



Novel policy ideas for a shift to low-carbon mobility

Final report

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November 2024

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List of abbreviations

ASI	Avoid-Shift-Improve
CAPEX	Capital expenditures
CEF	Connecting Europe Facility
CF	Cohesion Fund
DG CLIMA	Directorate-General for Climate Action
DRT	Demand responsive transport
EAFRD	European Agricultural Fund for Rural Development
ECA	European Court of Auditors
ERDF	European Regional Development Fund
ERTMS	European Rail Traffic Management System
ESAB	European Scientific Advisory Board on Climate Change
GHG	Greenhouse gas
HGV	Heavy goods vehicles
IAR	Impact assessment report
ICE	Internal combustion engine
IoT	Internet of Things
IWW	Inland waterways
MaaS	Mobility as a Service
MFF	Multiannual Financial Framework
MS	Member State
MDMS	Multimodal digital mobility services
NECPs	National energy and climate plans
NGO	Non-governmental organisation
OPEX	Operating expenses
pkm	Passenger kilometres
RMaaS	Rural Mobility as a Service
RRF	Recovery and Resilience Facility
SAF	Sustainable aviation fuel
SCF	Social Climate Fund
SRMP	Sustainable Regional Mobility Plans
SUMP	Sustainable Urban Mobility Plans
TEN-T	Trans-European Networks for Transport
UVAR	Urban Vehicle Access Regulations
vkm	Vehicle kilometres

Executive summary

This report, commissioned by the European Commission (DG CLIMA), develops and analyses novel policy options aimed at a shift to low-carbon mobility helping to decarbonise the transport sector in line with the recommended EU 2040 climate target, which seeks a 90% reduction in net greenhouse gas (GHG) emissions compared to 1990 levels. The transport sector is specifically addressed to achieve a near 80% reduction in emissions by 2040 relative to 2015. The recent Political Guidelines for the next European Commission have underscored the importance of a shift to more sustainable options to achieve the EU's climate objectives.

Critical areas for action in this report focus on intermodal, multimodal, and combined transport solutions, as well as modal shift towards rail, coaches, and active mobility. It builds on a high-level analysis of the current policy framework related to multimodal/intermodal mobility. Utilising the *Shift* dimension of the Avoid-Shift-Improve (ASI) framework, the study explores additional policies that support a transition from high-emission transport modes to more climate and environmentally friendly alternatives. Long-distance passenger mobility is projected to offer the largest potential for emissions reductions in 2040. A scenario analysis of the modelling underlying the European Commission's recommended 2040 climate target highlights the importance of shifting towards low-carbon alternatives for achieving further emission reductions.

Three key policy option packages are proposed in this report for passenger transport, long-distance coaches, rural mobility, and active mobility. Building on the analyses of the 2040 transport emission scenarios and the identified solutions, these packages have been selected based on their relevance to emission reduction, their potential for introducing novel EU policies, their significant co-benefits, and prioritisation through a ranking framework. The three policy packages comprise:

- **Long-distance coaches:** This aims at enhancing the attractiveness and integration of coach terminals for inter-urban and cross-border mobility.
- **Rural mobility:** Options that establish minimum standards and promote low-carbon mobility services in rural areas.
- **Active mobility:** Options to promote sustainable and safe active transportation through the adoption of targets, indicators, and effective safety regulations.

This report also recommends further analysis of the decarbonisation of passenger mobility between major cities by modal shift, e.g. by developing a European high-speed rail network.

For freight transport, this study includes a list of solutions without proposing specific policy options. These solutions are already to a large part covered by recent legislative acts or proposals, but their effectiveness will depend on final provisions adopted and actual future implementation.

The key funding instruments supporting low-carbon mobility solutions include Connecting Europe Facility (CEF-Transport), Cohesion Fund (CF), European Regional Development Fund (ERDF), Horizon Europe, InvestEU Fund as well as the Recovery and Resilience Facility (RRF). These instruments can be leveraged to finance the selected policy packages, particularly in enhancing transport infrastructure and promoting sustainable mobility across Europe. Additionally, the newly established **Social Climate Fund (SCF)** is a key source of support for vulnerable households and transport users, with a focus on promoting sustainable and affordable mobility options, including access to zero- or low-emission vehicles and the development of necessary recharging and refuelling infrastructure.

Résumé exécutif

Ce rapport, élaboré à la demande de la Commission européenne (DG CLIMA), propose et analyse de nouvelles options politiques visant à favoriser une transition vers une mobilité bas-carbone, contribuant ainsi à la décarbonation du secteur du transport, en conformité avec l'objectif climatique recommandé par la Commission européenne pour 2040. Cet objectif prévoit une réduction de 90 % des émissions nettes de gaz à effet de serre (GES) par rapport aux niveaux de 1990. Le secteur du transport, en particulier, est ciblé pour atteindre une réduction de près de 80 % des émissions d'ici à 2040, en comparaison avec les niveaux de 2015. Les récentes « Orientations politiques pour la prochaine Commission européenne » ont souligné l'importance de passer à des options plus durables pour atteindre les objectifs climatiques de l'UE.

Les domaines d'action essentiels dans ce rapport se concentrent sur les solutions de transport intermodal, multimodal et combiné, ainsi que sur le transfert modal vers le ferroviaire, les autocars et la mobilité active. L'analyse repose sur une évaluation de haut niveau du cadre politique actuel relatif à la mobilité intermodale et multimodale. En mobilisant la dimension « Transférer » du cadre « Éviter-Transférer-Améliorer » (Avoid-Shift-Improve), cette étude explore des politiques supplémentaires favorisant la transition des modes de transport à fortes émissions vers des alternatives plus respectueuses du climat et de l'environnement. La mobilité longue distance des passagers devrait offrir le plus grand potentiel de réduction des émissions en 2040. L'analyse des scénarios de la modélisation sous-jacente à l'objectif climatique recommandé par la Commission européenne pour 2040 souligne l'importance de passer à des alternatives bas-carbone pour parvenir à des réductions d'émissions supplémentaires.

Trois ensembles d'options politiques clés sont proposés dans ce rapport, portant respectivement sur les autocars longue distance, la mobilité rurale et la mobilité active. Ces ensembles, sélectionnés sur la base des analyses des scénarios d'émissions pour 2040 et des solutions identifiées, se distinguent par leur pertinence pour la réduction des émissions, leur potentiel à introduire de nouvelles politiques européennes, leurs co-bénéfices significatifs et leur priorisation à l'aide d'un cadre de classement. Les trois ensembles sont les suivants:

- **Les autocars longue distance:** Option visant à renforcer l'attractivité et l'intégration des gares routières pour la mobilité interurbaine et transfrontalière.
- **Mobilité rurale:** Options visant à établir des normes minimales et à promouvoir des services de mobilité bas-carbone dans les zones rurales.
- **Mobilité active:** Options visant à promouvoir un transport actif, durable et sécurisé par la mise en place d'objectifs, d'indicateurs et de réglementations efficaces en matière de sécurité.

Ce rapport recommande également une analyse plus approfondie de la décarbonation de la mobilité des passagers entre les grandes villes par un transfert modal, par exemple en développant un réseau ferroviaire européen à grande vitesse.

Pour le transport de marchandises, cette étude comprend une liste de solutions sans proposer d'options politiques spécifiques. Ces solutions sont déjà en grande partie couvertes par des actes législatifs ou des propositions récentes, mais leur efficacité dépendra des dispositions finales adoptées et de leur mise en œuvre concrète.

Les principaux instruments de financement soutenant les solutions de mobilité bas-carbone comprennent le Mécanisme pour l'Interconnexion en Europe (MIE), le Fonds de cohésion (FC), le Fonds européen de développement régional (FEDER), Horizon Europe, le fonds InvestEU ainsi que la facilité pour la reprise et la résilience (FRR). Ces instruments peuvent être utilisés pour financer les ensembles d'options politiques identifiés, notamment pour améliorer les

infrastructures de transport et promouvoir une mobilité durable à travers l'Europe. Par ailleurs, le **Fonds social pour le climat (FSC)**, récemment créé, constitue une ressource essentielle pour soutenir les ménages vulnérables et les usagers des transports, en mettant l'accent sur la promotion d'options de mobilité durables et abordables, y compris l'accès à des véhicules à faibles ou zéro émissions et l'installation des infrastructures nécessaires, comme les bornes de recharge et les stations de ravitaillement.

Overview of findings

The European Union's 2040 climate target aims for a 90% reduction in net GHG emissions compared to 1990 levels. For the transport sector, this means achieving a close to 80% reduction in emissions by 2040 relative to 2015. The recent Political Guidelines for the next European Commission¹ have outlined the importance of a shift to more sustainable options to achieve EU climate objectives. This report develops and analyses novel policy options supporting a shift towards low-carbon mobility for passenger and freight to support the decarbonisation of the transport sector in the EU.² As an analytical framework, it builds on the *Shift* dimension of the Avoid-Shift-Improve (ASI) framework, exploring policies that help to transition from emission-intensive transportation modes to more climate and environmentally friendly alternatives. These include intermodal, multimodal and combined transport solutions, as well as modal shift towards rail, coaches, and active mobility. The importance of focussing on 'increasing modal shift towards sustainable transport means' is also mentioned as policy priority in the Mission Letter for Transport Commissioner-designate Apostolos Tzitzikostas.³ While not the focus of this study, the *Avoid* dimension is not addressed in the current EU policy landscape and its potential could be further investigated.

This study maps relevant solutions supporting a shift towards low-carbon mobility, identifies and analyses policy options, and explores funding options. Methodologically, it builds on an analysis of the role of *Shift* solutions in the modelling underpinning the EU's proposed 2040 targets, and on a high-level analysis of the current policy framework related to multimodal/intermodal mobility aimed at identifying novel solutions. In a second step, novel policy options are developed based on a literature review, expert interviews, and an expert workshop. From this long list, three policy option packages – long-distance coaches, rural mobility, and active mobility – have been proposed based on a set of selection criteria. These are then analysed in more detail. Finally, funding options for these policy option packages are established, both for the Multiannual Financial Framework (MFF) and Recovery and Resilience Facility (RRF), as well as the Social Climate Fund (SCF).

Scenario analysis, critical areas for action and strategic opportunities

A scenario analysis of the 2040 impact assessment report⁴ was conducted, comparing various 2040 pathways (S1, S2, S3, and LIFE) to identify strategic opportunities for emission reductions. Among these, the LIFE scenario is particularly noteworthy for its emphasis on societal shifts towards sustainable lifestyles, including increased rail usage and higher vehicle occupancy rates. It envisions a future where behavioural and systemic changes are as crucial as technological solutions.

The figure below illustrates the projected direct CO₂ emissions from the transport sector by mode under different scenarios. Emissions reductions by 2040 are most substantial in road transport, driven by widespread electrification and the use of zero- and low-emission fuels for both passenger cars and heavy goods vehicles. Since there are significant existing efforts by the EU that support the decarbonisation of transport modes, policies from the *Improve* domain

¹ See p.9 of the Political Guidelines: 'To achieve our climate objectives, we also need to make it easier for people to shift to more sustainable options.' https://commission.europa.eu/document/download/e6cd4328-673c-4e7a-8683-f63ffb2cf648_en?filename=Political%20Guidelines%202024-2029_EN.pdf

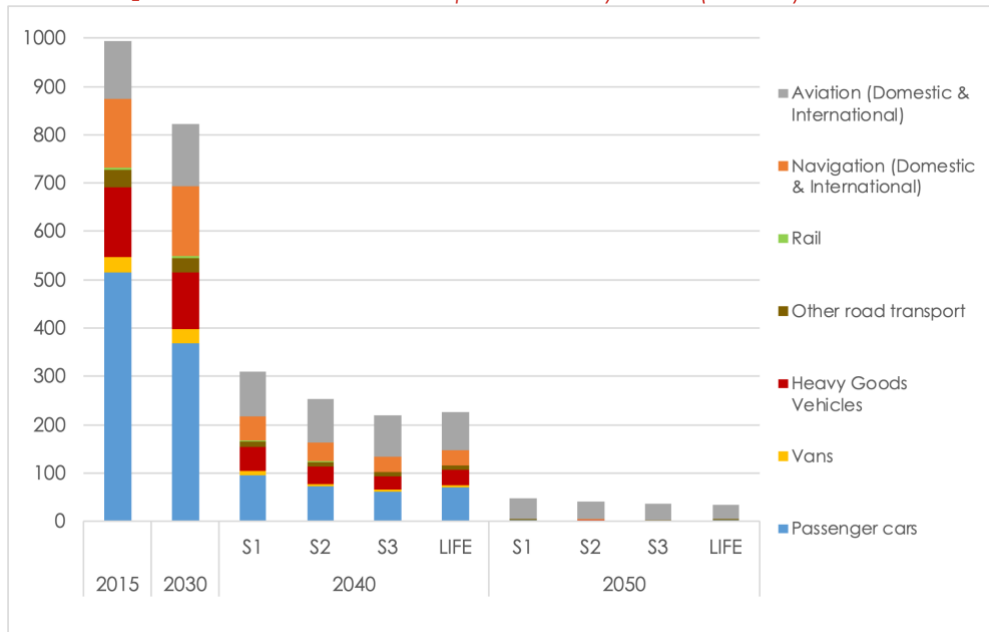
² For an explanation of key terms used in this study, see Appendix A.

³ https://commission.europa.eu/document/download/de676935-f28c-41c1-bbd2-e54646c82941_en?filename=Mission%20letter%20-%20TZITIKOSTAS.pdf

⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52024SC0063>

of the ASI framework are not the focus of the study. However, the variations between scenarios highlight that the *Shift* dimension also plays a relevant role in reducing emissions until 2040.

Figure 0-1 Direct CO₂ emissions from the EU transport sector by mode (MtCO₂)⁵



Source: Impact assessment report, Figure 76, EC, 2024⁶

Following the scenario analysis, the table below shows critical areas for action. It indicates the projected distribution of emissions by short-distance and long-distance transport in the 2040 modelling⁷, as well as key solutions for emissions reduction via modal shifts for passenger and freight. The table highlights that long-distance passenger mobility is projected to offer the largest potential for emissions reductions in 2040.

⁵ The category 'Other road transport' includes coaches and buses along with other modes, such as powered two-wheelers. 'Domestic navigation' includes inland waterway transport and national maritime transport. They are grouped together because a split between inland waterway and national maritime transport is currently not available in the official energy statistics, so the PRIMES model takes them together.

⁶ Supplementary information: data for the graphs presented in the impact assessment report, [Annex 8](#), EC, 2024.

⁷ Long-distance transport stands for non-urban transport in the PRIMES model.

Table 0-1 Critical areas for action

	Passenger	Freight
Long distance	<p>High share of CO₂ emissions in 2040⁸</p> <p>Key solutions:</p> <ul style="list-style-type: none"> • Aviation to rail (where possible) • Road to public and shared/collective (rail, coach, increased occupancy, cross-border public transport) 	<p>Moderate share of CO₂ emissions in 2040</p> <p>Key solutions:</p> <ul style="list-style-type: none"> • Road to rail • Road to inland shipping/ coastal shipping
Short distance (including urban, suburban, rural)	<p>Low share of CO₂ emissions in 2040</p> <p>Key solutions:</p> <ul style="list-style-type: none"> • Road to active modes • Road to public and shared/collective (ownership to usership) 	<p>Minimal share of CO₂ emissions in 2040</p> <p>Lower priority for additional policies due to very low emissions reductions potential</p>

Source: Own illustration based on a distribution of emissions underlying the impact assessment report (EC, 2024) provided by DG CLIMA. The terms 'long distance' and 'short distance' are defined in footnote 25.

To fully realise opportunities from the *Shift* dimension, policies are needed that promote more sustainable alternatives and reduce emissions from e.g. air and road transport, such as increasing car occupancy rates and reducing reliance on private vehicles. This necessitates not only infrastructure investments, but also innovative financial incentives and regulatory reforms that encourage these shifts.

Challenges in policy implementation and proposed solutions

Based on the high-level review of the current policy framework, challenges in policy implementation include existing delays in infrastructure development and insufficient digital integration, among others. The analysis points to a disparity in attention and resources between urban nodes and rural connectivity, with rural areas often underfunded despite their critical role in achieving broader mobility goals. There is a need for a more inclusive approach to policy development that considers peri-urban and rural areas, often neglected in sustainable mobility agendas. While the revised Trans-European Transport Network (TEN-T) Regulation offers promising developments, particularly in urban and rural connectivity, the full realisation of these benefits will depend on the successful and timely implementation of these changes.

While there are already significant policy measures in place to support multimodal low-carbon mobility in the EU, the report finds that there is clear potential for supplementary initiatives. These solutions include but are not limited to: (1) enhancing infrastructure investments, particularly in rail (passenger and freight) and active mobility; (2) harmonising standards for cross-border rail transport; (3) developing innovative financial incentives to encourage shared mobility; and (4) implementing regulatory reforms to open markets and improve access to transport infrastructure.

Policy option packages for long-distance coaches, rural mobility, and active mobility

Based on the analyses of the 2040 transport emission scenarios and a long list of identified solutions, the study develops recommendations covering policy option packages for long-distance coaches, rural mobility, and active mobility. These packages were proposed based on four criteria, namely: (1) relevance to emission reduction; (2) potential for additional/novel

⁸ Includes emissions from international aviation encompassing trips between one Member State and another, and between a Member State and countries outside the EU.

EU policies; (3) significant co-benefits; and (4) rating via a 'prioritisation framework' developed within this study to rank the different proposals. The policy options contain both legislative and non-legislative actions.

- For **long-distance coaches**, the study develops a policy options package to support more attractive and integrated infrastructure for coach terminals for inter-urban and cross-border coach-based mobility. Coaches, which are less capacity-constrained than rail, are a key solution to reduce emissions for long-distance passenger mobility. Assuming high occupancy rates this can be the mode with lowest emissions. Coaches are currently not in the focus of EU policy makers, implying a potential for novel policies. Coaches also serve as an important mode of transportation for low-income households, underscoring their role in addressing social equity and mobility poverty. Proposed policy options range from non-binding recommendations for minimum standards to establish and improve the quality of bus and coach terminals to legislative action such as minimum standards for facilities and the location of terminals.
- For **rural mobility**, policy options encompass defining minimum standards and promoting policy targets and strategies for low-carbon rural mobility services. This matters due to the significant share of emissions attributed to short-distance trips outside urban areas (~2/3). Moreover, there is a lack of dedicated policies or targets that address the challenges of rural mobility. Given the prevalence of private car use, rural mobility also intersects with social equity considerations, as not all rural residents can afford to buy a greener mode of private transport like an electric car. Proposed policy options range from non-binding recommendations and guidelines – for example for setting up Sustainable Regional Mobility Plans (SRMP) – to legislative action requiring regions within Member States to develop minimum standards of access to mobility in rural areas (e.g. based on the size, density, employment and service profile of the rural region).
- For **active mobility**, the study develops policy options to promote sustainable and safe active mobility through targets, indicators and effective safety regulations. While active mobility offers an alternative to fossil-fuelled options to reduce CO₂ emissions caused by motorised mobility, and dedicated EU interventions to boost active mobility exist, effective safety regulations that could further boost active mobility remain inconsistent and often fall short of required standards across Member States. Moreover, active mobility policy options entail positive co-benefits, such as improving social equity, public health, and pollution reduction.

This report also recommends further analysis of the decarbonisation of passenger mobility between major cities by modal shift. This aligns with the 'plan for an ambitious European high-speed rail network to help connect EU capitals' mentioned in the Mission Letter for Transport Commissioner-designate Apostolos Tzitzikostas.³

For freight transport, key policies such as the TEN-T Regulation and Sustainable Smart Mobility Strategy aim to shift freight from road to rail and inland waterways. The study finds, however, that challenges remain to increase the share of intermodal freight transport, in line with the targets set. Primary challenges include insufficient infrastructure, lack of cross-border harmonisation, and inadequate subsidies. Solutions proposed in this study to overcome the challenges involve, among others, expanding rail and waterway corridors, improving intermodal logistics centres, standardising regulations, and enhancing digital and data-sharing solutions. Strategic opportunities lie in investing heavily in rail infrastructure and intermodal hubs. To a large extent, this is already covered by recently adopted policies, the effectiveness of which will depend on the final implementation. Hence, this study does not propose specific policy options for freight.

Funding of low-carbon mobility policies

The key funding instruments supporting low-carbon mobility solutions include Connecting Europe Facility (CEF-Transport), Cohesion Fund (CF), European Regional Development Fund (ERDF), Horizon Europe, InvestEU Fund as well as the Recovery and Resilience Facility (RRF).

Under these instruments, significant funds are allocated to enhance transport infrastructure and promote sustainable mobility across Europe. For instance, CEF-Transport finances EUR 25.81 billion for building, rehabilitating, and upgrading transport infrastructure, focusing on cross-border projects and removing bottlenecks. Similarly, ERDF and CF support TEN-T projects, alongside promoting sustainable urban mobility, clean urban transport infrastructure, cycling infrastructure, digitalisation of transport systems, and alternative fuels infrastructure. The RRF allocates EUR 87.9 billion for reforms and investments in sustainable mobility including railway, urban mobility, and zero or low-emission vehicles.

Furthermore, the newly-established Social Climate Fund (SCF), aimed at supporting vulnerable households, transport users, and micro-enterprises, will fund measures that promote sustainable and affordable mobility, provide access to zero- or low-emission vehicles, and develop necessary recharging and refuelling infrastructure.

The table below summarises how these funding instruments can be used to support the selected policies and/or their specific elements. However, it is important to note that the eligibility for funding will depend on how the policy options are further defined and operationalised, including their implementation timeframe.

Table 0-2 Overview of how elements of the policy options could be financed by EU funding instruments

Policy options	Elements that could be financed under MFF/RRF	Elements that could be financed by SCF
Enhanced coach terminals	<ul style="list-style-type: none"> • CEF-Transport: Supports the development of multimodal passenger hubs integrating coach terminals with other transport forms. • ERDF/CF: Funds regional improvements and accessibility enhancements for coach terminals. • RRF: Invests in the modernisation and digitalisation of coach terminals as part of pandemic recovery efforts. 	<ul style="list-style-type: none"> • Financing targeted needs-assessments for the improvement of existing coach terminals. • Provision of technical assistance to the responsible authorities for the improvement of coach terminals. • Funding the improvement of infrastructure of bus terminals, e.g. measures improving the accessibility and user-friendliness for people with disabilities and/or reduced mobility, elderly people.
Low-carbon rural mobility services	<ul style="list-style-type: none"> • ERDF/CF: Invest in improving rural transport infrastructure and community-based projects, supporting the development of SRMP. • EAFRD: Funds rural mobility as part of broader rural development objectives, supporting community-led initiatives and active mobility projects. • RRF: Funds post-pandemic recovery investments enhancing rural mobility and green transition projects. 	<ul style="list-style-type: none"> • Building on the existing broad guidelines for SRMP, the SCF could fund capacity building or technical assistance activities for the responsible regional/local authorities compiling the Plans; knowledge-sharing platforms, etc.
Promoting active mobility	<ul style="list-style-type: none"> • Horizon Europe: Funds research and pilot projects focused on active mobility linked to health, safety, and pollution reduction. • Interreg: Facilitates regional cooperation to share best practices and strategies for promoting active mobility. • ERDF/CF & RRF: Invest in local and regional projects improving walking and cycling infrastructure. 	<ul style="list-style-type: none"> • Provide capacity building and technical assistance for the proper collection and analysis of the data. • Funding the capacity building measures for conducting active mobility projects in relevant MS authorities. • Setting up knowledge-sharing exchange platforms for sharing best practices.

		<ul style="list-style-type: none">• Provision of bicycles to vulnerable transport users/households, e.g. through subsidised sharing schemes.
EU cities' connectivity	<ul style="list-style-type: none">• RRF: Supports studies on the connectivity of EU cities for both passenger and freight transport, centred on decarbonising the transport sector (at Member State level).	<ul style="list-style-type: none">• N/A

1 Introduction

The overall objective of the project is to assist the European Commission, DG CLIMA, in the development of novel policies supporting a shift towards low-carbon mobility for passenger and freight. The importance of shifting to more sustainable modes of transport was also highlighted in the recent Political Guidelines for the next European Commission. Novel policies identified in this study complement existing transport policy initiatives. The aim is to help reduce emissions from the EU's transport sector, in line with the objectives of the European Green Deal and the emission reduction targets set by the Fit-for-55 package and beyond.

The study is divided into three main pillars, which are addressed in chapters 2-4 of this report:

- **Pillar 1: Reviewing the most promising and high-impact solutions that promote a shift towards low-carbon, multimodal mobility and intermodal transport** ([chapter 2](#)). In particular, Pillar 1 includes an analysis of the different scenarios of the impact assessment report informing the proposed 2040 climate target. This serves to identify the strategic opportunities offered by the LIFE scenario from the *Shift* perspective of the Avoid-Shift-Improve Framework (see section 2.1) to reduce emissions in 2040. It also includes an analysis of the challenges in policy implementation and execution in the transport sector with a focus on the *Shift* perspective. Finally, it presents the relevant solutions for both passenger mobility and freight transport that will constitute the basis for the development of novel policy options.
- **Pillar 2: Identifying relevant and novel EU-level policies specifically to deliver these emissions solutions, without duplicating or contradicting existing policies** ([chapter 3](#)). First, a long list of potential policies was developed during the exploration phase based on a targeted literature review, expert interviews, and results from Pillar 1. In a second phase, the study team selected three policy focus areas according to their overall relevance to emission reduction and the potential for additional/novel EU policies to be refined/condensed into concrete policies during an expert workshop. The three policy focus areas warranting deeper analysis were based on four criteria, namely: (1) relevance to emission reduction; (2) potential for additional/novel EU policies; (3) significant co-benefits of a policy; and (4) rating via a 'prioritisation framework' developed for this study. Within these policy focus areas – long-distance coaches, rural mobility, and active mobility – the report contains recommendations for policy option packages analysed in more detail.
- **Pillar 3: Translating the three policies into structural measures and investments, and identifying (additional) funding modalities under both the Multiannual Financial Framework (MFF) and the Social Climate Fund (SCF)** ([chapter 4](#)). For the three policy recommendations, targeted funding options are explored.

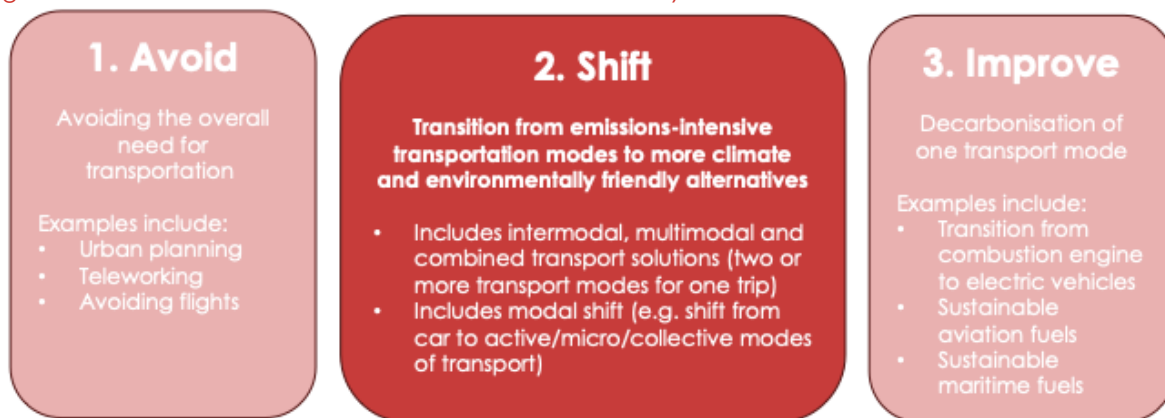
2 Solutions addressing gaps in low-carbon intermodal mobility

2.1 Analytical framework

The Communication on the European Union’s 2040 climate target and path to climate neutrality by 2050⁹ recommends a target for the European Union to achieve a 90% reduction in net GHG emissions by 2040 compared to 1990 levels. To achieve this target, emissions from the transport sector would need to decrease by close to 80% by 2040 relative to 2015 (73% relative to 1990), leveraging a combination of technological solutions and carbon pricing, as well as an efficient and interconnected multimodal transport system for both passengers and freight. It underscores the need for a significant transition in the transport and mobility sector to meet these climate objectives.

