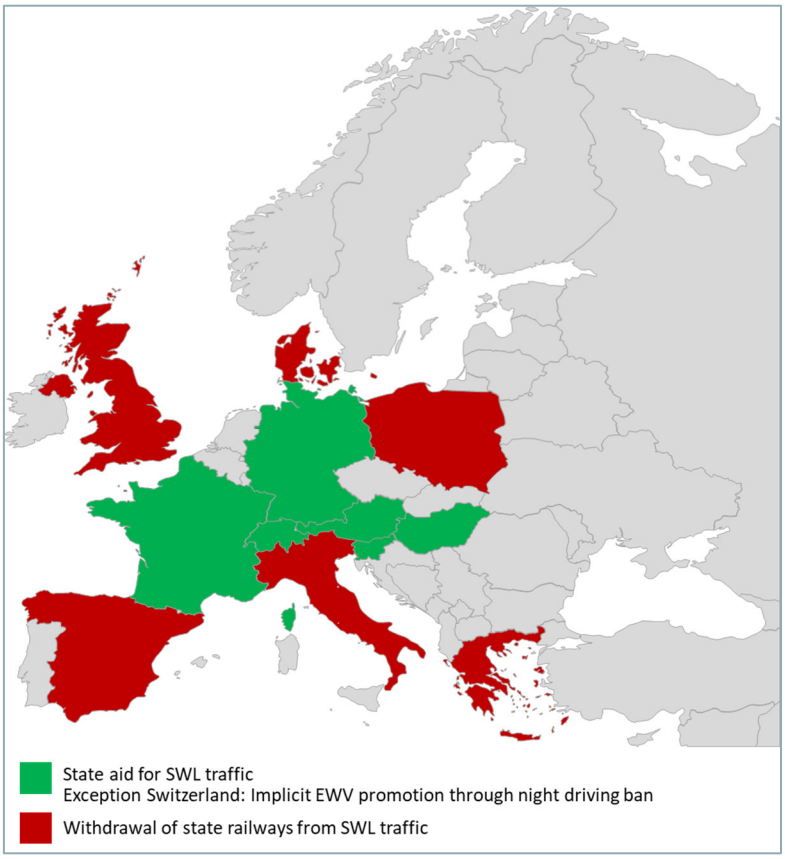

Figure 2: State aid for SWL traffic in the European countries
Source: own edition

A comparative analysis of state aid schemes in different countries is presented in Annex 1.

2.3.2. Changes in state aid/support

SWL transport was, is and will not be cost-effective also in the future. This applies to all countries and has already led to the introduction of adequate funding levels for RUs in Austria and France, for example. If SWL shall be maintained and expanded it has to be supported adequately. Due to the lack of profitability and operating losses no real competition in the SWL market has developed so far.

In order to be able to continue operating SWL in Europe, consistent operating cost support in combination with system price support is absolutely necessary.

The European Commission plans to replace the Community Guidelines on State aid to railway undertakings with new rules for and Land and Multimodal Transport Guidelines and to introduce the new Transport Block-Exemption Regulation ('TBER'): certain types of aid, for which it has already been sufficiently demonstrated that they are necessary and proportionate, are exempted from the notification procedure by regulation. The rules laid down in the TBER will be complementary to those set out in the **new Land and Multimodal Transport Guidelines** ('LMT Guidelines'). In the LMT Guidelines, the Commission sets out the conditions under which it will assesses notified public support to sustainable land transport that is not block-exempted. Together, these two sets of rules will form an **up-to date and comprehensive rulebook** for the granting of State aid in the sustainable land transport sector.

The draft of the Guidelines on State aid for land and multimodal transport and the new Transport Block Exemption Regulation are open to public consultation until 20.09.2024.

The new Guidelines on State aid for land and multimodal transport apply not only to railway undertakings but also to other rail operators and undertakings operating on the demand-side of the rail transport sector, i.e. transport organisers (e.g. logistics companies, freight forwarders, multimodal transport operators), to the extent they choose to use rail instead of road.

As regards operating aid, the new Guidelines do not include a section on aid for infrastructure use. Member States can use aid to reduce the external costs of transport, based on the external costs methodology, to continue to cover the costs linked to the use of infrastructure.

A new element introduced in the guidelines is operating aid for the start-up of new commercial rail freight services. This can be used to offset initial operating losses over a 5-year period, using a degressive approach.

For the Commission, the only valid justification for operating aid in favour of existing transport assets is the difference in external costs between road and rail transport. The aid intensity is increased from 50% to 75% of the difference in external costs. The difference in the cost of using the infrastructure can no longer be considered as a justification.

The new guidelines cover several types of investment aid in the railway sector, in particular aid for the construction, upgrading and/or renewal of private railway sidings. The guidelines also cover investment aid for the acquisition of (new or used) vehicles for rail transport. This aid may be granted only to new entrants to the railway sector and to railway undertakings and leasing operators in the rail transport sector that qualify as SME. The aid must be granted in the form of a public guarantee.

In addition to the adaptation of rolling stock to different electrical systems and the adaptation of rolling stock to different track gauges, the new guidelines include the European Railway Traffic Management System (ERTMS) and the Digital Automatic Coupling (DAC) among the interoperability aids that can be granted in the railway sector. In the latter two cases, the aid intensity is up to 80% of the eligible costs.

The Guidelines provide for specific rules to support investments in tangible and intangible assets for the technical adaptation or modernisation of rolling stock and equipment for sustainable multimodal transport. The following activities and technologies could, in particular, be supported: retrofitting and/or refurbishing of rolling stock; retrofitting and/or refurbishing of equipment for sustainable multimodal transport; telematics applications; logistics systems, such as load optimisation software; traffic forecast software (Estimated Time of Departure/Estimated Time of Arrival) and route optimisation software.

The new guidelines set out for the first time the criteria for public service obligations in freight transport, which were not previously regulated.

The following table provides an overview of the aid intensities per type of aid included in the draft guidelines:

	Block Transport Exemption Regulation	Land and Multimodal Transport Guidelines
Operating aid schemes to reduce the external costs of transport	50% of the external cost difference between road and rail, 60% for combined transport	75% of the external cost difference between road and rail
Operating aid schemes to launch new commercial connections	Operating loss compensation of 80% in year 1, 70% in year 2, 60% in year 3, 50% in year 4, 40% in year 5.	Operating loss compensation of 80% in year 1, 70% in year 2, 60% in year 3, 50% in year 4, 40% in year 5.
Investment aid schemes for the construction, upgrade and renewal of unimodal and multimodal rail and inland waterways transport facilities	50% of eligible costs	100% of eligible costs
Investment aid schemes for the construction, upgrade and/or renewal of private sidings	50% of eligible costs	100% of eligible costs
Investment aid schemes for the acquisition of vehicles for rail or inland waterways transport (for new entrants, SMEs)	State guarantee for 80% of the loan	State guarantee for 90% of the loan
Investment aid schemes for the acquisition of intermodal loading units (ILUs) and cranes on board of vessels	30% of eligible costs for ILUs, 20% for cranes	n/a
Investment aid schemes for interoperability (ERTMS, DAC, etc.)	50% of eligible costs, 80% for DAC and ERTMS	50% of eligible costs, 80% for DAC and ERTMS
Investment aid schemes for the adaptation and modernisation of vehicles for rail or inland waterways transport and of equipment for sustainable multimodal transport	20% of eligible costs	100% of eligible costs
PSO	Defined criteria	n/a

Figure 3: Overview of the aid intensities
Source: own edition

Evaluation of the new directives in relation to SWL transport

The Commission's aim with the new directives is to promote the development of the transport sector, to facilitate the transition to climate neutrality as set out in the European Green Deal and to ensure a level playing field for rail, inland waterway and multimodal transport.

