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COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT REPORT

Accompanying the document

**Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE
COUNCIL**

**amending Council Directive 92/106/EEC as regards a support framework for intermodal
transport of goods and Regulation (EU) 2020/1056 of the European Parliament and the
Council as regards calculation of external costs savings and generation of aggregated data**

{COM(2023) 702 final} - {SEC(2023) 373 final} - {SWD(2023) 352 final}

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Glossary

Term or acronym	Meaning or definition
CTD	Combined Transport Directive
CEEU	Common EU framework for GHG emissions accounting in transport and logistics, CountEmissions EU
SDG	Sustainable Development Goal
GHG	Greenhouse gases
EU	European Union
TFEU	Treaty on the Functioning of the EU
RR	Rail-road intermodal transport
IWW	Inland-waterways-road intermodal transport
SSS	Short sea shipping-road intermodal transport
CT	Combined transport
SSMS	Smart and Sustainable Mobility Strategy
OPC	Open public consultation
HDV	Heavy goods vehicle
eFTI	Electronic Freight Transport Information
bn	Billion
tkm	Tonne kilometre
ktoe	Kilo tonnes of oil equivalent
Mtoe	Million tonnes of oil equivalent
SO	Specific objective
PM	Policy measure
PO	Policy option
TEU	Twenty-foot equivalent unit

1. INTRODUCTION: POLITICAL AND LEGAL CONTEXT

1.1. Political context

This Impact Assessment accompanies a legislative proposal for a revision of Council Directive 92/106/EEC on the establishment of common rules for certain types of combined transport (CT) of goods between Member States. The Combined Transport Directive (CTD or the Directive)¹ is the only EU legal instrument that directly supports intermodal transport and thus incentivises the shift from road freight to lower emission transport modes (inland waterways, maritime transport and rail).

Today's political choice is established in the European Climate Law², according to which the European Union (EU or Union) needs to reduce its economy-wide greenhouse gas (GHG) emissions by at least 55% by 2030 as compared to 1990 levels, and achieve climate neutrality by 2050. The European Green Deal Communication³ pointed to the need to reduce transport GHG emissions by 90% by 2050 to achieve climate neutrality. Furthermore, to reduce its dependence of fossil fuels, the Union also needs to improve its energy efficiency, as highlighted in the REPowerEU package⁴, which lists the revision of the CTD as an important tool in this regard⁵. The Zero Pollution Action Plan⁶ promotes the switch to cleaner transport to reduce air and noise pollution.

The transformation towards low-emission and low-energy consumption freight transport requires a holistic approach. The Commission Communication on the Sustainable and Smart Mobility Strategy (SSMS)⁷ emphasises that all policy levers must be pulled to (1) make all transport modes more sustainable, (2) make sustainable alternatives widely available in a multimodal transport system and (3) put in place the right incentives to drive the transition. It calls for decisive action to shift more activity towards more sustainable transport modes, notably by moving a substantial amount of freight onto rail, inland waterways, and short sea shipping⁸.

Intermodal transport is key in enabling the higher uptake of rail and waterborne freight transport, which alone very rarely provide door-to-door transport solutions. Intermodal transport, providing the last mile door-to-door connections, combines the better environmental performance⁹ and energy efficiency of non-road transport with the accessibility and flexibility of road transport. It also enables a more efficient allocation of volumes among transport modes, both in terms of resource allocation and tackles effectively those road transport externalities which are hard to fully internalise, in particular congestion and accidents. Therefore, it is instrumental to achieve the ambition of the SSMS and that of the European Green Deal, which also called for a substantial part of the 75% of inland freight carried today by road to be shifted to rail and inland waterways. The SSMS accordingly announced that to support the greening of cargo operations in Europe, the existing framework for intermodal transport needs a substantial revamp and must be turned into an effective tool.

Even though the performance in volumes of intermodal freight transport has increased substantially over the last 30 years, road still dominates freight transport in the EU, because intermodal transport is often not competitive with road-only transport. There are several reasons. First, success of intermodal transport depends on the

¹ Council Directive 92/106/EEC of 7 December 1992 on the establishment of common rules for certain types of combined transport of goods between Member States, OJ L 368, 17.12.1992, p. 38-42.

² Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'), OJ L 243, 9.7.2021, p. 1-17.

³ COM(2019) 640 final.

⁴ RePowerEU Plan, COM(2022)230 final.

⁵ EU 'Save Energy', COM(2022) 240 final.

⁶ COM(2021) 400 final.

⁷ COM(2020) 789 final.

⁸ The SSMS set milestones for rail freight traffic to double and inland waterways/short sea shipping freight traffic to increase by 50% by 2050.

⁹ The 2016 evaluation of the CTD estimated that the shift from road-only to intermodal transport has brought along an annual saving of up to EUR 2.1 billion in external costs in 2011.

performance (availability, reliability, punctuality, speed) and cost of each part of the chain, i.e. the services offered by rail and waterborne transport, transshipment terminals as well as the road transport for the 'last mile'. There are performance gaps in all those elements that need to be addressed by respective sectoral legislation and industry efforts. Second, as long as the level of internalisation of the external costs between the modes differs, non-road and intermodal transport on medium-long distances is not price-competitive with road-only operations. The SSMS notes that to deliver fair and efficient pricing across all transport modes, a comprehensive set of measures is needed. Only then would polluters and users take full responsibility for the costs they generate, allowing users to make choices aligned with what is best for society.

In this context, the purpose of the CTD is to ensure, by compensating current market imperfections, that faster and more significant uptake of intermodal transport will be achieved by complementing other policies described in section 1.3, and by so doing frontload as much as possible the reduction of negative externalities caused by freight transport.

Definitions¹⁰:

- **Multimodal transport** is carriage of goods or passengers by at least two different modes of transport.
- **Intermodal transport** is movement of goods (in the same loading unit or a vehicle) by successive modes of transport without handling of the goods themselves when changing modes. It is a type of multimodal transport.
- **Combined transport** is a subset of intermodal transport meeting the definition in the CTD¹¹.

Considering that the definition of CT is very narrow, this impact assessment addresses the problems and potential of "intermodal transport" in general. Only where the issue relates narrowly to operations covered by the current CTD is the term CT used.

1.2. Legal context

Since 1975¹², the EU has had an instrument to support eligible intermodal operations with an objective to increase the competitiveness of CT vis-à-vis road-only freight transport and thereby achieve higher uptake of CT. The CTD does not regulate the access to market, nor does it establish any obligations on market participants or address any issues relevant to specific modes. Instead, its objective is to provide support for the freight operations with better environmental performance, to the operators who decide to apply. The CTD defines the eligibility (Article 1: definition) for support measures, i.e. which operations can benefit as well as conditions for proof of eligibility (Article 3). For those strictly defined eligible operations (see footnote 11), the CTD provides two types of benefits: regulatory measures and economic support, the aim of which is to ensure that CT can take place without restrictions and that the cost to the final user - the transport organiser - is reduced to make CT competitive with the road-only option.

Regulatory measures safeguard the freedom to provide the cross-border services and preserve CT from possible national protectionist measures (bans on authorisation schemes, quotas and regulated tariffs (prices) for all or part of the CT operation in Articles 2 and 8 respectively). It also clarifies that CT organisers (shippers or logistics companies) can use non-resident road hauliers for road-legs of CT the same way as they can use non-resident road-hauliers for international road-only transport (Article 4) and provides an additional possibility for own-account transport in CT allowing shippers and consignees to use each-others semi-trailers (Article 9).

As regards economic support, the CTD establishes two types of fiscal incentives¹³ and the basic methodology for establishing the eligible costs (Article 6). The support is designed and borne by Member States. The support can be

¹⁰ OECD Glossary of Statistical Terms, OECD Publishing, Paris, 2008, <https://doi.org/10.1787/9789264055087-en>.

¹¹ The operation has to take place between Member States, involve road leg(s) and non-road leg(s). The latter can be rail or waterborne (IWW, SSS) and has to be at least 100 km. The road legs are limited to the nearest suitable station when connecting to rail or 150 km for waterborne transport. It also includes a closed list of eligible loading units.

¹² Council Directive 75/130/EEC of 17 February 1975 on the establishment of common rules for certain types of combined road/rail carriage of goods between Member States, OJ L 48, 22.2.1975.

¹³ Tax reductions for road vehicles transport on rail and tax exemptions for road vehicles used exclusively in CT.

a lump-sum or proportional to the rail leg in that Member State, and take the form of reimbursement, reduction or exemption from listed road taxes. CTD does not clarify who the beneficiaries have to be, thus the fiscal incentives can be granted either to road hauliers or to CT organisers with the view to reduce the total cost of the door-to-door operation.

Finally, it establishes a reporting obligation for the Commission, assisted by the Member States, to report biennially on the CT market developments.

In order to increase the effectiveness of the CTD, the Commission made a proposal in 1998 to amend the CTD, but due to no result in negotiations withdrew the proposal in 2001. In 2016, the Commission conducted a REFIT evaluation¹⁴ and subsequently made a new proposal in 2017. This proposal was withdrawn in 2020 as negotiations between the co-legislators had resulted in an outcome that would have reduced the ambition of the CTD at the time when political objectives required the opposite. Further details on the REFIT analysis, earlier amendment proposals and reasons for their withdrawal are given in Annex 8.

The lessons learnt from the 1998 and 2017 proposals and negotiation outcomes were taken into consideration when designing the policy measures and options in this impact assessment. More specifically this initiative has considered:

- The need for a fundamentally different approach to the eligibility criteria. The eligibility criteria in the current CTD are defined in terms of length of different road and non-road legs and distances from suitable terminals, which do not always reflect actual geographical conditions and lead to many inconclusive discussions with the Member States. Furthermore, these criteria do not reflect the actual environmental performance of the fleet and energy carriers.
- The terminal investment requirements, while necessary, do not fit into the scope of the Directive and were therefore opposed by many Member States. Therefore, these are now addressed separately in the Commission proposal for the revision of the TEN-T Regulation.
- The need to coordinate with the State aid rules, which was another request of Member States during the 2017 negotiations.
- The use of digital solutions for eligibility checks and enforcement, which allow to consider more effective approach to eligibility based on the actual environmental benefits of each operation. The use of e.g. eFTI platforms would ensure that for transport organisers and public authorities the application of such criteria would not be overly complex, but instead will lead to savings of administrative costs compared to the current paper-based regime. In addition, in the future the reuse of the aggregated data on e-FTI platforms can facilitate market monitoring and improve the effectiveness of economic support measures.
- Different situations in Member States will require a different approach to support measures.

1.3. Synergies with other EU policy instruments

Uptake of intermodal transport allows, to the extent it leads to the higher use of non-road modes, reducing the external costs induced by freight transport at the system level. There is already a range of policies in place which (a) target the environmental performance of individual modes and (b) internalise external costs by applying polluter pays and user pays principles. Making individual modes more sustainable in terms of their energy efficiency and use of sustainable fuels, and thus reducing the transport externalities, has been addressed with a range of policy tools (CO₂ standards for vehicles, the Renewable Energy Directive, FuelEU Maritime and ReFuelEU Aviation Regulations, the Alternative Fuels Infrastructure Regulation, etc). For example, the CO₂ standards for vehicles target the uptake of low and zero-emission vehicles in the road transport sector, the FuelEU Regulation ensures the uptake of sustainable fuels in the maritime sector and the ReFuelEU Regulation in the aviation sector. The Renewable Energy Directive complements these initiatives by focusing on the supply of renewable energy, while the Alternative Fuels Infrastructure Regulation enables the uptake of zero-emission vehicles and sustainable fuels by ensuring the rollout of

¹⁴ SWD(2016) 140 final.

infrastructure. They all eventually aim to reducing the emissions from transport. Progress is on its way, requiring however time and significant investments to materialise as well as additional research and development efforts.

Similarly, a range of measures already target internalisation of external costs, with the aim to allow the society to make the right choices. For transport emissions the most effective tool is considered to be carbon pricing, including the extension of ETS to maritime transport and setting up a self-standing ETS for road transport and buildings. Ongoing reviews of energy and vehicle taxes, which are gradually adjusted and phased in, are sensitive to carbon content, and represent another tool for internalising the external costs of emissions from transport. The new common EU framework for GHG emissions accounting in transport and logistics (CEEU) will allow for improved transparency and accountability on transport-related external costs. Infrastructure charges represent another pricing measure. Smart, distance-based road charging, with varied rates for the type of vehicle, as provided for by the revised Eurovignette Directive, is an effective tool to incentivise sustainable and economically efficient choices, manage traffic and reduce congestion. Eventually the different work strands come together in a mutually compatible, complementary and coherent policy. This however is expected to take time to materialise. In this context, the SSMS set a milestone for all external costs of transport within the EU to be covered by the transport users at the latest by 2050¹⁵.

As explained, the interaction of these policies, some of which are applied at the EU level and others nationally, is complex. Unlike the above-mentioned initiatives for internalisation of external transport costs, whose starting point is mode-specific internalisation and which are part of the baseline scenario, the CTD focuses on the level playing field between modes and aims to act directly on the competitiveness gap, based on regular market analyses. Therefore, its review is the most appropriate tool to address its uneven competitive position.

Apart from price competitiveness discussed above, the attractiveness of intermodal transport depends on the performance of individual modes and available infrastructure capacity. Therefore, this initiative is developed in close coordination with other transport legislation and legislative proposals, including those within the Greening Transport Package, of which this initiative is part of.

It has strong connections with other parts of this package, notably the initiative for increasing the share of rail in international transport and the amendment of the Weights and Dimensions Directive¹⁶ on road transport, which are important for removing mode specific barriers to intermodal transport. Moreover, the new common EU framework for GHG emissions accounting in transport and logistics (CEEU) and the implementation of the Electronic Freight Transport Information Regulation¹⁷ (eFTI) provide a technical framework to enable the implementation of the revised CTD. The revision is also consistent with the recently adopted Naiades Communication¹⁸, which calls for the greater integration of inland waterways into a modern, trans-European intermodal transport system. In addition, a precondition for the use of intermodal and multimodal transport is the availability of appropriate infrastructure at sufficient capacity. The recent study on transshipment technologies¹⁹ (PWC, KombiConsult (2022) study) found that there are shortcomings on the TEN-T network for intermodal transport, and transshipment capacity is insufficient for rail and inland waterways. The terminal capacity has been

¹⁵ The SSMS sets a milestone for all external costs of transport within the EU to be covered by the transport users at the latest by 2050.

¹⁶ Council Directive 96/53/EC of 25 July 1996 laying down for certain road vehicles circulating within the Community the maximum authorized dimensions in national and international traffic and the maximum authorized weights in international traffic, OJ L 235, 17.9.1996, p. 59–75. It allows heavier and longer road vehicles to be used in intermodal transport, including CT road legs.

¹⁷ Regulation (EU) 2020/1056 of the European Parliament and of the Council of 15 July 2020 on electronic freight transport information, OJ L 249, 31.7.2020, p. 33–48.

¹⁸ [COM\(2021\) 324 final](#).

¹⁹ Comparative analysis of transshipment technologies for intermodal transport and their costs, PWC, KombiConsult 2022, https://transport.ec.europa.eu/news/study-analyses-transshipment-options-more-competitive-intermodal-transport-and-terminal-capacity-ten-2022-05-05_en

addressed in the context of Commission proposal for the revision of the TEN-T Regulation²⁰ that includes for the first time an obligation on Member States to ensure sufficient multimodal freight terminal capacity based on a dedicated analysis and action plan. These measures can be expected to deliver better infrastructure capacity for intermodal transport after 2030.

Importantly, the revision of the CTD is closely coordinated with the revision of the Guidelines for State aid to railway undertakings²¹ and the newly adopted Land and Intermodal Transport Enabling Regulation²². This allows the application of certain support, if defined in a dedicated block exemption regulation, without prior notification, thus addressing the Member States' call for simplification in State aid procedures during the 2017²³ CTD revision attempt. In essence, the CTD will establish policy goals, while State aid rules will set the framework for public support to achieve these policy goals, including definition of eligible costs, beneficiaries and aid intensity.

Finally, it should be noted that a link between CTD and road cabotage is brought up by some stakeholders. As explained above, Article 4 of the CTD provides an equal treatment of international CT to international road transport as regards the use of non-resident hauliers. In the revision of Regulation (EU) 1072/2009 in 2020²⁴, the co-legislators provided a derogation from Article 4 of the CTD in case of its abuse, while reconfirming that Article 4 has been useful and remains in force²⁵. Given that this measure was not part of the Commission's proposal, the Commission voiced its concerns and conducted a study²⁶ on the application of such restrictions on CT operations. The study found that even a low drop in the transported volumes entailed by the obligation can have negative impact on rail freight connections and can lead to inefficiencies and additional emissions.

1.4. Evaluation of the Directive

An evaluation²⁷ of the CTD was carried out in 2014-2016 and concluded that the CTD continues to be a relevant instrument for supporting freight transport combining different modes. It was estimated that the shift from road-only to intermodal transport has brought along an annual saving of up to EUR 2.1 billion in external costs in 2011. The shift from road to rail saved 7.3 Mt of CO₂, while the shift to inland waterways saved 0.96 Mt of CO₂. For comparison, the CO₂ emissions produced by heavy goods vehicles (HGVs) in 2011 were 203 Mt. While not all of these savings can be attributed to the CTD, it was established that without EU action, cross-border CT services would likely have been faced with barriers due to different legal systems, making CT services less attractive and possibly unfeasible. The evaluation shows that the intermodal transport operations in the EU measured in the twenty-foot equivalent unit (TEU) have quadrupled during the last two decades with a clear "jump" just after the implementation of the CTD, allowing the intermodal transport sector to grow on average at almost double the speed of road transport.

However, a number of provisions of the CTD, e.g. the requirement to use paper documents, are outdated since they reflect the market situation in 1992. Other provisions of the CTD suffer from diverging transposition and implementation at Member State level which causes daily practical problems to the industry and hence such provisions are not entirely effective. Furthermore, the economic support measures

²⁰ COM(2021) 812 final.

²¹ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13154-Rail-transport-revision-of-State-aid-guidelines_en

²² Council Regulation (EU) 2022/2586 of 19 December 2022 on the application of Articles 93, 107 and 108 of the Treaty on the Functioning of the European Union to certain categories of State aid in the rail, inland waterway and multimodal transport sector, OJ L338, 30.12.2022, p.35-39.

²³ SWD(2017) 362 final.

²⁴ Regulation (EU) 1055/2020 of the European Parliament and of the Council of 15 July 2020 amending Regulations (EC) No 1071/2009, (EC) No 1072/2009 and (EU) No 1024/2012 with a view to adapting them to developments in the road transport sector, OJ L 249, 31.7.2020, p. 17–32.

²⁵ Actions for annulment in respect of this provision have been lodged with the Court of Justice by some Member States (C-542/20, Lithuania v. Parliament and the Council, C-545/20, Bulgaria v. Parliament and the Council, C-547/20, Romania v. Parliament and the Council and C-554/20, Poland v. Parliament and the Council).

²⁶ "Data gathering and analysis of the impacts of cabotage restrictions on combined transport road legs", TRT Trasporti e Territorio, November 2020; https://ec.europa.eu/transport/modes/road/studies/road_en

²⁷ SWD (2016) 140 final

are very limited and therefore do not have a significant impact on the competitiveness of intermodal operations (further analysis in section 2.2.3). The efficiency problem reported by the industry is related to the inability to use electronic documents throughout the EU. Otherwise, both the industry and public administrations indicated in the public consultation that the policy measures are proportionate for achieving the policy objectives.

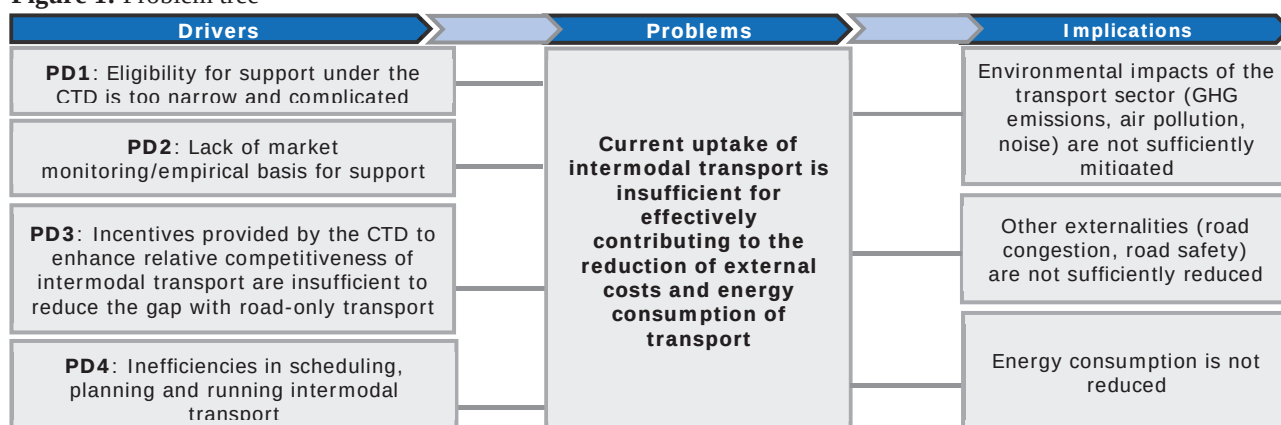
1.5. Sustainable development goals (SDG)

The CTD contributes to SDG 13 (Take urgent action to combat climate change and its impacts), SDG 9 (Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation) and SDG 11 (Make cities and human settlements inclusive, safe, resilient and sustainable). For further details, see Annex 3.

2. PROBLEM DEFINITION

The underlying problems, problem drivers and implications that are relevant for the revision of the CTD are presented in Figure 1.

Figure 1: Problem tree



2.1. What is the problem?

2.1.1. Problem – Current uptake of intermodal transport is insufficient for effectively contributing to the reduction of external costs and energy consumption of transport

Road transport's share in today's freight transport mix is persistently high (74.4% of intra-EU inland transport and 53.3% of all intra-EU transport in 2020), being the main driver of high negative externalities (including CO₂ emissions, but also air and noise pollution, accidents etc.) and energy consumption. The total external costs generated by freight transport in the EU are of the order of EUR 203 billion annually²⁸. 38% of these costs are generated by HGVs, (see Table 1). Accidents and congestion are the biggest cost components for any given HGV transport operation.

Table 1: Annual external costs of HGV freight transport by externality

Externality	HGV external cost (EUR billion)	Share of given externality in total HGV external costs
Congestion	14.6	18.8%
Accidents	23.0	29.7%
Air pollution	13.9	17.9%
Climate change (GHG)	9.6	12.4%
Noise	9.1	11.7%
Other	7.3	9.4%

Source: *The Handbook on the external costs of transport* CE Delft et al. (2019); Note: Other includes "well-to-tank" and

²⁸ Handbook on the external costs of transport, CE Delft (2019), <https://op.europa.eu/en/publication-detail/-/publication/9781f65f-8448-11ea-bf12-01aa75ed71a1>

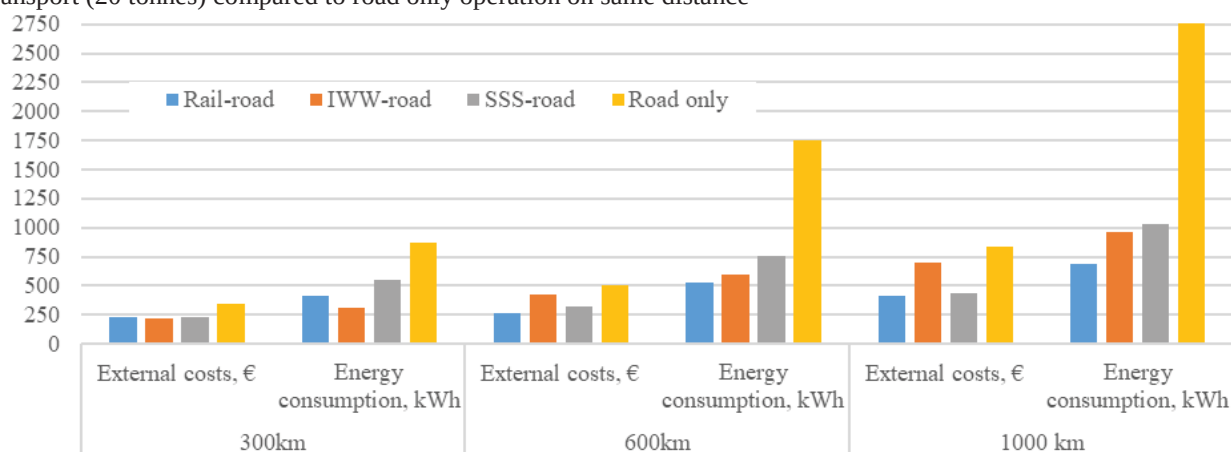
habitat damage externalities.

Source: European Commission (2019); Note: Other includes “well-to-tank” and habitat damage externalities.

The average external cost for rail transport and IWW per tonne-km (tkm) are almost three times lower, at EUR 0.013 per tkm and EUR 0.019 per tkm, respectively, compared to the average external cost for HGVs at EUR 0.042 per tkm. This difference is expected to reduce over time, mostly due to the decarbonisation of road transport which leads also to lower air pollution. However, the total external costs of road-only transport are expected to remain higher in particular due to congestion, but also due to road accidents which despite of continuous improvement of safety measures²⁹ would be hard to fully internalise with mode specific measures.

Similarly, the energy consumption of mass transport such as rail and waterborne transport is considerably lower per tkm than that of road-only transport. A recent case study of ten popular intermodal routes established that average energy savings of door-to-door intermodal transport compared to road-only transport is between 54 and 71%³⁰. Average energy consumption per tkm is 0.146 kWh for road transport, but 0.02 kWh for rail, 0.034 kWh for SSS and 0.046 kWh for IWW³¹. It is important to note that for intermodal transport, the external cost and energy consumption is higher than in unimodal non-road transport due to the included road leg(s). The absolute difference is the bigger the higher is the share of the non-road leg, as illustrated in Figure 2.

Figure 2: Average external costs and energy consumption for different distances of door-to-door intermodal container transport (20 tonnes) compared to road only operation on same distance



Source: Own calculations based on PWC, KombiConsult (2022) and Ricardo et al. support study (2023)

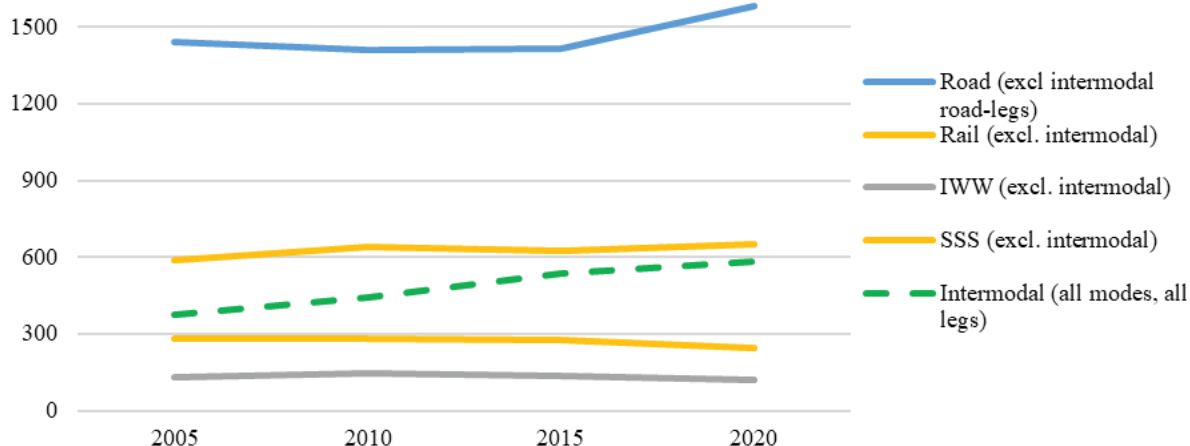
The volume of intermodal freight transport in tkm and TEU, including CT, has more than doubled in the last 30 years, since the adoption of the current CTD and has been the fastest growing market segment in three important non-road freight modes (i.e. rail, IWW, SSS), even if this relative growth advantage has in recent years slowed. However, it makes up still only 17% of total rail, IWW, SSS and road transport activity. This is because of two main reasons. First, it started from a relatively low base so even doubling its volume still results in a low share. Second, road transport activity has continued to grow at a sustained rate, in particular during the recent years, not allowing intermodal transport to increase its share in total rail, IWW, SSS and road transport activity. It has however increased its share in total non-road transport as the other market segments (conventional rail, inland waterways and short sea shipping) have grown at considerably slower pace than intermodal transport (Figure 3).

²⁹ On 1 March 2023 the European Commission proposed updated requirements for driving licences and better cross-border enforcement of road traffic rules.

³⁰ Comparative study on CO₂ emissions in door-to-door combined transport, UIRR, d-fine (2021), <https://www.uirr.com/en/media-centre/leaflet-and-studies/mediacentre/2102-comparative-study-on-co2-emissions-in-door-to-door-ct-d-fine.html>

³¹ Ricardo et al. support study (2023).

Figure 3: Freight transport activity of unimodal (excluding the intermodal respective legs) and total intermodal transport (incl. road and non-road legs), 2005-2020 (in billion tkm)



Source: Statistical pocketbook 2022, REFIT evaluation of CTD (2016) and Ricardo et al. support study (2023)

The overall freight transport volume (expressed in tkm) in the EU has increased by 36% between 1995 and 2020; however due to Covid-19, freight transport experienced a large drop in 2020 (-3.6% year on year). The biggest contributor to this growth has been road transport, which grew 54.8% between 1995 and 2020. Between 2005 and 2020 total freight transport increased by 5.7%, while road transport volume increased by 9.9% (157 billion tkm). As a result, road transport continues to have the largest and increasing share in EU freight transport. In 2020, total road transport (including intermodal road-legs) accounted for 53.3% of the total freight transport (in tkm), going up from 51.3% in 2005³².

In contrast, over the same period the transport volume for rail and IWW decreased respectively by 4.4% and 5% (when including intermodal operations). Only the volume of SSS increased by 9.5%³³. The situation in non-road transport without intermodal is however even graver as both rail transport and inland waterways transport decreased considerably between 2005 and 2020. The growth of intermodal non-road legs experienced however a sizable growth (Figure 3 and Table 2).

Table 2: Change of rail, inland waterways, short sea shipping and road transport volume between 2005 and 2020

	Total mode	Mode without intermodal	Intermodal
Road	9.9%	9.6%	12.5%
Rail	-4.4%	-13.9%	74.1%
Inland waterways	-5.0%	-9.2%	108.3%
Short sea shipping	9.5%	10.1%	88.8%

Source: Statistical pocketbook 2022, REFIT evaluation of CTD (2016) and Ricardo et al. support study (2023)

As far as non-road modes remain more environmentally sustainable, their much faster growth is essential to achieve the ambition of a more sustainable transport system as set by the Commission in the SSMS. The strategy specifies that rail freight traffic should increase by 50% by 2030 and double by 2050; and transport by inland waterways and short sea shipping should increase by 25% by 2030 and by 50% by 2050 (relative to 2015 levels). As can be seen in Table 2, intermodal transport is a key driver for growing freight volumes of non-road transport modes. Given that these modes alone rarely deliver door-to-door, intermodal solutions with road connections to and from terminals are necessary. Combining road with non-road legs in freight transport allows for high degrees of flexibility while improving the competitiveness of non-road legs and thereby contributing to meeting the milestones in the SSMS.

³² Statistical Pocketbook (2022), EU Transport in figures, https://transport.ec.europa.eu/media-corner/publications_en

³³ Ibid.

The problems for the intermodal sector remain more or less the same as in 1992 when the current CTD was adopted, even if some developments have taken place since then. Before the 1998 amendment proposal for CTD, the Commission adopted a dedicated Communication on intermodal transport³⁴ that highlighted four key needs: (i) a European strategy on infrastructure, (ii) a single transport market, including on competition rules, (iii) identification and elimination of obstacles to intermodality and (iv) addressing associated friction costs or specific barriers for intermodal transport uptake such as higher costs, longer journeys with delays, unreliable time planning, lack of quality services, limitations on types of goods transported, higher risk to damage cargo and more complex administrative procedures.

However, the 1998 amendment was withdrawn as explained above. While the consecutive TEN-T Regulation revisions have improved the non-road infrastructure, they have not addressed specifically intermodal infrastructure bottlenecks. Only the latest revision of the TEN-T Regulation³⁵ proposes dedicated obligation for addressing transshipment capacity and quality of multimodal terminals. Similarly, the existing State aid rules do not include dedicated guidelines for intermodal transport. While the ongoing review of State aid rules in this area is expected to include provisions for intermodal transport, the State aid provided today by different Member States is outside the scope of the CTD and remains very diverse (see section 2.2.3). Finally, there has been no or very limited change as regards the mentioned friction costs.

This was also well highlighted in the results of the open public consultation (OPC), where the respondents were asked to rate the different factors that impact the competitiveness of intermodal transport. 99 respondents replied to this question during the public consultation. The most pertinent reasons (more than 60% of respondents assign strong or very strong impact) why intermodal transport is not competitive include: road-only transport being cheaper door-to-door, the habit of using road-only transport, high transshipment cost and insufficient terminal infrastructure and insufficient non-road connections from nearby terminal (terminal service offer)³⁶. The results are given in Figure 4.

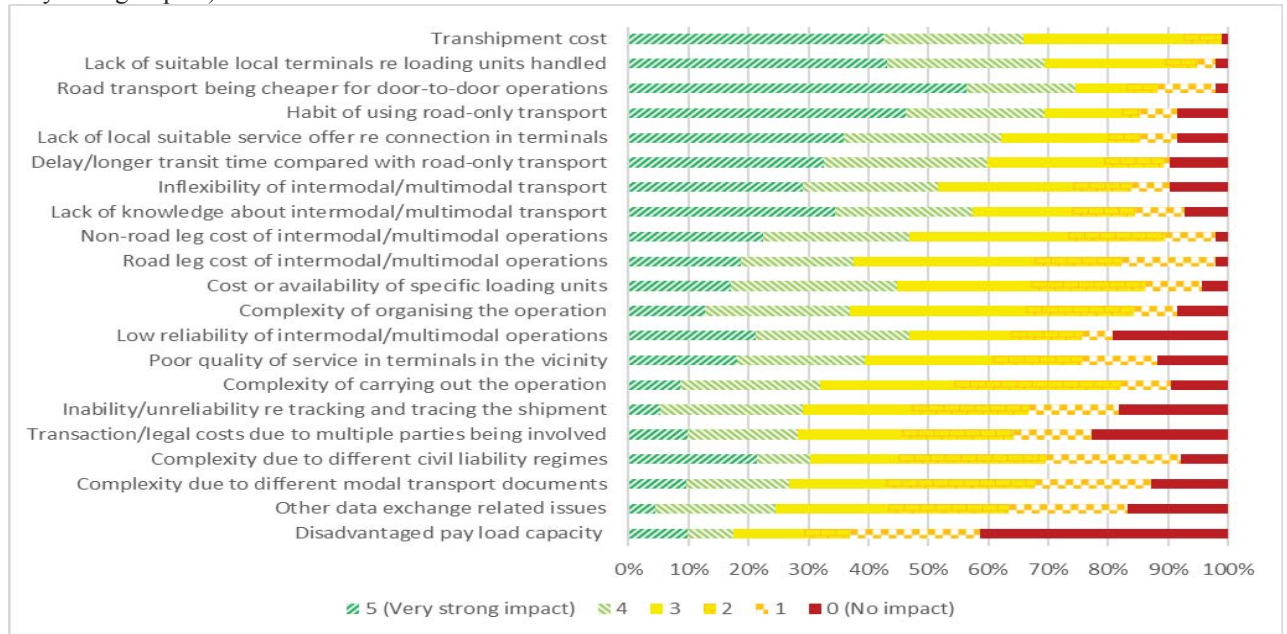
The lack of terminals and better functioning of rail and inland waterways sectors, which should contribute to better service offer and connections with non-road modes, is addressed by other initiatives as explained in section 1.3. As regards the habit of using road-only transport and complexities of starting to use intermodal transport, both problems are difficult to pinpoint as well as to address. The complexities are mostly inherent to intermodal transport as it always involves many parties, multiple contracts and different laws and rules, in particular for international operations. Logistics companies and freight forwarders are specialised in solving these issues for shippers, if the main concern – the higher costs – can be addressed.

³⁴ COM(97) 243 final.

³⁵ COM(2021) 812 final.

³⁶ Cheaper road: 42 out of 68 industry respondents, 10/14 public authorities, 4/10 EU citizens, 1/3 NGO, 1/1 trade union and 4/4 others. Transshipment costs: 43/68 industry respondents, 10/14 public authorities, 4/10 citizens, and 1/4 other. Lack of suitable terminal capacity: 50/68 industry respondents, 5/14 public authorities, 6/10 citizens, 1/3 NGO, 1/1 trade union and 3/4 others. Lack of suitable connection: 42/68 industry respondents, 5/14 public authorities, 6/10 citizens, 1/4 NGO, 1/1 trade union and 4/4 others.

Figure 4: Responses to “To what extent do the following factors affect the lack of competitiveness of multimodal/intermodal³⁷ transport compared with road-only transport (on a scale of 0-5, where 0 is no impact and 5 is very strong impact)?”



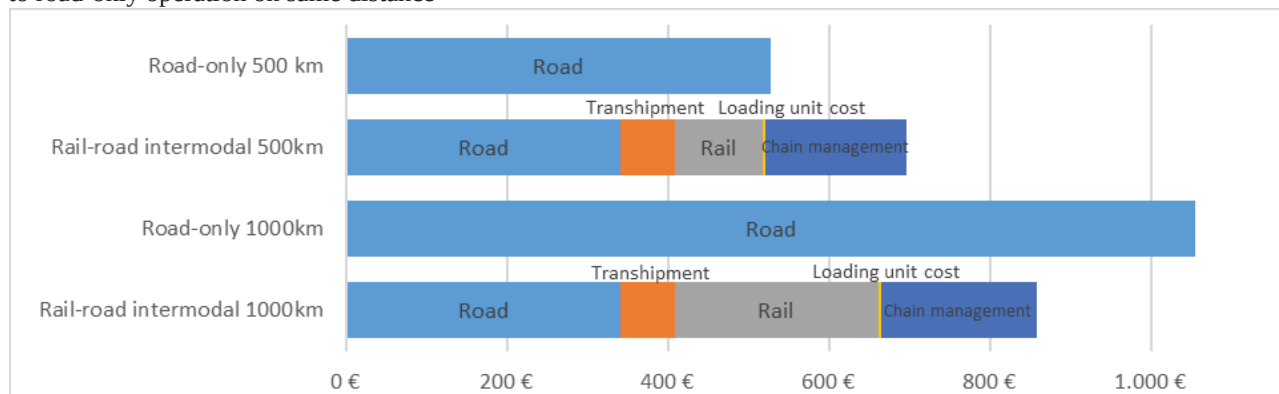
As regards the high costs, the impact assessment for the 2017 CTD review proposal already established that road-only transport is considerably cheaper on medium long distances, while on longer distances, intermodal transport is in most cases cost-competitive. The PWC, KombiConsult (2022) study³⁸ confirmed that, when considering all transport cost components of an intermodal operation, at 600 km all intermodal options are more expensive than similar road-only transport, while at 1000 km most intermodal options become competitive. The main reason for this is high transshipment and transport operation organisation and management costs that derive from complexity of multiparty operation. The shorter the distance of an operation, the bigger the relative share of these costs in the total cost structure. Road-leg costs also make up a considerable part of intermodal transport cost in shorter and medium long operations, in particular as road legs in intermodal transport are often priced not per tkm, but per time to factor in long waiting times for loading/unloading and in terminals (Figure 5).

These additional costs are inherent to intermodal transport and are the main reason why intermodal transport is not competitive on shorter distances. For example, the price gap with road-only transport on 500 km distance is around 19%. At 600 km, the price difference is around 9% and at 1000 km, the average intermodal rail operation is 20% cheaper than a road-only operation.

³⁷ During the stakeholder consultation, inclusion of multimodal operations within the scope of the CTD was considered, however this option was discarded, as explained in Annex 7.

³⁸ PWC, KombiConsult (2022), op.cit.

Figure 5: Cost components and their share in an average 500 km and 1000km rail-road intermodal operation compared to road-only operation on same distance³⁹



Source: own calculations based on the PWC, KombiConsult (2022) study models

The average distance at which intermodal operations become cost competitive with road-only transport without any support have been assessed to be 733 km for rail intermodal, 249 km for IWW intermodal and 817 km for SSS intermodal operations⁴⁰. Broadly, below those average distances, operations are normally not competitive and thus organisers of operations shorter than these “break-even distances” are unlikely to consider intermodal operations as an alternative to road-only transport.

Due to these inherent costs intermodal transport on short distances always remains more expensive than road-only. At the same time its cost-competitiveness in medium-to-long distances is affected by the fact that today’s transport prices do not reflect to the full extent the external costs of different modes. In case external costs would be fully reflected, “break-even distances” would be around 600 km (Figure 6) and the market prices alone would direct shippers towards more sustainable choices. However, the SSMS foresees the internalisation of external costs of transport (except those from infrastructure) at the latest by 2050 by pursuing a comprehensive set of measures⁴¹.

Meanwhile, there is large untapped potential on the EU transport market to increase the uptake of intermodal transport on medium-long distances. A large part of road-only operations in EU are below the break-even distances established above⁴². Around 23% of road-only freight transport is between 500 and 999 km and additional 18% between 300-500 km⁴³, which are distances considered interesting for intermodal transport⁴⁴. A sizable part of those operations could be carried out by intermodal transport if the market conditions, in particular infrastructure availability and price, were right. The main question is how to make operations at shorter distances interesting for transport organisers. Operations above these distances are already cost-competitive with road-only transport, so it can be assumed that those that are still using road do so for reasons other than price competitiveness.

³⁹ Differences exist, even within the same modal combination depending on the transshipment technologies and loading units used as well as between different parts of the EU. For example, in rail-road transport, the container transport is the most cost competitive segment and the so-called Rolling Road, i.e. accompanied intermodal transport, where full vehicle is transported on a train, is least cost competitive vis-à-vis road-only transport at all distances. PWC, KombiConsult (2022).

⁴⁰ Ricardo et al. support study (2023), op.cit.

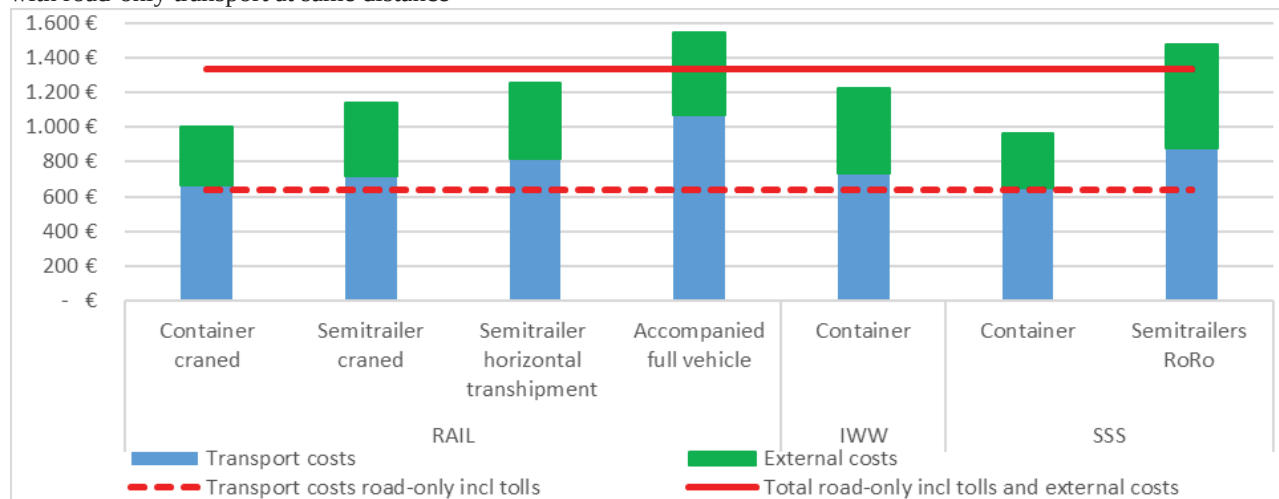
⁴¹ Internalisation of external costs is a process of developing and implementing over time a range of dedicated measures in various sectoral policies. Some measures are already adopted (Eurovignette Directive, the revised EU Emission Trading Scheme), some are negotiated (the Energy Taxation Directive) and others are still under consideration. Some are harmonised at the EU level (the EU Emission Trading Scheme), but most leave room for flexibility at national level (road charges and rail track access charges, vehicle and energy taxation). Most of these measures have transitional and/or phase in periods.

⁴² Ricardo et al. support study (2023), op.cit.

⁴³ According to Eurostat, today 60% of road transport is above 300km and 42% above 500km.

⁴⁴ Shorter distances are unlikely to be ever competitive for rail and SSS. For IWW, considerably shorter distances could be interesting, but potential only exists where there are inland waterways.

Figure 6: Total cost (transport cost and external cost) comparison of selected intermodal transport options at 600 km with road-only transport at same distance



Source: PWC, KombiConsult (2022)

2.2. What are the problem drivers?

This section explains the four problem drivers behind the insufficient uptake of intermodal freight transport. Problem driver 1 (*Eligibility for support under the CTD is too narrow and complicated*) and problem driver 3 (*The incentives provided by the CTD to enhance the relative competitiveness of intermodal transport are insufficient to reduce the gap with road-only transport*), are most critical. At the same time, tackling issues identified in problem driver 2 (*Lack of market monitoring/empirical basis for the support*) and problem driver 4 (*Inefficiencies in scheduling, planning and running intermodal transport*) would provide synergies with measures addressing the key drivers.

2.2.1. Problem Driver 1: Eligibility for support under the CTD is too narrow and complicated

According to the REFIT evaluation⁴⁵ and the 2017 impact assessment⁴⁶, the definition of eligible operations in Article 1 of the CTD was found first, to cover only a small part of operations and second, to be imprecise and causing practical problems for enforcement. 26 out of 49 respondents⁴⁷ to the stakeholders survey agreed or strongly agreed that the current eligibility criteria are too narrow. Only operations between Member States are covered. In addition, the definition also sets a minimum size limit for eligible loading units, excluding operations with smaller loading units. Finally, different eligibility conditions apply to different modal combinations, which creates both unequal treatment as well as difficulties in case different non-road legs are used in one operation. Overall, more than half of the intermodal operations in the EU, including all domestic intermodal operations, are excluded⁴⁸.

Importantly, the way the eligible operations are defined is not fully aligned with the objectives of the CTD. The eligibility is based on distance limits for different 'legs' to ensure that only operations with short road legs and a major part of operation on the non-road leg would be eligible. In reality, the definition allows operations where road leg(s) in the same operation together are longer than the non-road leg(s) to qualify, as well as operations where the substitution between road and non-road is not possible and thus no modal shift can be promoted. At the same time, a number of short-distance IWW operations are excluded despite having a high potential of reducing road congestion, in particular around large ports. Consequently, 24 out

⁴⁵ SWD(2016) 140 final.

⁴⁶ SWD(2017) 362 final.

⁴⁷ 20/31 industry respondents, 5/8 national authorities and 1/10 others.

⁴⁸ Updating EU combined transport data, ISL, KombiConsult 2017, <https://op.europa.eu/en/publication-detail/-/publication/c5b643b4-9e78-11e7-b92d-01aa75ed71a1/language-en>

of 49 stakeholders survey respondents⁴⁹ believed that the current eligibility criteria are not entirely relevant to promote the uptake of intermodal transport and the reduction of CO₂ emissions and other externalities.

Moreover, the language used in the definition has resulted in different transposition and application in Member States bringing along delays due to road checks, fines, court proceedings and infringements over the years. 25 out of 49 survey respondents and 15 out of 29 interviewees⁵⁰ considered that the current eligibility definition allows different interpretations. For example, the most-contested term in the current definition is the 'nearest suitable terminal' – that defines the eligibility for road legs for rail-road CT (RR) options⁵¹. This term has caused considerable problems to industry, as operators are fined for violating road cabotage or weights and dimensions rules, where national provision violate the CTD.

In addition, two issues relate to proof of eligibility. First, the provisions for proof of eligibility are ineffective and outdated. The information that is required to be presented does not allow establishing that an operation is eligible in all cases, in particular for initial road legs. Secondly, the CTD leaves it to the operators to decide which documents they provide for the proof and that no additional documents can be requested (explicitly clarified in the amendment in 2008⁵²), however some Member States nevertheless request specific document formats. This can cause problems, in particular for international operations, because operators would have to prepare different types of transport documents for different parts of the same operation.

2.2.2. Problem Driver 2: Lack of market monitoring/empirical basis for the support

As concluded by the REFIT evaluation, the CTD lacks an effective market monitoring framework that would allow to tailor support measures according to the actual situation. 18 out of 49 survey respondents⁵³ agreed or strongly agreed that an empirical basis to determine the adequate level of support is missing.

The CTD establishes a biennial reporting obligation on the Commission with assistance from the Member States. However, there are major challenges to collating reliable and comparable market data. While a number of primary sources on intermodal transport data are available, they all cover only certain segments of the market and often use different definitions or units of measurement thereby rendering data incomparable. The majority of the Member States do not gather, let alone regularly report, intermodal door-to-door transport data⁵⁴. Eurostat reports some data per mode, but does not report door-to-door intermodal volumes nor any data on transshipment⁵⁵.

⁴⁹ 18/31 industry respondents, 5/8 national administrations 1/10 others.

⁵⁰ 20/31 industry, 5/8 national administrations in the survey; 10/21 industry, 2/5 administrations and 3/3 NGOs in interviews

⁵¹ The Commission posed the question in the interpretation to CJEU in C-305/06, but the Court reached its decision on the case before this question, so no answer was given.

⁵² Council Regulation (EC) No 569/2008 of 12 June 2008 amending Regulation No 11 concerning the abolition of discrimination in transport rates and conditions, in implementation of Article 79(3) of the Treaty establishing the European Economic Community, OJ L 161, 20.06.2008.

⁵³ 14 out of 31 industry respondents and 4/8 authorities.

⁵⁴ Member States primarily gather transport statistics in compliance with EU legislation that cover different modes of transport (i.e. Regulation (EU) 70/2012 (road transport), Regulation (EC) 91/2003 (rail transport, Regulation (EC) 1365/2006 (inland waterway transport) and Regulation (EU) 42/2009 (maritime transport). However, none of these regulations includes an obligation to specifically gather data on intermodal operations in the respective modes. 13 Member States collect and analyse statistical data on intermodal transport operations, but mostly per mode and not modal combinations.

⁵⁵ Eurostat includes the following information on intermodal transport: (1) unitisation (transport in containers and other intermodal loading units) per mode, in tkm of gross-weight for road, rail and inland waterways and tonnes for SSS (2) long-distance road freight in containers (called modal shift potential). https://ec.europa.eu/eurostat/cache/metadata/en/tran_im_esms.htm Eurostat also provided data on intermodal operations on pilot project basis, providing grants for Member States to gather such data. The pilot was ended because of the lack of interest from Member States.

Due to the lack of comparable data on the market situation of combined transport, the Commission paused systematic reporting in 2002. To fulfil its obligation, the Commission contracted and published in 2014 an extensive market analysis, which was updated in 2017. The lack of data was acknowledged as an issue in the REFIT evaluation and in the subsequent impact assessment⁵⁶. For both of those reports, dedicated primary data gathering was carried out with the help of consultants.

Moreover, the CTD does not entail an automatic review mechanism to update the national support schemes in line with market developments and needs. Even if the fiscal incentive schemes under Article 6 are very limited, most Member States have not notified these to the Commission. Those schemes have therefore not been assessed by the Commission regarding their compliance with State aid rules and do not necessarily have a time limit. Other national support schemes beyond the scope of the CTD must have been notified to the Commission and thus must have a time-limit.

In the absence of adequate market analysis, notification of State support to the Commission and automatic review for all the support schemes, it is not possible to assess if the support schemes are effective, efficient and compatible with the internal market. In such a situation, the incentives provided to intermodal transport are uneven, where some Member States can end up providing too little or too much support.

2.2.3. Problem Driver 3: The incentives provided by the CTD to enhance the relative competitiveness of intermodal transport are insufficient to reduce the gap with road-only transport

The *modus operandi* of the CTD is to make intermodal freight transport more competitive by providing economic support and regulatory measures to compensate for market imperfections. However, according to the REFIT evaluation, the support measures established by the CTD to enhance the relative competitiveness of combined transport are very limited. Indeed, 70 out of the 100 responses to the OPC agree that this is an issue⁵⁷. The recent European Court of Auditors special report on intermodal transport also concluded that support on intermodal transport was not sufficiently effective as there was still no level playing field for intermodal freight transport in the EU due to regulatory and infrastructure barriers⁵⁸.

The limited effectiveness of the support measures provided in the CTD derives from four issues. First, the economic support is provided only to road vehicles in RR. Second, it applies to a very limited share of operations covering only road vehicles transported on rail (rolling road operations) and road vehicles used exclusively for combined transport operations. These types of operations cover around 5-6% of intermodal operations in the EU. Transport of containers is not covered. Third, the level of economic support, even for this limited range of operations, is not sufficient to induce a change in the choice for the transport mode. The CTD does not specify the level of support and the 2014 market analysis⁵⁹ found that the reimbursements of vehicle taxes translate to support of EUR 1 to EUR 50 per operation, constituting less than 1% of total costs. Furthermore, the support is provided to road hauliers (i.e. transport operators) and in most cases the benefit is not passed through to transport organisers who make the decisions on the choice of transport mode. According to the stakeholders survey, 19 out of 49 respondents⁶⁰ agreed or strongly agreed with the low, ineffective and inefficient support measures being an issue.

Fourth, national support is very heterogeneous. Given the limited scope of the CTD, several Member States have dedicated support for intermodal transport beyond the provisions of the CTD, notified to the

⁵⁶ SWD(2017) 362 final.

⁵⁷ This included 11 public authorities (CZ, 2 public authorities from BE, AT, 3 public authorities from FR, NO, IT, DE, SE), 49 industry stakeholders, four citizens and six responses under the category 'others'.

⁵⁸ Intermodal Freight Transport, EU still far from getting freight off the road, European Court of Auditors 2023, https://www.eca.europa.eu/Lists/ECADocuments/SR-2023-08/SR-2023-08_EN.pdf

⁵⁹ Analysis of the EU combined transport, KombiConsult 2014, <https://op.europa.eu/en/publication-detail/-/publication/675724ad-969f-11e7-b92d-01aa75ed71a1>

⁶⁰ Including four public authorities (MT, PL, HR, LV), 13 industry stakeholders and two responses under the category 'others'.

Commission under respective State aid rules. While in all State aid to intermodal transport operations approved by the Commission the methodology to quantify the aid amount is the same⁶¹, the support schemes still vary in terms of scope, level, eligibility and beneficiaries. For instance, some cover specific types of operations on one mode (e.g. start-up operations in IWW in Netherlands) or specific routes on one mode (e.g. support for SSS in Spain), others provide wide support to shippers per loading unit transported on RR (e.g. Croatia), support RR in the form of lump sums per operation or support transshipment costs (e.g. Luxembourg). While these differences between the type and level of support across Member States may be justified by national market situations, they increase the administrative burden for operators and create frictions in the internal market. 18 out of 49 respondents⁶² to the survey considered different measures in different Member States as a problem.

2.2.4. Problem Driver 4: Inefficiencies in scheduling, planning and running intermodal transport

By definition, intermodal transport involves multiple parties and entails complex arrangements, which in turn increase the costs of organising and carrying out an operation. The complexity of arrangements is further aggravated by different habits and systems used in the different transport modes, as well as lack of transparency and cooperation between the parties involved. While logistics companies and freight forwarders are specialised in solving these issues for shippers, such inherent complexities of intermodal transport operations, as far as they are not alleviated, still contribute to aggravating the problem.

Three main issues regarding inefficiencies have been identified that are not dealt with horizontally or homogeneously under different sectoral legislation:

1. Data interchange: The SSMS identifies the need to improve multimodal data interchange and smart traffic management to simplify the complex regulatory, administrative and business arrangements. Operators use different intermodal and unimodal planning and execution tools, with a wide variety of interfaces and frequently, each with its own dataset requirements and semantics. 13 out of 49 respondents⁶³ to the stakeholders' survey agreed that there is lack of interoperability, and the fragmentation of the different data sharing systems is an important limiting issue. Existing data sharing applications include information on orders, business documents, planning data and support of protocols and safety regulations. The lack of communication between different systems has a significant impact not only during the planning phase, but also during the operation phase. For example, issues related to the insufficient tracking and tracing of shipments prevent operators from monitoring the operation and responding adequately to delays⁶⁴. 12 out of the 49 respondents⁶⁵ to the stakeholders' survey, including all shippers/organisers consulted, identified this as a factor that hinders the uptake of intermodal transport.