Within this study, we look at the potential of solutions and policy options from the transport Shift dimension of the Avoid-Shift-Improve decarbonisation framework (see Figure 2-1; key terms used in the study are explained in Appendix A). This framework has recently been used in a United Nations’ global decarbonisation strategy in transport by road, rail, and inland waterway.¹⁰ There are significant existing efforts by the EU in the *Improve* dimension (e.g. CO₂ emission performance standards, sustainable aviation fuels, sustainable maritime fuels); therefore, policies in this domain are not the focus of the study. Regarding the *Avoid* dimension, policies circumventing the need for transportation are also not within the primary focus of this study, but as a potentially underrepresented area, some policy insights are offered as illustration.

Figure 2-1 Overview of ASI framework and focus of the study



Source: Technopolis and COWI, 2024

The 2040 targets are informed by a published impact assessment report (IAR)¹¹ which analyses pathways to reach climate neutrality by 2050. The IAR considers three target options represented by core scenarios (S1, S2, S3), helping to assess the reduction of GHG across

⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2024%3A63%3AFIN>

¹⁰ <https://unece.org/sites/default/files/2024-02/ECE-TRANS-2024-3e.pdf>

¹¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52024SC0063>

sectors by 2040, and a complementary variant scenario (LIFE¹²). The scenarios are described in more detail in section 2.2.2.

We conduct an analysis of the scenarios from a *Shift* perspective to identify solutions for passenger and freight transport. By leveraging the differing assumptions embedded in these scenarios, such as the extent of modal shift, increased occupancy rates, and the integration of intermodal/multimodal solutions, we can compare them to pinpoint strategic opportunities for crafting solutions aimed at reducing emissions by 2040.

We then look into the challenges in policy implementation/execution building on a high-level analysis of the current policy framework related to multimodal/intermodal mobility across key policy areas (e.g. infrastructure expansion, financial incentives, etc.). This analysis reveals possible solutions not fully covered by current policies and identifies critical areas where enhancements are needed to meet the recommended 2040 targets. This process guides the development of novel policies tailored to advancing low-carbon intermodal/multimodal mobility in Pillar 2 (see chapter 3).

2.2 EU 2040 transport and mobility targets: analysis and *Shift* perspective

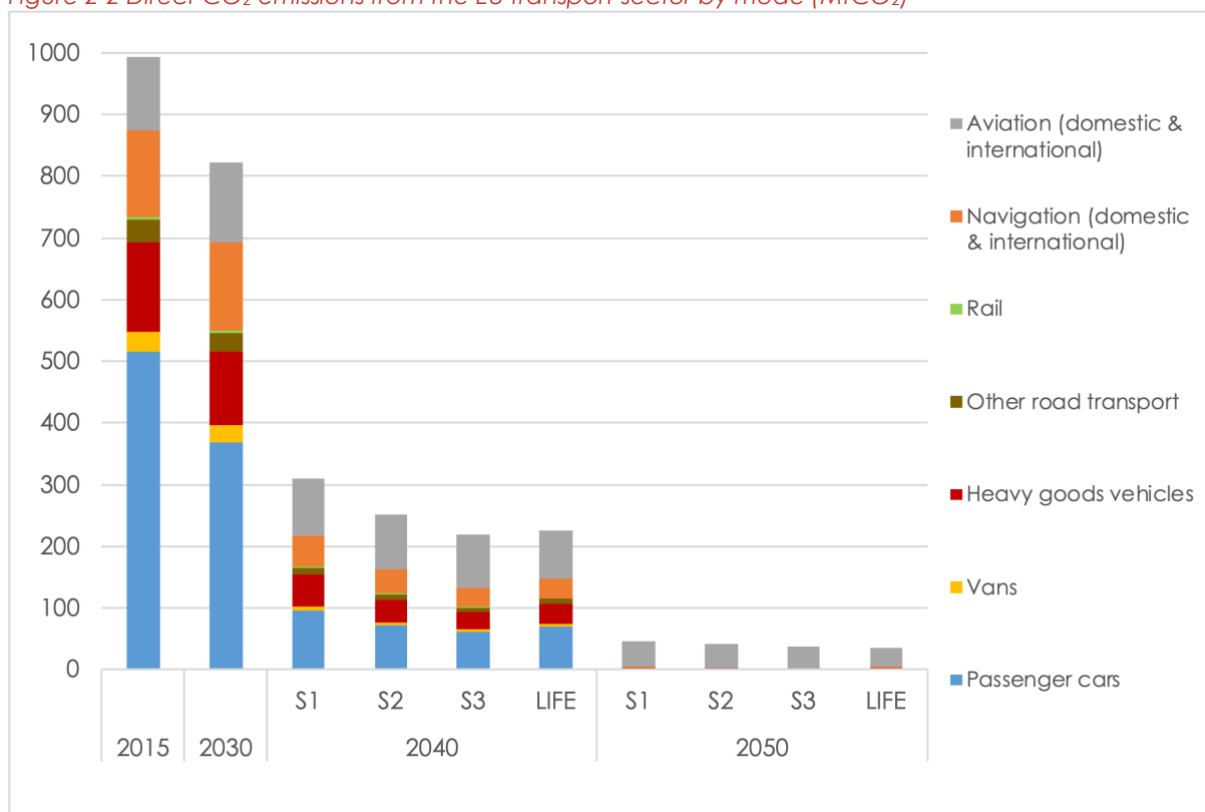
2.2.1 *The EU 2040 targets for transport and mobility in the 2040 impact assessment*

The modelling of the 2040 targets for the transport sector involves three core scenarios (S1, S2, S3), and a complementary variant (LIFE). The scenarios are outlined in the next section. Figure 2-2 presents the direct CO₂ emissions from the EU transport sector in 2015, 2030, and 2040 by mode of transport.¹³

¹² LIFE serves to illustrate how demand-driven actions can complement the supply-side technology deployment analysed in the core scenarios. It aims at the same overall reduction as S3 but involves a different sectoral distribution of emissions. Although the two scenarios are designed to meet the same 2040 climate target, under the LIFE scenario, energy and industrial sectors reduce emissions to an intermediate level (between S2 and S3), agriculture emissions reduce more than S3, and transport emissions are higher in LIFE than in S3, yet closer to the latter than to S2.

¹³ Source: Figure 76, section 1.5.5. CO₂ emissions from transport; Annex 8: Detailed quantitative analysis of GHG pathways, IAR Part 3.

Figure 2-2 Direct CO₂ emissions from the EU transport sector by mode (MtCO₂)¹⁴



Source: Impact assessment report, Figure 76, EC, 2024¹⁵

The largest emissions reductions in the three 2040 scenarios are in road transport, where the emissions from passenger cars drop significantly, supplemented by a sizeable decrease in emissions from heavy goods vehicles (HGVs). In the S1, S2 and S3 scenarios, the emissions reductions from road and rail transport are driven mostly by large-scale electrification combined with a switch to zero- and low-emission fuels to power the remaining internal combustion engine (ICE) vehicles and rolling stock. The emissions reductions in the maritime and air transport sectors are driven mainly by the uptake of zero- and low-emission fuels and the deployment of zero-emission airplanes and vessels, along with further improvements in energy efficiency. Emissions are lower in 2040 across scenarios mainly because of technological developments¹⁶ falling under the *Improve* dimension, which is out of the scope of our study. However, the variations observed between the scenarios can partially be attributed to the *Shift* dimension.

¹⁴ The category 'Other road transport' includes coaches and buses along with other modes, such as powered two-wheelers. Navigation includes domestic and international navigation and aviation includes domestic and international aviation. 'Domestic navigation' includes inland waterway transport and national maritime transport. They are grouped together because a split between inland waterway and national maritime transport is currently not available in the official energy statistics, so the PRIMES model takes them together.

¹⁵ [Supplementary information: data for the graphs presented in the impact assessment](#) report, EC, 2024.

¹⁶ Note that the successful rollout of these technological advances is not without uncertainties. Questions remain regarding whether appropriate regulatory frameworks will be established in time, if the necessary investments can be secured to replace existing stock, and whether there will be widespread citizen uptake of these new technologies.

2.2.2 Scenario analysis from a Shift perspective

2.2.2.1 Scenario overview

The scenario S1 relies essentially on the Fit-for-55 energy trends, which allow it to deliver on the 2040 target through a 'linear' reduction of net GHGs between 2030 and 2050. In turn, S2 builds on S1 and incorporates the effect of a faster decarbonisation of the energy system towards 2040, while S3 assumes large and fast uptake of all mitigation options, including the development of novel technologies, already in the decade 2030-2040. The LIFE scenario looks at the sensitivity of the analysis to key societal trends related to more sustainable lifestyles, resulting from changes in consumer preferences, from circular economy measures related to the use of energy and materials, as well as from changes in mobility and the food system.¹⁷

From a transport perspective, the 2040 scenarios can be summarised as presented in Table 2-1 (see Table 4 of the IAR and Appendix B for a full overview of the differences between scenarios).

Table 2-1 Summary of scenario assumptions in the impact assessment report

Considerations related to the transport sector	
S1	Projects beyond 2030 the consolidated techno-economic policy trends that deliver the 2030 target, while it delays a large uptake of novel technologies until after 2040 (it considers for instance a very limited uptake of e-fuels). It accounts for a more efficient operation of freight vehicles and delivery of goods by optimising multimodal delivery solutions, and higher use of intermodal freight transport.
S2	Builds on S1 and incorporates the effect of a faster decarbonisation of the energy system until 2040. Compared to S1, the road transport sector is characterised by higher car occupancy and some shift from cars to active modes (walking, cycling) and public transport, driven by a shift towards shared and collaborative mobility services, and a larger uptake of renewable H2 and e-fuels.
S3	Assumes a fully decarbonised power system by 2040 and a high share of e-fuels in hard-to-abate transport sectors, such as emissions from aviation and international shipping. Compared to S2, S3 shows modelling results with a higher shift towards shared and collaborative mobility services and multimodal travel, more efficient operation of freight vehicles and delivery of goods (by optimising multimodal delivery solutions), greater shift towards intermodal freight transport, and a larger uptake of renewable hydrogen and e-fuels.
LIFE	Considers the same mandates as S3 and assumes a stronger shift towards shared and collaborative mobility services and multimodal travel, including sustainable urban transport and smart charging. Concerning air transport, it assumes that the adoption of video-conferencing tools at large scale reduces the number of business trips. It also assumes that increased awareness of the impacts of aviation emissions on climate change reduces the number of long-distance leisure trips.

Source: Technopolis and COWI, 2024

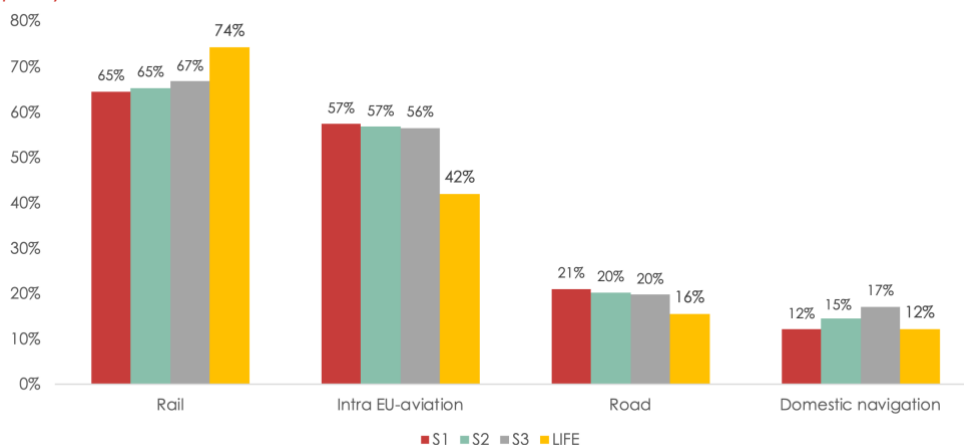
All scenarios build on the EU's adopted CO₂ emission standards for cars and vans (-100% from 2035 onwards). Both S1 and S2 consider the target to reduce emissions per kilometre from new lorries and coaches by 90% in 2040 (relative to the reference period 1 July 2019 to 30 June 2020), as established by the recently adopted CO₂ standards for HDVs. Instead, S3 and LIFE consider a more ambitious target (100% reduction by 2040). There is a difference of two percentage points (pp) between S1 and S2, and between S2 and S3 for sustainable aviation fuel (SAF) mandates (from 34% in S1 to 38% in S3), as well as for the sub-mandate for synthetic aviation fuels and H2 (from 10% in S1 to 14% in S3).

2.2.2.2 The Shift perspective in the scenarios

The increase in activity by mode foreseen in the scenarios for passenger transport expressed in passenger-km (pkm) is presented in Figure 2-3.

¹⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2024%3A63%3AFIN>

Figure 2-3 Increase in projected transport activity by 2040 relative to 2015 for passenger transport (in pkm)¹⁸



Source: Impact assessment report, Figure 61, EC, 2024¹⁹

For **passenger transport**, the modes showing the greatest increase in activity in all scenarios are rail and intra-EU aviation. In the case of LIFE, there is a strong modal shift towards rail (+7 points growth compared to S3), while intra-EU aviation decreases significantly (-14 points growth compared to S3). This decrease is driven by the wide adoption of video-conferencing tools, a reduced number of long-distance leisure trips, and modal shift towards high-speed rail where available. Passenger road transport also shows lower activity growth rates in LIFE compared to the other scenarios due in part to the increased use of active modes.²⁰ Moreover, LIFE foresees an increase in average car occupancy rate at 1.65 passengers/trip compared to around 1.55 passengers/trip in the other scenarios.²¹ This clearly demonstrates **the more pronounced emphasis on Shift in the LIFE scenario**, and also highlights the impact of Avoid-related measures, such as the adoption of videoconferencing to decrease business travel and the need for international and domestic air transport.

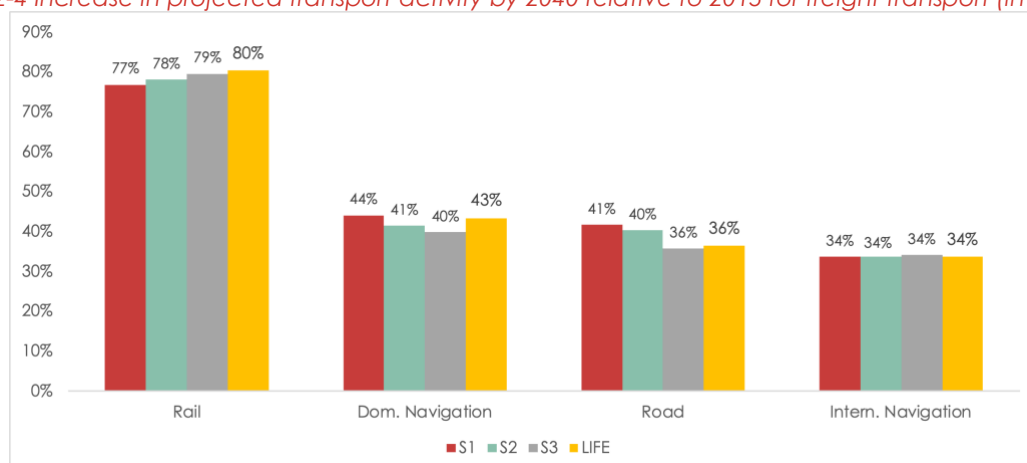
¹⁸ See Annex 8 of the IAR section 1.5. Transport, sub-section 1.5.2. Activity.

¹⁹ [Supplementary information: data for the graphs presented in the impact assessment](#) report, EC, 2024. Domestic navigation data is not included in Figure 61 and is drawn from Section 1.5.2 Activity.

²⁰ This shift is not represented in the PRIMES model.

²¹ See Annex 6 section 3.1.5.1. Table3. Key features of the LIFE scenario

Figure 2-4 Increase in projected transport activity by 2040 relative to 2015 for freight transport (in pkm)²²



Source: Impact assessment report, Figure 63, EC, 2024²³

Road transport activity is the dominant land freight mode and is projected to increase between 36% (LIFE) and 39% (S3). With the small difference between the LIFE scenario and S3 in the overall transport activities, it can be assumed that the LIFE scenario includes a higher shift from road transport to rail and domestic navigation compared to the S3 scenario. Overall, rail transport activity is projected to increase between 80% (LIFE) and 79% (S3) by 2040. This implies that rail is expected to account for by far the largest increase in freight transport activity for both scenarios. Road freight transport, however, still remains the dominant mode (see Figure 62, Annex 8 of IAR). There is an overall increase in freight transport between 35.4% (S3) and 35.2% (LIFE). The small difference between the two scenarios indicates that **overall freight activity is expected to increase significantly up to 2040**. Domestic navigation activity is higher for LIFE compared to S3, and international navigation is projected to increase by around 34% for all scenarios, with negligible differences.

While all scenarios incorporate a marked increase in the adoption of more sustainable alternatives, driven by existing policies and recent proposals from the Commission, the difference between LIFE and the other scenarios in their approach to modelling transport sector decarbonisation is marked by their respective emphasis on technological solutions versus behavioural and systemic changes. LIFE places an emphasis on the *Shift* dimension, explicitly making assumptions on changes in mobility patterns towards more sustainable alternatives. This involves not just adopting new technologies but also changing the fundamental structures of mobility to reduce reliance on road transport and aviation, and to increase the use of rail and active modes. This approach thus covers both the supply side (technology and infrastructure) and demand side of transport²⁴ (behavioural changes and modal shift).

²² See Annex 8 of the IAR section 1.5. Transport, sub-section 1.5.2. Activity.

²³ [Supplementary information: data for the graphs presented in the IAR](#), EC, 2024.

²⁴ The 2022 UITP paper 'Managing the demand for mobility' highlights challenges for implementing demand-side policies. Such challenges primarily revolve around their less tangible outputs compared to physical projects like infrastructure. Successfully implementing these policies requires a particular mindset that emphasises the development of a clear and robust concept for the measures to be taken, along with identifying specific target groups and measures.

2.2.3 Critical areas for action

Table 2-2 shows that the bulk of emissions in 2040 are projected in long-distance transport²⁵, in particular passenger transport with a high share of overall emissions. Therefore, novel policies addressing the *Shift* dimension in that area have a particularly high potential for emissions abatement in the medium term, beyond policies that help in reaching the 2040 targets. However, not all emissions under long-distance transport can be tackled by *Shift* policies. In particular, some emissions from international aviation (e.g. long-distance extra-EU passenger flights) cannot be shifted, since there may not be a feasible option to use another mode of transport.

Despite their relatively low share of emissions, policies addressing **short-distance passenger mobility** are relevant for at least two reasons:

- First, in terms of kilometres travelled, short-distance trips will continue to make up a significant share of overall travel in 2040²⁶. Moreover, there is still uncertainty with regards to the level of emissions reductions that will be achieved due to the CO₂ standards by 2040, including phasing out cars with internal combustion engines by 2035.²⁷ This implies a continued emissions reduction potential for trips made with cars powered by ICEs.
- Second, shifting from individual road-based transport to shared/collective/active mobility will have important co-benefits. These include not only improvements in congestion and reductions in air and noise pollution²⁸, but also significant health benefits from increased physical activity associated with active travel modes.²⁹

Due to its very minimal share of projected emissions, policies aimed at shifting **short-distance freight operations** are less of a priority for this study. However, it is important to stress that the projected emissions rely on the implementation of current policy goals. Since there is an inherent uncertainty whether the ambitious priorities will be reached (e.g. for shifting freight to rail and navigation transport, see section 2.3.3), we will still consider to some extent potential solutions and policy options in the short-distance freight dimension.

²⁵ In the PRIMES model, the categorisation of travel distances into 'short distance' (corresponding to 'urban' in the model) and 'long distance' (corresponding to 'inter-urban' in the model) relies on population thresholds rather than distance measures. This method considers both the size of the country and its population. Countries are segmented into urban and inter-urban areas based on these population thresholds, which are specific to each country. Thus, a precise kilometre-based definition of the terms short and long distances as used also in Table 0-1 and Table 2-2 is not applicable in this model.

²⁶ In 2021, passenger cars accounted for 83.3% of the total pkm for inland passenger transport. Vehicle-km were mostly made for non-urban trips at the level of EU-27, with almost two-thirds of all vehicle-km for non-urban and short-distance trips. (Study new mobility patterns in European cities. Final report. Task A, EU-wide passenger mobility survey, DG MOVE 2023.)

²⁷ Clean solutions for all: T&E's car decarbonisation roadmap, Transport and environment 2024. Available at: <https://www.transportenvironment.org/articles/clean-solutions-for-all-tes-car-decarbonisation-roadmap>

²⁸ Transition Paths towards a Sustainable Transportation System: A Literature Review. Jelti et al. *Sustainability* 2023, 15, 15457. <https://doi.org/10.3390/su152115457>

²⁹ Moreover, higher vehicle occupancy rates support more efficient use of space, which enhances urban spatial planning. This shift allows for optimised land use and the development of green spaces in urban areas. Finally, by decreasing reliance on private vehicles, there is reduced demand for materials and energy, promoting a more sustainable and resource-efficient transport system.

Table 2-2 Critical areas for action

	Passenger	Freight
Long distance	High share of CO₂ emissions in 2040³⁰ Key solutions: <ul style="list-style-type: none"> • Aviation to rail (where possible) • Road to public and shared/collective (rail, coach, increased occupancy, cross-border public transport) 	Moderate share of CO₂ emissions in 2040 Key solutions: <ul style="list-style-type: none"> • Road to rail • Road to inland shipping/coastal shipping
Short distance (including urban, suburban, rural)	Low share of CO₂ emissions in 2040 Key solutions: <ul style="list-style-type: none"> • Road to active modes • Road to public and shared/collective (ownership to usership) 	Minimal share of CO₂ emissions in 2040 Lower priority for additional policies due to very low emissions reductions potential

Source: Own illustration based on a distribution of emissions underlying the impact assessment report (EC, 2024) provided by DG CLIMA. The terms 'long distance' and 'short distance' are defined in footnote 25.

2.3 Analysis and identification of solutions in the *Shift* dimension

In the analysis of relevant solutions in the *Shift* dimension, we conceptually differentiate between policies addressing challenges in policy execution/implementation and those capitalising on strategic opportunities in the LIFE scenario. Challenges in policy execution/implementation are understood as discrepancies between already implemented policies and the projected effects based on policy goals, such as those formulated in the Sustainable and Smart Mobility Strategy. On the other hand, strategic opportunities in the LIFE scenario are seen as areas where new or enhanced policies can support decarbonisation through modal shifts.

In our analysis of relevant solutions within the *Shift* dimension, we outline two distinct areas:

- Challenges in policy execution/implementation which address the disparities observed between the outcomes of already implemented transport policies and their intended impacts (such as those formulated in the Sustainable and Smart Mobility Strategy). These challenges often stem from hurdles and delays in effective policy execution and highlight areas needing focused adjustments to meet policy goals more effectively.
- Strategic opportunities presented by the LIFE scenario which focuses on leveraging potential enhancements in intermodal mobility to achieve a substantial shift in transport. By addressing both the supply side (through advances in technology and infrastructure) and the demand side (via behavioural changes and modal shifts), the LIFE scenario offers a strategic perspective for improving outcomes through planning and integration within the *Shift* dimension.

The IAR suggests that additional policies are required to reach the reduced emissions level of the different 2040 scenarios, and current ones may require adaptation.³¹ For example, for freight transport, assumptions of a shift to rail underlying S2 and S3 are very ambitious (see section 2.3.3). Hence, there is a need for additional policies from the *Shift* dimension to reach the projected emissions reduction.

³⁰ Includes emissions from international aviation that encompass trips between one Member State and another, and between one MS and countries outside the EU.

³¹ See section 5.1.3 'Approach for the assessment of the 2040 climate target', Part 1, IAR. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52024SC0063>

2.3.1 Key policy areas

In order to identify relevant solutions, we have performed a **review of the current EU-level policies** touching upon intermodal and multimodal mobility and modal shift. This exercise allowed us to identify the solutions covered by existing policies as well as recurring themes in how the policies cover these solutions (key policy areas) (see Appendix C for an overview of the key policies on passenger transport). These key policy areas include:

- Expansion of infrastructure (including the enhancement and more efficient use of the existing and development of new infrastructure),
- Financial (dis)incentives,
- Prioritisation of low-(zero-)carbon modes,
- Digital solutions for mobility,
- R&I support,
- Standards and regulations,
- Collaboration and partnership development,
- Behavioural change and information campaigns, and
- (Rail) market liberalisation.³²

We have then used the key policy areas to assess the coverage of the solutions in the current policy framework and identify solutions that are least covered and could be considered in the framework of this study (Appendix C). This analysis, complemented by further literature review to identify the challenges in policy execution/implementation and by the strategic opportunities presented in the LIFE scenario, allowed us to pinpoint those solutions that support or are essential for the development of a *Shift* in transport (see sections 2.3.2 and 2.3.3).

2.3.2 Passenger transport

In this section, we present insights on the challenges in policy implementation and on strategic opportunities under LIFE, compared to the other scenarios. Finally, we identify the solutions supporting the development of novel policy options based on the identified critical areas for action.

2.3.2.1 Challenges in policy execution/implementation

In passenger transport, the proposal on Multimodal Digital Mobility Services (MDMS) has been postponed. The initiative on access to in-vehicle data, initially planned for release in 2021, has similarly been delayed.

In terms of infrastructure, TEN-T policy is set to develop and enhance a continent-wide rail network. However, there is a notable **discrepancy between the scale and quantity of proposed projects and the available funds**.³³ The CEF emphasises that funding allocated to the TEN-T network should also be directed towards infrastructure projects for public and collective transport which should also involve investments from the Member States. As the expansion of

³² The liberalisation of the EU rail market has been a transformative process aimed at increasing competition, enhancing service quality, and fostering efficiency across the European railway sector. This liberalisation, which followed the adoption of several railway packages, including the pivotal fourth railway package, has led to noticeable shifts in market dynamics and operational efficiencies. Building on this transformative success observed in the rail sector, extending market liberalisation principles to the coach industry and broader multimodal services could potentially replicate benefits in terms of increased competition, service quality, and operational efficiency.