Overall, the recognition of the need for investment support is welcome, but the specificity of the criteria, in particular with regard to the purchase and retrofitting of equipment, is disappointing.

With regard to aid for the purchase of vehicles, the Commission has failed to meet the needs of the sector with these draft guidelines. In order to renew the European fleet of locomotives and wagons, aid is also needed here, with an appropriate aid intensity to stimulate investment. Moreover, all railway undertakings, not only SMEs and new entrants, should be eligible for aid. This is particularly true for SWL traffic, where the vast majority of low-margin, rather loss-making traffic is carried by incumbent railway undertakings.

It would be appropriate to compensate the difference in external costs between road and rail transport in full, i.e. with an aid intensity of 100%. In addition, the difference between road and rail infrastructure use costs should continue to be used as an eligible cost and thus as a basis for calculating the aid.

However, it is welcome that the Commission considers that private sidings play a key role in reducing the need for first/last mile road freight transport, so that aid for the construction, upgrading and/or renewal of private sidings can facilitate the shift to sustainable land transport.

The inclusion of DAC and ERTMS in the aid objectives and their high aid intensity is also welcome. This can be seen as a strong signal from the Commission in favour of the introduction of these technologies.

It is a positive sign that the Commission recognises that in freight transport, as in passenger transport, there are services that cannot be operated on a commercial basis.

The adoption of the revised guidelines and the new Block Exemption Regulation for transport is planned for the end of 2025.

2.4. Digital and technical solutions

Digitisation of transport is a vital tool for achieving the European Union's political goals as outlined in the Digital Single Market Strategy for Europe. For rail transport, digital innovation is essential to enhance its competitiveness. The use of digital technologies offers the opportunity to increase efficiency and safety while reducing environmental impact without restricting mobility. In this context, it is particularly important to consider digitalisation, which can play a key role in increasing the efficiency of rail transport.

The digitisation of the railways sector is being resisted by many railway companies (shippers, freight forwarders, Workshops, Assets lessors, etc.) but also by the European Commission.

The digitalisation of rail transport is a key element in achieving competitive efficiency and increasing its share of transport performance. The form of digitisation can vary and the digitisation of the rail industry itself can touch on a variety of areas, including:

- Digital Access
- Automated Marshalling
- Automated Train Control
- Digital Maintenance

Within this document, tools have been selected that support Digital Access (using the online marketplace tool) and Automated Marshalling (using the Digital Automatic Coupler tool).

2.4.1. Online marketplace

An online marketplace for rail transport can help to make better use of assets, promote freight transport and improve the accessibility of rail services to end customers. Supporting single wagon load using the platform can benefit us in the following advantages:

- **More efficient use of capacity:** the platform can help optimise the use of spare capacity on trains, allowing better planning and more efficient use of available resources. By publishing spare capacity, other carriers can use this spare capacity to transport single wagon loads.
- **Acquire new shipments and business partners:** using the platform, carriers can easily respond to requests for transportation services (publish by end-customers), making it easier to win new contracts and make better use of their single wagon loads. The platform could serve as a marketplace where bids and enquiries for single wagon loads come together.
- **Better use of available assets:** sharing information on available assets, such as available wagons, locomotives or staff, can lead to better planning and coordination of transport, making it easier to obtain the necessary resources needed to transport individual wagon loads. This allows more flexible and efficient responses to customer requirements.

The enumerated advantages of the platform can also contribute to positive synergies in the form of reduced transport costs, reduced congestion, reduced external costs and so on.

Currently, such a platform already exists for rail transport under the name RAILVIS. More than 300 companies from the rail transport sector are registered on the platform. The platform includes railway carriers, freight forwarders, manufacturers and lessors of railway wagons and locomotives, repair shops, but also the customers themselves (industrial companies).

Members of the platform have many functionalities at their disposal, which are:

Browse, offer and request railway assets - this functionality is used to publish offers and inquiries with railway wagons and locomotives. On the basis of published offers and inquiries, members can get new contacts and easily acquire wagons and locomotives. This functionality is also used for renting and selling resources.

Freight rates - Platform members using this functionality have the possibility to publish a request for a transport, on the basis of which the railway undertaking or forwarder can offer quotations for these requests, thus having the possibility to obtain new transports. This functionality is also used for customers who are not able to fill the whole train, but on the contrary, who are only able to fill a few wagons and are interested in transporting their goods using single wagon loads.

Train capacities - carriers that have empty locomotive runs, case spare capacity can publish and offer spare capacity on trains, or use empty locomotive runs. This functionality can significantly increase the utilisation of single wagon loads.

2.4.2. Digital Automatic Coupling

The current screw coupling system is still the standard coupling method for freight trains in European countries. Coupling is done manually by a worker who has to step between the wagons to connect and disconnect them, a physically demanding activity in a hazardous environment. This antiquated system is inefficient for single wagon loads that require multiple handling of uncoupling wagons, coupling wagons along the way. The Digital Automatic Coupler can speed up and streamline the transportation of single wagon loads that typically require multiple wagon handling operations. It is an innovative component that automatically couples and uncouples wagons in a freight train, both physically (mechanical coupling and air line for braking) and digitally (electrical power and data connection). DAC is key to enable the necessary increase in efficiency and transparency in rail freight transport.

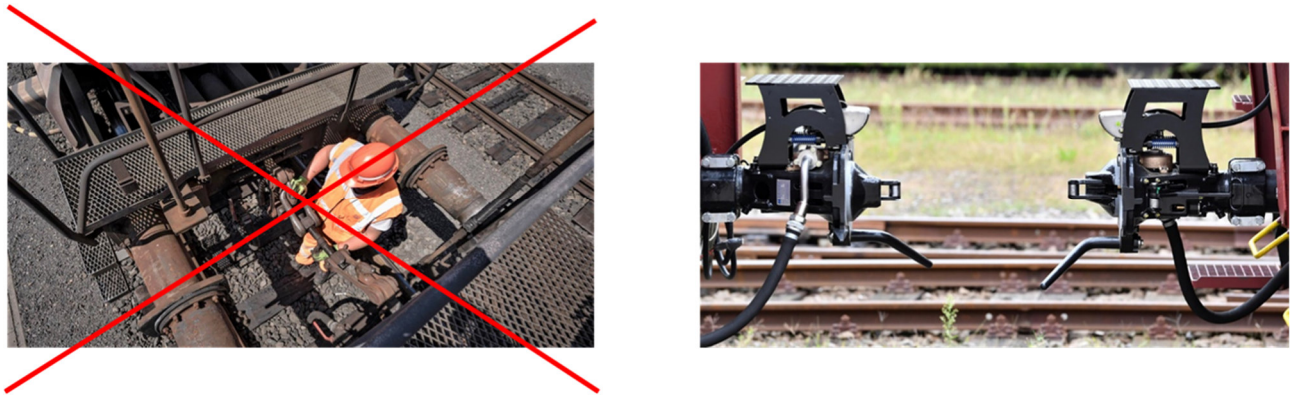

Figure 4: Screw coupling vs. digital automatic coupling

By implementing DAC in rail transport, several benefits can be achieved, in particular:

- More competitive transport as DAC allows heavier, longer and faster trains, increasing capacity,
- less shunting and faster shunting,
- reduced maintenance costs,
- fewer employees,
- increased automation and digitization as it facilitates the integration of tracking and communication functions,
- increased availability of wagons through predictive maintenance due to monitoring functions,
- increased rail safety by reducing the risk of derailment,
- reduced noise.