2. Transparency: Lack of transparency about terminal operations, their facilities and services, is an important problem not dealt with sufficiently in mode specific legislation. Lack of information about terminals was identified as a problem in the PWC, KombiConsult study⁶⁶ as well as by the recent European Court of Auditors report⁶⁷. There is not enough information available to transport organisers, in particular to new entrants, to accurately compare the services and facilities of terminals. For rail, rules are set in Regulation 2017/2177 on access to service facilities, but its application has only partially solved the issue. No transparency requirements for information to be made publicly available exist for inland waterways and

⁶¹ It is calculated as a percentage of the avoided external costs. When the aid intensity stays below 50% of the avoided external costs and 30% of the total cost of the subsidised transport mode, the Commission considers that there is a presumption of necessity and proportionality of the aid. For aid above these thresholds, Member States must demonstrate the need and proportionality of the measures in question.

⁶² 13 out of 31 industry stakeholders and 5/8 authorities.

⁶³ Including three public authorities (DK, LV, PL), seven industry stakeholders, and three responses under 'others' category.

⁶⁴ Gathering additional data on EU combined transport, TRT 2017, <https://op.europa.eu/en/publication-detail/-/publication/e58e6253-fc01-11e7-b8f5-01aa75ed71a1>

⁶⁵ Including two public authorities (DK, PL), eight industry stakeholders and two responses under 'others' category.

⁶⁶ PWC, KombiConsult (2022), op.cit.

⁶⁷ European Court of Auditors (2023), op. cit.

short sea shipping terminals. This results in inability to make initial assessments if desired intermodal operations would even be possible, without entering a dialogue with all terminals.

3. Operational inefficiencies in terminals. Intermodal transport requires transshipment between the modes in a transshipment terminal. Low operational efficiency of terminals can considerably increase the handling time and delays due to issues such as yard congestion, the need for shunting due to short handling tracks, delays in transshipment due to insufficient transshipment technology or staff, lack of suitable transshipment equipment, among others. The investments by terminals into improving their operational efficiency are unequal and sometimes insufficient, in particular in areas with less competition between the terminals. The poor quality of service in terminals in the vicinity was considered by 37 of 100 respondents⁶⁸ in the OPC as a factor negatively affecting the competitiveness of intermodal transport. While the proposed revision of the TEN-T Regulation imposes some requirements on TEN-T RR terminals (such as to be able to tranship all types of loading units for vertical transshipment terminals and handle 740 m long trains without manipulation), no other motivation exists for terminal upgrades in areas where there is no or limited competition.

2.3. How likely is the problem to persist?

According to the 2022 Strategic Foresight Report⁶⁹, coupled with population growth and higher living standards, the demand for transport will continue to grow. In the baseline scenario, EU road freight transport is projected to grow by 49% by 2050, notwithstanding efforts to shift more traffic to other modes such as rail or waterborne. However, as the Strategic Foresight Report identifies synergies between digital and green transitions, digitalisation and artificial intelligence is also expected to boost the emergence of more efficient multimodal mobility solutions. This would also benefit intermodal freight transport and developments in this direction have already started, e.g. with the implementation of the eFTI Regulation.

However, without further EU level action, the uptake of intermodal transport options for freight operations is likely to remain limited in the short to medium term. With no further changes to the CTD, only a limited share of the market would continue to have access to existing support which is needed to compensate for the lack of level playing field between the modes. Inconsistent interpretation and implementation of the CTD by Member States is expected to continue creating legal uncertainties. Even for eligible operations, the level of support is expected to remain insufficient to incentivise the shift from road-only transport to intermodal transport options. With no changes to the eligibility (i.e. the definition), the support would continue to be less effective and limited to less than half of all the intermodal operations in the EU.

While some identified inefficiencies in intermodal transport will be addressed, either by way of other EU legislation or market developments, the cost of intermodal transport would not go down to the level that would make most medium-long operations competitive. Other external factors affecting the transport market can have further negative impact on competitiveness. For example, the current energy crisis has, due to high electricity costs, increased the price gap between road-only and intermodal transport⁷⁰. Thus, the need for the CTD, as an instrument to support the competitiveness of intermodal transport, remains, while the appropriateness of the level and type of support needs to be continuously assessed vis-à-vis market developments.

While there have been discussions with Eurostat to improve the reporting of intermodal transport data, no revision of relevant Eurostat regulations is currently planned. The information on market conditions can only be gathered by dedicated studies. Some inefficiencies might be reduced due to unilateral steps by private parties, in particular on transparency. Similarly, private third-party development of planning tools or sector-wide voluntary agreements on data interoperability are possible, albeit unlikely, in particular between different modes.

⁶⁸ Five public authorities (2 public authorities from BE, AT, FR, IT), 25 industry stakeholders, four EU citizens and three responses under 'others' category.

⁶⁹ COM(2022) 289 final.

⁷⁰ UIRR/UIP joint statement, <https://www.uirr.com/en/media-centre/press-releases-and-position-papers/2022/mediacentre/2370-joint-erfa-uip-uirr-statement-on-energy-price-increases.html>

Nevertheless, without EU level action, it will not be possible to ensure a common level of interoperability and transparency across the EU.

3. WHY SHOULD THE EU ACT?

3.1. Legal basis

Title VI (Articles 90-100) of the Treaty on the Functioning of the EU⁷¹ (TFEU) establishes the EU's prerogative to make provisions for the Common Transport Policy. Article 91(1)(c) TFEU provides that the EU has competence in the field of transport to lay down measures to improve transport safety, while Article 91(1)(d) TFEU provides the same competence as regards "any other appropriate provisions".

3.2. Subsidiarity: Necessity of EU action

Under the principle of subsidiarity, in areas which do not fall within its exclusive competence, the EU shall act only if, and in so far as, the objectives of the proposed action cannot be sufficiently achieved by the Member States. Negative transport externalities, in particular those relating to climate change, are trans-boundary problems, which cannot be solved by national or local action alone. The pressing need to reduce GHG emissions produced by freight transport applies equally to cross-border and domestic operations. This is also the case of congestion and accidents on major transport corridors. Thus, the problem identified needs to be addressed at EU level because it has a cross-border dimension. Otherwise, non-harmonised and fragmented approaches at national level, which will fall short of effectively addressing the cross-border issues of intermodal transport (81% of which is international) bear the risk of leading to competitive distortions in the Single Market.

3.3. Subsidiarity: Added value of EU action

The aim of the CTD is to promote the uptake of intermodal transport, of which 81% is between Member States, across the EU through support framework based on common eligibility criteria. From the policy and the internal market perspective, it is important to aim that the benefits provided for in the CTD are applicable in a comparable way throughout the EU. In conditions, where economic support under the today's CTD is very limited, many Member States have reverted to supporting intermodal operations directly under the State aid rules. Those support measures may not be equally accessible to all operators, given that different eligibility criteria are used. Therefore, some operators may gain a competitive advantage with impacts beyond their national border. EU action with the aim to harmonise rules on eligibility and support framework that are coordinated with State aid rules, will help create comparable treatment of operators across EU, simplify administrative procedures for industry, the Member States and the Commission and improve the functioning of the internal market. This cannot be achieved with regulation at Member State level only.

4. OBJECTIVES: WHAT IS TO BE ACHIEVED?

4.1. General objectives

The CTD sets the increase of the uptake of intermodal transport as a means to achieve the objective of reducing negative transport externalities⁷². In the same vein, the general objective of this revision is to facilitate an increase in the share of rail, SSS and IWW transport in total intra-EU freight transport to reduce the negative externalities and the energy consumption in the transport sector as well as to mitigate the fragmentation of internal market. In particular, in the context of a holistic approach together with a variety of modal initiatives on rail, inland waterways, short sea shipping and road transport as well as horizontal instruments on infrastructure, digital

⁷¹ Consolidated version of the Treaty on the Functioning of the European Union, OJ C 326, 26.10.2012, p. 47–390.

⁷² The preamble of CTD states: "Whereas the increasing problems relating to road congestion, the environment and road safety call, in the public interest, for the further development of combined transport as an alternative to road transport."

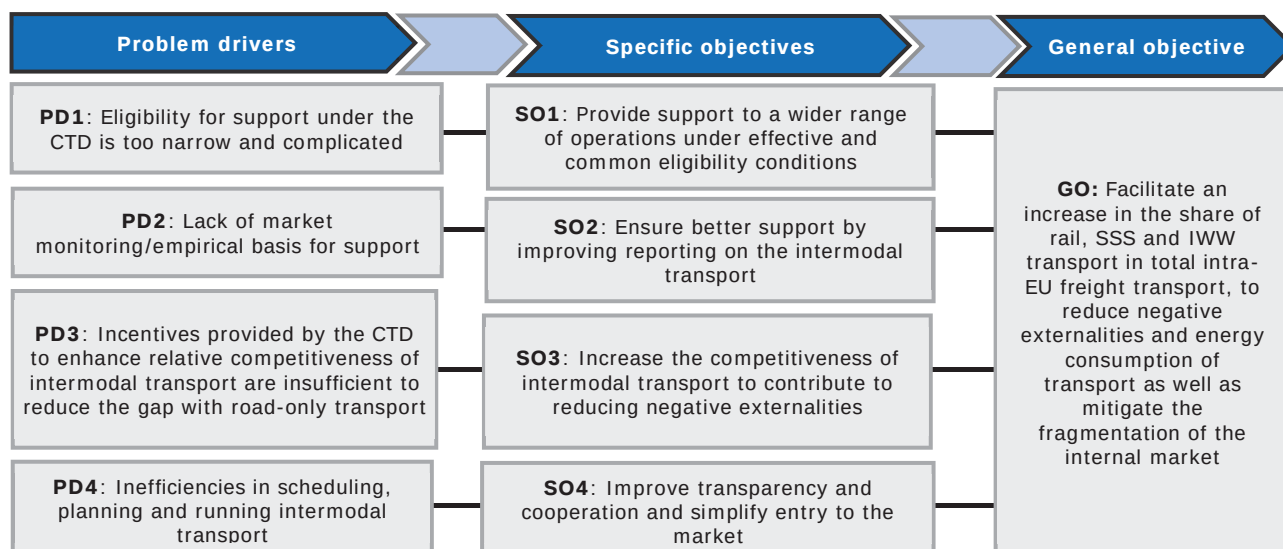
solutions and GHG accounting, its objective is to bring forward in time the higher uptake of intermodal transport while the effects of other instruments have not yet taken full effect.

The initiative should also contribute to the digital transformation as well as SDG. More specifically, it should contribute towards SDG 13 (Take urgent action to combat climate change and its impacts), SDG 9 (Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation) and SDG 11 (Make cities and human settlements inclusive, safe, resilient and sustainable).

4.2. Specific objectives

The specific objectives (SOs) and their correspondence with the problem drivers are presented in Figure 7.

Figure 7: Specific objective and their relation to problem drivers



Specific Objective 1 (SO1) - Provide support to a wider range of intermodal operations under effective and common eligibility conditions. The first specific objective is based on the need to improve the existing eligibility conditions and ensure that a larger part of intermodal operations could be included in the scope, while applying effective eligibility criteria. It would be important to ensure the coverage of all operations that could significantly contribute to reducing negative externalities but are not cost competitive vis-à-vis road-only transport. 28 of 49 respondents to the survey and 18 out of 29 interviewees⁷³ supported that CTD eligibility assessment should be extended to a wider range of operations. All respondents to the survey agreed that eligibility conditions should be justified from the perspective of the general objective and made easy to control. Multiple stakeholders pointed out in the stakeholder meeting as well as in comments to the survey that the eligibility should be the same for different modal combinations.

Specific Objective 2 (SO2) - Ensure better support by improving reporting on the intermodal transport. The second specific objective reflects the need to base the economic support on empirical evidence and to ensure that this support is regularly adjusted to consider the real needs of the market as well as the decreasing price gap as external costs become increasingly internalised. 20 out of 49 survey⁷⁴ respondents supported the objective to improve monitoring and reporting on the status of intermodal transport.

Specific Objective 3 (SO3) - Increase the competitiveness of intermodal transport to contribute to reducing negative externalities. The third specific objective refers to the need to make intermodal transport a more attractive alternative to road-only transport. 22 out of 49 respondents⁷⁵ to the survey agreed or strongly agreed that the objective of the revised CTD should be to increase the competitiveness of intermodal transport. In practical terms,

⁷³ 23/31 industry and 5/8 authority respondents in survey, 15/21 industry and 3/5 authorities in interviews.

⁷⁴ 16/31 industry and 4/8 authority respondents.

⁷⁵ 18/31 industry and 4/8 authority respondents.

the provided support should reduce the price gap between road-only and intermodal transport and thereby result in bringing down the distance at which an intermodal transport becomes cost competitive also for the medium-long operations, leading to a higher uptake of intermodal transport and lower external costs of freight transport.

Specific Objective 4 (SO4) - Improve transparency and cooperation and simplify entry to the market. The fourth objective reflects the need to make it easier for transport organisers to take up intermodal transport. In this regard, the CTD should improve the cooperation and exchange of information between the different parties in the transport chain and improve the efficiency of transshipment terminals as well as ensure that the information about services and facilities in terminals would be easily available. 17 out of 49 survey respondents and 18 out of 29 interviewees⁷⁶ agreed or strongly agreed that improving transparency and cooperation to facilitate and simplify entry to the market is an important objective.

5. WHAT ARE THE AVAILABLE POLICY OPTIONS?

5.1. What is the baseline from which options are assessed?

The starting point for the impact assessment of this initiative is the EU Reference scenario 2020 (REF2020)⁷⁷, which takes into account the impacts of the COVID-19 pandemic on the transport sector. Building on REF2020, the baseline has been designed to include the initiatives of the 'Fit for 55' package proposed by the Commission on 14 July 2021⁷⁸ and the initiatives of the REPowerEU package proposed by the Commission on 18 May 2022⁷⁹. More specifically, it should be noted that the baseline scenario takes into account the CO₂ standards for vehicles, the FuelEU maritime Regulation and the ReFuelEU aviation Regulation, as well as the Alternative Fuels Infrastructure Regulation and the proposed review of the Renewable Energy Directive. It also reflects the extension of the ETS to the maritime sector and setting up a self-standing ETS for road transport and buildings, as well as the proposed revision of the Energy Taxation Directive. Beyond this, it reflects the Eurovignette Directive and national measures like vehicle taxation. Thus, the baseline scenario takes into account the complex synergies between these policy instruments. The baseline scenario assumes no further EU level intervention on intermodal transport beyond the current CTD. For further details see Annex 4.

In terms of transport network, the baseline scenario accounts for the proposed revision of the TEN-T Regulation⁸⁰. It assumes that the high-quality TEN-T rail network would be gradually completed in three steps: 2030 for the core network, 2040 for the extended core network and 2050 for the comprehensive network. It also assumes full electrification of the core TEN-T rail network by 2030 and of the comprehensive network by 2050. In addition, the proposal includes for the first time an obligation on Member States to ensure sufficient multimodal freight terminal capacity based on dedicated analysis and action plans, which is part of the baseline scenario. The baseline also incorporates foresight megatrends⁸¹ and developments captured in the 2022 Strategic Foresight Report⁸², such as the trend of increasing demand for transport as population and living standards grow as well as the links between the digital and green transition.

In the baseline scenario, EU transport activity is projected to grow post-2020, following the recovery from the COVID pandemic. Road transport would maintain its dominant role, its activity going up by 29.1% by 2030 relative to 2015 (48.9% for 2015-2050)⁸³. Rail transport activity is projected to grow significantly faster than road, driven in particular by the gradual completion of the TEN-T network, where Member States and private investment will continue to be supported by the EU funding instruments such as Connecting

⁷⁶ 13/41 and 4/8 authority respondents in survey, 14/21 industry and 2/5 authority respondents, 2/3 NGOs.

⁷⁷ Detailed information about the preparation process, assumptions and results are provided in the EU Reference Scenario 2020, https://energy.ec.europa.eu/data-and-analysis/energy-modelling/eu-reference-scenario-2020_en

⁷⁸ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en

⁷⁹ https://ec.europa.eu/commission/presscorner/detail/en/IP_22_3131

⁸⁰ COM(2021) 812 final.

⁸¹ https://knowledge4policy.ec.europa.eu/foresight/tool/megatrends-hub_en#explore

⁸² COM(2022) 289 final.

⁸³ More explanations on the relation with the baseline scenarios underpinning the 'Fit for 55' package and REPowerEU package are provided in Annex 4.

Europe Facility, Cohesion Fund and the European Regional Development Fund. Measures of the ‘Fit for 55’ package also increase to some extent the competitiveness of rail and of waterborne transport relative to road transport. Freight rail traffic would increase by 42.2% by 2030 relative to 2015 (96% for 2015-2050), hence falling short of the milestone of the SSMS of increasing the traffic by 50% by 2030 and doubling it by 2050⁸⁴. Inland waterways and short sea shipping activity is projected to go up by 21.1% by 2030 relative to 2015 (49.5% for 2015-2050), also falling short of the milestone of the SSMS, in particular for 2030 (i.e. increase inland waterways and short sea shipping traffic by 25% by 2030 and by 50% by 2050)⁸⁵.

In 2015, the total intermodal transport volume in the EU was 534 billion tkm (Table 3)⁸⁶. 68.5% of this was carried by SSS. RR constituted 28.5%, while transport by IWW, which is relevant only within a limited number of river basins, accounted for 3%. 54% of all intermodal transport was containerised (from which 58% on SSS), 18.7% was carried in semitrailers (from which 77% on ferries), 4% in swap-bodies almost entirely on rail and 24% was accompanied transport in full vehicle combinations (90% of this on ferries). By 2020, the total volume of intra-EU intermodal transport had grown by 9% compared to 2015, to 584 billion tkm. Out of this 69.2% was maritime intermodal transport, 28.3% RR and 2.6% IWW.

Table 3: Intermodal and combined transport, 2015

Mode	Intra-EU freight	Door-to-door intermodal		Intermodal legs		Door-to-door CT	
	bn tkm	bn tkm	% of total intra-EU freight	bn tkm	% of total modal freight	bn tkm	% of intermodal
Road	1,562			149	10%		
Rail	396	152	5%	123	31%	92	60%
IWW	147	16	1%	14	9%	11	69%
SSS	864	366	12%	248	29%	123	34%
Total	2,969	534	18%	534	18%	226	42%

Source: Statistical pocketbook 2022; Ricardo et al. support study (2023)

The operations covered by the definition in the CTD are considerably lower constituting 42.3% in 2015 and 42.1% in 2020 from total intra-EU intermodal transport and amounting to 226 billion tkm and 246 billion tkm, respectively. For rail intermodal, in 2015, 60% of operations were covered by the CTD, for IWW 69% and for SSS 34%⁸⁷.

⁸⁴ As rail infrastructure capacity will need to accommodate an increasing amount of demand, in the baseline scenario by 2030 nearly 9,000 kilometres of rail (about 6.5% of the network) would be affected by capacity restrictions, of which 6,500 kilometres would be congested (4.7% of the network) and 2,500 kilometres highly utilised (1.8% of the network). By 2050, the rail network affected by capacity restrictions is projected to further increase to 20,200 kilometres (about 14.6% of the network), of which 11,500 kilometres would be congested (8.3% of the network) and 8,700 kilometres highly utilised (6.3% of the network).

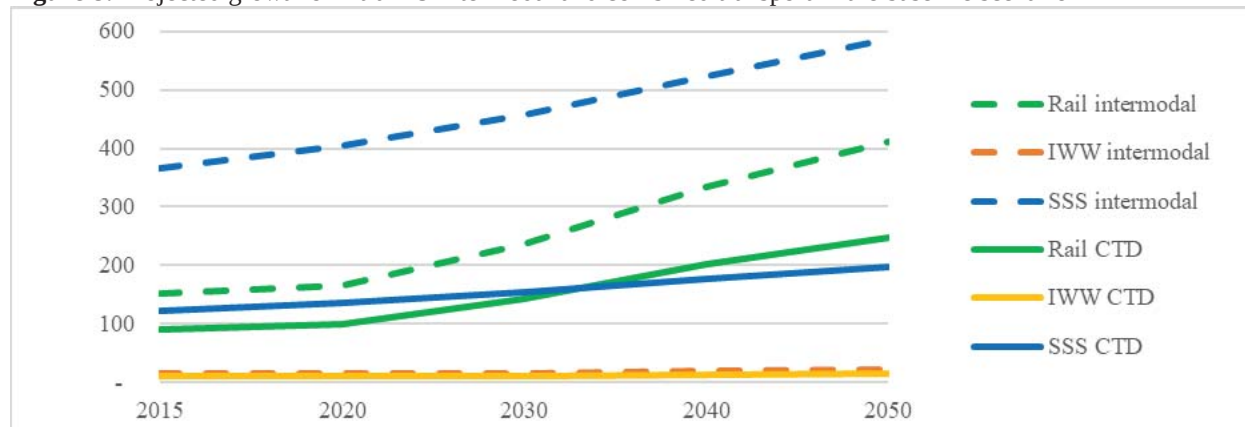
⁸⁵ The scenarios underpinning the impact assessments accompanying the 2030 Climate Target Plan and the ‘Fit for 55’ initiatives and the staff working documents accompanying the SSMS and the REPowerEU package, took into account a broader range of policies (including this initiative as well as the initiatives on rail capacity, the revision of the Weights and Dimensions Directive and the CEEU) that were represented in a stylised way ahead of the actual proposals, to show the delivery of at least 55% emissions reduction target by 2030 and to account for the interaction with the forthcoming initiatives. These initiatives (in particular the rail capacity initiative) are contributing towards the achievement of the milestones set in the context of the SSMS. To define a meaningful baseline scenario for the initiatives being part of the Greening freight package, these initiatives were not considered in the baseline scenario. This is the reason why the milestones of the SSMS are not assumed to be met in the baseline.

⁸⁶ ISL, KombiConsult (2017), op. cit. As no comparable data is systematically collected on the road legs of intermodal transport, intermodal specific data is based on the ISL, KombiConsult study (2017) where 2015 was the latest reported year. The UK volumes have been subtracted for comparison with future projections on EU27. Intermodal transport in EU includes domestic and intermodal door-to-door transport operations, including road legs and non-road legs. Intermodal traffic between EU and third countries such as deep-sea maritime transport is not included.

⁸⁷ This is due to the fact that many maritime operations, in particular island transport, are domestic and thus excluded from the scope, or that the road legs are longer than allowed by the current CTD, e.g. according to ISL, KombiConsult (2017), the median length of road legs in maritime intermodal is 98 km, while the average is 257 km, meaning that while majority of road legs are within current length limits, some are considerably longer.

The projected growth in the different intermodal segments is defined based on the expected evolution of the increase in the overall EU freight transport activity, and the increasing role of the unitised transport within the EU freight market. It also takes into account the measures aimed at reducing and internalising the external costs of transport, mentioned above, and the complex synergies between them. At the same time, the baseline evolution for this impact assessment has been defined using a conservative approach, considering in particular the constraints on terminal capacity⁸⁸. As a result, in the baseline scenario, the total intra-EU intermodal transport is projected to grow 33% by 2030 and 91% by 2050 (relative to 2015). By 2030, the RR will grow by 55% and by 2050 almost triple (171% relative to 2015), while IWW would grow by 4% by 2030 and 37.4% by 2050. SSS intermodal is expected to grow by 25% by 2030 and 60% by 2050. The operations covered by today's CTD are expected to grow at comparable rates (Figure 8).

Figure 8: Projected growth of intra-EU intermodal and combined transport in the baseline scenario



Source: Ricardo et al. support study (2023)

Comparing the total non-road legs volume of intermodal transport with the respective total modal activity, the intermodal transport accounted for 27.4% of all EU27 non-road freight transport activity in 2015. For the various modes, in 2015 the share of transport activity carried on intermodal transport was 31% for rail and 29% for SSS, while for IWW this share is lower, around 9%. In the baseline scenario, the share of intermodal in total non-road freight is estimated to reach 28.9% in 2030 and 32.9% in 2050. The highest increase in the share is expected in the rail intermodal sector.

CO₂ emissions from transport are projected to be 24% lower by 2030 compared to 2015, and 87% lower by 2050. The baseline scenario shows that the emission reductions from the transport sector would contribute towards the ambition of at least 55% emission reductions by 2030 and climate neutrality by 2050, while relying to a significant extent on technological solutions (i.e. the uptake of low- and zero-emission vehicles and of renewable and low carbon fuels) and carbon pricing. This would depart from the balanced approach underpinning the impact assessments accompanying the 'Fit for 55' package and the staff working document accompanying the REPowerEU initiatives⁸⁹, showing a combined approach of carbon pricing instruments and regulatory-based measures to deliver on the increased climate ambition⁹⁰. NO_x emissions are projected to go down by 56% between 2015 and 2030 (85% by 2050), mainly driven by the

⁸⁸ Terminal capacity will likely remain an issue in the immediate future especially in the rail sector until sufficient terminal capacity, as proposed by the TEN-T Regulation revision, is ensured. The recent PWC, KombiConsult (2022) study estimates for instance that terminal capacity in the EU will increase by only 18% until 2030, considering current plans for both terminal upgrades and new terminal constructions.

⁸⁹ SWD(2022) 230 final.

⁹⁰ The scenarios underpinning the impact assessments accompanying the 'Fit for 55' initiatives and the staff working document accompanying the REPowerEU initiatives incorporated a broader range of policies (including this initiative) that were represented in a stylised way ahead of the actual proposals, to show the delivery of at least 55% emissions reduction target by 2030 and to account for the interaction with the forthcoming initiatives. The scenario reflecting the 'Fit for 55' initiatives, the REPowerEU initiatives and the forthcoming initiatives shows the need to reduce emissions from transport by 26% by 2030 relative to 2015 and by 94% by 2050. Therefore, this initiative contributes towards the at least 55% emissions reductions target by 2030 and achieving climate neutrality by 2050.

electrification of the road transport and in particular of the light duty vehicles segment. The decline in particulate matter (PM2.5) would be slightly lower by 2030 at 52% relative to 2015 (90% by 2050).

Despite the infrastructure charges included in baseline, road freight congestion costs would continue to increase, and are estimated to amount to EUR 752 billion, expressed as present value over 2025-2050⁹¹. Congestion on the inter-urban network would be the result of growing freight transport activity along specific corridors, in particular where these corridors cross urban areas with heavy local traffic. External costs of road freight accidents are also projected to remain high, at EUR 98 billion expressed as present value over 2025-2050.

The baseline scenario reflects the projected higher energy prices driven by the Russian invasion of Ukraine⁹². Beyond this aspect, it was however not possible to quantify the impact of the Russian invasion of Ukraine, as there is large uncertainty with respect to its impacts, in particular for the medium to long term. While its impact is felt in terms of trade (e.g. grain, bulk fertilizers and hydrocarbons) and in certain geographical areas, the impact on the baseline of this initiative is expected to be limited. The problem that the uptake of the intermodal freight transport is insufficient for effectively contributing to the reduction of external costs and energy consumption of transport is likely to persist.

5.2. Description of the policy options

5.2.1. Retained policy measures

As a first step, a comprehensive list of possible policy measures was established after consultations with stakeholders, an expert meeting, independent research and the Commission's own analysis. This list was screened based on the likely effectiveness, efficiency and proportionality of the proposed measures in relation to the given objectives, as well as their legal, political and technical feasibility. The retained policy measures have been grouped in three policy options, with one of them having three sub-options. Table 4 presents the list of policy measures included in the policy options, organised based on problem driver and specific objective they address. Measures PM3 (proof of eligibility via eFTI platforms) and PM16 and PM17 (improving transparency of terminal services) are common to all policy options.

Table 4: List of retained measures and options

No	Categories measures by thematic area	Problem drivers and specific objectives	PO-A	PO-B1	PO-B2a	PO-B2b	PO-C
	Provide support to a wider range of operations under effective eligibility conditions						
PM1	Include in the scope <i>all</i> intermodal operations in the EU that save 25% GHG when using intermodal operation instead of road-only; calculation of GHG savings is based on common EU methodology (CEEU)	PD1 SO1		✓			
PM2 all-intra-EU	Include in the scope <i>all</i> intermodal operations in the EU that save 40% external costs when using intermodal operation instead of road-only; calculation of external costs is based on common EU methodology based on the unit	PD1 SO1	✓		✓		✓

⁹¹ Road congestion costs cover both the road legs of intermodal transport operations and road-only transport operations.

⁹² SWD(2022) 230 final.

No	Categories measures by thematic area	Problem drivers and specific objectives	PO-A	PO-B1	PO-B2a	PO-B2b	PO-C
	values from the Handbook ⁹³ , established by means of an implementing act						
PM2 cross-border	Include in the scope <i>only cross-border</i> intermodal operations in the EU that save 40% external costs when using intermodal operation instead of road-only; calculation of external costs is based on common EU methodology based on the unit values from the Handbook, established by means of an implementing act	PD1 SO1				✓	
PM3	Establish common data set for proof of eligibility with implementation via eFTI platforms	PD1 SO1	✓		✓		✓
Ensure better support by improving reporting on the multimodal/ intermodal transport							
PM4	Replace reporting by the Commission with Member States' voluntary analysis and strategic planning for sustainable freight transport	PD2 SO2	✓				
PM5	Replace reporting by the Commission with Member States' mandatory analysis and strategic planning for all freight transport system (cross-modal). An obligation to regularly review the measures.	PD2 SO2					✓
PM6	Reporting by the Commission with revised monitoring data and reporting period, including a review clause for reassessing the support regime established in the CTD. Obligation for Member States to notify ex ante their support schemes, which the Commission has to make available in a common website	PD2 SO2			✓		
Increase competitiveness of multimodal/ intermodal transport							
PM7	Mandatory harmonised support, does not constitute State aid: harmonised obligation on Member States to provide support with an aim to reduce door-to-door costs of intermodal operations at a level that induces modal shift; remove	PD3 SO3					✓

⁹³ The Handbook on the external costs of transport CE Delft et al. (2019). op.cit.

No	Categories measures by thematic area	Problem drivers and specific objectives	PO-A	PO-B1	PO-B2a	PO-B2b	PO-C
	all existing regulatory measures (Articles 2, 4, 7, 8, 9)						
PM8	Voluntary non-harmonised support, the State aid rules apply where relevant: call on Member States to use operational support tools from the Toolbox with an aim to reduce door-to-door costs of intermodal operations at a level that induces modal shift	PD3 SO3	✓				
PM9	Mandatory non-harmonised support, the State aid rules apply where relevant: obligation on Member States to have at least one operational support tool from the Toolbox with an aim to reduce door-to-door costs of intermodal operation at a level that induces modal shift	PD3 SO3			✓		
PM10	Voluntary support, the State aid rules apply where relevant: call on Member States to provide start-up support	PD3 SO3	✓		✓		
PM11	Mandatory non-harmonised support, the State aid rules apply where relevant: obligation on Member States to have at least one technological upgrade support measure from the Toolbox	PD3 SO3			✓		
PM12	Limit the direct financial support only to short and medium-long operations that are normally not cost-competitive with road-only transport (mode specific thresholds)	PD3 SO3	✓		✓		
PM13	Exempt road-legs of eligible operations from weekend and holiday driving bans	PD3 SO3			✓		✓
Improve transparency and cooperation and simplify entry to the market							
PM14	Define a data set for information to be shared between parties of transport chain by means of an implementing or delegated act	PD4 SO4					✓
PM15	Establish an obligation to use common data exchange protocols for operations covered by this Directive by means of an implementing or delegated act	PD4 SO4					✓
PM16	Require terminal operators to publish information on services and facilities available in each terminal. List of mandatory	PD4 SO4	✓		✓		✓

No	Categories measures by thematic area	Problem drivers and specific objectives	PO-A	PO-B1	PO-B2a	PO-B2b	PO-C
	information to be established in an implementing act.						
PM17	Provide a possibility to establish a framework of terminal categories based on minimum requirements on services/facilities available at terminals, by means of an implementing act.	PD4 SO4	✓		✓		✓

The main questions that were addressed when choosing the retained policy measures and building the policy options are discussed below.

Under *specific objective 1* “Provide support to a wider range of operations under effective eligibility conditions” the main question of the analysis was which operations should be eligible for the support. From the perspective of the general objective, all intermodal operations in the EU, including domestic intermodal operations, should be covered (as in the 1998 and 2017 proposals). On the other hand, to cater for potential questions around subsidiarity, PM2-cross-border considered only cross-border operations.

Regarding eligibility criteria, following the experience of the current CTD, previous two amendment attempts and the results of the stakeholder consultation, it was concluded that a new and more objective approach is needed for defining eligibility, where it is directly linked to the savings of the external costs. This means that only intermodal operations that achieve significant savings in external costs will be eligible under the revised CTD. Two different measures were analysed: eligibility based on GHG alone (PM1)⁹⁴ or on a wider set of externalities including in addition to GHG also air pollution, noise, congestion and accidents⁹⁵ (PM2-all-intra-EU and PM2-cross-border). For both, further analysis was carried out to establish the percentage threshold of external cost savings.

Various thresholds (from 20% to 75%) were tested and assessed, the two guiding principles being to ensure that (a) all modal combination could be eligible and (b) a major part of operations would be carried by a non-road mode (see Annex 4, section 3.1.1). Common to all POs is a measure to review the list of information that needs to be provided for proof of eligibility and establish an obligation to use eFTI platforms for making this information available. eFTI platforms would automatically calculate eligibility based on transport data already in the system (PM3).

Under the *specific objective 2* “Ensure better support by improving reporting on the multimodal/ intermodal transport”, two measures were considered in addition to the possibility to keep the existing Commission reporting obligation with small changes in monitoring data and frequency of reporting (PM6)⁹⁶. These two measures involve market analysis and reporting by Member States, either voluntary (PM4) or mandatory (PM5). Such market analysis is needed to adjust the support measures, but also to evaluate the support

⁹⁴ An option with GHG only was considered, given that it was promoted by some stakeholders, even though it gathered less support than basing eligibility on a wider set of externalities (4 compared to 18 survey respondents out of 22, i.e. 18%; and 4 compared to 14 interviewees out of 21, i.e. 33%). In addition, it was assessed, whether including in eligibility criteria only GHG, which is easier to monitor and could to some extent act as a proxy to capture the other externalities, could be sufficient to achieve the objectives.

⁹⁵ GHG, air pollution, congestion, noise, fatalities and injuries were used for modelling.

⁹⁶ The “Impact assessment support study for the review of the Community guidelines on State aid for railway undertakings” noted that to learn about the effectiveness and efficiency of various scheme designs, evidence is required, but ex-post evaluations for State aid schemes under the Railway Guidelines are very rare. The introduction of the requirement to evaluate schemes could facilitate the generation of such evidence, and allow for better informed choices of scheme design in the future.

regime established in the CTD, given that over time different regulatory and market-based measures, which reduce and internalise the external costs, are phased in.

Under the *specific objective 3 “Increase competitiveness of multimodal/ intermodal transport”*, a choice had to be made between different economic support and regulatory measures. As a result of an analysis of most common support schemes in the EU and in the world as well as those proposed in the literature, three types of support measures were selected – operational support that can be mandatory and harmonised (PM7), voluntary (PM8) or mandatory but not harmonised (PM9), start-up support and support for new services and for technological upgrade (e.g. for loading units, machinery and digital equipment). With a view to coordinate between national measures as well as with State aid rules, lists of different support tools that could be used under these measures by Member States – a Toolbox – was established. The Toolbox includes tools for operational (PM7, PM8, PM9) and for technological upgrade (PM11) support. Each group includes a list of different tools (for examples see Annex 9). A limitation of the admissibility for economic support under PM7-PM9 to only short and medium-long freight transport operations was retained to avoid supporting operations that are price-competitive without support (PM12). In addition, one new regulatory support measure in addition to existing ones in the current CTD is proposed similar to the 1998 amendment proposal, to establish an exemption from driving bans for road-legs of intermodal transport to ensure timely arrival to terminals (PM13).

Under the *specific objective 4 “Improve transparency and cooperation to facilitate flexibility and simplify entry to the market”*, measures for data interoperability (PM14, PM15) and terminal transparency (PM16, PM17) were retained.

A detailed description of retained policy measures is given in Annex 6.

5.2.2. *The construction and description of the options*

Policy measures are assigned to policy options (POs) based on their level of intervention. PO-A is the option with the softest intervention at EU level, while PO-C shows the strongest intervention. Following this general principle, the measures were selected so that in each policy option all identified problem drivers and specific objectives are addressed. The results of stakeholders’ consultations and field research were used for the final design of the measures and their combination into options, including variants to PO-B, allowing to assess different eligibility criteria.

The different options are characterised by:

- The choice of scope and eligibility criteria (PD1, SO1):
 - o All options, except PO-B2b, cover all intra-EU operations (including domestic). PO-B2b includes only cross-border intra-EU operations.
 - o PO-B1 is based on GHG emissions reduction, while all other options consider a wider set of negative externalities from the transport sector (PM2). PM3 is included in all POs, as it establishes a common enforcement regime.
- The way to organise market monitoring (PD2, SO2): (PM4-PM6) varies from Member States voluntary analysis and strategic planning in PO-A to a mandatory cross-modal analysis in most interventionist PO-C. PO-B keeps the reporting obligation with the Commission.
- Different intervention intensities of economic and regulatory support measures (PD3, SO3): these vary from voluntary in PO-A to mandatory but not harmonised in PO-B to mandatory and harmonised in PO-C. PO-A and PO-B will establish an upper distance limit to ensure that only operations that normally are not competitive with road-only can benefit. PO-C does not have such a limit, to allow to assess the impact of an alternative design. Support measures for PO-A and PO-B are defined in the Toolbox allowing Member States to choose, while in PO-C one common harmonised support scheme applies across the EU. In all options, the support should be sufficient to induce modal shift.
- The choice of measures to ease the market entry and cooperation (PD4, SO4): all options include terminal transparency requirements and propose to categorise terminals. PO-C defines, in addition,

common data sets and exchange protocols, with highest level of intervention in business-to-business data exchange process between different transport chain parties.

Policy option A (PO-A) is the option with softest intervention at EU level. It applies to all intra-EU operations, except those that do not have a viable road alternative. The eligibility is based on a wider set of externalities, requiring savings of at least 40% of external costs, with a methodology established in the Handbook on the external costs of transport⁹⁷ (PM2-all-intra-EU). The guidance for calculations will be established in an implementing act⁹⁸. The data to be provided for the proof of eligibility will be reviewed and tied to eFTI platforms (PM3).

The current Commission's biennial reporting obligation will be replaced by a call to Member States to carry out regular analysis and strategic planning for sustainable modes of transport to choose appropriate support (PM4). While PO-A does not oblige Member States to provide any support, it does provide a Toolbox with predefined support tools to choose from (PM8). Where relevant, such support tools need to be compliant with State aid rules, including the time limits on support schemes. Member States are not required to change their existing State aid schemes (which are outside the scope of the current CTD). Member States are also called on to not support operations that are longer than the established cost-competitiveness distances to avoid inefficiencies and/or windfall profits (PM12). Sectoral State aid guidelines and block exemptions, where available, will apply.

For terminal transparency and cooperation, one implementing act would introduce common transparency rules for terminals ensuring that all terminals make publicly available data on terminal facilities and services (PM16) and another could, after additional dedicated analysis, establish a terminal categorisation framework (PM17). These measures are complementary to the proposed revision of the TEN-T Regulation, which addresses the terminal capacity and quality on the TEN-T network and is reflected in the baseline.

Policy option B (PO-B) is the option that combines obligations at EU level with flexibility to take into account Member States specific situations. It obliges Member States to support intermodal transport but gives them a freedom to choose among the operational and technological upgrade support tools listed in the Toolbox, to address the challenges in national transport systems. For the scope, the following variants are analysed:

- PO-B1 and PO-B2a apply to all intra-EU operations except those that do not have a viable road-alternative (PM1 and PM2-all-intra-EU, respectively).
- PO-B2b applies only to cross-border intra-EU operations, having a similar scope to the current CTD (PM2-cross-border).

Another set of variants are analysed for the eligibility condition:

- In option PO-B1, the eligibility is based on GHG savings with a threshold of 25% (expressed in tonnes of CO₂ equivalent, PM1) calculated using the methodology that is currently being elaborated in a parallel EU initiative, namely CEEU.
- In options PO-B2a and PO-B2b, the eligibility is based on a wider set of externalities, similarly to PO-A (PM2-all intra-EU and PM2-cross-border, respectively).

In all PO-B sub-options, the data to be provided for proof of eligibility will be reviewed and tied to eFTI platforms (PM3).

For market analysis and reporting, all PO-B sub-options would rely on the current obligation where the Commission has to prepare the reports with assistance from Member States and by using dedicated market analysis studies (PM6). However, the interval between reports would be extended from 2 to 5 years, to

⁹⁷ CE Delft (2019).

⁹⁸ To ensure sufficiently precise comparison of operations, it would be necessary to continue updating the Handbook on regular basis, taking into account the latest scientific evidence. In addition, consistency and complementarity with the upcoming CEEU has to be ensured.

allow support measures to have an effect. The list of monitoring data to be covered by the report will be updated. A review clause for the assessment of the need to continue the support and its suitability will be included as well as an obligation on Member States to notify to the Commission their upcoming support schemes. The Commission has to publish this information.

For support tools, all PO-B sub-options require Member States to reduce operational costs (PM9) as well as to provide support for technological upgrades (PM11) (at least one tool for each). However, Member States can choose their own tools from the Toolbox to adapt the support to national circumstances within the given limits. Furthermore, Member States are called upon to establish start-up support measure for new intermodal routes, in particular in case of new terminals (PM10). Member States are also called on not to support operations that are longer than the established cost-competitiveness distances to avoid inefficiencies and/or windfall profits (PM12). Sectoral State aid guidelines and block exemptions, where available, will apply. All PO-B sub-options would include a regulatory benefit exempting road-legs of eligible operations from fixed driving bans (night-time, weekend and holiday driving bans) (PM13).

For terminal transparency and cooperation, the measures are the same as in PO-A.

Policy option C (PO-C) establishes the strongest EU level intervention. It applies to all intra-EU operations except those that do not have a road-alternative. The eligibility is the same as for PO-A and PO-B2 suboptions, based on a wider set of externalities at a 40% threshold (PM2-all-intra-EU). Like in other options, the data to be provided for proof of eligibility will be reviewed and tied to eFTI platforms (PM3).

The Commission's biennial reporting obligation will be replaced by Member States' obligation to carry out regular analysis and strategic planning that covers the full transport system and includes cross-modal analysis (PM5). This enables to assess the efficiency of the measures in terms of the objectives of increasing the share of rail, SSS and IWW transport in total intra-EU freight transport. In this context, Member States will have an obligation to gather data on intermodal operations in the respective modal combinations.

For support tools, it obliges Member States to provide harmonised support to reduce the cost of (the part of) eligible operations taking place in their territory at the level that induces uptake of intermodal transport (PM7). This support level is assessed to be 10% of total door-to-door cost of the operation for the shipper (for more details, see section 6.1.1 and Annex 4, section 3.3.1). PO-C would also include a regulatory benefit exempting road-legs of eligible operations from fixed driving bans, as in PO-B (PM13).

For data interoperability, PO-C provides establishing a defined data set that needs to be interoperable and can be shared across the transport chain (PM14). In addition, an obligation is established on Member States and private parties to ensure the use of common data sets and data exchange protocols between transport modes and different parties in intermodal operations, based on the ongoing work of the Digital Transport and Logistics forum (PM15). The measures for terminal transparency (PM16 and PM17) are the same as in PO-A and PO-B.

5.3. Measures and options discarded at an early stage

5.3.1. Discarded policy measures

Regarding the scope, the possibility to extend the coverage of the CTD to all multimodal (rather than only intermodal) operations was evaluated but discarded as being technically unfeasible. In addition, a measure to extend the support to all intermodal operations, including to the parts taking place outside of EU territory was discarded due to high financial costs and implementation difficulties.

As regards support measures, a call for Member States to provide any support without target support level and guidance from the Toolbox (as in PM8) was discarded as ineffective.

Finally, a measure to establish common data standards only for eligible intermodal operations was discarded as ineffective, as was the measure of a voluntary industry-driven terminal categories framework. Establishment of EU

freight transport horizontal and vertical cooperation platforms was discarded as technically questionable and more suitable for private initiatives.

A more detailed description of discarded policy measures is given in Annex 7.

5.3.2. Policy options discarded at an early stage

One sub-option of PO-A, using GHG savings rather than a wider set of externalities, was discarded given its limited contribution to the objectives. Following the analysis on the externalities' savings thresholds, two additional sub-options of PO-B were discarded. Sub-option PO-B1', where the GHG savings level was 40%, was discarded because IWW would never be eligible and SSS would not be eligible as of 2040. PO-B2', where a wider set of externalities savings level was 25%, was discarded as having too low threshold, whereby all operations on rail would have been eligible, even those where the rail leg would be less than 10% of total distance.

6. WHAT ARE THE IMPACTS OF THE POLICY OPTIONS?

This section summarises the main expected economic, social and environmental impacts of each policy option⁹⁹. The proposed measures are assumed to be implemented from 2025 onwards, so the assessment has been undertaken for the 2025-2050 period and refers to EU-27. Costs and benefits are expressed as present value over the 2025-2050 period, using a 3% discount rate. Further details on the methodological approach are provided in Annex 4.

6.1. Economic impact

The assessment of the economic impacts includes the costs which the various policy options entail for national public administrations, for the European Commission and for the businesses. A quantitative assessment of the impacts on volumes of intermodal transport and on administrative, adjustment and economic support costs as well as cost savings for businesses and public authorities per policy measure and policy option has been performed and is presented in detail in Annex 4. In addition, this section covers the impacts on the competitiveness of intermodal transport and GDP, SMEs, digital by default¹⁰⁰, the functioning of the internal market and competition, energy consumption and regional distribution. The economic impacts result from the changes of the market price of intermodal transport and the resulting modal shift, on the one hand, and increased budgetary contribution by Member States, on the other hand.

6.1.1. Impact on competitiveness of intermodal transport, modal shift and GDP

The support to be provided by Member States to eligible intermodal operations is aimed at achieving a reduction in the transport prices for senders of goods - the shippers, allowing operations that today are not price-competitive with road-only transport to have a comparable or lower price than a road operation on same distances. This is expected to motivate the shippers to choose more intermodal transport for their transport needs. The TRUST model has been used to estimate the impact on modal shift due to a reduction in transport costs (for the non-road legs of the intermodal operations) and transshipment costs brought about by the support measures, while considering the multimodal transport network embedded in the model. More explanations about the model are provided in Annex 4.

Evidence of the effectiveness of economic support measures on the uptake of intermodal transport and modal shift can be found in various applications across the EU. Results of the Marco Polo I programme (2003-2006) that amounted to EUR 41.8 million of funding, showed that funded actions resulted in a modal shift of 21.9 billion tkm away from road. Marco Polo II programme (2007-2013) had a longer duration, with final funding of EUR 99.8 million, and included two new types of actions (Motorways of the Sea and traffic avoidance). The funding intensity was also doubled, from 1 to 2 EUR for each 500 tkm shifted away from road (i.e. from 0.002 to 0.004 EUR per tkm

⁹⁹ The analysis in this section is based on Ricardo et al. support study (2023), and on the analysis of stakeholders' feedback.

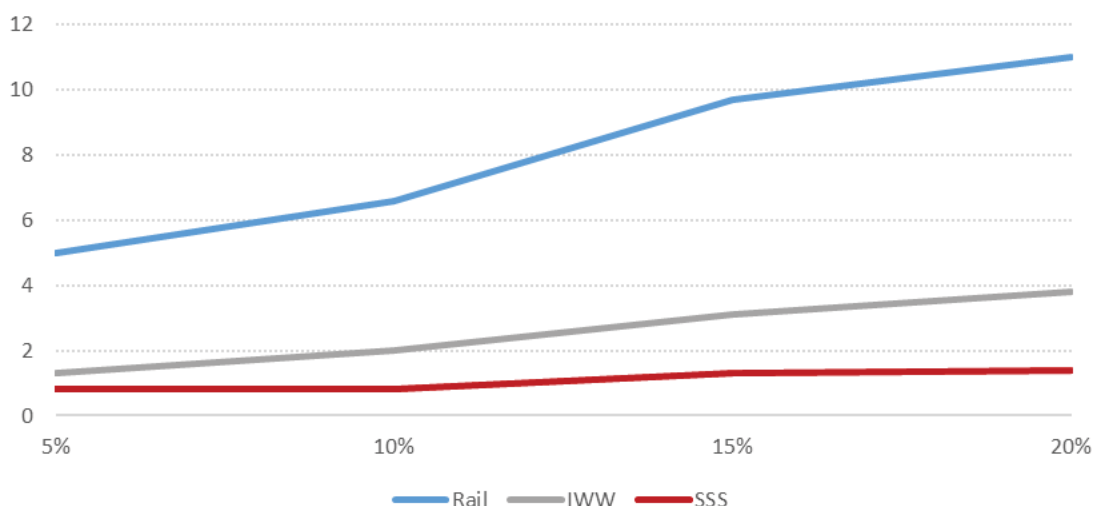
¹⁰⁰ https://ec.europa.eu/info/sites/default/files/file_import/digitally-transformed_user-focused_data-driven_commission_en.pdf

shifted). Considering all modal shift actions, Marco Polo II programme is estimated to have resulted in 35 billion tonne-kilometres shifted away from road, of which 19.5 bn tkm to rail, 14.8 bn tkm to SSS and 0.7 bn tkm to IWW. In addition, as explained in Annex 4, the results of Marco Polo II programme showed that each new intermodal service can shift between 815,000 and 846,000 tkm off the road (to rail and SSS services), and about 260,000 tkm in the case of IWW services¹⁰¹. Additional explanations on the Marco Polo programme and evidence from other support measures (Ferrobonus and Ecobonus in Italy, aid for rail transport in certain intermodal transport services and aid for innovative combined transport in Austria) at national level are included in Annex 14.

The impact on modal shift driven by the three policy options is a function of eligibility (how many operations are eligible to be supported) and different approaches to support it.

To identify the necessary level of support for making intermodal operations price-competitive, the analysis focussed on the average break-even distances, i.e. the shortest distance at which intermodal operations will become price-competitive with road-only operations, as discussed in section 2.1.1. Getting more operators to choose intermodal transport means in practice that the break-even distances in the future have to be shorter than today. This will depend on the share of costs supported by Member States. A limited cost-benefit analysis was carried out to establish what levels of support would provide which decrease in the break-even distances and which impact on volumes of modal shift, while also keeping in mind that increased support means a higher budgetary burden for Member States. Model simulations were used to estimate the stand-alone impact of reducing the costs on the break-even distance and on modal shift (i.e. without considering any eligibility condition), as shown in Figure 9. The analysis was carried out by reducing the door-to-door costs by 5%, 10%, 15% and 20%, and the impact on the distances at which the intermodal operation would become cost-competitive with road-only transport was estimated. Based on stakeholder consultation, literature review and modelling, the reasonable support level (aid intensity) to compensate for the price gap between road-only and intermodal transport that would induce modal shift was assessed to be between 10% and 15%. A lower level than 10% will not result in sufficient price reduction to motivate operators to shift their operations to intermodal. A higher level will bring the break-even distances to levels where operations are not competitive for reasons other than price (transit time and inconvenience). Considering that higher support levels also bring along higher budgetary costs for Member States, 10% has been chosen for the purpose of this impact assessment. For further details on the related assessment of support level, see Annex 4, section 3.3.1.

Figure 9: Impacts of different levels of door-to-door cost reduction (% increase in intermodal transport activity compared to the baseline)



Source: Ricardo et al. support study (2023)

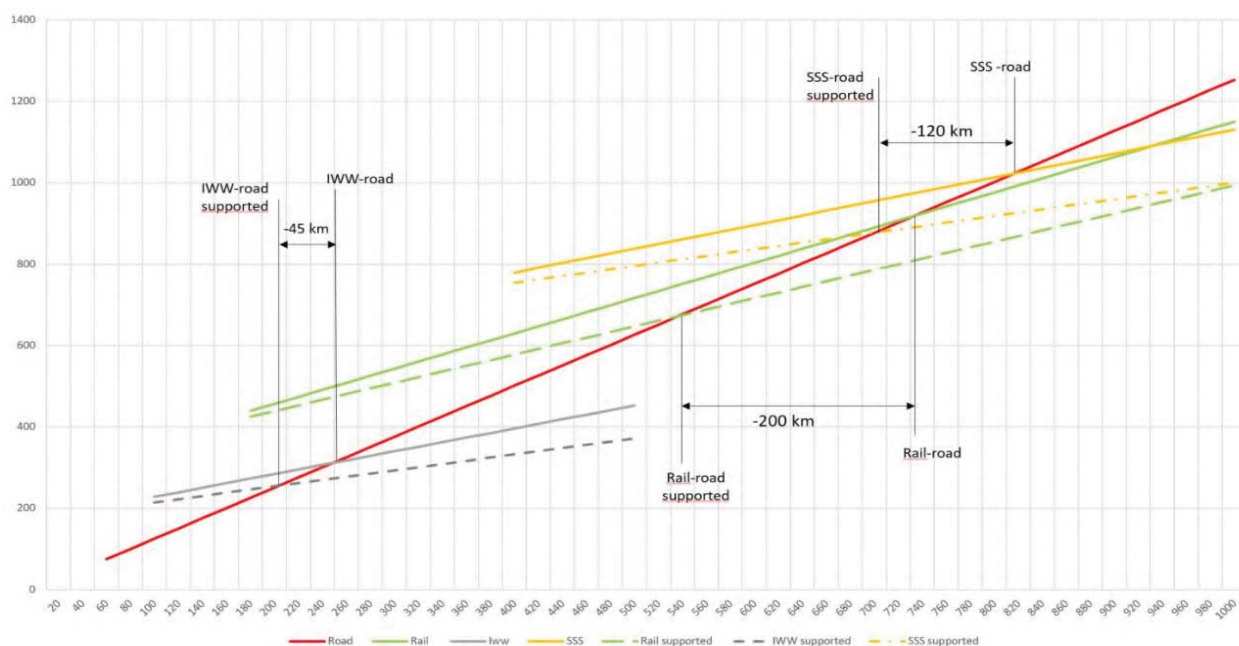
This level of support will not make all intermodal operations price-competitive, but rather will reduce the break-even distance and thus make more medium-long distance intermodal operations interesting for shippers. The

¹⁰¹ INEA (2020), Marco Polo II Programme, Final report.

short distance operations will not become price-competitive but are also less likely to shift to intermodal for other reasons, mostly due to longer transport time when terminal operations are involved. At the same time, long distance operations are already price-competitive and do not require additional economic support. Thus, the impact will be concentrated on medium-long intermodal operations between the distance threshold where they are already competitive and a new lower threshold where they will not become competitive due to reasons beyond cost-competitiveness. The assessment also takes into account the expected developments over time in the efficiency and prices of road-only transport and the resulting risk of reverse modal shift – the risk that some intermodal operations could move back to road-only transport if road transport becomes more competitive and the break-even distances of road and intermodal transport increase instead of decreasing.

Figure 10 represents the break-even distances at which operations can become price-competitive with the proposed support of 10%, *ceteris paribus*. The impact is different on different modal combinations. The biggest impact will be felt on RR, where door-to-door operations up to 200 km shorter than today will become price competitive, with lower average competitive distance after support being 533 km (from which 417 km on rail). The smallest impact will be on IWW operations, where 45 km shorter operations, at around 204 km (from which 184 on barge) will become price-competitive. SSS operations will figure in the middle with reduction of break-even distance by 120 km to 697 km (from which 541 km on sea).

Figure 10: Average cost-competitive door-to-door distances in intermodal transport without and with the support proposed in this revision, per modal combination (cost in EUR and km)



Source: Ricardo et al. support study (2023)

The assessment also considers other factors that impact the decisions of shippers beyond price – availability of infrastructure, suitable connections, delivery time etc., meaning that not all operations within those distance bands will shift to intermodal.

The final impact on new price-competitive break-even distances depends on the level of final effective support passed through to final users. The 2014 study on CT¹⁰² concluded, supported by the experience of DG Competition, that the pass-through of the support depends on who are the beneficiaries as well as specific conditions of a scheme. It is thus important that beneficiaries, conditions and level of support are established in a way that induce changes in the behaviour of those taking the decision on modal choice. This is also part of the assessment carried out by DG Competition of the State aid measures notified by Member States.

¹⁰² KombiConsult (2014), op. cit.