³³ European mobility atlas, Heinrich-Böll-Stiftung European Union, 2021. https://eu.boell.org/sites/default/files/2021-02/EUMobilityatlas2021_FINAL_WEB.pdf

the network unfolds, the significance of urban nodes is set to increase. However, the CEF-Transport programme allocated only EUR 330 million in co-financing for local public transport projects under the Urban Nodes Priority, representing approximately 1.4% of the total EUR 23.7 billion budget for 2014-2020. This minimal support highlights the disproportionate focus on road and long-distance rail infrastructure, which do not significantly contribute to sustainable commuting patterns for daily passenger mobility.^{34,35} This underscores the necessity for clearer definitions of these nodes to ensure their **eligibility for co-financing** and to secure their role in the broader transport network development.³⁶ Structural funds have filled some of the gaps, providing valuable support for intermodality; approximately EUR 175 million (ERDF) and EUR 429 million (CF) in the period 2014-2020. In principle, additional funds from the RRF in the period 2021-2026 can be used for infrastructure projects as well, however the share used for intermodal projects is difficult to assess. This will be analysed in more detail in chapter 4.3.

With regards to Sustainable Urban Mobility Plans (SUMP), the European Court of Auditors' (ECA) 2020 report highlights that despite efforts by the EC to encourage sustainable urban mobility, there is **little evidence of fundamental changes in city transportation strategies** or a notable shift towards more sustainable modes of transport.³⁷ Initiatives to improve public transport quality and expand capacity have not significantly curbed private car usage. The Commission's policy documents and guidelines, backed by considerable EU funding, have seen **limited adoption**, partly due to non-mandatory guidance and the subsidiarity principle. Some states and cities **struggle to match EU funding** with their resources, leading to operational and maintenance challenges in public transport³⁸. Ultimately, EU-funded projects in this domain have fallen short due to **poor project design, lack of data and analysis, inadequate goal-setting, and insufficient regional coordination**, calling for stronger strategic planning and implementation oversight.

Finally, there is also recognition that the **peri-urban and rural communities** are often left behind in sustainable mobility agendas in the EU and that policy, funding, planning, and research are not given the same attention as in urban areas.³⁹ The 'Future of Transport Outside Cities' report reveals that more than 70% of national transport emissions originate from regions outside major urban centres.⁴⁰ In fact, in 2021, passenger cars accounted for 83.3% of the total passenger-kilometres (pkm) in inland passenger transport and vehicle-kilometres (vkm) were mostly made for non-urban trips at the level of EU-27, with almost two-thirds for non-urban and short-distance trips⁴¹.

³⁴ CEF-TRANSPORT WORK PROGRAMME 2023-2027, UITP, 2024. <https://cms.uitp.org/wp/wp-content/uploads/2024/01/UITP-policy-position-CEF-WP-2023-2027-1.pdf>

³⁵ It is to be noted that an extended legal basis for funding urban nodes is at the final stages of adoption. Without this, the Commission cannot allocate funding to these new elements of the network.

³⁶ https://wise-europa.eu/wp-content/uploads/2024/06/2celsius_horizpaper_cbpt.pdf

³⁷ Sustainable Urban Mobility in the EU: No substantial improvement is possible without Member States' commitment', ECA, 2020 https://www.eca.europa.eu/lists/ecadocuments/sr20_06/sr_sustainable_urban_mobility_en.pdf.

³⁸ It is noted that the only the CAPEX is eligible to EU funding while the OPEX is to be supported by national/local funding and users.

³⁹ https://urban-mobility-observatory.transport.ec.europa.eu/news-events/news/bridging-urban-rural-transport-divides-2023-03-29_en

⁴⁰ https://www.herts.ac.uk/_data/assets/pdf_file/0007/339397/1107-UH-Roundtable-Report_P5.pdf

⁴¹ Study on new mobility patterns in European cities. Final report. Task A, EU-wide passenger mobility survey, DG MOVE 2023. <https://op.europa.eu/en/publication-detail/-/publication/adfc18f1-80e1-11ed-9887-01aa75ed71a1>

It is noted that the **revised TEN-T Regulation**⁴² introduces significant changes with a focus on enhancing urban nodes, linking functional urban areas, and improving rural connections. All 431 urban nodes along the TEN-T network will have to adopt and monitor SUMP by 2027, covering the entire Functional Urban Area (FUA). The overarching goals of the SUMP are to integrate the diverse transport modes, shift towards sustainable mobility, facilitate the uptake of zero- or low-emission mobility, reduce air and noise pollution and assess transport accessibility. Notably, Member States will be required to collect mobility data per urban node in the fields of sustainability, safety, and accessibility with a view to improving the performance of the trans-European transport network. Moreover, by 2030, Member States will be required to develop multimodal passenger hubs to facilitate first- and last-mile connections. This includes the requirement to facilitate access to both public transport infrastructure and active mobility.

2.3.2.2 Strategic opportunities presented by the LIFE scenario

According to the European Scientific Advisory Board on Climate Change (ESABCC), the **current EU policy framework has primarily concentrated on supply-side, technology-focused measures**, and much less on initiatives aimed at moderating consumption of GHG-intensive products and services. In transport, the ESABCC states that such initiatives are either absent or ineffective. It calls for EU policies that incentivise more vigorously the reduction of energy and material demand in mobility, both through efficiency improvements and behavioural changes.⁴³

The LIFE scenario envisions a higher shift towards shared and collaborative mobility than in the other scenarios. LIFE's envisioned increase in walking, cycling, and seamless travel between different transport modes calls for an **intensified effort in developing infrastructure** such as bike lanes, pedestrian paths, and integrated ticketing systems. The projected decrease in car transport activity and increase in car occupancy rates in the LIFE scenario highlight the need for policies that promote **higher vehicle occupancy and reduce reliance on private vehicles**.

The projected increase in passenger kilometres for rail transport in LIFE indicates a discernible gap in current efforts to **bolster rail infrastructure**, enhance service quality and availability, which calls for market-opening and greater effort to improve the overall appeal of rail travel.

The anticipated reduction in air travel in the LIFE scenario relative to the other scenarios, particularly for short distances and business trips, would require **further promotion of more sustainable alternative modes**. Encouraging the use of videoconferencing and promoting rail over flights for short hauls require not only technological investments, but also behavioural changes, supported by policies that make alternatives to flying more attractive and accessible.⁴⁴

It is understood that for such measures to work, other alternatives should be available and accessible to passengers and especially with regards to rail. If the expansion of the infrastructure and capacity is insufficient, the transport sector will likely fail to meet its decarbonisation targets. This shortfall would necessitate even greater efforts to ensure a level playing field, prioritising rail investments and implementing supportive policies to encourage a modal shift towards more sustainable transport options.

⁴² <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32024R1679>

⁴³ https://climate-advisory-board.europa.eu/reports-and-publications/towards-eu-climate-neutrality-progress-policy-gaps-and-opportunities/esabcc_report_towards-eu-climate-neutrality.pdf/@@download/file

⁴⁴ This has already partially become a reality since the COVID-19 pandemic.

While not being the focus of this study, the Avoid dimension of the ASI framework is not adequately addressed in the current⁴⁵ EU policy landscape, as targets only indirectly support avoidance of certain modes of transportation and stimulation of others through, for example, sustainable transport upgrades and digital integration. Within this context, the LIFE scenario stands out thanks to its consideration of how greater use of videoconferencing can decrease business travel. Indeed, the current framework and pathways for 2040 lack direct measures for significantly reducing travel needs. This includes urban planning for compact living and enhanced local amenities ('15-minute city'). Similarly, while digital enhancements facilitate teleworking, explicit support or incentives to promote such flexible working arrangements as a norm are missing. Promotion of local services to minimise travel distances is not strongly emphasised either. Furthermore, investment in digital infrastructure enabling remote work and education is ongoing but the implementation is lagging and not adequately covering rural areas where access to digital infrastructure is key.^{46, 47}

Current policies also miss the opportunity to drive behavioural change through dedicated campaigns or programmes highlighting the advantages of travelling less. Hence, a more focused inclusion of strategies for urban design, teleworking support, local service enhancement, and behavioural encouragement could solidify the EU's commitment to reducing travel demand.⁴⁸

2.3.2.3 Solutions

The solutions identified in this report are based on our policy review and identified challenges in policy implementation, as well as the opportunities presented by the LIFE scenario (see section 2.3.1). They were developed considering the critical areas for action needed to support the achievement of the 2040 target in passenger mobility and are presented in Table 2-3. However, we did not differentiate between the geographical levels and competences in developing these solutions. This aspect should be further investigated to ensure that the proposed solutions are effectively tailored to the specific needs and capacities at different levels of governance. Understanding the roles and responsibilities across local, regional, national, and EU levels is crucial for the successful implementation of these solutions.

⁴⁵ While not directly referring to the Avoid dimension, one of the key recommendations of ESABCC for the development of new policies in the EU is to **pursue more ambitious reductions in energy and material demand** through new and strengthened policies. ESAB recommend considering **sufficiency in the pre-use phase** through urban and territorial spatial planning, as well as the use phase, (i.e. through digital solutions, awareness-raising and sharing good practice), https://climate-advisory-board.europa.eu/reports-and-publications/towards-eu-climate-neutrality-progress-policy-gaps-and-opportunities/esabcc_report_towards-eu-climate-neutrality.pdf/@download/file

⁴⁶ Currently, fibre networks, which are critical for delivering gigabit connectivity, only reach 56% of households, while 5G coverage stands at 81% of the population, dropping to 51% in rural areas. However, the deployment of 5G stand-alone networks is lagging and 5G is still falling short in quality with regards to end-users' expectations and industry needs. Some 55% of rural households are still not served by any advanced network and 9% are not yet covered by any fixed network at all, https://ec.europa.eu/commission/presscorner/detail/en/ip_23_4619

⁴⁷ <https://data.consilium.europa.eu/doc/document/ST-8465-2023-INIT/EN/pdf>

⁴⁸ https://climatechampions.unfccc.int/driving-change-how-avoid-shift-targets-can-transform-land-transport/?_gl=1*zisfgt*_ga*MTA2OTU4NTQ4NS4xNzEwOTY2ODc5*_ga_7ZZWT14N79*MTcxMDk2Njg3OS4xLjEuMTcxMDk2NzAxNzAxNC4wLjAuMA

Table 2-3 Solutions for passenger mobility

Key policy area	Pertaining solutions short distance (urban, suburban, rural)	Pertaining solutions long distance
Expansion of infrastructure⁴⁹	<ul style="list-style-type: none"> • Funding for public transport infrastructure as a prerequisite for modal shift • Fund active mobility infrastructure, support its planning, and ensure its safety to promote wider use especially in rural settings • Mobility hubs beyond urban nodes, specifically targeting suburban and rural connectivity • Demand Responsive Transport (DRT) planning and development of tailored solutions for remote and rural areas where traditional public transport may not be viable, ensuring their integration with public transport where available. 	<ul style="list-style-type: none"> • Investments in rail infrastructure to enable effective cross-border, high-speed and overnight train services • Enhance and expand European rail infrastructure by integrating advanced digital technologies, focusing on the digitalisation of capacity and track allocation systems, and implementing the European Rail Traffic Management System (ERTMS) across the network • Investments in the development and enhancement of coach stations as intermodal hubs that seamlessly integrate with other transport modes like rail and local public transport • Integration of DRT services at major long-distance travel hubs as last-mile solutions. This could involve partnerships between long-distance transport operators and DRT providers, supported by EU incentives
Financial incentives and disincentives for the shift	<ul style="list-style-type: none"> • Targeted subsidies and grants for developing intermodal transit points in rural and peripheral regions • Support the MS in the introduction of a comprehensive scheme that directly subsidises combining different modes of short-distance transport (public services and shared mobility options), especially in suburban and rural areas • Support MS in investigating the feasibility of reduced taxes for residents using car-sharing services or DRT; incentivise the shift from car ownership to car usership 	<ul style="list-style-type: none"> • Creation of a comprehensive scheme that offers discounts or rebates for passengers choosing sustainable long-distance travel options, like rail over air where options are available and accessible to travellers. This scheme could also support bundling services (e.g. rail plus local public transport or plus bike-sharing) to encourage multimodal travel • Introduction of targeted incentives for travellers to opt for lower-emission multimodal transport options on long journeys, such as tax benefits for rail travel, aiming to shift travel behaviour • Pricing mechanisms that reflect the environmental cost of long-distance travel⁵⁰ • Introduction of subsidies and incentives for coach operators to maintain and establish routes that serve rural areas and cross-border connections, ensuring these communities have access to affordable and reliable long-distance travel options • Develop a unified strategy for transportation that involves both the introduction of subsidies and incentives for coach operators to maintain and establish routes serving

⁴⁹ This report does not consider the negative effects caused by emissions from the construction of mobility infrastructure ('grey energy'). A comprehensive impact assessment for a policy option proposing new infrastructure should support the European Commission to better determine the environmental impact of new infrastructure investments.

⁵⁰ Measures have already implemented within the European Union to partially cover the external costs of aviation, notably the coverage of the aviation sector by ETS and the phase out of free allowances. Nevertheless, a 'carbon pricing gap' remains.

Key policy area	Pertaining solutions short distance (urban, suburban, rural)	Pertaining solutions long distance
		<p>rural areas and cross-border connections, as well as the combined planning and financing of public service operations across multiple modes of transport</p>
<p>Digital solutions (focus on Mobility as a Service, MaaS)</p>	<ul style="list-style-type: none"> Encouraging the development of region-specific MaaS platforms with subsidies and technical support, ensuring these platforms offer comprehensive options tailored to the needs of urban and suburban commuters 	<ul style="list-style-type: none"> Expand existing EU digital initiatives to enhance and broaden the capabilities of platforms for long-distance travel, incorporating regulatory changes that tackle lingering competition issues within the rail sector; mandate and incentivise national railways to offer access to all their services, across both long-distance and local fares, on independent ticketing platforms Digitalisation to support a harmonised European rail management system Strengthen the European rail system by fully implementing modern EU-wide ERTMS to enhance signalling and increase operational efficiency Complement this with a robust digitalisation strategy that improves capacity and traffic management at main network nodes and intermodal terminal levels.
<p>Standards and regulations</p>	<ul style="list-style-type: none"> Development of specific EU guidelines and funding mechanisms to support the implementation of DRT systems in rural and suburban areas This could involve subsidies for local governments and private operators to establish on-demand transport services that complement existing public transport networks Supporting measures for rural mobility with funding from both the EU and Member States Implement regulatory reforms to open the coach and multimodal service markets to new entrants. This includes simplifying licensing procedures, reducing operational restrictions, and ensuring non-discriminatory access to critical infrastructure such as bus depots, railway stations, and integrated ticketing systems 	<ul style="list-style-type: none"> Establishing a level playing field in intermodal competition, especially concerning the low external costs for rail services compared to road and aviation Rail ticketing regulation that enables passengers to search and book rail tickets across Europe in combination with other transport modes to foster multimodal travel Equip train drivers for cross-border operations and enhance their capabilities with digital tools that compensate for differences in route familiarity and language proficiency
<p>R&I support</p>	<ul style="list-style-type: none"> Pilot projects for networks of urban suburban and rural mobility hubs that integrate local public transport with on-demand shuttles and sharing services Pilot projects for Rural MaaS (RMaaS) Projects for Artificial Intelligence (AI) in rural mobility 	<ul style="list-style-type: none"> Supporting the development of travel demand management programmes at the EU level that encourage travellers to consider alternative schedules or routes for long-distance trips and choosing the most efficient and environmentally friendly alternatives.

Key policy area	Pertaining solutions short distance (urban, suburban, rural)	Pertaining solutions long distance
	<ul style="list-style-type: none"> Projects for hub-to-hub automated driving systems (ADS) Research on behavioural change enactment for low-carbon multimodal mobility 	<ul style="list-style-type: none"> Research on the levers that could change long-distance travellers' behaviour
Collaboration and partnership development	<ul style="list-style-type: none"> Know-how transfer and capacity development for rural mobility planning based on best practices 	<ul style="list-style-type: none"> Cross-border agreements to enhance coach connectivity supported by last-mile solutions to reach remote areas
Behavioural change and information campaigns	<ul style="list-style-type: none"> Incorporate sustainable transport education into school curricula and offer community workshops on intermodal travel planning Implement EU-wide campaigns to raise awareness of DRT services and their benefits, focusing on improving perceptions of public transport accessibility, especially in areas underserved by traditional fixed-route services Consider novel approaches to support behavioural change through social media such as influencer marketing 	<ul style="list-style-type: none"> Educational programmes targeting businesses to encourage employee use of multimodal and sustainable travel options for business trips. Educational programmes and awareness campaigns in schools and universities about multimodal long-distance travel Consider novel approaches to support behavioural change through social media such as influencer marketing

Source: Technopolis and COWI, 2024

2.3.3 Freight transport

2.3.3.1 Challenges in policy execution/implementation

For freight, **the challenges in policy implementation create uncertainty in reaching the 2040 scenarios**. All 2040 scenarios, and especially S2 and S3, postulate a significant shift from freight via road to freight rail and freight inland navigation transport to achieve the anticipated emission reductions. The increased share in rail freight transport and inland navigation builds on the assumptions that the revision of key policies can push the needed capacity sufficiently forward. This pertains particularly to the TEN-T Regulation, the revision of the combined transport directive, the rail capacity initiative and CEF funding. Additionally, the Sustainable Smart Mobility Strategy and Action Plan as an overarching framework assumes an increase of rail freight traffic by 50% in 2030 / 100% in 2050 and increase of inland/short sea shipping by 25% in 2030 and 50% in 2050. The implementation of these goals is considered to be achieved for all scenarios due to recently proposed policies.

However, as outlined below, the special report of the European Court of Auditors on intermodal freight transport⁵¹ indicates that considerable challenges in policy execution and implementation exist in the implementation of already adopted policies and the Commission 'set unrealistic EU targets for 2030 and 2050 for the increased use of rail and inland waterways for the transport of freight'. Hence, there are uncertainties for all 2040 scenarios as to whether these gaps can be overcome and whether the assumptions underlying the different scenarios can be reached.

⁵¹ https://www.eca.europa.eu/Lists/ECADocuments/SR-2023-08/SR-2023-08_EN.pdf

The challenges⁵² concern in particular the following policies that serve as an underlying assumption to reach the share of rail freight transport, inland navigation freight, and short-distance navigation:

- 2020 Sustainable and Smart mobility strategy targets,
- Implementation of the TEN-T network, and
- Implementation of the proposed revision of the combined transport directive.

The review of the challenges in policy implementation above does not factor in policy initiatives that are currently decided upon or have recently been adopted, such as revised regulations for TEN-T, state aid for rail, inland waterways and the multimodal transport sector, and on the use of railway capacity⁵³, as well as the revision of the combined transport directive – all of which address parts of these challenges. The ECA report points to the fact that the TEN-T Regulation might have the potential to overcome some of the barriers mentioned, which largely depend on effective implementation. At this point, however, we cannot make any statements to what extent the final versions of the revisions of the regulation on state aid for rail, inland waterway and multimodal transport sector⁵⁴ and combined transport can mitigate the challenges.

The key 2023 Intermodal Freight Transport report⁵⁵ by ECA and other targeted literature⁵⁶ were drawn upon to match the challenges identified with the long list of solutions. Some solutions address policy execution and strategic opportunities simultaneously. For example, when an existing policy insufficiently addresses a strategic opportunity, it may highlight both the need to enhance current policies and for the introduction of additional strategies. The solutions that respond to the challenges and deficiencies presented by ECA are considered high-level challenges to be addressed. In addition, the solutions responding to the challenges were checked against the list of policy areas (see Appendix C). It is important to mention that the solutions can only provide a high-level picture of the needs to be addressed. Expert interviews under Pillar 2 were used to further verify and complement the list below.

According to the analysis performed, supported by literature⁵⁷, the high-level policy areas pointed out to be least/insufficiently addressed in the current policy context are (corresponding key policy areas in brackets):

- Subsidies for modal shift infrastructure enabling the shift to low-carbon transport modes (financial incentives),
- Cross-border harmonisation of standards (standards and regulations/collaboration and partnership development),

⁵² The challenges are based on the European Court of Auditors report referred to above, but are also echoed in other sources, such as

https://cadmus.eui.eu/bitstream/handle/1814/56704/PB_2018_10.pdf?sequence=1&isAllowed=y,
https://cadmus.eui.eu/bitstream/handle/1814/69796/PB_2021_03_FSR.pdf?sequence=1&isAllowed=y,
<https://etr.springeropen.com/articles/10.1186/s12544-023-00614-0>, and
<https://www.tandfonline.com/doi/full/10.1080/01441647.2023.2279219>

⁵³ <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52023PC0443>

⁵⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32022R2586>

⁵⁵ https://www.eca.europa.eu/Lists/ECADocuments/SR-2023-08/SR-2023-08_EN.pdf

⁵⁶ <https://op.europa.eu/en/publication-detail/-/publication/d37790ea-b6ef-11ec-b6f4-01aa75ed71a1>

⁵⁷ https://www.eca.europa.eu/Lists/ECADocuments/SR-2023-08/SR-2023-08_EN.pdf;
<https://etr.springeropen.com/articles/10.1186/s12544-023-00614-0>; and <https://op.europa.eu/en/publication-detail/-/publication/d37790ea-b6ef-11ec-b6f4-01aa75ed71a1>

- Quantitative binding targets governing the share of intermodal freight in Member States and strengthening the competitiveness of intermodal transport through regulatory measures (standards and regulations),
- Support of smart solutions including data-sharing and intelligent transport (digital solutions for mobility),
- R&I support in the field of modal shifts (R&I support),
- Strengthening partnerships between stakeholders (collaboration and partnership development), and
- Lack of data on existing intermodal terminals, the need for new intermodal terminals (digital solutions for mobility/expansion of infrastructure).

2.3.3.2 Strategic opportunities presented by the LIFE scenario

The LIFE scenario assumes, as mentioned, a significant increase in rail transport activity, together with increased domestic navigation. Compared to passenger transport, the behavioural dimension and avoiding transport, does not play a significant role in the LIFE scenario for freight. With continued economic growth, freight transport activities are projected to increase, on which avoiding the need for transport will only have a limited impact.

Opportunities are posed by the need to heavily invest in rail infrastructure and intermodal hubs, making rail freight transport more economically viable, reliable, and flexible. The same applies to making use of existing domestic navigation terminals and routes, and further supporting intermodal hubs making intra-EU domestic navigation more accessible and attractive.

2.3.3.3 Solutions

In the scope of this study, current or very recent policy initiatives with potential implications for these challenges have not been taken into consideration, as impacts and effectiveness cannot be assessed yet. Table 2-4 provides such initiatives with potential relevance to address the challenges. In Table 2-5, we are able to present solutions for long-distance and urban freight transport for each of these high-level challenges.

Table 2-4 List of existing policy initiatives

Implementation of the eFTI Regulation ⁵⁸ and EMSWe Regulations ⁵⁹
Ongoing work on European Mobility Data Space ⁶⁰
Development of a concept of multimodal freight corridor information systems under the digital transport and logistics Forum (DTLF) ⁶¹
MS efforts: multi-country EDIC project to be launched later this year ⁶²
Support of data interoperability projects under CEF transport, CEF Digital and DIGITAL programmes
Model initiatives for digitalisation and interoperability in rail: ERTMS ⁶³ , VTIMS (maritime) ⁶⁴ , and RIS (IWT) ⁶⁵
TSI Telematics Applications for Passenger Services ⁶⁶

⁵⁸ https://transport.ec.europa.eu/transport-themes/logistics-and-multimodal-transport/effi-regulation_en?prefLang=it

⁵⁹ <https://eur-lex.europa.eu/EN/legal-content/summary/european-maritime-single-window-environment.html>

⁶⁰ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13566-Transport-data-creating-a-common-European-mobility-data-space-communication-_en

⁶¹ https://transport.ec.europa.eu/transport-themes/digital-transport-and-logistics-forum-dtlf_en

⁶² <https://digital-strategy.ec.europa.eu/en/policies/edic>

⁶³ https://www.era.europa.eu/domains/infrastructure/european-rail-traffic-management-system-ertms_en

⁶⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0100>

⁶⁵ <https://ris.cesni.eu/30-en.html>

⁶⁶ https://www.era.europa.eu/domains/technical-specifications-interoperability/telematics-applications-passenger-service-tsi_en

Revision of the combined transport directive CTD: Providing a regulatory support framework for combined transport and establishing requirements for terminal transparency ⁶⁷
New proposal on CountEmissionsEU: a single methodology for calculating greenhouse gas (GHG) emissions from transport services
TSI Telematics Applications for Freight Services ⁶⁸
Proposal on the use of railway infrastructure capacity in the single European railway area ⁶⁹
Revised Union guidelines for the development of the trans-European transport network (TEN-T) (2024/1679) ⁷⁰

Source: Technopolis and COWI, 2024

Table 2-5 Solutions for freight transport

High-level challenge	Pertaining solutions long distance	Pertaining solutions urban
Insufficient infrastructure (terminals, trans-shipment points, last mile connectivity, electrification of rail tracks)	<ul style="list-style-type: none"> Expansion of rail and waterway freight corridors as a prerequisite for modal shift Expansion of intermodal logistics centres that facilitate efficient cargo transfer between modes Improvement of modal shift infrastructure (hubs, connections, transshipment points and terminals) 	<ul style="list-style-type: none"> Urban logistic hubs for efficient goods distribution Micro-hubs for last-mile delivery such as urban freight distribution centres for cargo bikes, etc. Dedicated lanes for freight vehicles
Lack of harmonisation regulation (customs, documentation, weights, dimensions, technical standards), insufficient implementation of the TEN-T network	<ul style="list-style-type: none"> Support for standardised cross-border digital solutions Regulative approaches for technical standards on cross-border transport, e.g. improving interoperability standards for loading units Agreements with neighbouring countries to harmonise standards and procedures for cross-border green freight, reducing bottlenecks (such as mandatory train stops at borders) and improving efficiency Implementing data exchange/improve transparency within the EU on the existence of intermodal terminals and services offered by them 	
Lack of quantitative binding targets for the share of intermodal freight in the EU and lack of targets on greening freight^{71,72}	<ul style="list-style-type: none"> Policies that mandate a minimum share of freight to be transported via rail or waterways for long distances Implement zoning laws that favour the establishment of businesses near rail or water transport facilities to reduce road freight distance 	<ul style="list-style-type: none"> Urban freight regulations (e.g. parking rules, access rules) prioritising electric or hybrid vehicles for deliveries Fleet standards for new mobility services (e.g. x% electric, cargo-bike use)

⁶⁷ [https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747446/EPRS_BRI\(2023\)747446_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747446/EPRS_BRI(2023)747446_EN.pdf)

⁶⁸ https://www.era.europa.eu/domains/technical-specifications-interoperability/telematics-applications-freight-service-tsi_en

⁶⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52023PC0443>

⁷⁰ https://publications.europa.eu/resource/cellar/cc3395a5-3516-11ef-b441-01aa75ed71a1.0006.03/DOC_1

⁷¹ The revision of the Weights and Dimensions Directive is expected to lead to more shifts from unimodal road freight to intermodal operations.

⁷² Until this point: only targets on the increased use of rail and inland waterways for freight.