On the other hand, the DAC also faces negative opinions from carriers and railway companies.

- The financing of the introduction and operation of the DAC is still unclear - it is necessary that the introduction and operation of DAC and the costs of the interim period (technology changes) are

financed by EU funds in order to avoid cost increases for the railway carriers. If costs increase, carriers will not be willing to implement DAC on their wagons.

- Lack of conditions for coordinated action with non-EU countries - the conditions considered for DAC deployment only apply to EU countries, but freight wagons often move outside the EU, which is a significant barrier to DAC implementation.
- Lack of DAC testing - the obligation to implement DAC is an increasingly debated topic. According to available sources, all wagons are to be equipped with this system by 2027. However, there is currently no functional, tested and tried DAC. Therefore, the carriers do not agree with this idea.

3. Action plans (solutions)

The cessation of single wagon traffic can have a number of negative consequences, the most important of which are illustrated in the figure below.

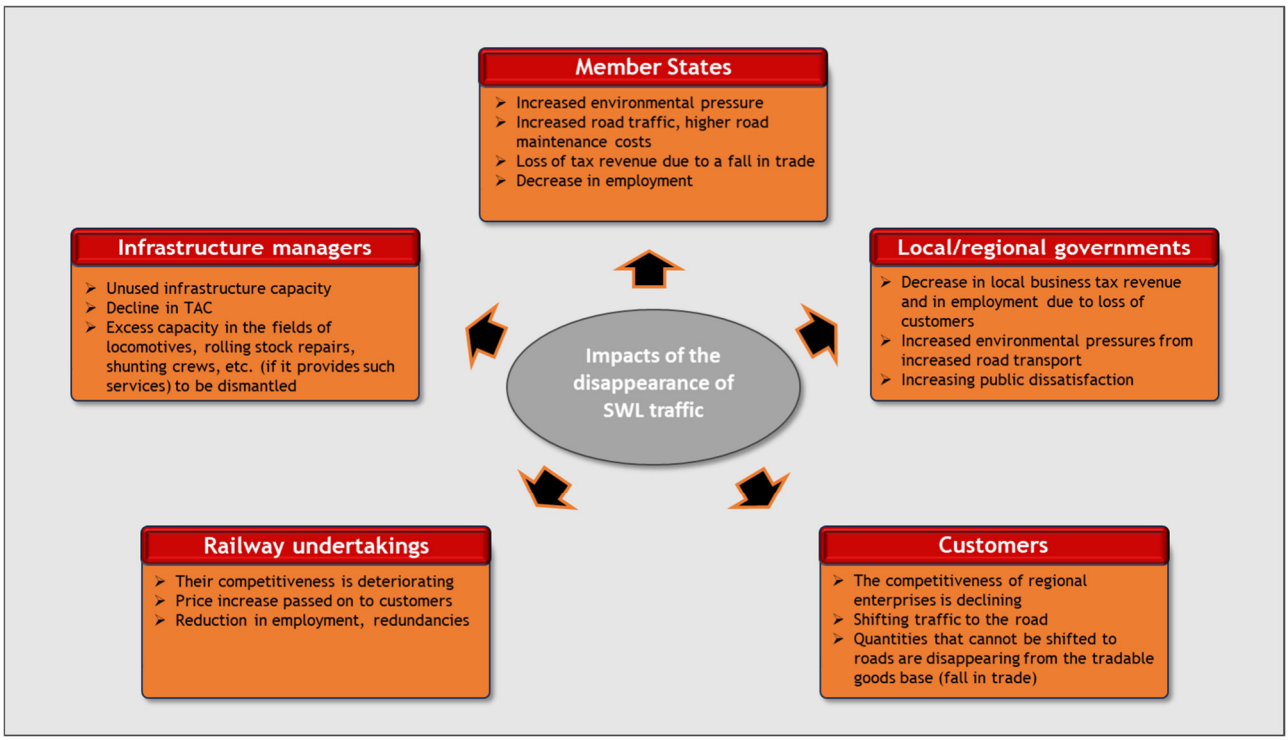

Figure 5: Impacts of the cessation of SWL traffic
Source: own edition

In order to circumvent the adverse consequences and to maintain SWL traffic, a number of measures can and should be implemented in a variety of areas. The solutions have been formulated for four main target groups: 1. the government, national and regional policy makers, 2. infrastructure managers, 3. railway undertakings and 4. customers.

3.1. Government, national and regional policy makers

It is of great importance for states, government policy makers and authorities to maintain SWL traffic. In order to facilitate the preparation and decision-making processes pertaining to SWL, we have compiled a list of the fundamental and most commonly cited arguments and considerations.

SWL is important to meet EU and national transport policy objectives to increase rail's market share, to favour more economical use of energy and environmentally friendly modes of transport.

On the state side, single wagonload rail freight can be operated at lower overall costs (employment, environment, sustainability) than other modes of transport, if it were to be abandoned.

Shifting rail single wagonload freight to road transport would further increase external costs (noise and air pollution, congestion, accidents and their associated costs), which society would have to bear and pay.

The operation of the rail single wagonload system provides jobs and livelihoods for the employees of many rail service providers (infrastructure managers' marshalling yard, station and shunting staff, train dispatchers; traction unit staff in the case of traction providers; staff in freight wagon maintenance workshops; executive staff of freight railway undertakings (locomotive drivers, wagon inspectors, train dispatchers, storage staff).

The performance of rail single wagonload freight contributes to higher utilisation of rail track capacity.

SWL provides rail transport opportunities for many small and medium-sized enterprises, thus contributing to their international competitiveness. Their consignments that do not reach the length of a full train can be transported by rail, allowing them to supply their domestic and international markets with materials, components and semi-finished products, or to use imported goods (raw materials, stocks) in their production processes.

SWL ensures the continuous rail service of state-owned and/or strategically important companies, thus contributing to the smooth production of and access to products and services of key importance for the national economy.

Keeping dangerous goods transported by rail in single wagonload traffic on the railways is in the interests of society as a whole, as their transport by rail is safer and more controlled.

The emergence on roads of the volume that can be covered by hundreds of thousands of extra trucks per year would lead to a significant increase in road maintenance and renewal costs (national and municipal); at the same time, the utilisation of the renewed/upgraded rail network, with significant EU funding, would be reduced (maintaining or increasing rail traffic volumes is the objective of EU transport development tenders).

With the disappearance of single wagonload transport, the road transport network would require substantial upgrading.

The preceding arguments suggest that state, governmental and regional decision-makers may intervene in two principal areas of action. Firstly, they may seek to facilitate the development of an appropriate regulatory framework that will encourage the growth of SWL traffic. Secondly, they may endeavour to secure the financial resources necessary to ensure the continued maintenance and development of state-owned railway infrastructure.