The additional volumes of intermodal operations in 2030 and 2050, relative to the baseline, are presented in Table 5. Cumulatively over 2025-2050, PO-A is expected to achieve a total additional volume of intermodal operations of 24.6 bn tkm relative to the baseline. The modest increase is a result of the fact that in PO-A providing support will be voluntary, meaning little change compared to the baseline is expected. In PO-B and PO-C, the volumes are expected to grow at a considerably higher rate, with the growth increasing considerably between 2030 and 2040. Cumulatively over 2025-2050, the total additional volume for PO-B1 would be 1,388 bn tkm, for PO-B2a 1,391 bn tkm, for PO-B2b 1,072 bn tkm, and for PO-C 829 bn tkm¹⁰³. The difference between PO-B1 and PO-B2a stems from different eligibility, in particular the fact that in PO-B1 the eligibility is based only on GHG savings, which makes most IWW and some SSS operations not eligible already before 2040. The difference between PO-B2a and PO-B2b stems from the different scope, with PO-B2a covering all intra-EU operations (including domestic) while PO-B2b only cross-border intra-EU operations. The total additional volume in PO-C is smaller than in PO-B mostly because of removal of existing regulatory measures, including the equivalent treatment of international combined transport with international road transport as regards the use of non-resident hauliers (Article 4) that is considered today the most important regulatory benefit by stakeholders. All policy options contribute towards SDG 9 (Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation).

Table 5: Modal shift (traffic volume of new non-road legs) and total intermodal transport (incl. road legs) that would be induced by different POs and growth compared to the baseline in 2030 and 2050 (bn tkm)

	2030			2050			2030		2050	
	Rail	IWW	SSS	Rail	IWW	SSS	Total intermodal	% growth	Total intermodal	% growth
PO-A	0.2	0.0	0.1	1.0	0.0	0.2	0.38	0.1%	1.6	0.2%
PO-B1	17.0	0.3	11.3	36.7	0.04	14.2	37.9	5.4%	66.1	6.5%
PO-B2a	16.6	0.6	11.5	36.8	0.8	14.7	37.7	5.3%	67.5	6.6%
PO-B2b	13.5	0.6	10.7	24.3	0.8	11.9	32.8	4.6%	48.1	4.7%
PO-C	8.4	0.2	5.3	25.9	0.3	9.8	18.3	2.6%	46.7	4.6%

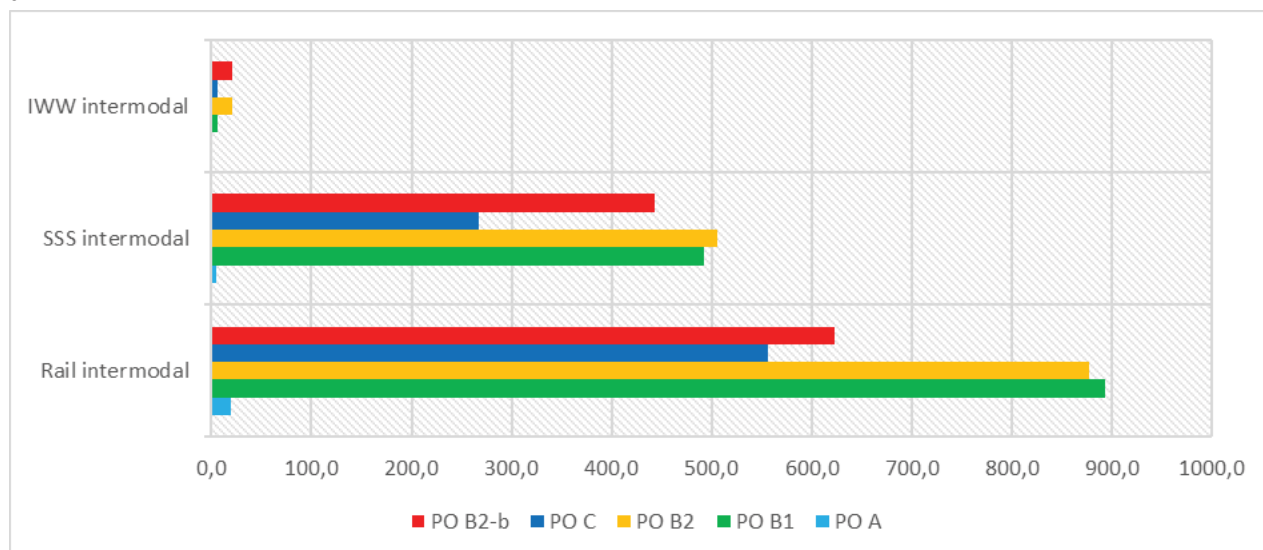
Source: Ricardo et al. support study (2023)

It is important to point out that in the sub-option PO-B1 with the GHG-only eligibility criterion, most IWW operations will not be eligible for support during the second half of the analysed period¹⁰⁴, while almost all RR operations, including those where the rail leg is very short and road legs are longer than rail leg would be eligible. The increase in rail compensates for the loss in IWW and the total impact for PO-B1 is similar to PO-B2a both in each year as well as over the period of 2025-2050, relative to the baseline. The impact of PO-B2b is projected to be lower than that of PO-B2a due to the fact that it covers only cross-border intra-EU operations.

¹⁰³ The objective of the initiative is to induce a substitution effect. The income effect, as shown by the modelling results, is limited in all policy options (i.e. the increase in the total transport activity is lower than 0.2% relative to the baseline for all time periods). This is because the demand for freight transport depends on the demand and supply of goods and the price elasticity of demand for freight transport is low. Furthermore, support will not bring the price lower than currently charged for road transport services.

¹⁰⁴ The fact that most IWW operations will not be eligible under PO-B1 during the second half of the period is due to the fact that the greenhouse gas emissions performance of road transport is projected to significantly improve over time and catch up with that of IWW. This is not due to lower ability to reduce greenhouse gas emissions from IWW relative to road transport. It rather reflects the EU level and Member States level policies implemented and proposed so far, and included in the baseline. As different regulatory and market-based measures are phased in (reducing and internalising the external costs) the relevance and eligibility criteria in the CTD will need to be reassessed and adjusted.

Figure 11: Additional intermodal volume per policy option and mode over 2025-2050, relative to the baseline, in bn tkm



Source: Ricardo et al. support study (2023)

The increase in the intermodal rail traffic, as envisaged in the best performing policy options (PO-B1 and PO-B2a), is expected to require up to a maximum 3% increase in rail capacity relative to the baseline in 2050 that can be absorbed thanks to better management of the rail capacity¹⁰⁵. In this context, it should be noted that the rail capacity initiative, part of the forthcoming Greening freight package, is expected to bring about an improvement in the management of capacity and traffic that results in visible progress of rail performance¹⁰⁶. This comes in addition to the improvements in infrastructure envisaged in the baseline scenario, due to the proposed revision of the TEN-T Regulation. This includes for the first time an obligation on Member States to ensure sufficient multimodal freight terminal capacity based on dedicated analysis and action plans. Post-2030, terminal capacity is thus expected to increase in line with the demand. The proposal also envisages that the high-quality TEN-T rail network would be gradually completed in three steps: 2030 for the core network, 2040 for the extended core network and 2050 for the comprehensive network, as explained in section 5.1.1.

The increase in the competitiveness of intermodal transport operations is expected to have knock-on effects throughout the entire economy, leveraging the initial impact on the transport sector. This is also expected to lead to positive impacts on GDP. The impact on GDP is however estimated to be small as the proposal does not bring along new transport activity, but rather induces redistribution of operations between the modes. All policy options are expected to have a small positive impact on GDP (Table 6). The changes are expected mostly due to positive effects on logistics organisers, terminal activity and engagement of more companies in one transport operation. PO-A is estimated to have a very limited impact on GDP relative to the baseline (less than 0.1% increase in 2030 and 2050) because of the limited support given and the low impact on intermodal volumes. The impact of PO-B1 will be larger relative to the baseline (less than 0.1% increase in 2030 and 0.1% increase in 2050), but relatively low compared to PO-B2a, PO-B2b and PO-C (0.1% increase in 2030 and around 0.3% increase in 2050).

Table 6: Increase in GDP compared to the baseline, EU-27, EUR bn (in 2021 prices)

		PO-A	PO-B1	PO-B2a	PO-B2b	PO-C
GDP	2030	0	5	15	15	16
	2050	2	25	68	57	67

Source: Ricardo et al. support study (2023)

¹⁰⁵ As explained in Annex 4, the TRUST model was used as part of the modelling framework for this impact assessment. The TRUST model is a European transport network model simulating road, rail, inland waterways and maritime transport activity. TRUST covers the whole EU and its neighbouring countries and it allows for the assignment of passenger and freight origin-destination (OD) matrices at NUTS3 level (about 1,600 zones) on the multimodal transport network. As explained in Annex 4, the model also reflects the intermodal transport chains.

¹⁰⁶ The preferred policy option estimates a 4% increase in rail capacity by 2050, relative to the baseline.

6.1.2. Impact on national public administrations

Adjustment costs for public authorities. Adjustment costs derive from different obligations on data gathering, analysis and strategic planning under PM4-PM6, where the strongest impact is expected in PO-C mandating new harmonised analysis and strategic planning for freight transport system in Member States (PM5). The recurrent adjustment costs in PO-C are estimated at EUR 1.6 million every 5 years from 2025 onwards, while the one-off costs at EUR 1.1 million for setting up the data gathering system. In PO-A, where the data gathering, analysis and strategic planning for sustainable freight transport remains voluntary (PM4), the recurrent costs are estimated at EUR 0.3 million every 5 years from 2025 onwards, while the one-off costs for setting up additional data gathering systems are EUR 0.2 million. In PO-B, there are no additional costs relative to the baseline for national public authorities. The costs for the European Commission (due to PM6) are discussed in section 6.1.3. Expressed as present value over 2025-2050, the total adjustment costs for national public authorities are estimated at EUR 1.4 million in PO-A (of which EUR 0.2 million one-off costs) and at EUR 7.8 million in PO-C (of which EUR 1.1 million one-off costs)¹⁰⁷.

Economic costs (costs of support) for public authorities. By far the biggest impact on national administrations compared to the baseline is the cost of economic support deriving from extended eligibility and support measures under PM7-PM12 (see Table 7). The differences in these costs depend mostly on eligibility criteria which define how many operations would benefit from support (volume supported), including the scope (all intra-EU operations versus only cross-border intra-EU operations), as well as on the choice of type of support in each policy option.

Table 7: Impacts on recurrent costs and costs savings for public authorities compared to the baseline, EU-27 (million EUR, in 2021 prices)

Applicable policy measures	Difference to the baseline									
	PO-A		PO-B1		PO-B2a		PO-B2b		PO-C	
	2030	2050	2030	2050	2030	2050	2030	2050	2030	2050
Adjustment costs for data gathering, analysis and strategic planning										
PM4	0.3	0.3								
PM5									1.6	1.6
Economic costs – cost of support										
PM7*									1,665.3	2,394.1
PM8	0.0	0.0								
PM9*			246.7	352.2	262.0	437.9	200.3	269.0		
PM10			112.0	0.0	112.0	0.0	112.0	0.0		
PM11			5.1	13.1	5.1	13.1	5.1	13.1		
Administrative costs savings										
PM3	0.2	0.0	0.2	0.0	0.2	0.0	0.2	0.0	0.2	0.0
Total costs	0.3	0.3	363.8	365.4	379.1	451.1	317.4	282.1	1,666.9	2,395.7
Total costs savings	0.2	0.0	0.2	0.0	0.2	0.0	0.2	0.0	0.2	0.0
Net costs	0.1	0.3	363.5	365.4	378.8	451.1	317.2	282.1	1,666.6	2,395.7

Source: Ricardo et al. support study (2023), * The costs of support for PM7 and PM9 reflect the synergies with PM10-PM13 on the intermodal volume eligible for support.

In PO-A the support is voluntary (PM8) and thus Member States are expected to continue with their current support schemes, resulting in no additional operational support relative to the baseline, even if eligibility is theoretically increased (due to PM1). In PO-B1, the additional cost of operational support due to PM9 is estimated at EUR 246.7 million in 2030 and EUR 352.2 million in 2050 relative to the baseline. In PO-B2a, where eligibility is defined through saving 40% of wider set of externalities (PM2-all-intra-EU) for all intra-EU operations and the type of support provided is the same as in PO-B1 (PM9), the cost of operational support is projected to be EUR 262 million in 2030 and EUR 437.9 million in 2050. In PO-B2b, the cost of operational support is projected at EUR 200.3 million in 2030 and EUR 269 million in 2050, lower than in PO-B2a, due to the fact that PO-B2b only covers cross-border intra-EU operations (PM2-cross-border). The cost of harmonised mandatory operational support in PO-C

¹⁰⁷ More detailed explanations of costs by policy measure are provided in Annex 4.

due to PM7 (in combination with eligibility defined under PM2-all-intra-EU) is estimated to be considerably higher as no upper distance limit is applied on operations eligible for operational support (PM12). This is estimated at EUR 1.7 bn in 2030 and EUR 2.4 bn in 2050 relative to the baseline (see Table 7).

The economic cost of PM10 (start-up support) and PM11 (technological upgrade support) apply only in PO-B1, PO-B2a and PO-B2b. They are estimated at EUR 112 million for PM10 and EUR 5.1 million for PM11 in 2030 relative to the baseline. In 2050, no start-up support applies anymore, while the technological upgrade support amounts to EUR 13.1 million (see Table 7).

It needs to be clarified that the cost of operational support due to PM7/PM9 is affected by support provided under PM10 (start-up support) and PM11 (technological upgrade support) in PO-B, and by regulatory support under PM13 (exemptions from driving bans) in both PO-B and PO-C, each of which results in additional intermodal traffic relative to the baseline and thereby increases the volume of operations eligible for operational support¹⁰⁸.

At the same time, in PO-A and PO-B, PM12 limits the obligation to provide operational support only to those operations that are not financially self-sustained, thereby reducing the budgetary burden. The estimates for the cost of support provided above and in Table 7 already reflect all synergies between the support measures included in each option. More detailed explanations are provided in Annex 4.

The total additional economic support by national public authorities relative to the baseline is estimated to be the highest in PO-C (EUR 1.7 billion in 2030 and EUR 2.4 billion in 2050), followed by PO-B2a (EUR 379.1 million in 2030 and EUR 451.1 million in 2050), PO-B1 (EUR 363.8 million in 2030 and EUR 365.4 million in 2050), and PO-B2b (EUR 317.4 million in 2030 and EUR 282.1 million in 2050). In PO-A, where support remains voluntary, no additional costs are expected. Expressed as present value over 2025-2050, the additional economic support is estimated at EUR 34.8 bn in PO-C, EUR 7.5 bn in PO-B2a, EUR 7.2 bn in PO-B1 and EUR 5.3 bn in PO-B2b relative to the baseline. The difference between PO-B1 and PO-B2 sub-options derives from different eligibility criteria.

The estimated economic costs (cost of support) for public authorities in 2030 and 2050, by policy option and Member State compared to the baseline, are provided in Table 8 and Table 9 below. The tables provide both the cost of support in million EUR and as percent of GDP, relative to the baseline. The estimated economic costs (cost of support) for public authorities in 2030 and 2050, by policy measure and Member State compared to the baseline are provided in Annex 4. It should be noted however that due to the nature of the CTD, where the support provided also depends on the applications for support by transport operators, the outcome by Member State may turn out to be different than estimated in this impact assessment. However, the estimates below provide an indication of the order of magnitude of the cost of support.

It should be noted that for 2030, the cost of support is estimated to be up to 0.03% of GDP for Member States in PO-B1 and PO-B2a and up to 0.05% of GDP for Member States in PO-C (see Table 8). For 2050, the cost of support is estimated at up to 0.02% of GDP for Member States in PO-B1 and PO-B2a and up to 0.08% of GDP for PO-C (see Table 9). The higher cost of support, expressed as percent of GDP relative to the baseline, estimated for the Eastern European Member States can be explained by: the absence of support schemes under the current CTD in most of these countries; the higher effectiveness in terms of modal shift of support schemes in these countries, which depends on the relative costs of road and rail transport¹⁰⁹; and, the comparatively lower GDP levels.

¹⁰⁸ It is however important to point out that while the economic support measures PM7-PM9 are complementary to PM10 and PM11, they do not result in “double” support for an operation as the beneficiaries of these support measures are different (See Annex 4 on stakeholders). Support under PM10 and PM11 aims at enabling the operations and increasing their efficiency. When the support under PM10 and PM11 reduces the total cost of operation, the support given under PM7-PM9 will also reduce as the support is relative to the cost of operation.

¹⁰⁹ This is because of the lower road transport costs in these countries.

Table 8: Estimated economic costs (cost of support) for public authorities in 2030, by policy option and Member State, compared to the baseline (million EUR, in 2021 prices, and percent of GDP)

	Economic support (EUR million)					Economic support as percent of GDP				
	PO-A	PO-B1	PO-B2a	PO-B2-b	PO-C	PO-A	PO-B1	PO-B2a	PO-B2-b	PO-C
AT	0.0	7.4	7.8	4.8	36.9	0.00%	0.00%	0.00%	0.00%	0.01%
BE	0.0	13.7	14.5	13.8	100.4	0.00%	0.00%	0.00%	0.00%	0.02%
BG	0.0	4.4	4.7	3.8	31.4	0.00%	0.01%	0.01%	0.01%	0.05%
CZ	0.0	8.2	8.4	7.2	11.0	0.00%	0.00%	0.00%	0.00%	0.00%
CY	0.0	0.0	0.0	0.0	0.0	0.00%	0.00%	0.00%	0.00%	0.00%
DE	0.0	42.8	45.4	32.9	247.7	0.00%	0.00%	0.00%	0.00%	0.01%
DK	0.0	16.2	16.5	15.7	30.7	0.00%	0.00%	0.00%	0.00%	0.01%
EE	0.0	0.7	0.8	0.4	4.4	0.00%	0.00%	0.00%	0.00%	0.01%
ES	0.0	29.7	30.8	28.6	130.7	0.00%	0.00%	0.00%	0.00%	0.01%
EL	0.0	5.8	6.2	5.3	47.2	0.00%	0.00%	0.00%	0.00%	0.02%
FI	0.0	9.2	9.7	8.2	66.1	0.00%	0.00%	0.00%	0.00%	0.02%
FR	0.0	41.1	42.7	35.9	177.3	0.00%	0.00%	0.00%	0.00%	0.01%
HR	0.0	15.8	16.0	14.9	25.7	0.00%	0.03%	0.03%	0.03%	0.05%
HU	0.0	6.6	7.0	2.9	33.1	0.00%	0.00%	0.00%	0.00%	0.02%
IE	0.0	0.0	0.0	0.0	0.2	0.00%	0.00%	0.00%	0.00%	0.00%
IT	0.0	34.2	35.5	33.3	149.1	0.00%	0.00%	0.00%	0.00%	0.01%
LV	0.0	2.8	2.9	1.5	16.1	0.00%	0.01%	0.01%	0.00%	0.04%
LT	0.0	3.5	3.7	0.7	17.7	0.00%	0.01%	0.01%	0.00%	0.03%
LU	0.0	0.1	0.1	0.1	0.4	0.00%	0.00%	0.00%	0.00%	0.00%
MT	0.0	0.0	0.0	0.0	0.0	0.00%	0.00%	0.00%	0.00%	0.00%
NL	0.0	52.2	54.6	53.5	293.3	0.00%	0.01%	0.01%	0.01%	0.03%
PL	0.0	22.4	23.0	19.2	64.9	0.00%	0.00%	0.00%	0.00%	0.01%
PT	0.0	6.1	6.5	6.4	46.8	0.00%	0.00%	0.00%	0.00%	0.02%
RO	0.0	7.1	7.6	2.1	39.2	0.00%	0.00%	0.00%	0.00%	0.01%
SE	0.0	10.2	10.8	4.0	62.7	0.00%	0.00%	0.00%	0.00%	0.01%
SI	0.0	15.6	15.8	14.8	22.6	0.00%	0.03%	0.03%	0.02%	0.04%
SK	0.0	7.9	8.0	7.3	9.6	0.00%	0.01%	0.01%	0.01%	0.01%
EU-27	0.0	363.8	379.1	317.4	1665.3	0.00%	0.00%	0.00%	0.00%	0.01%

Source: Ricardo et al. support study (2023)

Table 9: Estimated economic costs (cost of support) for public authorities in 2050, by policy option and Member State, compared to the baseline (million EUR, in 2021 prices, and percent of GDP)

	Economic support (EUR million)					Economic support as percent of GDP				
	PO-A	PO-B1	PO-B2a	PO-B2-b	PO-C	PO-A	PO-B1	PO-B2a	PO-B2-b	PO-C
AT	0.0	14.0	17.1	7.4	69.5	0.00%	0.00%	0.00%	0.00%	0.01%
BE	0.0	18.3	22.8	17.2	136.4	0.00%	0.00%	0.00%	0.00%	0.02%
BG	0.0	4.9	6.3	4.4	38.4	0.00%	0.01%	0.01%	0.01%	0.05%
CZ	0.0	5.4	6.6	3.4	27.0	0.00%	0.00%	0.00%	0.00%	0.01%
CY	0.0	0.0	0.0	0.0	0.0	0.00%	0.00%	0.00%	0.00%	0.00%
DE	0.0	65.8	82.5	51.5	387.1	0.00%	0.00%	0.00%	0.00%	0.01%
DK	0.0	7.0	8.5	7.0	51.5	0.00%	0.00%	0.00%	0.00%	0.01%
EE	0.0	1.3	1.6	0.7	7.1	0.00%	0.00%	0.00%	0.00%	0.01%
ES	0.0	26.8	32.6	21.8	200.0	0.00%	0.00%	0.00%	0.00%	0.01%
EL	0.0	7.5	9.1	7.4	63.1	0.00%	0.00%	0.00%	0.00%	0.02%
FI	0.0	11.1	13.6	9.2	80.2	0.00%	0.00%	0.00%	0.00%	0.02%
FR	0.0	41.4	50.6	33.7	259.1	0.00%	0.00%	0.00%	0.00%	0.01%
HR	0.0	4.1	5.0	3.1	26.5	0.00%	0.01%	0.01%	0.00%	0.04%
HU	0.0	10.6	12.9	5.0	53.1	0.00%	0.00%	0.00%	0.00%	0.02%
IE	0.0	0.1	0.1	0.0	0.3	0.00%	0.00%	0.00%	0.00%	0.00%
IT	0.0	30.5	37.4	25.4	208.0	0.00%	0.00%	0.00%	0.00%	0.01%

	Economic support (EUR million)					Economic support as percent of GDP				
	PO-A	PO-B1	PO-B2a	PO-B2-b	PO-C	PO-A	PO-B1	PO-B2a	PO-B2-b	PO-C
LV	0.0	6.9	8.4	2.2	38.0	0.00%	0.02%	0.02%	0.00%	0.08%
LT	0.0	5.1	6.1	1.3	25.6	0.00%	0.01%	0.01%	0.00%	0.04%
LU	0.0	0.2	0.2	0.2	1.0	0.00%	0.00%	0.00%	0.00%	0.00%
MT	0.0	0.0	0.0	0.0	0.0	0.00%	0.00%	0.00%	0.00%	0.00%
NL	0.0	42.8	53.9	46.1	345.3	0.00%	0.00%	0.00%	0.00%	0.03%
PL	0.0	18.5	22.7	11.3	115.9	0.00%	0.00%	0.00%	0.00%	0.01%
PT	0.0	8.0	9.7	8.3	62.5	0.00%	0.00%	0.00%	0.00%	0.02%
RO	0.0	10.4	13.3	3.6	57.8	0.00%	0.00%	0.00%	0.00%	0.01%
SE	0.0	16.6	20.1	6.5	97.7	0.00%	0.00%	0.00%	0.00%	0.01%
SI	0.0	4.9	6.0	3.3	27.4	0.00%	0.01%	0.01%	0.00%	0.03%
SK	0.0	3.1	3.8	2.2	15.6	0.00%	0.00%	0.00%	0.00%	0.01%
EU-27	0.0	365.4	451.1	282.1	2394.1	0.00%	0.00%	0.00%	0.00%	0.01%

Source: Ricardo et al. support study (2023)

Administrative costs for public authorities. Administrative cost savings are estimated for public authorities deriving from the mandatory use of eFTI platforms with clear and relevant data requirements (PM3), thanks to which eligibility checks at road-side will become 10% quicker. Considering that intermodal pre- and post-haulage (i.e. road legs of intermodal transport) represents nearly 10% of road transport operations in EU-27, the administrative cost savings for authorities are estimated at EUR 0.2 million per year from 2025 onwards. The savings are the same for all policy options. It should be noted that costs savings are assumed to occur only until 2035 as post-2035 eFTI and the digitalisation of transport information is expected to be widely in use in the baseline. Expressed as present value over 2025-2050, the administrative costs savings are estimated at EUR 2.3 million relative to the baseline in all policy options.

Net costs/costs savings for public administrations. Expressed as present value over 2025-2050, PO-A is expected to lead to total costs savings for public administrations estimated at EUR 0.9 million¹¹⁰, while PO-B and PO-C result in net costs. The highest net costs are projected in PO-C (EUR 34.8 bn), followed by PO-B2a (EUR 7.5 bn), PO-B1 (EUR 7.2 bn) and PO-B2b (EUR 5.3 bn). The largest share of the costs originates from economic support to intermodal transport.

6.1.3. Impact on the European Commission

Two measures are expected to lead to adjustment costs for the European Commission, namely PM6 (included in PO-B) and PM17 (included in all policy options). For PM6, the costs are estimated at EUR 0.3 million every five years to prepare the market monitoring report under PO-B (EUR 1.7 million expressed as present value over the period 2025-2050 relative to the baseline). In relation to the preparation of the implementing acts under PM17 in PO-A, PO-B and PO-C, as additional research is needed to establish the relevant criteria for terminal categories, one-off costs of EUR 0.3 million are foreseen for a study. More details on the costs are provided in Annex 4. Total adjustment costs for the European Commission, expressed as present value over 2025-2050 relative to the baseline, are estimated at EUR 2 million in PO-B and EUR 0.3 million in PO-A and PO-C (of which EUR 0.3 million one-off costs in PO-A, PO-B and PO-C). No other costs are projected for the European Commission.

6.1.4. Impact on businesses

The shippers and transport organisations that choose to benefit of this proposal will face adjustment costs and administrative costs but they will also benefit of administrative costs savings compared to the baseline. Detailed explanations on costs and costs savings for businesses, by policy measure, are provided in Annex 4. In addition, the shippers will have a wider choice of transport options and benefit of easier entry to the market, in particular thanks

¹¹⁰ In PO-A the recurrent adjustment costs due to PM4 are occurring every 5 years, while the administrative costs savings driven by PM3 every year for 2025-2035. Expressed as present value over 2025-2050 the total adjustment costs are lower than the total administrative costs savings, thus resulting in net costs savings. The calculation also takes into account the one-off adjustment costs due to PM4.

to the new terminal transparency obligation. The freight forwarders and logistics operators and connection organisers engaged in organising intermodal transport operations as well as transport operators in rail and waterborne transport and terminal operators are expected to experience an increase in business opportunities, as intermodal volumes increase.

Adjustment costs (one-off) for businesses. The total adjustment costs relative to the baseline are estimated to be highest in PO-C (EUR 28.3 million) mostly due to the one-off costs for revising the internal information and data sharing protocols by businesses under PM15 and establishing a common harmonised data set for communication under PM14, followed by PO-A and PO-B (EUR 0.3 million). No data related requirements are envisaged in PO-A and PO-B as these are left to other future EU instruments to ensure wider application.

One-off adjustment costs will occur for the eFTI platform providers (EUR 0.05 million, in all policy options) and for the terminal operators (EUR 0.21 million, in all policy options), who will be required to provide information on their services and facilities on their homepages (PM16) and assess and show their category (PM17). The recurrent costs for PO-A, PO-B and PO-C linked to transparency requirements and the need for regularly updating data (due to PM16) are reported under administrative costs below.

Table 10: Impacts on one-off adjustment costs for businesses compared to the baseline, EU-27 (million EUR, in 2021 prices)

Applicable policy measures	Difference to the baseline				
	PO-A	PO-B1	PO-B2a	PO-B2b	PO-C
PM3	0.05	0.05	0.05	0.05	0.05
PM14					5.60
PM15					22.41
PM16	0.18	0.18	0.18	0.18	0.18
PM17	0.03	0.03	0.03	0.03	0.03
Total one-off adjustment costs	0.26	0.26	0.26	0.26	28.28

Source: Ricardo et al. support study (2023)

Administrative costs for businesses. Three measures are expected to lead to administrative costs for businesses, namely PM16 (in all policy options) due to the transparency requirements and the need for regularly updating data, and PM10, PM11 and PM16 (in PO-B) for the application process and the need to comply with the potential ex-post reporting by those operators who choose to benefit from economic support. The administrative costs for the application process and ex-post reporting (PM10 and PM11) are estimated at EUR 0.38 million in PO-B1 and PO-B2a in 2030 and at EUR 0.22 million in PO-B2b. For 2050, they are estimated at EUR 0.39 million in PO-B1, EUR 0.42 million in PO-B2a and EUR 0.19 million in PO-B2b (where the scope includes only cross-border intra-EU operations), relative to the baseline (see Table 11). They are however not counted towards the ‘one in, one out’ approach.

As explained above, the transparency requirements and the need for regularly updating data under PM16 also lead to administrative costs for businesses in PO-A, PO-B and PO-C. It is not possible to assess with precision how often terminals upgrade their services and facilities, but the efforts are expected to be limited, amounting to not more than 1 hour of work every 5 years for gathering the information and updating the homepage. To estimate the costs, the number of intermodal terminals in the EU (980) and the tariffs per hour for ISCO 3 (Technicians and associate professionals) have been used (31.1 EUR/hour). The recurrent administrative costs are thus estimated at EUR 0.03 million (every 5 years). For the purpose of the *application of the ‘one in, one out’ approach*, the annual average cost per terminal, spreading the 5-years costs annually, is estimated at 6.2 EUR. Considering the 980 intermodal terminals in the EU, the average annual costs are estimated at EUR 6,100.

Total administrative costs for businesses are estimated to be highest in PO-B2a relative to the baseline (EUR 0.41 million in 2030 and EUR 0.46 million in 2050), followed by PO-B1 (EUR 0.41 million in 2030 and EUR 0.42 million in 2050), PO-B2b (EUR 0.25 million in 2030 and EUR 0.22 million in 2050), and PO-A and PO-C (EUR 0.03 million in 2030 and 2050). Expressed as present value over 2025-2050, they are

estimated at EUR 6.6 million in PO-B2a, EUR 6.4 million in PO-B1, EUR 3.2 million in PO-B2b and EUR 0.1 million in PO-A and PO-C.

Administrative costs savings for businesses. Businesses will also incur recurrent administrative cost savings due to PM3 (proof of eligibility), PM6 (reporting by the Commission) and PM7-PM9 (support measures). In PM3 (included in all policy options) the proof of eligibility is implemented via the eFTI platforms, and operators engaged in intermodal transport will benefit from not having to manage paper-based transport documents, in particular for road-side checks. In addition, the operators will benefit from updated data requirements that allow to check the eligibility faster at road-side checks. The costs savings due to the use of electronic data and appropriate data requirements are estimated to be on average 5 EUR per shipment¹¹¹. In order to derive the total administrative costs savings for businesses, the unit cost savings are multiplied by the number of intermodal operations carried out under the different policy options. It must be noted that costs savings are assumed to occur until 2035 as post-2035 eFTI platforms are expected to be widely in use among EU operators; so there will be little case for PM3 to induce costs savings compared to the baseline. The costs savings by policy option in 2030, relative to the baseline, are provided in Table 11. Expressed as present value over 2025-2050, the administrative costs savings due to PM3 are estimated at EUR 3.35 bn in PO-A, EUR 4.08 bn in PO-B1, EUR 4.12 bn in PO-B2a, EUR 3.16 bn in PO-B2b and EUR 5.31 bn in PO-C. For the purpose of the *application of the 'one in, one out' approach*, the average number of eligible operations per year during the 2025-2035 period is estimated at 0.071 bn in PO-A, 0.086 bn in PO-B1, 0.087 bn in PO-B2a, 0.067 bn in PO-B2b and 0.112 bn in PO-C. Applying the unit costs savings of 5 EUR per shipment, the administrative costs savings per year for the 'one in, one out' are estimated at EUR 0.35 bn in PO-A, EUR 0.43 bn in PO-B1 and PO-B2a, EUR 0.33 bn in PO-B2b and EUR 0.56 bn in PO-C.

PM7-PM9 are expected to lead to administrative costs saving for businesses. Operators who decide to apply for economic support will be subject to administrative costs related to the preparation of the application. These costs are only relevant to new applicants relative to baseline. However, the application process for the support under PM7-PM9 will be considerably simplified relative to the baseline thanks to clear eligibility rules (PM1/PM2) and the use of eFTI platforms (PM3) that will simplify the retrieval and submission of information to authorities for those operators that choose to apply for economic support – it will be possible to download the information about eligible operations directly from the eFTI platform. Furthermore, ensuring the same eligibility conditions across EU will allow the organisers of international operations to considerably save time and cost from application preparation as an eligible operation will be eligible across EU the same way¹¹². The administrative costs savings for businesses due to PM7-PM9 in 2030 and 2050, relative to the baseline, are shown in Table 11. Expressed as present value over 2025-2050, they are estimated at EUR 220.1 million in PO-A (due to PM8), EUR 196.4 million in PO-B1 (due to PM9), EUR 192.6 million in PO-B2a (due to PM9), EUR 260.6 million in PO-B2b (due to PM9) and to EUR 172.2 million in PO-C (due to PM7).

Businesses are also expected to enjoy administrative costs savings under PM6 (included in PO-B1, PO-B2a and PO-B2b) thanks to the Commission centrally publishing the information on upcoming support schemes and thus saving operators time to monitor Member States plans in the application process. These savings come in addition to the costs savings for the preparation of the applications under PM7-PM9, and depend on the number of applications for support in PO-B1, PO-B2a and PO-B2b. Table 11 provides the administrative costs savings in 2030 and 2050 for PO-B1, PO-B2a and PO-B2b relative to the baseline. Expressed as present value over 2025-2050, they are estimated at EUR 23.1 million in PO-B1, EUR 23.9 million in PO-B2a and EUR 10.3 million in PO-B2b relative to baseline. Measure PM6, PM7-PM9 are not counted towards the 'one in, one out' approach.

¹¹¹ SWD (2017) 194 final.

¹¹² In the baseline scenario the application preparation is assumed to take 16 hours. All applicants are assumed to save 4.2 hours per request. The Eurostat Labour Force Survey data for Non-Wage Labour Costs (i.e. ISCO 3 – Technicians and associate professionals) has been used (31.1 EUR/hour) to quantify the costs.

Total administrative costs savings for businesses are estimated to be highest in PO-C relative to the baseline (EUR 567.9 million in 2030 and EUR 7 million in 2050), followed by PO-B2a (EUR 444.3 million in 2030 and EUR 10.2 million in 2050), PO-B1 (EUR 443.8 million in 2030 and EUR 10.7 million in 2050), PO-A (EUR 367.7 million in 2030 and EUR 10.9 million in 2050) and PO-B2b (EUR 347.9 million in 2030 and EUR 13.9 million in 2050). Expressed as present value over 2025-2050, they are estimated at EUR 3.57 bn in PO-A, EUR 4.30 bn in PO-B1, EUR 4.34 bn in PO-B2a, EUR 3.43 bn in PO-B2b and EUR 5.48 bn in PO-C.

Table 11: Impacts on recurrent costs and costs savings for businesses compared to the baseline, EU-27 (million EUR, in 2021 prices)

Applicable policy measures	Difference to the baseline									
	PO-A		PO-B1		PO-B2a		PO-B2b		PO-C	
	2030	2050	2030	2050	2030	2050	2030	2050	2030	2050
Administrative costs										
PM10			0.10	0.00	0.10	0.00	0.10	0.00		
PM11			0.28	0.39	0.27	0.42	0.11	0.19		
PM16	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Administrative costs savings										
PM3	355.3	0.0	431.3	0.0	431.7	0.0	332.7	0.0	557.3	0.0
PM6			1.1	1.6	1.1	1.7	0.5	0.8		
PM7									10.5	7.0
PM8	12.4	10.9								
PM9			11.4	9.2	11.5	8.5	14.7	13.2		
Total costs	0.03	0.03	0.41	0.42	0.41	0.46	0.25	0.22	0.03	0.03
Total costs savings	367.7	10.9	443.8	10.7	444.3	10.2	347.9	13.9	567.9	7.0
Net costs savings	367.6	10.8	443.3	10.3	443.9	9.7	347.6	13.7	567.8	7.0

Source: Ricardo et al. support study (2023)

Net costs savings for businesses. All policy options are expected to result in net costs savings for businesses (see Table 11). Expressed as present value over 2025-2050, the net costs savings are estimated to be the highest in PO-C (EUR 5.46 bn) relative to the baseline, followed by PO-B2a (EUR 4.33 bn), PO-B1 (EUR 4.30 bn), PO-A (EUR 3.57 bn) and PO-B2b (EUR 3.43 bn).

6.1.5. Impact on SMEs

Intermodal transport by definition involves many different economic agents. While many operators in rail transport and maritime shipping are medium and some even large companies, operators in road transport, inland waterways and many intermodal organisers are often SMEs. In the road transport sector, in particular, 99% are SMEs (enterprises employing up to 250 people and with a turnover of less than EUR 50 million^{113,114}). Among logistics operators, freight forwarders and terminal operators, the EU has some of the world's largest operators, but also many SMEs. Finally, there are many SMEs among all companies that need their freight to be transported. Therefore, *the initiative is considered relevant for the SMEs* and the SME test has been performed (see Annex 13).

An increase in intermodal transport will have a positive economic impact on all these SMEs. As regards road hauliers, for those engaged today in long-distance road transport that would be replaced by intermodal transport, a change in type of business is expected. An intermodal transport operation usually involves two different road transport operators carrying out the road legs at each end of the operation. While the total number of kilometres driven will reduce - as is the objective of the CTD - the price per kilometre of short distance road legs is higher than of long-distance operations and thus profitability per kilometre is higher. As road hauliers are price setters and not price takers in intermodal operations, a switch from long-haul operations to intermodal road legs is not expected to impact their turnover. In intermodal road legs, the road carriage price is mostly quoted per time or per

¹¹³SWD(2017) 194 final, https://eur-lex.europa.eu/resource.html?uri=cellar:9d5c61bf-4629-11e7-aea8-01aa75ed71a1.0001.02/DOC_1&format=PDF

¹¹⁴https://ec.europa.eu/eurostat/databrowser/view/SBS_SC_1B_SE_R2_custom_3493320/default/table

operation, because a considerable amount of waiting time is involved both at loading and unloading and in terminals for the drivers. In addition, there are less empty truck operations, which otherwise occur due to inability to fill empty trucks on the long-distance return.

As explained in section 6.1.4, all policy options are expected to result in net costs savings for businesses, estimated at EUR 5.46 bn in PO-C, followed by PO-B2a with net costs savings estimated at EUR 4.33 bn, PO-B1 with net costs savings of EUR 4.30 bn, PO-A with net costs savings estimated at EUR 3.57 bn, and PO-B2b with net costs savings estimated at EUR 3.43 bn, expressed as present value relative to the baseline. Considering the large share of SMEs estimated to operate in the intermodal transport sector, a significant share of these net costs savings is expected to be attributed to them although the available data did not allow a split of these costs savings between the two groups of operators (i.e. SME and others).

6.1.6. Digital by default

All policy options will have a positive impact on the application of the 'digital by default' principle, introduced by the common measure on proof of eligibility (PM3) that applies to all policy options. The carriers who wish to benefit from the special regime will be obliged to use a certified eFTI platform for recording their transport data prior to an operation taking place. The eFTI platforms will include a dedicated option for intermodal transport that will pull the data from existing modal transport data sets with the transport organiser only needing to link the different legs. The platform will include a calculator, which on the basis of the information in transport contracts and some additional elements (such as type of the vehicle and fuel used) can calculate the savings in the external costs and will enable both the transport organiser as well as authorities carrying out road-side checks to immediately see if an operation is eligible or not. This will considerably simplify the collection and presentation of the data for the operators, eliminating the need for road hauliers to provide a large number of paper documents covering all intermodal operation legs. It will also simplify and make more robust the control process for the authorities, as eFTI platforms can include a simple but comprehensive confirmation interface for proof of eligibility, including the transport information about each leg and transshipment transaction. Data stored on a certified eFTI platform will be accessible to the authorities in all Member States the operation passes by, and can potentially be used for verification without stopping a vehicle¹¹⁵. Importantly, as explained in sections 6.1.2 and 6.1.4, the use of eFTI platforms will bring along significant administrative cost savings for public authorities, but in particular for businesses. Furthermore, the eFTI platforms can be used by shippers to collate the data on all eligible operations for the purposes of application for economic support. The eFTI platforms can provide an option to download a summary report of all eligible operations in a given timeframe with pre-defined additional information fields required by Member State giving the aid. They can also be used to gather aggregated data on operations chosen to benefit from the CTD on main transport lanes, volumes, distances, types of loading units used, for statistical and analytical purposes.

6.1.7. Impact on the functioning of the internal market and on competition

Internal market. All policy options are expected to have a positive impact on the functioning of the internal market. The CTD does not regulate market access to intermodal transport as such. Access to different modal parts of intermodal transport is regulated in sectoral legislation. However, the regulatory provisions of the CTD ensure full liberalisation of eligible intermodal transport operations from quotas (Article 2), an extension of definition of own-account transport (Article 9) as well as the right to use non-resident hauliers for international operations in the same way as it is allowed for international road transport (Article 4).

Furthermore, this initiative contributes to the creation of a more consistent framework to support intermodal. The proposed harmonised approach to eligibility for support (PM1 in PO-B1 and PM2 in other options) and enforcement via eFTI platforms in all options (PM3) will reduce the burden that the current Member State specific State aid schemes impose on transport organisers and shippers. Similarly, the proposed approach to the selection of economic support measures, where relevant in line with State aid rules (PM7-PM12), the common approach to

¹¹⁵ Digital enforcement initiatives are currently under consideration. In the absence of EU legal framework, for now it depends on national legislation whether remote checks are permitted or not.

weekend/holiday driving bans (PM13) and data and transparency requirements on terminals (PM16-PM17) will improve the market functioning, lower the entry barriers to the use of intermodal transport and reduce the administrative burden. PO-C with mandatory harmonised support (PM7) and strongest intervention, including in addition to terminals' transparency also full data cooperation (PM14, PM15) has the strongest impact on the functioning of the internal market. PO-A with voluntary non-harmonised support (PM8) performs only slightly better than the baseline, due to better defined eligibility (PM2). The PO-B sub-options differ in terms of their scope. PO-B1 and PO-B2a, which cover all intra-EU intermodal operations (PM2-all-intra-EU) perform better from the internal market perspective, given that a common regime for both domestic and international operations would reduce complexity and administrative burdens to the companies which handle both domestic and international operations (81% of intermodal operations are international). In PO-B2b only cross border operations are included (PM2-cross-border), which can lead to higher fragmentation, where Member States decide to apply different or no support regime for the domestic operations.

Competition. Article 93 of TFEU states that State aid shall be compatible with the Treaty if it meets the needs of coordination of transport. The concept has been clarified by the Commission in the State aid Railway guidelines¹¹⁶. The disparities between the different modes of transport as regards negative externalities ought to be corrected by public support for those modes of transport which give rise to the lowest external costs¹¹⁷. The measures proposed in this revision can thus be seen as contributing to the needs of coordination of transport in line with Article 93 TFEU as interpreted by the Commission, if the eligibility is based on saving of the externalities as in PO-A, PO-B2a, PO-B2b and PO-C. In case of PO-B1 and eligibility based on GHG savings, the compatibility with State aid rules would have to be separately assessed by the Commission.

Having an EU-level harmonised definition of eligible operations and a common objective as regards the cost reduction to final users resulting from the Member State's support, reduces the risk of distortion to competition and improves the functioning of the internal market, as shippers and/or intermodal operators from all Member States would benefit from support based on same principles. PO-B sub-options do not prescribe harmonised rules for the design of the aid measures, which are left to the discretion of Member States, nor do they prescribe harmonised rules for eligible costs, beneficiaries or aid intensities, which are conditions assessed under the State aid rules to ensure the compatibility of the aid with the internal market. To that purpose, the close coordination of the current revision of the CTD and the ongoing revision of the State aid Railway guidelines is necessary and key to ensure the consistency of the Commission's transport and competition policies¹¹⁸. Thus, competition and market integration aspects as well as the risk of overcompensation are safeguarded by adherence to the State aid rules.

In case of PO-C, the support would be fully harmonised with no discretion left to Member States. Such support would not create market distortions and not constitute State aid as it would not be imputable to the Member State.

6.1.8. *Regional distribution of impacts*

High road transport volumes affect central and peripheral regions differently and thus the relative benefit of modal shift is more important in central regions where transit traffic volumes are high. These regions have already relatively high intermodal transport volumes as compared to peripheral volumes as well as national support

¹¹⁶ Community guidelines on State aid for railway undertakings, Communication from the Commission [2008/C 184/07](#), GU C 184 del 22.7.2008, p. 13–31.

¹¹⁷ A review of the Commission's case practice in the field of aid for the coordination of transport is available in the Commission's [Fitness check of the 2012 State aid modernisation package, railways guidelines and short-term export credit insurance \(SWD\(2020\) 257 final\)](#), annex 6 Section V (p. 33) and annex 8, Section VII, p. 132 ff.

¹¹⁸ The new Council Regulation, proposed in the context of the revision of the State aid Railway Guidelines, will enable the Commission to declare certain categories of State aid to greener modes of transport compatible with the internal market. These include certain types of aid in favour of rail, inland waterway and multimodal transport. In particular, aid supporting the coordination of transport, i.e. aid provided not to a transport operator, but to a shipper or transport organiser, has a very limited potential of distorting competition. Following the adoption of the proposed Regulation by the Council, the Commission intends to adopt a Block Exemption Regulation relieving Member States from the obligation of prior notification to the Commission of aid measures falling within these categories.

programs in place to motivate uptake of intermodal transport. However due to high transport volumes in general, the potential for modal shift remains high also in these regions. On the other hand, many peripheral regions today have very low levels of intermodal transport, both because low terminal density as well as no support to intermodal transport. Establishing any support schemes can have a considerable effect, in particular after the terminal capacity increase once the revised TEN-T Regulation takes effect. The highest positive effect is expected in PO-B2a, where the increase in the intermodal volumes relative to the baseline is the highest (see Table 5), followed by PO-B1, PO-B2b, PO-C, and PO-A. PO-B2b, which excludes domestic operations from the scope has lower impacts, given that some Member States may decide not to support these operations. It should be noted that under any option, Member States can go beyond the legal minimum established in the CTD and use different support measures to tackle their regional circumstances, subject to the adherence to the State aid rules, where relevant.

6.1.9. Impact on energy consumption

All policy options are expected to lead to a decrease in energy consumption in the transport sector relative to the baseline due to the higher uptake of intermodal transport, which is more energy efficient than road-only transport as explained in section 2.1.2. PO-A is expected to bring along only a small increase in intermodal traffic and thus limited energy savings relative to the baseline. Cumulatively over 2025-2050 they are estimated at 86 kilo tonnes of oil equivalent (ktoe). The cumulative energy savings over 2025-2050 are estimated to be the highest in PO-B1 (10.9 million tonnes of oil equivalent (Mtoe)), followed by PO-B2a (10.5 Mtoe), PO-B2b (7.3 Mtoe) and PO-C (3.7 Mtoe). All policy options contribute towards SDG 11 (Make cities and human settlements inclusive, safe, resilient and sustainable).

Table 12: Energy savings compared to the baseline in 2030, 2050, and cumulatively over 2025-2050, EU-27, (in ktoe)

		PO-A	PO-B1	PO-B2a	PO-B2b	PO-C
Energy consumption	2030	3	416	401	242	154
	2050	3	177	174	82	19
	2025-2050	86	10,883	10,472	7,311	3,719

Source: Ricardo et al. support study (2023)

6.2. Social impact

This section assesses the impacts of the policy options on road safety and congestion, on employment and fundamental rights.

6.2.1. Impact on road safety and on congestion

Road safety remains one of the priorities of the EU with clear goals for the reduction of road deaths and serious injuries by 2030 and 2050, to which the Road Safety Package recently proposed by the Commission would also contribute. On top of that, all policy options are projected to have positive impacts on road safety, leading to lives saved and injuries avoided due to the traffic shifted away from road-only transport. In PO-A, the shifted traffic is very small and thus the decrease in the external costs of accidents (fatalities and injuries) is limited, i.e. EUR 102 million relative to the baseline, expressed as present value over 2025-2050 (see Table 13). The impact is the highest in PO-B2a (EUR 1.7 bn external costs savings), followed by PO-B1 (EUR 1.5 bn), PO-B2a (EUR 1.2 bn) and PO-C (EUR 0.5 bn). Similarly, the effect on congestion¹¹⁹ depends on the type of intermodal transport used, the location of terminals and the volumes shifted away from road-only transport under a given option. Intermodal transport non-road legs take place normally between urban nodes, while road legs deliver the goods to and from the shipper and recipient. The situation is somewhat different when the goods are transported to a port (IWW or SSS), that allows to entirely eliminate the road leg on one end of the intermodal transport and thus helping to reduce congestion more. The highest reduction in external costs of congestion is estimated for PO-B2a (EUR 7.6 bn), expressed as

¹¹⁹ Congestion costs refer to road transport, covering both road-only transport and the road legs of intermodal transport operations.

present value over 2025-2050 relative to the baseline, followed by PO-B1 (EUR 7.2 bn), PO-B2b (EUR 5.5 bn), PO-C (EUR 2.8 bn) and PO-A (EUR 0.4 bn)¹²⁰.

Table 13: Reduction in external costs of accidents (fatalities and injuries) and congestion in 2030, 2050 and present value over 2025-2050 relative to the baseline, EU-27 (million EUR, in 2021 prices)

		PO-A	PO-B1	PO-B2a	PO-B2b	PO-C
Accidents	2030	5	73	76	57	25
	2050	3	44	45	33	18
	2025-2050	102	1,547	1,663	1,214	530
Congestion	2030	19	316	338	242	130
	2050	14	215	226	163	88
	2025-2050	427	7,208	7,623	5,481	2,820

Source: Ricardo et al. support study (2023)

6.2.2. Impact on employment

All policy options are expected to lead to a small increase in the economy-wide level of employment relative to the baseline by 2050¹²¹. This is because the shift to intermodal transport solutions involves several transport modes, transshipment and terminal services that will generate more employment. In 2030, the largest increase in the number of jobs created is expected in PO-B2a (24 thousand), followed by PO-C (19 thousand), PO-B2b (15 thousand), PO-B1 (12 thousand). PO-A shows no significant impact relative to the baseline in 2030. In 2050, similarly to 2030, the largest increase in the number of jobs created is expected in PO-B2a (83 thousand), followed by PO-C (81 thousand), PO-B2b (69 thousand), PO-B1 (28 thousand) and PO-A (1 thousand). The main driver of the larger impact in PO-B2a, PO-B2b and PO-C is measure PM2 on establishing the eligibility of operations that achieve savings of 40% of externalities compared to road-only options, combined with the different combinations of measures introducing economic support to eligible intermodal solutions (i.e. PM7-PM10). The impact of PO-B2b is somewhat lower than that of PO-B2a and PO-C due to the lower scope, covering only cross-border intra-EU operations.

Table 14: Increase in economy-wide employment compared to the baseline, EU-27 (in thousand persons)

		PO-A	PO-B1	PO-B2a	PO-B2b	PO-C
Employment	2030	0	12	24	15	19
	2050	1	28	83	69	81

Source: Ricardo et al. support study (2023)

It is also important to consider the impact of the policy options on each transport sector individually. Although the results suggest that the potential job losses in the road transport are offset by increases in employment in the non-road transport sectors, the extent of the losses/gains in each sector is hard to estimate. The skills required for jobs in the different transport modes vary and therefore it is unlikely that there will be a direct job transfer between sectors. However, with re-training, mid-term adjustment should be possible. Given that one intermodal transport operation requires combination of short-haul road with long-haul non-road operations, as well as transshipment and terminal services, it is clear that such a shift away from long-distance road operations will create more “local” higher quality jobs. Therefore, some road transport companies are expected to change the markets they serve, at least in the short-term. On the other hand, the commercial road transport sector faces an increasing demand and a significant shortage of drivers (400,000 for freight)¹²². The shift to intermodal solutions may alleviate to some extent the pressure on the shortage of drivers.

¹²⁰ It should be noted that the modelling results of the policy options account for the external costs associated to all freight transport operations and are not limited to intermodal transport.

¹²¹ This is in line with the results from the 2017 impact assessment, which also pointed to the link between modal shift and the creation of jobs in the intermodal sector.

¹²² IRU driver shortage report 2022.

6.2.3. Impacts on fundamental rights

The policy options were assessed to determine if they have an impact on the fundamental rights and/or equal treatment of EU citizens. The starting point for the assessment of the fundamental rights is the Charter of Fundamental Rights of the European Union¹²³. All four POs were assessed having regard to the relevant EU instrument and it was concluded that they maintain full respect for human and fundamental rights, and none will have any negative impact thereon.

6.3. Environmental impacts

Reduction of external costs of transport through modal shift. The reduction of negative environmental impacts is part of the general objective of the CTD and the saved external costs constitute part of the benefits of this revision. All POs are expected to have a positive impact on environment (see Table 15). The scale of environmental impacts depends on the volume of road-only transport replaced with intermodal non-road legs. The bigger this modal shift, the bigger the positive environmental impact. The policy options result in a replacement of 0.2 to 26 bn tkm road freight transport with non-road transport in 2030 and of 0.5 to 39.7 bn tkm in 2050. The environmental impact depends however not only on the total volume replaced, but also on the mode that replaces the road part. This is the case of PO-B1 where most operations are shifted to rail, relative to PO-B2a where more operations are shifted to waterborne transport. On the other hand, as the overall shift towards intermodal transport operations is slightly higher in PO-B2a relative to PO-B1, the external costs savings are higher in PO-B2a relative to PO-B1.

The highest reduction in environmental external costs is projected in PO-B2a (EUR 4.60 bn for CO₂ emissions, EUR 0.47 bn for air pollution emissions and EUR 0.91 bn for noise), expressed as present value over 2025-2050 relative to the baseline, followed by PO-B1 (EUR 4.40 bn for CO₂ emissions, EUR 0.45 bn for air pollution emissions and EUR 0.85 bn for noise), PO-B2b (EUR 2.93 bn for CO₂ emissions, EUR 0.34 bn for air pollution emissions and EUR 0.69 bn for noise) and PO-C (EUR 2.67 bn for CO₂ emissions, EUR 0.16 bn for air pollution emissions and EUR 0.46 bn for noise). PO-A shows significantly lower reductions in external costs. With regard to air pollution, PO-B and PO-C would lead to a marginal increase in external costs relative to the baseline in 2050. This however is not linked to the energy/fuel use but can be explained by increased particulate matter emissions from rail transport due to higher wear and tear¹²⁴ as a consequence of increased rail activity, which outweighs the decrease in particulate matter emissions from road transport¹²⁵. Expressed as present value over 2025-2050, all policy options result however in a reduction of external costs of air pollution emissions. The assessment also takes into account the projected shifts between non-road modes; these however are not significant.

Table 15: Changes in environmental external costs in 2030, 2050 and present value over 2025-2050 compared to the baseline, EU-27 (million EUR, in 2021 prices)

		PO-A	PO-B1	PO-B2a	PO-B2b	PO-C
Climate change (GHG)	2030	-6	-162	-171	-118	-98
	2050	-14	-40	-51	-16	-11
	2025-2050	-147	-4,395	-4,603	-2,930	-2,665
Air pollution	2030	-8	-53	-60	-41	-31
	2050	-3	18	21	23	17
	2025-2050	-53	-448	-470	-337	-164
Noise	2030	-0.2	-37	-39	-36	-17
	2050	-0.4	-24	-27	-22	-17

¹²³ OJ C 326 of 26.10.2012 p.2.

¹²⁴ Emissions from wear and tear for rail are currently not part of EMEP/EEA Guidebook, which does not consider non-exhaust emissions of rail transport as a separate category. However, they are included here for sake of completeness.

¹²⁵ It should be noted that in the baseline scenario the particulate matter emissions are projected to reduce by 90% in 2050 relative to 2015, driven by the uptake of zero-emission vehicles. For this reason, in 2050 the increase in particulate matter emissions from rail transport due to higher wear and tear outweighs the reduction in particulate matter from road transport, leading to higher particulate matter emissions relative to the baseline.

		PO-A	PO-B1	PO-B2a	PO-B2b	PO-C
	2025-2050	-7	-846	-905	-694	-455

Source: Ricardo et al. support study (2023)

All policy options are consistent with the environmental objectives of the **European Green Deal** and the **European Climate Law**¹²⁶. All policy options contribute towards SDG 13 (Take urgent action to combat climate change and its impacts). **No significant harm** is expected on the environment in any of the policy options.

7. HOW DO THE OPTIONS COMPARE?

7.1. Effectiveness

The assessment of effectiveness looks at the extent to which the general and specific objectives (SO) of the intervention are met. Table 16 provides the assessment criteria for this. A detailed assessment of effectiveness is presented in Annex 12.