<p>Lack of subsidies/grants, for modal shift infrastructure and operations to provide for a level playing field for intermodal freight transport (in comparison to e.g. road)</p>	<ul style="list-style-type: none"> • Financial support for companies adopting rail and waterborne for long-distance freight • Subsidies for use of modal shifts infrastructure • Incentives for investments in sustainable intermodal transport solutions 	
<p>Implementing and supporting smart solutions (digital, data sharing, intelligent transport solutions)</p>	<ul style="list-style-type: none"> • Digital platforms for streamlined freight booking and management across modes • Technologies for tracking and optimising the environmental footprint of long-distance freight 	<ul style="list-style-type: none"> • Implementation of Internet of Things technology (IoT) for real-time tracking and management of freight to improve efficiency and reduce unnecessary trips • Regulate and promote the use of automated delivery systems for last-mile logistics such as standards for the use of drones in deliveries
<p>Insufficient R&I activities in the field</p>	<ul style="list-style-type: none"> • R&I support for digital platforms on freight, logistical concepts, etc. • R&I support for automation concepts (e.g. port automation) 	
<p>Strengthening partnerships between stakeholders; transport operators logistics, manufacturers, authorities</p>	<ul style="list-style-type: none"> • Partnerships targeted at businesses depending on transport solutions, e.g. through the provision of digital platforms for transport solutions • Campaigns targeted at businesses to highlight the cost savings and environmental benefits of switching to greener transport options 	<ul style="list-style-type: none"> • Foster partnerships between city authorities, businesses, and logistics providers to pilot innovative urban freight solutions • Initiatives of public buyers (e.g. municipalities) for collaboration with green freight transport companies • Collaboration between logistics companies, urban planners, and local governments to optimise city logistics
<p>Lack of data for existing intermodal terminals/need for new intermodal terminals</p>	<ul style="list-style-type: none"> • European database on the existence of intermodal infrastructure/solutions for long-distance transport 	

Source: Technopolis and COWI, 2024

3 Identification and analysis of novel policies

This chapter outlines the identification of potential novel policies and an evaluation of three cases of policy option packages, which include more detailed analyses of novel policies in the areas of long-distance coaches, rural mobility, and active mobility. It is structured as follows:

- Methodological approach for the identification and analysis of proposed novel policies is explained in section 3.1.
- Narrative for the identification and selection of policy options is presented in section 3.2.1.
- Long list of policy options developed in this study is presented in section 3.2.2.
- In-depth analyses of the proposed policy options packages in the policy focus area (1) long-distance coaches, (2) rural mobility, and (3) active mobility is given in sections 3.2.3 to 3.2.5.

The selected packages containing suggestions for potential policy options are called: (1) 'Supporting more attractive and integrated infrastructure for coach terminals for inter-urban and cross-border coach-based mobility'; (2) 'Low-carbon rural mobility services: Defining minimum standards and promoting policy targets and strategies'; and (3) 'Promoting sustainable and safe active mobility through clear targets, indicators and effective safety regulations.

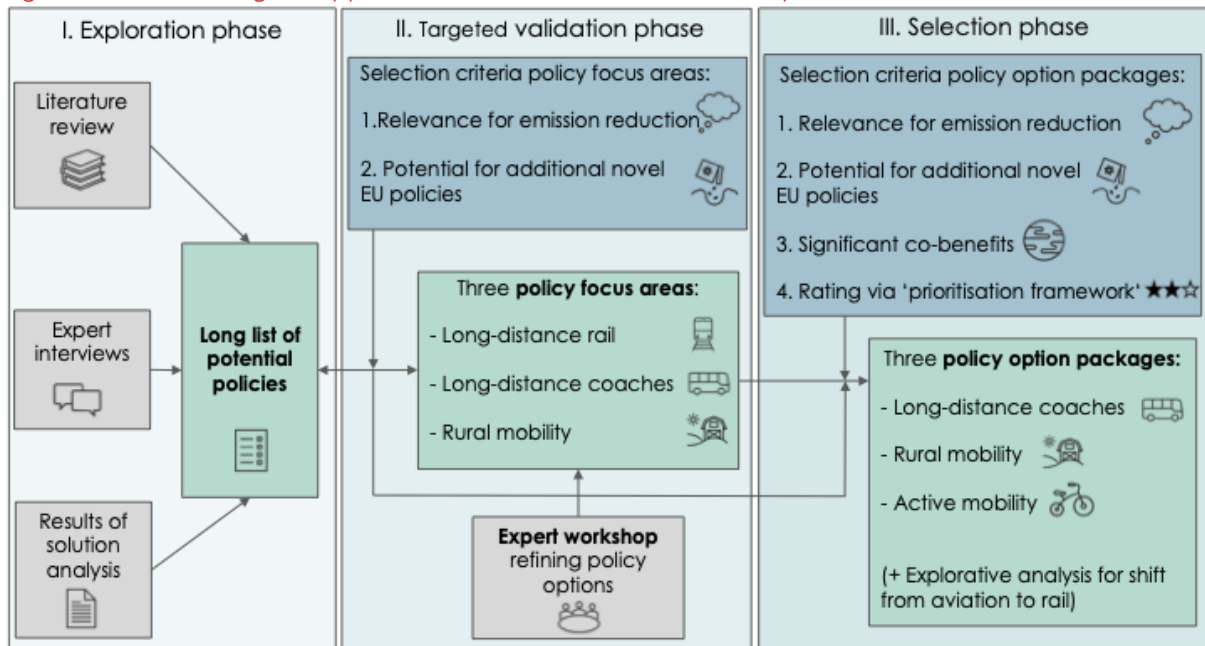
The in-depth analyses of these three packages (sections 3.2.3 to 3.2.5) contain the reasons for selecting the policy focus areas and concrete policy options, a problem analysis describing the most relevant issues to be addressed by the policy options, the reason why EU action is needed, the specific policy options suggested, as well as the potential impacts of the policy options.

3.1 Methodological approach for the identification and analysis of proposed novel policies

To identify and select the policy options for a detailed analysis, we employed a holistic approach that integrated various resources in three phases (see Figure 3-1 below).

- First, a long list of potential policies was developed during the exploration phase from the literature review, expert interviews, and solution analysis in section 2.3 ('exploration phase').
- Second, we selected three policy focus areas based on the overall relevance for emission reduction and the potential for additional novel EU policies ('targeted validation phase'). Policy options from the long list within these policy focus areas were discussed and refined at an expert workshop, allowing to further develop the long list of policy options.
- Finally, in the 'selection phase', four criteria were developed to extract novel policy options; namely, emission reductions, additionality/novelty, co-benefits, and a ranking via a 'prioritisation framework' (see below). Within the policy focus areas chosen, based on the criteria (long-distance coaches, rural mobility, and active mobility), recommendations for packages were then developed and analysed in more detail. These policy options packages often combine several policy options from the long list.

Figure 3-1 Methodological approach for the identification of novel policies



Source: Technopolis and COWI, 2024

The following sub-sections explain the methodological approach in more detail.

3.1.1 Exploration phase (developing the long list)

For the exploration phase, the goal was to cover all relevant areas of mobility and transport and to explore a wide range of novel policies that could have an impact on emission reduction through a shift towards low-carbon mobility. We used an integrated approach with multiple resources to develop a comprehensive list of potential policies that promote the shift from conventional to sustainable transport modes. The following resources were used:

Results of the solution analysis

The initial work in chapter 2.3 provided valuable insights into existing policies and gaps and potential solutions in the context of multimodal mobility and intermodal transport.

Literature review

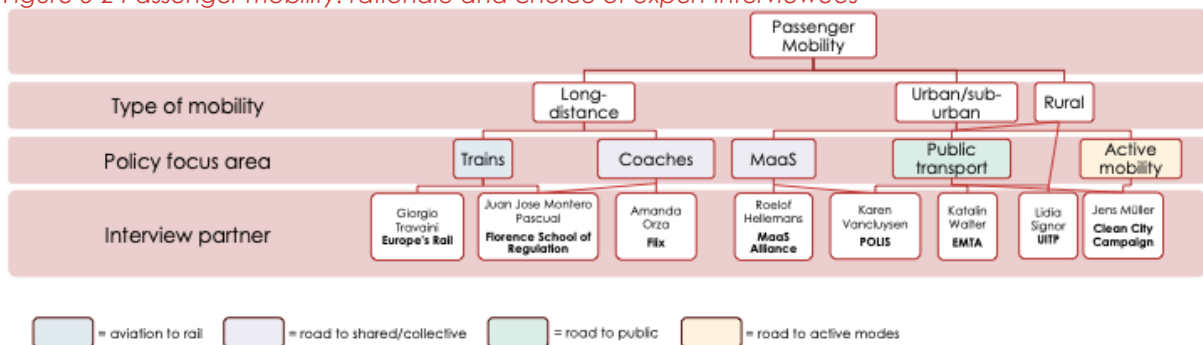
To identify relevant policy proposals targeting the *Shift* dimension, we conducted a targeted literature review for passenger mobility and freight transport. To this end, we screened targeted analyses and proposals of potential policies from relevant stakeholders (including research institutions, associations, and NGOs), focusing on stakeholder publications rather than on scientific analyses. Reviewed publications include scholarly analyses, practical policy briefs, and results from conferences and workshops. A full list of the reviewed literature can be found in Appendix D.

Expert interviews

For a more targeted overview and direct discussion of potential policies, we conducted semi-structured expert interviews. The interviews covered various stakeholder groups, including public authorities, NGOs, academic and research institutions, and economic stakeholders such as transport providers. In total, 13 interviews were conducted. The selection of experts for interviews was done following a structured approach aimed at ensuring comprehensive coverage of passenger and freight transport solutions. The guiding rationale for the choice of our expert interviews is described below and visualised in Figure 3-2 for passenger and in Figure 3-3 for freight transport:

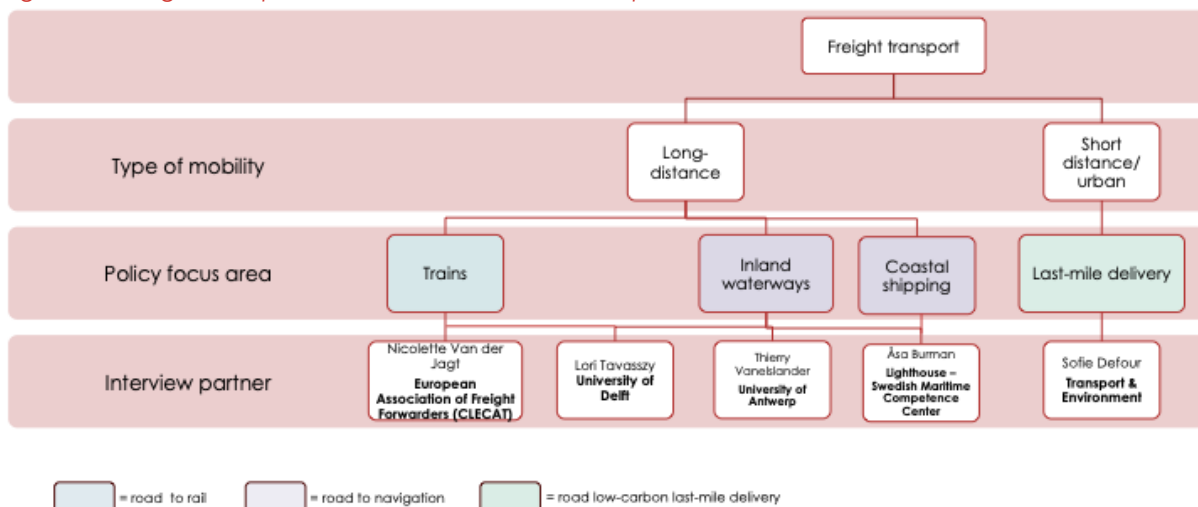
- **Division between passenger and freight transport:** Experts were initially categorised based on their specialisation in either passenger or freight transport, allowing for focused discussions on the challenges and policy options within each domain.
- **Segmentation by travel distance:** Within each category, experts were further segmented based on the distance covered, distinguishing between long-distance and short-distance transport/mobility. For short-distance mobility, considerations encompassed both urban/sub-urban and rural settings, acknowledging the distinct characteristics and requirements of each.
- **Specific solutions enabling modal shift and mapping to policy focus area:** Experts were assigned based on their expertise in specific solutions enabling mode shifts and indirectly the use of multi-/intermodal mobility identified in the gap analysis under Pillar 1 (e.g. trains, coaches, MaaS, public transport). At the same time, these solutions were developed in close relation to the underlying policy focus areas; mobility solutions (e.g. coaches or rural mobility) where the potential for additional policies were analysed. This approach ensured a nuanced exploration of policy interventions tailored to enablers of modal shifts and multi-/intramodality across diverse transport modes.
- **Broad coverage of relevant freight transport modes:** Intermodal freight transport relies heavily on a seamless combination of different transport modes, and the infrastructure enabling the shifts between modes (such as terminals). Accordingly, we selected experts with a thematic focus on several modes of transport, but with differing professional backgrounds, such as academia, branch organisations, and NGOs.

Figure 3-2 Passenger mobility: rationale and choice of expert interviewees



Source: Technopolis and COWI, 2024

Figure 3-3 Freight transport: rationale and choice of expert interviewees



Source: Technopolis and COWI, 2024

3.1.2 Targeted validation phase

From the long list developed in the exploration phase, three **policy focus areas** were selected to refine novel policy options within promising areas, namely long-distance rail, long-distance coaches, and rural mobility. Policy options from the long list within these focus areas were discussed and refined during a two-hour **expert workshop** conducted on 7 May 2024, allowing to further develop the long list of policy options

The workshop had two primary objectives. First, it aimed to validate the selection and ratings of the potential policies within the three policy focus areas through discussion with field experts, focusing on the relative importance of each policy option. Second, it sought to identify any gaps in the existing list to ensure comprehensive coverage of all relevant policies, thus refining the long list of policy options. Overall, 11 experts validated 14 policy options in detail. The list of participants, the agenda and the minutes of meeting of the workshop can be found in Appendix F.

3.1.3 Selection phase

In the selection phase, all results and information from the previous phases were combined to select an updated list of policy focus areas, within which policy option packages were analysed in more detail, including the context of potential political measures and various options for novel policies, ranging from non-legislative to legislative.

The three policy focus areas were selected based on the following criteria:

- **Relevance for emission reduction:** Potential to shift mobility towards low-carbon transport modes.
- **Potential for additional novel EU policies:** Potential for novel policies to complement (add value to) the existing EU policy framework.
- **Significant co-benefits of a policy:** This may include for instance impacts on social justice, health, or pollution reduction.
- **Rating via ‘prioritisation framework’:** High average policy rating, reflecting the overall effectiveness and feasibility of the policies.

The prioritisation framework is an evidence-based process tool developed for this study that facilitated the transparent ranking of different policies from the long list by assigning scores from a set of criteria for each policy. In our rating, we focused on the following categories of criteria,

assigning a score from 1 to 4 to each criterion, with 4 representing the most positive outcome: effectiveness, efficiency/targeting, innovativeness, and technical feasibility as well as social justice. The policies with the highest value represented those with an overall high potential. The full policy rating is shown in Appendix E.

3.2 Results from the identification and analysis of novel policies

3.2.1 Policy gaps and levers for novel solutions emerging from the interviews and the workshop

This section outlines the key insights obtained from the literature review and expert interviews, providing a narrative for the identification and selection of policy options. Emphasis is placed on important policy gaps and main levers of the EU to promote multi-/intermodal transport. These insights complement the solution analysis carried out in section 2.3 by providing a more detailed perspective, as well as by cross validating the findings of this analysis.

3.2.1.1 Passenger mobility

3.2.1.1.1 Shift from aviation/road to rail and coaches

Aviation:

Reducing emissions from the aviation sector is challenging as the sector relies on existing aircraft technologies and, unlike road or rail, does not have realistic options currently to electrify at scale. This coupled with a forecasted average annual increase of close to 2% in the European demand makes **aviation one of the fastest growing sources of emissions in the transport sector.**

Aviation is part of the Climate Target Plan modelling for 2030, and the measures proposed for aviation under Fit-for-55 will contribute to the EU's climate goals. ReFuelEU Aviation sets minimum shares for the supply of sustainable aviation fuels (SAFs) that gradually increase over time. As a result, the projected reduction in GHG emissions in aviation is of more than 60% compared to baseline in the Commission's modelling. This abatement allows for the EU to achieve its goal of transport reduction of 90% by 2050 and contributes to climate neutrality by 2050.

Given these limitations and looking at the most cost-efficient manner to achieve the reductions across the economy, the EU's modelling projects remaining emissions from aviation across scenarios (cf. Figure 2-2), which are offset by negative emissions to reach the EU's overall net-zero target.⁷³ Secondly, complementary technologies (such as hydrogen-powered or electric aircrafts) may contribute to the decarbonisation for shorter routes over the longer term. However, new technologies' commercialisation is not expected in the short term⁷⁴ and the actual GHG reduction will depend on the energy source and the level of the decarbonisation

⁷³ The long-term goal of ReFuelEU Aviation for 2050 is that at least 70% of all aviation fuel supplied to EU airports have to be SAF. And at least half of the supply of SAF (35%) must be synthetic aviation fuels. This compares to a 0,2% SAF supply in the EU in 2023. This highlights the significant ambition of the Regulation in the next 25 years. The transition from fossil fuels to sustainable fuels will take time and rely in the short and medium term mainly on biofuels for aviation, certified in accordance with RED sustainability criteria and excluding a number of feedstocks such as food and feed crops. Synthetic aviation fuels, considered to be the most sustainable SAF, will play a significant role in decarbonising aviation in the medium and long term. See Annex I of https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202302405. Biofuels eligible as SAF must be advanced and waste biofuels, as explained in Art. 3 (8) of Regulation (EU) 2023/2405. However, sustainability concerns remain, as pointed out by https://www.transportenvironment.org/uploads/files/202407_TE_advanced_biofuels_report-1.pdf.

⁷⁴ Airbus has announced the world's first hydrogen-powered commercial aircraft by 2035. See <https://www.airbus.com/en/innovation/energy-transition/hydrogen/zeroe> and <https://www.carbone4.com/en/analysis-faq-aviation-climate>. Hydrogen-based flying would also require a new hydrogen infrastructure at airports.

of the grid that will power such aircraft. ReFuelEU Aviation aims to promote such technologies as well. The successful development of SAF supply in line with the requirements of ReFuelEU Aviation will contribute to the reduction of the GHG emissions and help in reducing some (but not all) of the non-CO₂ effects, thanks to the better fuel quality of SAF.⁷⁵ ReFuelEU Aviation will allow for the reporting of fuel quality data and the Commission is tasked in this Regulation to assess possible measures to optimise the contents of aviation fuels (Article 17), which may also help in further reducing the environmental impacts of aviation fuels.

Initiatives to modulate passenger transport demand and support modal shift from aviation to low-carbon shared and collective transport could be considered to further reduce GHGs in the air transport sector. Other measures to further boost the uptake of SAF could also be considered, such as extending the time scope for EU ETS support. The aviation sector requires large-scale investments in SAF, which is key for the decarbonisation.

While some novel policies to directly and solely tackling emissions from aviation are included in the long list of policies section 3.2.2, such policies are considered with caution: They are entangled in complex socio-economic issues and there is a considerable risk that they are not politically feasible. For this reason, in parallel to on-going discussions on the feasibility of directly addressing aviation emissions, alternative options should be pursued. These alternatives include reinvesting the proceeds from taxes into clean aviation technologies and promoting and supporting other low-carbon transport modes to encourage a modal shift.

Rail:

High-speed and night trains could increasingly become an alternative to flights for longer distances, provided that existing barriers are addressed (including limited infrastructure capacity and absence of a level playing field of taxation). For high-speed trains, additional **infrastructure capacity**^{76, 77} is required, which can be partially achieved through the EU-wide rollout of the European Rail Traffic Management System, potentially increasing the capacity of existing physical infrastructure by 30%.⁷⁸ **Stronger long-term cooperation** between national actors and infrastructure managers is also needed to facilitate better cross-border services.⁷⁹ The need for more efficient capacity management through closer collaboration between infrastructure managers and the use of digital tools is also emphasised in the Commission's proposal to improve the use of rail infrastructure capacity.⁸⁰

The **expansion of rail capacity** presents a significant challenge for the shift towards passenger and freight rail. Resolving this lack of capacity is complex. A major issue regarding rail capacity

⁷⁵ See Commission Staff Working Document full-length report accompanying the updated analysis from the Commission to the European Parliament and Council of the non-CO₂ climate impacts of aviation and potential policy measures pursuant to EU Emissions Trading System Directive Article 30(4) (SWD/2020/277 final) and <https://www.transportenvironment.org/topics/planes/airplane-pollution#:~:text=Non%2DCO2%20effects%20account%20for,the%20EU%27s%20aviation%20climate%20package>

⁷⁶ UIC (2022) Boosting passenger preference for rail: <https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/boosting-passenger-preference-for-rail>

⁷⁷ Although night trains do use existing railway infrastructure at night, additional infrastructure is needed for a large-scale expansion of night trains for at least three reasons. First, rail tracks are often maintained during the night, which means that fewer tracks are available for night trains to pass through. Second, the infrastructure at train stations is often insufficient to accommodate a larger number of passengers arriving at early hours. Third, the capacity of night trains is inherently lower than that of high-speed trains due to the larger space required per passenger onboard. This implies that compared to high-speed trains, a higher number of night trains needs to be deployed to transport a given number of passengers.

⁷⁸ https://www.europarl.europa.eu/doceo/document/A-9-2021-0181_EN.pdf

⁷⁹ FSR (2022) Modal shift: the moment of truth. MAIN TAKEAWAYS AND LESSONS LEARNT FROM THE EUROPEAN YEAR OF RAIL: <https://fsr.eu.eu/publications/?handle=1814/74040>

⁸⁰ [https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/754599/EPRS_BRI\(2023\)754599_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/754599/EPRS_BRI(2023)754599_EN.pdf)

constraints is a **lack of infrastructure funding** as well as funding for solutions that can foster rail infrastructure (such as digitalisation). Overall investment requirements are substantial, and funding should be prioritised both on the national and EU level. Thus, the EU could play a larger role to better **coordinate funding and ensure efficient allocation** of national and EU-wide investments. For instance, the EU could provide guidance on best practices of effective funding strategies (e.g. in Italy public funds are channelled to infrastructure managers that ensure their effective use).⁷⁹ Moreover, increased market-opening may also help to better utilise the existing capacities and reduce prices by providing competition.

The **regulatory framework** governing the infrastructure is also important. For example, the **revision of the TEN-T Regulation** prioritises the facilitation of high-speed networks interlinking major EU urban regions, as well as the development of passenger corridors.

Digitalisation plays a key role in promoting efficient rail transport and enhancing the available capacity. Digital tools are also required for the implementation of multimodal ticketing, an efficient real-time traffic management and the efficient deployment of ERTMS.^{81, 82}

The EU could consider promoting the **establishment of a level playing field in intermodal competition** by means of pricing reflecting externalities and subsidies.⁸³ Currently, rail transport bears the highest costs, including both infrastructure charges and a significant portion of its external costs.

For air transport, airlines do pay airport charges, which reflect the infrastructure costs and could in principle be adapted to increasingly cover other external costs such as reducing noise and emissions.⁸⁴ Aircraft operators also surrender allowances for flights operating within the European Economic Area as part of the EU ETS Directive (which will move to full auctioning by 2026), and will soon cancel CORSIA⁸⁵ emissions units for other international flights. However, the external costs of aviation emissions are not fully internalised. This concerns, for instance, the need to address the non-CO₂ effects of aviation and the absence of a kerosene tax, despite the Commission's proposal amending the Energy Taxation Directive⁸⁶. Moreover, the road sector in some Member States, such as Germany, does not impose fees for road infrastructure use for private cars, which means that passenger cars only cover their external costs through fuel prices, but not their infrastructure costs.⁸⁷

To establish a level playing field all means of transport should internalise their negative externalities. This would involve **charging for infrastructure use and incorporating external costs**, such as those from noise, air pollution, GHG emissions, and other environmental impacts of all transport modes, etc. By aligning the cost structures across different transport modes, the EU

⁸¹ Ott et al. (2021) Safe, smart, and green: Boosting European passenger rail's modal share: <https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/safe-smart-and-green-boosting-european-passenger-rails-modal-share>

⁸² Witlox et al. (2022) Changing tracks: identifying and tackling bottlenecks in European rail passenger transport: <https://doi.org/10.1186/s12544-022-00530-9>

⁸³ This would "make it easier for people to shift to more sustainable options" (see Political Guidelines for the next European Commission).

⁸⁴ The Airport Charges Directive (Directive 2009/12/EC) also allows Member States to modulate airport charges for reasons of public interest, including environmental purposes.

⁸⁵ Carbon Offsetting Reduction Scheme for International Aviation from the International Civil Aviation Organisation: <https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx>

⁸⁶ See tabled revision of the Energy Taxation Directive <https://www.europarl.europa.eu/legislative-train/spotlight-JD22/file-revision-of-the-energy-taxation-directive>

⁸⁷ FSR (2022) Modal shift: the moment of truth. Main takeaways and lessons learnt from the European year of rail: <https://fsr.eui.eu/publications/?handle=1814/74040>

can ensure a fairer and more sustainable transport system and encourage the use of low-carbon alternatives.⁸⁸

From an EU perspective, the **harmonisation of EU-wide rail systems** should be further promoted to achieve a reliable cross-national rail transportation for passenger and freight. This includes an effective streamlining of technical and operational rules and norms as well as financial support to enhance interoperability, e.g. through the integration of multi-system trains in combination with the education of drivers.^{81, 89}

The recent Letta report⁹⁰ notes that boosting freedom of movement in the EU requires establishing a truly **integrated Trans-European Network of Transport**. Despite setting target years to address remaining TEN-T infrastructure gaps and bottlenecks (the TEN-T Regulation establishes specific deadlines for constructing the core, extended, and comprehensive networks by 2030, 2040, and 2050, respectively), the report alerts to the risk that Member States may not meet the 2030 targets. It notably sheds light on a highly fragmented rail network (particularly concerning high-speed rail) and a noticeable deficiency in multimodal connections. The report identified three types of needs: major investments, cooperation between Member States, and a more predictable, stable and transparent rail sectoral regulation.

When it comes to the railway sector, the report underlines the necessity of synchronising railway systems across Europe, which is hampered by the fragmentation of markets and infrastructure, as well as the persistence of legal and technical barriers. Keys to address the challenges are:

- The deployment of rail's key digital enablers and a centralized EU-level governance and coordination on the migration and deployment of these key digital enablers.
- Infrastructure investments to create a comprehensive, pan-European high-speed rail network, seamlessly linking all EU capitals and major urban centres. By ambitiously connecting the continent's most important cities, this project stands to significantly elevate rail's role in long-distance passenger transportation, aiming to capture more than 50% of the market share.