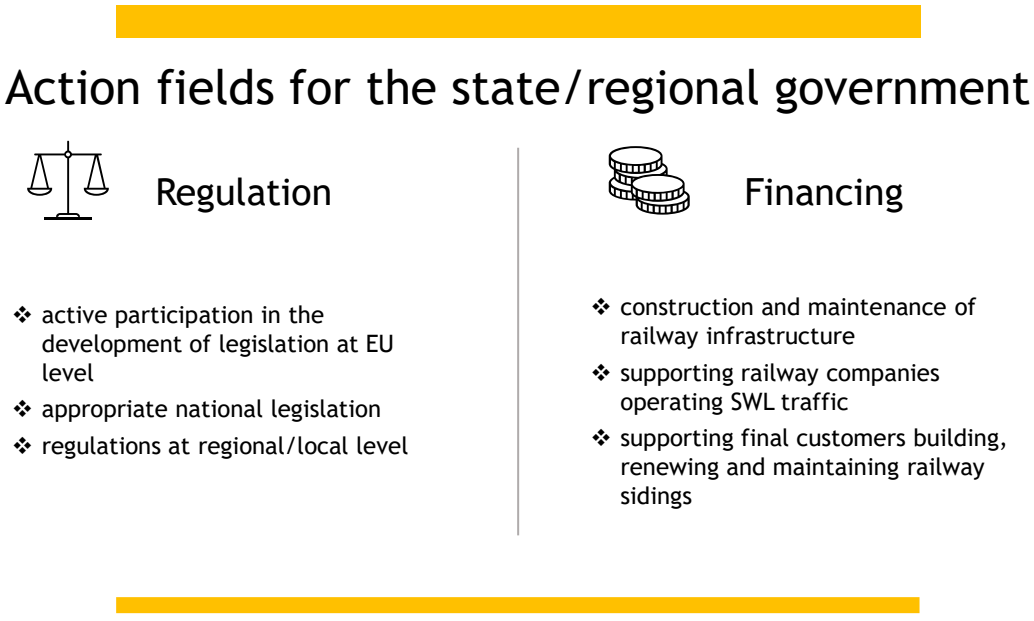

Figure 6: Action fields for the state/regional government
Source: own edition

A number of solutions exist at various levels of regulation and funding that have a positive impact on the growth of the SWL concept. While these solutions and proposed measures are valid individually, their combined implementation multiplies their effectiveness. The importance and role of these solutions will depend to a large extent on the specific situation of the railways, freight markets and regulatory environment in each State.

Solutions, proposals for action in the field of regulation

It is necessary to create a level playing field between rail and road. This can be achieved by using the current revision of the Railway State Aid Guidelines to effectively address the unlevel competition between

rail and road by increasing the allowed aid intensities for state aid for the coordination of transport. In particular, it is recommended that aids with intensities of up to 100% of the external costs avoided by rail transport should be considered compatible with the internal market.

It is further recommended that the exemption from notification aid for the coordination of transport by means of a block exemption be granted, thereby reducing the administrative burden and speeding up the process of introducing national state aid schemes.

Even if it cannot be classified as a "public good" in economic terms, single-wagon transport can be considered as a kind of public service in freight transport because of its role in saving industry, diversifying and relieving the pressure on the roads The governments should utilise the current revision of the Railway State Aid Guidelines to delineate transparent regulations pertaining to public service obligations in rail freight transportation. This will enable member states to facilitate the transition from road to rail, particularly in regions where single wagonload services are not viable on a commercial basis.

It is imperative to ensure alignment between road and rail infrastructure charges for freight based on the Eurovignette Directive.

Furthermore, it is necessary to harmonize social charges and tax regimes across modes. It is recommended that the principle of energy efficiency be applied in the context of freight investments.

Solutions, proposals for action in the field of financing

It is crucial to allocate sufficient funding to essential infrastructure, including the construction and maintenance of railways. The development of the national rail network (electrification, upgrading of lines to class "D" (225 kN), etc.) would significantly reduce the unit cost of transport. The acceleration of goods transport (reduction in journey times) and the increase in predictability and reliability of transport (regular services) would also reduce the unit cost of rail transport, as railway undertakings would be able to handle more traffic in a given time with the rolling stock at their disposal.

The appropriate implementation of Article 30 of Directive 2012/34 EU of the European parliament and of Council of 21 November 2012 establishing a single European railway area, which aims to ensure the balance of infrastructure managers' accounts and encourage multi-annual contracts between public authorities and infrastructure managers, is of great importance.

It would also be essential to comply fully with Annex VII (8) of EU Directive 2012/34:

"As regards temporary restrictions of the capacity of railway lines, for reasons such as infrastructure works, including associated speed restrictions, axle load, train length, traction, or structure gauge ('capacity restrictions'), of a duration of more than seven consecutive days and for which more than 30 % of the estimated traffic volume on a railway line per day is cancelled, re-routed or replaced by other modes of transport, the infrastructure managers concerned shall publish all capacity restrictions and the preliminary results of a consultation with the applicants for a first time at least 24 months, to the extent they are known, and, in an updated form, for a second time at least 12 months before the change of the working timetable concerned."

In order for the infrastructure manager to meet this requirement, the State should inform him at least two years in advance of the resources available for the development and maintenance of the railway infrastructure. Only on the basis of the available financial resources can the infrastructure manager plan and prepare infrastructure investments, the time plan for their implementation and, on this basis, capacity constraints. However, in the vast majority of Member States, public finances are based on annual budget plans, with no items planned and agreed for the longer term, so infrastructure managers cannot comply with this regulation. This fundamentally undermines the predictability and reliability of rail freight services - the most important quality criteria.

It is similarly important to recognise the value of rail and road cooperation, as this is a key aspect of the future of EU transport. In this context, it is proposed that member states provide adequate funding for general loading and unloading tracks (and handling equipment) at smaller stations, with the aim of facilitating first and last mile connections with road transport.

It is recommended that the state provide financial assistance to rail companies and road hauliers to co-finance the purchase of innovative freight wagons and swap bodies.

In order to shift goods from road to rail and increase SWL traffic, national and regional governments should consider the implementation of national programs that aim to enhance the connectivity of industrial sites with the principal rail network, commonly referred to as the "private sidings." These programs may draw inspiration from the approaches adopted by Germany, Austria, Switzerland, and the United Kingdom, which have established collaborative financial frameworks for the development and maintenance of these connections.

The question of state aid for SWL traffic remains a key issue. One possible solution is to subsidise the difference in infrastructure costs and the difference in external costs, in line with EU directives. Another option is to provide discounts on other cost elements related to the implementation of SWL traffic.

The financial resources required to implement these proposals are the responsibility of the Member States. One potential solution to the problem of financial resources could be to earmark the funds collected from tolls and use the ETS (Emissions Trading System) revenues to develop environmentally friendly transport solutions.

3.2. Infrastructure managers

In addition to the general condition and characteristics of the rail infrastructure, infrastructure managers can facilitate the growth of single wagonload traffic in three main areas. Firstly, they can ensure the availability of rail elements and facilities specifically serving rail freight. Secondly, they can optimize the capacity allocation system. Thirdly, they can enhance the range of services provided to rail freight operators.