Table 16: Link between objectives and assessment criteria

Objectives	Assessment criteria
General objective	
Facilitate an increase in the share of rail, SSS and IWW in total intra-EU freight transport, to reduce negative externalities and energy consumption of transport as well as mitigate the fragmentation of the internal market	- Impact on the volume of intermodal transport in the EU - Reduction in external costs of transport (including CO₂ emissions, air pollutant emissions, noise, fatalities and injuries, and road congestion)
Specific objectives	
SO1: Provide support to a wider range of operations under effective and common eligibility conditions	- Impact on the share of intermodal operations eligible for support - Suitability and clarity of proof of eligibility conditions
SO2: Ensure better support by improving reporting on intermodal transport market	Impact on the availability of information and analysis of intermodal market
SO3: Increase competitiveness of intermodal transport to contribute to reducing negative externalities	- Distance at which intermodal transport is price-competitive with road-only transport - Support is appropriate and effective
SO4: Improve transparency and cooperation and simplify entry to the market	- Ease of data exchange between parties in intermodal transport chain - Ease of access to terminal information

Each of the options addresses the problems, their drivers and the general and specific objectives. Concerning **SO1**, all five options provide support to wider range of operations than the today's CTD and achieve an almost identical increase in the share of operations eligible as well as suitable, common and clear eligibility conditions. However, PO-B1, where eligibility is based on GHG only ignores the benefits of non-road modes in terms of other externalities beyond the GHG emissions, resulting in some SSS operations and all IWW operations as of 2035 not being eligible. This is compensated by higher eligibility for rail but these additional rail operations that are eligible in PO-B1 (compared to PO-A, PO-B2a, PO-B2b and PO-C) can have very short rail legs (27% of total operation). Support to such operations is not desirable. Therefore, although producing similar net benefits as PO-B2a (see next section), PO-B1 is considered less effective, since in medium to long term, it results in over-reliance on rail-road intermodal operations, even with long road legs. PO-A, PO-B2a, PO-B2b and PO-C ensure that all modal combinations are eligible throughout the period and that the non-road leg is always longer than the combined road legs in an operation.

¹²⁶ Regulation (EU) 2021/1119.

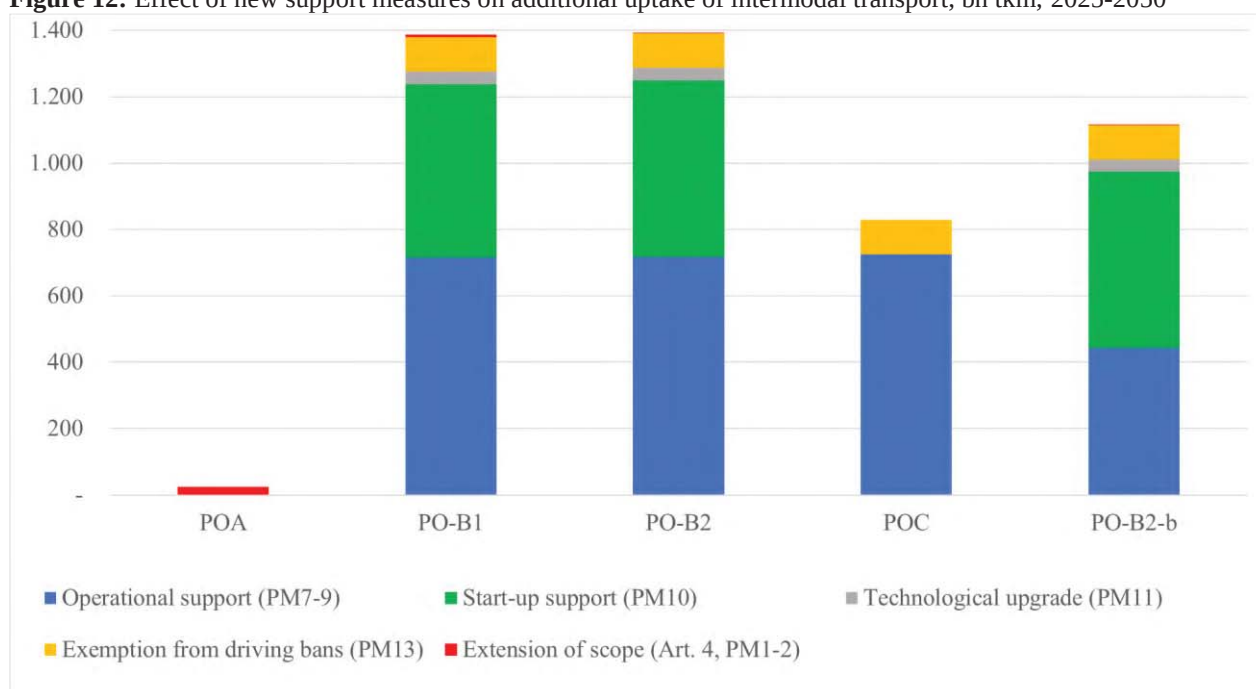
Concerning **SO2**, PO-A is somewhat more effective than the baseline as some additional Member States may start carrying out regular analysis and strategic planning for intermodal transport. PO-C aims to ensure that Member States were aware of the market development and the impacts of their support schemes, but in absence of EU level statistics, data availability difficulties persist, and EU level consolidation of the results would be challenging. PO-B retains centralised analysis (by the Commission) and foresees that the Commission will conduct a dedicated study every 5 years to prepare a regular report, making also use of information retrieved from eFTI platforms. PO-B sub-options also improve access to information on upcoming support schemes, making it much more effective relative to the baseline.

SO3, PO-A is only somewhat more effective than the baseline in making intermodal operations more competitive, as support remains voluntary. PO-C does not reflect well the heterogeneous market situation and problems on the ground, where a harmonised solution may not deliver the best possible outcome in all Member States. PO-B's sub-options deliver comparable outcomes on price competitiveness to shippers; the effect is elevated thanks to additional start-up support that ensures better availability of connections/non-road services. Among the three, PO-B2a is most effective, given its broader scope (if compared to PO-B2b) and the externalities-based eligibility (if compared to PO-B1). If measured by the amount of externalities saved, most effective in terms of SO3 is PO-B2a, followed by PO-B1, PO-B2b, PO-C and PO-A.

Concerning **SO4**, no measures are foreseen for data rules in PO-A and PO-B on the assumption that horizontal legislation for all freight transport operations would be more effective than regulating data only for eligible intermodal operations. The impact on PO-C on data rules is positive, but low. As regards access to terminal information, all options ensure availability of terminal information and possibility for further transparency measures through implementing acts.

With regard to the general objective of increasing the share of rail, SSS and IWW, PO-A is slightly more effective than the baseline, and only delivers very limited additional volumes, while PO-B2a and PO-B1 are much more effective than PO-B2b and PO-C (see Figure 12). Higher replacement volume of road-only transport with intermodal transport results in higher positive impacts from reducing the negative externalities of transport. The difference between PO-B1 and PO-B2a in terms of additional intermodal volumes is limited (1,388 bn tkm in PO-B1 and 1,391 bn tkm in PO-B2a, cumulative for 2025-2050 relative to the baseline), but they differ in terms of which modal combinations deliver the uptake.

Figure 12: Effect of new support measures on additional uptake of intermodal transport, bn tkm, 2025-2050



Source: Ricardo et al. support study (2023)

7.2. Efficiency

Efficiency concerns "the extent to which objectives can be achieved for a given level of resource/at least cost". The costs and benefits are summarised in Table 17.

Table 17: Summary of costs and benefits per policy option (including one-off and recurrent costs) - present value for 2025-2050 compared to the baseline (in million EUR)

	Baseline	Difference to the Baseline				
		PO-A	PO-B1	PO-B2a	PO-B2b	PO-C
National authorities						
Adjustment costs	2.1	1.4	0.0	0.0	0.0	7.8
Economic cost of support	24,941.6	0.0	7,223.3	7,476.3	5,294.3	34,825.2
Administrative costs savings	0.0	2.3	2.3	2.3	2.3	2.3
European Commission						
Adjustment costs	0.3	0.3	2.0	2.0	2.0	0.3
Businesses						
Adjustment costs	0.0	0.3	0.3	0.3	0.3	28.3
Administrative costs	312.0	0.1	6.4	6.6	3.2	0.1
Administrative costs savings	0.0	3,573.7	4,303.1	4,336.0	3,429.1	5,479.5
Benefits (reduction in external costs relative to the baseline)						
External costs of GHG emissions	608,508	146.7	4,394.6	4,603.0	2,929.7	2,665.5
External costs of air pollution emissions	218,819	53.3	448.1	470.3	337.3	163.8
External costs of noise	39,568	6.6	846.0	904.7	694.4	455.3
External costs of accidents	98,081	101.8	1,546.7	1,663.4	1,214.0	530.1
External costs of congestion	752,002	427.4	7,207.5	7,622.8	5,481.1	2,820.5
Total costs		2.1	7,232.0	7,485.2	5,299.8	34,861.7
Total benefits		4,311.6	18,748.3	19,602.5	14,087.9	12,117.1
Net benefits/costs		4,309.5	11,516.3	12,117.3	8,788.1	-22,744.6
Benefits to cost ratio		2065	2.59	2.62	2.66	0.35

Source: Ricardo et al. support study (2023); Note: for 'net benefits/costs' a positive sign stands for net benefits and a negative sign for net costs.

By far the biggest cost element of the policy options is the support by Member States authorities, which depends on eligibility conditions and foreseen support measures in a given option. Limited adjustment costs are expected for the eFTI providers and terminal operators for implementing the data and transparency rules and for Member States for regular analysis and strategic planning for intermodal transport.

PO-A shows the lowest additional costs (EUR 2.1 million), but also delivers the lowest benefits (EUR 4.3 bn), expressed as present value over 2025-2050 relative to the baseline. The benefits are mainly due to the administrative costs savings from using the eFTI platforms on existing operations as well as due to the external cost savings thanks to the extension of the scope. However, the impact on modal shift is very small, as is the resulting small reduction of externalities. PO-C, on the other hand, shows the highest costs (EUR 34.9 bn), due to very high operational support (no upper distance limit for economic support) that is not offset by total benefits (EUR 12.1 bn). PO-B1 and PO-B2a have comparable cost and benefit levels. PO-B1 is estimated to result in total costs of EUR 7.2 bn and total benefits of EUR 18.8 bn, while PO-B2a is projected to result in total costs of EUR 7.5 bn and total benefits of EUR 19.6 bn. PO-B2b shows both lower total costs (EUR 5.3 bn) and lower total benefits (EUR 14.1 bn) than PO-B1 and PO-B2a, because it covers only cross-border intra-EU operations. While this limits the economic cost of support for Member States, it also limits the benefits in terms of external costs saved.

The highest net benefits relative to the baseline are estimated for PO-B2a (EUR 12.1 bn), followed by PO-B1 (EUR 11.5 bn), PO-B2b (EUR 8.8 bn) and PO-A (EUR 4.3 bn). PO-C results in net costs estimated at EUR 22.7 bn. PO-A shows the highest benefits to cost ratio (2065), followed by PO-B2b (2.66), PO-B2a (2.62), PO-B1 (2.59) and PO-C, with higher costs than benefits (0.35).

7.3. Coherence

Internal coherence assesses how various elements of the revised CTD function together to achieve the objectives. Although all five POs address the identified problems, the level and intensity vary. PO-A is designed to leave the maximum flexibility to Member States as the problems are heterogeneous depending on their starting point (baseline) of already existing support frameworks. As a result, PO-A has the lowest intensity of EU-level intervention as regards strategic planning and support and no data requirements. The minimal EU-level intervention means that intermodal policy will remain almost entirely in the hands of Member States and thus the coherence with the general policy objective to facilitate at EU level the uptake of intermodal transport is low. PO-C brings along the overall highest EU-level intervention and full harmonisation both as regards strategic planning as well as support and detailed and specific data requirements. The high-level intervention ensures a homogenous approach to EU market and facilitates the functioning of the internal market. However, it fails to count for the differences in regions, markets and segments. PO-B follows a medium level flexible intervention whereby it sets minimum goal based common requirements applicable across the EU with central overview of developments, taking into account the heterogeneous market situations. Thus, PO-B shows higher internal coherence than PO-C. The only difference between the PO-B sub options PO-B1, PO-B2a and PO-B2b is eligibility. PO-B2b is slightly more coherent given that its eligibility (based on all external costs and covering all intra-EU operations) combined with the support measures supports best the general objective.

External coherence concentrates on the compliance of the initiative with national policies, other EU instruments and relevant EU policies, as well as international obligations. The CTD in general and consequently all identified policy options have strong links to several other existing and planned EU instruments as discussed in section 1.3 (Synergies with other EU policy instruments). The support provided under the CTD is meant to be complementary to other national and EU regulatory instruments, both horizontal and per transport mode and to work hand in hand with State aid rules. While other instruments provide a legal framework for different transport modes to operate in (modal regulation such as the envisaged initiative on measures to better manage and coordinate international rail traffic, Weights and Dimensions Directive), set requirements for physical and digital infrastructure (TEN-T Regulation, eFTI Regulation) or promote reduction of externalities (Eurovignette Directive, the upcoming CEEU Regulation), the role of CTD is to compensate for the remaining inefficiencies and market failures that hold back the operators from choosing more sustainable freight transport solutions. PO-A and PO-B1, where eligibility is based on GHG alone, are not however coherent with current State aid practice and rail legislation where a wider scope of externalities savings is required. Therefore, support measures under these options would either require changes in current practices or dedicated State aid assessment. When the external costs are fully internalised, CTD's support may not be necessary or even desirable anymore. In this respect, all policy options are coherent with other EU laws.

7.4. Subsidiarity and proportionality

Negative externalities are trans-boundary problems produced by international transport, which cannot be solved by national or local action alone. Even domestic road operations create the negative externalities that are global in nature such as GHG emissions and congestion¹²⁷. The objective of the revision cannot be sufficiently achieved at Member State level also because intermodal operations are mostly cross-border (81%). Comparing the policy options, PO-A leaves the highest level of flexibility on intervention to Member States. However, the impacts of this option are very close to the baseline, thus it is not effective in meeting the objectives of this initiative. PO-C, at another extreme, leaves least choice to national and local levels with full EU-level harmonisation, without allowing for any subsidiarity in terms of tailoring the approach and budget planning. PO-B ensures a balance between EU level policy goals and subsidiarity, by allowing flexibility to address Member State specific or regional problems, while ensuring a common level of ambition on achievable benefits.

¹²⁷ Congestion is often considered to be local in nature, directly affects all road users, including those engaged in international freight transport. It also tends to propagate and produce spill-over effects affecting more than one Member State in cross-border areas.

Two further elements of policy options require attention from the subsidiarity perspective. First, all policy options, except PO-B2b propose to include in the scope of the revised CTD all intra-EU intermodal operations, rather than only cross-border operations as in the current CTD. However, the division into domestic and international is not effective in achieving the policy objective of reducing transport externalities and also problematic from the internal market perspective. It is difficult to explain why the same operation would be supported if done in cross-border context and not supported if done in national context. Including all operations in the scope ensures equal regulatory and economic treatment of all intermodal transport operations, be it domestic or cross-border, leading also to higher environmental benefits. Expanding the framework also improves the effectiveness of the initiative in terms of the uptake of non-road freight transport and its contribution to reducing the external costs and energy needs, while limiting the scope only to international operations would cut the number of operations that overall could help in achieving the EU Green Deal and SSMS milestones. From the internal market perspective, it needs to be added that national support provided today is heterogeneous and 18 out of 20 of respondents¹²⁸ to the stakeholders' survey considered different measures in different Member States as a problem. PO-B2b, which excludes domestic operations from the scope of the CTD, would at least partly keep the same situation, which increases the complexity for operators and creates frictions in the internal market. For national authorities it could be challenging to justify the existence of different support regimes for cross-border and for domestic operations or to refuse to domestic operations the support they grant to cross-border operations. For this reason, the gain of subsidiarity under BO-B2b, where domestic operations are excluded from the scope of the CTD, is limited.

Bringing all operations into the scope of the CTD would not allow to completely eliminate this fragmentation (given that Member States can always go further than the minimum requirements in the CTD, subject to compliance with State aid rules) but can significantly reduce it. Having a common minimum support regime will also avoid the risk of under-compensation of domestic operations¹²⁹. The inclusion of domestic intermodal operations in the scope of the Directive was also strongly supported by the stakeholders. The majority of survey respondents (22 out of 27) and interviewees (17 out of 22) supported the extension of the scope of the CTD to cover all intermodal transport that saves certain negative externalities.

Second, PM 13 proposes to exempt road-legs of eligible operations from weekend and holiday driving bans, including for domestic transport. Driving bans on roads during weekends and holidays, which today exist at least in 13 Member States, aim to reduce congestion, and improve safety on roads during those periods, where the roads are used more for private travel. However, if applied to intermodal transport road legs, both in case of cross-border or domestic intermodal operations, they create considerable problems for logistics chain, given that road legs cannot be carried out directly before or after the non-road leg. This results in terminal yard congestion, large traffic jams just before and after the driving ban times around terminals and inability to efficiently fill the rail, IWW or SSS vehicle/vessel during such driving bans. EU level intervention to national rules in this regard is justified, given that impacts of national bans reach across the borders, impacting the functioning of the internal market and affecting the capacity usage on the TEN-T network. Removing driving bans for road vehicles carrying intermodal units and being part of an intermodal solution (which constitute only 10% of road freight traffic) would allow to exploit unused capacity during the period of driving ban for running more services¹³⁰. This would allow better use of rail and terminal infrastructure capacity. Recognising this fact, most Member States having bans, already apply exemptions for intermodal transport road-legs¹³¹. However, these exemptions are very heterogeneous, not following the definition established in the CTD and some are discriminatory. It should be noted that bans have a similar effect to logistics chain and the use of infrastructure, be they applied to the road legs of cross-border or domestic intermodal operations. Furthermore, as mentioned above, national authorities could find it difficult to justify bans to domestic operations, while cross-border operations can run. Therefore, excluding domestic operations from PM13 due to subsidiarity concerns, would add complexity and administrative burdens, while in

¹²⁸ 13 out of 14 industry stakeholders and 5/6 authorities.

¹²⁹ Today, several Member States do not provide any support.

¹³⁰ For example, an intermodal rail service running five times per week can benefit from the driving ban exemption to add an additional run during the weekend.

¹³¹ Five Member States do not have any exemptions for intermodal road legs from driving bans.

practice making little difference in the volume of traffic on the roads¹³². Therefore, sub-options of PO-B and option PO-C, which include PM 13, would ensure uniform and equal application of what is already practice in several Member States. The impact of PM13 over 2025-2050 is estimated at 0.4% increase in the intermodal transport activity relative to the baseline.

As regards proportionality, this proposal calls on Member States to implement economic and administrative support measures, where relevant, in compliance with State aid rules) to certain types of transport operations. However, it is assessed that this support is proportional to achieve the policy objective. While none of the policy options entirely eliminates the competitiveness gap between intermodal and road-only transport, PO-B1 and PO-B2a ensure sufficient modal shift at reasonable cost (each 49 cents of support under PO-B2a generates 1 EUR worth of reduction in external costs). PO-B2a has a similar benefit-cost ratio than PO-B2b, however it should be noted that it is missing out on opportunities, leaving domestic operations with equivalent environmental benefits without a support and thus resulting in 38% lower outcome on the benefits side.

Legally, while some stakeholders were voicing preference for a Regulation, the choice of the instrument (revision of the Directive) is adequate as it allows satisfactory achievement of the objectives while also ensuring adherence to the subsidiarity principle.

Table 18 provides a summary of the comparison of the options against the baseline scenario in terms of effectiveness, efficiency, coherence, subsidiarity and proportionality. The following ranking symbols have been used: from '+' (somewhat more effective/efficient/coherent/proportionate than the baseline) to '++++' (much more effective/efficient/coherent/proportionate than the baseline); from '-' (somewhat less effective/efficient/coherent/proportionate than the baseline) to '----' (much less effective/efficient/coherent/ proportionate than the baseline).

Table 18: Comparison of options in terms of effectiveness, efficiency, coherence, subsidiarity and proportionality relative to the baseline

Criteria	PO-A	PO-B1	PO-B2a	PO-B2b	PO-C
Effectiveness	+	+++	++++	+++	+++
Efficiency	++++	++	++	++	--
Coherence	++	+++	++++	+++	++++
Subsidiarity	0	+/-	+/-	+	--
Proportionality	+	++	++	+	+

8. PREFERRED OPTION

8.1. Identification of the preferred policy option

Each of the options addresses the problems identified, their drivers and the specific objectives, however some options are more **effective** in achieving the specific and general objectives. All PO-B sub-options and PO-C are considerably more effective than PO-A. PO-A is only somewhat more effective than the baseline in delivering the SO3 and SO4 and has weak effectiveness on SO1 and SO2 as well as on the general objective. PO-B1, PO-B2b and PO-C are less effective than PO-B2a, as the latter is more effective in delivering on SO1 by having better balance of different modal combinations (compared to PO-B1) and SO2 (compared to PO-B2b and PO-C).

With respect to **efficiency**, PO-A and all PO-B sub-options result in net benefits relative to the baseline while PO-C results in net costs. While PO-A has by far the highest benefit-cost ratio, it brings along very little modal shift and its benefits are almost entirely limited to administrative cost savings for existing intermodal operations. PO-B1 and PO-B2a produce comparable total modal shift and have a similar benefit-cost ratio, but PO-B1 does not allow equal access to support for all modal combinations and would result in support to RR operations even if major part of

¹³² No data is available to assess what is the volume of national operations in five Member States which today do not exempt the road legs of the intermodal transport from the weekend and holiday driving bans. But applying EU averages, the share of road legs affected could be around 2% (assuming that 10% of road transport is related to road legs of intermodal operations and about 20% of those are national operations).

operation takes place on road. PO-B2b has a similar benefit-cost ratio to PO-B1 and PO-B2a but its impact on total modal shift and reduction in external costs is more limited because it only covers cross-border intra-EU operations. In comparison to PO-B1 and PO-B2a it has also less potential in reducing the frictions in the internal market, given that domestic operations are not covered.

Concerning **coherence**, all policy options are coherent between their various elements and with relevant EU legislation. However, PO-A could be considered under-ambitious as regards the objectives set in the European Green Deal and SSMS, given that it does not deliver sufficient modal shift. PO-B sub-options and PO-C are broadly comparable in their coherence in this regard. PO-B1, where eligibility is based on GHG alone, is not coherent with current State aid practice which calculate eligible costs based on saved externalities. PO-B2b is slightly less coherent than PO-B2a given that it has narrower eligibility scope. In terms of **subsidiarity**, PO-A ensures high consistency with the subsidiarity principle by leaving the decision on support entirely to Member States, while PO-C ranks low as it enforces harmonised support and budget expenditure. PO-B1 and PO-B2a ensure a balanced outcome by providing for a common framework to support equal treatment of all intermodal operations and reduces fragmentation of the internal market, while granting flexibility to Member States to design their support measures effectively according to the local situation. PO-B2b, leaving domestic operations out of scope, has a slight advantage with regards to the subsidiarity principle, which is however mitigated by a compromise between subsidiarity and effectiveness and by questions of practical consequences as explained section 7.4. Finally, as regards **proportionality**, PO-B will strike the best balance by achieving the objectives in a coherent and effective way, while leaving the necessary scope for national decision. This is particularly the case for PO-B2a which has the highest net benefits. The proportionality of PO-B2b is somewhat lower, given that its intervention level can be suboptimal, leaving some domestic operations, with equivalent environmental benefits, without support.

Thus, the preferred policy option is PO-B2a. It delivers on the objective by ensuring the highest modal shift and external cost savings with a good benefit-cost ratio, while also ensuring coherence, proportionality and subsidiarity. The envisaged substantial public support is necessary to compensate competitiveness gap of the intermodal transport until the parallel instruments tackling externalities of transport, both at EU and national level, kick in. PO-B2a is also the most effective, efficient and coherent policy response to tackle specific externalities that are prominent in road transport, namely congestion, accidents and pollution and which are hard to abate with mode based measures. Given that the support measures are meant to be regularly assessed and adjusted in light of regulatory and market developments, PO-B2a represents a balanced approach to achieving a level playing field between transport modes, allowing to frontload to the extent possible the savings in transport externalities. The measures in the preferred option are broadly supported by stakeholders, in particular to have a more robust eligibility criteria, allowing to treat all modal combinations equally. For the savings' threshold, stakeholders supported inclusion of a wider set of externalities, rather than only GHG; there was however no consensus on the level of the threshold. Stakeholders also supported the inclusion of domestic operations within the scope, maintaining existing regulatory measures (ban of quotas and allowing to use of non-resident hauliers for road legs for cross-border operations) and agreed that implementing some support measures should be mandatory for Member States. There was also strong support for better information availability on terminals.

PO-B2a complies with the principle of “do no significant harm” and delivers overall positive environmental impact in compliance with the “digital by default” principle.

8.2. REFIT (simplification and improved efficiency)

The amendment to the CTD was part of the REFIT initiatives in 2017. However, the current revision is considered a new initiative under the Commission Work Programme 2023 under the heading A European Green Deal¹³³, as it takes a new and different approach to eligibility and support. The new eligibility conditions, combined with an eligibility “calculator” on an eFTI platform and with increased and targeted support is expected to considerably increase the efficiency of the CTD. The revision ensures considerable simplification of procedures also to existing operations thanks to the use of eFTI platforms (PM3) that allow

¹³³ COM(2022) 548 final.

to simplify the proof of eligibility for industry as well as control of eligibility for public authorities. The use of eFTI will also simplify the preparation of applications for support for the industry and allow to gather information about intermodal operations benefitting from this Directive.

8.3. Application of the ‘one in, one out’ approach

The preferred option (PO-B2a) is expected to deliver significant recurrent administrative cost savings for businesses operating in the intermodal sector. As explained in section 6.1.4, thanks to the proof of eligibility that is implemented via the eFTI platforms (PM3), operators engaged in intermodal transport will benefit from not having to manage paper-based transport documents, in particular for road-side checks. The recurrent costs savings for businesses due to the use of electronic data are estimated at EUR 0.43 bn per year¹³⁴. At the same time, under the new transparency rules (PM16), terminals will incur administrative costs for updating the information required to be published on their website. The recurrent annual average cost per terminal during 2025-2035 is estimated at EUR 6.2. Considering the 980 intermodal terminals in the EU, the average annual costs are estimated at EUR 6,100. The administrative costs savings largely outweigh the costs and thus the net recurrent administrative cost savings for businesses under the ‘one in, one out’ approach are estimated at EUR 0.43 bn annually.

In addition, as explained in section 6.1.4, the preferred policy option is expected to result in one-off adjustment costs for businesses estimated at EUR 0.3 million.

8.4. Sensitivity analysis for the preferred policy option

Sensitivity analysis has been performed for the preferred policy option (PO-B2a), assuming different eligibility thresholds for the external costs savings when using an intermodal operation instead of road-only. More specifically, two alternative eligibility thresholds have been assessed: 30% external costs savings (PO-B2a - Case 1) and 50% external costs savings (PO-B2a - Case 2). They are compared to PO-B2a (Central case), which includes an eligibility threshold of 40% external costs savings. All other measures included in PO-B2a (Case 1) and PO-B2a (Case 2) are the same as in PO-B2a (Central case).

As shown in section 3.1.1 of Annex 4 (Table 35), the breakeven distances increase with the eligibility threshold. This means that a lower number of intermodal operations get support, the higher the eligibility threshold. Thus, as illustrated in Table 19, PO-B2a (Case 1) results in higher increase in total intermodal transport volumes relative to PO-B2a (Central case) and PO-B2a (Case 2) in lower increase in total intermodal transport volumes relative to PO-B2a (Central case). Cumulatively over 2025-2050, the total additional intermodal volumes for PO-B2a (Case 1) are estimated at 1,430 bn tkm, for PO-B2a (Central case) at 1,391 bn tkm and for PO-B2a (Case 2) at 1,244 bn tkm, relative to the baseline.

Table 19: Modal shift (traffic volume of new non-road legs) and total intermodal transport (incl. road legs) that would be induced by PO-B2a (Case 1), PO-B2a (Central case) and PO-B2a (Case 2) and growth compared to the baseline in 2030 and 2050 (bn tkm)

	2030			2050			2030		2050	
	Rail	IWW	SSS	Rail	IWW	SSS	Total intermodal	% growth	Total intermodal	% growth
PO-B2a – Case 1 (30% reduction in external costs)	17.1	0.6	11.6	38.7	0.8	14.7	38.2	5.4%	69.1	6.8%
PO-B2a – Central case (40% reduction in external costs)	16.6	0.6	11.5	36.8	0.8	14.7	37.7	5.3%	67.5	6.6%
PO-B2a – Case 2 (50% reduction in external costs)	14.7	0.5	11.5	30.2	0.7	14.6	35.0	4.9%	61.1	6.0%

Source: Ricardo et al. support study (2023)

¹³⁴ To calculate the costs savings for the application of the ‘one in, one out’ approach, the cost saving per shipment is estimated at 5 EUR while the number of shipments at 0.087 billion.

The higher shift to intermodal transport in PO-B2a (Case 1) relative to PO-B2a (Central case) leads to higher total costs relative to the baseline due to larger economic cost of support, but also to higher benefits due to the external costs savings. The opposite is true for PO-B2a (Case 2), which results in lower total costs and benefits compared to the baseline relative to PO-B2a (Central case). The total costs, total benefits, and net benefits for PO-B2a (Case 1), PO-B2a (Central case) and PO-B2a (Case 2) are shown in Table 20. In terms of benefits to costs ratio, the three cases are similar to each other and also to PO-B1 and PO-B2b (as illustrated in section 7.2), showing that the ranking of the options in terms of efficiency would not change with lower or higher eligibility thresholds.

Table 20: Summary of costs and benefits for PO-B2a (Case 1), PO-B2a (Central case) and PO-B2a (Case 2) - present value for 2025-2050 compared to the baseline (in million EUR)

	Difference to the Baseline		
	PO-B2a (Case 1)	PO-B2a (Central case)	PO-B2a (Case 2)
Total costs	7,662.8	7,485.2	6,870.7
Total benefits	19,786.5	19,602.5	18,038.1
Net benefits	12,123.6	12,117.3	11,167.4
Benefits to costs ratio	2.58	2.62	2.63

Source: Ricardo et al. support study (2023)

9. HOW WILL ACTUAL IMPACTS BE MONITORED AND EVALUATED?

The Commission will monitor the implementation and effectiveness of this initiative through several actions and a set of core indicators that will measure progress towards achieving the operational objectives. In particular, the Commission will carry out regular analyses of the intermodal transport market as per PM6 as well as gather information about Member States support schemes.

Table 21 presents performance areas, corresponding operational objectives and possible indicators for an effective monitoring framework.

Table 21: Performance areas, corresponding operational objectives and possible indicators for an effective monitoring framework

Performance area	Operational objectives	Possible indicators
Level of intermodal support and costs of access	- Extend the level of support to a wider range of intermodal transport operators - Reduce administrative costs for accessing intermodal transport support	- Number of Member States adopting support measures (by type of measure -financial, operational, start-up, technological) - Type and level of support provided in each Member State - Number of (transport) operators that have applied/benefited from support measures (by type of measure) - Total level of support (in EUR) provided by Member States (in terms of budget available/actual support) - Administrative costs for access to intermodal support
Impact on intermodal transport	Increase volume/share of intermodal freight transport	- Share of intermodal transport in total freight transport, compared to the baseline - Share of individual transport modes in freight transport, compared to the baseline - Main barriers that hinder the uptake of intermodal transport

Performance area	Operational objectives	Possible indicators
Relative cost competitiveness of intermodal transport	• Reduce relative costs of intermodal transport in relation to road-only freight transport	• Average break-even distance per mode combination (and change from the current situation)
Availability of information on intermodal transport facilities	• Ensure access to relative information concerning intermodal transport services/facilities	• Availability, ease of access and completeness of information concerning intermodal transport services (qualitative)
Access to information on intermodal transport	• Improve access to information on intermodal transport activity/market	• Commission reporting on intermodal transport activity • Availability of information on intermodal transport activity (qualitative)

A dedicated study is planned under PM6 to support monitoring activities, in particular as regards the mapping of intermodal market developments and main remaining barriers. eFTI platforms can be used to gather aggregated data on eligible operations and their specifics such as main transport lanes, volumes, distances, types of loading units used, support provided and externalities saved etc. In cooperation with Eurostat, all or part of this information can be made public more often than the reports foreseen in PM6. Furthermore, the notifications of upcoming support measures to the Commission for central publication allows the Commission also to gather up-to-date information about Member States support schemes. The mentioned dedicated study will also have to gather information about terminal information and quality.

The initiative will be successful if, through the provision of the support measures, it brings about an increase in the number of intermodal freight transport operations and leads to a higher share of non-road modes in the total freight transport mix.

Ultimately, a successful scenario is one in which all Member States adopt support measures within the scope of the CTD, that are, where relevant, facilitated by State aid rules tailored to support intermodal operations. These support measures are used by operators and lead to improved access to intermodal transport services/facilities, reduce relative costs and enhance the competitiveness of intermodal transport operations, and eventually increase the share of intermodal transport operations in the total freight. It will also provide enhanced information on available intermodal transport services to address information barriers in the decision process. Furthermore, it will ensure sufficient information on the intermodal transport market (at both EU and national level), to help Member States target support measures to make them more effective and efficient.

ANNEX 1: PROCEDURAL INFORMATION

1. LEAD DG, DECIDE PLANNING/CWP REFERENCES

The lead DG is DG MOVE, Unit D1: Maritime transport and logistics

DECIDE reference number: PLAN/2020/8707

Item 8.c in Annex I to Commission Work Programme 2023

2. ORGANISATION AND TIMING

The impact assessment follows the ex-post (REFIT) evaluation in 2016¹³⁵, the proposal for revision of the CTD in 2017 that was subsequently withdrawn in 2020, and the European Green Deal and SSMS that envisaged the introduction of a more ambitious proposal. The impact assessment started in 2021, with the inception impact assessment published on 19 August 2021¹³⁶.

The impact assessment on a possible review of the CTD was coordinated by an Inter-Service Steering Group (ISSG). The Commission Services participating in the ISSG were: Secretariat-General, Legal Service, DG Climate Action, DG Competition, DG for Employment, Social Affairs and Inclusion, DG Industry, Entrepreneurship and SMEs, DG for Energy, DG for Research and Innovation, Eurostat, Joint Research Centre. The Inter-Service Steering Group met 6 times: on 30 June 2021, 29 September 2021, 10 March 2022, 30. June 2022, 27 October 2022 and 29 March 2023. It was consulted throughout the different steps of the impact assessment process: notably on all stakeholder consultation materials and deliverables from the external contractor and on the draft Staff Working Document.

3. CONSULTATION OF THE RSB

The draft report was submitted to the RSB on 12 April 2023 and was discussed by the Board on 10 May 2023. RSB issued a negative opinion on 12 May 2023. Recommendations from the Board were addressed in a revised version of the Impact Assessment report, submitted to the board on 12 June, as detailed in the table below.

Table 22-1: Modifications of the IA report in response to the first RSB opinion

Detailed RSB comments	Modifications to the IA report
(1) The report should clearly set out the overarching rationale for promoting combined transport. It should better explain why combined transport is important, which market failure it aims to correct and how it helps to deliver on key EU policies. While the overall purpose of this initiative seems to be to reduce various negative externalities from freight transport, this should be made more explicit upfront or clarified if this is not the case. The report should describe more clearly which policy instruments aim to tackle transport externalities and explain why these alone are not sufficient. It should explain better the role of combined transport in this and how its expected	The revised IA explains from the outset in section 1.1 <i>Political context</i> and 1.3 <i>Synergies with other EU policy instruments</i> that higher uptake of intermodal transport allows, to the extent it leads to the higher use of non-road modes, reducing the external costs induced by freight transport at the system level. In section 1.3 it clarifies that the CTD complements other transport policies, which (a) reduce external costs by targeting the environmental performance of individual modes and (b) internalise external costs by gradually applying polluter pays and user pays principles. Progress is on its way but takes time to materialise. For now, shifting freight away from road

¹³⁵ SWD(2016) 140 final.

¹³⁶ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13010-Sustainable-transport-revision-of-Combined-Transport-Directive_en

Detailed RSB comments	Modifications to the IA report
effects interact with those from the broader instruments addressing transport externalities (e.g. ETS transport, CO2 standards, energy taxation, road charging, etc.). It should identify the remaining gap that might be tackled best through combined transport (and fiscal incentives) while reflecting parallel measures aiming to increase terminal availability and performance.	would provide significant environmental benefits. In this context, the main market failure the CTD addresses is that today intermodal transport on short and medium distances is still non-competitive with road-only transport. The IA report clarifies that part of this problem is related to inefficiencies of the performance of non-road modes is addressed by other policies. However, another part of the problem is uneven internalisation of external costs. The latter is tackled by the CTD, which aims to support certain intermodal operations by compensating for a cost-competitiveness gap which still exists.
The report should consequently consider corresponding objectives and make the reduction of externalities and ensuring a level playing field across transport modes the guiding principle throughout the report. It should consider the magnitude and importance of reducing externalities and possible prioritising between them, as some external costs seem higher than others. The reduction of specific externalities could find its way into the intervention logic via the specific objectives.	In the revised report, the general objective in section 4.1 is adjusted as follows: <i>Facilitate an increase in the share of rail, SSS and IWW transport in total intra-EU freight transport, to reduce negative externalities and energy consumption of transport <u>as well as mitigate the fragmentation of internal market</u></i> In section 4.2 the following is added to SO3: <i>Increase the competitiveness of intermodal transport <u>to contribute to reducing negative externalities.</u></i> The externalities have made the starting point of the problem definition in section 2.1 and the problem has been adjusted as follows: <i>Current uptake of intermodal transport is insufficient <u>for effectively contributing to the reduction of external costs and energy consumption of transport.</u></i> The section on impact assessment and cost benefit analysis are already built around the calculation of saved external costs. While reducing all externalities is important, the revised IA report clarifies that, while GHG and other emissions can be effectively tackled by sectoral legislation, the issues with road accidents and congestion, could be more effectively addressed by the higher uptake of non-road modes.
(2) The report should better explain the subsidiarity dimension of the initiative. It should better justify why domestic intermodal operations need to be included in the scope of the Directive and why such decision is not presented as a policy choice.	Additional arguments, including the scale of cross-border operations, equal footing of all similar operation and internal market aspects, accompanied by stakeholder views, are included in section 7.4 in the <i>subsidiarity and proportionality section of the comparison of options</i> to better explain the subsidiarity dimension of the initiative. In addition, a new option PO-B2b, a sub-option of option PO-B, which includes in the scope only cross-border operations, has been included, allowing to compare the impacts of policy option with and without domestic operations.

Detailed RSB comments	Modifications to the IA report
Regarding the measure to remove bans imposed by Member States on driving at night-time, holidays and weekends for the road legs of eligible combined transport, the report should demonstrate whether and how such measure would respect the subsidiarity and proportionality principles. It should also discuss why Member States should not be allowed to continue to impose such bans (including for purely domestic transport), if justified by public interest reasons.	Regarding the exemptions to night-time, holidays and weekends driving bans (PM13), the analysis in section 7.4 has been strengthened to highlight the cross-border spill-over effects of national driving bans and their negative impact on the use of rail infrastructure and terminal capacity. It also includes internal market aspects and a reference to stakeholder views.
(3) The construction of broad policy options appears arbitrary. The features of options should be presented clearer (e.g. in terms of voluntary or mandatory State aid and the possibility to add further subsidies than prescribed). The options should be more clearly linked to the specific objectives and the underlying problem drivers as clarified above. Given the broad scope of transport externalities to be tackled, the report should explain why it considers options that address only one externality.	The description of policy measures in section 5 (<i>Policy options</i>) and Annex 6 (<i>Retained measures</i>) of the revised IA report has been rechecked and amended. Section 5.2.2 (<i>The description of options</i>) explains the underlying principles of assigning the policy measures to different options, such as stakeholder views, intensity of intervention and ensuring that all problem drivers and specific objectives are covered. In section 5.2.1 (<i>Retained policy measures</i>) it is explained that an option (PO-B1) defining eligibility based on GHG savings only has been retained in response to the stakeholders' request.
It should clarify whether alternative eligibility saving rates were considered, and if so, why these were not included as variants for the relevant support measures. More generally, the report should consider the implications of other combinations of policy measures.	In section 5.2.1 (<i>Retained policy measures</i>) it is explained that for both types of the eligibility criteria, based on GHG alone (PM1) and based on a wider set of externalities (PM2), further analysis was carried out to establish the percentage threshold of external cost savings retained in the options. As explained in section 3.1.1 of Annex 4, various thresholds (from 20% to 75%) were tested. In addition, a sensitivity analysis is included in section 8.4, applying one higher and one lower eligibility threshold for the preferred policy option. Some further adjustments have been made in the POs: • PO-A: PM1 (GHG based eligibility) has been replaced with PM2 (externalities-based eligibility), to allow for its fairer comparison with PO-B. PM14 (<i>defined dataset</i>) has been excluded while PM16 and PM17 (<i>terminal transparency and label</i>) have been included, to be better in line with the low intervention level of this option. • PO-B: includes a new variant PO-B2b, which covers only cross-border (rather than all) intermodal operations, to better assess subsidiarity aspects. • PO-C: includes PM14, which is more in line with the high intervention intensity of this option.

Detailed RSB comments	Modifications to the IA report
The report should further explain the modelling approach. It should better justify the assumption that the 10% reduction of door-to-door transport costs would lead to higher uptake of intermodal transport. It should provide evidence of the effectiveness of financial support measures on the uptake of intermodal transport and modal shift. It should better explain the analysis to establish what levels of financial support is required to have an impact on volumes and modal shift and what that increased support would mean in terms of budgetary implications for Member States.	The revised IA report explains better the underlying reasoning of the assumption that the 10% cost reduction would allow to attract more shippers and transport organisers to use intermodal transport. More detailed explanations have been provided in section 6.1.1 (<i>Impact on competitiveness of intermodal transport, modal shift and GDP</i>), including a reference to section 3.3.1 of Annex 4, which explains the approach in depth. Annex 14 of the revised IA includes examples of the impact of existing Member State support schemes to the uptake of different modal combinations of intermodal transport, main findings of which are included in section 6.1.1 (<i>Impact on competitiveness of intermodal transport, modal shift and GDP</i>). Section 6.1.2 (<i>Impacts on national public administration</i>) includes the estimated cost of support by policy option and Member State (also expressed as percent of GDP). In addition, the estimated costs of support by policy measure and Member State have been added to Annex 4.
(4) The report should present a more balanced comparison of options and better justify the choice of the preferred one. It should clearly demonstrate that the envisaged financial support/fiscal incentives are a more effective and efficient policy response than what could be achieved via the broader instruments tackling externalities of transport. It should discuss the risk of overcompensating intermodal transport because of the combination of various measure such as those contributing to the internalisation of external cost of road transport expected to be achieved by 2050.	Section 7 on the comparison of options has been revised, including corrections to the scoring, and separation of subsidiarity and proportionality scores. The narrative justifying the choice of the preferred option, has been improved, considering also the additional analysis conducted in the revised IA report, to follow up the other Board recommendations. The revised IA report has explained in section 1.3 <i>Synergies with other EU policy instruments</i> that economic support measures are necessary policy response as far as other broader instruments that reduce and internalise external costs will be phased in and start having impact. As the competitiveness gap narrows, the relevance and eligibility criteria in the CTD as well as the design of State aid measures will need to be reassessed and adjusted, as provided for in PM5 and PM6 (<i>market analysis, notifications and review</i>). Such evaluation and corresponding adjustments will mitigate the risk of overcompensation. In section 6.1.7 <i>Impact on the functioning of the internal market and on competition</i> it is recalled that all support schemes need to comply, where relevant, with the State aid rules, which are designed to prevent overcompensation.

RSB issued a postive opinion with reservations on 29 June 2023. The second set of recommendations from the Board were included in the revised version of the Impact Assessment report as detailed in the table below.

Table 23-2: Modifications of the IA report in response to the second RSB opinion

Detailed RSB comments	Modifications to the IA report
(1) The report should set out more clearly and consistently what the main motivation behind this initiative is. It should further clarify whether the dominant objective is to tackle the remaining	The revised IA underscores in sections 1.3 <i>Political context</i> and 1.3 <i>Synergies with other EU policy instruments</i> that the objective of the initiative is higher uptake of intermodal transport with a view to reduce

Detailed RSB comments	Modifications to the IA report
negative transport externalities or to increase the competitiveness of intermodal transport more generally. While the revised report takes better account of the policy context for broad parallel initiatives such as ETS transport, CO2 and air pollution standards, energy taxation, road safety and charging, Eurovignette etc, it remains unclear as to how these measures interact and work together in tackling negative road transport externalities and what gap remains. Under the dynamic baseline the report should be clearer on how the expected contribution of the other instruments and initiatives would affect the current disadvantages of intermodal transport in terms of uneven internalisation of external costs. In doing so, the report should clearly indicate which type of external cost (e.g. congestion, accidents, air pollution, GHG emissions) is the most problematic one under the evolving gap to be tackled and whether any prioritisation of externalities is needed. It should explain more convincingly why this gap is apparently only (or best) to be tackled via a revision of the CTD and why adaptations of the other instruments were not considered as alternative measures.	the external costs induced by freight transport at the system level. It clarifies that unlike the other initiatives for internalisation of external transport costs, whose starting point is mode-specific internalisation (such as ETS transport, CO2 and air pollution standards, energy taxation, road safety and charging which are included in the Baseline scenario), the CTD focuses on the level playing field between modes and aims to act directly on the competitiveness gap, based on regular market analyses. Therefore, its review is the most appropriate tool to address the uneven competitive positions of the different freight transport modes. The baseline section has been revised to better reflect the initiatives that are covered in its scope. It also highlights that the synergies between these initiatives are reflected in the baseline. An estimation of the external costs of congestion and accidents has been also added in the baseline section.
(2) While the revised report presents a new option that does not bring domestic transport under the scope of the CTD and thus provides greater policy choice in terms of complying with the subsidiarity principle, it still needs to better argue and substantiate why Member States would be not be able to take appropriate measures on domestic transport issues and why incentives based arguments such as better utilisation of transport infrastructure should override justified public interest considerations they may have (e.g. certain fixed driving bans). In this context the report should clarify whether exempting certain operations from fixed driving bans would also apply to purely domestic combined transport. It should justify why no options were considered that would allow Member States to continue to impose justified public interest measures regarding transport.	The IA explains in section 7.4 that leaving domestic operations out of the scope for subsidiarity considerations could result in lower support to certain operations that contribute equally to environmental benefits. On the one hand, this would not be in line with the policy objectives. On the other hand, for Member States authorities it could be challenging to justify the existence of different support regimes for cross-border and for domestic operations, or to refuse to domestic operations the support they grant to cross-border operations. PM13 applies to all operations within the scope of the directive, which means that under the preferred policy option PO-B2a the driving bans should be lifted for the road legs of all intermodal operations. Such bans have a similar effect to logistics chain and the use of infrastructure, be they applied to the road legs of cross-border or domestic intermodal operations. Furthermore, national authorities could again find it difficult to justify bans to national operations, while international operations can run. Therefore, excluding national operations from PM13 due to subsidiarity concerns, would add complexity and administrative burdens, while in practice the impact on road volume can be very limited (the share of road operations possibly impacted is around 2%).
(3) The report should present a more balanced comparison of options. It should ensure consistency between the impact analysis and the scoring of the comparison summary table. For	Additional clarifications have been added in sections 7.1, 7.4 and 8.1.

Detailed RSB comments	Modifications to the IA report
instance, it is not clear why options PO-B1 and PO-B2a receive a different score in terms of effectiveness despite having quite comparable net benefits. Similarly, it is difficult to understand why PO-B2a performs significantly better than PO-B2b in terms of proportionality, despite the latter having a better Benefit-Cost-Ratio. It is also not clear why PO-B2b performs only slightly better than options PO-B1 and PO-B2a in terms of subsidiarity, given that it excludes domestic transport from the scope.	In particular, the IA clarifies that while PO-B1 produces similar net benefits as PO-B2a, it is considered less effective, since in medium to long term, it results in over-reliance on rail-road intermodal operations, even with rather long road legs. PO-B2a performs better than PO-B2b in terms of proportionality, despite having a similar benefit-cost ratio than PO-B2b, because it is missing out on opportunities, leaving domestic operations with equivalent environmental benefits without a support and thus resulting in 38% lower outcome on the benefits side. PO-B2b, that leaves domestic operations out of scope, has only a slight advantage with regards to the subsidiarity principle, because it compromises between subsidiarity and effectiveness while having questions about practical applicability as explained under point (2) above.
(4) In view of above, the report should better justify the choice of the preferred option, including in terms of compliance with the proportionality and subsidiarity principles. It should also better demonstrate that the envisaged substantial financial public support is a more effective, efficient and coherent policy response than what could be achieved via parallel instruments tackling externalities of transport.	Respective clarifications have been added to section 8.1.

4. EVIDENCE, SOURCES AND QUALITY

The impact assessment is based on several sources, using both quantitative and qualitative data. This includes:

- REFIT evaluation of the CTD (2016)
- Stakeholder consultation activities (see Annex 2)
- External support study carried out by an independent consortium (lead by Ricardo)
- Commission experience in monitoring and implementing the CTD

ANNEX 2: STAKEHOLDER CONSULTATION (SYNOPSIS REPORT)

This annex provides a summary of the outcomes of the consultation activities for the review of the CTD, including in the context of the external support study. It notes the range of stakeholders consulted, describes the main consultation activities, and provides a succinct analysis of their views and the main issues they raised. The full analysis of the consultation results is presented in the stakeholder consultation report annexed to the support study.

The objectives of the consultation activities were the following:

- to collect information and opinions of stakeholders on the key problems and associated drivers, the definition of relevant policy objectives linked to those problems, and the identification, definition and screening of policy measures that could be considered in this Impact Assessment
- to gather information and opinions on the likely impacts of policy measures and options.

1. OVERVIEW OF CONSULTATION ACTIVITIES

Consultation activities have taken place in 2021 and 2022, from the publication of the Inception Impact Assessment (IIA) in August 2021, to the targeted consultation that closed in August 2022.

As part of the initial feedback mechanism, interested parties had the possibility to provide **feedback on the Inception Impact Assessment** from 19 August to 16 September 2021. A total of 62 individual responses were received.

Subsequently, an **open public consultation** was accessible on the website “Have your Say” from 7 March to 30 May 2022. In total, 101 responses were received from different stakeholders. Some stakeholders also provided position papers together with their responses to the OPC. The views of the respondents are presented hereafter objectively, without any inference as to what any majority or minority of citizens may think of each topic.

Finally, the following targeted consultation activities were carried out:

- **A targeted online survey** aimed to validate the problem definition and the objectives of the policy options, obtain input to define further the policy measures/options, and provide data needed to support the assessment of impacts of measures and expected costs. The survey ran from 16 May to 24 June and received 59 responses.
- **Targeted stakeholder interviews** were conducted with 29 stakeholders between May and August 2022 (including three exploratory interviews were conducted in February 2022).
- One **stakeholder expert meeting** with industry was held on 25 October 2022. There were 60 participants representing 55 organisations.

2. STAKEHOLDER GROUPS CONSULTED

The table below provides a short overview of the main types of stakeholders identified and targeted as part of the different consultation activities.

Table 24: Key stakeholder roles and mapping against activities

High-level stakeholder group	Description	Stakeholder engagement activity
Shippers and their associations	Shippers are firms that need to ship goods as part of their business. Shippers can be producers, buyers or intermediaries. These shipments may be addressed to other offices, factories, warehouses, clients, end consumers, or are part of export operations. Shippers may arrange own multimodal/intermodal operations and deploy their own fleet for the movement of cargo, fully or partially, or may acquire the services partly or fully through organisers of multimodal transport operations. They attempt to minimise the cost of the logistics chain (cost of arranging and cost of transport) and, thus, make decisions on the management of the supply chain such as those related to modes and carriers to employ, inventory management and facility location.	Exploratory interviews Targeted surveys Targeted interviews Stakeholder expert meeting OPC
Freight (chain) organisers and their associations (e.g. logistics operators, freight forwarders)	Freight organisers are organisations responsible for the assembling and organisation of shipments of goods for firms or other organisations. They hold responsibility for the timely and qualitative delivery of this cargo up to its destination. Freight organisers are involved in different stages of the supply chain management. They contract the services of transport operators and engage in interaction and negotiations with multiple carriers that may cover different stages of the operation. The decisions made by the freight organisers have the potential of reducing the shippers' costs due to the optimal choice of transport route and mode choices. These choices also have an impact on environmental and social aspects. Freight organisers can also provide CT organiser services as well as all or part of the transport carrier services.	Exploratory interviews Targeted surveys Targeted interviews Stakeholder expert meeting OPC
Independent connection organisers (organisers of non-road leg services)	Connection organisers are organisations that organise a rail, IWW or SSS service by subcontracting the carriers and selling "slots" on vehicle or vessel to shippers or freight organisers. They take the commercial risk of filling train/ship/barge. Connection organisers can be legally independent but be affiliated to transport operators or freight organiser. Freight organisers, transport operators or consortiums of shippers can act as connection operators.	Exploratory interviews Targeted surveys Targeted interviews Stakeholder expert meeting OPC
Transport operators (carriers) and their associations (e.g. maritime shipping lines, inland waterways operators, railway undertakings, road hauliers)	Transport operators are organisations operating the vehicles and vessels involved in the movement of cargo. Transport operators make decisions and investment that could improve or hinder the compatibility and interoperability with other modes, the feasibility and optimality of combining modes. They are also responsible for aspects of sustainability and efficiency in the operation, such as energy efficiency measures, fleet sizing, technology upgrade, vehicle routing and scheduling, network configuration, among others. In multimodal and intermodal chains, transport operators can subcontract other transport operators to carry out all or part of the transport operation.	Targeted surveys Targeted interviews Stakeholder expert meeting OPC
Terminal operators and infrastructure managers and their associations	Terminal operators make decisions that could leverage the synergies with other nodes and modes in the hinterland network. They interact and coordinate actions	Targeted surveys

High-level stakeholder group	Description	Stakeholder engagement activity
	with both freight organisers and transport operators and have a high responsibility on the integration of different transport interfaces. They make decisions that could impact transport choices, such as fees and charges for the use of their facilities and are partially responsible (together with national and regional authorities) for the deployment of investment to improve infrastructure, acquire transshipment equipment or adapt facilities for the combination road/vessel or rail/vessel.	Targeted interviews Stakeholder expert meeting OPC
Public authorities (national and regional)	National authorities are responsible for transposing, implementing and enforcing the CTD, adopting support measures and reporting on the progress. Local authorities (regional governments and urban authorities in charge of Sustainable Urban Logistics Plans) may also be involved in the adoption of specific measures and will be directly or indirectly affected by the implementation of the relevant provisions.	Targeted surveys Targeted interviews OPC
Other stakeholders (civil society)	Other interested stakeholder groups include consumer organisations, non-governmental organisations (NGOs) and academic experts/ research and knowledge partners (public and private organisations). They provide additional sectoral viewpoints and help us understand the details of the measures and policy options, including in terms of achieving environmental policy objectives, and what impacts could affect the industry, the consumers and the environment. One German trade union (Eisenbahn- und Verkehrsgewerkschaft EVG, the railway and transport union) responded to the OPC, as did three organisations that classified themselves as NGOs (which were pro-rail organisations from Germany and Poland and an organisation representing Swedish transport companies). For the OPC analysis, these were grouped under 'Other', along with those organisations that had classified themselves as 'Other' (i.e. from other stakeholder group type that those explicitly listed). The 'Other' group comprised one Austrian labour organisation, two inland waterway lobby groups and a network. In general, the responses from stakeholders included in category 'Other' did not differ from the responses of the industry stakeholders but were complementary to these.	Targeted surveys Targeted interviews OPC

3. CONSULTATION ACTIVITIES – THE METHODOLOGY AND TOOLS USED

The stakeholder consultation methodology relied on a combination of a range of methodologies and tools, which are described in more detail in this section.

The participation to all the consultation activities is presented in the table below. The industry stakeholders included stakeholders from different roles explained above. However, many are engaged in different roles/activities at the same time and thus they were given an opportunity to identify their main role, or several roles. Similarly, several involved industry associations represent operators from various roles. For this reason, the industry stakeholders have not been separated into different roles.

Table 25: Participation in different consultation activities

Stakeholder type	IIA	OPC	Interviews	Survey	Workshop
Industry	38	68	21	31	55
EU citizens	13	10	0	0	0
NGOs	1	3	0	0	0
Public authorities	4	14	5	8	0
Other	6	5	3	10	0
Total	62	100	29	49	55

Inception Impact Assessment

The consultation on the IIA focused on the objectives and preliminary problem drivers and policy measures for this revision as set out and described in the IIA. The majority of the received replies were general in nature.