Coaches:

Coaches provide a sustainable alternative to individual road travel by leveraging **higher occupancy rates**, leading to a more efficient use of resources per passenger-km travelled. Depending on the assumptions underlying the calculation of GHG intensities (in particular the assumed occupancy rates of both coaches and private cars, the share of electric coaches and electric private cars, and the carbon intensity of electricity), coaches, also with internal combustion engine can represent the most sustainable mode of passenger transport under current conditions.⁹¹

⁸⁸ <https://fsr.eu.eu/the-observer-internalising-the-external-costs-of-transport/>

⁸⁹ FSR (2023) New rules for better rail capacity management: <https://fsr.eu.eu/publications/?handle=1814/76024>

⁹⁰ <https://www.consilium.europa.eu/media/ny3j24sm/much-more-than-a-market-report-by-enrico-letta.pdf>

⁹¹ UBA (2018) assume a GHG intensity of 32g/pkm for coaches, based on an average occupancy rate of 59%, or 34 passengers per coach. This compares to emissions of 41g/pkm for long-distance trains (based on the German electricity mix). Assuming an occupancy rate of only 14 passengers per coach, on the other hand, the EEA (2020) reports a GHG emissions intensity of 80g/pkm. See https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/2018-04-26_texte_33-2018_vergleich_verkehrstraeger_fembusse_teil3.pdf and <https://www.isi.fraunhofer.de/content/dam/isi/dokumente/ccn/2021/Methodology%20for%20GHG%20Efficiency%20of%20Transport%20Modes.pdf>

Unlike rail transport, the availability of infrastructure poses less of a challenge for coach services. Compared to increasing railway capacity, **infrastructure** for coaches (in particular bus terminals) can be provided comparatively easily.

Today, **cabotage**⁹² is not allowed in several European countries. One reason is that some countries create monopolies to cross-subsidise less profitable routes with more profitable ones.⁹³ The harmonisation of domestic coach operating regulations within the EU could lead to a larger variety and more affordable transportation options by coach in these countries. Hence, a liberalised coach market could incentivise customers to transition away from cars in favour of more sustainable bus travels.⁹⁴

There are **no EU-wide definitions and standards for bus terminals infrastructure**, which may be one reason for a lack of quality standards (e.g. suitable and pleasant waiting areas for coach passengers). Furthermore, unlike train stations, bus terminals are frequently located outside of city centres, making them less appealing and accessible.⁹⁵

a. Shift from road to public/shared at the local level

Public transport:

Public transport serves as the backbone of the urban mobility transition and requires infrastructure investments to reach its full potential.⁹⁶ In particular, **urban nodes** are crucial to offer seamless national and international transportation services. In this context, the Connecting Europe Facility⁹⁷, a key EU funding instrument for transport, could provide targeted **financial support** for public transport infrastructure such as urban nodes. However, as mentioned above, urban nodes currently only receive 1% of the total funding. Adapted eligibility criteria could support funding urban nodes as part of a broader network that enables sustainable mobility.⁹⁸

Measures regulating urban vehicle access (e.g. low-emission zones and zero-emission zones, congestion charges, parking pricing strategies etc.) are powerful tools to support a shift from road to public transport or other more sustainable forms of mobility (e.g. active mobility) within urban areas. These measures also help with internalising the external costs of traffic. Currently, over 700 schemes are implemented across different cities in the EU.⁹⁹ In accordance with the principle of subsidiarity, these access regulations can only be developed and introduced at the local level, but the EU could play a pivotal role in ensuring their **cross-border enforcement**,

⁹² Cabotage refers to national road passenger services for hire and reward that are provided on a temporary basis by a carrier in a host MS, as well as the picking up and setting down of passengers within the same MS in the course of a regular international service. See <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017SC0358>

⁹³ See the impact assessment on Regulation (EC) No 1073/2009 from 2017: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52017SC0358&from=FR> and EU Regulation on common rules for access to the international market for coach and bus services: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009R1073>

⁹⁴ However, a potential harmonisation of EU access regulations for coaches should be designed to ensure that publicly contracted services are not restricted in a way that disadvantages groups with limited access to mobility (in particular, by addressing the risk that routes with lower profitability may be discontinued in a fully liberalised system). See ARAFER (2017): <https://www.autorite-transport.fr/wp-content/uploads/2017/02/Press-release-Arafer-Bus-survey.pdf>

⁹⁵ For example, cities like Paris and Cologne are moving or have moved coach stations outside of the city centre.

⁹⁶ https://www.agora-verkehrswende.de/fileadmin/Projekte/2017/12_Thesen/Agora-Verkehrswende-12-Insights_EN_WEB.pdf and <https://www.sciencedirect.com/science/article/pii/S2667091722000024>

⁹⁷ https://cinea.ec.europa.eu/programmes/connecting-europe-facility/transport-infrastructure_en

⁹⁸ https://wise-europa.eu/wp-content/uploads/2024/06/2celsius_horizpaper_cbpt.pdf

⁹⁹ <https://urbanaccessregulations.eu/stakeholders/uvar-data-available>

including holding foreign drivers accountable for adherence to local rules.¹⁰⁰ Such a policy would ensure the effectiveness and integrity e.g. of low- or zero-emission zones.¹⁰¹

Sustainable Urban Mobility Plans are a core element of local and national policies that combine mobility and climate protection. They can help to effectively improve urban mobility not only by promoting public transport, but also shared and active mobility options.¹⁰² The EU could further promote the development and implementation of SUMP for all cities and regions, including their connection to rural areas, e.g. via (financially) **incentivising good practices**.¹⁰³

MaaS:

The promotion of **public-private partnerships** is essential for establishing and coordinating some MaaS initiatives, for example in rural areas. The effective coordination, implementation, and systematic rollout of integrated and connected mobility services relies on the **availability of data for public authorities**. Creative strategies could help facilitating data sharing between public authorities and private service providers, such as making permits for shared mobility providers and micro-mobility operators conditional on sharing data with public authorities.

Suburban and rural areas currently often lack options for shared mobility, since MaaS operators typically concentrate on or in urban areas. New business models and public-private partnerships with MaaS operators/funding could support dedicated mobility services in suburban and rural areas. This would enhance mobility in these regions and connect them with urban hubs and nodes.

b. Shift from road to active

Active mobility:

A leveraging of safety regulations and pollution-related regulations¹⁰⁴ could indirectly promote the transition to sustainable active mobility or shared/collective mobility. Possible measures include the introduction of a clear definition of safe cycling and walking routes, as well as more stringent and long-term EU-wide emissions and air quality standards based on the revision of the Ambient Air Quality Directives.¹⁰⁵

The **European Cycling Declaration**¹⁰⁶ marks a significant step towards recognising cycling as a fully-fledged mode of transport. The development of concrete action plans, specific targets and key performance indicators as well as funding opportunities could help realising the declaration's goals.¹⁰⁷

¹⁰⁰ In certain European cities, foreign drivers constitute a significant proportion of road users. In Amsterdam, for example, 35% of drivers possess foreign licences for which a vehicle ownership cannot be traced.

<https://www.polisnetwork.eu/news/polis-calls-for-improved-regulation-of-foreign-drivers-in-uvars/>

¹⁰¹ <https://eurocities.eu/latest/how-foreign-registered-vehicles-get-away-with-it/>

¹⁰² https://urban-mobility-observatory.transport.ec.europa.eu/document/download/b75c2af6-c3b9-4e9c-a579-f3ec356c0337_en?filename=sump_decision_makers_summary.pdf

¹⁰³ <https://www.polisnetwork.eu/wp-content/uploads/2021/09/New-Urban-Mobility-Framework-POLIS.pdf>

¹⁰⁴ https://environment.ec.europa.eu/topics/air/air-quality/eu-air-quality-standards_en and https://road-safety.transport.ec.europa.eu/index_en

¹⁰⁵ The recently agreed revision of EU air quality standards (Revision of the Ambient Air Quality Directives) is close to adoption as of 28 June 2024. See <https://www.europarl.europa.eu/legislative-train/theme-a-european-green-deal/file-revision-of-eu-ambient-air-quality-legislation>

¹⁰⁶ https://transport.ec.europa.eu/document/download/60033b3b-0652-495c-add3-ffea2388ff81_en?filename=European_Declaration_on_Cycling_text.pdf

¹⁰⁷ <https://eurocities.eu/resources/time-for-the-eu-to-press-ahead-on-the-cycling-declaration/> and https://urban-mobility-observatory.transport.ec.europa.eu/news-events/news/whats-next-after-european-commissions-cycling-declaration-2023-11-27_en?prefLang=it

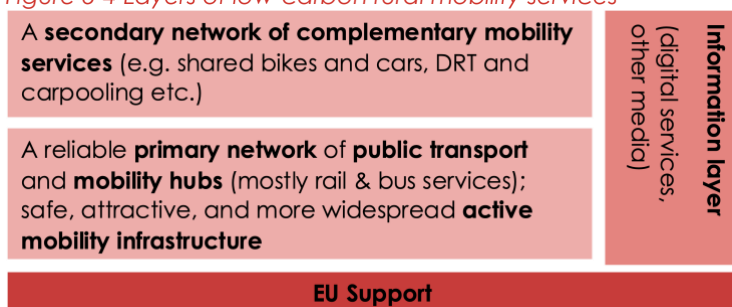
E-bikes and all forms of bicycles with electric assistance offer a low-carbon alternative for traveling longer distances between cities and suburban or rural areas. The development of **safe and convenient infrastructure** would further facilitate the use of this form of active mobility.¹⁰⁸

c. Shift from individual car use in rural areas to low-carbon alternatives

As discussed above, **rural mobility** is a key aspect for the EU to achieve a low-carbon mobility transition due to its high share of short-distance car travels. Vehicle kilometres for short-distance trips by car are almost twice as high for non-urban areas.

Low-carbon rural mobility alternatives encompass a range of innovative and sustainable transport solutions tailored to rural settings. These include DRT services, community-based transport initiatives, ride sharing or car sharing options, and active and micro-mobility methods. Essential to their success is the adaptation to local circumstances and seamless integration of various transport modes, often achieved through digital integrated planning and ticketing systems. Figure 3-4 displays the relevant layers of low-carbon rural mobility. The primary network consists of a reliable public transport, primarily bus and rail services which link rural centres with intermodal hubs for access to urban areas. Safe, attractive, and widespread active mobility infrastructure is also important for connecting the main routes. This basic layer is complemented with an additional network of flexible mobility services, including shared bikes, cars, DRT, and carpooling. This allows for customised and attractive services outside major routes, especially for more remote areas. An information layer, implemented through digital tools, ties these elements together, facilitating efficient and user-friendly mobility solutions.

Figure 3-4 Layers of low-carbon rural mobility services



Source: Technopolis and COWI, 2024

The European Commission recognises the **significance of advancing low-carbon rural mobility**, as outlined in its long-term vision for rural areas¹⁰⁹ as well as in the SSMS and in the updated concept for SUMP. Additionally, the EU launched the SMARTA-NET project and provided various tools and guidance for stakeholders involved in rural mobility.¹¹⁰

However, the EU and the great majority of Member States currently **lack dedicated policies or targets** specifically addressing the challenges of rural mobility, as noted in the 2021 SMARTA project report.¹¹¹ The report emphasises the **need for a comprehensive policy development process to establish regional and local rural mobility policies, as well as a deployment**

¹⁰⁸ This is also emphasised by the European Cycling Declaration.

¹⁰⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52024DC0450>

¹¹⁰ <https://www.smarta-net.eu>

¹¹¹ SMARTA (2021) Policy Recommendations for Sustainable Shared Mobility and Public Transport in European rural areas: https://ruralsharedmobility.eu/wp-content/uploads/2021/03/Smarta-Policy-Recommendations_Final-Version_web.pdf

framework for planning, managing, and funding the shift towards low-carbon rural mobility by the end of this century.

The EU could facilitate this process by taking **more decisive action on rural mobility**, including supporting capacity development and providing technical support, as well as adjusting eligibility criteria for funding and promoting sustainable regional mobility plans.¹¹²

3.2.1.2 Freight transport

Key insights, gained from interviews and literature review, centre around the following solutions, addressing gaps as pointed out in section 2.3.

High-level gaps identified in the gap analysis of Pillar 1 (see section 2.3.3.) fully align with the insights of all interviewed experts and have been verified by them. As already summarised in the analysis, the main gaps relate to the following points:

- Subsidies for modal shift infrastructure and transport modes,
- Cross-border harmonisation of standards,
- Quantitative binding targets for share of intermodal freight in Member States and strengthening competitiveness of intermodal transport through regulatory measures,
- Support of smart solutions (digital, data sharing, intelligent transport),
- R&I support in the field of modal shifts,
- Strengthening partnerships between stakeholders, and
- Lack of data for existing intermodal terminals/ need for new intermodal terminals.

After discussing the gaps, interviewees raised the following overall points:

The majority of the high-level gaps relate to the fulfilment of basic conditions to make multimodal transport work. Although the gaps outlined are important to be addressed, they do not constitute quick wins, but rather require long-term investments and a comprehensive set of policies. When suggesting novel policies on multimodality in the framework of this study, it will be challenging to address the broad range of improvements needed to fulfil the basic conditions, especially given the on-going EU initiatives (listed in Table 2-4) that once implemented are supposed to address those gaps to large extent.

The reluctance of forwarders to shift from road to rail or inland waterways (IWW) relates to a lack of trust in addition to the higher costs. For many operators, the reliability of multimodal transport paths is the main factor behind the choice of road in favour of rail. In addition, there is a disparity in terms of the quality of services offered by multimodal transport paths and, for instance, road transport. Road transport is more flexible, reliable and mitigation measures are more easily at hand in the event of congestion or problems arising. Trust is hard to regain, so it is often difficult to persuade operators to return to multimodal transport when they have experienced difficulties.

Trust in multimodal transport can be partly created by initiating good examples of what works well. Rail and IWW-transport work better for some goods than for others. Regaining trust can therefore focus on the cases in which multimodality works well, showcasing the mode's potential in respective industries.

Synchro-modality may provide a security net to make multimodal freight transport more reliable, balancing the insecurities associated with multimodal-freight transport and providing a back-up function in case problems arise. This might be achieved by offering companies road-

¹¹² ITF (2021) Innovations for Better Rural Mobility: <https://www.itf-oecd.org/innovations-better-rural-mobility>

transport alternatives if rail-transport goods are delayed. Synchro-modality, supported by ICT solutions can moreover provide a more flexible approach to multimodality, by offering freight forwarders a range of solutions depending on the needs and constraints of the freight. Synchro-modality may also benefit from more elaborate tracking infrastructure for freight, helping forwarders and companies handle delays better thanks to reliable data about new estimated arrival/delivery times based on real-time location of the shipment. Existing initiatives, such as the concept of 'physical internet' advocated by the ALICE technology platform and the following additional initiatives may serve as inspiration for further action or policies in the field.¹¹³

- [ERRAC](#)
- [ERTRAC](#)
- [WATERBORNE](#)
- [ACARE](#)

Focus on monitoring the effectiveness of corridors more closely. Freight corridors (of the TEN-T network) should be monitored more closely with regards to their performances and services. Based on the monitoring, issues and points of improvement can be more easily captured and used as a decision basis for further actions. This would promote to focus on the corridors specifically and create well-working axes in which the basic conditions (as further described above) are met.

¹¹³ Corridors, Hubs and Synchro-modality – ALICE Alliance for Logistics Innovation through Collaboration in Europe: <https://www.etp-logistics.eu/roadmaps-3-2/corridors-hubs-and-synchromodality-2/>

3.2.2 Long list of potential policies

Table 3-1 and Table 3-2 show a long list of potential new policies from the *Shift* dimension for passenger mobility and freight transport, respectively. The list was developed in the exploration phase and refined in the targeted validation phase, as described in the methodological section above.

Table 3-1 List of policies for passenger mobility

Key solution	Policy focus area	Suggested policy	Short explanation of policy
Cross-cutting	Rural mobility	Linking regional and rural development funding to the deployment of rural mobility policies and providing dedicated assistance	The EU could consider linking the eligibility of MS and rural regions for regional and rural development funding to the development of rural mobility policies and frameworks (e.g. SRMPs). The goal is to motivate and incentivise MS and regions to make rural mobility a priority. This policy could be accompanied by further measures to simplify access to such funding, including capacity development and technical support provided by the EU (e.g. Rural Mobility Technical Assistance Programme).
Cross-cutting	Rural mobility	Promoting the development of Sustainable Regional Mobility Plans (SRMPs)	The EU could consider the dedicated promotion of SRMPs to improve the political framework and support progress for rural mobility. The proposal goes beyond rural mobility as an annex to a SUMP, although the linkage between rural and urban areas is important. Possible measures: dedicated EU recommendations, concepts and guidelines, obligation through a regulation/directive or a dedicated funding mechanism.
Cross-cutting	Rural mobility	Promoting target-bound rural mobility policies	The EU could consider the promotion of rural mobility policies at the national or provincial level that define minimum standards for access to local transport services (this could e.g. include minimum standards for the frequency of access to buses or alternative modes). ¹¹⁴ A possible measure could be a dedicated funding mechanism.
Cross-cutting	Rural mobility	Promoting the adaptation of effective local legal frameworks to foster low-carbon mobility in rural areas	The EU could consider supporting the development of appropriate regulatory frameworks at regional and local level to facilitate low-carbon mobility in rural areas. Examples for legal frameworks that could be adapted include tendering and procurement rules. In rural areas, current legislation often restricts eligible bidders, excluding smaller operators and community transport services. On-demand services are often regulated due to competition concerns, despite their potential to improve rural public transport. Concrete measures could include legal advice, exchange of best practices and policy guidelines.
Car to coach	Coaches	EU-wide market opening of national long-distance coach markets	The EU could consider the enforcement of free access to the international market for coach and bus services to national markets and prohibiting discrimination on grounds

¹¹⁴ See: https://www.agora-verkehrswende.de/fileadmin/Projekte/2023/Mobilitaetsgarantie_Teil-1/102_Mobilitaetsgarantie.pdf

Key solution	Policy focus area	Suggested policy	Short explanation of policy
			of nationality and place of establishment. This adaptation could lead to a larger variety and more affordable transportation options by coach across the EU.
Car to coach	Coaches	Establishing an EU-wide definition of coach terminals	The EU could consider establishing an EU-wide harmonised and effective definition of coach/bus terminals, distinguishing it from en-route stopping points and on-street stands. Furthermore, the introduction of EU-wide guidelines/recommendations could establish a level playing field for access to such terminals.
Car to coach	Coaches	Supporting more attractive and integrated infrastructure for bus and coach terminals	The EU could consider the promotion of more attractive bus terminals (necessary facilities and accessible location), e.g. via adapted SUMP guidelines and good practices, agenda-setting, as well as competence- and knowledge-sharing.
Shift to rail	Passenger rail	Targeted support for infrastructure bottlenecks	With the need for large rail infrastructure investments, a more targeted needs assessment of train infrastructure could be done. The identified needs would provide the basis for more focused (prioritised) investments addressing the most important barriers on rail tracks. A factor could be the prioritisation of train lines in which the highest CO ₂ saving potential (according to the potential for passengers transported) could be achieved. In a second step, funding from existing MFF envelopes (e.g. CEF, ERDF/CF) could be channelled to the identified needs/projects, e.g. facilitated by a technical assistance facility.
Road to public	Passenger rail	Dedicated subsidies for public transport tickets	The EU could consider providing dedicated subsidies for public transport across all MS to make public transportation more affordable, following initiatives such as the Deutschland-Ticket in Germany and the Klima-Ticket in Austria, which offer flat-rate ticketing options for nationwide travel on various forms of public transport.
Cross-cutting	Passenger rail	Limiting airport capacity	The EU could consider either directly or indirectly establishing a reduced cap on airport capacity provided these are compatible with EU internal market rules and less restrictive measures are not sufficient to achieve the decarbonisation targets set at EU level as well as that such measures do not lead to shift of capacities and emissions to the hubs outside the EU. It could do this through the formulation of a directive that sets out the obligation to limit airport capacity (slot reduction) in line with the climate targets. Alternatively, it could create a policy framework that makes it easier for Member States to limit airport capacity.
Cross-cutting	Passenger rail	Further clarify common criteria for temporary restricting of short-haul flights, combined with incentives for rail travel and infrastructure investment	The EU could consider further clarifying the criteria under which Member States may temporarily restrict traffic rights for environmental and climate reasons, to promote a consistent approach across the EU while taking into account other policy measures specifically aimed at decarbonising aviation, while also providing incentives for train travel, and investing in rail infrastructure and connectivity.
Shift to rail	Passenger rail	Adapting rail access charges to the occupation rate of trains	Some infrastructure-related bottlenecks could be partly overcome by improving the capacity of passenger trains, improving frequency and reliability of rail service and access between airport and train station for connecting passengers. Increasing the capacity of passenger trains (e.g. longer/double deck) could help to decrease

Key solution	Policy focus area	Suggested policy	Short explanation of policy
			congestion on high-activity tracks. The EU could take legislative action to adapt rail access charges to the occupation rate of trains. Today, travelling by rail can be on average twice as expensive as travelling by plane or car for short distance. ¹¹⁵ A reduction in rail tolls for high-capacity trains, night trains and international trains can reduce their cost by an average of 15% ¹¹⁶ , making them more affordable and thus encouraging an overall shift to rail.
Shift to rail	Pricing	EU-wide tax alignments for aviation	The EU has some pricing measures already in place, such as the EU ETS and national taxation ¹¹⁷ and the requirements for aviation fuel suppliers to gradually increase the share of SAF blended into the conventional aviation fuel supplied at EU airports, which will significantly affect their costs. In addition, the EU could consider implementing minimum tax rates for aviation, such as a rate for kerosene ¹¹⁸ , or a minimum passenger tax as several MS have already implemented. Alternatively, to preserve a global level playing field, a global tax to be agreed/discussed at COP30 would offer a more effective approach.
Cross-cutting	Pricing	Obligatory minimum road tolls	The EU could consider the introduction of mandatory minimum road tolls for private cars and passenger transport. Currently, several MS use vignettes for car charges, although they would have the technical infrastructure to introduce tolls (since they already use tolls for goods vehicles or buses). Others apply no road charging for cars at all. ¹¹⁹ EU-wide standardised minimum tolls are more efficient than vignettes and can promote emission reduction and the shift towards low-carbon mobility. ¹²⁰
Cross-cutting	Pricing	Promoting the phase-out of fossil fuel subsidies	The EU could consider the adaptation of directives that set guidelines for MS to gradually phase out fossil fuel subsidies or redirect them towards greener alternatives. These directives can establish targets, timelines, and reporting requirements to monitor progress. ¹²¹

¹¹⁵ <https://www.greenpeace.de/publikationen/report-ticket-prices-of-planes-vs-trains-in-europe.pdf>

¹¹⁶ <https://www.transportenvironment.org/discover/new-study-solo-travelers-could-save-up-to-20-on-the-cost-of-night-train-tickets-in-europe/>

¹¹⁷ <https://op.europa.eu/en/publication-detail/-/publication/0b1c6cdd-88d3-11e9-9369-01aa75ed71a1>

¹¹⁸ see tabled revision of the Energy Taxation Directive (2021): <https://www.europarl.europa.eu/legislative-train/spotlight-JD22/file-revision-of-the-energy-taxation-directive>

¹¹⁹ https://transport.ec.europa.eu/transport-modes/road/road-charging_en

¹²⁰ https://www.transportenvironment.org/wp-content/uploads/2021/07/2017_04_road_tolls_report_briefing.pdf

¹²¹ Currently, MS are required to report on their progress in phasing out fossil fuel subsidies as part of their integrated national energy and climate progress reports. The EU's Eighth Environment Action Programme calls for an immediate phase-out of fossil fuel subsidies, but most MS lack concrete plans for their elimination. Fossil fuel subsidies dramatically increased in 2022. While 47% of these subsidies in 2022 have a planned end-date before 2025, for most subsidies there is no end-date or it is after 2030. Hence, EU action could accelerate the end of fossil fuel subsidies. See [2023 Report on Energy Subsidies in the EU](#) and [data from EEA](#).

Novel policy ideas for a shift to low-carbon mobility

Key solution	Policy focus area	Suggested policy	Short explanation of policy
Road to active	Active mobility/Rural	EU funding/support for long-distance cycling infrastructure	Promoting the use of e-bikes over individual cars can be greatly facilitated by the establishment of dedicated long-distance bike lanes. The creation of specialised long-distance bicycle lanes can significantly enhance the safety and efficiency of cycling infrastructure. A safer environment for cyclists is correlated with an increase in cycling activity. ¹²² Targeted EU funding could be provided, for example, for constructing long-distance cycle paths, facilitating their integration into existing transport networks, and promoting cycling as a sustainable commuting option along these routes. Possible measures include: obligation through a regulation/directive or a dedicated funding.
Road to active	Active mobility	Indirect promotion of active mobility through safety and pollution regulation	The EU could consider accelerating a shift to sustainable active mobility through robust safety or pollution regulations. In the spirit of Vision Zero, EU-wide policies could be developed that prioritise the safety of mobility while promoting sustainable practices (e.g. via a clear definition of safe cycling and walking routes). The introduction of stringent and long-term EU-wide emissions and air quality standards may also indirectly promote the shift towards cleaner modes (e.g. via congestion charges or zero emission zones at the regional and local level).

¹²² https://nacto.org/wp-content/uploads/2016/07/NACTO_Equitable_Bikeshare_Means_Bike_Lanes.pdf and Obispo (2014): The Relationship Between Bicycles and Traffic Safety for all Road Users, <https://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=2489&context=theses>

Table 3-2 List of policies for freight transport

Key solution	Policy focus area	Suggested policy	Short explanation of policy
Shift to rail/navigation	Long-distance freight	Support of synchro-modality/physical internet approaches, to find the best combination of transport modes for a shipping	Supporting synchro-modality approaches or projects may lead to operators gaining trust in the reliability of multimodal freight transport. Through real-time digital systems and by drawing upon several modes of transport (e.g. back-up of train transport by trucks if necessary), barriers in the infrastructure can be better anticipated and overcome. Synchro-modality can be supported by promoting best-practices/showcase projects, and by promoting the use of existing EU funds, among others.
Shift to rail/navigation	Long-distance freight	Implementation of technical assistance instruments for targeted use of funding	This relates to the design of a technical assistance facility to ensure the more targeted and effective use of existing funding envelopes, such as the cohesion policy funds and CEF. Comparable TA facilities, as provided under the JTF, may help MS authorities to direct funds towards multimodal freight transport infrastructure.
Shift to rail/navigation	Long-distance freight	Targeted subsidies for modal shift infrastructure to improve the distribution and quality of multimodal hubs.	Existing funding envelopes: guidance or recommendations for MS to targeted support for modal shift infrastructure with existing funding (e.g. CEF, ERDF/CF). Creating funding schemes/funding conditions that are exclusively reserved for modal shift hubs.
Shift to rail/navigation	Long-distance freight	Quantitative binding targets for share of intermodal freight in Member States	This relates to the design of EU level legislative measures to increase the share of freight on rail and IWW. The targets could be based on a percentage of freight activities (km or number of shipments) transported by rail and IWW for all Member States. Alternatively, the targets could be based on the potential of MS to increase IWW and rail freight according to the already existing infrastructure.