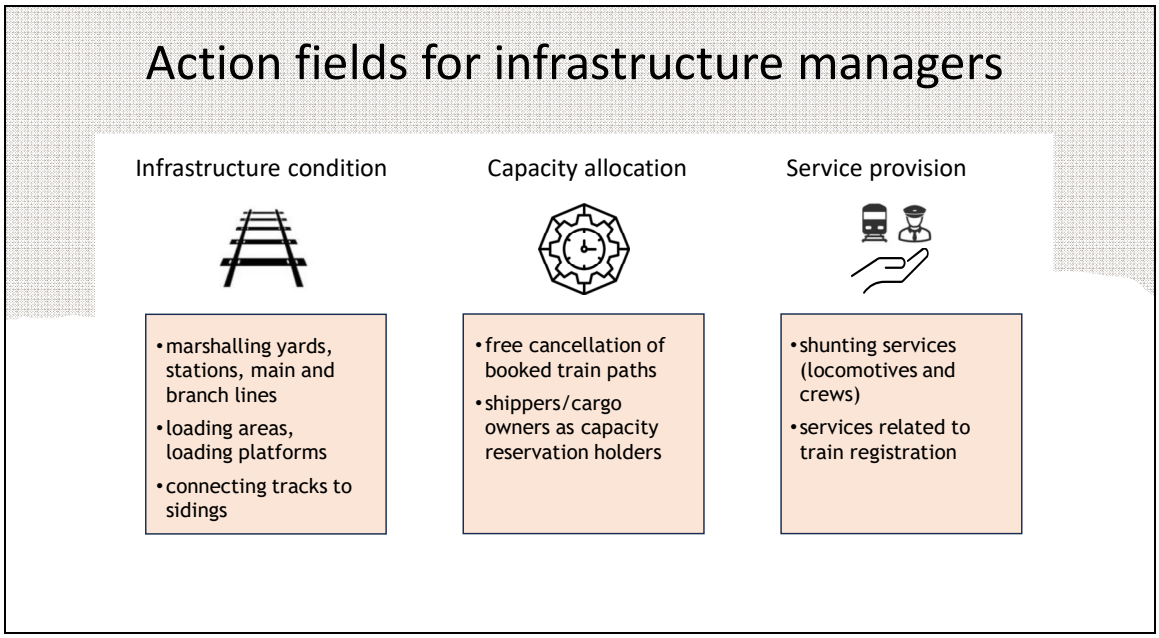

Figure 7: Action fields for infrastructure managers
Source: own edition

Infrastructure condition

The state of the rail infrastructure has a significant impact on the quality and cost of single wagonload services. The length and density of the railway lines, the number of tracks, the proportion of electrified

lines, the technical condition, the availability of loading points - these are the main characteristics that determine the framework conditions for rail freight transport: track capacity, the availability of diesel and electric locomotives, transport possibilities, speed, speed restrictions due to poor technical conditions of the tracks. All these factors have a significant impact on both the quality and the cost of the service.

While the development of rail infrastructure is also crucial for freight transport, the prioritization of passenger transport typically has a more significant direct social, economic and political impact, which often takes precedence in the definition of development and maintenance priorities.

It is evident that specific elements of rail infrastructure are indispensable for freight transport. The development and maintenance of these elements would result in a number of benefits, including increased efficiency, enhanced economic competitiveness and a reduction in environmental impact. Infrastructure managers are responsible for the maintenance of the track network of freight yards and marshalling yards, which are essential for the operation of freight transport, particularly single wagonload transport, and for ensuring the necessary capacity. The capacity to meet growing demand and the implementation of modernisation can facilitate the smooth operation of freight traffic, thereby reducing delays and congestion.

In order to maintain the volume of freight transported by rail and to shift additional new freight from road to rail, it is necessary to maintain the existing capacity of paved loading areas with adequate road connections, loading tracks and the creation of new loading areas. The efficiency of single wagonload transport may be further enhanced by utilizing loading tracks of optimal length and axle load, in conjunction with modern loading equipment. In the process of renovating and modernizing railway lines and stations, it is of equal importance to consider the development of loading tracks and loading areas. It is therefore recommended that the removal and utilization of these facilities for alternative purposes, such as the construction of P+R car parks, should be avoided.

Door-to-door rail transport, the first and last miles of the journey by rail, can be made via the industrial sidings. Most of these facilities are privately owned, meaning that the owner is responsible for the condition, operation, and maintenance of the aforementioned infrastructure, as well as the associated costs. However, the tracks connecting the sidings to the national or regional rail network are predominantly publicly owned and managed by infrastructure managers. It is their responsibility to ensure that the infrastructure is technically sound and provides effective and efficient connections.

It thus falls upon the infrastructure managers to guarantee that all the sidings currently in use or planned for renewal (by the time the renewal is completed) are accessible in an effective and efficient manner. Unfortunately, due to underfunding and the prioritization of infrastructure serving passenger transport, resources are not always available to achieve this. Furthermore, the poor technical quality of the connecting tracks represents a bottleneck in terms of freight train parameters, wagon load capacity (axle load) and, as a result, the economic viability of transport.

In order to guarantee the optimal condition, capacity, and availability of the aforementioned infrastructure elements, it is advised that infrastructure managers allocate dedicated development funds to infrastructure elements and facilities related to rail freight.

Capacity allocation

Infrastructure capacity for rail freight is allocated in a regulated, competitive and neutral manner within the liberalized rail markets of the Member States of the European Union. The working timetable shall be established once per calendar year. The change of working timetable shall take place at midnight on the second Saturday in December. The final date for receipt of requests for capacity to be incorporated into the working timetable shall be no more than 12 months in advance of the entry into force of the working timetable. As the backbone of the single wagonload traffic is the freight trains that regularly run between the hub stations, the railway companies will at that time already announce their requirements for the train paths that are necessary for the operation of these trains. In practice, however, this means that railway undertakings order train paths one to one and a half years ahead of the actual traffic. It is not possible to anticipate actual demand accurately over such a time horizon, and thus in many cases there may simply not be any wagons to be handled and sent by the train on the ordered path on the day of the journey.

It is recommended that the infrastructure manager implement a policy whereby railway undertakings operating single wagonload traffic are able to cancel, free of charge, train paths that have been ordered well in advance if they become redundant due to a lack of goods to be forwarded. Such a system would encourage railway undertakings to monitor customer demand on an ongoing basis, thereby leading to cost savings which would, in turn, increase the economic viability of SWL traffic. Furthermore, the freed-up train paths could be utilized by other railway undertakings in the case of increased demand.

In the liberalised rail freight market, several railway undertakings compete for a given transport contract. Obviously, they try to offer potential customers a favourable and comprehensive quotation, including the reservation and provision of loading space at stations. This leads to multiple reservations, often with overbooking for the same goods. The infrastructure manager can prevent this overbooking by giving the owner of the goods, or the freight forwarder acting on his behalf, the opportunity to conclude a framework capacity contract and, as the capacity reservation holder, to request the loading space capacity required for the transport himself.

Service provision

Single wagonload transport is a particularly labour-intensive segment of rail freight transport, where the shortage of skilled workers is particularly acute and may even become a barrier to traffic in the long term. This could be alleviated if infrastructure managers were to provide the railway undertakings with shunting crews, locomotives and locomotive crews at the marshalling yards for pre-notified charges, on the basis of a special order. In addition, they should also perform the tasks of train registration (registration of data required for preparing the total weight report of a departing train, transferring the data to the infrastructure manager's information system for recording, preparing braked weight calculation, handling the train rear end signal disc). This could greatly improve the situation for the railway undertakings, as they will not have to maintain separate staff at these marshalling yards – infrastructure manager’s staff will perform these tasks for both freight and passenger trains. The list of marshalling yards providing the described services and the charges for these services shall be included in the Network Statement.