Open Public Consultation

The OPC focused on the problem definition and the objectives of the revision, containing 22 detailed questions on the subjects. The OPC questions were prepared based on the results of OPC carried out for the impact assessment in 2017.

Online survey

A targeted survey was developed to gather information to validate the problem definition and the objectives of the policy options, obtain input to define further the policy measures/options. Major part of the survey was focused on obtaining the data needed to support the assessment of impacts of measures and expected costs. The survey was aimed at national authorities and industry representatives (associations and individual participants) from all relevant groups (freight organisers, transport operators, terminal operators, shippers).

Interviews

Three exploratory interviews were undertaken during the inception phase of the study. The exploratory interviews considered views on the identified problem drivers and policy objectives, but they also considered the potential impacts of policy measures.

The targeted interviews were conducted based on a tailored interview checklist (based on the questionnaire developed for the survey) that allowed to explore in depth the relevant topics for each stakeholder group. Discussions with stakeholders focused on a range of topics, including the identification of barriers for the use of more sustainable options, and their views on the policy options, confirming the extent to which relevant measures address the drivers contributing to the problems. They also assisted in understanding the cost elements associated to each policy measure and their magnitude.

In parallel, targeted follow up interviews with stakeholders who had completed the survey were carried out. The aim of these interviews was to clarify any questions in relation to their survey response, and delve further into certain topics that have been raised or missed.

Stakeholder expert meeting

The industry stakeholder expert meeting took place after the policy options under consideration had been agreed with the Commission, but before the preferred policy option had been chosen. The

stakeholder expert meeting introduced the key data and assumptions underlying the scenarios developed with respect to each of the policy options under consideration, presented the impact assessment methodology applied to assess the economic, social and environmental impacts of the policy options, as well as the initial results and focused on the discussion on the choice of the preferred policy option.

4. FEEDBACK RECEIVED

Problem definition and objectives

The stakeholder consultation activities revealed a large degree of agreement among stakeholders that the problems and objectives identified in this impact assessment are relevant for the development of intermodal transport¹³⁷.

The IIA consultation and OPC focused on the problem at a higher level, after which the survey and interviews took a more detailed and systematic approach to specifying the problem and an associated objective for the revision of the CTD. A common theme in the feedback on the IIA was a lack of clarity surrounding some of the definitions of the current CTD, while others suggested that the CTD should focus more on IWW and SSS in addition to road and rail transport. One industry respondent commented that restrictions on road transport would not solve the problems of other modes, while another industry respondent noted that smaller companies faced more challenges when using intermodal transport. Overall, there was broad support across all stakeholder groups for the problems that were identified, and the associated objectives for the revision of the CTD.

In the OPC, respondents were asked detailed questions about the problem. Two thirds of respondents believed that *intermodal/multimodal transport was competitive with road-only transport in the EU without support only in some situations* (63 out of 95; 66%). This point of view was shared by participating industry stakeholders, except for terminal operators, who were more pessimistic with three out of five considering intermodal/multimodal transport never or almost never competitive with road-only transport without support. Freight organisers (e.g. logistics operators, freight forwarders mostly active in the road transport) were generally more sceptical about the lack of price-competitiveness of intermodal transport compared to road-only transport and the insufficiency of the support provided through the current CTD than the other industry stakeholder groups, who in their vast majority agreed that the lack of price-competitiveness was an obstacle to the development of intermodal transport. 80 out of 100 respondents (80%) implied that there were differences in *the competitiveness of intermodal/multimodal transport in different Member States*, with common reasons being differences in the infrastructure and services that were available, as well as differences in the support provided. Respondents identified six factors as affecting the lack of competitiveness of intermodal/multimodal transport compared with road-only transport: transshipment costs (87 out of 94; 93%) and lack of suitable terminals in the vicinity (85 out of 95; 89%) were the most prominent ones. For both of these, at least 75% of respondents from each stakeholder type and industry sub-category agreed that these were relevant factors. 80% of the respondents considered an additional four factors as being relevant, i.e.: road transport being cheaper than intermodal/multimodal transport for door-to-door operations (78 out of 94; 83%); habit of using road-only transport (78 out of 94; 83%); lack of suitable service offer in terminals in the vicinity (76 out of 95; 80%); and delay/longer transit time compared with road-only transport (73 out of 92; 79%). For each of these, at least half of the respondents from each stakeholder type and industry sub-category felt that these factors were relevant, with the exception of transport organisers, a minority of which (3 out of 7) felt that road transport being cheaper than intermodal/multimodal transport for door-to-door operations was a relevant factor.

¹³⁷ The respective shares of responses presented in this section refer to the total amount of responses to the specific consultation question and not to the total amount of responses to the consultation activity as such.

The questions for the survey and interviews were designed to be complementary. In relation to problems associated with *Thematic Area 1, 'Extend support to a wider range of operations and set eligibility conditions that are simple and justified'*, 25 out of 31 survey respondents (81%), and 19 out of 23 interviewees (83%), 'agreed' or 'strongly agreed' that *the current eligibility criteria were too narrow*. This pattern was similar between different stakeholder groups, i.e. freight organisers, transport operators, public authorities, and civil society representatives. 23 out of 31 survey respondents (74%) and 15 out of 21 interviewees (71%) felt that *some of the eligibility criteria were not entirely relevant* to promote modal shift or to reduce CO₂ emissions and other externalities. Similarly, 25 out of 31 survey respondents (81%) and 16 out of 19 interviewees (84%) had the view that *the current definition of CT uses ambiguous terms*. The prevailing view among industry stakeholders was that the CTD needs to be restrictive and not allow for different interpretations per Member State. When asked to explain their responses, a couple of public authorities and the European Association for Forwarding, Transport and Customs Services/European Logistics Platforms Association (CLECAT/ELPA; representing more than 20 national logistics industry associations) noted that it was not clear whether the definition of CT includes one or two-leg operations, and that this had been interpreted differently in different Member States. Some public authorities and industry respondents (in particular road hauliers) were concerned that the revision of the CTD would not sufficiently factor in the changes and modernisation of the freight transport market. The term "nearest suitable terminal" was commonly identified by freight organisers as one that was particularly ambiguous. The Irish Road Haulage Association (IRHA) suggested that there needed to be flexibility on the length of road legs in particular, as a result of the different geographies in the EU's Member States.

There was support for the objectives identified to address these problems. 28 out of 30 of survey respondents (93%) and 20 out of 21 interviewees (95%) 'agreed' that *the Directive should extend support to a wider range of operations*. In the survey, all industry stakeholders but one supported the extension of support. One respondent felt that it should be restricted to only combined transport operations. The response was similar in relation to the other objective *that eligibility conditions should be easy to control and justified*, as all survey respondents (31 out of 31; 100%) and 20 out of 22 of interviewees (91%) 'agreed' or 'strongly agreed' with this. The response was similar across all stakeholder groups. When asked to explain their responses, one association (CLECAT/ELPA) called for the scope to be extended to all multimodal transport operations in the EU, as long as the longest leg of the journey was carried out using a sustainable mode of transport, and that the initial and final road legs were relatively short. They also underlined that multimodal operations should make use of shipping, as well as rail and inland waterways.

There was support for the definition of the problem under *Thematic Area 2 'Improve monitoring and reporting of the status of intermodal transport'*, i.e. that there was a *lack of market monitoring/empirical basis to determine the adequate level of support*. Eighteen out of 20 survey respondents (one industry stakeholder and one public authority neither agreed nor disagreed) and 15 out of 22 interviewees (68%) 'agreed' or 'strongly agreed' with this definition of the problem. Similarly, there was support for the proposed objective to address this problem: *Improve monitoring and reporting of the status of multimodal/intermodal transport*, as 20 out of 21 of survey respondents (95%) and 15 out of 22 interviewees (68%) either 'agreed' or 'strongly agreed' with this objective. Among freight organisers, transport operators, and civil society representatives, several respondents expressed support for improved monitoring and reporting requirements, while others stated that reporting for the sake of reporting should be avoided.

Stakeholders generally 'agreed' with each of the four elements of the problem definition associated with *Thematic Area 3, 'Increase competitiveness of intermodal transport'*. All but two of the survey respondents and interviewees (19 out of 21 in both cases; 90%) 'agreed' or 'strongly agreed' that there was an issue with the *narrow application of support measures*, while all but one (19 out of 20 survey respondents (95%) and 20 out of 21 interviewees (95%)) stakeholder in each case 'agreed' or

‘strongly agreed’ that there was a problem with the *insufficient level of incentives provided*. With respect to the third element of the problem definition, *differences in the application of the support measures*, again all but two respondents (17 out of 19 survey respondents (89%) and 16 out of 18 interviewees (89%)) in each case either ‘agreed’ or ‘strongly agreed’ that this was an issue. Finally, while 17 out of 18 survey respondents (94%) ‘agreed’ or ‘strongly agreed’ that there was a problem as *information on national State aid is inadequate, therefore access is unequal*, 16 out of 21 interviewees (76%) held such a view. In the survey, most stakeholders that did not explicitly agree with the problems identified in this thematic area also did not disagree. One out of five responding public authorities in the survey disagreed that the level of incentives was insufficient and one out of three responding public authorities disagreed that the information on national State aid was inadequate (industry representatives all agreed on these two points). One road hauliers association (the World Road Transport Organisation – IRU) noted that the lack of harmonisation of support measures was a challenge to some cross-border operations.

Similarly, 22 out of 23 survey respondents (96%) and 16 out of 19 interviewees (84%) either ‘agreed’ or ‘strongly agreed’ with the objective that was proposed to address these problems: *increase competitiveness of multimodal/intermodal transport*. In the survey, the responses of public authorities were split, as four (strongly) agreed, one disagreed and three did not answer. While some freight organisers and transport operators argued that multimodal/intermodal transport was less cost-effective than road-only transport so needed to be supported, both IRU and the European Shippers Council (ESC) pointed out that not only price competitiveness should be considered, but also other aspects such as flexibility, capacity and reliability. The Maltese and the Finnish transport ministries noted that increased competitiveness of multimodal/intermodal transport was needed.

Under *Thematic Area 4, ‘Increase transparency and cooperation to facilitate flexibility and simplify entry to the market’*, 15 out of 18 respondents to the survey (83%), and 16 out of 21 interviewees (76%), either ‘agreed’ or ‘strongly agreed’ that *inefficiencies in scheduling, planning and running multimodal transport* were an issue. Freight forwarders and shippers had a bigger tendency than transport operators and terminal operators to see inherent inefficiencies in scheduling, planning and running multimodal transport as an important obstacle to the development of intermodal transport. Similarly 13 out of 18 survey respondents (72%) and 15 out of 21 interviewees (71%) of stakeholders either ‘agreed’ or ‘strongly agreed’ that a *lack of multimodal information exchange and insufficient track and tracing of shipments* were part of the problem (12 out of 18 survey respondents (67%) and 14 out of 21 interviewees (67%)). This was across all stakeholder groups. In the survey, only on the tracking and tracing of shipments, the opinions of industry representatives diverged. Otherwise there was broad agreement on the problems under this thematic area. In the interviews, those respondents who did not explicitly agree generally did not disagree either. Deutsche Post/DHL did not see inefficiencies in scheduling and planning, but considered running multimodal transport a challenge, as they were missing a standard intermodal information exchange space. 17 out of 19 survey respondents were also in favour of the proposed objective to address the proposed problem definition and 18 out of 21 interviewees (86%) either ‘agreed’ or ‘strongly agreed’ that a relevant objective was to *improve transparency and cooperation to facilitate flexibility and simplify entry to the market*. Three stakeholders disagreed or strongly disagreed (one each from industry, public authorities and civil society).

Potential solutions

The IIA sought stakeholders’ initial feedback on three options for amending the CTD, in addition to Option 1, which was ‘no change’. Option 2 proposed to *expand the list of support tools and provide support to operations that saved certain negative externalities*, while Option 3 additionally proposed to *make it an obligation that the support tools chosen by Member States be based on a regular analysis of the transport system*. Option 4 in turn built on Option 3 by *requiring that a certain number of mandatory, harmonised support measures be applied*. There was also a general consensus amongst

respondents that change was needed, with many highlighting that action at the level of either Option 3 or Option 4 would be most effective.

The survey and interview identified three potential measures in response to the objectives identified in relation to *Thematic Area 1 'Extend support to a wider range of operations and set eligibility conditions that are simple and justified'*. 22 out of 27 of survey respondents (81%) and 17 out of 22 interviewees (77%) believed that the first measure (M1: *extending the scope of the CTD to cover all intermodal transport that saves certain negative externalities*) would contribute to either a 'significant' or 'a large extent' to achieving the stated objective of *extending support to a wider range of operations and set eligibility conditions that are simple and justified*. The responses were similar across stakeholder groups.

On the measures extending the scope of the CTD to cover all intermodal transport that saves certain negative externalities, nine out of 14 industry stakeholders that responded said that they expected additional direct costs as a result of the implementation of the proposed measure. There were only two responses from public authorities - one respondent (PL) expected additional direct costs as a result of the implementation of the proposed measure and one did not (MT).

Basing eligibility on the savings in relation to a *wide set of externalities* was more popular than basing eligibility solely on *GHG emissions* saved amongst both survey respondents (18 – compared to four – out of 22; 82%) and interviewees (14 – compared to four – out of 21; 67%). In the interviews, two industry associations and two public consultation were sceptical about basing eligibility on a wider set of externalities, mainly with the argument that GHG as a sole criterion would be simpler. In terms of which negative externalities to include, five were chosen by 15 or more (out of 18) survey respondents, i.e. GHG emissions, accidents, air pollution, congestion and noise. A similar question was asked in the OPC, which gave similar results as all those who supported a wide range of externalities being considered wanted to see *GHG emissions* included (37 out of 37; 100%), while large proportions also wanted *congestion* (34 out of 37; 92%); *noise* (30 out of 37; 81%), *energy efficiency* (22 out of 27; 81%); *air pollution* (29 out of 37; 78%) and *accidents* (29 out of 37; 78%) considered. In the survey, the inclusion of some other externalities was considered by some to be important as they were all part of the broader issue, even though this would make the calculation more complex. Calculating GHG emissions was considered easier, but it was also underlined that the calculation of GHG emissions of different operations should be accurate.

However, there was no clear consensus from the respondents to the survey on the minimum level of savings, of either GHG emissions or a wider range of externalities, that would need to be achieved compared to road transport for a CT journey to be eligible for support. As to GHG emissions, four industry stakeholders voted for a savings level of 61%-70% and three industry stakeholders voted for the minimum level 1%-10%. The one public authority that responded voted for a savings level of 41%-50%. When considering a wider set of negative externalities, the one public authority voted for 31%-40%, while the picture for industry was mixed. Three industry stakeholders voted for 41%-50%, two opted for the maximum 71%-80% and one for the minimum 1%-10%.

Stakeholders were asked a series of questions in relation to second measure of Thematic Area 1: M2 – *Limit the direct operational financial support to operations with door-to-door distance of less than a certain value*, which revealed little support for this measure. 15 out of 21 survey respondents (71%), both industry stakeholders and public authorities, and 11 out of 20 interviewees (55%) did not consider that the establishment of a distance threshold was an necessary criterion for assessing eligibility. No differences were found across stakeholder groups. 17 out of 23 survey respondents (74%) and 14 out of 20 interviewees (70%) did not believe that a threshold of no more than 1000 km was appropriate, although three out of four public authorities and three out of 17 industry representatives that expressed a view in the survey did consider it appropriate. Among the interviewed stakeholders, the European Barge Union (EBU, IRU and LTG Cargo (freight organiser) considered a distance threshold an appropriate criterion for assessing eligibility, but did not think it

should be limited to 1000 km. Several freight organisers and the Maltese transport authority considered the 1000-km threshold arbitrary and requested more flexibility. Stakeholders who were against a specific distance threshold in the survey stated that it should either be GHGs or other negative externalities that influence levels of support or that benefits should be provided for anyone engaging in multimodal operations to facilitate uptake.

15 out of 23 survey respondents and ten out of 21 interviewees believed that the third measure relating to Thematic Area 1, i.e. *M3: Establish new and adequate dataset obligations for proof of eligibility*, would help to achieve the objective of *extending support to a wider range of operations and set eligibility conditions that are simple and justified* to either a large or significant extent. While logistics sector representatives saw potential benefits for multimodal/intermodal transport from the introduction of tools of the eFTI Regulation, road sector representatives noted their reservation as eFTI was still under development, its uptake was still low or that it would add complexity.

Six out of the 13 industry respondents indicated that there would be additional direct one-off costs for their organisations or member organisations due to the implementation of dataset obligations for proof of eligibility (three terminal operators plus a transport operator and two others), whilst the other six respondents indicated that it would impact their annual operating expenditures (across all subgroups but more transport operators). The main costs expected by UIRR and one anonymous transport operator corresponded to the implementation of the digitalisation of data sharing and the increase in the number of man hours required for training and the recruitment of new staff. These were seen by WienCont to be different between different companies, with differences depending on the maturity of their administrative processes. Two public authority respondents indicated that there would be additional direct costs as a result of the implementation of this measure, whereas three public authorities said that they did not know what would be the impact on additional costs.

There were a few advantages identified across both public authorities and industry with the introduction of new and adequate dataset obligations for proof of eligibility. Both stakeholder groups cited the increases in efficiency and transparency that obligations would provide, and the stronger foundations created for data sharing. The main disadvantages echoed by both public authorities and industry were the added human resources required and the challenging complexity of uniformly implementing data reforms.

Under *Thematic Area 2 'Improve monitoring and reporting of the status of intermodal transport'*, stakeholders were asked to express their views on two possible measures for addressing the proposed objective, i.e. measures *M4, establish an analysis and strategic planning obligation for Member States for sustainable transport modes only*; and *M5, establish an analysis and strategic planning obligation for Member States for all transport system (cross-modal)*. Stakeholders considered that M5 would contribute more towards the objective of *improving monitoring and reporting of the status of multimodal/intermodal transport*, than M4. Amongst stakeholders, 19 out of 22 survey respondents (and 15 out of 22 interviewees) (86% and 68% respectively) considered that M5 would contribute to achieving the objective to a large or significant extent, compared to only 10 out of 22 (and six out of 22 interviewees) (45% and 27% respectively) for M4. In the survey, the responses of public authorities were the same for both measures (three in favour, one against), while the industry clearly preferred M5. In the interviews, some freight organisers (e.g. IRHA, CLECAT/ELPA, IRU) found the concept of “sustainable transport modes” too difficult to define, a reason for their preference for M5. They reported fears that the definition could be too limited and could fully remove road transport without proper comparison of greener technologies in the different transport modes. EBU noted that road transport will become more sustainable in the future. The most popular *frequency of reporting* under M5 was two years (19 out of 22 survey respondents and 12 out of 20 interviewees; 86% and 60% respectively), largely supported by the industry, while several public authorities thought that the frequency of reporting should be every five years. In the survey, 12 out of 13 industry respondents (92%) stated that they would accept a reporting obligation on their intermodal activities.

For the measures under Thematic Area 2, on improving reporting, no responses were received on the relevant cost impacts.

The first question relating to possible solutions under *Thematic Area 3, 'Increase competitiveness of intermodal transport'* asked stakeholders to indicate their preferred approach for introducing support tools. The most popular option amongst survey respondents (six out of 17; 35%) was M10, i.e. *mandatory adoption of at least one operational support tool (eligibility based on this Directive's definition) and at least one technological upgrade support tool (eligibility to be defined by MS) from the list of support Toolbox*. This was followed by M7 (*mandatory harmonised adoption of specific support tool by all MS for non-road legs costs*), which was supported by five survey respondents (29%). In the survey, respondents from the industry generally were more in favour of mandatory harmonised support, whereas public authorities were more split between mandatory and voluntary and between harmonised and flexible approach. M7 was also the most popular response amongst interviewees (supported by five industry associations and two civil society representative out of 17 replies; 41%). Those stakeholders that supported a mandatory approach argued that this would ensure harmonisation between Member States and would better support cross-border journeys, whereas those who supported a voluntary approach argued that a such an approach was more appropriate as Member States were different.

Stakeholders were also asked for their views on making the detail of four of the measures mandatory. Respondents agreed or strongly agreed that the following support tools should be mandatory for all Member States in relation to:

- *M6: Reductions or reimbursements of charges paid by the shipper or operator who organised the intermodal transport operation equal to the share or lump sum of certain transshipment costs (e.g. 30%)* (ten out of 15 for the survey and 17 out of 21 amongst the interviews; 67% and 81% respectively).
- *M7: Reductions or reimbursements of costs paid by the shipper or operator who organises the transport operation equal to the share or lump sum of certain transport costs per loading unit on non-road leg (e.g. 20%)* (eight out of 15 for the survey and 18 out of 21 amongst the interviews; 53% and 86% respectively).
- *M9: at least 1 mandatory tool for support from the list of support Toolbox that reduce/reimburse operational transport costs* (ten out of 16 for the survey and 13 out of 17 amongst the interviews; 63% and 76% respectively).
- *M10: at least 1 mandatory tool for support from the list of support Toolbox that reduce/reimburse operational transport costs and at least 1 mandatory tool for support from the list of support Toolbox that provide financial support for setting up new routes and technological upgrades* (ten out of 16 for the survey and eleven out of 17 amongst the interviews; 63% and 65% respectively).

For all the items in the list above, support in the survey came essentially from industry stakeholders. Among public authorities, support and opposition to each of the above-listed measures was almost exactly split half/half. In the course of the stakeholder workshop, concerns about the potential adverse impact of the application of the tools being made voluntary on the level playing field were raised by a number of stakeholders.

Interviewees also indicated which of the specific provisions that are currently in the CTD should be retained. 15 out of 20 were for retaining Article 2 (ban on quotas; 75%), Article 4 (equivalent use of non-resident hauliers as in international road transport; 15 out of 20; 75%) and Article 8 (ban on price controls; 12 out of 20; 60%). This reflected the responses to a similar question in the OPC, where 49 out of 72 of respondents indicated their support for retaining Article 2 (68%) and Article 4 (39 out of 59; 66%). In addition, 55 out of 72 (76%) of respondents to the OPC supported retaining both Article

6.1 (tax reductions or reimbursements to road hauliers of Rolling Highway CT operations; and Article 6.2 (tax exemptions to road hauliers for vehicles used exclusively in all new eligible CT; 57 out of 73 (78%)).

In the survey, stakeholders were asked for their views on how four policy measures under *Thematic Area 4, 'Increase transparency and cooperation to facilitate flexibility and simplify entry to the market'* would contribute to meeting the proposed objective of *improving transparency and cooperation to facilitate flexibility and simplify entry to the market*. For both M11 (establish interoperability obligation for defined data set) and M12 (establish common data exchange protocol), all survey respondents that had a view (12 out of 12; 100%) and 15 out of 22 interviewees (68%) believed that these measures would contribute to achieving the proposed objective to a 'significant extent'. For M13, *establish transparency requirements for services/facilities available at terminals*, 12 out of 13 survey respondents (92%) and 13 out of 22 interviewees (59%) also believed that the measure would contribute to achieving the proposed objective to a 'significant extent' (on industry respondent chose "limited extent" as an answer).

On M11, M12 and M13, two industry stakeholders (one transport operator and one freight organiser) expected some additional direct one-off costs for their organisation or their members, but did not expand further. Five industry stakeholders (across all subgroups) expected some additional ongoing costs from ensuring compliance with requirements for these measures, but again did not expand further.

Stakeholders were asked to indicate from a list of criteria those that they considered important for transparency and as being an appropriate basis for defining terminal categories. At least ten interviewees out of 21 indicated that each criterion was important. No interviewee opposed any criterion. Within the survey, the criteria listed as the most important (75%) by industry stakeholders was 'connections by road, rail, inland waterways and short-sea' and by public authorities (45%) was 'conditions for road hauliers'.

Support tools

A number of support tools could be adopted to support industry stakeholders to increase the use of multimodal/intermodal transport. Linked to questions under thematic area 3 above, stakeholders were also asked further questions on the details of the proposed support measures.

As part of the OPC, stakeholders were asked a range of questions on support tools, including who should be the beneficiaries of these. There was broad support to *apply policies or support measures to different actors*, with *transport organisers* (85 out of 96; 89%) and *shippers* (83 out of 95; 87%) being the most popular beneficiaries *to encourage them to choose intermodal/multimodal options*. 59 out of 93 respondents (63%) believed that the *eligibility for support* should be *based on new principles* rather than on those in the current CTD. With the exception of participating terminal operators and freight organisers, the majority of whom were against giving up the current principles, all industry sub-categories responding to the OPC were in their majority in favour of introducing new principles. The most common aim of the support tools included in the CTD should be to *provide support to cover the inherent disadvantages of intermodal/multimodal transport in order to make intermodal/multimodal operations price-competitive vis-à-vis road-only transport* (58 out of 75; 77%). This was supported by the majority of respondents from each stakeholder group and industry sub-category. There was also broad support for different types of measures, such as: *economic support for technological upgrades* (89 out of 96; 93%); *regulatory support* (85 out of 96; 89%); *economic support to operations* (85 out of 96; 89%); and *administrative support* (simplification of procedures) (79 out of 95; 83%). All stakeholder groups considered these measures equally as 'important' or 'very important'.

In the context of Thematic Area 3, stakeholders, including those from different industrial sectors, were asked tailored questions in the survey about different support tools. When asked about the most important factors in choosing intermodal transport operations, the most important factor given by industry respondents to the survey was *price* (11 out of 12; 92%), followed by *reliability* (six out of 12; 50%) and *delivery time* (four out of 12; 33%). These factors were similarly considered to be important by interviewees, across stakeholder groups: freight forwarders, transport operators and public authorities agreed to a very large extent. Some interviewees highlighted that, while gaining importance, sustainability was not yet a primary concern for customers. Industry respondents were also asked to provide the *minimum level of reduction of transport costs that would be needed to make door-to-door intermodal transport solutions competitive with road-only transport* for different ‘road-other mode’ combinations. Road-rail combinations were considered to require least cost reductions, as half of those who responded (five out of ten) considered that reductions of less than 10% would be needed to make rail-road combinations competitive with road-only transport. On the other hand, for road-SSS combinations half of those who responded (two out of four) considered that cost reductions of less than 20% would be needed to make these combinations competitive, whereas three out of the five responses (60%) relating to road-inland waterways combinations felt that a reduction of over 25% was needed for these to become competitive.

Stakeholders were then asked questions about different aspects of potential support tools, with the survey having more tailored questions for different types of stakeholder. First, there was a series of questions on potential *financial support in the form of reductions or reimbursements of operational costs*. Ten out of 15 interviewees ‘agreed’ or ‘strongly agreed’ with the inclusion of either a reduction or reimbursement of the *transshipment costs incurred* (67%), of the *charges incurred for the use of certain infrastructure* and of the *operational transport costs to a shipper or operator who organises the transport operations* (both nine out of 15; 60%). In the interviews, several industry associations declared themselves in favour of financial and non-financial support measures to make intermodal transport more cost-effective. Public authorities which responded tended to be more cautious as to their capacity to provide financial support. The possibility of reducing rail access charges was referred to as an option by several public authorities. The survey revealed little experience with the use of these support measures. If such support tools were applied, there was a preference for these to be applied as a *share of costs* (e.g. three out of four supported the reduction or reimbursement of the transshipment costs incurred working in this way), but the numbers that responded to this question were very low. Industry respondents also tended to support the *Member State where the costs occurred funding the support*, although again the numbers were very low (e.g. again only three out of four shippers supported the reduction or reimbursement of the transshipment costs incurred working in this way).

On the operational support measures, no industry stakeholder provided information on the impacts associated with the implementation of these measures. Naturally, industry stakeholders welcomed all additional public support. The Latvian Ministry of Transport noted that the main problem for cohesion countries will be the level of EU support in general, first for the intermodal infrastructure (terminals, equipment, etc.) but also for supporting intermodal operations. Latvia considers the situation regarding intermodal transport uneven between different Member States. In those Member States with a low population density, the low number of freight movements might not be enough to make intermodal transport profitable.

Second, there were questions about *financial support for setting up new routes*. Eight out of 15 interviewees (53%) ‘agreed’ or ‘strongly agreed’ with the inclusion of ‘*start-up support to the shipper or operator for organising a new intermodal transport scheduled route*’. Again, the survey revealed little experience with such support tools in practice and industry – again from a low level of response – felt that the support should be applied as a *share of costs* (e.g. four out of six transport operators; 67%) and for these to be *funded by the Member State where the costs occurred* (e.g. six out of six transport operators; 100%). When asked in the interviews about their reasons for being in favour of

start-up support for a new scheduled route, it was noted that starting up long routes was a significant financial risk for operators and would often only become financially viable after several months of operation. Some industry representatives expressed their concern that new routes might be stopped again after support runs out.

The third set of questions on support tools asked for views on *financial support for technological upgrades*. Six of the proposed support tools received a majority support from interviewees, i.e.:

1. *Start-up support for agents for establishing an open access consolidation or distribution centre or platform for intermodal transport* (12 out of 14; 86%).
2. *Financial support to transport operators or transport chain organisers in intermodal transport for ICT upgrades* (12 out of 14; 86%).
3. *Financial support to transshipment terminal owners or operators for acquiring additional clean equipment for increasing their handling capacity and ability to handle new types of loading units* (11 out of 14; 79%).
4. *Financial support to transshipment terminal operators for acquiring clean transshipment and shunting equipment* (11 out of 14; 79%).
5. *Financial support to transport operators for retrofitting non-cranable semi-trailers into cranable semitrailer* (10 out of 15; 67%).
6. *Financial support to transport operators/carriers or transport chain organisers for acquiring or/and using 'clean' vehicles or vessels exclusively in intermodal transport* (10 out of 15; 67%).

15 out of 15 transport operators (100%), underlined that the initial investment costs had impacted their introduction of such technologies. The survey again revealed little experience with these support tools and again industry – from a low level of response – also called for the support to be applied as a *share of costs* (e.g. 4 out of 5 terminal operators (80%)).

The fourth set of questions related to potential *regulatory support*. Stakeholders 'agreed' or 'strongly agreed' with the inclusion of both of the proposed support tools, i.e. *exemption of eligible intermodal transport road legs for from national/local traffic bans* (13 out of 15; 87%) and *allow increased weights and dimensions for road vehicles in intermodal transport road legs beyond EU rules* (12 out of 15). The survey revealed that industry did not agree that these support tools *should only apply to zero emission vehicles*, e.g. 4 out of 5 transport operators disagreed that weekend or peak hour driving bans should only be lifted for zero emission vehicles.

Expected evolution without further action

Of the survey respondents and interviewees who responded to a question about how the share of intermodal transport in their country would evolve without further support over the next decade, all but one considered that the share would either stagnate or decline by 2030. When asked about how the average costs per transport operation by mode would evolve without further revision of the CTD, stakeholders of all groups in the interviews agreed that costs would generally rise in the context of overall high inflation. 14 out of 19 of interviewees suggested that the cost of road transport would increase by more than 15% by 2030, whereas for other modes, ten out of 19 felt that the costs would either increase by at least 5% for rail or they did not know (12 out of 19 for inland waterways) and ten out of 19 for short sea shipping). When asked about the effects on costs for different modes of the regulatory framework, six out of seven of survey respondents (86%) and 13 out of 18 interviewees (72%) thought that costs for road transport would increase. Some respondents thought this also for short sea shipping, with five out of seven survey respondents (71%) and seven out of 18 interviewees (38%) (with a further nine indicating they do not know) indicating this.

ANNEX 3: WHO IS AFFECTED AND HOW?

1. PRACTICAL IMPLICATIONS OF THE INITIATIVE

The revision of the CTD aims at increasing the uptake of intermodal transport by making intermodal transport more competitive vis-à-vis road-only transport. The costs and benefits of the preferred option are expected to fall on different stakeholder groups.

The preferred policy option is expected to have positive impacts on those involved in intermodal transport but may also lead to some negative impacts on those engaged in road-only transport that are not willing to shift to providing the intermodal road legs. At the same time, the shippers, while not bearing additional costs, will benefit from a wider range of transport options.

Description of industry stakeholders' roles and their place in the intermodal chain

The intermodal transport market consists of four groups of industry stakeholders, defined here by type of activity, and Member State authorities. In some cases, the stakeholders participate in several activities in the sector and the stakeholder groups may somewhat overlap.

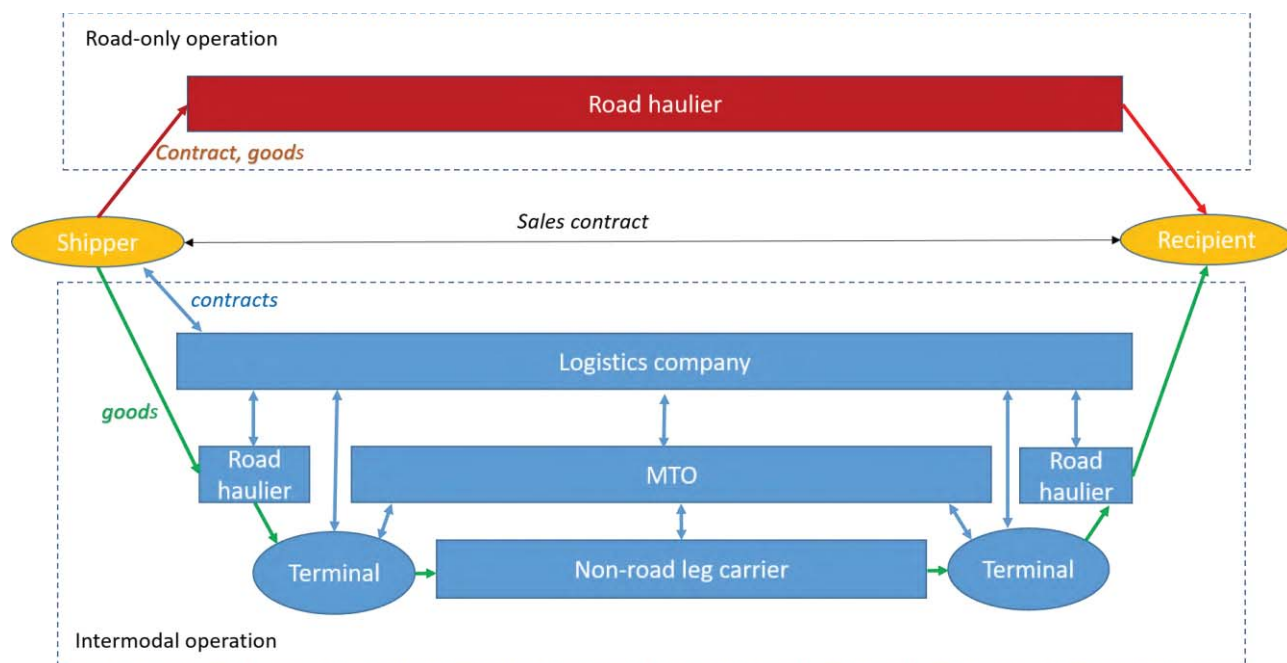
The goods are owned and shipped by shippers, who have an interest to send the good from place of departure to place of arrival. The shippers may organise the transport themselves or hire a logistics company or freight forwarder to do the organisation for them. Thus, the shippers and logistics companies are treated in this impact assessment as transport organisers. They decide which mode of transport to use for the operation and are crucial in achieving modal shift. Some organisers, in particular bigger logistics companies, may also be engaged in actual transport activity and act as carriers for parts of the transport operation, typically the road leg, but not limited to it. For instance, some large shipping companies are developing their own logistics services for roads that connect to maritime services. Similarly, some shippers carry out on their own account transport for parts of operation, typically the road-leg.

Transport carriers are companies actually carrying the goods either on rail (railway undertakings), inland waterways (barge operators), short sea shipping (maritime operators) or road (road hauliers). The carriers do not decide which mode of transport to choose, but simply carry out the operation as per transport contract on the mode of transport they are active in. The exception is the situation where a road haulier can decide to take a ferry instead of driving all the way without a transport organiser intervention. Sometimes carriers subcontract other carriers either in the same mode or other modes to carry out the operation.

Dedicated companies exist, in particular in rail transport, that organise connections without organising door-to-door services or without providing actual transport services. These are known as either multimodal transport operators (MTOs) or combined transport operators (CTOs). In this impact assessment, they are called connection organisers. These economic agents take the commercial risk of establishing rail services between terminals, contract a railway undertaking to carry out the transport and sell "slots" to transport organisers on these trains. In such a model, the railway undertaking is not taking any risks as it is always paid for running a full-length train. It is the connection organiser that has to find sufficient shippers or logistics companies to actually fill the train and cover the costs it pays to the railway undertaking. These operators are crucial enablers of intermodal transport as railway undertakings are often unwilling to sell rail-space wagon-by-wagon and most shippers do not have sufficient freight to fill full block trains at regular intervals. Sometimes, logistics companies can act as connection organisers and sometimes shippers create consortiums among themselves to arrange new train services.

Terminal operators play a part in intermodal transport by transshipping freight between modes. Usually, terminal operators do not provide other services in the intermodal chain. Terminals may be owned or be affiliated to carriers or connection organisers.

Figure 13: Comparative example of contractual relationships and the flow of goods between different industry stakeholders in road-only transport and in intermodal transport



Finally, the revision has to take into account that modal shift to intermodal transport has an impact on those road hauliers who currently carry out road-only long-distance transport. The road hauliers can adapt to intermodal market and start providing intermodal road legs.

All industry stakeholders mentioned, except long-distance road hauliers, are expected to benefit from increased competitiveness of the intermodal transport. For the carriers, the logistics companies, the volume of their operations and thus turnover will increase. For the connection organisers, their risks are reduced and as is investment payback-time. However, this does not necessarily translate into higher profits as competition with road-only transport is sharp and any increase in intermodal transport prices to shippers will result in operations simply taking place on road-only transport. Similarly, the carriers and logistics companies are not expected to raise their prices as the competing road transport price remains a constraining factor. For shippers, there is no cost saving impact expected, as the support is expected to bring the intermodal transport cost to a comparable level with road-only transport. Thus, for shippers who today use road-only transport, the reduction of the intermodal price will not actually affect their costs.

2. SUMMARY OF COSTS AND BENEFITS

I. Overview of Benefits (total for all provisions) – Preferred Option (PO-B2a)		
Description	Amount	Comments
Direct benefits		
Administrative cost savings for businesses, expressed as present value over 2025-2050 relative to the baseline	EUR 4.3 billion	Administrative cost savings derive from simplified procedures thanks to the use of eFTI digital transport data platforms for proof of eligibility and for reporting eligible operations in support to the application process, as well as from easier access to information about upcoming support schemes. The beneficiaries are transport organisers.
Administrative cost savings for Member State authorities, expressed as present value over 2025-	EUR 2.3 million	Mandatory use of eFTI platforms for proof of eligibility reduces the road-side check time.

I. Overview of Benefits (total for all provisions) – Preferred Option (PO-B2a)		
<i>Description</i>	<i>Amount</i>	<i>Comments</i>
2050 relative to the baseline		
Indirect benefits		
Reduction in external costs of transport, expressed as present value over 2025-2050 relative to the baseline	EUR 15.3 billion	Indirect benefit to society at large, as the shift from road-only transport to intermodal transport saves external costs of GHG emissions, air pollutant emissions, noise, accidents and congestion
Reduction in energy consumption (cumulative over 2025-2050 relative to the baseline)	10.5 million of tonnes of oil equivalent	Indirect benefit to society at large, as the shift from road-only transport to intermodal transport reduces overall energy consumption.
Positive impact on GDP relative to the baseline	GDP increase of 0.1% in 2030 and 0.3% in 2050 relative to the baseline	Indirect benefit to society at large. The increase in the competitiveness of intermodal transport operations is expected to have knock-on effects throughout the entire economy, leveraging the initial impact on the transport sector. This is also expected to lead to positive impacts on GDP, which is estimated to increase by around 0.1% in 2030 and 0.3% in 2050 relative to the baseline.
Positive impacts on employment relative to the baseline (additional persons employed over 2025-2050)	24,000 additional persons employed in 2030 and 83,000 in 2050	Indirect benefit to society at large. The shift to intermodal transport solutions involves several transport modes, transshipment and terminal services that will generate more employment.
Administrative cost savings related to the ‘one in, one out’ approach*		
Administrative cost savings for businesses (annual savings relative to the baseline)	EUR 0.43 billion	Recurrent administrative cost savings derive from simplified procedures thanks to the use of eFTI digital transport data platforms for proof of eligibility. The beneficiaries are transport organisers.

II. Overview of costs – Preferred option (PO-B2a)						
	Citizens/Consumers		Businesses		Administrations	
	One-off	Recurrent	One-off	Recurrent	One-off	Recurrent
Direct adjustment costs, expressed as present value over 2025-2050 relative to the baseline	-	-	For operators in the intermodal transport: EUR 0.3 million.	-	For the European Commission: EUR 0.3 million.	For the European Commission: EUR 1.7 million.
Direct administrative costs, expressed as present value over 2025-2050 relative to the baseline	-	-	-	For operators in the intermodal transport: EUR 6.6 million	-	-
Economic cost of support, expressed as present value over 2025-2050 relative to the baseline	-	-	-	-	-	For national public administrations: EUR 7.5 billion.
Costs related to the ‘one in, one out’ approach						

II. Overview of costs – Preferred option (PO-B2a)							
		Citizens/Consumers		Businesses		Administrations	
		One-off	Recurrent	One-off	Recurrent	One-off	Recurrent
Total	Direct adjustment costs, expressed as present value over 2025-2050 relative to the baseline	-	-	For operators in the intermodal transport: EUR 0.3 million.	-		
	Indirect adjustment costs	-	-	-	-		
	Administrative costs (for offsetting), annual costs relative to the baseline	-	-	-	EUR 6,100		

3. RELEVANT SUSTAINABLE DEVELOPMENT GOALS

III. Overview of relevant Sustainable Development Goals – Preferred Option (PO-B2a)		
Relevant SDG	Expected progress towards the Goal	Comments
SDG 9: Industry, innovation and infrastructure Indicator: 9.1.2: Passenger and freight volumes, by mode of transport	PO-B2a is expected to result in 6.8% increase in intermodal volumes across all non-road modes relative to the baseline scenario (cumulative over 2025-2050).	This is largely attributed to PM9, PM10, PM11 and PM13, which are expected to engender an increase in intermodal freight transport using support tools. These measures are expected to drive a shift away from road freight and towards rail, IWW and SSS freight transport.
SDG 13: Climate action Indicator: 13.2.2: Total greenhouse gas emissions per year	PO-B2a is expected to result in a reduction in the CO ₂ emissions of freight transport by 0.7% of the CO ₂ emissions of freight transport in the 2025-2050 period, relative to the baseline scenario.	This is largely attributed to PM9, PM10, PM11 and PM13, which are expected to engender an increase in intermodal freight transport using support tools. The shift away from road freight will support a reduction in CO ₂ emissions relative to the baseline scenario.
SDG 7 - Affordable and clean energy Indicator: 7.3.1 is the "Energy intensity measured in terms of primary energy and GDP".	By replacing road-only transport with intermodal transport, energy consumption in freight transport per tkm transported is expected to reduce. Cumulatively over 2025-2050 period, the energy consumption will reduce by 10.5 million of tonnes of oil equivalent.	This is largely attributed to PM9, P10, P11 and PM13, which are expected to engender an increase in intermodal freight transport using support tools. The shift away from road freight will reduce energy consumption as rail, IWW and SSS freight transport is more energy efficient per tkm transported due to larger loading capacity.

ANNEX 4: ANALYTICAL METHODS

1. DESCRIPTION OF THE ANALYTICAL METHODS USED

The analytical framework used for the purpose of this impact assessment builds on the PRIMES-TREMOVE, ASTRA and TRUST models, and the assessment of the administrative costs, etc.¹³⁸.

The baseline scenario has been developed using the PRIMES-TREMOVE model by E3Modelling. PRIMES-TREMOVE has a successful record of use in the Commission's energy, transport and climate policy assessments. In particular, it has been used for the impact assessments underpinning the 'Fit for 55' package, the impact assessments accompanying the 2030 climate target plan¹³⁹ and the staff working document accompanying the sustainable and smart mobility strategy¹⁴⁰, the Commission's proposal for a long term strategy¹⁴¹ as well as for the 2020 and 2030 EU's climate and energy policy framework.

ASTRA and TRUST are the main models used to assess the policy measures and options presented in this impact assessment. For the baseline scenario they have been calibrated on the results of the PRIMES-TREMOVE model.

The proposed measures are assumed to be implemented from 2025 onwards, so that the assessment has been undertaken for the 2025-2050 period and refers to EU-27. Costs and benefits are expressed as present value over the 2025-2050 period, using a 3% discount rate.

1.1. PRIMES-TREMOVE model

The PRIMES-TREMOVE transport model projects the evolution of demand for passengers and freight transport, by transport mode, and transport vehicle/technology, following a formulation based on microeconomic foundation of decisions of multiple actors. Operation, investment and emission costs, various policy measures, utility factors and congestion are among the drivers that influence the projections of the model. The projections of activity, equipment (fleet), usage of equipment, energy consumption and emissions (and other externalities) constitute the set of model outputs.

The PRIMES-TREMOVE transport model can therefore provide the quantitative analysis for the transport sector in the EU, candidate and neighbouring countries covering activity, equipment, energy and emissions. The model accounts for each country separately which means that the detailed long-term outlooks are available both for each country and in aggregate forms (e.g. EU level).

In the transport field, PRIMES-TREMOVE is suitable for modelling *soft measures* (e.g. eco-driving, labelling); *economic measures* (e.g. subsidies and taxes on fuels, vehicles, emissions; ETS for transport when linked with PRIMES; pricing of congestion and other externalities such as air pollution, accidents and noise; measures supporting R&D); *regulatory measures* (e.g. CO₂ emission performance standards for new light duty vehicles and heavy duty vehicles; EURO standards on road transport vehicles; technology standards for non-road transport technologies, deployment of Intelligent Transport Systems) and *infrastructure policies for alternative fuels* (e.g. deployment of refuelling/recharging infrastructure for electricity, hydrogen, LNG, CNG). Used as a module that contributes to the PRIMES energy system model, PRIMES-TREMOVE can show how policies and trends in the field of transport contribute to economy-wide trends in energy use and emissions. Using data disaggregated per Member State, the model can show differentiated trends across Member States.

¹³⁸ Ricardo et al. support study (2023), op.cit.

¹³⁹ SWD/2020/176 final.

¹⁴⁰ SWD/2020/331 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020SC0331>

¹⁴¹ [2050 long-term strategy \(europa.eu\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020SC0331)

The PRIMES-TREMOVE has been developed and is maintained by E3Modelling, based on, but extending features of, the open source TREMOVE model developed by the TREMOVE¹⁴² modelling community. Part of the model (e.g. the utility nested tree) was built following the TREMOVE model¹⁴³. Other parts, like the component on fuel consumption and emissions, follow the COPERT model.

Data inputs

The main data sources for inputs to the PRIMES-TREMOVE model, such as for activity and energy consumption, come from EUROSTAT databases and from the Statistical Pocketbook 'EU transport in figures'¹⁴⁴. Excise taxes are derived from DG TAXUD excise duty tables. Other data comes from different sources such as research projects (e.g. TRACCS project) and reports.

1.2. TRUST - TRansport eUropean Simulation Tool

TRUST is a European scale transport network model developed and maintained by TRT and simulating road, rail, inland waterways and maritime transport activity. TRUST covers the whole Europe and its neighbouring countries and it allows for the assignment of passenger and freight origin-destination (OD) matrices at NUTS3 level of detail (about 1,600 zones) on the multimodal transport network¹⁴⁵.

Road, rail, inland waterways and maritime transport modes are covered in separate modules, each with its own matrices that are then assigned simultaneously on the multimodal transport network.

TRUST is built in PTV-VISUM software environment. The assignment algorithm used is Equilibrium Assignment which distributes demand for each origin/destination pair among available alternative routes, according to Wardrop first principle. This principle assumes that each traveller is identical, non-cooperative and rational in selecting the shortest route, and knows the exact travel time he/she will encounter. If all travellers select routes according to this principle the road network will be at equilibrium, such that no one can reduce their travel times by unilaterally choosing another route of the same OD pair. This principle has been extended to consider generalised travel cost instead of travel time, where generalised travel cost can include the monetary cost of in-vehicle travel time, tolls, parking charges and fuel consumption costs. The impedance function is defined in terms of generalised time from an origin O to a destination D. Travel costs are defined separately by link types using combinations of fixed, time-dependent and distance-dependent parameters. Travel time is estimated endogenously by the model as result of the assignment. Speed-flow functions are used to model the impact of traffic on free-flow speeds, given links capacity. The model iterates until a pre-defined convergence criterion for equilibrium is reached.

TRUST can simulate various transport policy measures at network level and at European scale for road, rail, maritime and inland waterways. It is particularly suitable for modelling policies in the fields of infrastructure, infrastructure charging, etc.

The TRUST model has an internal mode choice module which allows to estimate modal split for various scenarios. Future trends of transport demand by mode coming from ASTRA are used to

¹⁴² <https://www.tmleuven.be/en/navigation/TREMOVE>.

¹⁴³ Several model enhancements were made compared to the standard TREMOVE model, as for example: for the number of vintages (allowing representation of the choice of second-hand cars); for the technology categories which include vehicle types using electricity from the grid and fuel cells. The model also incorporates additional fuel types, such as biofuels (when they differ from standard fossil fuel technologies), LPG, LNG, hydrogen and e-fuels. In addition, representation of infrastructure for refuelling and recharging are among the model refinements, influencing fuel choices. A major model enhancement concerns the inclusion of heterogeneity in the distance of stylised trips; the model considers that the trip distances follow a distribution function with different distances and frequencies. The inclusion of heterogeneity was found to be of significant influence in the choice of vehicle-fuels especially for vehicles-fuels with range limitations.

¹⁴⁴ Statistical Pocketbook (2022), https://transport.ec.europa.eu/media-corner/publications/statistical-pocketbook-2022_en.

¹⁴⁵ Further information on TRUST is available on <http://www.trt.it/en/tools/trust/>

estimate total demand and then split by mode according to new travel time and costs deriving from infrastructure development and policies implementation.

The TRUST road model deals with the assignment of road transport origin-destination matrices for both passenger cars and trucks above 3.5t. The road network covers all relevant links between the NUTS-3 regions, including motorways, primary roads, and roads of regional and sub-regional interest. Ro-Ro ferry services are also explicitly modelled. TRUST rail network includes different link types (conventional, high speed, border rail link, by user group). Rail supply includes also intermodal terminals for load transfer between road and rail. Interchange with maritime mode is modelled where existing. Demand is segmented according to different train types (three for passengers and two for freight). TRUST inland waterways network includes all main canals and 70 inland ports across Europe. Each link has specific features on free-flow speed, class of the canal, draught and capacity. Inland waterways demand matrices are segmented in two categories (container; non-container). TRUST inland waterways assignment is performed according to an AON (all or nothing) algorithm. The maritime model includes almost 200 ports across Europe and all sea routes between ports. Access to maritime mode is direct for those zones with ports and by feeder modes (road, rail or inland waterway) for zones without ports. Thus, the model simulates complete freight origin-destination paths. Time and costs at ports are considered in the calculation of the generalised cost. Maritime demand matrices are segmented into container, bulk and general cargo.

The TRUST model is a well established model that has been used for numerous impact assessments in the transport field over the past 15 years. So far, the model has not undergone a formal scientific review by a panel of external experts.

In the context of this impact assessment, the TRUST network model was used for:

- Testing and fine-tuning some of the policy measures to be implemented and combining them in policy options.
- Analysing the eligibility criteria defined in the policy options based on the distribution of tkm by distance bands in the TRUST model.
- Assessing the share of traffic which cannot benefit from economic support.

In addition, TRUST was used to quantify the modal shift expected over the time horizon of the impact assessment (2030, 2040 and 2050) resulting from the implementation of those policy measures providing an operational economic support to the non-road modes.

More specifically, the model was used to assess the impact of reductions in transport costs and transshipment costs for policy measures foreseeing a contribution to eligible operations (i.e. those determining a reduction of cost for non-road modes) to transport operators or shippers. The impact was calculated in terms of percentage change in transport activity (tkm) relative to the baseline for each mode for the intra-EU27 flows.

Intermodal transport chains are simulated by TRUST as “unitised” transport flows composed of:

- Initial road leg (from origin of goods to departure terminal)
- Transshipment (at the departure terminal)
- Non-road main mode leg (either rail, inland waterway or short-sea shipping)
- Transshipment (at the arrival terminal)
- Final road leg (from the arrival terminal to the destination of goods)

Figure 14: TRUST modelling of unitised transport flows



Source Ricardo et al. support study (2023)

Therefore, the assessment of the policy measures with the TRUST model entailed applying the reduction of the transport costs for non-road main mode legs (i.e. point c)) and of transshipment costs at terminals (i.e. points b) and d)).

Data inputs

The main data sources for inputs to the TRUST model are the EUROSTAT database and the Statistical Pocketbook 'EU transport in figures'¹⁴⁶, TENtec Information system¹⁴⁷ and ETISplus database.

1.3. ASTRA - ASsessment of TRANsport Strategies

ASTRA is a strategic model based on the Systems Dynamics Modelling approach simulating the transport system development in combination with the economy and the environment until the year 2050¹⁴⁸.

ASTRA consists of different modules, each related to one specific aspect such as the economy, transport demand or the vehicle fleet. The main modules cover the following aspects:

1. Population and social structure (age cohorts and income groups)
2. Economy (e.g. GDP, input-output tables, employment, consumption and investment both at aggregate and at sectoral level)
3. Foreign trade (inside EU and to partners from outside EU)
4. Transport (including demand estimation, modal split, transport cost and infrastructure networks)
5. Vehicle fleet (passenger and freight road vehicles by segment and drivetrain)
6. Environment (including air pollutant emissions, CO₂ emissions, energy consumption).

The economy module simulates the main economic variables. Some of these variables (e.g. GDP) are transferred to the transport generation module, which uses the input to generate a distributed transport demand. In the transport module, demand is split by mode of transport. The traffic performance by mode is associated with the composition of the fleet (computed in the vehicle fleet module) and the emissions factors (defined in the environmental module), in order to estimate total emissions.

Several feedback effects take place in the ASTRA model. For instance, the economy module provides the level of income to the fleet module, in order to estimate vehicle purchase. The economy module then receives information on the total number of purchased vehicles from the fleet module to account for this item of transport consumption and investment. Furthermore, changes in the economic system immediately feed into changes of the transport behaviour and alter origins, destinations and volumes of European transport flows.

The indicators that ASTRA can produce cover a wide range of impacts; in particular transport system operation, economic, environmental and social indicators. The environment module uses input from the transport module (in terms of vehicle-kilometres-travelled per mode and geographical context) and from the vehicle fleet module (in terms of the technical composition of vehicle fleets), in order to compute fuel

¹⁴⁶ Statistical Pocketbook (2022), op.cit.

¹⁴⁷ https://ec.europa.eu/transport/themes/infrastructure-ten-t-connecting-europe/tentec-information-system_en

¹⁴⁸ A detailed description of the model is available at <http://www.astra-model.eu/index.htm>

consumption, greenhouse gas emissions and air pollutant emissions from transport. ASTRA also estimates the upstream emissions (well-to-tank) due to fuel production and vehicles production. Therefore, well-to-wheel emissions can be provided as well.

Strategic assessment capabilities in ASTRA cover a wide range of transport measures and investments with flexible timing and levels of implementation.

Geographically, ASTRA covers all EU Member States plus the United Kingdom, Norway and Switzerland. The model is built in Vensim software and is developed and maintained by TRT, M-Five and ISI Fraunhofer.

The ASTRA model is a well established model that has been used for numerous impact assessments in the energy, transport and climate action fields for the past 15 years. A dedicated version of the ASTRA model was developed by TRT and M-Five on behalf of JRC and is being used since 2013, when the first version was developed as part of the ASSIST project¹⁴⁹.

So far, the model has not undergone a formal scientific review by a panel of external experts.

In the context of this impact assessment, the ASTRA model was used to estimate the wider impacts of the policy measures and options in terms of GDP, GHG emissions, air pollution emissions and other external costs of transport. To this aim, the ASTRA model has used as input the estimated increase in the unitised transport from the TRUST model. To monetise the external costs, the unit values from the Handbook on the external costs of transport¹⁵⁰ have been used.

Data inputs

ASTRA is calibrated on the EUROSTAT database and data from the Statistical Pocketbook 'EU transport in figures'¹⁵¹.

1.4. Cost model

The assessment of the transport costs by mode was performed on the basis of specific cost assumptions highlighting the contribution of the various legs of intermodal transport. They reflect the transport costs by mode and the costs of transshipments.

The following modes have been considered separately

1. Long distance road transport (truck used as main mode or as long-distance feeder mode);
2. Short distance road transport (truck used as feeder mode);
3. Rail intermodal;
4. IWW intermodal;
5. SSS – Roll-on/roll-off (RoRo);
6. SSS – Lift-on/lift-off (LoLo).