Source: Technopolis and COWI, 2024

3.2.3 Analysis of policy options for long-distance coaches

Reason for selection

The policy package on long-distance coaches was chosen according to the selection criteria above for the following reasons:

- First, a major factor for choosing coaches as a policy focus area is their potential for reducing emissions for long-distance passenger mobility, which is projected to account for a high share of transport CO₂ emissions in 2040 (Table 2-2). Depending on the occupancy rate, coaches can become the mode with the lowest emissions. For shifting long-distance mobility away from cars and planes, coaches are less capacity-constrained than rail, since they are mostly able to use existing infrastructure. This also reduces the need for additional emissions for constructing new infrastructure ('grey emissions').
- Second, coaches are currently not notably in the focus of EU policymakers. Therefore, a significant potential for additional policy interventions was identified.
- Third, the importance for coach policies targeting both terminal infrastructure and overall regulatory framework for the coach market was highlighted in the expert workshop. Coach terminals should be improved by integrating them into major multimodal hubs to incentivise their use over more carbon-intensive alternatives. Additionally, supporting regulations that promote non-discriminatory practices are important.
- Lastly, coaches serve as an important mode of transportation for low-income households, underscoring their role in addressing social equity and mobility poverty (explored further in section 4.4 on funding options under the SCF). In that sense, coaches are complementary to rail in the sense that they are a low-cost option.

Problem analysis

Coaches provide a sustainable alternative to individual road travel by exploiting higher occupancy rates, resulting in a more efficient use of resources per passenger-km travelled. Depending on the assumptions underlying the calculation of GHG intensities, coaches can be the most sustainable mode of passenger transport.¹²³ Hence, the shift to coaches for long-distance travel can have a significant effect on emission reduction, especially if coach fleets can be updated to zero-emission vehicles faster than the private car fleet. Coaches are already an important means of providing connected and efficient inter-urban mobility for younger passengers and economically disadvantaged groups who do not have access to a car.¹²⁴

Furthermore, coaches as a collective means of transport can play an important role in promoting a multimodal mobility system, especially for interurban journeys. This value is also acknowledged in the EU's Sustainable and Smart Mobility Strategy.¹²⁵ Moreover, the revised

¹²³ Particularly relevant for the emissions intensity are the assumed occupancy rates, the type of vehicles (e.g. internal combustion engine vs. zero-emission vehicles), as well as the carbon intensity of electricity. UBA (2018) assume a GHG intensity of 32g/pkm for coaches, based on an average occupancy rate of 59%, or 34 passengers per coach. This compares to emissions of 41g/pkm for long-distance trains (based on the German electricity mix). Assuming an occupancy rate of only 14 passengers per coach, on the other hand, the EEA (2020) reports a GHG emissions intensity of 80g/pkm. See https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/2018-04-26_texte_33-2018_vergleich_verkehrstraeger_fembusse_teil3.pdf and <https://www.isi.fraunhofer.de/content/dam/isi/dokumente/ccn/2021/Methodology%20for%20GHG%20Efficiency%20of%20Transport%20Modes.pdf>

¹²⁴ https://transport.ec.europa.eu/document/download/2d7fa8a8-b20b-492d-9a07-07fa9d5d3073_en?filename=2017-12-support-study-ia-revision-access-intl-market-bus-coach.pdf

¹²⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0789>

TEN-T Framework outlines the required implementation of multimodal passenger hubs, which should also enhance the infrastructure for bus and coach services. Bus/coach terminals and recharging stations for future electric coaches are mentioned as part of the urban nodes requirements.¹²⁶

Regulation (EC) No 1073/2009¹²⁷ states that carriers from all Member States should be guaranteed access to international transport markets without discrimination on grounds of nationality or place of establishment. It aimed to clarify and simplify the rules, improving enforcement, and minimising administrative burdens. However, an ex-post evaluation showed that while the Regulation has contributed to creating a more coherent framework for international coach and bus services, different regulatory regimes for national services as well as discrimination concerning access to coach terminals persist. As a result, the current regulation falls short in significantly increasing the modal share of coach and bus services and improving intermodal connectivity.

Despite the positive potential for reducing emissions, coaches account for only a small proportion of the kilometres travelled on long-distance journeys. In 2007, the share of coaches in passenger-kilometres was 9.3%, falling to 8.0% in 2014, with significant differences between Member States (e.g. Spain has a higher share of coaches).¹²⁸ In 2024, only 3.4% of Europeans planned to travel by coach, compared to 55.1% by air, 28.2% by car and 9.6% by train, illustrating the weak role and low attractiveness of coach services for long-distance travel.¹²⁹

Hence, coach services face challenges to fully compete with other modes in the inter-urban transport market. In particular, there is a low modal share of coach services and insufficient competitiveness of coaches for long-distance journeys between other modes of transport. Furthermore, there are challenges in meeting passenger needs leading to a low attractiveness for passengers to travel by coach, such as integrated and efficient door-to-door transport, safety/security.

The drivers of these problems include:

- Insufficient coach terminal infrastructure and integration with other modes of transport – direct and easy access to other sustainable transport modes: Many coach terminals lack basic facilities such as clean toilets, restaurants, and comfortable waiting areas, which can deter potential passengers, especially those with special needs and disabilities. Improving the quality and accessibility of coach terminals is essential to increase the attractiveness of coach travel. Terminals should be strategically located to facilitate connections with other transport modes, reducing travel barriers for all users. Additionally, safety and security measures, including surveillance and adequate lighting, should be integrated to protect passengers, especially during late-night delays. Scientific evidence shows that the passenger travel experience can influence the choice of travel mode.¹³⁰
- Poor location of coach terminals and insufficient integration with other modes of transport: Many coach terminals are often located far from city centres and major intermodal hubs,

¹²⁶ https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401679, p. 51.

¹²⁷ Since 2019, the proposal is blocked and in the Council, the proposal is on hold at the level of the working party on land transport, <https://www.europarl.europa.eu/legislative-train/theme-a-europe-fit-for-the-digital-age/file-1d-common-rules-for-coach-and-bus-services>

¹²⁸ https://www.ifmo.de/files/publications_content/2014/ifmo_2014_Long_Distance_Mobility_en.pdf and https://transport.ec.europa.eu/document/download/2d7fa8a8-b20b-492d-9a07-07fa9d5d3073_en?filename=2017-12-support-study-ia-revision-access-intl-market-bus-coach.pdf

¹²⁹ <https://www.statista.com/statistics/1325231/preferred-mode-of-transport-for-european-travelers/>

¹³⁰ https://www.researchgate.net/publication/319355945_The_Influence_of_Travel_Experience_within_Perceived_Public_Transport_Quality and <https://www.mdpi.com/2071-1050/12/21/9154>

making them less accessible and convenient for multimodal and connected mobility. Coach terminals often lack direct routes from main train stations, limiting an effective modal shift. It is important to locate coach terminals close to train terminals, since roadside stops are not suitable for encouraging low-carbon multimodal travel habits.¹³¹ Ideally, coach terminals should be a section of an existing transport hub to maximise multimodal transport and its comfort experience.

- Insufficient regulatory and legal framework: There is no EU-wide harmonised and effective definition of coach terminals across the EU, although this is the legal basis for future regulations. At present, coach terminals cannot be legally distinguished from stopping points and on-street bus stops. Furthermore, there is no regulation dealing with the separation of the operation of coach services and the control of the terminals. This means that if a road passenger transport operator is a public entity, there is not automatically a separate public authority that exercises control over terminal infrastructure. This may lead to a lack of equal access to the terminal infrastructure for other operators.
- Insufficient transparency regarding coach terminals: There are no clear guidelines or rules for terminal operators to make key information available to coach service operators, such as the rules for scheduling capacity allocation and the up-to-date timetable and capacity allocation.

Need for EU action

There is a practical need for EU action to address the role of coach services as an enabler for low-carbon multimodal mobility due to the cross-border nature of transport and mobility challenges, the lack of consistent policy frameworks across Member States, and the significant disparities in resources and infrastructure development. Coordinated efforts at EU level can ensure the integration of sustainable transport solutions, harmonise regulations, and leverage funding more effectively than individual countries acting alone. The EU can also facilitate communication and the exchange of best practices and skills between Member States. This collective approach is essential to develop coherent, scalable, and economically viable low-carbon coach services that benefits all citizens across the EU.

Policy options

To address these problems within the political context, there is a wide range of policy options that the EU could consider, ranging from non-legislative to legislative actions. It is important to note that some of these policy recommendations are linked to Regulation (EC) No 1073/2009, a revision of which is currently on hold.¹³² An analysis of whether this proposed revision should be withdrawn, and a new proposal be put forward by the Commission, or whether additional policies should be proposed, is outside of the scope of this study. The proposed policy options package can be summarised as 'supporting more attractive and integrated infrastructure for coach terminals for inter-urban and cross-border coach-based mobility'.

Non-legislative actions: This option brings together relevant non-legislative actions that promote the implementation of more suitable coach terminals and the adaptation of a more efficient and transparent operative framework. To be most effective, these actions should be realised simultaneously.

¹³¹ https://transport.ec.europa.eu/document/download/2d7fa8a8-b20b-492d-9a07-07fa9d5d3073_en?filename=2017-12-support-study-ia-revision-access-intl-market-bus-coach.pdf

¹³² The last three measures, concerning a harmonised definition, the separation of services and infrastructure as well as improved transparency, are based on the [impact assessment](#) for the revision of Regulation (EC) No 1073/2009. Since 2019, the proposal is [on hold](#) in the Council at the level of the working party on land transport.

- Guidelines and declarations: Develop non-binding recommendations for minimum standards to establish and improve the quality of bus and coach terminals. These guidelines would outline best practices for the integration of essential facilities such as toilets, restaurants and waiting areas and recommend that terminals be located in or near city centres and/or major multimodal mobility hubs to facilitate access and transfer between different modes of transport.
- Assistance and leadership: Facilitate the exchange of best practice and expertise between Member States. This includes providing technical assistance and legal expertise to local authorities and stakeholders to improve the design and functionality of coach terminals. The EU would take a leading role in promoting the debate on the importance of coach services and terminal infrastructure for long-distance low-carbon multimodal mobility.
- Dedicated funding: Dedicated EU funding to support the construction and renovation of bus and coach terminals as integrated bus hubs. These measures should consider investment needs for innovative technologies such as zero-emission coaches (e.g. charging infrastructure). Since coaches are mainly used by low-income groups¹³³, such measures may be eligible for financing under the Social Climate Fund (SCF).

Legislative action: This option summarises legislative actions that can build on the non-legislative actions above.

- Regulations on facilities and location of coach terminals: Introducing laws requiring coach terminals to provide basic facilities and to be located in accessible locations (e.g. could be included into the Regulation (EC) No 1073/2009). These could include setting minimum standards for facilities and the location of terminals, including standards for multimodal connectivity (i.e. new or renovated coach terminals should be part of easily reachable major transport hubs).
- Harmonised definition of coach terminals in Regulation (EC) No 1073/2009: Establish an EU-wide legal definition of coach terminals, distinguishing them from en-route stopping points and on-street stands. This would ensure consistency across Member States and provide a clear framework for future legal adaptations.
- Separation between coach service operation and infrastructure management: Adapt Regulation (EC) No 1073/2009 to ensure the separation between the operation of coach services and the management of coach terminals. In the special case that a road passenger transport operator represents a public entity, a distinct public authority must exercise control over its terminal. This would avoid conflicts of interest and promote fair access to terminal facilities for all bus operators.
- Transparency requirements: Adapt Regulation (EC) No 1073/2009 to require the disclosure of information about coach terminals. The competent authority or manager of the coach terminals could be obligated to publish relevant information such as provided services, prices for these services, the timetable and the allocation of capacities. This information could be available on a website and in at least two official languages of the Union.

Potential impact of the policy options

The impact assessment for the revision of Regulation (EC) No 1073/2009⁹³ suggested that the potential for discrimination in relation to terminal access alone could lead to the suppression of around 400 million vkm. This would imply an annual emissions reduction of 0.57 Mt CO_{2e},

¹³³ <https://www.sciencedirect.com/science/article/abs/pii/S0965856411001856>

assuming that the coach passengers would otherwise have chosen alternative modes like cars, planes, or trains.¹³⁴

Again assuming that the combination of the policy options above would boost overall coach travel by 10-20% relative to 2019 levels¹³⁵ and decrease emissions from other modes accordingly, this could lead to annual emissions savings of between 1.8 and 3.67 Mt CO_{2e}.¹³⁶ This is equivalent to between 6.2% and 12.3% of the emissions of 'other road transport activities' (including coaches) projected for 2030 in the modelling underlying the Commission's recommendation for a 2040 climate target (see section 2.2), and between 0.5% and 1% of the total passenger car emissions projected for 2030.

3.2.4 Analysis of policy options for rural mobility

Reason for selection

- First, policy options supporting a shift towards addressing low-carbon rural mobility were selected due to the significant share of emissions attributed to short-distance trips outside urban areas (~2/3). This highlights the importance to shift rural mobility away from reliance on private cars to innovative low-carbon alternatives in order to reduce transport emissions.
- Second, rural mobility policies lack dedicated streams or targets addressing the challenges of rural mobility. The workshop confirmed the need for a comprehensive policy development process to establish regional and local rural mobility policies, as well as a deployment framework for planning, managing, and funding the shift towards low-carbon rural mobility.
- Third, given the prevalence of private car dependency, rural mobility also intersects with social equity considerations, as not all rural residents can afford to own or do not have the ability or licence to drive a car. In addition, improving rural mobility acts as a catalyst for improving the rural economy, contributing positively to social aspects such as employment rates and community well-being.

Rural mobility is also mentioned in the Mission Letter for Transport Commissioner- designate Apostolos Tzitzikostas.³

Problem analysis

Rural mobility is a key area for the EU to achieve a low-carbon mobility transition due to its high share of short-distance car travels. The Future of Transport Outside Cities report reveals that more than 70% of national transport emissions originate from regions outside major urban centres.¹³⁷ In fact, in 2021, passenger cars accounted for 83.3% of the total passenger-

¹³⁴ The emission reduction potential of 0.57 Mt CO_{2e} is a conservative estimate assuming that 59% of the displaced vkm would have otherwise taken place in a train, 36% via car and 5% by plane (UBA, 2018). To estimate the potential CO₂ emission reductions from increased coach travel, the CO₂ emissions for the additional vkm by coach are compared to a counterfactual. We assume that an increase in distance travelled by coach would proportionately decrease travel by trains, cars, and flights. The difference between the additional emissions from coach travel to the decrease in emissions from cars, planes and trains yields the net CO₂ savings. Annual CO₂ savings will decrease over time as the emissions from alternative transport modes (particularly cars) reduce, e.g. due to increasingly stringent CO₂ vehicle standards, as well as the progressive electrification of the European car fleet.

¹³⁵ We choose the year 2019 as the base year of our simulations to reflect pre-COVID levels of coach travel across Europe.

¹³⁶ If policies supporting an expansion of coach operations shift travel away only from cars and planes rather than trains, emissions savings from a 10-20% increase in km travelled by coach would be much higher. In this case, emissions could decrease by between 3.6 and 7.3 Mt CO_{2e}.

¹³⁷ https://www.herts.ac.uk/_data/assets/pdf_file/0007/339397/1107-UH-Roundtable-Report_P5.pdf

kilometres in inland passenger transport and vehicle-kilometres were mostly made for non-urban trips at the level of EU-27, with almost two-thirds of short-distance trips outside of urban areas.¹³⁸

Focusing on multimodal aspects, low-carbon rural mobility has the potential to accelerate emission reduction in the transport sector. While EU regulations will mandate that all new cars sold must have zero emissions by 2035, the actual process of replacing the existing fleet of internal combustion engine vehicles with electric vehicles will be gradual. Many cars with traditional engines will still be in use for several years beyond 2035. For example, low-income households may continue to rely on conventional vehicles due to the affordability issues related to electric vehicles. Parallel measures and earlier action can also lower the overall costs associated with climate change. Moreover, electrification alone does not solve the problems associated with high car dependency and extensive individual vehicle use, which continue to cause mobility poverty in remote areas. Therefore, a comprehensive approach involving various modes of low-carbon transport is essential to achieve rapid emission reductions and an equitable mobility transition in rural areas.

The European Commission recognises the **significance of advancing low-carbon rural mobility**, as outlined in its long-term vision for rural areas¹³⁹, as well as in the Sustainable and Smart Mobility Strategy and in the updated concept for Sustainable Urban Mobility Plans. Additionally, the EU launched the SMARTA-NET project and provided various tools and guidance for stakeholders involved in rural mobility, such as the European Rural Mobility Network (ERMN).¹⁴⁰ The revision of the TEN-T stresses the need for projects to increase accessibility and connectivity between urban and rural areas for common interest related to urban nodes.¹⁴¹

However, the EU and the great majority of MS currently **lack dedicated policies or targets** specifically addressing the challenges of rural mobility, as noted in the 2021 SMARTA project report. The report emphasises the **need for a comprehensive policy development process to establish regional and local rural mobility policies, as well as a deployment framework** for planning, managing, and funding the shift towards low-carbon rural mobility by the end of this century.¹⁴²

Hence, the main problems impeding the development of low-carbon rural mobility include the high dependency on individual car use and a lack of/limited accessibility to alternative low-carbon mobility services.

The drivers of these problems include:

- Local barriers for innovative sustainable rural mobility services: National/regional passenger transport law and procurement law tends to restrict the pool of eligible bidders, often excluding operators that use smaller taxi-sized vehicles and community bus services.
- Cultural and lifestyle factors: In rural communities, owning and using a private car is a deeply ingrained cultural norm. The convenience, privacy and flexibility that cars offer align

¹³⁸ Study on new mobility patterns in European cities, Final report, Task A, EU-wide passenger mobility survey, DG MOVE 2022. <https://op.europa.eu/en/publication-detail/-/publication/adfc18f1-80e1-11ed-9887-01aa75ed71a1>

¹³⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52024DC0450>

¹⁴⁰ <https://www.smarta-net.eu> and <https://www.smarta-net.eu/ermn/>

¹⁴¹ https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401679, p. 53

¹⁴² SMARTA (2021) Policy Recommendations for Sustainable Shared Mobility and Public Transport in European rural areas: https://ruralsharedmobility.eu/wp-content/uploads/2021/03/Smarta-Policy-Recommendations_Final-Version_web.pdf

with the dispersed and remote nature of many rural communities, both between communities and between rural and urban areas.

- Operational and management challenges: There is a lack of local expertise, operational capacity, and digital infrastructure necessary to support integrated low-carbon rural mobility solutions.¹⁴³
- Geographical and demographic constraints: The dispersed nature of rural populations and the greater distances between key destinations make frequent and extensive low-carbon transport networks economically challenging. This low population density reduces the economic feasibility of public transport and shared mobility options.

Need for EU action

Even though rural mobility does not fall within the immediate and direct competence of the EU, it is important that the EU acts on this matter, as highlighted by the SMARTA report.

- First, mobility is a fundamental freedom within the EU, and thus the EU should ensure that citizens in rural areas have similar access to sustainable and flexible mobility services as those in urban areas. The importance of having an easy choice to shift to sustainable mobility options is also stressed in the recent Political Guidelines for the next European Commission.¹⁴⁴
- Second, rural mobility is also closely connected with issues such as rural development, agriculture, energy, and health, underscoring the importance and relevance of rural mobility policies. This interconnectedness demonstrates that the EU can influence other aspects, such as promoting economically prosperous rural regions, while simultaneously implementing measures to promote sustainable rural mobility.
- Third, the general lack of explicit rural mobility policies and targets in most Member States shows that the neglect of rural mobility in the past is a systemic and symbolic problem. Therefore, EU action is essential to initiate a policy development process and establish a clear framework. Such a framework would enable Member States to prioritise rural mobility and empower local actors to organise comprehensive mobility solutions that meet the community's needs.
- Indeed, the SMARTA report outlines that the EU has multiple policy options, ranging from supportive to mandatory measures. For example, the EU can facilitate the communication and exchange of good practices and know-how between Member States. This collective approach can help to develop cohesive, scalable, and economically viable low-carbon mobility that benefits all rural areas across the EU.

In addition to the arguments above, further analysis is needed to clarify the need for action on rural mobility at the EU level in light of the subsidiarity principle.

Policy options

To address the above-mentioned problems within the political context, there is a wide range of policy actions – both legislative and non-legislative – that the EU could consider. The proposed policy options package can be summarised as 'Low-carbon rural mobility services: Defining minimum standards and promoting policy targets and strategies'.

¹⁴³ https://cms.uitp.org/wp/wp-content/uploads/2022/02/Knowledge-Brief-Rural-Mobility_FEB2022-web.pdf and <https://www.itf-oecd.org/innovations-better-rural-mobility>

¹⁴⁴ https://commission.europa.eu/document/download/e6cd4328-673c-4e7a-8683-f63ffb2cf648_en?filename=Political%20Guidelines%202024-2029_EN.pdf

Overall, the topic of subsidiarity needs to be analysed in more depth in upcoming phases of the policy assessment, in case the Commission decides to proceed with (some of) these potential policies (particularly for legislative actions).

Non-legislative actions: This option summarises relevant non-regulatory actions that promote the adaptation of the legal and operative framework for low-carbon rural mobility. To be most efficient these actions should be realised simultaneously.

- Guidelines and declarations: Develop non-binding recommendations and guidelines (e.g. in the form of declarations) for the preparation and implementation of SRMPs, as well as guidance for the definition and implementation of minimum standards for rural mobility services or other explicit mobility targets like recommendations for measurable cycling and walking targets in the National energy and climate plans (NECPs). These tools should ideally be accompanied by guidelines concerning the adaptation of local regulatory frameworks that can impact the effective implementation of novel standards and plans (such as the adaptation of the local passenger transport law and procurement law).
- Assistance and leadership: Facilitate competence-sharing, exchanges between Member States, and capacity-building within Member States. Provide authorities and stakeholders ample access to legal experts and technical assistance to support the design and implementation of regulatory changes that promote sustainable rural mobility, namely the introduction of minimum mobility standards and SRMPs. The EU would assume a leadership role in promoting the discussion on how to implement low-carbon mobility in rural areas.
- Dedicated funding and adapting tendering and procurement rules: Allocate funding specifically to support the development and implementation of rural mobility policies and strategies, including linking these efforts to broader regional and rural development funding streams. The eligibility criteria for EU funding would be more closely linked to the existence and implementation of plans and strategies for rural and intermodal mobility (e.g. having clear and ambitious standards and SRMPs that follow best practice). Furthermore, funding regulations could be reformed to provide greater flexibility, enabling a wider range of providers of mobility solutions to gain legal recognition as public transport service providers. This would allow them to qualify for subsidies or tax deductions. In particular, the EU could support the regional revision of procurement rules and operator licensing criteria to permit local taxis, demand-responsive transport, and community transport providers to compete for public service contracts in rural areas.

Legislative action: This option summarises legislative actions that can build on the non-legislative measures above.

- Implementation of a directive requiring regions within Member States to develop clear minimum standards of access to mobility in rural areas, based on the size, density, employment and service profile of the rural region. It could also be stated that these standards or targets have to be included in the NECPs, encompassing a clear assessment of how the mobility guarantee could lead to national emission reduction. This policy should be accompanied by support and guidance measures as described above.
- Implementation of a directive requiring regions within Member States to develop and implement SRMPs. This regulation could follow the example of TEN-T, which sets out that the largest 430 EU cities should adopt a SUMP by 2025. In this way, the most important rural regions in the Member States could be obliged to develop and implement SRMPs by a certain date. This policy should be accompanied by support and guidance measures as described above.

Potential impact of the policy options

Assuming that legislative actions successfully initiate effective low-carbon rural mobility strategies, reducing individual car use by 5-15% in rural areas, annual emissions from car usage could decrease by between 7.2 and 21.5 Mt CO₂.¹⁴⁵ This is equivalent to between 2% and 5.9% of the total passenger car emissions projected for 2030 in the modelling underlying the Commission's recommendation for a 2040 climate target (see section 2.2).

3.2.5 Analysis of policy options for active mobility

Reason for selection

- First, active mobility policy options were explored in more detail because of the potential to effectively reduce emissions by changing mobility habits. Active mobility substituting for fossil fuelled motorised mobility could save a significant share of CO₂ emissions caused by personal transport.¹⁴⁶
- Second, while dedicated EU interventions to boost active mobility exist, effective safety regulations remain inconsistent and often fall short of adequate standards across MS. Current regulations tend to prioritise a seamless experience for car users rather than ensuring the safety and convenience of those using active mobility modes. The establishment of safe infrastructure is a precondition for an effective expansion of active mobility and hence there is a potential for additional policy measures.
- Third, active mobility policy options were selected because of their strong focus on positive co-benefits, such as improving social equity (better access to transport for marginalised communities), public health (increased physical activity leads to lower rates of heart and other diseases) and pollution reduction (especially improved air quality in urban areas). These co-benefits reinforce the overall value of the policy and support its integration into broader sustainability frameworks.

Active mobility (reporting on progress regarding the European Declaration on Cycling) is also mentioned in the Mission Letter for Transport designate-Commissioner Apostolos Tzitzikostas.³

Problem analysis

Active mobility represents an efficient and low-carbon mobility option that is recognised as a key component of the EU's vision for the future daily mobility. Active modes of mobility such as walking or cycling (including on e-bikes) should become a convenient and effective travel choice for short distances, complementing public transport and personalised shared mobility options. In addition to its potential to reduce emissions, active mobility offers significant potential to support citizens' health and to foster social cohesion, contributing to the creation of healthier and more sustainable communities.¹⁴⁷

The EU is directly involved in promoting active mobility through various regulations and initiatives, highlighting the benefits of cycling and walking in decarbonising the mobility sector.

¹⁴⁵ This estimate is based on an average CO₂ emissions intensity of the European car fleet of 119 g/km ([ICCT, 2022](#)) and the assumption that policies targeting rural mobility target all short-distance travel outside of cities. It does not consider increases in emissions from alternative modes of transport. Annual CO₂ savings will also decrease over time as the emissions of the car fleet will reduce due to increasingly stringent CO₂ vehicle standards, as well as the progressive electrification of the European car fleet.

¹⁴⁶ <https://www.sciencedirect.com/science/article/abs/pii/S0959378021000030?via%3Dihub>

¹⁴⁷ <https://www.eiturbanmobility.eu/mastering-mobility-understanding-the-health-benefits-of-active-mobility/#:~:text=Engaging%20in%20active%20mobility%20not,healthier%20and%20more%20sustainable%20cities>, <https://www.sciencedirect.com/science/article/pii/S2214140522001591>, and <https://www.sciencedirect.com/science/article/pii/S0277953624002788>.

The European Declaration on Cycling states that cycling will be treated as a stand-alone, fully-fledged mode of transport.¹⁴⁸ The revised TEN-T Regulation¹⁴⁹ sets stronger requirements for the implementation of multimodal passenger hubs in urban nodes, with the aim of effectively integrating active mobility options. Additionally, the EU Urban Mobility Framework¹⁵⁰ and the revised SUMP¹⁵¹ stress that active modes must become a clear priority in urban mobility planning.

Active mobility is closely related to safety regulations, which are an important factor in promoting active modes of mobility. Improving the safety features of active mobility infrastructure correlates with an increase in these activities.¹⁵² Therefore, the EU has developed a 'Safe System' approach that includes several directives, recommendations and targets that should improve the safety of vulnerable road users.¹⁵³ For instance, the EU road safety policy¹⁵⁴ acknowledges pedestrians and cyclists as vulnerable road users. And the revised General Vehicle Safety Regulation (EU) 2019/2144¹⁵⁵ has introduced mandatory safety features that benefit those individuals outside of a vehicle. With Vision Zero, the EU is dedicated to reducing road death to zero by 2050.¹⁵⁶

However, there is still a long way to go to achieve Vision Zero and to establish truly safe and comfortable active mobility in an EU-wide multimodal mobility system. The European Court of Auditors states that at the current rate of progress, and without additional efforts, the EU will not meet the targets of 'halving the numbers of deaths and serious injuries' between 2020 and 2030 and getting both close to zero by 2050. This will most likely have a negative impact on an efficient transition to low-carbon multimodal mobility because safety remains a prerequisite for progress in active mobility.¹⁵⁷

Active mobility is not yet an established equal mode of transport; individual car use remains at the centre of daily mobility.¹⁵⁸ Overall, the main problems hindering the promotion of active mobility include:

- Lack of safe, continuous, and well-maintained infrastructure for active mobility, such as dedicated bike lanes, pedestrian pathways, and secure parking facilities for bikes etc.
- Persistent lack of priority for active mobility compared to motorised carbon-intensive transport.