3.3. Railway undertakings

The SWL service is traditionally provided by the respective incumbent of a national market, which uses substantial shunting yards to consolidate and de-consolidate long-distance full trains, as well as builds networks to cover all regions of a national market. Today, non-incumbents also offer SWL services in most European markets, either using shunting yards or alternative solutions for (de-) consolidation. Non-incumbents typically focus on specific regions or industries.

The following figure illustrates the intervention areas identified for railway undertakings.

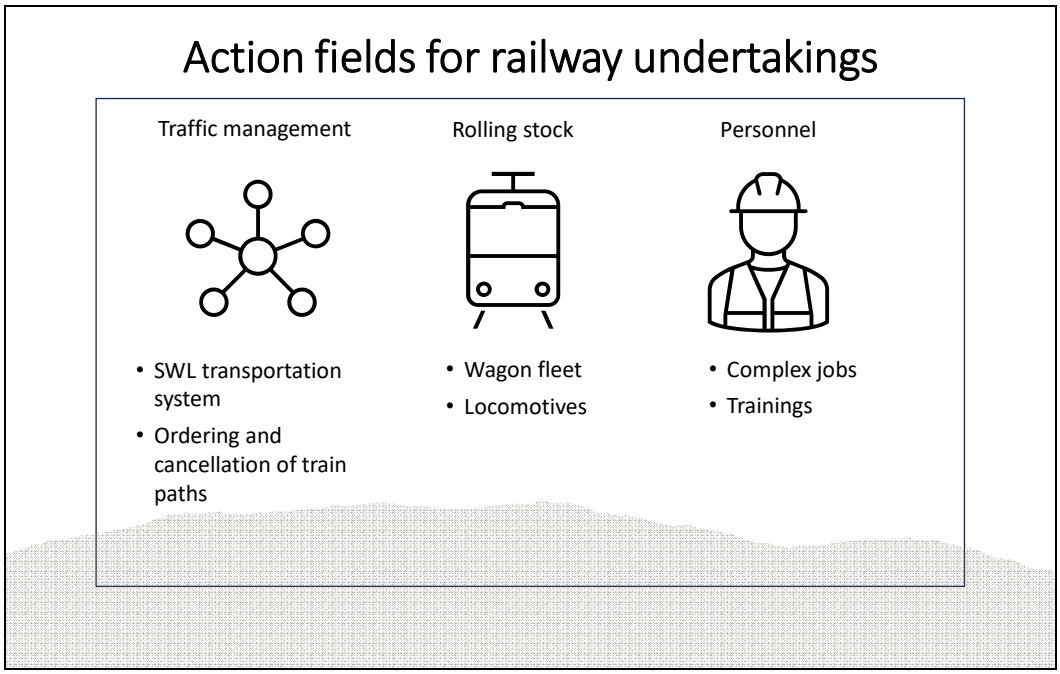

Figure 8: Action fields for railway undertakings
Source: own edition

Traffic management

A principal responsibility of rail undertakings providing SWL transport is to establish an effective traffic organisation and management system. It is evident that the specific railway infrastructure conditions in the country or region must be taken into account. These include the condition, characteristics and capacity of the railway lines, as well as the location of the interchange stations and marshalling yards. Another important input is the volume, direction and seasonal variation of goods carried in SWL traffic.

On the basis of these inputs and needs, the traffic management system must be defined and the necessary capacities in terms of both freight and staff must be allocated.

Single wagonload transport system must be continuously monitored and evaluated by the railway undertaking and, if necessary, the system must be modified. By increasing efficiency and offering a range of services tailored to demand, costs and financing needs can be reduced.

The most important factors influencing the organisation of single wagonload transport service and the forwarding order of consignments are the following:

- whether certain service points (handling points) have changed,
- whether the types of goods served have changed compared to the previous situation,
- whether the customer concerned requires a change in the delivery pattern (e.g. a change of delivery day(s), a change in the number of deliveries),
- whether a change in the routing table on the forwarding route of the wagons (from marshalling yard to marshalling yard, containing the number of wagons set to another train between the two marshalling yards) is required based on the changed needs (volumes, forecasts for specific traffic days),
- change the number of domestic express trains between marshalling yards (weekly average),
- modification of the submission of annual/annual supplementary train path orders taking into account the changes to the Network Statement, Performance Scheme and Network Access Contract rules,
- changes in service technology due to the introduction of newly hired traction vehicles into the market (change of towing gender and/or train load, more reliable service, higher availability),
- whether the shunting staff previously provided by the infrastructure manager are available to carry out the services to the required standard,

- rescheduling of paths/services due to planned or foreseeable track closures.

In order to adapt to changing conditions, in particular to changes in customer demand for transport, railway undertakings must be able to adapt in a truly flexible and cost-effective way. This can be achieved if the infrastructure manager allows them to cancel pre-ordered train paths free of charge.

Rolling stock

Both diesel and electric, mainline and shunting locomotives are required to handle single wagonload traffic.

It is imperative that the locomotive fleets of railway companies operating single wagonload services are capable of providing these services in a cost-effective and environmentally friendly manner. This is the only way to ensure the long-term sustainability and competitiveness of this segment. There are numerous illustrative examples in Central Europe that demonstrate this approach, including the deployment of renewable locomotive fleets, the utilisation of modern electric locomotives with recuperation capabilities, and the integration of hybrid locomotives. It is evident that such investments entail significant financial outlay with a long-term return, thereby generating an immediate challenge pertaining to the source of funding - an issue that is addressed in the planned funding area of the Land and Multimodal Guidelines. This is particularly pertinent in the context of the low profitability and even loss-making SWL sector.

In addition to the locomotives, the wagon fleet is equally important. Whether owned or rented, wagons must be available in the right technical condition, in the right quantity and of the right type to meet the requirements. In order to provide a competitive service compared to their main competitor, road, rail companies need to provide different types of wagons for the different types of goods carried in SWL traffic. Furthermore, they must enhance efficiency by increasing the loading capacity of the wagons.

A number of modular lightweight concepts have been developed in the European market. A modular wagon is designed with a flexible and configurable structure, allowing for the easy addition, removal, or reconfiguration of various components or modules. This design approach offers significant advantages in terms of adaptability, efficiency, and cost-effectiveness. A common feature of modular systems is that they provide standardised flat wagons with a structure that meets the needs of different customers. Modular wagons can be adapted to carry different types of goods, making them suitable for diverse industries and reducing the need for specialized wagons. With the wagons themselves weighing less, a greater proportion of the total weight capacity of the train can be devoted to cargo. This means more goods can be transported per trip, increasing operational efficiency. By standardizing components and allowing for quick replacements, modular wagons can reduce maintenance and operational costs. The initial investment in a modular system can also be offset by the long-term savings from its versatility and efficiency. Nevertheless, similar to the situation with locomotives, the profitability of SWL traffic is insufficient to cover the costs of investing in these wagons. Therefore, railway companies would require additional support in this area as well.

Personnel

A critical issue for rail freight is the shortage of skilled labour. The average age of people working in the rail sector is high, many are approaching retirement age, while there is a shortage of young and skilled replacements who might be attracted to the railways. The replacement of an ageing workforce is a crucial aspect of ensuring the long-term sustainability of rail transport, with particular significance in the context of highly labour-intensive SWL traffic. This requires making a career in the railways attractive to young people, starting with the acquisition of the skills needed to take up a job in the railways.