In order to provide reliable estimates of the average costs, costs have been assessed on representative distances. To this end typical cases have been represented by different distance thresholds: short (300 km), medium (600 km) and long (1000 km). In the case of short distances (300 km), RR is typically more costly than an all-road solution. The same 300km distance threshold can be suitable for IWW-intermodal combination, because the cost difference of the inland waterway leg and road transport per unit transported is bigger, and the road legs are very short and thus have little impact on costs. In the case of a medium distance range (600 km), intermodal solutions become more competitive with single mode road

¹⁴⁹ [Assist-Project - ASSIST](#)

¹⁵⁰ CE Delft et al. (2019). op.cit.

¹⁵¹ [Statistical Pocketbook \(2022\), op.cit.](#)

transport while in the case of long-distance example (1000 km and more) intermodal in almost all cases is the best option.

Other elements having an impact on the average costs are attributed to the average composition of traffic in terms (number of units carried on a train, balance of flows on the round trip, etc.). The objective of the cost model was to provide an assessment of the various components of the costs, to give an indication of the likely evolution of costs over time. The underlying assumption has been that costs represent a good approximation of transport prices. Regional differences in transport cost were considered to take into account for example differences in drivers' wages or level of tolls and track access charge levied in the different countries.

2. BASELINE SCENARIO

In order to reflect the fundamental socio-economic, technological and policy developments, the Commission prepares periodically an EU Reference Scenario on energy, transport and GHG emissions. The socio-economic and technological developments used for developing the baseline scenario for this impact assessment build on REF2020¹⁵². The same assumptions have been used in the policy scenarios underpinning the impact assessments accompanying the "Fit for 55" package¹⁵³.

Main assumptions of the baseline scenario

The main assumptions related to economic development, international energy prices and technologies are described below.

Economic assumptions

The modelling work is based on socio-economic assumptions describing the expected evolution of the European society. Long-term projections on population dynamics and economic activity form part of the input to the model and are used to estimate transport activity, particularly relevant for this impact assessment.

Population projections from Eurostat¹⁵⁴ are used to estimate the evolution of the European population, which is expected to change little in total number in the coming decades. The GDP growth projections are from the Ageing Report 2021¹⁵⁵ by the Directorate General for Economic and Financial Affairs, which are based on the same population growth assumptions.

Table 26: Projected population and GDP growth per Member State

	Population			GDP growth	
	2020	2025	2030	2020-'25	2026-'30
EU27	447.7	449.3	449.1	0.9%	1.1%
Austria	8.90	9.03	9.15	0.9%	1.2%
Belgium	11.51	11.66	11.76	0.8%	0.8%
Bulgaria	6.95	6.69	6.45	0.7%	1.3%
Croatia	4.06	3.94	3.83	0.2%	0.6%
Cyprus	0.89	0.93	0.96	0.7%	1.7%
Czechia	10.69	10.79	10.76	1.6%	2.0%
Denmark	5.81	5.88	5.96	2.0%	1.7%
Estonia	1.33	1.32	1.31	2.2%	2.6%
Finland	5.53	5.54	5.52	0.6%	1.2%

¹⁵² EU Reference Scenario 2020, op.cit.

¹⁵³ [Policy scenarios for delivering the European Green Deal \(europa.eu\)](#)

¹⁵⁴ EUROPOP2019 population projections: [Eurostat - Data Explorer \(europa.eu\)](#)

¹⁵⁵ The 2021 Ageing Report : Underlying assumptions and projection methodologies [The 2021 Ageing Report: Underlying Assumptions and Projection Methodologies | European Commission \(europa.eu\)](#)

	Population			GDP growth	
	2020	2025	2030	2020-'25	2026-'30
France	67.20	68.04	68.75	0.7%	1.0%
Germany	83.14	83.48	83.45	0.8%	0.7%
Greece	10.70	10.51	10.30	0.7%	0.6%
Hungary	9.77	9.70	9.62	1.8%	2.6%
Ireland	4.97	5.27	5.50	2.0%	1.7%
Italy	60.29	60.09	59.94	0.3%	0.3%
Latvia	1.91	1.82	1.71	1.4%	1.9%
Lithuania	2.79	2.71	2.58	1.7%	1.5%
Luxembourg	0.63	0.66	0.69	1.7%	2.0%
Malta	0.51	0.56	0.59	2.7%	4.1%
Netherlands	17.40	17.75	17.97	0.7%	0.7%
Poland	37.94	37.57	37.02	2.1%	2.4%
Portugal	10.29	10.22	10.09	0.8%	0.8%
Romania	19.28	18.51	17.81	2.7%	3.0%
Slovakia	5.46	5.47	5.44	1.1%	1.7%
Slovenia	2.10	2.11	2.11	2.1%	2.4%
Spain	47.32	48.31	48.75	0.9%	1.6%
Sweden	10.32	10.75	11.10	1.4%	2.2%

Beyond the update of the population and growth assumptions, an update of the projections on the sectoral composition of GDP was also carried out using the GEM-E3 computable general equilibrium model. These projections take into account the potential medium- to long-term impacts of the COVID-19 crisis on the structure of the economy, even though there are inherent uncertainties related to its eventual impacts. Overall, conservative assumptions were made regarding the medium-term impacts of the pandemic on the re-localisation of global value chains, teleworking and teleconferencing and global tourism.

International energy prices assumptions

Alongside socio-economic projections, transport modelling requires projections of international fuel prices. The table below shows the oil prices assumptions of the baseline and policy options of this impact assessment, that draw on the modelling underpinning the REPowerEU package¹⁵⁶.

Table 27: Oil prices assumptions

Oil	2015	2020	2030	2040	2050
in \$'15 per boe	52.3	39.8	92.1	97.4	117.9
in €'15 per boe	47.2	35.8	83.0	87.8	106.3

Technology assumptions

Modelling scenarios is highly dependent on the assumptions on the development of technologies, both in terms of performance and costs. For the purpose of the impact assessments related to the “Climate Target Plan” and the “Fit for 55” policy package, these assumptions have been updated based on a rigorous literature review carried out by external consultants in collaboration with the JRC. Continuing the approach adopted in the long-term strategy in 2018, the Commission consulted on the technology assumption with stakeholders in 2019. In particular, the technology database of the PRIMES and PRIMES-TREMOVE models (together with GAINS, GLOBIOM, and CAPRI) benefited from a dedicated consultation workshop held on 11 November 2019. EU Member States representatives also had the opportunity to comment on the costs elements during a workshop held on 25 November 2019. The updated technology assumptions are

¹⁵⁶ SWD(2022) 230 final.

published together with the EU Reference Scenario 2020¹⁵⁷. The same assumptions have been used in the context of this impact assessment.

Other input data and assumptions for the base year

Intermodal transport

The size of the intermodal transport market in the EU27 is defined starting from the most recent studies available on the topic. The 2017 study by ISL, KombiConsult¹⁵⁸ indicates that in 2015 the intermodal transport sector moved a total of 534 bn tkm, considering the EU27 only¹⁵⁹. In terms of volumes of container transported, the same study estimates that approximately 56 million TEU per year were transported in the EU27. Most traffic is linked to maritime transport, followed by rail and inland waterways. In particular, SSS represents 68% of EU27 intermodal transport activity, and 57% of container traffic. RR covers instead 29% of all tonnes moved in EU27, and 32% of the volumes of containers. Transport by IWW, which is relevant only within a limited number of river basins, accounts for 3% of tonnes moved and 11% of container traffic, respectively (see Table 27).

Table 28: EU 27 freight transport activity (billion tkm) and volumes transported (mTEU) in the intermodal transport sector (2015)

	Freight transport activity		Volumes	
	Gtkm	%	mTEU*	%
Rail/road	152	29%	18	32%
IWW/road	16	3%	6	11%
SSS/road	366	68%	32	57%
Total	534	100%	56⁽¹⁾	100%

Source: Ricardo et al. support study (2023); Note: * includes double counting of SSS-rail and SSS-IWW traffic (5%).

Compared against figures on the total freight transport activity provided in the Statistical Pocketbook¹⁶⁰ it is estimated that intermodal transport accounted for nearly 27% of all EU27 (non-road) freight transport activity in 2015. Considering the various modes, in 2015 the share of transport activity carried out with intermodal units was estimated to be 31% and 29% for rail and SSS respectively, while for IWW this share was lower, at around 9%.

Taking into account the EU27 intermodal transport activities that meet the definition of CT of the current CTD¹⁶¹, it can be estimated that the scope of application of the current CTD is limited to about 12% of the total freight transport carried out by non-road modes. As shown in Table 28, the scope of application ranges from 19% for rail to 10% and 6% respectively for SSS and IWW.

Focusing on the scope of application of the CTD within the intermodal transport sector only, the CTD covers approximately 45% of the overall EU27 intermodal (non-road) transport activity. The share for SSS is estimated to be much lower than that of rail and IWW, as only 36% of SSS intermodal operations comply with the CTD definition (compared to 60% and 68% for rail and IWW respectively). This is mainly due to the fact that many SSS intermodal operations are domestic and that, for those that are international (intra-EU), some involve a road leg of more than 150 km.

¹⁵⁷ [EU Reference Scenario 2020 \(europa.eu\)](https://european-council.europa.eu/media/en/press-articles/2020/07/20200720-01.pdf)

¹⁵⁸ ISL, KombiConsult (2017), op.cit.

¹⁵⁹ In this section, the intermodal transport market is defined considering only intermodal transport activity in EU27, which as provided in ISL, KombiConsult (2017) includes domestic and intra-EU intermodal transport activities only. International activities, including intermodal traffic between EU borders or ports and third countries such as deep-sea maritime transport, are also provided in the study but have not been considered.

¹⁶⁰ Statistical Pocketbook (2022), Op. cit.

¹⁶¹ ISL, KombiConsult (2017), op.cit.

Table 29: Share of intermodal freight transport in total freight transport activity (billion tkm), and of intermodal transport activity covered by the current CTD (EU27, 2015)

	Freight transport activity (Gtkm)			Shares (%)		
	Total	Intermodal (non-road legs)	Covered by the CTD	Intermodal in total activity	Covered by CTD as % of total activity	Covered by CTD as % of intermodal
	(a)	(b)	(c)	(b/a)	(c/a)	(c/b)
Rail	396	123	74	31%	19%	60%
IWW	147	14	9	9%	6%	68%
SSS *	864	248	89	29%	10%	36%
Total	1 407	385	172	27%	12%	45%

Source: Ricardo et al. support study (2023). Note: * includes only domestic and intra-EU27 transport

Transshipment

Transshipment between modes represent an additional key element in intermodal transport chains, and various studies analyse the volume of operations and the performance of intermodal terminals in the EU. In 2015, terminals in EU27 carried out an average of over 58 million transshipment operations per year, of which approximately 38 million (65%) are at seaports, 28% at hinterland rail terminals, and 6% in the IWW/road sector (see Table 29).

Table 30: Transshipment operations in EU27 (2015)

	Annual number of transshipments (million)	Share of total
Rail/road	17	28%
IWW/road	4	6%
SSS/road	38	65%
Total	58	100%

Source: Ricardo et al. support study (2023).

Cost of transport

The cost of *rail transport* is estimated based on a bottom-up approach combining the following categories of costs: costs related to locomotives (including interest, depreciation, maintenance, etc.), driver costs, other operation costs such as electricity costs and track access charges (TAC). In order to get comparable data with the all-road transport, some assumptions had to be made with respect to the composition of the trains (number of wagons and locomotive), load factors, weight of tares (container, semi-trailer, swap bodies), length and weight of the train, average speed (45-50 km/h), single trip/round trip. The cost per intermodal train-km is estimated in the range of 12-15 EUR/train-km, also depending on the country (there are differences with respect to driver wages, TAC and electricity costs). To this, shunting operations and terminal handling (included in transshipment costs) need to be added. Over the past years, changes have been observed in TAC (as in several countries they have been reduced to support the sector) and in electricity prices (in particular current price are far higher compared to a year ago).

The average cost for container transport by inland waterway, taking into account a typical barge of 600 TEU over a navigation distance of 250 km is estimated to be around 0.03EUR/t-km. The cost does not include terminal handling, which needs to be added.

The average cost for container transport by short sea shipping, taking into account typical ships between 600 and 2500 TEU mostly used for feeder services, is estimated to be around 0.13-0.14 EUR/TEU-km. In Ro-Ro transport, the unit transported are trucks or semitrailer driven onto a ferry, which can be accompanied or not accompanied. The semitrailers as units are more commonly shipped unaccompanied, and ships carry between 150 and 200 units over an average distance of 500 km. The unit price is estimated to be around 0.6 EUR per unit per km. Since the semitrailer can be considered equivalent to 2 TEU, the cost per TEU is estimated to be in the range of 0.3 EUR/TEU-km. For longer distances the unit price is decreasing. To this, the container handling in port terminal needs to be added the cost of container handling.

For *road legs*, the main input data included the costs related to vehicles (purchase/lease, interest/capital cost, taxes, maintenance), other operation costs (fuel and additives, tyres, lubricants), driver costs, tolls and other costs such as overheads, based on the following assumptions:

1. Yearly mileage: typically, heavy goods vehicles used for long distance transport travel 100,000-120,000 km per year¹⁶².
2. The average speed, assumed in the 60-65 km/h range, is also affecting the unit cost as many cost components depend on the time spent.
3. Fuel consumption: current consumption rate is assumed on long distance at around 32 litre/100 km¹⁶³. This is assumed to decrease over time following the baseline projections results provided by the PRIMES-TREMOVE model, taking into account the stricter limits set by emission standard regulations and the use of alternative fuels. In the long term, the projected shift to electrified powertrains is expected to reduce this cost component.
4. Road transport assumptions for feeder services (pre and post haulage) see a higher unit cost per km. This is because of the higher time dependency of the cost (waiting times), and consequently on the shorter distance driven on a yearly basis.

Finally, the *cost of transhipments* is based on input from a 2017 study by TRT¹⁶⁴ and a more recent study on transshipment technologies by PWC¹⁶⁵. An average cost has been considered taking into account the weight of the different type of units. In the former it was estimated e.g. that the costs per transshipment are on average EUR 51 in the RR sector, EUR 42 for IWW/road, and EUR 67 for SSS/road. More granular information on transshipment costs is provided in the latter, showing for instance how transshipment costs vary depending on the technology used, the type of loading unit, as well as the transport modes concerned. The study also provides information on the distribution of costs among different components (i.e. investment, operation, and ground costs).

Policies in the Baseline scenario

Building on the EU Reference scenario 2020, the impact assessments accompanying the 'Fit for 55' initiatives proposed by the Commission on 14 July 2021¹⁶⁶ considered several scenarios relying on regulatory measures and carbon pricing. They took into account a broader range of policies (including this initiative as well as the initiatives on rail capacity, the revision of the Weights and Dimensions Directive and the CEEU), that were represented in a stylised way ahead of the actual proposals, to show the delivery of at least 55% emissions reduction target by 2030 and to account for the interaction with the forthcoming initiatives. The scenario reflecting the preferred policy options of the impact assessments accompanying the proposals considered a balanced approach, showing a combined approach of carbon pricing instruments and regulatory-based measures (including this initiative as well as the initiatives on rail capacity, the revision of the Weights and Dimensions Directive and the CEEU) to deliver on the increased climate ambition. The staff working document accompanying the REPowerEU initiatives¹⁶⁷ took as a starting point the scenario of the 'Fit for 55' package showing a combined approach of carbon pricing instruments and regulatory-based measures and additionally included the proposed revision of the Renewable Energy Directive and Energy Efficiency Directive. All these scenarios share the same macro-

¹⁶² The value usually found in literature are between 100 and 130 thousand km. See for example the analysis performed by the Comité national routier (<https://www.cnr.fr/en/espace-europe>).

¹⁶³ This variable can be retrieved for example from CNR analyses, <http://www.cnr.fr>

¹⁶⁴ TRT (2017), op.cit.

¹⁶⁵ PWC, KombiConsult (2022), op.cit.

¹⁶⁶ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en

¹⁶⁷ SWD(2022) 230 final.

economic and technology assumptions and also include the policy measures part of the EU Reference scenario 2020.

The baseline scenario for this impact assessment builds on the EU Reference scenario 2020 (similarly to the 'Fit for 55' and REPowerEU scenario) and thus share the same macro-economic and technology assumptions. It also includes all the policy measures part of the EU Reference scenario 2020. In addition, the baseline scenario has been designed to include the 'Fit for 55' initiatives and the REPowerEU initiatives while excluding this initiative and other initiatives part of the forthcoming Greening Freight package (initiatives on rail capacity, the revision of the Weights and Dimensions Directive and the CountEmissions EU). In other words, the baseline scenario of this initiative does not include the proposed revision of the CTD but only the current CTD.

The baseline also incorporates foresight megatrends¹⁶⁸ and developments captured in the 2022 Strategic Foresight Report¹⁶⁹. Among others, it captures the trend of increasing demand for transport as population and living standards grow as well as the links between the digital and green transition. In particular, the projected transport activity draws on the long-term population projections from Eurostat and GDP growth from the *Ageing Report 2021*¹⁷⁰ by the Directorate General for Economic and Financial Affairs.

Baseline scenario results

EU transport activity is projected to grow post-2020, following the recovery from the COVID pandemic. Road transport would maintain its dominant role, its activity going up by 29.1% by 2030 relative to 2015 (48.9% for 2015-2050). Rail transport activity is projected to grow significantly faster than road, driven in particular by the gradual completion of the TEN-T network, supported by the Connecting Europe Facility, Cohesion Fund and the European Regional Development Fund funding. Measures of the 'Fit for 55' package also increase to some extent the competitiveness of rail and of waterborne transport relative to road transport. Freight rail traffic would increase by 42.2% by 2030 relative to 2015 (96% for 2015-2050), hence falling short of the milestone of the SSMS of increasing the traffic by 50% by 2030 and doubling it by 2050. Inland waterways and short sea shipping activity is projected to go up by 21.1% by 2030 relative to 2015 (49.5% for 2015-2050), also falling short of the milestone of the SSMS, in particular for 2030 (i.e. increase inland waterways and short sea shipping traffic by 25% by 2030 and by 50% by 2050).

Congestion costs would increase by about 14% by 2030 and 32% by 2050, relative to 2015. Congestion on the inter-urban network would be the result of growing freight transport activity along specific corridors, in particular where these corridors cross urban areas with heavy local traffic.

CO₂ emissions from transport¹⁷¹ are projected to be 24% lower by 2030 compared to 2015, and 87% lower by 2050. The baseline scenario shows that the emission reductions from the transport sector would contribute towards the ambition of at least 55% emission reductions by 2030 and climate neutrality by 2050, while relying to a significant extent on technological solutions (i.e. the uptake of low- and zero-emission vehicles and of renewable and low carbon fuels) and carbon pricing. This would depart from the balanced approach underpinning the impact assessments accompanying the 'Fit for 55' package and the staff working document accompanying the REPowerEU initiatives¹⁷², showing a combined approach of carbon pricing instruments and regulatory-based measures to deliver on the increased climate ambition. It should be noted that the scenarios underpinning the impact assessments accompanying the 'Fit for 55' initiatives and the staff working document accompanying the REPowerEU initiatives took into account a broader range of policies (including this initiative) that were represented in a stylised way ahead of the

¹⁶⁸ https://knowledge4policy.ec.europa.eu/foresight/tool/megatrends-hub_en#explore

¹⁶⁹ COM(2022) 289 final of 29 June 2022.

¹⁷⁰ The 2021 Ageing Report: Underlying assumptions and projection methodologies, The 2021 Ageing Report: Underlying Assumptions and Projection Methodologies | European Commission (europa.eu).

¹⁷¹ Including international aviation but excluding international maritime.

¹⁷² SWD(2022) 230 final.

actual proposals, to show the delivery of at least 55% emissions reduction target by 2030 and to account for the interaction with the forthcoming initiatives. The scenario reflecting the 'Fit for 55' initiatives, the REPowerEU initiatives and the forthcoming initiatives shows the need to reduce emissions from transport by 26% by 2030 relative to 2015 and by 94% by 2050. Therefore, this initiative contributes towards the at least 55% emissions reductions target by 2030 and achieving climate neutrality by 2050.

NO_x emissions are projected to go down by 56% between 2015 and 2030 (85% by 2050), mainly driven by the electrification of the road transport and in particular of the light duty vehicles segment. The decline in particulate matter (PM_{2.5}) would be slightly lower by 2030 at 52% relative to 2015 (90% by 2050).

Intermodal transport

Drawing on the baseline projections for the freight transport activity, other information available from the literature and modelling inputs, Table 30 presents the projected evolution of the intermodal transport activity for the different combinations of modes for EU27. Total intermodal transport activity is projected to grow by around 34% between 2015 and 2030 and 95% between 2015 and 2050. The largest growth is estimated to take place in the intermodal RR sector, which is expected to more than double between 2015 and 2050 (170% increase), while the increase in the SSS and IWW intermodal sectors is expected to be lower, at around 60% and 37% respectively.

Table 31: EU27 freight transport activity (billion tkm) and percent changes (2015-2030 and 2015-2050) in the intermodal transport sectors

Intermodal freight transport activity (non-road legs)	2015	2020	2030	2040	2050	2015-2030	2015-2050
Rail/road	123	134	191	271	334	55.1%	170.5%
IWW/road	14	13	14	16	19	3.6%	37.4%
SSS/road	248	274	310	355	398	25.0%	60.2%
Total	385	420	516	642	750	33.9%	94.7%

Source: Ricardo et al. support study (2023)

The projected growth in the different intermodal sectors is driven by two main factors: the increase over time in the overall EU freight transport activity, and the increasing role that unitised transport is expected to have within the EU freight market. There is a clear trend in the EU indicating that freight is increasingly moved in unitised loads, making intermodal one of the fastest growing segments in the EU freight transport market. A recent survey on the rail freight market suggests e.g. that between 2009-2019 intermodal rail transport grew by almost 50% (compared to 16% growth for the overall rail freight) and predicts that this trend will consolidate in future years¹⁷³.

The baseline projections presented in Table 30 have been defined using a more conservative approach, considering in particular that, despite the strong potential highlighted by industry players, constraints in terminal capacity will likely remain an issue in future years especially in the rail sector¹⁷⁴. As a result, the baseline projections show that intermodal transport will reach a share of nearly 34% of the overall EU rail freight market by 2030, and further up to 43% by 2050. Intermodal transport in the SSS sector is expected to perform just above average compared to the overall short sea shipping market, going up from the current market share (29%) to 31% in 2050. The growth for the IWW sector is projected to be more aligned to that of total inland waterway freight transport, i.e. maintaining a constant market share of 9%.

¹⁷³ According to UIC-UIRR (2020), in the period 2009-2019 intermodal rail transport activity (tkm) has grown by almost 50% (compared to 16% of total rail freight transport). Such increasing trend is estimated to continue also in future years, with intermodal rail freight volumes growing by an additional 47% by 2049, reaching an annual volume of over 278 Gtkm and a market share in the rail freight market of over 50%.

¹⁷⁴ The PWC, KombiConsult study (2022) estimates that terminal capacity in the EU will increase by only 18% until 2030, considering current plans for both terminal upgrades and new terminal constructions.

Finally, considering the share of activity covered by the current CTD as estimated by ISL, KombiConsult (2017)¹⁷⁵, the volumes falling within the scope of the current CTD in the baseline were estimated (see Table 31). Without EU level action, in the baseline scenario the scope of application of the current CTD is assumed to remain unchanged until 2050, so that the shares of freight transport activity covered by the CTD remain the same as reported in Table 28. This implies that the freight activity covered by CTD grows at the same rate as the intermodal freight transport activity (i.e. 170% increase for rail, 60% for SSS, and 37% for IWW).

Table 32: EU27 intermodal freight transport activity (billion tkm) covered by the CTD, and percent changes (2015-2030 and 2015-2050)

Intermodal freight transport activity (non-road legs)	2015	2020	2030	2040	2050	2015-2030	2015-2050
Rail/road	74	80	115	163	201	55.1%	170.5%
IWW/road	9	9	10	11	13	3.6%	37.4%
SSS/road	89	98	111	127	142	25.0%	60.2%
Total	172	187	235	301	356	36.8%	106.6%

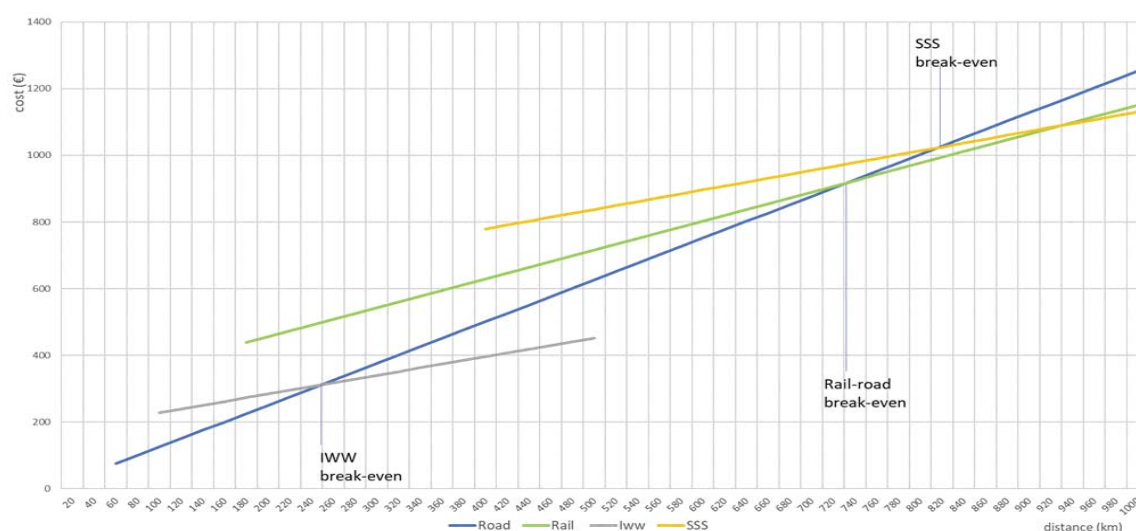
Source: Ricardo et al. support study (2023)

Cost comparison

In order to compare intermodal operations with road-only alternatives, costs were calculated for a range of cases. Fixed road legs distances were assumed based on the median distances established in the 2017 study by ISL, KombiConsult¹⁷⁶:

Figure 15 shows the distances at which such intermodal operations become price-competitive or break even with road-only transport, by modal combination.

Figure 15: Cost comparison of select intermodal operations with road-only alternative



Source: Ricardo et al. support study (2023)

¹⁷⁵ KombiConsult (2017), op.cit.

¹⁷⁶ Ibid.

3. IMPACTS ON COSTS AND COSTS SAVINGS PER POLICY MEASURE

This section provides an assessment of the impacts by policy measure or group of policy measures, where relevant. The synergies between the policy measures included in the policy options are also taken into account where relevant.

3.1. Provide support to a wider range of operations under effective eligibility conditions (PM1-PM3)

3.1.1. Measures PM1 and PM2 – eligibility conditions

Under PM1 and PM2 the scope of eligibility for support is extended to all intermodal operations in the EU that deliver a minimum level of savings of external costs compared to road-only transport. Domestic, operations between Member States and the EU-part of international operations with third countries would be covered as long as the operation taking place within EU delivers the required savings. The eligibility for support is based only on actual socio-environmental merits avoiding the abstract leg-distance definition for eligibility in the current CTD.

Socio-environmental merits

For defining the socio-environmental merits, three main criteria were analysed:

1. establish which externalities ensure meaningful eligibility today but also in the future taking into account the projected changes in transport externalities per mode up to 2050;
2. establish which level of external costs savings ensures that all three non-road modes (rail, inland waterways, short sea shipping) would be eligible at a reasonable level;
3. establish which level of external costs savings ensures that major part of operation is on non-road.

Two policy measures were assessed with regard to the socio-environmental merits: one looking at the GHG emissions (PM1) and another one at a broader set of externalities including GHG emissions, air pollution, congestion, accidents and noise (PM2) that an intermodal transport operation would allow to save as compared to a corresponding unimodal road-only transport operation between the same starting and ending points.

The level of externalities and the potential socio-environmental advantages of an intermodal transport operation vary depending on a wide range of factors, including transport-specific conditions (mode combinations, distance covered, etc.) and environmental and location-specific factors (geographical scope, level of congestion, etc.). As it is not possible to assess in detail the externalities related to all different intermodal and road-only transport operations in EU, the impacts of PM1 and PM2 are assessed based on average externality factors per unit of transport activity (e.g., GHG emissions per ton-km travelled by a certain mode or combination of modes). More specifically:

- a) As regards PM1, average GHG emission factors were estimated for each mode considering the emissions per unit of transport activity (tkm) from the baseline scenario;
- b) With respect to PM2, average externality factors beyond GHG emissions were derived from the 2019 Handbook on the external costs of transport¹⁷⁷. In particular, the average (monetary) value of the external costs of freight transport can be used for a comprehensive comparison of the level of externalities linked to different types of transport activities.

Table 33: Average external costs of freight transport (EUR-cent/tkm), 2016 values¹⁷⁸

¹⁷⁷ CE Delft, 2019.

¹⁷⁸ Noise costs for inland waterway transport and maritime transport are not considered in the 2019 Handbook on the external costs of transport. The noise emission factors for these transport modes are relatively low as activity usually take place in sparsely populated areas. Maritime transport can also have an impact on habitats. However, the habitat damage costs have not been considered in the 2019 Handbook on the external costs of transport. Generally, there are limited studies covering the external costs of habitat damage due to transport activities.

Cost category	HGV	Rail	IWW	Maritime
Accidents	1.3	0.1	0.1	
Air Pollution	0.8	0.2	1.3	0.4
Climate change	0.5	0.06	0.3	0.2
Noise	0.5	0.6		
Congestion	0.8			
Well-to-Tank	0.2	0.2	0.1	0.1
Habitat damage	0.2	0.2	0.2	
Total	4.2	1.3	1.9	0.7

Source: European Commission (2019)

For the analysis of the impacts until 2050, the baseline projections for the evolution of the level of externalities produced by the different modes of transport were considered, which accounts for the use of less polluting and more energy efficient vehicles in EU freight transport operations. The evolution of the well-to-wheel GHG intensity for each mode of transport in the baseline scenario for 2015-2050 is provided in Table 33¹⁷⁹.

Table 34: Evolution of GHG intensity by transport mode for 2015-2050 in the baseline scenario (2015=100)

Mode	2015	2030	2040	2050
Road	100	64	39	17
Rail	100	36	7	2
Inland waterways	100	76	59	34
Short sea shipping	100	89	60	12

Source: Ricardo et al. support study (2023)

Furthermore, the level of externalities of intermodal transport also varies depending on the combination of modes used and on the share of distance covered with each mode within an operation. The weighted average length of road transport within the intermodal operations in EU has been defined based on average single road leg distances established in the study by ISL, KombiConsult¹⁸⁰ and taking into account the different market segments and types of operations within modal combinations as shown in Table 34.

Table 35: Weighted median road distances in EU intermodal transport, in km

Type of operation	Assumptions	Weighted average road leg per operations*
Rail-road	55% of cases one road leg, 45% two road legs	116
IWW-road	one road leg	21
SSS-road	80% one road leg, 20% two road legs	156

Source: Ricardo et al. support study (2023); *Including average empty containers pick-up/delivery to/from depot.

Savings thresholds - level of external costs savings that ensure that all three non-road modes (rail, inland waterways, short sea shipping) would be eligible

An analysis was carried out to establish at which level of external cost savings would it be ensured that all modal combinations are eligible for support. It was established that for PM1 (GHG emissions), all modal combinations could be eligible up to a threshold of 25% in case of minimum road transport, i.e. one road leg with median distance. In case of 2 median road legs, the non-road distance would have to be double in order to be eligible. Above this threshold, IWW would not be eligible taking into account the legislative framework included in the baseline¹⁸¹. SSS would still be eligible at 40% and rail would be always eligible even at shortest distances as rail transport already

¹⁷⁹ The indicator considers the ratio between total emissions and transport activity. For inland waterways, the average emissions intensity of domestic navigation (inland waterways and national maritime) has been assumed.

¹⁸⁰ KombiConsult (2017), op. cit.

¹⁸¹ Non-eligibility applies to sector average. Operations where cleaner barges such as for example solar barges are used, would be individually still eligible.

has lower GHG emissions than road (Table 32) and is expected to further reduce GHG emissions quicker than road (Table 33). However, possibly as soon as of 2035, but certainly before 2040 the waterborne transport and IWW in particular would not be eligible at any savings thresholds. The eligibility of rail in the future would depend on the actual speed of decarbonisation of road transport relative to other modes (on well-to-wheel basis).

For PM2 (wider set of externalities including GHG emissions, air pollution, congestion, accidents and noise), all modal combinations would be eligible up to a savings threshold of 50% based on the baseline projections up to 2050 (in case of one road leg). At 55%, IWW would not be eligible anymore, while reasonably long rail would lose eligibility at 65% and SSS at 75%.

Table 36: Door-to-door distance with one road leg necessary for eligibility under PM1 and PM2

GHG savings (PM1)				Wider externalities savings (PM2)			
	Rail	IWW	SSS		Rail	IWW	SSS
-20%	102	63	217	-20%	113	32	171
-25%	109	137	261	-25%	125	38	186
-30%	118	N	326	-30%	141	47	203
-35%	128	N	436	-35%	162	60	224
-40%	139	N	657	-40%	190	84	249
-45%	154	N	1333	-45%	229	140	282
-50%	171	N	N	-50%	289	416	324
-55%	193	N	N	-55%	392	N	381
-60%	222	N	N	-60%	608	N	461
-65%	260	N	N	-65%	1349	N	586
-70%	315	N	N	-70%	N	N	803
-75%	398	N	N	-75%	N	N	1273

Source: Ricardo et al. support study (2023). Note: The cells marked with “N” refer to savings thresholds at which operations are not eligible at any distance

Level of external costs savings that ensures that major part of operation is on non-road

Taking into account the objective to shift major part of the operation away from road, the analysis further established at which savings thresholds is it ensured that the non-road transport is indeed more than 50% of the eligible operations door-to-door distance.

For PM1 (GHG), this would be ensured only as of savings threshold of 50% for rail, but at that threshold, IWW and SSS would not be eligible. At 25%, where IWW and SSS are eligible at least in 2030, rail legs could be as low as 27% of the total distance of the operation. PM2 (wider set of externalities) would ensure that the non-road leg is always the major part of operation already at a 40% savings threshold for all modal combinations.

Table 37: Percentage share of the non-road leg from total door-to-door intermodal operation distance at different savings thresholds

		25%	30%	35%	40%	50%
PM1 – GHG	Rail	27	32	37	43	53
	IWW	85	never	never	never	never
	SSS	50	60	70	80	never
PM2 - EXT	Rail	36	43	51	65	72
	IWW	47	57	67	86	83
	SSS	30	36	42	54	75

Source: Ricardo et al. support study (2023).

Share of eligibility of total intermodal transport

The minimum reduction threshold of external costs that will be set will directly impact the share of intermodal operations in the EU that would benefit from support. Roughly, the lower the reduction required, the more intermodal operations will be eligible for support. Similarly, the higher the reduction required, the longer distance the eligible operations have to be as saving comes from the difference of socio-environmental merits between the non-road part of the operation and road transport. By applying the above criteria and comparing the intermodal solutions with the road-only solutions, the shortest eligible door-to-door distances were established as presented in Table 37.

Table 38: Door-to-door distance thresholds for eligibility criteria (km)

Policy measure	Rail			IWW			SSS		
	2030	2040	2050	2030	2040	2050	2030	2040	2050
PM1 (GHG - 25%)	184	194	244	73	never	never	268	273	243
PM2 (EXT - 40%)	275	281	287	84	87	82	299	299	292

Source: Ricardo et al. support study (2023); Note: 'GHG - 25%' stands for extending the scope to all intermodal operations in EU that save 25% GHG when shifting from road-only to intermodal; 'EXT - 40%' stands for extending the scope to all intermodal operations in EU that save 40% external cost when shifting from road-only to intermodal.

It must be noted that the figures presented are the theoretical shortest eligible operation distances notwithstanding whether intermodal operations of such distances exist in reality. The simulations have been carried out taking into account existing non-road transport operations in general and not specifically intermodal operations for which such granular data does not exist. The break-even distances of intermodal transport with respect to costs are normally higher than those for unimodal rail, inland waterways or short sea shipping, do not involve transshipment costs, high organisational costs nor road-legs that are priced often per time and not per distance and have considerably higher costs per tkm than non-road transport. As a matter of fact, when comparing with the break-even distances presented in Figure 15 above, it can be assumed that the operations below the break-even distances even if saving a sufficient amount of externalities would not widely take place today as they would not be cost-efficient.

For the same reasons, it is not possible to empirically establish with precision the share of intermodal operations that would be eligible due to PM1 and PM2. However, by using the data on distance bands from the TRUST model, it is possible to establish how much of rail, IWW and SSS operations in general are longer than the calculated minimum eligible distance. The minimum eligible distances were calculated using weighted average road-leg distances. No exact data exists on the distribution of road leg distances in intermodal transport, but it is clear that a certain amount of operations within the above shares would not fulfil the saving threshold as the road legs would be too long compared to the non-road leg. Taking into account that the non-road legs of economically viable intermodal operations are normally longer on average than unimodal rail, inland waterways and short sea shipping operations as they also involve transshipment costs, and using normal (Gaussian) distribution for establishing the share of road legs that are above the weighted average road leg distances and would thus in combination with minimum calculated non-road leg distances not deliver the required savings, the estimated share of intermodal operations that would be eligible under PM1 and PM2 are presented in the Table 38.

Table 39: Estimated share of intermodal operations eligible per mode for PM1 and PM2

Policy measure	Rail			IWW			SSS		
	2030	2040	2050	2030	2040	2050	2030	2040	2050
PM1 (GHG - 25%)	88%	87%	83%	57%	0%	0%	70%	70%	70%
PM2 (EXT - 40%)	81%	81%	80%	56%	56%	56%	73%	73%	73%

Source: Ricardo et al. support study (2023); Note: 'GHG - 25%' stands for extending the scope to all intermodal operations in EU that save 25% GHG when shifting from road-only to intermodal; 'EXT - 40%' stands for extending the scope to all intermodal operations in EU that save 40% external cost when shifting from road-only to intermodal.

Taking into account the shares of different modal combinations in total intermodal transport and the eligibility from total intermodal transport under the current CTD, it can be established that the policy measures would result in an overall extension of the eligibility of 33.4% in 2030 for PM1 and 33.5% for PM2, and 30.2% in 2050 for PM1 and 33.3% under PM2.

PM1 and PM2 alone are not expected to result in an increase in the total intermodal traffic volumes. In theory if no other changes would be made to current CTD, PM1 and PM2 would result in wider application of today's support and current schemes for support (Article 4 and 6) would have to be extended to wider set of operations as shown above. However, as Article 6 is ineffective no impact on the total intermodal traffic volumes is expected. In addition, a very small increase in the intermodal traffic volume has been observed due to the extended scope of today's regulatory measures, essentially Article 4 (equivalent treatment of road hauliers carrying out road legs with road-only transport).

The costs for national public administrations linked to the extended eligibility are reflected in the cost calculations for PM7-PM12 below, due to the synergies between the measures. There are no costs attributed to the industry (i.e. there is no obligation on the industry to use the CTD).

3.1.2. Measure PM3 – proof of eligibility

PM3 establishes new and adequate data set obligations for proof of eligibility with implementation via eFTI platforms. This measure will update which data needs to be provided and how proof of eligibility by the industry who wants to benefit from the support measures should be provided. It is important to acknowledge that as today, this measure will not imply obligations or adjustment costs on all economic operators in the intermodal transport sector, but only on those that are eligible under respective Member States schemes and choose to benefit from the support measures. Overall, the impact of PM3 will be mainly linked to the proof of eligibility required to hauliers at road checks.

PM3 will make it mandatory to use an eFTI platform in case the organiser wants to benefit from support measures. The eFTI Regulation¹⁸² entered into force in August 2020 and will apply from 2025. The eFTI platforms will already cover the current CTD dataset. However, using eFTI is not mandatory in general nor for CTD today. In PM3, the updated dataset will be integrated into the eFTI platforms and a dedicated functionality will be added so that the platform can automatically calculate the eligibility. Thus, the organisers will enter into the eFTI platform usual transport data, required by other modal EU and national legislation as well as some limited additional data specific for CT, in particular linking the different legs of one operation and adding vehicle or vessel and fuel data. The dedicated functionality will pull together the data needed to establish eligibility from different datasets and inform both the organiser as well as controlling authorities in case of road-side checks whether an operation is eligible or not. The eFTI platform can also be used to assemble information or reports of all eligible operations carried out, for submitting to authorities for application of economic support. The impact of the latter is covered under PM7-PM11.

¹⁸² Regulation (EU) 2020/1056.

The exact methodology and input data for externalities needs to be established separately by other legal acts (CEEU and its implementing acts in case of PM1) or by implementing or delegated acts for PM2 based on the Handbook of the external costs of transport¹⁸³. In case of PM2, it would be necessary to continue updating the Handbook on a regular basis, taking into account the latest scientific evidence as well as integrating the results of CEEU.

Adjustment costs for the private sector

The costs for the private sector are mostly covered by the implementation of the eFTI Regulation and thus part of the baseline. Additional adjustment costs are expected due to PM3 for the eFTI platform providers in the form of initial investments for developing the required dedicated functionality (one-off adjustment costs). They are estimated at EUR 0.05 million in 2025 relative to the baseline.

Table 40: Adjustment costs for the private sector due to PM3 relative to the baseline (in million EUR, 2021 prices)

	Costs (in million EUR)
Adjustment costs for eFTI platform providers (one-off costs in 2025)	0.05

Source: Ricardo et al. support study (2023)

Administrative costs savings for the private sector

As in PM3 the proof of eligibility is implemented via the eFTI platforms, the operators engaged in intermodal transport will benefit from not having to manage paper-based transport documents, in particular for road-side checks. In addition, the operators will benefit from updated data requirements that allow to check the eligibility faster at road-side checks. The costs savings due to the use of electronic data and appropriate data requirements are estimated to be on average 5 EUR per shipment¹⁸⁴. This also takes into account the eFTI platform fees for platform users. In order to derive the total administrative costs savings for the private sector, the unit cost savings are multiplied by the number of intermodal operations carried out under the different policy options. The costs savings for the private sector for 2025, 2030 and 2035 relative to the baseline are provided in Table 40. It must be noted that costs savings are assumed to occur until 2035 as post-2035 eFTI platforms are expected to be widely in use among EU operators; so there will be little case for PM3 to induce costs savings compared to the baseline.

Expressed as present value over 2025-2050, the administrative costs savings are estimated at EUR 3.35 bn in PO-A, EUR 4.08 bn in PO-B1, EUR 4.12 bn in PO-B2a, EUR 3.16 bn in PO-B2b and EUR 5.31 bn in PO-C.

For the purpose of the application of the 'one in, one out' approach, the average number of eligible operations per year during the 2025-2035 period is estimated at 0.071 bn in PO-A, 0.086 bn in PO-B1, 0.087 bn in PO-B2a, 0.067 bn in PO-B2b, and 0.112 bn in PO-C. Applying the unit costs savings of 5 EUR per shipment, the administrative costs savings per year for the 'one in, one out' are estimated at EUR 0.35 bn in PO-A, EUR 0.43 bn in PO-B1 and PO-B2a, EUR 0.33 bn in PO-B2b, and EUR 0.56 bn in PO-C.

Table 41: Administrative cost savings for the private sector due to PM3 in different policy options, relative to the baseline (in billion EUR, 2021 prices)

Cost elements	2025	2030	2035
EUR saved/check for operators (A)	5	5	5
PO-A			
Number of intermodal operations, in billion (C1)	0.065	0.071	0.076
Total cost saving per year (A*C1)	0.32	0.36	0.38
PO-B1			
Number of intermodal operations, in billion (C2)	0.078	0.086	0.094
Total cost saving per year (A*C2)	0.39	0.43	0.47
PO-B2a			
Number of intermodal operations, in billion (C3)	0.078	0.086	0.097
Total cost saving per year (A*C3)	0.39	0.43	0.48

¹⁸³ CE Delft (2019).

¹⁸⁴ SWD (2017) 194 final.

Cost elements	2025	2030	2035
PO-B2b			
Number of intermodal operations, in billion (C4)	0.060	0.067	0.073
Total cost saving per year (A*C4)	0.30	0.33	0.37
PO-C			
Number of intermodal operations, in billion (C5)	0.101	0.111	0.124
Total cost saving per year (A*C5)	0.51	0.56	0.62

Source: Ricardo et al. support study (2023)

Administrative costs savings for national public authorities

As regards public authorities, no additional adjustment costs for using the eFTI platforms are expected as the use and acceptance of eFTI platforms is already mandatory for all public authorities under the eFTI Regulation and thus part of the baseline.

On the other hand, due to PM3 the national authorities will benefit from faster procedures for road-side checks in case road-hauliers are using one of the regulatory benefits established by the CTD. The availability of digital transport information will significantly reduce the time spent by officers for inspections. For authorities, these benefits can be quantified based on the number of road checks carried out in the EU (the number of checks is considered fixed, i.e. it is not affected by the CTD provisions), and the fact that the use of digital transport data allows to cut the duration of road-side check by 10% (a time savings valued on average at 2.4 EUR per check)¹⁸⁵. Considering that pre/post haulage operations (i.e. road legs of intermodal transport) represent nearly 10% of road transport operation in EU27, the administrative cost savings for public authorities are estimated at EUR 0.24 million per year from 2025 onwards. Expressed as present value over 2025-2050, they are estimated at EUR 2.29 million relative to the baseline.

Table 42: Administrative cost savings for public authorities due to PM3, relative to the baseline (EUR million, 2021 prices)

	Annual	Present value over 2025-2050
Administrative cost savings (recurrent)	0.24	2.29

Source: Ricardo et al. support study (2023)

It must be noted that costs savings are assumed to occur only until 2035 as post-2035 eFTI and the digitalisation of transport information is expected to be widely in use among EU operators; so there will be little case for PM3 to induce costs savings compared to the baseline.

No impact is expected on intermodal traffic volumes due to PM3.

3.2. Ensure better support by improving reporting on the multimodal/ intermodal transport (PM4-PM6)

3.2.1. Measure PM4 – Replace the Commission reporting with Member States' voluntary analysis and strategic planning for sustainable freight transport

Adjustment costs for national public authorities

In PM4 the existing reporting mechanism is replaced with a new system where Member States carry out analysis and strategic planning on sustainable freight transport on a voluntary basis while the Commission reporting is abolished. The voluntary system proposed under PM4 is expected to bring limited adjustment costs for authorities. More specifically, it is expected that five Member States who

¹⁸⁵ The Mobility Package I IA study (<https://transport.ec.europa.eu/system/files/2017-06/2017-04-support-study-ia-revision-haulage.pdf>; page 120) indicates expected cabotage checks under the baseline scenario of 1.35 million/year and savings of EUR 3.2 million/year from the use of the e-CRM (linked to a 10% time reduction).

today do not carry out such analysis (AT, CZ, NL, PT and SE) would do so in the future. The one-off effort in 2025 is estimated at 98 to 198 man-days per country, depending on the number of transport modes and on the size of the freight transport sector of the country. In addition, every five years the effort required is estimated at 147 to 297 man-days per country. To estimate the costs, the tariffs per hour from the Eurostat Structure of earnings survey, Labour Force Survey data for Non-Wage Labour Costs (i.e. ISCO 2 – professionals) have been used. The total one-off costs in 2025 are estimated at EUR 0.2 million, while the recurrent costs from 2025 onwards at EUR 0.3 million every five years (see Table 42). Expressed as present value over the 2025-2050 horizon, the total adjustment costs for national authorities are estimated at EUR 1.4 million, of which one-off costs of EUR 0.2 million.

3.2.2. Measure PM5 – Replace the Commission reporting with Member States’ mandatory analysis and strategic planning for all freight transport system (cross-modal). An obligation to regularly review the measures will be included.

Adjustment costs for national public authorities

PM5 introduces an obligation on MSs to prepare on a regular basis, e.g. every 5 years, an analysis and strategic planning covering the entire freight transport system (i.e. covering both road and non-road modes). This new mechanism will allow a systematic assessment of the effectiveness and efficiency of the CTD and a review of the economic support measures according to the evolution of framework conditions in the transport sector. PM5 is expected to lead to adjustment costs for national authorities, as Member States will be required to collect data and transport statistics on a regular basis and prepare or commission a report to be published.

For the quantification of the adjustment costs for Member States, it has been assumed that each Member State will incur an initial effort to set-up the data collection system estimated at 40 to 264 man-days for 2025, and between 60 and 396 man-days every 5 years for data consolidation and report preparation, with efforts varying depending on the number of transport modes and on the size of the freight transport sector of the country. To estimate the costs, the tariffs per hour from the Eurostat Structure of earnings survey, Labour Force Survey data for Non-Wage Labour Costs (i.e. ISCO 2 – professionals) have been used¹⁸⁶.

The total one-off adjustment costs are estimated at EUR 1.1 million, and the recurrent adjustment costs at EUR 1.6 million every 5 years from 2025 onwards compared to the baseline (in 2021 prices). Expressed as present value over 2025-2050, total adjustment costs for public authorities are estimated at EUR 7.8 million, of which one-off costs of EUR 1.1 million (see Table 42).

3.2.3. Measure PM6 – Revise the Commission reporting obligation. Include a review clause and ex-ante notification and publication of Member States support schemes.

Adjustment costs for national public authorities

PM6 proposes a more limited revision of the monitoring and reporting obligations defined in Article 5 of the current CTD. The reporting will be done by the Commission as today, but the revision will involve a review of the list of data to be reported, in particular as regards outdated provisions, as well as an extension of the reporting from 2 to 5 years. Less frequent analyses allows a more meaningful analysis of the effects of the support measures and also leaves the time needed to adjust measures based on the evidence collected and the analysis produced.

In order to ensure transparency of support schemes to industry, PM6 also includes an ex-ante notification requirement for Member States to share with the Commission information on upcoming

¹⁸⁶ For EU-27 these are estimated at EUR 37.5 per hour in 2021 prices.

support schemes so that the Commission could make this information public on a central Commission gateway (linked to Member States own published information). The notification should be made sufficiently early to allow the Commission to publish the information prior to opening of the scheme and to allow operators to prepare, where appropriate, their applications before the scheme's opening, in particular if application is time or budget limited (may run out of budget in short time). This notification requirement is not expected to bring along any additional costs relative to the baseline as it is expected that Member States by default publish information about upcoming support schemes.

The current provision in Article 5 already requires Member States to assist the Commission in preparing the report. Thus no new obligations on Member States are established under PM6. A summary of the adjustment costs for the national public authorities due to PM4-PM6 compared to the baseline is provided in Table 42.

Table 43: Summary of adjustment costs for national public authorities due to PM4-PM6 compared to the baseline (million, 2021 prices)

Cost element	PM4	PM5	PM6
One-off costs	0.2	1.1	0
Recurrent costs (every 5 year)	0.3	1.6	0
Present value over 2025-2050	1.4	7.8	0

Source: Ricardo et al. support study (2023)

Adjustment costs for the European Commission

The cost for the European Commission to commission a dedicated study to gather and analyse the intermodal transport market is estimated at around EUR 300,000 per report. Expressed as present value over 2025-2050, total adjustment costs for the European Commission are estimated at EUR 1.7 million.

Administrative cost savings for the private sector

Operators are expected to enjoy administrative costs savings under PM6 (included in PO-B1, PO-B2a and PO-B2b) thanks to Commission centrally publishing the information on upcoming support schemes and thus saving operators time to monitor Member States plans in this regard. These savings come in addition to the costs savings for the preparation of the applications discussed under PM7-PM9 (see section 3.3.5 of Annex 4) and are estimated to represent 20% of these costs savings. The administrative costs savings depend on the number of applications for support in PO-B1, PO-B2a and PO-B2b. The total administrative cost savings for the private sector are estimated at EUR 23.1 million in PO-B1, EUR 23.9 million in PO-B2a and EUR 10.3 million in PO-B2b relative to baseline, expressed as present value over 2025-2050.

Table 44: Administrative cost savings for the private sector due to PM6, relative to the baseline (EUR million, 2021 prices)

Policy option	2030	2050	Present value over 2025-2050
PO-B1	1.1	1.6	23.1
PO-B2a	1.1	1.7	23.9
PO-B2b	0.5	0.8	10.3

Source: Ricardo et al. support study (2023)

No impact is expected on intermodal traffic volumes due to PM4-PM6.

3.3. Support measures to increase the competitiveness of intermodal transport (PM7-PM13)

Measures included in this category aim to provide a direct operational and other direct economic support to favour the uptake of more intermodal operations. The main effect of PM7-PM9 is through

a reduction of costs and thus a reduction of the average distance at which it becomes profitable to use intermodal solutions as compared to road-only transport (break-even distances). PM12 is a top-up measure reflecting the State aid rules to ensure the efficiency of both PM7 and PM9 and is thus analysed together with these policy measures. PM10, PM11 and PM13 are enabling measures addressing specific issues in the sector and creating preconditions for intermodal operations to grow.

Beneficiaries of the economic support can be either the transport organisers, connection organisers or carriers (for explanations see Annex 3). In order to maximise the leverage of the measures, the direct contribution should go to those economic operators who take the decision for modal choice and bear the related commercial risk. For PM7-PM9, it is the shippers or freight forwarders who decide on which mode to use and are thus seen as more effective beneficiaries than contributions to carriers. For PM10, the commercial risk is taken by economic agents who arrange a new connection for the non-road leg. Depending on the circumstances, these “connection operators” can be the carriers, the shippers, logistics companies or their consortiums or dedicated companies organising intermodal connections on non-road legs, but not carrying them out themselves. For PM11, the beneficiaries will depend on the specific support tool to be used.

3.3.1. PM7-PM9 - direct operational support’s impact on traffic volumes

PM7-PM9 entail an operational support to intermodal transport operators in the form of a reduction/reimbursement of the cost. The application of the PM7 would be mandatory and harmonised across all Member States. In PM8 it would be voluntary and in PM9 it would be mandatory for Member States to apply operational support, but design of support tool would not be harmonised. Both for the purposes of PM8 as well as PM9 (but also for PM10-PM11), a Toolbox with a list of possible support tools with more detailed minimum conditions would be included. A preliminary example of the measures in the Toolbox is included in Annex 9.

The change in the relative costs between transport operations by transport mode is estimated to lead to higher uptake of intermodal transport, as assessed with the help of TRUST model. As explained in section 1 of Annex 4, TRUST is a European scale transport network model developed and maintained by TRT and simulating the road, rail, inland waterways and maritime transport activity. TRUST covers the whole Europe and its neighbouring countries and it allows for the assignment of passenger and freight origin-destination (OD) matrices at NUTS3 level of detail (about 1,600 zones) on the multimodal transport network. Evidence of the effectiveness of financial support measures on the uptake of intermodal transport and modal shift can be found in various applications across EU. More explanations are provided in Annex 14.

Modelling assumptions

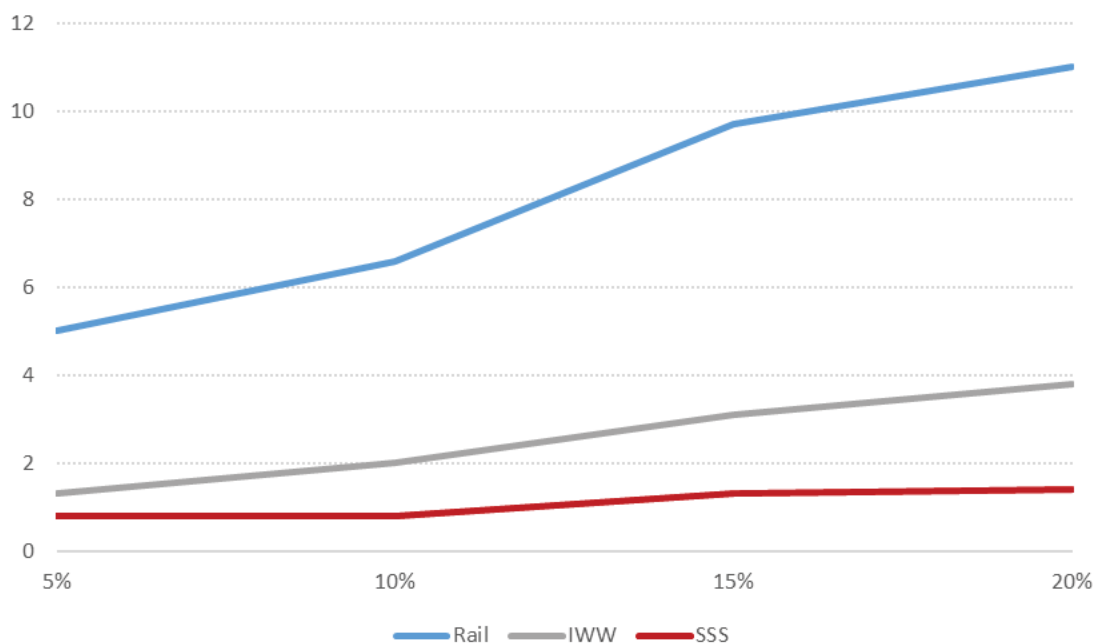
The support is to be provided as a percentage of the door-to-door transport cost. As the first step, the analysis had to establish the percentage of cost reduction that would induce sufficient modal shift. Consultation with the stakeholders, desk research and model simulations identified that on average 10% reduction of door-to-door costs to the operator who decides which mode to use (the organisers) would make intermodal options attractive to them¹⁸⁷.