The drivers of these problems include:

- Insufficient consideration of the safety criterion in the selection of infrastructure projects: In the 2014-2020 period, achieving EU road safety objectives was not consistently prioritised during project selection. Many projects did not target sections with high accident or fatality

¹⁴⁸ https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AC_202402377

¹⁴⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022PC0384>

¹⁵⁰ https://ec.europa.eu/commission/presscorner/detail/en/fs_21_6781

¹⁵¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023H0550>

¹⁵² https://nacto.org/wp-content/uploads/2016/07/NACTO_Equitable_Bikeshare_Means_Bike_Lanes.pdf and https://www.researchgate.net/publication/323368548_The_Relationship_Between_Bicycles_and_Traffic_Safety_for_all_Road_Users

¹⁵³ <https://ec.europa.eu/newsroom/move/items/613384>

¹⁵⁴ https://road-safety.transport.ec.europa.eu/eu-road-safety-policy/priorities/safe-road-use_en

¹⁵⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R2144>

¹⁵⁶ https://road-safety.transport.ec.europa.eu/index_en

¹⁵⁷ <https://www.eca.europa.eu/en/publications?ref=sr-2024-04>

¹⁵⁸ <https://www.sciencedirect.com/science/article/pii/S2352146516301831>

rates, and the selection criteria did not require prioritisation of these high-impact areas. In addition, no specific road safety design criteria were mandated, leading to significant variations in safety standards between projects. Although the Commission has the opportunity to influence funding priorities during the planning and implementation phases, road safety considerations have not been systematically integrated into the selection and design phases of infrastructure projects. Steps, such as the 2021 introduction of dedicated road safety topics under CEF for some Member States, are a positive start in addressing these gaps. Furthermore, for the current 2021-2027 period, there will be less EU funding for road infrastructure, which means that there is also likely to be less funding for road safety.¹⁵⁹

- Operational and management challenges at EU level: There is a lack of harmonisation in safety standards and regulations between Member States. National approaches to promoting safer infrastructure vary considerably in terms of sophistication. This may limit the potential for active mobility in some Member States, if lower safety standards deter consumers from choosing active mobility.
- Inadequate funding for active mobility compared to traditional road infrastructure: As noted by the International Transport Forum, investments in road infrastructure that do not favour the need to decarbonise the transport sector remain prevalent.¹⁶⁰ For every euro spent on cycling infrastructure, many more are spent on road and car infrastructure. From EU structural funds, EUR 4.5 billion will be invested in cycling during the 2021-2027 financial period, which should suffice to build around 12,000 km of cycling infrastructure. While this is a substantial increase in investment, it represents only a small part of what would be needed to double cycling activities in the EU.¹⁶¹ In contrast, EU governments invest around EUR 112 billion a year in transport, dedicated mostly to building and maintaining roads.¹⁶² Furthermore, the funding mechanisms for cycling infrastructure are fragmented across different funds and lack the focused, substantial funding seen for road projects. Levels of investment in cycling infrastructure vary widely between Member States, with countries like the Netherlands and Denmark leading the way in per capita spending on cycling.¹⁶³ Here, the EU could support a balanced promotion of active mobility across Member States.
- Overall progress towards Vision Zero is too slow: As outlined above, current analyses suggest that the EU will not achieve the Vision Zero targets with the measures currently planned. On top of this, achieving further reductions in road fatalities will be increasingly challenging as Member States reach higher levels of safety performance. Between 2010 and 2022, Lithuania, which had the seventh highest fatality rate in 2010, achieved a 60% reduction in road fatalities. Conversely, the Netherlands, which had the third lowest fatality rate in 2010, experienced a 22% increase in fatalities over the same period. This disparity highlights the growing difficulty of achieving significant improvements in road safety outcomes. Specific EU action is therefore needed to achieve the Vision Zero targets.¹⁵⁹

¹⁵⁹ https://www.eca.europa.eu/ECAPublications/SR-2024-04/SR-2024-04_EN.pdf

¹⁶⁰ <https://www.itf-oecd.org/modal-shift-cleaner-transport-fails-materialise>

¹⁶¹ <https://cyclingindustries.com/news/details/cycling-industry-welcomes-eus-record-high-investment-of-eur-45-billion-in-cycling-infrastructure-under-the-2021-2027-eu-cohesion-policy#:~:text=businesses%20in%20Europe-.Cycling%20Industry%20welcomes%20EU's%20€4.5%20billion%20in%20cycling%20infrastructure,2021%2D2027%20EU%20Cohesion%20policy&text=When%20CIE's%20predecessor%20body%20the,infrastructure%20across%20all%20member%20states> and <https://ecf.com/news-and-events/news/eu-investments-cycling-using-eu-structural-funds-shift-higher-gear>

¹⁶² https://ec.europa.eu/regional_policy/sources/work/road-2022/road-infrastructure-2022.pdf

¹⁶³ https://ec.europa.eu/regional_policy/sources/work/road-2022/road-infrastructure-2022.pdf

Need for EU action

To ensure the transition towards active and safe mobility is as effective as possible, the EU has the power to shape the policy agenda of Member States and mandate legally binding targets for the rollout of safe active mobility infrastructure in the context of EU-wide safety regulations as concrete national targets are largely absent.

In order to further implement Vision Zero, including greater emphasis on safety and better infrastructure befitting the need for more active mobility within the transport sector, EU intervention is essential.

- First, as outlined in the Political Guidelines of the next European Commission, it is the EU's responsibility to facilitate the transition towards sustainable mobility for all Europeans. Therefore, the EU must expedite investment in and the deployment of safe and effective active mobility infrastructure.
- Second, there are currently significant disparities in the quality and safety of active mobility infrastructure across Member States, often resulting in unsafe conditions for cyclists and pedestrians. EU initiatives can address these disparities by establishing an EU-wide definition of what constitutes safe active mobility infrastructure.
- Third, EU action and leadership can stimulate innovation, consolidate competencies and funding, and facilitate the exchange of best practices, thereby enhancing the adoption of active mobility policies across all Member States.

In addition to the arguments above, further analysis is needed to clarify the need for action on active mobility at the EU level in light of the subsidiarity principle.

Policy options

To address these problems within the political context, there is a wide range of both legislative and non-legislative policy options for the EU to consider. The proposed policy options package can be summarised as 'Promoting sustainable and safe active mobility through clear targets, indicators and effective safety regulations'.

Non-legislative actions: This option brings together relevant non-regulatory actions that promote active mobility. To be most effective, these actions should be implemented simultaneously.

- Recommendations for measurable objectives with ambitious targets and monitoring of key performance indicators at the EU level and the national level, for example in the European Declaration on Cycling. Furthermore, EU recommendations could be established for measurable cycling and walking targets for Member States' NECPs, thus facilitating national policy processes supporting active mobility.
- Definitions and guidelines for safe infrastructure for active mobility: Develop and disseminate a comprehensive definition of a safe active mobility infrastructure (minimum requirements), as well as guidance for its design and maintenance (including bike lanes and pedestrian pathways). These definitions and guidelines should promote best practice and encourage voluntary compliance across Member States.
- Additional soft measures such as capacity management: Encourage managing authorities to improve their capacity for active mobility projects, for example through training programmes. Encourage them to build larger cycle networks at the expense of smaller isolated projects. Consultation on the regulatory framework for cycling infrastructure in Member States, identifying best practices and significant barriers to the implementation of state-of-the-art cycling projects.

- Improved funding mechanisms: Provide dedicated and substantial funding for active mobility infrastructure, ensuring that investment in cycling and pedestrian pathways is proportionate to that in traditional road infrastructure. This involves streamlining the funding mechanisms of different EU funds to provide coherent and targeted support for active mobility projects.

Legislative action: This option summarises legislative actions that can build on the non-legislative measures presented above.

- Define a legally binding safe infrastructure for active mobility: Establish a binding EU-wide definition of what constitutes safe active mobility infrastructure. This includes minimum safety requirements for bike lanes, pedestrian pathways, and other related facilities. All new and renovated infrastructure must meet these minimum standards.
- Define legally binding targets on cycling and walking infrastructure for EU countries: Member States could be mandated to include measurable cycling and walking targets in their NECPs. This would include regular reporting and monitoring processes.
- Legal framework for infrastructure projects: Integrate road safety as a mandatory criterion in the selection and design phase of EU-funded infrastructure projects. This would ensure that projects prioritise high-impact areas and adhere to standardised safety designs.

Potential impact of the policy options

The proposed non-legislative and legislative measures to promote active mobility in the EU have the potential to contribute to emission reduction from short-distance trips by decreasing the reliance on private carbon-intensive vehicles, both in urban and rural areas. Scientific evidence suggests that by substituting for motorised mobility, active mobility reduces CO₂ emissions caused by personal transport.¹⁶⁴

3.2.6 Recommendation for further analysis of the decarbonisation of passenger mobility between major cities by modal shift

Today, despite challenges related to decarbonisation, a key advantage of aviation and car is that it offers a convenient way, and often the only practical way of connecting cities. Therefore, an alternative solution to address emissions from aviation is to boost rail and coach connectivity between cities that are currently not well connected, notably via high-speed rail.

Building on the results of this study, we recommend further analysis of novel policies supporting the development a European high-speed rail network to help decarbonise long-distance transport.. Such analysis (e.g. in the form of a study) would support the 'plan for an ambitious European high-speed rail network to help connect EU capitals' mentioned in the Mission Letter for Transport Commissioner-designate Apostolos Tzitzikostas.

¹⁶⁴ <https://www.sciencedirect.com/science/article/abs/pii/S0959378021000030?via%3Dihub>

4 Funding of policies supporting a shift towards low-carbon mobility

This chapter examines how the low-carbon mobility solutions are financed under the EU's 2021-2027 Multiannual Financial Framework, summarising key funding instruments, as well as discussing how the selected policy options and their elements could be funded in the EU. Furthermore, the chapter outlines how the low-carbon mobility solutions for both passenger and freight transport can be supported under the Social Climate Fund, and it assesses how the selected policy options can be translated into structural measures and investments that may be financed under the SCF.

4.1 Overview of EU's funding under MFF and RRF

The EU's MFF is a seven-year financial plan that sets the budgetary framework for the EU, outlining the spending priorities and allocating funds to various policy areas and programmes. Under the MFF 2021-2027, the EU budget is divided into seven thematic areas: 1. Single Market, Innovation and Digital; 2. Cohesion, Resilience and Values; 3. Natural Resources and Environment; 4. Migration and Border Management; 5. Security and Defence; 6. Neighbourhood and the World; 7. European Public Administration).¹⁶⁵ Out of the seven thematic areas, the Single Market, Innovation and Digital (EUR 149.51 billion) as well as Cohesion, Resilience and Values (EUR 426.69 billion) provide direct support for transport and mobility projects in the EU.

In response to the economic fallout from the COVID-19 pandemic, the EU also introduced a separate recovery package called 'NextGenerationEU' with an allocation of EUR 750 billion. The majority of NextGenerationEU support is channelled to Recovery and Resilience Facility, which among other things supports reforms and investments in sustainable mobility – including railway, urban mobility, and zero or low-emission vehicles.

Under the current MFF and the additional support through NextGenerationEU, transport and mobility projects are primarily financed through several key EU funds and programmes tailored to support infrastructure, innovation, and sustainability initiatives in the transport sector. The key funding instruments include (see also Table 4-1):

- **Connecting Europe Facility – Transport:** The CEF is one of the main instruments specifically designed to promote growth, jobs, and competitiveness through targeted infrastructure investment at the European level. It supports the development of high-performing, sustainable, and efficiently interconnected trans-European networks in the fields of transport, energy, and digital services. For the 2021-2027 period, CEF has a substantial budget of EUR 25.81 billion to fund transport projects that enhance cross-border connections, remove bottlenecks, and improve sustainable transport infrastructures. Furthermore, CEF earmarks 60% of its overall budget to climate objectives focusing on sustainable transport modes.¹⁶⁶
- **Cohesion Fund:** The CF aims to reduce economic and social disparities and to promote sustainable development. In the transport sector, the CF funds transport infrastructure

¹⁶⁵ European Commission, Directorate-General for Budget, The EU's 2021-2027 long-term budget and NextGenerationEU – Facts and figures, Publications Office of the European Union, 2021, <https://data.europa.eu/doi/10.2761/808559>

¹⁶⁶ Regulation (EU) 2021/1153 of the European Parliament and Council, 7 July 2021, establishing the Connecting Europe Facility and repealing Regulations (EU) No 1316/2013 and (EU) No 283/2014, available: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R1153>

projects that are crucial for the environmental sustainability and mobility enhancement, particularly in less developed regions.

- **European Regional Development Fund:** The ERDF focuses on strengthening economic and social cohesion by correcting imbalances between its regions. It supports a wide array of transport projects, particularly those aiming at urban, regional, and cross-border mobility to stimulate balanced territorial development.
- **Horizon Europe:** While predominantly known as the EU's key funding programme for research and innovation, Horizon Europe also allocates funds to transport-related research and innovation projects. The projects supported often focus on developing new technologies and solutions for cleaner, smarter, and more efficient transport systems.
- **InvestEU Fund:** The programme supports private and public investments in sustainable infrastructure, including those for transport and mobility, projects that drive the adoption of low-emission technologies and promote energy efficiency in transport.
- **RRF:** While supporting the Member States in recovering from the COVID-19 pandemic, the RRF is focused on promoting the twin transitions to a green and digital economy, which includes substantial support for transport and mobility projects.

Other funds may have elements of intermodal mobility, but they are limited in scope, e.g. European Agricultural Fund for Rural Development (EAFRD) supports rural development and village revitalisation that may also entail transport infrastructure measures. Another example is the LIFE Programme which primarily supports projects that contribute to environmental and climate goals, including those related to clean energy, nature conservation, and resource efficiency. Some of the support can be linked to sustainable transport, e.g. support to renewable energy sources for transport systems, but compared to other above-mentioned funds, it is limited in scope. European Social Fund Plus (ESF+) can also support intermodal mobility by funding workforce development and reskilling targeting sustainable mobility.

Each fund has specific eligibility criteria and objectives, focusing on particular aspects of transport and mobility projects. In the following sections, we dive deeper into the specific funds that target intermodal/multimodal mobility.

4.2 Key funding instruments for transport and mobility under MFF and RRF

Under various EU funding instruments (see Table 4-1), significant investments are made to enhance transport infrastructure and promote sustainable mobility across Europe. CEF-Transport earmarks EUR 25.81 billion for building, rehabilitating, and upgrading transport infrastructure, focusing on cross-border projects and removing bottlenecks in both the Core and Comprehensive TEN-T networks. Similarly, ERDF and CF support TEN-T projects, alongside promoting sustainable urban mobility, clean urban transport infrastructure, cycling infrastructure, digitalisation of transport systems, and alternative fuels infrastructure. The RRF allocates EUR 87.9 billion for reforms and investments in sustainable mobility including railway, urban mobility and zero or low-emission vehicles. InvestEU dedicates EUR 9.9 billion to clean and multimodal transport, road safety, and infrastructure renewal. Lastly, Horizon Europe provides support for research and innovation linked to solutions and services for clean, competitive, safe, smart and resilient transport and mobility. These funds collectively aim to create a more sustainable, connected, and efficient transport network across Europe.

Table 4-1 Overview of main funding instruments supporting transport and mobility

Funds	Budget 2021-2027	Types of projects supported
CEF-Transport ¹⁶⁷	EUR 25.81 billion, out of which EUR 11 billion reserved for cohesion countries	<p>Building new, rehabilitating and upgrading transport infrastructure in Europe</p> <ul style="list-style-type: none"> • Cross-border projects and projects aiming at removing bottlenecks or bridging missing links in various sections of the 'core network' and the 'comprehensive network', traffic management systems and innovation in the transport systems. • Project examples: a high-speed rail connection between two cities in EU, an efficient maritime link between two cities in EU, road connection, inland waterway transport, hydrogen refuelling stations, railway connection.
ERDF (including Interreg) and CF	<p>Planned EU financing to PO3: around EUR 40.4 billion (EUR 22.6 billion for ERDF and EUR 17.8 billion for CF)¹⁶⁸</p> <p>Planned EU financing to PO2: around EUR 93.3 billion (includes all low carbon investments)</p>	<p>PO2: Promoting sustainable multimodal urban mobility</p> <ul style="list-style-type: none"> • 081-082 Clean urban transport infrastructure and rolling stock • 083 Cycling infrastructure • 084-085 Digitalisation of urban transport and other • 086 Alternative fuels infrastructure <p>PO3: Developing and enhancing sustainable, climate resilient, intelligent and intermodal national, regional and local mobility, including improved access to TEN-T and cross-border mobility.</p> <ul style="list-style-type: none"> • 087-095: Roads: newly built or upgraded or modernisation of TEN-T, digitalisation, other • 096-107: Rail: Newly built or upgraded railways, modernisation of TEN-T, other newly built or upgraded railways or reconstructed of railway, digitalisation, ERTMS, mobile rail assets, other. • 108-109 Multimodal transport (TEN-T) and not urban • 110-113 Seaports (TEN-T) and excluding facilities dedicated to transport of fossil fuel, others • 114-117 Inland waterways and ports (TEN-T) and excluding facilities dedicated to transport of fossil fuels, others • 118 Security, safety and air traffic management systems, for existing airports • 119-120 Digitising transport
RRF ¹⁶⁹	Estimated expenditure around EUR 87.9 billion for sustainable mobility	<p>Reforms and investments in sustainable mobility including railway, urban mobility and zero or low-emission vehicles</p> <ul style="list-style-type: none"> • Modernisation of railway infrastructure, rail connectivity – TEN-T network • Urban transport: metro and tram extensions, electrification of public transport bus fleets, cycling paths and infrastructure, renovation of cable ferry lines, coastal transport lines in insular areas, others • Electric vehicles and charging stations: helping purchase consumers zero emission vehicles, others • Alternative fuel infrastructures: hydrogen and biomethane refuelling stations • Reforming national regulatory frameworks to include sustainable urban mobility plans, detailed studies, strategies for sustainable mobility plans, others

¹⁶⁷ CEF-Transport, accessed on 13 June, 2024, https://cinea.ec.europa.eu/programmes/connecting-europe-facility/transport-infrastructure_en

¹⁶⁸ As per data from Cohesion Data by 20/06/2024: <https://cohesiondata.ec.europa.eu/themes/3/21-27>

¹⁶⁹ Recovery and Resilience Scoreboard, Thematic analysis, Sustainable mobility, April 2024: https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/assets/thematic_analysis/scoreboard_thematic_analysis_sustainable_mobility.pdf

InvestEU ¹⁷⁰	EUR 9.9 billion to sustainable infrastructure, including clean transport	<ul style="list-style-type: none"> • Clean and sustainable transport, multimodal transport, road safety, renewal and maintenance of rail and road infrastructure • Framework operations aim to support financial intermediaries
Horizon Europe	EUR 15.1 billion for global challenges within climate, energy and mobility ¹⁷¹	<ul style="list-style-type: none"> • Developing solutions and services for clean, competitive, safe, smart and resilient transport and mobility (both passenger and freight) • EU Mission: Climate-neutral and smart cities • Partnerships such as Connected Cooperative and Automated Mobility and Clean Aviation

4.3 Preliminary assessment of funding for the selected policy options under MFF and RRF

In this section, we look into the four selected policy options and discuss how these policy options or their elements could be potentially supported under the existing EU funding instruments. However, it should be noted that the policy options are broadly defined and their potential support depends on how they are operationalised and further detailed. Moreover, the discussion of funding is around the current 2021-2027 period, while the implementation of the options may be relevant for the next programming period post-2027. One of the key funding instruments, RRF, is introduced in response to the crisis (COVID-19 pandemic) and as such may not be available in the next programming period.

The availability of the EU funding also depends on various factors, e.g. some of the funding instruments (ERDF, CF, RFF) pre-allocate the funding to Member States, while others allocate funding on competitive basis (e.g. Horizon Europe, CEF-Transport, InvestEU). As such, available funding will depend on how Member States have pre-allocated the funds (in programming period 2021-2027) or on the availability of the calls for proposals. Furthermore, the absorption rates of cohesion policy funds in the current programming period 2021-2027 are lower (compared to the previous programming periods)¹⁷², which indicates challenges in utilising the already allocated funds effectively within the stipulated timeframe.

4.3.1 Supporting more attractive and integrated infrastructure for coach terminals for inter-urban and cross-border mobility

The policy option focused on enhancing coach mobility, particularly inter-urban and cross-border coach-based mobility, aims to facilitate a modal shift from aviation and passenger cars to low-carbon modes of public transport. One of the key elements of this option is that coach terminals should be well-connected to the networks of urban centres through public transport and urban mobility. Looking into the specific elements of this policy option, the following key funding instruments are relevant:

- **CEF-Transport:**
 - Development of multimodal passenger hubs: Projects that integrate coach terminals with other forms of transport, such as rail, cycling, and walking paths, to create seamless multimodal transport hubs. The revised TEN-T Regulation (2024) supports multimodal passenger hubs to facilitate first and last-mile connections, providing access to public

¹⁷⁰ InvestEU Fund, accessed on 13 June, 2024: https://investeu.europa.eu/investeu-programme/investeu-fund_en

¹⁷¹ <https://op.europa.eu/en/publication-detail/-/publication/1f107d76-acbe-11eb-9767-01aa75ed71a1>

¹⁷² ECORYS, et al. (2024). Absorption rates of Cohesion Policy funds. Policy Department for Structural and Cohesion Policies, European Parliament. European Union, 2024: [https://www.europarl.europa.eu/RegData/etudes/STUD/2023/747284/IPOL_STU\(2023\)747284_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2023/747284/IPOL_STU(2023)747284_EN.pdf)

transport infrastructure and active mobility.¹⁷³ Multimodal passenger hubs should be equipped with at least one recharging station dedicated to serve buses and coaches (also considering refuelling stations for hydrogen).

- **ERDF/CF:**
 - Regional improvement: Fund projects aimed at improving the infrastructure of coach terminals in less developed regions, making them more attractive and accessible.
 - Accessibility enhancements: Support efforts to ensure coach terminals are accessible via public transport.
- **RRF:**
 - Post-pandemic recovery: Invest in the modernisation and digitalisation of coach terminals as part of broader recovery efforts, e.g. financing projects that make coach terminals more energy-efficient and environmentally friendly.
 - Sustainable mobility infrastructure: Provide funding for green mobility infrastructure projects that are part of national recovery plans.

Furthermore, some elements of this policy option could be supported under SCF), which is discussed in the next chapter.

4.3.2 *Low-carbon rural mobility services: Defining minimum standards and promoting policy targets and strategies*

The policy option for enhancing rural mobility, including the development of SRMPs, minimum standards for rural mobility services, and promoting low-carbon modes of transport, can be supported through several key EU funding streams. Below are the instruments that can finance some of the elements of this policy option:

- **ERDF and CF** aim to strengthen economic and social cohesion by correcting regional differences. It is particularly relevant for underdeveloped regions, which are often rural:
 - Rural infrastructure development: Investments to improve rural transport infrastructure, including roads, bike lanes, and walking paths.
 - Community-based projects: Support for projects that involve local communities and small operators in delivering rural mobility services.
 - Sustainable mobility projects: Financing for the development and implementation of SRMPs to improve accessibility and sustainability in rural areas.
 - Decarbonisation initiatives: Support for projects aimed at shifting from passenger cars to low-carbon public and active modes of transport.
- **EAFRD** can support rural mobility as part of its broader objectives to enhance the quality of life and economic opportunities in rural areas:
 - Community-Led Local Development: Under the LEADER approach used in EAFRD, local action groups can devise and implement strategies tailored to the specific mobility needs of their communities, e.g. they can help to define minimum standards for rural mobility services and develop SRMPs.¹⁷⁴

¹⁷³ REGULATION (EU) 2024/1679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 June 2024 on Union guidelines for the development of the trans-European transport network, amending Regulations (EU) 2021/1153 and (EU) No 913/2010 and repealing Regulation (EU) No 1315/2013: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401679

¹⁷⁴ CAP, LEADER approach https://eu-cap-network.ec.europa.eu/networking/leader/leader-explained_en

- Rural transport services: Funding to improve public transport options and infrastructure in rural areas.
- Active mobility initiatives: Investments in walking and cycling paths as part of sustainable rural mobility strategies.
- **RRF:**
 - Post-pandemic rural mobility: Investments to enhance rural mobility as part of pandemic recovery and resilience strategies.
 - Green transition: Funding for projects that contribute to the decarbonisation of rural transport.

4.3.3 *Promoting sustainable and safe active mobility through clear targets, indicators and effective safety regulations*

This policy option focuses on indirect promotion of active mobility through safety and pollution regulation with a link to health benefits. Due to the indirect nature of this policy option, we see that potential support can be provided through measure linked to pilot projects, cooperation between regions to share best practices, and the development of joint strategies and infrastructure support for active mobility.

- **Horizon Europe:**
 - Research and pilot projects: Funding research projects focused on the impact of active mobility on health, safety, pollution reduction, and urban transport innovations. It can also support pilot projects implementing new safety measures or pollution-reducing strategies.
- **Interreg:**
 - Exchanging best practices: Facilitating cooperation between regions to share best practices and develop joint strategies for promoting active mobility, improving safety standards, and reducing pollution.
- **ERDF/CF and RRF:**
 - New and improved cycling infrastructure: Financing local and regional projects that build and improve cycling and walking infrastructure, enhance urban mobility safety measures, and invest in decarbonisation initiatives.

4.3.4 *Decarbonisation of passenger mobility between major cities by modal shift*

This policy option focuses on developing a comparative study of the connectivity of cities in the EU as well as with neighbouring countries for passengers, in particular by developing a high-speed rail network. This policy option could be to some extent supported through RRF, but only at the Member State level. In addition, the support provided by SCF may be relevant in this context and is further defined in the next section.

4.4 Preliminary assessment of the funding under SCF

4.4.1 *SCF funding opportunities*

According to Article 8 of the Regulation, a range of transport-relevant measures could be funded by SCF, if targeting vulnerable households, vulnerable transport users or vulnerable micro-enterprises. The definitions of these target groups are defined in the SCF Regulation:

Table 4-2 SCF Definitions¹⁷⁵

Vulnerable households	Means households in energy poverty or households, including low-income and lower middle-income ones, that are significantly affected by the price impacts of the inclusion of greenhouse gas emissions from buildings within the scope of Directive 2003/87/EC and lack the means to renovate the building they occupy.
Vulnerable transport users	Means individuals and households in transport poverty, but also individuals and households, including low-income and lower middle-income ones, that are significantly affected by the price impacts of the inclusion of greenhouse gas emissions from road transport within the scope of Directive 2003/87/EC and lack the means to purchase zero- and low-emission vehicles or to switch to alternative sustainable modes of transport, including public transport.
Vulnerable micro-enterprises	Means micro-enterprises that are significantly affected by the price impacts of the inclusion of greenhouse gas emissions from buildings or road transport within the scope of Directive 2003/87/EC and that, for the purpose of their activity, lack the means either to renovate the building they occupy, or to purchase zero- and low-emission vehicles or to switch to alternative sustainable modes of transport, including public transport, as relevant.