Many young people are put off by the amount of material to be covered and the teaching methods. Rail training should be adapted to the learning habits of Generation Z. This generation has grown up with digital technologies such as the internet, smartphones and computers and prefers short and dynamic content. Short videos, animations and interactive content can be more effective for them than longer, traditional training materials. Railway training needs to adapt to these new trends.

Infrastructure managers and passenger railway companies encounter analogous challenges with regard to their human resources. Potential synergies and opportunities for collaboration in the field of shunting and traction should be investigated and exploited. Nevertheless, in the lack of such an outcome, freight railway undertakings will be forced to contend with these challenges independently.

Since it is not economically sustainable to maintain a staff of a few people at railway stations with lower traffic and since some of the knowledge required for each job is the same, the introduction of a complex job, where one person can perform the tasks of several jobs in the course of his/her daily work, seems to be an obvious solution. One potential solution for railway undertakings could be the introduction of a complex wagon inspector job, whereby colleagues would gain the required knowledge for the role of shunting foreman, pass the necessary examinations and thus be able to perform also the duties of shunting foreman. Similarly, the tasks of locomotive drivers could be made more complex, whereby drivers could perform the tasks of wagon inspector in addition to those of locomotive driver.

3.4. Customers

Rail, being the most energy efficient and the least emitting mode of land transport, provides businesses with an opportunity to reduce their overall emissions footprint.

SWL services are used more extensively for the transport of goods such as metals, chemicals, solid and liquid fuels, and transport equipment. Customers typically opt for SWL when block trains would be too expensive in relation to the size of the shipment or customers would need to bundle shipments over an extended period of time. Another reason is a limitation of track dimensions in either the sender or recipients tracks. Furthermore, SWL is able to fulfil specific transport requirements and constraints in a more efficient manner than combined transport solutions. This is due to the fact that SWL makes better use of wagon and train transport capacity, as well as loading facilities and processes. Consequently, Single Wagon Load provides numerous customers with access to European rail freight.

Customers' choices of transport mode are increasingly influenced by the EU's Energy Efficiency Directive 2012/27. The Directive requires Member States to establish national energy efficiency targets that contribute to the EU-wide energy efficiency target. It is incumbent upon Member States to implement energy efficiency obligation schemes that encourage energy suppliers and consumers to utilise energy in a more efficient manner. The Directive also requires large companies to carry out regular energy audits to identify opportunities to improve energy efficiency. Audits are not mandatory for small and medium-sized enterprises, but Member States should encourage them to adopt energy efficiency measures. These measures could include the transition from pure road transport to partial or full rail transport.

Similarly, the requirement to produce ESG reports may influence customers to select environmentally friendly and low-emission modes of transport when making their decisions. An ESG (Environmental, Social, and Governance) report is a document that assesses the environmental, social, and governance performance of companies. The objective of ESG reporting is to provide information on the sustainability and ethical practices of companies, thereby assisting investors, regulators, and other stakeholders in evaluating the sustainability risks and opportunities associated with the company.

The preparation and publication of ESG (Environmental, Social, and Governance) reports was previously mandated by the Non-Financial Reporting Directive (NFRD) 2014/95/EU. This required large companies to publish their non-financial information, including ESG aspects, on an annual basis. The Directive came into force in 2018 and covered companies with more than 500 employees. The NFRD will be replaced by the Corporate Sustainability Reporting Directive (CSRD) from the 2024 fiscal year onwards, and will significantly expand ESG reporting obligations. The European Union Directive 2022/2464, which introduces the CSRD, extends the reporting obligations to smaller companies, introduces stricter reporting standards and requires mandatory independent verification of reports. Environmental, social and governance (ESG) reporting must include comprehensive data on a range of topics, including environmental protection, carbon emissions and energy efficiency. In accordance with the European Sustainability Reporting Standards (ESRS), organisations are required to provide comprehensive data on their carbon emissions, including those generated by their

own facilities and vehicles, as well as those associated with their supply chains. The report must include detailed information on the organisation's short-, medium- and long-term emission reduction targets, along with the measures and strategies it has put in place to achieve these targets and improve its energy efficiency. This may involve a shift towards the increased use of rail freight transport.

In addition to legal obligations, customers may also be driven to use environmentally friendly modes of transport by their own business policies. Furthermore, their clients' decisions, regulations and requirements may act as a further incentive for them to do so.

Whether customers decide to use rail transport, including single wagonload transport, for external, internal or business reasons, it is important that they join forces with railway companies and other stakeholders in efforts to increase the competitiveness of SWL traffic in order to ensure the long-term sustainability of the segment.

4. Conclusions


The construction and increase in the efficiency of the single wagonload traffic (SWT) system as part of rail freight transport in Central Europe is one of **the basic elements of implementing the European Union's demand to limit environmental pollution by means of transport**. It is also a way to increase communication accessibility in areas at risk of marginalization, disadvantaged areas and for the SMSE's sector.


The joint task of the R4R Project Partners, local and national railway operators, managers of transport companies, local, regional and national authorities, institutions responsible for space planning and transport development strategies at the scale of municipalities, inter-municipal associations, regions, interregional and cross-border is **to include the SWT system in plans. development, investment and environmental protection.** Such action should be a permanent element in the development of projects involving public and/or European financing.


The key condition for the re-valorization of SWT is its economic justification: making the system not only profitable, but also competitive with other forms of freight transport. The proposal is for The Guidelines on Track Access Charges to include the possibility of reducing pre- and post-carriage fees for SWT and allowing national measures in support of single-wagon load trains and combined transport as part of public aid; as part of the Capacity Regulation, coordination among Infrastructure Managers and Allocation Bodies should be strengthened, increasing dialogue with their customers (Railway Undertakings and other Applicants) and other stakeholders in order to build and implement appropriate digital tools on a local and international scale; as part of The Weights and Dimensions Directive, limiting the increase in the availability of road transport, threatening the environment and market balance in the transport sector.


The condition for the development and effectiveness of single SWT is to equip the system with modern technical, ICT and hardware resources. The basic transport management tools include: digital mobility services (digital access, automated marshalling, automated train control…), digital navigation services and journey route planning services (online marketplace). Access to modern technological solutions is crucial for SWT in the context of profitability and market attractiveness.


The existence and increasing the role of SWT in the freight transport system **requires constant and long-term cooperation of the Public Partner** (planning and financing of investments, financial support, inclusion in spatial planning and development strategies), **Infrastructure Managers** (to ensure the availability of rail elements and facilities specifically serving rail freight, to optimize the capacity allocation system, to enhance the range of services provided to rail freight operators), **Railway Undertakings** (to establish an effective traffic organization and management system, monitoring and evaluation, flexibility and differentiation of transport costs).