A limited cost-benefit analysis was carried out to establish what levels of support would provide which decrease in the break-even distances and which impact on volumes of modal shift, while keeping also in mind that increased support means higher budgetary burden to Member States. TRUST model simulations were used to estimate the stand-alone impact of reducing the costs on the break-even distance and on modal shift (i.e. without considering any eligibility condition). The first analysis was carried out on reducing the door-to-door costs by 5%, 10%, 15% and 20%, and their

¹⁸⁷ Industry stakeholders suggested reductions depend mostly on the modal combination, with rail lowest (5 out of 10 suggested less than 10%) and IWW the highest (3 out of 5 suggested more than 25%). SSS was in the middle with 2 out of 4 respondents suggesting less than 20%.

impact on the distances at which the intermodal operation would become cost-competitive with road-only transport. For the analysis, the weighted average road leg distances (see Table 34) and average transshipment costs were used as fixed costs and organisational costs for multimodal chain were not taken into account. It is important to keep in mind that in real life the price conditions and operational characteristics can be very different and thus the relative shares of cost components diverge quite widely depending on the market segment, geographical areas, number of road legs and number of transshipments, type of loading unit and several other technical characteristics¹⁸⁸.

Figure 16: Impacts of different levels of door-to-door cost reduction (% increase in intermodal transport activity compared to the baseline)



Source: Ricardo et al. support study (2023)

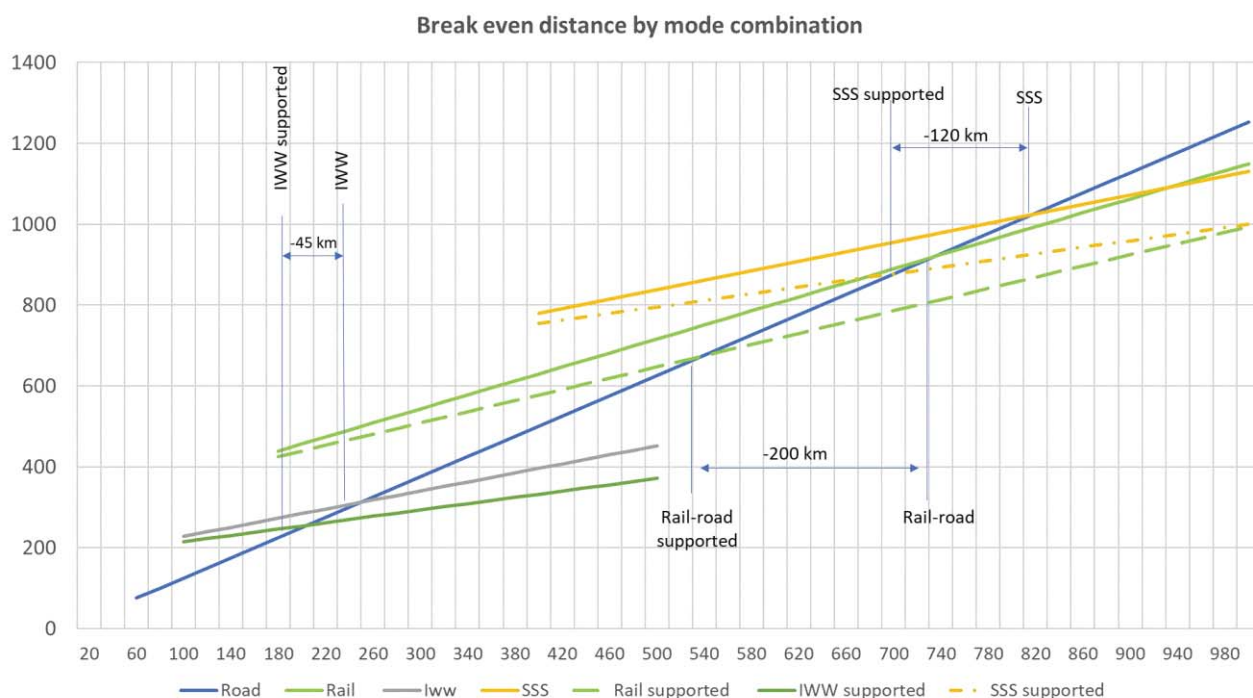
This modelling supported stakeholders' view that aid intensity level between 10% and 15% would induce reasonable level of modal shift as can be seen in Figure 16. A lower level of support would not result in sufficient price reduction to motivate large number of shippers (organisers) to shift their operations to intermodal transport or would only make a very small number of operations attractive. The remaining high break-even distance would mean that large number of operations that are still below the new break-even distance would continue to rely on road-only transport. A higher level of support will bring the break-even distances down and ensure more modal shift, but it also needs to be kept in mind that the higher the support level the higher the budgetary costs for Member States. Furthermore, at certain shorter distances the intermodal operations are not competitive for reasons other than price. In particular transit time and inconvenience of organising and following a multiparty operation outweigh the pure cost-competitiveness, meaning that it may result in a situation where higher support is available, but operators are nevertheless not interested in shifting to intermodal. Thus increasing the support to make also very short operations cost- competitive is not effective.

Considering that higher support levels also bring along higher budgetary costs for Member States, 10% has been chosen for the purpose of this impact assessment. The following graph illustrates how a 10% support granted under PM7-PM9 to intermodal transport reduces the break-even distances of the different modal combinations. Without operational support the break-even distances are on average (door-to-door) 740 km for rail, 260 km for IWW and 775 km for SSS. With a 10% support for door-to-door costs, the break-even distances are reduced to 535 km for rail, 200 km for IWW and

¹⁸⁸ Detailed analysis on cost comparison of different types of intermodal operations has been carried on PWC. KombiConsult (2022). However, this study did not take into account geographic differences and assumed also fixed distance road legs.

610 km for SSS (Figure 17). This demonstrates the effectiveness of these measures in terms of making more (shorter) operations economically competitive with road-only transport and thus increasing the potential for modal shift.

Figure 17: Average price-competitive door-to-door distances in intermodal transport without and with the economic support of 10%, per modal combination (cost in EUR and distance in km)



Source: Ricardo et al. support study (2023)

For modelling purposes, the 10% reduction of door-to-door costs was translated into a reduction of different cost components of the intermodal operation; in particular non-road leg costs as road leg and transshipment costs do not depend on the total door-to-door distance – it is the length of the non-road leg that is variable. Transport chain organisation costs were not included in the modelling as they vary widely from sector and operator. For rail, the 10% door-to-door reduction translates into a non-road leg cost reduction of 15-25%, for IWW into a cost reduction of 21-33% and for SSS of 23-35% depending on the distance of operation *ceteris paribus*. Variability can be greater when other characteristics are included. As regards transshipment cost reduction, the range can be quite large as transshipment costs vary greatly between modes and geographic locations. A 10% reduction of door-to-door costs can thus vary between 35-70% of transshipment costs, but in most cases remains between 45-55%.

For the mandatory harmonised approach in PM7, in order to reflect the harmonisation, a reduction of non-road cost was considered that translates into 10% reduction of the door-to-door price. The exact reduction of the non-road cost varies depending on modal combination, distance of non-road leg, type of technology used and geographic location as well as who are the beneficiaries. For this impact assessment, it was assumed that the organiser who decides on modal choice will receive the 10% reduction. For modelling purposes, the reduction of non-road transport costs was used as proxy, assuming a reduction of 20% of rail costs and 30% of waterborne costs.

For the mandatory but flexible support in PM9, it is also assumed that the organisers who choose the mode of transport will benefit directly from support, at the more-or-less same aid intensity. However, as Member States will have the possibility to design their own schemes, the modelling assumptions were adapted to reflect the possibility that not all support is paid to organisers and not all support is thus passed through to decision makers. For modelling purposes, a mix of reductions of non-variable transshipment cost and variable non-road leg costs was considered based on Member States current

practices resulting in approximately 81% of intermodal transport activity being supported through variable costs' reduction and the remaining 19% through a reduction of transshipment costs. For the non-road cost reduction, same assumptions were used as for PM7, while for the reduction of transshipment costs, 50% reduction was used.

In case support is voluntary, as in PM8, Member States are unlikely to change much the current approach, maintaining the support provided to the intermodal transport sector around the level currently provided. Thus, no specific modelling assumptions were made for PM8.

Limiting operational support to market failure/necessity condition

PM12 aims to ensure that the operational support given in relation to PM8/PM9 is not provided to operations that are already financially self-sustained to reflect more clearly the State aid rules and in particular the condition of necessity in relation to a specific market failure¹⁸⁹. PM12 is not applied in combination with PM7 as the support in PM7 is harmonised. For PM10, PM11 and PM13, the limit is not applied directly, but where these measures result in additional eligible operations to be supported under PM8/PM9, the limit applies the same way it applies to all other eligible operations.

For the modelling purposes, PM12 limits the direct economic support to operations with door-to-door distance below average mode-specific break-even point. The TRUST model output was used to assess the share of traffic which would be eligible for support under PM8-PM11 but would not benefit of economic support due to PM12. Specifically, the share of transport activity (in tkm) operated on distances longer than break-even points was estimated considering analogous transport activity by distance bands extracted from the TRUST model.

Based on the TRUST model data, the support was modelled to be limited to operations that for rail and SSS imply a travel distance shorter than 900 km door-to-door while for IWW this threshold is fixed at 400 km door-to-door. The weighted average road legs length were assumed. The corresponding share of operations that would not meet the necessity condition is 20% for rail-road intermodal, 48% for IWW and 64% for SSS. The overall contribution modelled for Member States budgets to support PM8/PM9 was consequently lowered proportionally to the demand that exceeds the distance threshold.

Impact on modal shift and intermodal transport volumes

As PM7 ensures uniform harmonised application on all eligible operations, the impact of this measure is assessed to be the highest while the impact of voluntary support under PM8 is the lowest. The elasticity of support is higher for rail than for the waterborne modes, partly because of accessibility of rail-road operations across EU and partly due to other factors such as delivery time.

The estimated stand-alone impact of PM7 in terms of additional intermodal transport activity (without considering the limitation due to eligibility criteria or other measures included in PO-C) is in the range of +4.2% for rail, +0.9% for IWW and +1.3% for SSS in 2030, and +8.2%, +1.4% and +2.1% respectively in 2050, and amounts to a 2.8% increase for 2025-2050 compared to baseline.

¹⁸⁹ Condition of necessity of State aid is assessed in all State aid cases. Respective State aid rules establish the conditions at which aid is considered necessary to tackle the identified market failure.

Table 45: Impacts of PM7 on intermodal transport (door-to-door) activity (billion tkm and percentage change compared to baseline)

	2030	% change to the baseline	2050	% change to the baseline	2025-2050	% change to the baseline
Rail	9.9	+4.2%	33.7	+8.2%	570.8	+7.1%
IWW	0.2	+0.9%	0.3	+1.4%	5.1	+1.1%
SSS	6.1	+1.3%	12.4	+2.1%	221.2	+1.7%
Total	16.1	+2.3%	35.9	+3.5%	616.8	+2.8%

Source: Ricardo et al. support study (2023)

The stand-alone impact of PM9 in terms of additional intermodal freight transport activity is estimated at approximately +4% for rail, +1% for IWW and +1.7% for SSS in 2030, and +7.8% for rail, +1.5% for IWW and +1.8% for SSS in 2050.

Table 46: Impacts of PM9 on intermodal transport (door-to-door) activity (billion tkm and percentage change compared to baseline)

	2030	% change to the baseline	2050	% change to the baseline	2025-2050	% change to the baseline
Rail	9.4	+4%	32.3	+7.8%	550.4	+6.9%
IWW	0.2	+1%	0.3	+1.5%	5.7	+1.2%
SSS	7.7	+1.7%	10.3	+1.8%	231.4	+1.8%
Total	17.2	+2.4%	42.9	+4.2%	607.7	+2.8%

Source: Ricardo et al. support study (2023)

The stand-alone impact of PM8 on the intermodal transport competitiveness and on the modal share of intermodal transport is expected to be negligible.

3.3.2. PM10 – start-up support

PM10 and PM11 are enabling measures creating pre-conditions for intermodal transport to take place and accelerating supply-side investments.

PM10 foresees start-up support for establishing new non-road connections between points where such connections do not yet exist (see section 2 in Toolbox, Annex 9). This is particularly necessary to support the objective of new terminal creation under the proposed revision of TEN-T Regulation. New intermodal non-road connections/services often do not have sufficient client base to fill the train or vessel to allow it to be profitable, which creates a considerable hindrance to start new services. However, over time services become established and fill-ratio increases and thus such support should be temporary and diminishing where necessary. Such a support is particularly important in areas where intermodal links are less dense and/or demand and financial risk are higher. However, new connections/services are not required everywhere and thus this measure cannot be mandatory, but should rather be optional.

Previous studies clearly indicate that the costs of setting up new intermodal routes or services (including costs of new equipment, market analysis, transactions, additional management/staff time, etc.) can be significant, and influence both the willingness of market operators to expand the market supply and also indirectly the overall competitiveness of intermodal vs. road-only transport¹⁹⁰.

¹⁹⁰ A study by TRT (2017) estimates e.g. that the average cost of setting up a new scheduled service to a new destination is on average in the range of EUR 20,000 and EUR 173,000, while the cost of organising a new CT route (i.e. a service to a new destination not previously covered) is on average between EUR 200 and EUR 1,000, with values that can of

Various examples exist in the EU of start-up support measures for new intermodal services and modal shift actions, including e.g. the Marco Polo programme(s), and other aids established for example in Italy, Germany and the Netherlands¹⁹¹. Those existing schemes have different features in terms of budget available, targeted sector, conditions and aid intensity levels. The current practice seems to suggest that Member States tend to provide start-up support proportional to operational cost per tkm or units transported per new services, rather than providing direct financing of start-up capital investments (e.g. one-off capital financing). The current examples suggest that the intensity of support provided to establish new intermodal services is typically in the range of EUR 0.3-0.8 million per service. This amount should be sufficient to cover not only start-up costs but also the operational losses during the first years of operation (i.e. before demand fully materialise) and could be considered a reference value for the voluntary application of PM10.

Table 47: Examples of start-up programmes in EU-27

Start-up programme	Country	Sector	Budget	Economic support
Marco Polo II	EU27 plus UK	Rail, IWW, SSS	35 EUR million/year, 260-800 EUR million per modal shift action funded	2 EUR per 500 tkm shifted (i.e. 0.004 per tkm)
Marebonus	IT	SSS	56 EUR million/year	30% of operating cost
Ferrobonus	IT	Rail	25 EUR million/year	2.5 EUR per train-km
Twin Hub rail network	NL	Rail	Total 1.06 EUR billion, 0.3-0.4 EUR million transferred to each rail operator	Financing for new pilot train services (50% coverage of losses)
Modal shift aid	NL	Rail, IWW	EUR 5.6 million/year	EUR 20 per TEU
Eco-incentive to SSS	ES	SSS	EUR 20 million/year	100% of external cost savings by using SSS instead of road (EUR/HGV shifted)

Source: INEA (2020) Marco Polo II Programme; 2022 IA study on State aids for railways undertakings.

Different outcomes have been observed e.g. with respect to the response of market operators to the available subsidies. As shown in the table below, the Marcopolo II programme evidence that each new intermodal service can shift between 815,000 and 846,000 tkm off the road (to rail and SSS services), and about 260,000 tkm in the case of IWW services.

Table 48: Marco Polo II – modal shift impacts

Sector	Average tkm shifted per action	Tkm per EUR funded
Rail	815,176	309
IWW	260,862	360
SSS	845,993	552
Total	792,571	364

Source: INEA (2020) Marco Polo II Programme, Final report

course vary largely depending on the specific case and context considered (quality and scale of operations to be arranged, operator's capacity, mode sector, etc.). The same study indicates that such capital costs indirectly impact on the relative competitiveness of intermodal services, estimating an additional cost of EUR 50-100 of organising an intermodal compared to road-only transport. Source: TRT (2017), op.cit.

¹⁹¹ For instance, scheme N 640/08 offered in Saxony (Germany) from 2009 to 2015, offering start-up aid for new combined transport services for a maximum of 3 years; the scheme N449/2008 offered in Italy subsidizing road-rail transport of containers in between Naples and the Nola freight village; the SA.54990 aid made available recently in Italy by the Emilia-Romagna region, subsidising logistics undertakings and multimodal transport operators by compensating the difference in external costs of road transport; and the SA.38639 aid providing financing for pilot train services within the "Twin hub" railway network. Also in the Netherlands, a new aid scheme has been recently adopted to promote modal shift from road to rail and inland waterways.

Although uncertainties related to the adoption by Member States (in terms of intensity and duration of the support) do not allow a consistent quantification of its effects on the level of intermodal transport activity, possible outcomes from the application of PM10 were analysed based on the evidence/examples previously described and assuming that a specific group of Member States decides to adopt PM10. The assumptions are based on the experience and the statistics collected during the Marco Polo II programme, as reported by INEA¹⁹².

For the purpose of the assessment, it is assumed that a start-up programme has a duration of 5 years, and that every 6th year either same country or a new country starts a new start-up programme cycle. The start-up measure is used between 2025 and 2039¹⁹³. Reference countries have been selected focusing mostly on middle-size countries and aiming for a diverse sample in terms of transport modes coverage¹⁹⁴.

It is then assumed that each programme cycle leads to the activation of 10 new services in the rail sector (i.e. 10 for each country covering rail), 5 new services for IWW, and 7 new services for SSS. In total, 427 new services would be created between 2025 and 2039.

Moreover, the average traffic operated by the start-up services has been determined based on Marco Polo II statistics on the operational performance of the “modal shift” actions, which is considered a reference for the operation of new intermodal services in EU-27¹⁹⁵. As explained later, closed actions should be representative of successful start-up services, while terminated actions are considered in order to reflect the inefficiencies actually characterizing the ramp-up phase of new services.

For the quantification of impacts until 2050, the following additional assumptions are used:

- In the first 5 years of existence (ramp-up phase), these services are assumed to operate only a share of the average traffic estimated from Marco Polo II statistics, namely 60% in the first year, 70% in the second year, and 80% from the third to the fifth year.
- When a program cycle ends, a share of the activated services is assumed to terminate (to account for the risk that services may not prove successful or economically feasible), while the ones that survive will continue to operate at normal volume levels. Also based on Marco Polo II statistics, the survival rate is assumed to be 70% for rail and SSS services, and 50% for IWW services. Finally, it is assumed that a part of new connections would be created under market conditions in any case, only at a later stage. The start-up support accelerates the opening of new connections and thereby the additional uptake of intermodal transport. The share of traffic on the new connections assumed to have been accelerated corresponds to 50% for rail and SSS, and 100% for IWW.

The stand-alone impacts of start-up support are comparable in magnitude to direct operational support under PM7/PM9 in 2030 but are considerably lower for 2025-2050 as the impact is mainly observed at the introduction of new routes, in the beginning of the period. The impact of start-up support over 2025-2050 is estimated at 1.9% increase in the intermodal transport activity relative to the baseline.

¹⁹² INEA (2020), Marco Polo II Programme, Final report.

¹⁹³ The assumption that programmes last until 2039 is driven by planned expansion of terminal capacity, which, consistently with TEN-T plans, should occur mainly over the next decade (implying that demand for new links and services to/from terminals will likely concentrate in the years before 2040).

¹⁹⁴ The overall assessment does not involve country-specific assumptions related e.g. to funding capacity or service parameters (start-up costs, traffic volumes, etc.). The selection of reference middle-size countries (covering nearly a third of EU27) is made merely for the purpose of building a hypothetical scenario where different shares of intermodal services in rail, IWW and SSS receive start-up support. The reference countries selected are the following: In 2025, DK, ES, HR, IT, NL for rail, NL for IWW and DK, ES, HR, IT, NL for SSS. In 2030, the same countries are assumed to continue the scheme and the following additional countries are expected to introduce the measure: CZ, FR, PL, SI, SK for rail, FR for IWW and FR, PL, SI for SSS. In 2035, all the countries using the measure in 2030 are expected to continue with the measure.

¹⁹⁵ In particular, the average traffic operated per year corresponds to the weighted average of the ton-km operated by terminated and closed modal shift actions, while the maximum traffic corresponds to the average ton-km operated by closed actions only.

Table 49: Impacts of PM10 on the intermodal transport (door-to-door) activity (billion tkm and percentage change compared to the baseline)

	2030	% change from baseline	2050	% change from baseline	2025-2050	% change from baseline
Rail	8.2	+3.5%	10.7	2.6%	254.5	+3.2%
IWW	0.1	+0.9%	0.5	2.1%	11.2	+2.3%
SSS	4.9	+1.1%	5.9	1%	146.2	+1.1%
Total	13.2	+1.9%	17.1	1.7%	411.8	+1.9%

Source: Ricardo et al. support study (2023)

The modal shift effects of start-up support can vary depending on the intensity and the duration of the support as well as on context-specific factors, in particular the structure of the road transport activity potentially shifting, the competitiveness of intermodal market operators, prevailing road transport prices etc.¹⁹⁶. It is thus important to reiterate that PM10 is not designed as an alternative to PM7-PM9, but rather as a complementary measure for specific situations. The beneficiaries of PM10 would not be the same as in PM7-PM9. The aim of this support tool is not to reduce the market price to shippers, but rather to compensate the new connection's provider for lower load factors/operational losses allowing thus the service to operate at market prices. Any shippers and transport organisers using the new services would be nevertheless eligible for operational support under PM7-PM9. This is particularly important to ensure that the modal shift effects are not temporary and transport organisers continue to use the intermodal services after the temporary start-up support expires, thus not forcing the connection operators to terminate the connection that previously received support.

3.3.3. PM11 – technological upgrade support's impact on traffic volume

PM11 foresees additional support tools for providing support to technological upgrade investments and actions that enable the take-up of intermodal transport. The measure aims to influence the uptake of modern equipment across different stakeholders in intermodal transport chain (see section 3 in Toolbox, Annex 9). For example, transport organisers and operators could benefit from State aid to upgrade their loading units, support for integrating connected systems and for acquiring devices for automation and digital logistics.

The limited competitiveness of intermodal vs. road-only transport represents a hindering factor for operators to invest in new equipment and innovative solutions, since compensating for the investment through a price increase for final users would expose them to the risk of losing demand and market share. Providing economic support can thus be essential for unlocking investments in innovative solutions and upgrade of the equipment used in the intermodal transport sector. Such investments can in turn create the conditions for a potential increase in the efficiency and productivity of different parts of the intermodal transport chain, with relevant knock-on effects on the overall competitiveness of intermodal transport vs. road-only alternatives both in terms of services costs and quality and reliability. PM11 will not cover any support to investment into infrastructure.

Support tools of this type have been established in various MSs, receiving a relatively strong demand from the industry and being among the support actions with the higher share of budget absorption¹⁹⁷.

¹⁹⁶ In some cases, financial support contributed only partially to attract new investments or induce modal shift, particularly when operators are confronted with high risks and/or constraints at infrastructure level (rail network, terminal, etc.). The way the support is designed is another relevant aspect to consider, with flexible schemes generally more effective thanks to the possibility of adjusting the support according to the specific capacity of the beneficiary and to changes in the economic and transport market outlook.

¹⁹⁷ An example is the Austrian Programme of Aid for Innovative Combined Transport (SA.60132), which is in place since 1999 and proved as an efficient instrument to unlock investments that otherwise would have probably not occurred, thanks to well-designed eligibility criteria and a strong capacity at the level of the granting authority. In Germany the aid programme to support innovation in rail freight transport (SA.55353) has been established to support the development

Considering that an increase in the overall efficiency of intermodal transport is to be expected as a result of the provision of economic support for different technological upgrades, but that quantifiable evidence is very limited as regards the effectiveness of the PM11 list of measures and the impacts that such innovations can produce on modal shift, it has been assumed that the stand-alone impact of PM11 would be in the order of a 4.5-5.9% increase of the effect of PM9, with impacts varying depending on the mode and period considered. The impact of PM11 over 2025-2050 is estimated at 0.1% increase in the intermodal transport activity relative to the baseline.

Table 50: Impacts of PM11 on the intermodal transport (door-to-door) activity (billion tkm and percentage change compared to the baseline)

	2030	% change to the baseline	2050	% change to the baseline	2025-2050	% change to the baseline
Rail	0.5	+0.2%	1.6	+0.4%	27.9	+0.3%
IWW	0.01	+0.1%	0.01	+0.1%	0.3	+0.1%
SSS	0.4	+0.1%	0.5	+0.1%	12.9	+0.1%
Total	0.9	+0.1%	2.2	+0.2%	41.1	+0.1%

Source: Ricardo et al. support study (2023)

Similarly to PM10, the additional volumes, to the extent they are eligible, would also receive the operational economic support under PM7-PM9.

3.3.4. PM13 – exemptions from driving bans

PM13 establishes an exemption from fixed weekend, night and holidays driving bans for intermodal transport road legs. For this reason, it applies only in those MS where driving bans exist. At least 13 Member States¹⁹⁸ are using some types of driving bans for HGVs, with public holidays driving ban used most commonly, followed by weekend driving bans. Several Member States already apply exemptions for CT road-legs. However, these exemptions are very heterogeneous, and some are discriminatory. They do not follow the definition established in the CTD. Five Member States do not have any exemptions for intermodal road legs from driving bans.

While driving bans for road-only transport may be justified, they are creating – on top of ineffective logistics chain management for shippers – considerable problems for intermodal transport both as regards terminal yard congestion (and road congestion in areas around terminals before and after driving ban periods) as well as ineffective use of non-road transport. Removing driving bans for road vehicles carrying intermodal units and part of an intermodal solution would allow to exploit unused capacity during the period of driving ban for running more services. For example, an intermodal rail service running 5 times per week can benefit from the driving ban exemption to add an additional run during the weekend. Currently this is hindered in many areas due to terminal yard congestion – the terminal would need space to store during the duration of the driving ban both the arriving loading units that need to be first unloaded to storing area as well as waiting loading units that need to be loaded onto departing service. Due to lack of such storing space, this results today in HGVs waiting outside and around the terminal, creating the need for building additional safe and secure parking areas for trucks.

The estimate of additional intermodal traffic generated by the measure is obtained by considering the number of terminals operating in countries where driving bans exist, and assuming that for each of them

and testing of innovative, including for automated cargo handling. Innovation in intermodal transport is supported as well within broader support programmes for investment in freight terminals, rolling stock renovation, etc. showing that varied innovation and efficiency gains can be triggered in rail, IWW, SSS and road legs of intermodal transport when financial support are available to potential investors.

¹⁹⁸ AT, CZ, DE, LU, SI, PL, HU, SK, FR, EL, IT, RO, ES.

one additional run per week can be created. The effect of the measure is expected to be observed from 2027 onwards because the adaptation of processes to get additional slots may take some time. The impact of PM13 over 2025-2050 is estimated at 0.4% increase in the intermodal transport activity relative to the baseline.

Table 51: Impacts of PM13 on the intermodal transport (door-to-door) activity (billion tkm and percentage change compared to the baseline)

	2030	% change to the baseline	2050	% change to the baseline	2025-2050	% change to the baseline
Rail	1.4	+0.6%	2.2	+0.5%	45.4	+0.6%
IWW	0.1	+0.3%	0.1	+0.2%	0.1	+0.01%
SSS	1.2	+0.3%	1.5	+0.3%	33	+0.3%
Total	2.6	+0.4%	3.7	+0.4%	78.5	+0.4%

Source: Ricardo et al. support study (2023)

These additional volumes, if eligible, would also receive the operational economic support under PM7-PM11.

3.3.5. Impacts of PM7-PM13 on costs

PM7-PM13 result in three types of effects: additional intermodal transport (modal shift), updated or new minimum aid requirements for existing operations that are already supported voluntarily by Member States (included in the baseline) and new support in Member States that do not currently support intermodal operations. This is expected to translate into increased budget expenditures for Member States, for providing economic support.

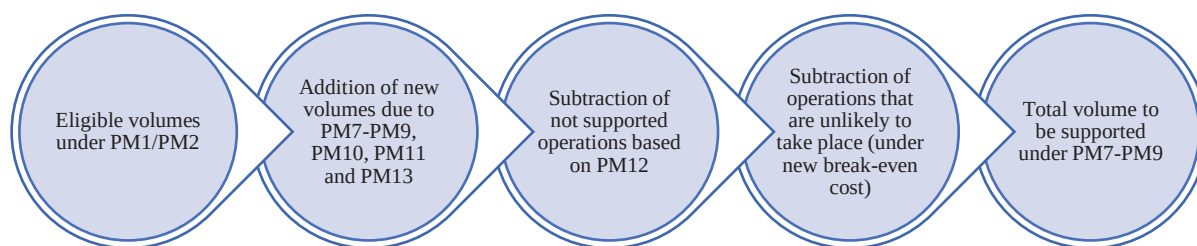
In addition, administrative costs for operators who wish to apply for economic support (application preparation and ex-post reporting) are expected. These costs are only relevant for the additional applicants relative to the baseline scenario. At the same time, as explained under PM3, costs savings are expected thanks to the use of eFTI platforms.

Costs for PM7-PM9

Budget expenditures for public authorities, for providing economic support

For PM7-PM9, the additional intermodal transport activity created by these measures as stand-alone measures is provided in sections 3.3.1-3.3.4 above. However, PM10, PM11 and PM13 also lead to additional volumes of intermodal transport that would be supported under PM7-PM9. Furthermore, as support is not limited only to newly created operations, but has to be applied to all eligible operations, the volume supported needs to take into account the extension of eligibility resulting from PM1/PM2. At the same time, PM12 will reduce the operations actually receiving economic support. Furthermore, it is expected that the vast majority of theoretically eligible operations that are shorter than the break-even distance will in reality not take place and thus will not apply for support. Figure 18 shows the process of arriving to total volume of intermodal operations supported under PM7-PM9.

Figure 18: Process of establishing the volume of traffic supported under PM7-PM9



The TRUST model was used to establish the amount of support to be paid under PM7 and PM9, considering the synergies with other support measures included in the policy options. The economic support for 2030 and 2050 relative to the baseline by policy measure and policy option, as well as the present value over 2025-2050 relative to the baseline are provided in Table 51.

Table 52: Economic support provided by public authorities due to PM7 and PM9, by policy option compared to the baseline (million EUR, in 2021 prices)

Policy option	2030	2050	Present value over 2025-2050
PO-B1 (PM9)	246.7	352.2	5,924.1
PO-B2a (PM9)	262.0	437.9	6,177.1
PO-B2b (PM9)	200.3	269.0	3,995.2
PO-C (PM7)	1,665.3	2,394.1	34,825.2

Source: Ricardo et al. support study (2023)

For PM8, as no significant increase in the intermodal transport activity is expected relative to the baseline there is no impact on economic support provided by the public authorities.

The cost of support by policy measure and Member State, relative to the baseline, expressed in million EUR and as percent of GDP, is provided in the tables below. As explained in section 6.1.2, it should be noted that due to the nature of the Combined Transport Directive, where the support provided also depends on the applications for support by transport operators, the outcome by Member State may turn out to be different than estimated in this impact assessment. However, the estimates below provide an indication of the order of magnitude of the cost of support.

Table 53: Estimated economic costs (cost of support) for public authorities due to PM7 in PO-C in 2030 and 2050, by Member State, compared to the baseline (million EUR, in 2021 prices, and percent of GDP)

	Economic support (EUR million)		Economic support as percent of GDP	
	2030	2050	2030	2050
AT	36.9	69.5	0.01%	0.01%
BE	100.4	136.4	0.02%	0.02%
BG	31.4	38.4	0.05%	0.05%
CZ	11.0	27.0	0.00%	0.01%
CY	0.0	0.0	0.00%	0.00%
DE	247.7	387.1	0.01%	0.01%
DK	30.7	51.5	0.01%	0.01%
EE	4.4	7.1	0.01%	0.01%
ES	130.7	200.0	0.01%	0.01%
EL	47.2	63.1	0.02%	0.02%
FI	66.1	80.2	0.02%	0.02%
FR	177.3	259.1	0.01%	0.01%

	Economic support (EUR million)		Economic support as percent of GDP	
	2030	2050	2030	2050
HR	25.7	26.5	0.05%	0.04%
HU	33.1	53.1	0.02%	0.02%
IE	0.2	0.3	0.00%	0.00%
IT	149.1	208.0	0.01%	0.01%
LV	16.1	38.0	0.04%	0.08%
LT	17.7	25.6	0.03%	0.04%
LU	0.4	1.0	0.00%	0.00%
MT	0.0	0.0	0.00%	0.00%
NL	293.3	345.3	0.03%	0.03%
PL	64.9	115.9	0.01%	0.01%
PT	46.8	62.5	0.02%	0.02%
RO	39.2	57.8	0.01%	0.01%
SE	62.7	97.7	0.01%	0.01%
SI	22.6	27.4	0.04%	0.03%
SK	9.6	15.6	0.01%	0.01%
EU-27	1665.3	2394.1	0.01%	0.01%

Source: Ricardo et al. support study (2023)

Table 54: Estimated economic costs (cost of support) for public authorities due to PM9 in PO-B1 in 2030 and 2050, by Member State, compared to the baseline (million EUR, in 2021 prices, and percent of GDP)

	Economic support (EUR million)		Economic support as percent of GDP	
	2030	2050	2030	2050
AT	7.2	13.3	0.00%	0.00%
BE	13.4	17.8	0.00%	0.00%
BG	4.3	4.8	0.01%	0.01%
CZ	2.2	5.2	0.00%	0.00%
CY	0.0	0.0	0.00%	0.00%
DE	41.9	62.9	0.00%	0.00%
DK	4.1	6.8	0.00%	0.00%
EE	0.7	1.3	0.00%	0.00%
ES	17.4	26.1	0.00%	0.00%
EL	5.7	7.4	0.00%	0.00%
FI	9.0	10.8	0.00%	0.00%
FR	26.5	39.8	0.00%	0.00%
HR	3.7	3.9	0.01%	0.01%
HU	6.4	10.1	0.00%	0.00%
IE	0.0	0.1	0.00%	0.00%
IT	21.7	29.5	0.00%	0.00%
LV	2.7	6.6	0.01%	0.01%
LT	3.4	4.9	0.01%	0.01%
LU	0.1	0.2	0.00%	0.00%
MT	0.0	0.0	0.00%	0.00%
NL	37.5	41.7	0.00%	0.00%
PL	10.2	17.8	0.00%	0.00%
PT	6.0	7.8	0.00%	0.00%
RO	7.0	9.9	0.00%	0.00%
SE	9.9	15.9	0.00%	0.00%
SI	3.5	4.7	0.01%	0.01%
SK	1.9	3.0	0.00%	0.00%
EU-27	246.7	352.2	0.00%	0.00%

Source: Ricardo et al. support study (2023)

Table 55: Estimated economic costs (cost of support) for public authorities due to PM9 in PO-B2a in 2030 and 2050, by Member State, compared to the baseline (million EUR, in 2021 prices, and percent of GDP)

	Economic support (EUR million)		Economic support as percent of GDP	
	2030	2050	2030	2050
AT	7.7	16.4	0.00%	0.00%
BE	14.3	22.3	0.00%	0.00%
BG	4.6	6.2	0.01%	0.01%
CZ	2.3	6.4	0.00%	0.00%
CY	0.0	0.0	0.00%	0.00%
DE	44.4	79.6	0.00%	0.00%
DK	4.4	8.3	0.00%	0.00%
EE	0.8	1.6	0.00%	0.00%
ES	18.5	31.9	0.00%	0.00%
EL	6.1	8.9	0.00%	0.00%
FI	9.6	13.2	0.00%	0.00%
FR	28.2	49.1	0.00%	0.00%
HR	3.9	4.8	0.01%	0.01%
HU	6.8	12.4	0.00%	0.00%
IE	0.0	0.1	0.00%	0.00%
IT	23.0	36.4	0.00%	0.00%
LV	2.9	8.1	0.01%	0.02%
LT	3.6	5.9	0.01%	0.01%
LU	0.1	0.2	0.00%	0.00%
MT	0.0	0.0	0.00%	0.00%
NL	40.0	52.9	0.00%	0.00%
PL	10.8	22.0	0.00%	0.00%
PT	6.4	9.5	0.00%	0.00%
RO	7.4	12.8	0.00%	0.00%
SE	10.6	19.4	0.00%	0.00%
SI	3.8	5.7	0.01%	0.01%
SK	2.0	3.7	0.00%	0.00%
EU-27	262.0	437.9	0.00%	0.00%

Source: Ricardo et al. support study (2023)

Table 56: Estimated economic costs (cost of support) for public authorities due to PM9 in PO-B2b in 2030 and 2050, by Member State, compared to the baseline (million EUR, in 2021 prices, and percent of GDP)

	Economic support (EUR million)		Economic support as percent of GDP	
	2030	2050	2030	2050
AT	4.6	6.7	0.00%	0.00%
BE	13.5	16.7	0.00%	0.00%
BG	3.7	4.3	0.01%	0.01%
CZ	1.2	3.2	0.00%	0.00%
CY	0.0	0.0	0.00%	0.00%
DE	31.9	48.6	0.00%	0.00%
DK	3.6	6.8	0.00%	0.00%
EE	0.4	0.6	0.00%	0.00%
ES	16.3	21.1	0.00%	0.00%
EL	5.2	7.3	0.00%	0.00%
FI	8.0	8.9	0.00%	0.00%
FR	21.3	32.1	0.00%	0.00%
HR	2.8	3.0	0.01%	0.00%
HU	2.7	4.5	0.00%	0.00%
IE	0.0	0.0	0.00%	0.00%
IT	20.9	24.4	0.00%	0.00%

	Economic support (EUR million)		Economic support as percent of GDP	
	2030	2050	2030	2050
LV	1.5	1.9	0.00%	0.00%
LT	0.6	1.0	0.00%	0.00%
LU	0.1	0.2	0.00%	0.00%
MT	0.0	0.0	0.00%	0.00%
NL	38.9	45.1	0.00%	0.00%
PL	7.0	10.6	0.00%	0.00%
PT	6.3	8.1	0.00%	0.00%
RO	2.0	3.1	0.00%	0.00%
SE	3.8	5.9	0.00%	0.00%
SI	2.7	3.1	0.00%	0.00%
SK	1.3	2.1	0.00%	0.00%
EU-27	200.3	269.0	0.00%	0.00%

Source: Ricardo et al. support study (2023)

Administrative costs savings for the private sector

PM7-PM9 are expected to lead to administrative costs saving for the private sector. Operators who decide to apply for economic support will be subject to administrative costs related to the preparation of the application. These costs are only relevant to new applicants relative to baseline. However, the application process for the support under PM7-PM9 will be considerably simplified relative to baseline thanks to clear eligibility rules (PM1/PM2) and the use of eFTI platforms (PM3) that will simplify the retrieval and submission of information to authorities for those operators that choose to apply for economic support – it will be possible to download the information about eligible operations directly from the eFTI platform. Furthermore, ensuring the same eligibility conditions across EU will allow the organisers of international operations to considerably save time and cost from application preparation as an eligible operation will be eligible across EU the same way. All applicants are assumed to save 4.2 hours per request¹⁹⁹. The Labour Force Survey data for Non-Wage Labour Costs (i.e. ISCO 3 – Technicians and associate professionals) has been used (31.1 EUR/hour) to quantify the costs. This is expected to lead to administrative cost savings for all current applicants (and reduce the costs for future applicants compared to the baseline costs). The administrative costs savings for the private sector due to PM7-PM9, by policy option, are shown in Table 56.

Table 57: Recurrent administrative costs savings for the private sector due to PM7-PM9 compared to the baseline (millions EUR, in 2021 prices)

Policy option	2030			2050			Present value over 2025-2050		
	PM7	PM8	PM9	PM7	PM8	PM9	PM7	PM8	PM9
PO-A		12.4			10.9			220.1	
PO-B1			11.4			9.2			196.4
PO-B2a			11.5			8.5			192.6
PO-B2b			14.7			13.2			260.6
PO-C	10.5			7.0			172.2		

Source: Ricardo et al. support study (2023)

Costs for PM10 and PM11

Budget expenditures for public authorities, for providing economic support

The budget expenditures for public authorities from starting 425 new services thanks to PM10 have been calculated using the final funding absorbed on average by the modal shift actions financed in

¹⁹⁹ In the baseline scenario the application preparation is assumed to take 16 hours.

Marco Polo II. In particular, as the budget is meant to cover the start-up investments for new services (new vehicles, organisational costs, etc.) and the possible losses during the first years of operation (i.e. before demand fully materialises). It is assumed that SSS requires relatively more start-up funding than rail (EUR 0.87 million for SSS and EUR 0.60 million for rail per year per supported new service), and that IWW requires a lower level of support (EUR 0.40 million on average per year per supported new service). Based on this, it has been assumed that a Member State would allocate on average EUR 6 million per year for start-up measures targeting the rail and SSS sector, and EUR 2 million for IWW.

Table 58: Economic support provided by public authorities due to PM10 (million EUR, in 2021 prices)

Sector	2030	Present value over 2025-2050
Rail	60	596.3
IWW	4	39.8
SSS	48	505.3
Total	112	1,141.3

Source: Ricardo et al. support study (2023)

The support for technological upgrade (PM11) foresees a list of various support tools to terminals and carriers, with all the support tools in the list requiring only relatively limited investments. The need for these investments is assessed to relate to between 1-10% of operations depending on mode of transport and year, with a cost of approximately 0.1% of total cost of intermodal operations. The support tools provided under PM11 are thus estimated to be around 0.5% of total cost of intermodal operations depending on mode of transport and year.

Table 59: Economic support provided by public authorities due to PM11 (million EUR, in 2021 prices)

Sector	2030	2050	Present value over 2025-2050
Rail	3.0	10.6	116.2
IWW	0.1	0.1	1.4
SSS	2.0	2.4	40.2
Total	5.1	13.1	157.9

Source: Ricardo et al. support study (2023)

The cost of support for PM10 and PM11 by Member State, relative to the baseline, expressed in million EUR and as percent of GDP, is provided in the tables below. As explained in section 6.1.2, it should be noted that due to the nature of the Combined Transport Directive, where the support provided also depends on the applications for support by transport operators, the outcome by Member State may turn out to be different than estimated in this impact assessment. However, the estimates below provide an indication of the order of magnitude of the cost of support.

Table 60: Estimated economic costs (cost of support) for public authorities due to PM10 in PO-B1, PO-B2a and PO-B2b in 2030 and 2050, by Member State, compared to the baseline (million EUR, in 2021 prices, and percent of GDP)

	Economic support (EUR million)		Economic support as percent of GDP	
	2030	2050	2030	2050
AT	0.0	0.0	0.00%	0.00%
BE	0.0	0.0	0.00%	0.00%
BG	0.0	0.0	0.00%	0.00%
CZ	6.0	0.0	0.00%	0.00%
CY	0.0	0.0	0.00%	0.00%
DE	0.0	0.0	0.00%	0.00%
DK	12.0	0.0	0.00%	0.00%
EE	0.0	0.0	0.00%	0.00%
ES	12.0	0.0	0.00%	0.00%
EL	0.0	0.0	0.00%	0.00%
FI	0.0	0.0	0.00%	0.00%

	Economic support (EUR million)		Economic support as percent of GDP	
	2030	2050	2030	2050
FR	14.0	0.0	0.00%	0.00%
HR	12.0	0.0	0.02%	0.00%
HU	0.0	0.0	0.00%	0.00%
IE	0.0	0.0	0.00%	0.00%
IT	12.0	0.0	0.00%	0.00%
LV	0.0	0.0	0.00%	0.00%
LT	0.0	0.0	0.00%	0.00%
LU	0.0	0.0	0.00%	0.00%
MT	0.0	0.0	0.00%	0.00%
NL	14.0	0.0	0.00%	0.00%
PL	12.0	0.0	0.00%	0.00%
PT	0.0	0.0	0.00%	0.00%
RO	0.0	0.0	0.00%	0.00%
SE	0.0	0.0	0.00%	0.00%
SI	12.0	0.0	0.02%	0.00%
SK	6.0	0.0	0.01%	0.00%
EU-27	112.0	0.0	0.00%	0.00%

Source: Ricardo et al. support study (2023)

Table 61: Estimated economic costs (cost of support) for public authorities due to PM11 in PO-B1, PO-B2a and PO-B2b in 2030 and 2050, by Member State, compared to the baseline (million EUR, in 2021 prices, and percent of GDP)

	Economic support (EUR million)		Economic support as percent of GDP	
	2030	2050	2030	2050
AT	0.2	0.7	0.00%	0.00%
BE	0.3	0.5	0.00%	0.00%
BG	0.1	0.1	0.00%	0.00%
CZ	0.1	0.3	0.00%	0.00%
CY	0.0	0.0	0.00%	0.00%
DE	1.0	2.9	0.00%	0.00%
DK	0.1	0.2	0.00%	0.00%
EE	0.0	0.1	0.00%	0.00%
ES	0.3	0.7	0.00%	0.00%
EL	0.1	0.1	0.00%	0.00%
FI	0.2	0.3	0.00%	0.00%
FR	0.6	1.6	0.00%	0.00%
HR	0.1	0.1	0.00%	0.00%
HU	0.2	0.5	0.00%	0.00%
IE	0.0	0.0	0.00%	0.00%
IT	0.4	1.0	0.00%	0.00%
LV	0.1	0.3	0.00%	0.00%
LT	0.1	0.2	0.00%	0.00%
LU	0.0	0.0	0.00%	0.00%
MT	0.0	0.0	0.00%	0.00%
NL	0.7	1.1	0.00%	0.00%
PL	0.2	0.7	0.00%	0.00%
PT	0.1	0.2	0.00%	0.00%
RO	0.2	0.5	0.00%	0.00%
SE	0.2	0.7	0.00%	0.00%
SI	0.1	0.2	0.00%	0.00%
SK	0.0	0.2	0.00%	0.00%
EU-27	5.1	13.1	0.00%	0.00%

Administrative costs for the private sector

Both PM10 and PM11 would bring along recurrent administrative costs to those operators who choose to benefit from these measures due to the application process and the need to comply with the potential ex-post reporting. These costs are only relevant for additional applicants relative to baseline scenario. As regards start-up support applications (PM10), it is assumed that the applicant has to spend 11.8 hours²⁰⁰ on application for support and 8 hours for any subsequent reporting and payment requests. To estimate the costs, the tariffs per hour from the Eurostat Structure of earnings survey, Labour Force Survey data for Non-Wage Labour Costs (i.e. ISCO 2 – professionals) have been used (31.1 EUR/h). Total costs are derived by multiplying the cost per application with active supported services in any given period. The total administrative costs for the private sector due to PM10 and PM11, by policy option, relative to the baseline are reported in Table 61.

Table 62: Recurrent administrative costs for the private sector due to PM10 and PM11, by policy option compared to the baseline (million EUR, in 2021 prices)

	2030		2050		Present value over 2025-2050	
	PM10	PM11	PM10	PM11	PM10	PM11
PO-B1	0.103	0.28	0.00	0.39	0.55	5.8
PO-B2a	0.104	0.27	0.00	0.42	0.56	6.0
PO-B2b	0.104	0.11	0.00	0.19	0.56	2.6

Source: Ricardo et al. support study (2023)

3.4. Data and transparency related measures (PM14-PM17)

Costs for PM14 and PM15

PM14 and PM15 introduce rules on data, common data set and data set exchange protocols respectively, for improved communication between the different stakeholders in the intermodal chain. These measures do not create obligations to use electronic transport data, but set common rules in case electronic data is used. These measures are not expected to create additional intermodal volume on their own.

Adjustment costs for the private sector

Estimating the costs for these measures is difficult. First, the number of stakeholders who will have to bear the costs is not known. Second, the effort that is required per company is unclear. In relation to the first issue, no reliable data source is available for the number of operators active in intermodal transport. In the EU, there are about 1.2 million land transport companies alone²⁰¹. Large part of these companies are not active in intermodal transport, but are rather independent/self-employed truck drivers. Therefore, it has been assumed that only companies in the road or rail transport with more than 50 employees act in intermodal transport. According to Eurostat²⁰² there are 11,080 companies with more than 50 employees in the land transport and 144 companies in the rail freight transport sector. In addition, there are several thousand companies in IWW and SSS. For example, in the Netherlands there are over 3,000 IWW companies. In Germany there are about 750 IWW companies²⁰³. Since the Netherlands and Germany cover a large part of the EU inland navigation,

²⁰⁰ Similarly to PM7-PM9, the applicants are assumed to save 4.2 hours per request relative to the baseline (16 hours) due to the use of eFTI platforms (PM3). Therefore, the time per application is estimated at 11.8 hours in PM10.

²⁰¹ https://ec.europa.eu/eurostat/databrowser/view/sbs_sc_1b_se_r2/default/table?lang=en

²⁰² https://ec.europa.eu/eurostat/databrowser/view/SBS_SC_1B_SE_R2/default/table?lang=en&category=sbs.serv.sbs_sc_sc

²⁰³ <https://www.binnenschiff.de/pressemitteilung/statistiken-zur-binnenschiffahrt-in-der-bdb-broschuere-daten-fakten-ueber-205-mio-tonnen-gueter-auf-deutschen-fluessen-und-kanalen/>

one could extrapolate the number of companies to 8,000 at the EU level. In addition, the number of SSS companies is estimated to be similar to that in the IWW sector.

According to these estimations, there are about 27,224 companies in total potentially involved in intermodal transport. A survey²⁰⁴ asking stakeholders how much it would cost to switch to electronic freight documents established inter alia that two-thirds of multimodal operators were already using electronic transport data in intermodal shipments.

The Digital Transport and Logistics Forum has been working for several years with industry on related questions. The most common data exchanged in transport chains has been established and considerable work has been done on establishing the data exchange protocol parameters. It can thus be assumed that large part of operations would already meet new requirements or would need minimum adjustments. It is thus assumed that maximum one third of the operators active in intermodal transport (around 9,000 operators) would actually be faced with additional adjustment costs in PM14 and PM15.

The effort required for revising the IT systems is estimated at 20 hours for PM14 and 80 hours for PM15 per company. To estimate the costs, the tariffs per hour from the Eurostat Structure of earnings survey, Labour Force Survey data for Non-Wage Labour Costs (i.e. ISCO 3 – Technicians and associate professionals) have been used (31.1 EUR/hour). The total one-off adjustment costs are thus estimated at EUR 5.6 million for PM14 and EUR 22.4 million for PM15.

Costs for PM16 and PM17

PM16-PM17 are measures to improve transparency on terminal services and quality. PM16 foresees an obligation on terminal operators to publish information on services and facilities available in their terminal and keep it updated. A similar but not identical obligation exists on rail facilities, but no obligation exists to make the data available free of charge on public homepage. PM17 establishes a framework for terminal categories based on available services and facilities, based on a self-assessment. The requirements for each category would be published in a secondary EU act. A one-off obligation would be put on the terminal operators to make their terminal categorisation visible on their homepage.

Adjustment costs for the private sector

There are 980 intermodal terminals in the EU, of which 851 have rail connection and 129 do not²⁰⁵. While rail connected terminals already have to fulfill some data requirements for rail facilities, these data requirements are overlapping only partially. In addition, rail facilities are not required to make this information available on their homepage. Under PM16, all terminal operators will have to make the information available on their homepage and bear the initial adjustment costs as well as the recurrent administrative costs (discussed below) for updating their homepage. As the data requirements are basic information readily available for the terminal operator (see Annex 10), it is thus assumed that gathering the information will take 2 hours of work initially plus 1 hour for updating the homepage every 5 years. To estimate the costs, the tariffs per hour for ISCO 3 (Technicians and associate professionals) have been used (31.1 EUR/hour). The one-off adjustment costs are estimated at EUR 0.18 million. The administrative costs related to updating the homepage are discussed in the following section.

²⁰⁴ TRT (2017), op.cit.

²⁰⁵ PWC, KombiConsult (2022). Note that some terminals with rail connections can be in ports and provide transshipment services without rail link.

As regards PM17, the obligation to self-assess the category and make it visible on their homepage is assumed to take not more than 1 hour of work at the initial introduction, equivalent to one-off costs of EUR 0.03 million.

Table 63: Adjustment costs for the private sector due to PM14 - PM17, in millions EUR (2021 prices)

	PM14	PM15	PM16	PM17
Adjustment costs (one-off)	5.6	22.4	0.18	0.03

Source: Ricardo et al. support study (2023)

No costs are expected on public authorities for PM14-PM17.

Administrative costs for the private sector

As explained above, under PM16 all terminal operators will have to make the information available on their homepage and bear the initial adjustment costs (discussed above) as well as the recurrent administrative costs for updating their homepage. It is not possible to assess with precision how often terminals upgrade their services and facilities, but the costs are expected to be limited, amounting to not more than 1 hour of work every 5 years for gathering the information and updating the homepage. To estimate the costs, the tariffs per hour for ISCO 3 (Technicians and associate professionals) have been used (31.1 EUR/hour). As explained above, there are 980 intermodal terminals in the EU. The recurrent administrative costs are thus estimated at EUR 0.03 million (every 5 years). Expressed as present value over 2025-2050, total administrative costs for the private sector are estimated at EUR 0.10 million.

For the purpose of the application of the 'one in, one out' approach, the annual average cost per terminal, spreading the 5-years costs annually, is estimated at 6.2 EUR. Considering the 980 intermodal terminals in the EU, the average annual costs are estimated at EUR 6,100.

Adjustment costs for the European Commission

PM17 is also expected to lead to adjustment costs for the European Commission as there is a need for a further study to establish the most appropriate criteria for terminal category framework for all modal combinations. The one-off cost for the European Commission are estimated at EUR 300,000.

ANNEX 5: COMPETITIVENESS CHECK

1. OVERVIEW OF IMPACTS ON COMPETITIVENESS

Dimensions of Competitiveness	Impact of the initiative (+ +/+/0/-/ -/n.a.)	References to sub-sections of the main report or annexes
Cost and price competitiveness	++	Section 6.1.1 of the SWD, Annex 4
International competitiveness	0	N/A
Capacity to innovate	+	Annex 4 (methodology) and Annex 6 (retained measures)
SME competitiveness	++	Sections 6.1.1 and 6.1.5 of the SWD, Annex 13

2. SYNTHETIC ASSESSMENT

2.1. Cost and price competitiveness

The objective of the revision is to reduce negative externalities from transport through modal shift, which is achieved by increasing the cost and price competitiveness of the intermodal sector as compared to the road-only sector in the EU. Intermodal operations below a certain distance are not price-competitive with road only transport resulting in road-only transport still being the preferred transport option for freight with its resulting negative external effects. Until external costs are full internalised in the EU, regulatory and economic support can help to make intermodal transport price-competitive.

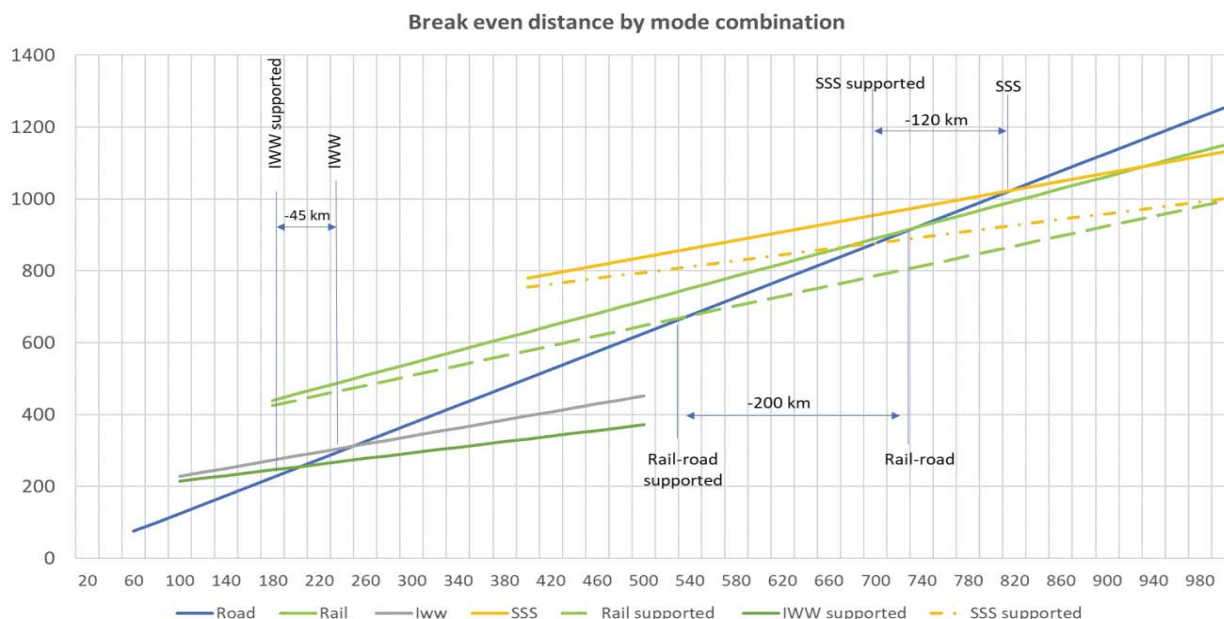
The preferred policy option (PO-B2a) increases the share of intermodal that is eligible for support and ensures that all intermodal combinations (rail, IWW and SSS) will be eligible for support. It also increases the level and types of support available. In summary, it makes more operations more price competitive vis-à-vis road only transport.

Without operational support, the door-to-door break-even distances are on average 740 km for rail, 260 km for IWW and 775 km for SSS. With a 10% support from total door-to-door price, the break-even distances are reduced to 535 km for rail, 200 km for IWW and 610 km for SSS. Thus, the support provided by CTD makes shorter operations economically competitive with road-only transport and thus increases the potential for modal shift. Operations shorter than these new break-even distances will not be price-competitive with road only transport and thus are likely to remain on road-only transport.

A higher percentage of support would result in even shorter break-even distances.

Start-up support and technological upgrade support, provided for under PM10 and PM11, as well as exemption from driving bans provided for in PM13 are not aimed at increasing price competitiveness, but are enabling tools to make intermodal transport possible. However, as regards flexibility and availability, they make intermodal transport more competitive by allowing it to take place in more places and more frequently.

Figure 19: Average price-competitive door-to-door distances in intermodal transport without and with the economic support of 10%, per modal combination (cost in EUR and km)



Source: Ricardo et al. support study (2023)

The increase in the competitiveness of intermodal transport operations is expected to have knock-on effects throughout the entire economy, leveraging the initial impact on the transport sector. This is also expected to lead to positive impacts on GDP. The impact on GDP is however estimated to be small as the proposal does not bring along new transport activity, but rather induces redistribution of operations between the modes. The changes are expected mostly due to positive effects on logistics organisers, terminal activity and engagement of more companies in one transport operation. PO-B2a is estimated to lead to 0.1% increase in GDP in 2030 and 0.3% increase in 2050 relative to the baseline.

2.2. International competitiveness

This revision has no impact on international competitiveness of intermodal transport as it applies strictly to operations within the EU.

2.3. Capacity to innovate

This proposal has limited impact on capacity to innovate. By making intermodal transport more competitive, investment into new technologies can become interesting for the sector. Technology and mode-neutral, non-discriminatory support to intermodal transport and removal of limits of eligible loading units can trigger innovation as regards loading units and transshipment technology, or wider roll-out of currently marginal innovative technologies. Several stakeholders have already shown interest to invest in intermodal transport for loading units that are not eligible and thus competitive today (smaller containers suitable for urban transport, universal aviation loading units, horizontal transshipment technologies etc.). Furthermore, the support to technological upgrade will allow to support innovation and technological upgrade in general.

2.4. SME competitiveness

Given that SMEs represent a substantial part of the transport market, including the intermodal market, the assessment on the overall cost and price competitiveness aspect as provided in section 2.1, to very

large extent shall be applicable also here. In this regard, the revision has an impact on the competitiveness of SMEs providing services in the intermodal chain or wishing to enter this market. For further details on SME impacts, see Annex 13.

As explained in section 6.1.5, PO-B2a is expected to result in net costs savings for businesses, estimated at EUR 4.33 billion, expressed as present value relative to the baseline. Considering the large share of SMEs estimated to operate in the intermodal transport sector, a significant share of these net costs savings are expected to be attributed to them although the available data did not allow a split of these costs savings between the two groups of operators (i.e. SME and others).

ANNEX 6: RETAINED MEASURES

No	Categories of measures by thematic area	Problem drivers and spec. objectives	Short description
PM1	Include in the scope <i>all</i> intermodal operations in EU that save 25% GHG when using intermodal operation instead of road-only; calculation of GHG savings is based on common EU methodology (CEEU)	PD1 SO1	Establishes which operations are eligible for support provided under the CTD. The distance limits for different transport legs and to nearest suitable terminal, as used in the current CTD will be removed. There would be no size limits on loading units. All intermodal freight operations in the EU, including domestic operations, that achieve a 25% reduction of CO ₂ e (GHG), compared to a road only transport between the same points, are eligible. GHG calculations will be based on the methodology established in the CEEU ²⁰⁶ .
PM2 all- intra- EU	Include in the scope <i>all</i> intermodal operations in EU that save 40% external costs when using intermodal operation instead of road-only; calculation of external costs is based on common EU methodology based on the unit values from the Handbook ²⁰⁷ , established by means of an implementing act.	PD1 SO1	Establishes which operations are eligible for a support provided under the CTD. The distance limits for different transport legs and to nearest suitable terminal, as used in the current CTD, will be removed. There would be no size limits on loading units. All intermodal operations in the EU, including domestic operations, that achieve a 40% reduction of negative externalities, compared to a road only transport between the same points, are eligible. Calculations of external costs will be based on a common EU methodology which uses the unit values from the Handbook on the external costs of transport ²⁰⁸ . References to the methodology will be provided in an implementing act, facilitate the update of the reference values to take into account the future updates of the Handbook.
PM2 cross-	Include in the scope <i>only cross-border</i> intermodal operations in EU that save 40% external costs	PD1 SO1	Establishes which operations are eligible for a support provided under the CTD. The distance limits for different transport legs and to nearest suitable terminal, as used in the current CTD, will be removed. There would be no size limits on

²⁰⁶ CountEmissionsEU proposal is part of the Greening Freight Package. It aims to establish a harmonised methodology to measure door-to-door GHG remissions of transport operations, allowing for reliable results, and enable a fair comparison of different transport options.

²⁰⁷ The Handbook on the external costs of transport CE Delft et al. (2019). op.cit.

²⁰⁸ CE Delft (2019), Handbook on the external costs of transport, available at : <https://op.europa.eu/en/publication-detail/-/publication/9781f65f-8448-11ea-bf12-01aa75ed71a1>

No	Categories of measures by thematic area	Problem drivers and spec. objectives	Short description
border	when using intermodal operation instead of road-only; calculation of external costs is based on common EU methodology based on the unit values from in the Handbook, established by means of an implementing act		loading units. Like in the current CTD, only cross-border intermodal freight operations in the EU that achieve a 40% reduction of negative externalities, compared to a road only transport between the same points, are eligible. Calculations of external costs will be based on a common EU methodology which uses the unit values from the Handbook on the external costs of transport. References to the methodology will be provided in an implementing act, facilitate the update of the reference values to take into account the future updates of the Handbook.
PM3	Establish common data set for proof of eligibility with implementation via eFTI platforms	PD1 SO1	This is a measure to implement PM1 and PM2s. It establishes a clear and harmonised definition of data required for the proof of eligibility, including in case of road-side checks. Data should cover the whole chain of the transport activity and make it possible to follow the operation door-to-door. The list of data elements builds on the compromise reached in the negotiations on the previous revision of CTD in 2019. All eligible operations have to provide transport data electronically using eFTI platforms ²⁰⁹ . The eFTI platforms will include a dedicated option for intermodal transport and a 'plug-in' calculator of external costs, to reduce administrative burdens to operators. This will enable both, the transport organiser as well as authorities carrying out road-side checks to immediately see if an operation is eligible or not.
PM4	Replace reporting by the Commission with Member States' voluntary analysis and strategic planning for sustainable freight transport	PD2 SO2	Establishes a regime for the market monitoring and analysis, where the Members States are invited to conduct an analysis of their transport system and sustainable freight transport (rail, IWW, SSS) to allow design their support based on empirical evidence. Based on the analysis, Member States would be invited to

²⁰⁹ Regulation (EU) 2020/1056 of the European Parliament and of the Council of 15 July 2020 on electronic freight transport information (the eFTI Regulation) establishes a legal framework that allows economic operators to share information in an electronic format concerning the transport of goods in the EU hinterland by road, rail, inland waterways and air, to prove compliance with applicable transport legislation.

No	Categories of measures by thematic area	Problem drivers and spec. objectives	Short description
			prepare a plan on how to best support modal shift and address the specific problems in their transport system.
PM5	Replace reporting by the Commission with Member States' mandatory analysis and strategic planning for all freight transport system (cross-modal). An obligation to regularly review the measures.	PD2 SO2	Establishes a regime for the market monitoring and analysis, where Members States are obliged to conduct an analysis of their transport system, with a special focus on trends for intermodal transport and bottlenecks for increased uptake. The regular analysis has to cover all modes of transport (including road-only) and analyse inter alia the cross-modal trends, issues and projections. Based on the analysis, Member States have to prepare a plan on how to best support modal shift and address the particular problems in their transport system. This plan and related measures are updated regularly (every 5 years).
PM6	Reporting by the Commission with revised monitoring data and reporting period, including a review clause for reassessing the support regime established in the CTD. Obligation for Member States to notify ex ante their support schemes, which the Commission has to make available in a common website	PD2 SO2	Establishes a regime for the market monitoring and analysis, by retaining the current obligation in Article 5 for Commission to report about the market situation of intermodal transport in EU. The list of data to be reported will be updated and the reporting period will be extended from current 2 years to 5 years, to allow sufficient time for measures to have impact between reports. Member States have to notify to the Commission a link where they publish ex-ante information on the opening new support schemes. The Commission will make all these links available on its homepage.
PM7	Mandatory harmonised support, does not constitute State aid: Harmonised <i>obligation</i> on Member States to provide support with an aim to reduce door-to-door costs of intermodal operations at a level that induces modal shift; remove all	PD3 SO3	Establishes a regime for mandatory harmonised support, where the Member States will be required to provide economic support through co-financing the cost of the non-road leg by a fixed percentage. The scheme is established in detail as regards the eligibility, eligible costs, level of support (aid intensity) as well as beneficiaries, without leaving any discretion to the Member States. Such a scheme would be considered not constituting State aid as it would not be imputable to the Member State. Therefore, the measure would not be subject to the obligation under article 108(3) TFEU that requires Member States to notify all

No	Categories of measures by thematic area	Problem drivers and spec. objectives	Short description
	existing regulatory measures (Articles 2, 4, 7, 8, 9)		State aid to the European Commission for prior authorisation ²¹⁰ . Existing regulatory support measures (articles 2, 4, 7, 8, 9) would be deleted.
PM8	Voluntary non-harmonised support, the State aid rules apply, where relevant: call on Member States to use operational support tools from the Toolbox with an aim to reduce door-to-door costs of intermodal operations at a level that induces modal shift	PD3 SO3	Establishes a regime for voluntary support, where the CTD includes a non-binding aim for inducing sufficient modal shift. In order to achieve this aim, Member States are invited to implement support tools chosen from a list provided in the CTD. A Toolbox of support tools will be annexed to the revised CTD, from which the Member States will be free to select support tools suitable to particular Member State's situation. Any support should be provided to operations eligible under the CTD. The measures would have to be notified under State aid rules, where relevant. Simplified procedures or block exemptions may apply to schemes that meet relevant conditions.
PM9	Mandatory non-harmonised support, the State aid rules apply, where relevant: obligation on Member States to have at least one operational support tool from the Toolbox with an aim to reduce door-to-door costs of intermodal operation at a level that induces modal shift	PD3 SO3	Establishes a regime for mandatory non-harmonised support, where the CTD includes an obligation to Member States to adopt at least one support scheme for operational support with the main characteristics defined in the Toolbox in the annex to the CTD. Member States have the flexibility to choose the type of measure best suitable for local conditions. The Toolbox includes options such as support to transshipment costs as well different options for supporting operational costs of different legs. The support measures in combination should aim at reducing the overall door-to-door operational costs by 10%. Any support scheme needs to comply with State aid rules, where relevant. Simplified procedures or block exemptions may apply to schemes that meet relevant conditions.

²¹⁰ Commission Notice on the notion of State aid as referred to in Article 107(1) of the Treaty on the Functioning of the European Union, 2016/C 262/01, paragraphs 44-46, [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016XC0719\(05\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016XC0719(05)&from=EN)

No	Categories of measures by thematic area	Problem drivers and spec. objectives	Short description
PM10	Voluntary support, the State aid rules apply, where relevant: call on Member States to provide start-up support	PD3 SO3	Establishes a regime for voluntary support, where Member States are invited to provide economic support for setting up new rail, IWW or SSS routes to connection organisers or such scheduled routes (shuttles) with open access to all shippers/chain organisers where such routes carry a majority of operations eligible under the CTD. The support should be limited to routes that are currently not served or where no similar intermodal routes exist in the vicinity. Such support is in particular useful in case of new terminals. The start-up support should be limited in time and be reduced gradually. This policy measure cannot be mandatory, given that need for such support is not universal. Start-up support will be part of the Toolbox annexed to the CTD. Any support scheme needs to comply with State aid rules. Simplified procedures or block exemptions may apply to schemes that meet relevant conditions.
PM11	Mandatory non-harmonised support, the State aid rules apply, where relevant: obligation on Member States to have at least one technological upgrade support measure from the Toolbox	PD3 SO3	Establishes a regime for mandatory non-harmonised support, where the CTD includes an obligation to Member States to adopt at least one technological upgrade scheme for operational support with main characteristics defined in Toolbox in the annex of the CTD, while leaving the flexibility to choose the type of measure best suitable for local conditions to the Member States. The measure refers to upgrades for loading units, machinery and digital equipment with a limited budget impact, but acting as important enablers. This support will also facilitate innovation in intermodal sector. The beneficiaries will be carriers of different intermodal legs, organisers or terminal operators, depending on the specific support tool. The support will be provided when it is shown that the vehicles, vessels or terminal equipment is used for eligible operations. Any support scheme needs to comply with the State aid rules, although most of the support in this category might be below of the de minimis threshold (currently EUR 200 000 per Member State to a single undertaking over any

No	Categories of measures by thematic area	Problem drivers and spec. objectives	Short description
			period of three fiscal years, EUR 100 000 in case of undertakings performing road freight transport for hire or reward) and thus would not need to be notified.
PM12	Limit the direct financial support only to short and medium-long operations that are normally not cost-competitive with road-only transport (mode specific thresholds)	PD3 SO3	Sets an upper door-to-door distance limit for operations, which can benefit from the mandatory economic support. Intermodal operations become competitive with road-only transport at certain longer distance. This average distance is different for different modal combinations. This measure allows to limit the mandatory support only to operations that are not competitive with road -only operations and would thus not take place without a support. This will reduce the budgetary burden to Member States and would ensure more efficient use of resources. Different cut-off distances are established for each modal combination with rail, IWW and SSS.
PM13	Exempt road-legs of eligible operations from weekend and holiday driving bans	PD3 SO3	An obligation to exempt the road legs of eligible intermodal transport from fixed (night, week-end and holiday) driving bans. Such driving bans cause considerable problems for logistics chain as road legs cannot be carried out directly before or after the non-road leg. This results in terminal yard congestion, larger traffic jams just before and after the driving ban times and inability to efficiently fill the rail, IWW or SSS vehicle/vessel during such driving bans limiting the time non-road leg timetables.
PM14	Define a data set for information to be shared between parties of transport chain by means of an implementing or delegated act	PD4 SO4	This measure provides for an obligation to Member States and private parties to ensure that a defined set of harmonised data will be established to ensure enhanced data interoperability between the railway, inland waterways (IWW), short sea shipping (SSS) sectors, road sectors and terminals. The data sets could be developed based on existing modal initiatives and data sets defined therein (TAF TSI for rail, RIS for IWW and TIS for SSS). The details, including the definition of the data set, will be left for an implementing or delegated act. There is currently no obligation in EU law that would specify and/or require the data in an intermodal chain to be interoperable between different operators and

No	Categories of measures by thematic area	Problem drivers and spec. objectives	Short description
			modal-specific systems. Lack of this interoperability results in inefficiencies and inability to plan and follow a loading unit.
PM15	Establish an obligation to use common data exchange protocols for operations covered by this Directive by means of an implementing or delegated act	PD4 SO4	This measure provides for an obligation to Member States and private parties to use common data exchange protocols between transport modes and different parties. The data exchange protocols would be based on the work of the DTLF ²¹¹ , which is in the process of developing main elements for constructing an open and neutral data sharing infrastructure for freight transport and logistics based on a federation of platforms, not limited to any specific mode or modal combination. The details, including the definition of the data set, may be left for an implementing or delegated act.
PM16	Require terminal operators to publish information on services and facilities available in each terminal. List of mandatory information to be established in an implementing act.	PD4 SO4	A common list of information relevant specifically to intermodal operations and applicable to all modal combinations would be established with an obligation to make it publicly available and keep up to date. The details (list of information) would be established in an implementing act. This relates especially to available services and facilities but also to information on access by transport modes, number and length of operation tracks, type of loading units handled, crane technology AGV, electrification and value added services.
PM17	Provide a possibility to establish a framework of terminal categories based on minimum requirements on services/facilities available at terminals, by means of an implementing act.	PD4 SO4	A simple framework of quality level (categories) of terminals will be established. Terminal categorisation would be based on a selected list of the main characteristics on availability of facilities and services, based on the list of information established by PM16. Given that the characteristics reflect facilities and services, which can be easily observed, the categorisation would not entail accreditation or centralized regular assessment. Such a categorization would allow quick comparison of terminals. It will be motivating the operators to

²¹¹ Digital Transport and Logistics Forum is an expert group of the European Commission bringing together public and private stakeholders from various transport and logistics communities to support the European Commission in promoting the digital transformation of the transport and logistics sector. https://transport.ec.europa.eu/transport-themes/digital-transport-and-logistics-forum-dtlf_en

No	Categories of measures by thematic area	Problem drivers and spec. objectives	Short description
			upgrade the quality of their terminals, and can be used as benchmark for investors. The list of categories with required characteristics would be established in an implementing act.

ANNEX 7: DISCARDED MEASURES

Categories measures by thematic area	Problem drivers and spec. objectives	Short description and reason for discarding
Extend the scope to all multimodal operations	PD1 SO1	All support under the CTD would have been available not only intermodal but for all multimodal operations that save externalities. Legally, identifying the eligible multimodal transport activities and distinguishing them from unimodal non-road transport would have been very difficult. Enforcement of application on multimodal transport would not have allowed to use the eFTI shipment-based data sets, given that goods are often regrouped at loading and unloading points between the modes. It would have been impossible to follow one load, e.g. a parcel or bulk goods, from door-to-door. It was also assessed that with multimodal transport, and in particular for some types of goods such as heavy bulk goods like coal, grain, oil, dangerous goods, etc., there would be high risk of deadweight profit seeking. Finally, extending the scope of support to almost all non-road transport would bring along considerably increase in expected budget contributions, which was assessed to be politically unacceptable.
Extend the support to all intermodal operations, including to the parts taking place outside of EU territory	PD1 SO1	The measure would have extended support, including economic support also to the parts of intermodal operations that take place outside of EU territory. This measure was considered not acceptable both due to high financial costs as well as due to difficulties for implementation.
Encourage support to eligible operations, without a list of tools	PD1 SO1	The measure would have called Member States to provide support to intermodal transport, but leaving the choice, type and design of the support entirely to the Member States, including abolishing current fiscal support tools. This measure was considered as ineffective for achieving the objectives.
Establish common data standards for eligible operations	PD4 SO4	The measure would have established common data standards for only the supported intermodal operations. On-going horizontal policy work is ongoing for all transport operations aiming to establish harmonized rules for interoperable information sharing

Categories measures by thematic area	Problem drivers and spec. objectives	Short description and reason for discarding
		across all segments of the transport and logistics sector. These initiatives, including the common European mobility data space, and the Digital Transport and Logistics Forum (DTLF) are expected to provide for generic solutions to be further customized for individual applications, such as the combined transport.
Call for industry-driven terminal categories framework	PD4 SO4	The measure would have included a call to industry to elaborate voluntary terminal categories framework. The value added of such a call in EU legislation is limited.
Establishment of EU freight transport horizontal and vertical cooperation platforms	PD4 SO4	The measure would have created one or more centralised platforms for improving freight transport stakeholders' cooperation. Horizontal cooperation for load sharing and vertical cooperation for chain organisation would have been covered. Such private initiatives exist but mandating them at centralised level is not following subsidiarity principle.

ANNEX 8: HISTORICAL CONTEXT FOR CTD

The CTD was first adopted in 1975. The main political objective for the CTD has been since the adoption of the first CTD improvement of the environmental performance of the transport system²¹². The original Directive was amended five times to extend the beneficial regime to a wider set of operations. The general EU climate and environmental objectives were reconfirmed over the years at more ambitious levels resulting *inter alia* in several amendments and amendment proposals for this Directive.

In 1992 the Commission published the White Paper on Transport and accompanying legislative package that led to today's CTD entirely liberalising the CT market in EU and providing today's support framework. The accompanying proposal on strategic combined transport terminal network was not adopted.

In 1997, The Commission published a dedicated strategy on intermodal transport in Europe²¹³. Since then, there have been two attempts to amend the CTD, in 1998²¹⁴ and 2017²¹⁵.

The 1998 revision proposed an extension of eligibility to domestic operations, a road leg limit based on a 20% share in total operation and exclusion of island transport. It also proposed exempting CT road legs from weekend driving bans. The proposal was stalled in European Parliament, and the Commission withdrew the proposal in 2001.

In 2011, the Commission published the Transport White Paper²¹⁶, which set a specific goal of shifting by 2030 30% of long-distance road freight (over 300 km) to rail or waterborne transport, and more than 50% by 2050.

The European Parliament highlighted in 2015 that a European sustainable mobility policy needs to build on a broad range of policy tools to shift towards the least polluting and most energy-efficient modes of transport in a cost-efficient manner²¹⁷.

A REFIT evaluation²¹⁸ of the CTD was published in 2016 that concluded that the CTD continues to be a relevant instrument for supporting CT. It was estimated that the shift from road-only to intermodal transport has brought along an annual saving of up to €2.1 billion in external costs (2011). While not all of this saving can be attributed to the CTD, it was established that without EU action, cross-border CT services would likely have been faced with barriers of different legal systems, making CT services less attractive and possibly unfeasible. The evaluation also showed that there is significant margin for further improving the effectiveness of the CTD as some of its provisions are outdated or unclear. The shortcomings relate in particular to the narrow eligibility and too low economic support. In addition, the evaluation concluded that the transposition is not always homogenous and allows contradictory or misleading interpretation and implementation (see section 2.2.1).

In 2017, the European Parliament requested a revision of the CTD to increase multimodal transport, eliminate unfair practices and ensure compliance with the social legislation relating to CT.²¹⁹

²¹² Preamble of 75/130/EEC states: "Whereas the use of the road/rail method for the international carriage of goods by road is economically advantageous over long distances, whereas it reduces road traffic and thus enhances road safety; whereas at the same time it contributes to the protection of the environment;..."

²¹³ COM(97) 243 final.

²¹⁴ COM(98) 0414 final.

²¹⁵ COM(2017)0648 final.

²¹⁶ COM(2011) 144 final.

²¹⁷ https://www.europarl.europa.eu/doceo/document/TA-8-2015-0423_EN.html

²¹⁸ SWD(2016) 140 final.

²¹⁹ https://www.europarl.europa.eu/doceo/document/TA-8-2017-0009_EN.html

As a result, the Commission adopted a proposal in 2017 to amend the CTD with a focus on clarifying the definition and increasing the support to be provided. The 2017 impact assessment accompanying the amendment proposal established that the goal in 2011 Transport White Paper will not be met without additional intervention. The proposal clarified the existing definition in light of existing case law and complaints without changing the approach based on fixed distances for different parts of the operation. It also proposed to promote investment into terminal infrastructure and considerably improve the fiscal and economic support tools.

While all Member States welcomed the amendment and supported the objective to improve the competitiveness of CT, any proposals to extend the eligibility were met with resistance²²⁰. Similarly, many Member States were against an obligation to facilitate the increase of terminal capacity²²¹. As regards increased support to CT operations, Member States views diverged²²². This was further challenged by some Member States' efforts to abolish the equivalent treatment for use of non-resident road hauliers in all international intra-EU transport. The European Parliament broadly supported the proposal, proposed further ambition as regards the economic support, but also requested some exemptions. Progress was made in two trilogues, but the Council was unable to agree on a mandate for a third trilogue, which resulted in the European Parliament adopting its first reading outcome not reflecting the progress made in the trilogues. Consequently, several amendments introduced by the co-legislators modified the proposal in a manner which, if adopted, would have significantly reduced the effectiveness of the Commission proposal. Therefore, the Commission withdrew its proposal, concluding that the necessity of increasing the share in total transport of sustainable transport modes under the European Green Deal required stronger support for multimodal solutions.

The EESC adopted an opinion in 2021 questioning the need for the financial promotion and regulatory support.²²³

²²⁰ 18 Member States supported retaining the scope only on operations between Member States.

²²¹ No Member State supported the obligation to promote terminal investment. 15 Member States could agree on obligation to encouraging to promote terminal investment. 9 Member States were against any obligation in this regard.

²²² No Member State supported harmonised mandatory support. The rest of the Member States supported an obligation to provide support when the choice of support tool was left to Member States.

²²³ <https://www.eesc.europa.eu/lt/our-work/opinions-information-reports/opinions/intermodal-transport-and-multimodal-logistics-making-modes-complementary-greening-transport-own-initiative-opinion>

ANNEX 9: TOOLBOX OF SUPPORT TOOLS

Below preliminary list serves as an example of types of support tools that can be included in the Toolbox to be annexed to the revised CTD

Without prejudice to State aid rules and in particular conditions for eligible costs, beneficiaries and aid intensities, the support provided in this Directive, and contributing to the objective to ultimately reduce the cost to shippers by 10%, falls into the following categories:

Part 1: operational support for eligible intermodal operations

- (a) Support to reduce the costs borne by intermodal transport organisers (shippers, logistics companies), such as total transport (door-to-door) costs, transshipment costs or transport costs for non-road legs;
- (a) Support to reduce the costs borne by operators who organise the intermodal transport operation, such as transport costs per loading unit transported, external-cost charges or congestion, charges for the use of certain infrastructure;

Part 2: Start-up support

The financial start-up support to cover, for limited time period, costs related to operating a new intermodal transport scheduled route on rail, IWW or SSS

Part 3: Technological upgrade support

Support to reduce the costs borne by operators for investments in technological upgrade for intermodal transport, such as:

- (a) investments to identify the semi-trailers used in intermodal transport in accordance with the identification regime established pursuant to international standards ISO6346 and EN13044,
- (b) investments to make the non-cranable semi-trailers to become crable
- (c) investments for the integration of connected systems and the automation of operations in intermodal transport, digital logistics, related information and communication technologies and intelligent transport systems that are necessary for the smooth functioning of intermodal transport operations, in particular support for investments into terminal photogates and automatic check-in/check-out booth,
- (d) investments into low-emission vehicles or vessels or transshipment technology in intermodal transport,
- (e) investments for the purchase of equipment to allow transshipment of semi-trailers, such as gantry crane grapple arms for vertical transshipment of semi-trailers

ANNEX 10: TRANSPARENCY REQUIREMENTS ON TERMINALS

Below preliminary list serves as an example of types or information potentially required to be made public by terminal operators for each terminal on their homepage.

Information	Information
Terminal and operator	• Name, address and coordinates of the terminal • Contact details of the operator of the terminal • Opening times
Non-road connections	List the destinations that are directly connected to the terminal, including mode/transport system and name of operators of such connections and frequency and days of departures per destination
Loading units	• Types of loading units handled, description of limitations • Service facilities for loading units (repair, maintenance, cleaning, weighing of containers, stuffing/stripping))
Handling	• Technical equipment for loading and unloading, including type and number of handling equipment • Number and length of handling tracks (rail)/No. of loading berths, total (usable) length and draught (IWW/SSS) • Priority rules • Maximum load for handling • Handlings per hour
Services for road hauliers	• Access conditions • Waiting areas • Facilities • Waiting times • Weighting of vehicles
Storage	• Available storage capacity • Time limits for storage • Applicable restrictions (dangerous cargo (incl. class), reefer and reefer power supply, etc.) • Empty container depot
IT systems	• Use of photogates, OCR • Use of digital check-in and check-out • Data exchange main systems
Other facilities	• Customs, phytosanitary inspections • Packing

ANNEX 11: TERMINAL CATEGORIES – RAIL

Below list of terminal categories for rail serves as an preliminary example of conditions to be included in the terminal categories.

Category	Conditions
A	All types of intermodal loading units can be transhipped/handled
	740m long tracks exist under the crane
	Possibility to enter/exit the terminal with the main/electric locomotive via continuous tracks (no shunting required)
	At least 10 daily rail departures. At least 5 rail destinations
	Daily theoretical handling capacity in 600 ILUs and 15 trains
	Digital photogates are in use. Automatic check-in and check-out booths are in use.
B	All types of intermodal loading units can be transhipped/handled
	740m long tracks exist under the crane
	Possibility to enter/leave the terminal with the main/electric line locomotive (no need for shunting).
	At least 8 daily rail departures. At least 4 rail destinations
	Daily theoretical handling capacity 450 ILUs and 12 trains.
	Digital photogates are in use. Automatic check-in and check-out booths are in use.
C	All types of intermodal loading units can be transhipped/handled
	740m long trains can be handled with a <i>reasonable efficiency</i> even though 740m tracks are not there
	Shunting is needed as main locomotives cannot enter the terminal
	At least 4 daily rail departures. At least 2 rail destinations
	Daily theoretical handling capacity 300 ILUs and 8 trains.
	Digital photogates are in use. Automatic check-in and check-out booths are in use.
D	Not every type of intermodal loading unit can be transhipped/handled at the facility
	740m long trains can be handled with a <i>reasonable efficiency</i> even though 740m tracks are not there
	Shunting is needed as main locomotives cannot enter the terminal
	At least 5 weekly rail departures. At least 3 weekly rail destinations.
	Daily theoretical handling capacity 200 ILUs and 6 trains.
	Digital photogates and automatic check-in and check-out booths are not in use.
E	Not every type of intermodal loading unit can be transhipped/handled at the facility
	740m long trains cannot be handled efficiently
	Shunting is needed as main locomotives cannot enter the terminal
	One weekly connection, one rail destination.
	Daily theoretical handling capacity 80 ILUs and 1 train.
	Digital photogates and automatic check-in and check-out booths are not in use.

ANNEX 12: EFFECTIVENESS OF THE POLICY OPTIONS

The following table summarises the expected effectiveness of each policy option, complementing the description in section 7.1.

	Strongly negative	Weakly negative	No or limited impact	Weakly positive	Strongly positive	Unclear
	PO A	PO B1	PO B2a	PO B2b	PO C	
General objective: Facilitate an increase in the share of rail, short sea shipping and inland waterways in total intra-EU freight transport to contribute to reducing negative externalities as well as energy consumption of transport						
Impact on volume of intermodal transport in the EU	Very small positive impact on the volume of intermodal transport: cumulatively over the 2025-2050 period, PO-A is expected to result in a 0.11% increase in intermodal volumes (door-to-door) relative to the baseline scenario.	Strongly positive impact on the volume of intermodal transport: cumulatively over the 2025-2050 period, PO-B1 is expected to result in a 6.41% increase in intermodal volumes relative to the baseline scenario.	Strongly positive impact on the volume of intermodal transport: cumulatively over the 2025-2050 period, PO-B2a is expected to result in a 6.43% increase in intermodal volumes relative to the baseline scenario.	Positive impact on the volume of intermodal transport: cumulatively over the 2025-2050 period, PO-B2b is expected to result in a 4.96% increase in intermodal volumes relative to the baseline scenario.	Positive impact on the volume of intermodal transport: cumulatively over the 2025-2050 period, PO-C is expected to result in a 3.83% increase in intermodal volumes relative to the baseline scenario.	
Reduction in external costs of transport (including CO ₂ emissions, air pollutant emissions, fatalities and injuries, noise, and road congestion)	Very small positive impact on external costs of transport: PO-A is expected to save EUR 753.8 million worth of external costs expressed as present value over 2025-2050, relative to the baseline scenario (in 2021 prices).	Strongly positive impact on external costs of transport: PO-B1 is expected to save EUR 14.4 bn worth of external costs expressed as present value over 2025-2050, relative to the baseline scenario (in 2021 prices).	Strongly Positive impact on external costs of transport: PO-B2a is expected to save EUR 15.3 bn worth of external costs expressed as present value over 2025-2050, relative to the baseline scenario (in 2021 prices).	Positive impact on external costs of transport: PO-B2b is expected to save EUR 10.7 bn worth of external costs expressed as present value over 2025-2050, relative to the baseline (in 2021 prices).	Medium positive impact on external costs of transport: the PO-C is expected to save EUR 6.6 bn worth of external costs expressed as present value over 2025-2050, relative to the baseline scenario (in 2021 prices).	

Strongly negative	Weakly negative	No or limited impact	Weakly positive	Strongly positive	Unclear
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	PO A	PO B1	PO B2a	PO B2b	PO C
	2021 prices).		2021 prices).	prices).	
Specific objective 1: Provide support to a wider range of operations under effective eligibility conditions					
Impact on the share of intermodal operations eligible for support	Positive effect on the share of operations that are eligible for support provided under the Directive. PO-A is expected to increase the volume of eligible intermodal operations by 33.4% in 2030 and 30.2% in 2050, compared to the baseline scenario (reflecting the current CTD). However, eligibility based on GHG only will result in part of waterborne transport and all IWW not being eligible for support as of 2035 onwards.	Positive effect on the share of operations that are eligible for support provided under the Directive. PO-B1 is expected to increase the volume of eligible intermodal operations by 33.4% in 2030 and 30.2% in 2050, compared to the baseline scenario (reflecting the current CTD). However, eligibility based on GHG only will result in part of waterborne transport and all IWW not being eligible for support as of 2035 onwards.	Strongly positive effect on the share of operations that are eligible for support provided under the Directive. PO-B2a is expected to increase the volume of eligible intermodal operations by 33.5% in 2030 and 33.2% in 2050, compared to the baseline scenario (reflecting the current CTD). Eligibility conditions ensure that all modal combinations have equivalent accessibility to support (technology neutral).	Positive effect on the share of operations that are eligible for support provided under the Directive. PO-B2b is expected to increase the volume of eligible intermodal operations by 27.1% in 2030 and 26.9% in 2050, compared to the baseline scenario (reflecting the current CTD). Eligibility conditions ensure that all modal combinations have equivalent accessibility to support (technology neutral).	Positive effect on the share of operations that are eligible for support provided under the Directive. PO-C is expected to increase the volume of eligible intermodal operations by 33.5% in 2030 and 33.2% in 2050, compared to the baseline scenario (reflecting the current CTD). Eligibility conditions ensure that all modal combinations have equivalent accessibility to support (technology neutral).
Suitability and clarity of eligibility conditions	Positive effect on clarity and suitability of eligible conditions: the new data set for proof of eligibility and the use of eFTI platforms will simplify the process and reduce the cost and time, requiring less effort from operators and making it easier for authorities to verify				

Strongly negative	Weakly negative	No or limited impact	Weakly positive	Strongly positive	Unclear
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	PO A	PO B1	PO B2a	PO B2b	PO C
	eligibility, thereby reducing risk of fines and administrative procedures.				
Specific objective 2: Ensure better support by improving reporting on multimodal / intermodal transport					
Impact on availability of information and analysis of intermodal market	Small positive effect. Under PO-A, some additional Member States are expected to start carrying out regular analysis and strategic planning for intermodal transport.	Positive effect. Centralised analysis by the Commission ensures better accessibility to information about the overall EU market for industry from different Member States. The 5 year period ensures that analysis can capture the impact of measures. Notification and publication on Commission homepage of upcoming support schemes allows equal access to support for all EU operators. Automatic review clause of the Directive ensures that support will be kept up to date.		Positive effect. Ensures Member States are well aware of the intermodal market and cross-impacts between different modes and the impacts of their support schemes. Does not ensure equally easy access to information for all EU operators (language barriers).	
Support is appropriate and effective	Small positive effect may take place in the longer run and due to peer pressure. While in the first part of the period, Member States are not expected to change their existing support schemes or to introduce new ones, upon their expiry, Member States are expected to design new measures in compliance with	Strongly positive effect. Member States are expected to design new measures in compliance with eligibility conditions under CTD, but keeping in mind local conditions and problems. They are expected to follow the guidance on eligible costs as established in the Toolbox. These conditions are expected to ensure that support is appropriate and effective to achieve the reduction of break-even distance and ensures comparable outcome in all Member States and for all operators notwithstanding the modal combination. Additional start-up support ensures that new non-road		Positive effect. Member States are expected to design new measures in compliance with eligibility conditions under CTD, but keeping in mind local conditions and problems. They are expected to follow the guidance on eligible costs as established in	Small to medium positive effect. Harmonised support ensures that support is appropriate and effective to achieve the reduction of break-even distance. However, as starting position in different Member States are heterogeneous, single type of support is expected to have also varying effect in

Strongly negative	Weakly negative	No or limited impact	Weakly positive	Strongly positive	Unclear
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	PO A	PO B1	PO B2a	PO B2b	PO C
	eligibility conditions under CTD and follow the guidance on eligible costs. These conditions are expected to ensure that support is appropriate and effective.	connections/services can be easier established, in particular to new terminals, thereby enabling the use of intermodal transport and considerably increasing the effectiveness of the option.		the Toolbox, but only for international operations. Some Member States may opt for less or no support for the domestic operations. Therefore the support could be less effective in achieving the reduction of break-even distance. The outcome in all Member States and for all operators may not be always comparable. Additional start-up support ensures that new non-road connections/services can be easier established, in particular to new terminals, thereby enabling the use of intermodal transport and considerably increasing the effectiveness of the option.	different Member States and for different modal combinations and in some Member States could result in reduction of support.
Distance at which	No or limited positive effect	Positive impact. Reduces the	Positive impact. Reduces	Positive impact. Reduces	Positive impact. Reduces the

Strongly negative	Weakly negative	No or limited impact	Weakly positive	Strongly positive	Unclear
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	PO A	PO B1	PO B2a	PO B2b	PO C
intermodal transport is price-competitive with road-only transport	compared to baseline as Member States are mostly expected to continue with current support schemes.	distance at which intermodal transport is price-competitive for operations eligible for operational support under this option. The break-even distances are reduced from 740 to 535km for rail, from 260km to 200km for IWW and from 775km to 610km for SSS.	the distance at which intermodal transport is price-competitive for operations eligible for operational support under this option. The break-even distances are reduced from 740 to 535km for rail, from 260km to 200km for IWW and from 775km to 610km for SSS.	the distance at which intermodal transport is price-competitive for operations eligible for operational support under this option. The break-even distances are reduced from 740 to 535km for rail, from 260km to 200km for IWW and from 775km to 610km for SSS.	distance at which intermodal transport is price-competitive for operations eligible for operational support under this option. The break-even distances are reduced from 740 to 535km for rail, from 260km to 200km for IWW and from 775km to 610km for SSS.
Specific objective 4: Improve transparency and cooperation and simplify entry to the market					
Ease of data exchange between parties in intermodal transport chain	Positive impact on exchange of data along the intermodal transport chain: harmonised data set would ensure that minimum data is interoperable between all modes and Member States. However, a common dataset for all modes would mean that data specific to modal operations would not be covered and this would	No effect	No effect		Positive effect on exchange of data along the intermodal transport chain: common data exchange protocol set would ensure flexible and effective way for ensuring data is interoperable between all modes and Member States. Obligation applicable only to operations eligible under this directive would however

Strongly negative	Weakly negative	No or limited impact	Weakly positive	Strongly positive	Unclear
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	PO A	PO B1	PO B2a	PO B2b	PO C
	seriously limit the effect. Data obligation applicable only to operations eligible under this Directive would limit the effect of such data rules.				limit the effect of such data rules.
Ease of access to terminal information	Positive effect to shippers, intermodal transport organisers and in particular new entrants: the new requirements for terminal operators proposed by PM16 would ensure that essential information on terminal operations, their facilities and services would be easily and freely available, allowing potential users to assess if modal shift is a possibility for them. Categorisation of terminals (PM17) would provide a better overview of the quality level of terminals, to shippers, authorities and financiers. The visibility of such categorisation would provide a motivation for terminal operators to upgrade the most important facilities and services and thereby improve the efficiency of total intermodal chain.				

ANNEX 13: SME TEST

Step (1) of the SME test (identification of affected businesses).	
Directly affected. SMEs active in intermodal transport would fall under the scope of this initiative. The exact number of involved SMEs is not known, but SMEs are estimated to dominate its subsectors, with 99% of the total road-hauliers^{224,225} and IWW sector being SMEs. In rail 93% of companies are SMEs and in maritime 98%. Based on desk research, it has been assessed that approximately 27,000 companies could be involved in intermodal transport, most of them SMEs in the road sector. It should be noted however that as access to terminals requires often special training of drivers and large road vehicle fleets, dedicated companies dominate the intermodal road sector and micro-companies are not that active in intermodal transport, though they are sometimes subcontracted. Road-hauliers currently carrying out road-only transport will also be impacted when operations shift from road-only to intermodal. In addition, SMEs as shippers are a major beneficiary of the CTD support. While many larger shippers already use intermodal transport. Their large volume of transported goods allows them to benefit from the more competitive sub-segment of intermodal transport on rail, the block trains. For the SMEs however the volumes remain low and access to intermodal transport often requires the use of consolidator, either a logistics company or a multimodal transport organiser. These services are less competitive vis-à-vis road transport and thus the support to increase the price-competitiveness of intermodal transport is important for attracting SMEs to use these services. Indirectly affected. The number of SMEs indirectly affected will be larger but is not quantifiable. Increased use of intermodal transport often results in creation of new supporting services, in particular around terminals (hospitality sector).	See sections, 6 (Economic impacts), 8 (Preferred option) and Annex 4
Step (2) of the SME test (consultation of SME stakeholders).	
The methodological approach used in consultation activities consisted in gathering specific data on SMEs and micro-enterprises from the stakeholders consulted (OPC, targeted questionnaires and targeted interviews), SMEs were asked to identify themselves. It should be noted that most SMEs were represented in the consultations by the sector associations. Targeted consultations. 19 out of 39 respondents to the survey questionnaire in the targeted stakeholders' consultation identified themselves as SMEs. Open Public Consultation. The OPC was organised from 08 March to 30 May 2022. 6 out of 23 companies that responded to the OPC identified themselves as SMEs (1 small and 5 medium-sized companies).	See annex 2 (Stakeholder consultation)
Step (3) of the SME test (assessment of the impacts on SMEs).	
Direct impacts on SMEs. It has not been possible to quantify the impact specifically for SMEs. An increase in intermodal transport will have positive economic impact on all SMEs other than road hauliers. The SME shippers will have a wider choice of transport options and easier access to the market, thanks to new terminal transparency obligations. The SMEs logistics operators engaged in organising intermodal transport operations as well as SME transport operators in rail and waterborne transport are expected to experience increases in business opportunities as volumes increase. The technological upgrade support (PM11) is expected to particularly benefit SMEs, though it will remain in Member States' competence to decide if they limit the support to SMEs only or not. As regards road hauliers, those engaged today in intermodal transport will benefit from increased transport volumes. For those engaged today in long-distance road-only transport that would be replaced by intermodal transport, two options are present (continue on other routes/clients or switch to intermodal road legs), leaving it up to hauliers themselves to choose the action (no mandatory obligations to shift). Where modal shift occurs, road hauliers can decide to also shift from long-distance road transport to intermodal road legs. However, it should be noted that the modal shift predicted is small compared to remaining road freight transport. In 2030, only 1.2% of road freight transport will be replaced by non-road transport (26 bn tkm in 2030), while 9 bn tkm of new intermodal road legs will be created. As explained in section 6.1.4, all policy options are expected to result in net costs savings for businesses, estimated at EUR 5.46 billion in PO-C, followed by PO-B2a with net costs savings estimated at EUR 4.33 billion, PO-B1 with net costs savings of EUR 4.30 billion, PO-A with	See sections 6.1 (Economic impacts) and Annex 4

²²⁴ https://eur-lex.europa.eu/resource.html?uri=cellar:9d5c61bf-4629-11e7-aea8-01aa75ed71a1.0001.02/DOC_1&format=PDF

²²⁵ https://ec.europa.eu/eurostat/databrowser/view/SBS_SC_1B_SE_R2_custom_3493320/default/table

net costs savings estimated at EUR 3.57 billion, and PO-B2b with net costs savings estimated at EUR 3.43 billion, expressed as present value relative to the baseline. Considering the large share of SMEs estimated to operate in the intermodal transport sector, a significant share of these net costs savings are expected to be attributed to them although the available data did not allow a split of these costs savings between the two groups of operators (i.e. SME and others). Indirect impacts on other SMEs. Indirect impacts on other SMEs such as hospitality sector will be positive due to new business opportunities.	
Step (4) of the SME test (minimizing negative impacts on SMEs).	
Minimising negative impacts. An intermodal transport operation usually involves two different road transport operators carrying out the road legs at each end of the operation. While the total number of kilometres driven on road will reduce – as is the objective of the CTD - the price for intermodal road legs is not per kilometre, but rather per time and intermodal road legs are considered more profitable per kilometre. The road carriage price is quoted per time or per operation, because a considerable amount of waiting is involved both at loading and unloading and in terminals for the drivers. In addition, there are less empty truck operations which will also increase the profitability for hauliers. Alternative options. None.	See section 6.1 (Economic impacts), 7 (How do options compare), 8 (Preferred PO), Annex 4 and Annex 5

ANNEX 14: FINANCIAL SUPPORT MEASURES AND MODAL SHIFT

Ex-post evidence on the effectiveness of financial support measures on the uptake of intermodal transport is generally limited. Member States are not required to evaluate their measures, but some evaluation reports are available. They typically provide an overview of the measure, its objectives, results achieved for the period of assessment, the budget spent and key result or performance indicators (which vary depending on the desired output and type of beneficiaries).

The most commonly used measure for effectiveness is an estimate of the transport volumes that have been shifted to intermodal transport during the assessment period. In some cases, other indicators have been considered to proxy the extent to which the scheme has been successful in promoting a modal shift²²⁶.

Marco Polo II (2007-2013)

The Marco Polo programmes were mostly performance based and provided funding to the transport and logistics sector to support certain actions aiming to shift transport off the road. The final report on the Marco Polo II programme²²⁷ discusses the effectiveness of both Marco Polo programmes but with focus on Marco Polo II.

In Marco Polo I (2003-2006), the final funding amounted to EUR 41.8 million, which is 41% of the funding initially available. The funded actions resulted in a modal shift of 21.9 billion tonne-kilometre (tkm), i.e. about 46% of the initial modal shift target.

Marco Polo II (2007-2013) had longer duration and higher budget available than Marco Polo I, and included two new types of actions (Motorways of the Sea and traffic avoidance). Furthermore, besides introducing changes to procedures to facilitate participation from applicants, the funding intensity was doubled from 1 to 2 EUR for each 500 tkm shifted off the road (i.e. from 0.002 to 0.004 Euro per tkm shifted).

The modal shift target for Marco Polo II was also higher (20.5 billion tkm per year, or 143.5 billion tkm during the entire programme), in line with the increase in EU freight transport that was expected over the programme duration. However, the initial target became out of reach because of the financial crisis and the economic context.

The level of target achievement for Marco Polo II actions differed depending on transport mode, with rail actions having the highest level of achievement. Rail actions represented 46.5% of the program's total achieved modal shift followed by maritime transport (35.3%), and IWW (1.7%), while traffic avoidance actions and mixed actions contributed to the remaining 16.5%. The lower level of success for IWW actions was mainly explained by stronger competition from road transport on shorter distances, unstable water levels and infrastructure limitations.

The table below shows the overall results achieved by modal shift actions (both closed and terminated actions) funded under Marco Polo II.

²²⁶ E.g. the correlation between the goods moved under the scheme and the change in transported volumes across the desired modes; traffic volumes shifted as a proportion of total transported volumes across the desired modes; comparison between the change in transported volumes for a specific Member State and the change in transported volumes for the rest of the EU (to show how the scheme worked in a country relative to the rest of the EU).

²²⁷ INEA (2020), Marco Polo II Programme, Final report.

Table 64: Results from all modal shift actions funded under Marco Polo II

Mode	Final funding (million EUR)	Share	Modal shift impact (billion tkm)	Share
Rail	67.6	68%	19.5	56%
IWW	1.8	2%	0.7	2%
SSS	30.4	30%	14.8	42%
Total	99.8	100%	35.0	100%

Source: INEA (2020)

Additional insights about the Marco Polo II outcomes were collected through questionnaires replied by programme beneficiaries, including:

- Overall, beneficiaries commented that their actions and services were very successful, and that the programme was instrumental in their decision to set up a new intermodal service. The main reason for the success was that the financial support helped to increase their business capacity and minimise the financial risks. However, some also highlighted that this came with overcomplicated administrative procedures and cumbersome requirements in particular in recording costs.
- The programme had sustainable impact given that 97% of the services supported continued their operations after the end of the grant and became self-sustained financially. Moreover, the programme had a spillover effect as it was used by many beneficiaries (60% of the respondents) as a model for the development of similar services, not supported by grants.
- For almost all responding beneficiaries the benefits of Marco Polo II are wider than the modal shift effect itself and include improved market conditions, optimised load factors, more opportunities for rail transport, a more stable and efficient supply chain, improved know-how in the area of intermodal transport and enhanced collaboration between ports across countries.
- Finally, the responding beneficiaries consider that the co-funding (2 EUR per 500 tkm shifted) was broadly adequate.

Evidence from other support measures for intermodal transport

Ex-post evaluations of national support schemes for intermodal transport are quite rare, which makes it difficult to draw conclusions on how the schemes have performed in terms of modal shift impacts and uptake of intermodal transport. The measures that have been evaluated are mostly subsidies/grants at the national level, where MS valuation was mainly driven by a commitment at EU level or the need for permission by the Commission for measures classified as State aid. Overall, the evaluations produced tend to differ in terms of methodology and type of performance indicators considered, which makes cross-comparison of policy performance difficult.

Considering the support provided to end users of intermodal transport service (i.e. demand-side support), descriptive evidence on policy performance is available for two Italian support schemes, i.e. Ferrobonus and Ecobonus. Ferrobonus aid was given to users of railway services to optimise the use of intermodal rail freight transport and enforce a modal shift from road to rail, while Ecobonus aimed to implement a modal shift from road to short-sea transport. Considering feedback from the Commission decisions and academic literature, both these schemes succeeded in achieving a modal shift from road to rail or SSS and a positive effect on freight volumes transported by the desired modes:

- The Commission decision on the Ferrobonus prolongation of 2016 already indicates that the first edition of the programme achieved its goals. The aid amounts to 1.05 EUR per total train-km and led to an increase of rail intermodal transport by 3.8 million train-km (+17.3%) between

2009-2010 and 2010- 2011²²⁸. Moreover, focusing on the rail connection Genoa-Barcelona, a 2015 study²²⁹ reckons that Ferrobonus created a shift of 1.13% of transported tons off the road, and an increase of rail transport activity of 55,838 tonnes per year.

- As for the Ecobonus, a report from Italian authorities²³⁰ concludes that this scheme created an increase of RoRo traffic volumes between Italy and Spain of 12.1% between 2007 and 2010, compared to pre-scheme volumes. In absolute terms, 87,564 trailers shifted from road network to SSS routes. Moreover, the report observes that Ecobonus has sustained RoRo traffic demand also after the end of the scheme, estimating that 14% (1.332 million tonnes out of the 9.409 million) of freight transported over the 2011-2013 period on Italian-Spanish RoRo routes have to be credited to the Ecobonus.

Considering supply-side support to intermodal transport, evaluation of modal shift impacts has been produced for two Austrian support schemes, which were offered to railway undertakings to compensate for additional costs faced by rail and so shift freight from road to rail. The first aid targets the “provision of certain intermodal transport services by rail”, while the other targeted investments in “Innovative Combined Transport” technologies and equipment.

- The EC State aid decision of 2017²³¹ on the Aid for transport of goods by rail in certain combined transport services for 2018-2022 suggests that the initial scheme proved effective in delivering modal shift. According to estimates from Austrian authorities, the scheme led to an increase of 2.8% of transport services in tkm in the supported production forms²³² during the period 2013-2015.
- According to the evaluation report from the Austrian authorities²³³, the Aid for Innovative combined transport achieved a shift of road transport to other modes of transport of 58.12 billion tkm for 2009-2014 and of 47.74 billion tkm for 2015-2020. Considering that such volumes represented approximately 24% and 36% of the total freight volumes transported via rail and IWW in the respective evaluation periods, the scheme was deemed highly effective in terms of modal shift outcomes.

The following table summarizes the evaluation of State aid effects in the aforementioned four schemes. Note that the effects are observed during the period covered by the evaluation reports, while long-term effects are not included. Moreover, the reported modal shift impact should be read as an indication of effects rather than hard evidence, since none of the evaluation reports used methods allowing for the identification of causal effects.

Table 65: Results from support measures at Member State level

	Support measure	Type of measure	Financial support	Total amount	Modal shift volume
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²²⁸ [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017XC0317\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017XC0317(01)&from=EN)
https://ec.europa.eu/competition/state_aid/cases/264873/264873_1872028_67_2.pdf

²²⁹ Tsamboulas, D., et al. (2015), The Ferrobonus Incentive for Achieving Modal Shift to Rail: A Socio-Economic Evaluation (No. 15- 2839).

²³⁰ RAM Spa (2019) “Analysis of practices to support multimodality”. CHARGE – Interreg Italy-Croatia: Deliverable 5.1.1.

²³¹ https://ec.europa.eu/competition/state_aid/cases/269839/269839_1971628_105_5.pdf

²³² The scheme provides for support to rail services in the following three production forms of freight rail transport: i) single wagonload traffic (“SWT”), ii) unaccompanied combined transport (“UCT”) and iii) accompanied combined transport (“RoLa”) by compensating additional costs which are faced by rail transport but not by road transport.

²³³ <https://www.bmk.gv.at/themen/innovation/publikationen/evaluierungen/ikv.html>.

Rail (IT)	Ferrobonus (2010-11) SA.32603	Direct grant users of rail service	1.05€ per train-km	23.3 million EUR	3.8 million train- km (+17.3%)
Rail (AT)	Aid for rail transport in certain intermodal transport services (2013-17) SA.33993	Direct grant to railway undertakings	Up to 26.71 per 1000 tkm	1,118	+2.8% tonne-km
Rail (AT)	Aid for Innovative combined transport (2009-14)	Subsidy to railway undertakings for acquisition of technologies and equipment	n.a.	15.1 million EUR	58.121 billion tkm (+36%)
Rail (AT)	Aid for Innovative combined transport (2015-20) SA.41100		n.a.	10.8 million EUR	47.74 billion tkm (+24%)
SSS (IT)	Ecobonus (2007-10) (aid for international Ro-Ro routes between IT-ES)	Direct grant to truckers	30% of the RoRo fare charged to truckers	67.0 million EUR	87,564 semitrailers (+12.1% vs. pre- scheme levels)

Source: Impact assessment support study for the review of the Community guidelines on State aid for railway undertakings (2023), State aid decisions, national authorities evaluation reports.

Finally, more general conclusions on State aid for rail freight are also provided in the recent “Impact assessment support study for the review of the Community guidelines on State aid for railway undertakings”, drawing from existing evidence from rail sector policy support. Relevant conclusions for design and assessment of support measures for intermodal freight include:

- Granting authorities could specifically target routes and segments that show greatest potential for the modal shift.
- Reducing costs in an intermodal transport chain could incentivise a substantial number of customers to move from road to intermodal transport. Most demand for transport is on short routes where trucks are predominant. Therefore, State aid which reduces the distance at which rail becomes more competitive than road would likely be effective in fostering a modal change.
- National rail transport in small countries also needs to be supported to compete with road, since it cannot exploit economies of scale. Yet another example of services in need of support is IWW transport, where distance travelled is typically shorter than that travelled by rail and the tonnages transported are lower due to higher instances of the transport of empty containers.
- Compared to investment State aid, operational aid has greater potential to distort competition within the rail freight segment, but it can more effectively facilitate a modal shift to rail in the short term. Investment State aid for infrastructure and rolling stock can be expected to reduce operating costs in the long-term by supporting the use of modern and efficient technical solutions. Compared to operating State aid, such aid has less potential to distort competition within the rail freight segment, but it would likely take longer to facilitate a modal shift to rail.
- To learn about the effectiveness and efficiency of various scheme designs, evidence is required, but ex-post evaluations for State aid schemes under the Railway Guidelines are very rare. The introduction of the requirement to evaluate schemes could facilitate the generation of such evidence, and allow for better informed choices of scheme design in the future.