The use and inclusion of the SWT offer into its own transport structure should be an element of the development policy of the enterprise - the end user, as part of compliance with the requirements of the Non-Financial Reporting Directive and reporting **in accordance with the principles of Environmental Social Corporate Governance Goals**

Annex 1

State aid relating to SWL traffic in the European countries

(June 2024)

Country	France	Austria	Hungary	Germany	Slovenia
Subject	**France Aid for the operation of single wagonload services for the period 2021-2025**	**Austria – Aid scheme for the provision of rail freight services in certain segments**	**Hungary – Support for rail freight transport (single wagon scheme)**	**Germany Support for rail freight transport (single wagon load and wagon group transport trains)**	**Slovenia Prolongation of an aid scheme for the promotion of rail freight transport in Slovenia**
Aid scheme number	**SA.62529 (2021/NN)**	**SA.104264 (2022/N)**	**SA.59448 (2020/N)**	**SA.108800 (2024/N)**	**SA.107235 (2023/N)**
Objective of the aid scheme	The notified scheme aims to encourage the transfer of part of the freight activity from road to rail by providing incentives for single wagonload transport.	Stabilising traffic, maintaining performance. Important for increasing the modal share of rail freight	Stabilisation, 2-4% increase in performance per year	As part of the Climate Action Programme 2030 of the German Federal Government, the notified measure aims at stabilising or strengthening the competitive position of rail freight transport, specifically in the form of single wagon transport and short-distance wagon group transport, and thereby contribute to a modal shift of freight from road to rail as a more environmentally friendly mode of transport.	The aid scheme aims at promoting sustainable freight transport in the context of the Slovenian Climate Change Fund ('Climate Change Fund'), and at increasing the volume of freight transported by rail, thereby supporting the modal shift from road to rail. The aid scheme provides support to railway undertakings providing two types of freight transport: single wagon transport and combined road-rail transport.
Contracting party	The authority responsible for authorising the notified measure is the French Ministry for Ecological Conversion	Austrian Ministry of Transport (bmvit)	Hungarian Ministry of Construction and Transport (ÉKM) to Hungarian Railways (MÁV) and MÁV to Railway companies	The granting authority is the German Federal Railway Authority (Eisenbahn-Bundesamt or EBA).	The aid granting authority is the Slovenian Ministry of Infrastructure. The public call for applications is published on the website of the Slovenian Ministry of Infrastructure and is open to all beneficiaries who meet the eligibility criteria. The allocation of funds will be decided by the Slovenian Minister of Infrastructure by means of a decision based on objective and pre-defined criteria.
Beneficiaries	The beneficiaries of the notified scheme are railway undertakings in the European Union providing transport services between two points in mainland France for domestic services or to or from mainland France for import/export services. Where certain services involve more than one operator or are combined, the aid will be granted to the company providing the final service.	All railway undertakings entitled to provide rail freight services on the existing Austrian public railway infrastructure are eligible for aid under the scheme.	The beneficiaries of the scheme are railway undertakings providing or planning to provide SWT services in Hungary. The scheme is open to domestic undertakings registered in Hungary as well as to undertakings registered in any other State of the European Economic Area ("EEA"), i.e. both domestic and EEA undertakings have access to the aid under the same conditions and without discrimination.	The beneficiaries of the scheme are railway undertakings which operate single wagon load transport services or wagon group transport services in Germany in line with the German Railway Act and meet the eligibility criteria and pass the granting procedure for support under the two funding lines of the scheme, as explained below. Undertakings in difficulty within the meaning of the Guidelines on State aid for rescuing and restructuring non-financial undertakings in difficulty, and undertakings subject to an outstanding recovery order following a previous decision of the Commission declaring an aid unlawful and incompatible with the internal market, are excluded from the scope of the measure.	Eligible beneficiaries are railway undertakings which hold a valid operating licence from a Member State of the European Union or the European Economic Area and which carry out or have carried out rail freight transport activities in Slovenia and are subject to payment of railway infrastructure charges in Slovenia. Domestic and foreign undertakings may access the aid under the same conditions and without discrimination.
Number of beneficiaries (number)	No data	11-50 undertakings	5-15 undertakings	50 undertakings	Under 10 undertakings
Aid scheme period	From 1 January 2021 to 31 December 2025	From 1 January 2023 to 31 December 2027 (5 years)	From 29 October 2021 to 31 December 2025	From 21 May 2024 to 31 May 2029 (5 years)	From 1 January 2024 to 31 December 2025
Was there a previous aid scheme	No	Yes, 03.12.2012-31.12.2017 and 31.12.2018-01.01-2022.12.31 (S.A.48390)	No	State Aid SA.58046 (2020/N) – Germany Support for rail freight transport (single	Extension of SA.62208
Type of aid scheme	operational	operational	operational	operational	operational
Form of the aid	Direct grant, non-refundable	Non-refundable grants	Non-refundable grants	The aid will take the form of direct grants	Non-refundable grants
Amount of aid (single wagonload)	Total budget: EUR 450 million Annual budget: EUR 90 million	The total budget for the five-year period is set at a maximum of €1 443.5 million. The annual budget for the measure is therefore EUR 288,7 million (of which a maximum of EUR 224,3 million per year for aid to reduce external costs and a maximum of EUR 64,4 million per year for aid for the use of railway infrastructure)	The overall budget is HUF 29.33 billion (around EUR 82.1 million), with a yearly budget of maximum HUF 6.4 billion (around EUR 17.9 million). For 2021, Hungary has estimated a budget of HUF 3.73 billion (around EUR 10.6 million)	The overall budget for this period is EUR 1.7 billion, with a yearly budget of maximum EUR 320 million	The budget under the notified measure is EUR 17.5 million
Items of aid	The French authorities estimate the total eligible costs at EUR 299.4 million per year, which corresponds to the difference between the external costs of road and rail freight transport (estimated at EUR 3.43/tonne/km). The total cost of rail freight transport is estimated at EUR 462.3 million per year. According to the French authorities, the maximum amount of aid is EUR 90 million per year. The aid intensity calculated on the basis of the amount of aid is therefore 19.5% of the total cost of rail transport, or 30% of the eligible costs. Eligible costs are obtained by multiplying the unit value of externalities between road and rail transport (3.43 cts EUR/net tkm2) by the annual volume of goods transported by these services in 2019, declared by operators, of 8 729 650 721 net tkm. On this basis, the eligible costs amount to EUR 299 427 019,70, i.e. approximately EUR 300 million.	Domestic (max. 100km): 29,17 EUR/ 1000tkm, over 100km: 11,28EUR/1000tkm Export-import (max. 100km): 29,17 EUR/1000tkm, over 100km: 6,24EUR/1000tkm	Domestic (max.): 8,38 HUF/net tkm Export-import (max.): 4, 95 HUF/net tkm	There are two parts to the aid: Part 1: different aid rates (EUR 180-900) for each of the 4 performance levels according to the total number of wagons served per year per point of reception/destination point, depending on the number of wagons forecasted to be served per year per point of reception/destination point (0-2000 wagons). Part 2: aid for direct connections (up to 15 freight wagons) between marshalling points up to a distance of 300 train-km, with aid rates varying according to the train-km	Single wagonload traffic: up to EUR 8,075/ 1000tkm
Annual transport performance (in net tkm,)	8729 million tkm (2019)	5255 million tkm (2019)	1015 million tkm (2022)	No data	249 million tkm (2017)
Supported traffic relations	domestic, export, import trade	domestic, export, import trade	domestic, export, import trade	implicitly applies to domestic, export, import trades	domestic, export, import trade
Aid from other aid schemes	-	S.A.57371 AT 2020 for 11,1million EUR for domestic single wagonload traffic, S.A. 60655 AT 2021 for 1st semester, S.A. 63825 AT 2021 for 2nd semester	-	State Aid SA. 105221 (2022/N) – Germany Prolongation of aid scheme for the promotion of rail freight transport. State aid SA.58570 (2020/N) – Germany Guidelines on the construction, extension, reactivation and replacement of railway sidings and related infrastructure. State aid SA.63202 (2021/N) – Germany Amendment of SA.54102 (2019/N) – Scheme to promote investment to strengthen rail freight transport in Saxony-Anhalt	-