The following points as part of the SCF regulation¹⁷⁶ describe a set of eligible measures for both passenger and freight transport taken into consideration when suggesting the funding of policy options by the SCF:

- Provide targeted, accessible and affordable information, education, awareness and advice on cost-effective measures and investments, available support for building renovations and energy efficiency, **as well as sustainable and affordable mobility and transport alternatives.**
- **Provide access to zero- and low-emission vehicles and bicycles**, while maintaining technological neutrality, including financial support or fiscal incentives for their purchase as well as for appropriate public and private infrastructure, in particular, where relevant, **purchase of zero- and low-emission vehicles, infrastructure for recharging and refuelling and development of a second-hand zero-emission vehicles market**; Member States shall aim to ensure that where zero-emission vehicles are an affordable and deployable solution, support to such vehicles is prioritised in their Plans.
- Incentivise the use of **affordable and accessible public transport** and support private and public entities, including cooperatives, in developing and providing **sustainable mobility on demand, shared mobility services and active mobility options.**
- Member States may include in the estimated total costs of the Plans the costs of technical assistance to cover expenses related to training, programming, monitoring, control, audit, and evaluation activities which are required for the management of the Fund and the achievement of its objectives, **for example studies**, IT expenses, public consultation of stakeholders, information and communication actions, etc. The costs of such technical assistance shall be up to 2.5% of the estimated total costs of the Plan, as referred to in Article 6(1), point (j).

This translates into a set of measures for both passenger- and freight transport. With regards to options for the support of freight transport, we could not identify direct benefits for vulnerable transport users or households, but rather for micro-enterprises.

¹⁷⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R0955>

¹⁷⁶ *ibid.*

Table 4-3 Eligible measures pertaining to passenger/freight transport

Eligible passenger transport measures	Eligible freight transport measures
<ul style="list-style-type: none"> • Information education, awareness, advice on sustainable, affordable mobility and transport alternatives • Provision of access to zero-, low-emission vehicles and bicycles, and provision of financial support/fiscal incentives to acquiring these modes of transport • Provision of appropriate public/private infrastructure for zero/low-emission vehicles, recharging infrastructure, and developing a second-hand zero-emission vehicles market • Providing incentives for the use of public transport that is affordable and accessible • Supporting entities offering sustainable mobility, sharing mobility, etc. services 	<ul style="list-style-type: none"> • Provision of information, education awareness that contribute to increased implementation of low-carbon freight solutions benefitting micro-enterprises • Support for the purchase of zero- and low-emissions vehicles, bicycles and micro-mobility vehicles and charging/refuelling infrastructure for micro-enterprises • Shared mobility, mobility on demand solutions (for freight) benefitting micro-enterprises.

In addition, the SCF regulation sets a range of assessment criteria for Social Climate Plans to be drafted by Member States, namely relevance, effectiveness, efficiency and coherence. These assessment criteria have been equally taken into account when proposing the funding options:

Table 4-4 Social Climate Plans Assessment Criteria¹⁷⁷

Criteria	Description
Relevance	<ul style="list-style-type: none"> • Adequate response to the social impacts on vulnerable households, micro-enterprises, transport users in MS, affected by the EU-ETS2 through energy poverty or transport poverty. • Not harming environmental objectives • Reducing fossil fuel dependency • Contributing to the green transition and 2030/2050 energy and climate targets
Effectiveness	<ul style="list-style-type: none"> • Long lasting impact on the challenges addressed by the plan • Respecting effective monitoring, implementation according to timetables, targets and indicators • Consistency and compliance with Directive 2018/2001, and alternative fuel infrastructure directive • Consistency, complementarity, synergy and coherences with article 6(3)
Efficiency	<ul style="list-style-type: none"> • Estimated total cost of the plan is plausible, cost efficient, and proportionate with the environmental and social impact, taking into account national specificities. • The milestones and targets proposed are efficient, regarding the scope and objectives of the eligible actions.
Coherence	<ul style="list-style-type: none"> • The plan contains measures and investments representing coherent actions

• **Compliance with the DNSH principle:**

As laid out in Regulation 2023/955, all measures supported under the SCF have to comply with the principle of 'do no significant harm' (DNSH), as specified in the Taxonomy Regulation (2020/852):

- Accordingly, none of the suggested options to be funded under the SCF can be seen to doing or causing significant harm to any of the environmental objectives, namely

¹⁷⁷ Regulation (EU) 2023/955 of the European Parliament and of the Council.

climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, the circular economy, pollution prevention and control, and protection of biodiversity.

- With the SCF addressing multiple other objectives beyond climate and environment, the application of DNSH needs to be tailored to the scope of the fund. The SCF therefore foresees a technical guidance for the application, to be issued after the issuance of the call for evidence form.¹⁷⁸
- The draft guidance for the SCF has been published as part of the public consultation on the application of DNSH under the SCF, which runs from 18 June to 13 August 2024.¹⁷⁹

To assess the eligibility of the proposed measures with the SCF, the draft guidance including the relevant technical annex on transport has been drawn upon.

4.4.2 Compatibility of the policy options with SCF criteria

As presented in section 3.2, the proposed policy options centre around active mobility, rural mobility, coach mobility and decarbonisation of passenger mobility between major cities (EU cities' connectivity).

To assess the potential compatibility of the policy options with SCF objectives we assessed the following elements.

First, whether the option benefits vulnerable households, vulnerable transport users, or vulnerable micro-enterprises.

Second, whether the option is encompassed by the SCF eligible measures

Third, whether the option complies with the assessment criteria of the Social Climate Plans,

Fourth, whether the option complies with the DNSH principle of the EU Taxonomy, in accordance with the draft guidance published for public consultation.¹⁸⁰

4.4.2.1 Funding options for more attractive and integrated infrastructure for coach terminals for inter-urban and cross-border mobility

Coach transport is considered a comparably cheap mode of transport, often providing a more affordable alternative to train, which in turn makes it more attractive for low-income groups. The Social Climate Fund may therefore provide a suitable funding source to promote aspects seeking to improve the attractiveness of coach terminals, including electrification and charging infrastructure.

• Non-legislative options and the pertaining suggestions for SCF-funded aspects:

Guidelines and declarations: Develop non-binding recommendations for the establishment and improvement of bus and coach terminals. Possible entries for SCF to support this option:

- Financing targeted needs-assessments for the improvement of existing coach terminals. A particular focus could be on the provision of accessibility for -and the improvement of attractiveness for vulnerable transport users, as well as electrification and charging infrastructure.

¹⁷⁸ EC(2024) SCF DNSH Criteria – Annex II – Transport: https://climate.ec.europa.eu/document/download/e749d38e-22cb-4850-a78a-701ec7fb174e_en?filename=policy_scf_dns_h_annex_2_transport_en_0.pdf

¹⁷⁹ The draft guidance on the application of the 'DNSH' principle under the Social Climate Fund is available here: [EC \(2024\), Draft Guidance – DNSH principle under the SCF](#).

¹⁸⁰ *ibid.*

Assistance measures: Facilitate the exchange of best practice and expertise between Member States through, for example:

- Provision of technical assistance to the responsible authorities for the improvement of coach terminals. The technical assistance could draw upon national and international best practices, with a focus on improving the attractiveness and integration of coach terminals and coach services, in a multimodal transport context, for all users and therefore also vulnerable transport users.

Dedicated funding – Dedicated EU funding to support the construction and renovation of bus and coach terminals as integrated bus hubs. Funding bus terminal infrastructure includes:

- Measures to improve accessibility and user-friendliness for people with disabilities and/or reduced mobility, and elderly people. This can involve ramps, elevators, visual aids, etc.
- Measures to improve the safety and sense of security in terminals (lighting, cameras).
- Multilingual guidance and signals in the stations, making them understandable to people not speaking a national language.
- Provision of services and assistance personnel/carers accompanying people with disabilities.
- Measures contributing to the transition to zero-emission coaches, such as charging stations.
- Ensuring access to other modes of public transport, to enable smooth modal shifts for all users.

Funding coaches (category M3) that are not considered zero-emission vehicles, is likely not compliant according to DNSH criteria outlined in the technical annex on transport.¹⁸¹ Low-emission coaches can be compliant if 'corresponding zero-emission vehicles are not affordable or deployable'.¹⁸¹

4.4.2.2 Funding options for low-carbon rural mobility services

The policy option presented in section 3.2 proposes to define/propose minimum standards and policy targets and strategies for low-carbon mobility services. The Social Climate Fund offers a wealth of different possibilities to fund aspects contributing to the promotion of low-carbon rural mobility services. While SCF funds the rollout of a range of low-carbon transport solutions, the focus of the option is on the provision of policy targets and strategies. When presenting the options below, particular focus was on solutions that may directly contribute to overarching standards, targets and strategies, to the extent possible.

In principle, the SCF Regulation emphasises the need to support rural regions, as their geographic specificity may impact transport poverty, the vulnerability of households, micro-enterprises and transport users. More specifically: *'Transport poverty can particularly affect individuals and households in rural, insular, peripheral, mountainous, remote and less accessible areas or less developed regions or territories, including less developed peri-urban areas and the outermost regions.'*

In the following, the possibilities of funding/supporting aspects of the policy options proposed in the in-depth analyses of the policy option packages will be discussed. Due to feasibility, only the non-legislative options will be discussed.

- **Non-legislative options and the pertaining suggestions for SCF-funded aspects:**

¹⁸¹ EC(2024) SCF DNSH Criteria – Annex II – Transport: https://climate.ec.europa.eu/document/download/e749d38e-22cb-4850-a78a-701ec7fb174e_en?filename=policy_scf_dns_h_annex_2_transport_en_0.pdf

Guidelines and declarations: Develop non-binding recommendations and guidelines (e.g. in the form of declarations) for the preparation and implementation of SRMPs, as well as guidance on the definition and implementation of minimum standards for rural mobility services or other explicit mobility targets like recommendations for measurable cycling and walking targets in the NECPs.

Possible entries for the SCF to support this option could be:

- Building on the existence of overarching guidelines for SRMPs, SCF could support capacity-building or technical assistance activities for the responsible regional/local authorities compiling the SRMPs. A specific emphasis in terms of SCF objectives could be the incorporation of transport poverty alleviation or the focus on vulnerable groups in the Plans.
- After the completion of SRMPs, further technical support may be provided to the implementation of the Plans, supporting the setting up of organisational entities necessary for the implementation (e.g. car-sharing providers, additional administrative units in authorities), the education of staff in the public sector, and the provision of awareness-raising activities for citizens to accelerate the uptake of services provided under the SRMP.
- After the completion of SRMPs, SCF can provide support to cycling/walking/public transport infrastructure (building new infrastructure or upgrading existing infrastructure, supporting users of low-carbon mobility services, or subsidised public transport tickets).

Assistance and leadership: Facilitate competence-sharing, exchanges between Member States, and capacity-building within Member States.

Possible entries for the SCF to support this option could be:

- Funding aspects of the technical assistance to support the design and implementation of regulatory changes.
- Funding the creation of knowledge-sharing platforms focused on rural mobility, e.g. comparable to the SMARTA project.¹⁸²
- Funding awareness-raising and education measures (e.g. introducing minimum mobility standards). The concept of minimum mobility standards would take specific account of the needs of vulnerable groups and people prone to transport poverty.
- Funding specific competence-sharing exchanges between Member States that take into account vulnerable transport users and micro-enterprises.

Dedicated funding and adapting tendering and procurement rules: Allocate funding specifically to support the development and implementation of rural mobility policies and strategies, including linking these efforts to broader regional and rural development funding streams.

- As this option targets the adaptation of tendering and procurement rules, no appropriate lever for funding provided by SCF could be identified.

4.4.2.3 Funding options for promoting sustainable and safe active mobility through clear targets, indicators and effective safety regulations

The Social Climate Fund makes specific reference to the promotion of active mobility, such as through the improvement of cycling/walking infrastructure or the provision of bike/e-bike

¹⁸² <https://ruralsharedmobility.eu/about/>

sharing. More specifically: '[...] incentivise the use of affordable and accessible public transport and support private and public entities, including cooperatives, in developing and providing sustainable mobility on demand, shared mobility services and active mobility options.'¹⁸³

- **Non-legislative options and the pertaining suggestions for SCF-funded aspects:**

Recommendations for ambitious targets and monitoring of key performance indicators at the EU level and national level:

- No appropriate lever for funding through the SCF could be identified.

Definitions and guidelines for safe infrastructure for active mobility:

- No appropriate lever for funding through the SCF could be identified.

Data collection and harmonisation: Enhance the collection and harmonisation of national data on serious injuries and causes of accidents, including alcohol consumption and speeding.

- Provide capacity-building and technical assistance for the proper collection and analysis of the data.

Additional soft measures such as capacity management: Encourage managing authorities to improve their capacity for active mobility projects, for example through training programmes:

- Funding capacity-building measures for conducting active mobility projects in relevant MS authorities.
- Setting up knowledge-sharing exchange platforms for best-practice sharing.

Improved funding mechanisms: Provide dedicated and substantial funding for active mobility infrastructure, ensuring that investment in cycling and pedestrian pathways is proportionate to that in traditional road infrastructure:

- Provision of bicycles to vulnerable transport users/households, e.g. through subsidising sharing schemes, or by providing direct support for the acquisition of bicycles.

4.4.2.4 Funding options for decarbonisation of passenger mobility between major cities

- **Non-legislative options and the pertaining suggestions for SCF-funded aspects**

Comparative study of the connectivity of cities in the EU, as well as with neighbouring countries for passengers, centred around the decarbonisation of the transport sector.

According to the regulation, SCF covers in principle '[...] expenses pertaining to preparatory, monitoring, control, audit and evaluation activities which are required for the management of the Fund and the achievement of its objectives, in particular studies.'¹⁸⁴

It will have to be further investigated whether a study on EU city connectivity can be considered a preparatory action that is necessary to achieve the objectives of the fund. Additionally, the study would have to be requested by a Member State and would therefore likely not cover the entire EU. It is to our understanding, however, that Member States require several studies of that kind, focusing on different geographies of the Union (e.g. Germany requesting a study on the connection between cities in Germany and connection to cities in adjacent countries).

¹⁸³ Article 8/1g, Regulation (EU) 2023/955 of the European Parliament and of the Council: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R0955>

¹⁸⁴ Regulation 2023/955, Article 10: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R0955>

Focus on decarbonisation of passenger and modal shift to low-carbon modes of transport.

This transversal policy option pertains to a broad range of solutions, mainly referring to the decarbonisation of long-distance transport solutions. For SCF to be able to support aspects of this ambition, there will need to be a clear relation to the support of vulnerable households, vulnerable micro-enterprises or vulnerable transport users.

With regards to passenger-transport related options this refers to among others:

- Subsidised train or coach tickets for vulnerable households or transport users.
- Funding improved accessibility to trains and coaches for people with disabilities/reduced mobility.
- Multilingual guidance and signals in stations, simplified ticket sales etc.

The menu of different options for funding through SCF is based on assumptions and the information available in the Regulation. As further guidance documents and best-practice examples are planned, they will need to be drawn upon when formulating concrete measures under SCF. Additionally, the options above need to be revisited after the finalisation of the guidance on the DNSH-principle, to ensure that all options are in accordance.

5 Conclusion

This report presents an analysis of the potential for novel policy options to shift to multimodal, low-carbon mobility in the EU with the overarching objective to reduce greenhouse gas emissions in the mobility and transport sector. This study has identified and prioritised the most impactful of these novel policies to be mainstreamed across the EU and help reach the climate targets in the transport sector.

Key insights from the analysis highlight that there are already significant policy measures in place to support multimodal low-carbon mobility. At the same time, there is a clear potential for supplementary initiatives, particularly in policy areas like rural mobility, coach services, and safety regulations for active mobility.

In a next step, the study contains detailed policy options for the following areas:

- Supporting more attractive and integrated infrastructure for coach terminals for inter-urban and cross-border mobility.
- Promoting low-carbon rural mobility services with minimum standards, policy targets, and strategies.
- Promoting sustainable and safe active mobility through clear targets, indicators, and effective safety regulations.

Implementing these policies would (1) reduce emissions by shifting mobility towards low-carbon transport modes, (2) address relevant challenges identified in policy implementation/execution in the current EU policy framework, as well as (3) achieve significant co-benefits in terms of a just transition, health, and pollution reduction.

In addition to these three policy focus areas, regarding emission reductions, aviation was identified as another area deserving political attention. Aviation (both domestic and international) has the second highest share of projected transport emissions in 2040 in all scenarios of the Commission's impact assessment for the 2040 climate target. This report also recommends further analysis of the decarbonisation of passenger mobility between major cities by modal shift, for example by developing a European high-speed rail network. While not the focus of this study, our analysis supports the notion that the *Avoid* dimension could be further investigated.

In a final step, the selected policies were translated into structured and actionable measures and investments, with potential funding strategies identified under the MFF, RRF and SCF. Through funding envelopes such as CEF, ESIF funds, RRF and SCF, a multitude of possibilities exist to support solutions designed to boost multimodal low-carbon mobility. Most of the funds provide a certain room for manoeuvre for Member States to support low-carbon transport, and in principle the prioritisation of multimodality depends on their willingness and needs. Accordingly, the existing funds provide possibilities to support the novel policies suggested above but may require additional technical assistance or other support for Member States to direct the funding into targeted structural measures. The Social Climate Fund – a relatively new tool to address effects of the ETS2 on vulnerable transport users and vulnerable micro-enterprises – may prove to be a useful mechanism to supplement existing funding envelopes. Due to the specific eligibility criteria and objectives, only some aspects of the suggested policies may be feasible. This will have to be further investigated, while supporting documentation for the drafting of the Social Climate Plans is published.

Appendix A Key terms for the scope of this study

This defines a set of key terms reflecting and framing the scope of the study. Definitions are aligned with the Sustainable and Smart Mobility Strategy and the November 2023 proposal of the Combined Transport Directive.

Key terms in this study

Term	Definition in the context of the study
Novel policy	The term 'novel' policy includes initiatives or measures that have not been implemented at the EU level before, although they may have been enacted at the level of individual MS, at the local level or in non-EU countries. A policy thus qualifies as novel only if is not yet adopted, envisaged, or funded by the EU, and without contradicting existing policies. Novel, creative and new policies are used as synonyms in this report.
Creative policy	See 'novel policy'
New policy	See 'novel policy'
European Union level/ Added value of EU action	According to our understanding, relevant intermodal policies for this project include policies that can be implemented either a) directly at the EU level, or b) via EU funds either managed centrally by the EU and its institutions or jointly by EU and Member States, where low-carbon intermodal mobility objectives can be supported.
Policies supporting long-lasting greenhouse gas emission reductions	Policies that support emissions reductions for at least the next ~15 years. Due to the increased electrification of passenger road transport, the effect of policies reducing car use will become modest in the very long run. However, according to the definition proposed, policies reducing car use are within the scope of this project.
Transport	Transport primarily refers to the physical movement of people and goods from one location to another. It involves the infrastructure, vehicles, and systems that facilitate the actual transfer, focusing on the mechanistic and logistical aspects. The primary concern is the physical act of moving, encompassing various modes such as road, rail, air, maritime, and inland waterways. Each mode falls under the umbrella of transport. The focus here is on the efficient functioning of each one, addressing issues like infrastructure development, vehicle efficiency, and regulatory frameworks.
Mobility	Mobility is a broader and more holistic concept that is more closely connected to the topic of passenger transport than to freight transport. It encompasses the entire range of movements of people and goods. Beyond the physical transportation, mobility considers social and cultural factors influencing movement. It extends the scope to include land use patterns, urban design, economic and social opportunities, and user behaviours. It includes active mobility (walking, cycling), public transport, shared mobility, and private modes. Urban planning, accessibility, and societal impacts become integral components of mobility.
Multimodal transport / multimodal mobility	'Multimodality' in the transport sector, or 'multimodal transport' refers to the use of different modes (or means) of transport on the same journey. The concept applies to both freight and passenger transport and in both cases can now be driven on by the growing trend towards digitalisation. Multimodality takes advantage of the strengths of the different modes, such as convenience, speed, cost, reliability, predictability, and in combination, can offer more efficient transport solutions for people and goods which will help ease the pressure on our congested transport infrastructure, and make the whole sector more environmentally friendly, safer, and cost efficient' ¹⁸⁵ . The term multimodal mobility is used to specifically describe the movement of passengers and individuals with various modes of transportation within a single journey.
Intermodal transport	Intermodal transport involves the coordinated use of multiple modes of transportation, ensuring the seamless movement of goods across different legs of the journey. In general: 'Intermodal transport operations means the carriage of a single intermodal loading unit

¹⁸⁵ Definition according to the staff working document for the Sustainable and Smart Mobility Strategy, p.118: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020SC0331&rid=1>

	between its loading point and unloading point over two or more transport legs, where at least one leg takes place by rail, inland waterways or short sea shipping and the initial or final leg, or both, take place by road, without handling of the goods during transshipment between the different transport legs, whether or not covered by a single multimodal transport contract or consecutive mode specific transport contracts. ¹⁸⁶ Therefore, intermodal transport stands out as a distinctive type of multimodal freight transportation, where the transported goods are not handled during mode shifts, but only the loading unit changes the mode of transport.
Combined transport	Combined transport refers to a specific type of intermodal freight transportation, where operations reduce negative externalities by 40% compared to road-only operations (or, in cases of routes from islands to the mainland lacking road alternatives, by at least 40% compared to alternative maritime intermodal operations) ² . Essentially, this includes transportation operations where a significant portion is carried out by rail, inland waterways, or sea (short sea shipping), with much shorter initial and final road legs that serve as feeders for loading units between the loading/unloading points and terminals. ¹⁸⁷
Intermodal mobility	Intermodal mobility is used as an umbrella term encompassing the set of solutions within the scope of this study. This includes intermodal, multimodal and combined transport solutions, as well as multimodal mobility solutions that contribute to a modal shift, for both passenger and freight. While the term 'intermodal transport' is typically solely used in the freight context, within this report the term intermodal mobility is used to cover both passenger and freight. Intermodal mobility as it is used in this report thus encompasses the <i>Shift</i> dimension of the ASI framework.

Source: Technopolis and COWI, 2024

¹⁸⁶ Definition according to the 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, p. 22: https://transport.ec.europa.eu/document/download/9024df1d-7fd9-439d-aa57-478f336f8dc8_en?filename=COM_2023_702_1.pdf

¹⁸⁷ https://ec.europa.eu/commission/presscorner/detail/en/qanda_23_5588

Appendix B Scenario targets and transport-related assumptions

The table below summarises the reductions foreseen in each scenario as well as their transport-related assumptions.

Scenarios and transport-related assumptions

Scenario	2040 CO ₂ Emissions (MtCO ₂)	2040 Reduction vs. 2015	2040 Reduction vs. 1990	Transport-related assumptions
S1	310	69%	62%	<ul style="list-style-type: none"> - Very limited uptake of e-fuels up to 2040 which deployment is projected to accelerate after that - CO₂ standards for cars and vans: -100% vs 2021 from 2035 onwards - The CO₂ standards for HDVs establish a mandate to decrease CO₂ emissions per km from new lorries and coaches by 43% in 2030, 64% in 2035 and 90% from 2040 onwards - The minimum shares of sustainable aviation fuels (SAF), related to ReFuelEU Aviation, are 20% in 2035, 34% in 2040 - The minimum shares of synthetic aviation fuels are 5% in 2035, 10% in 2040 - FuelEU Maritime GHG intensity targets: -31% in 2040 - The IMO GHG emissions reduction target for international shipping is set at the lower end of the range (i.e. 70% GHG emissions reduction in 2040 relative to 2008)
S2	252	75%	69%	<ul style="list-style-type: none"> - It projects by 2040 a higher deployment of novel technologies such as e- fuels than S1 - Higher shift towards shared and collaborative mobility services and multimodal travel - More efficient operation of freight vehicles and delivery of goods (by optimising multimodal delivery solutions) - Higher use of intermodal freight transport - Larger uptake of renewable H2 and e-fuels - CO₂ standards for cars and vans: -100% vs 2021 from 2035 onwards - The CO₂ standards for HDVs establish a mandate to decrease CO₂ emissions per km from new lorries and coaches by 43% in 2030, 64% in 2035, 90% in 2040 (relative to the reference period 1 July 2019-30 June 2020) - The minimum shares of sustainable aviation fuels (SAF), related to ReFuelEU Aviation, are 21% in 2035 and 36% in 2040 - The minimum shares of synthetic aviation fuels are 6% in 2035, 12% in 2040 - Incentives for the deployment of zero-emissions aircraft - FuelEU Maritime GHG intensity targets: -31% in 2040 - The IMO GHG emissions reduction target for international shipping is set at the mid-point of the range (i.e. 75% GHG emissions reduction in 2040 compared to 2008)
S3	219	78%	73%	<ul style="list-style-type: none"> - Higher shift than S2 towards shared and collaborative mobility services and multimodal travel - More efficient operation of freight vehicles and delivery of goods (by optimising multimodal delivery solutions) - Higher shift towards intermodal freight transport - Larger uptake of renewable H2 and e-fuels - CO₂ standards for cars and vans: -100% vs 2021 from 2035 onwards - The CO₂ standards for HDVs establish a mandate to decrease CO₂ emissions per km from new lorries and coaches by 43% in 2030, 64% in 2035, 100% from 2040 onwards

Scenario	2040 CO ₂ Emissions (MtCO ₂)	2040 Reduction vs. 2015	2040 Reduction vs. 1990	Transport-related assumptions
				<ul style="list-style-type: none"> - The minimum shares of sustainable aviation fuels (SAF), related to ReFuelEU Aviation, are 22% in 2035 and 38% in 2040 - The minimum shares of synthetic aviation fuels are 7% in 2035, 14% in 2040 - Incentives for the deployment of zero-emissions aircraft - FuelEU Maritime GHG intensity targets: -31% in 2040 - The IMO GHG emissions reduction target for international shipping is set at the higher end of the range (i.e. 80% GHG emissions reduction in 2040 relative to 2008)
LIFE	226	Similar to S2 and S3 (Assigned as ~77.4 %)	Similar to S2 and S3 (Assigned as ~71%)	<p>Same as S3 with regards to CO₂ standards, ReFuelEU and IMO</p> <p>Stronger shift towards shared mobility, active modes and multimodal travel as well as lower aviation demand and a stronger shift to rail. The impacts foreseen are:</p> <ul style="list-style-type: none"> ->Decrease in car transport activity (pkm) by 5% in both 2040 compared to S1, S2 and S3 ->Increase in average car occupancy rate: 1.65 and 1.75 passengers/trip in 2040, respectively, compared to around 1.55 passengers/trip in both 2040 in S1, S2 and S3 ->Increase in passenger rail transport activity (pkm) in 2040 (+4% to +6%, compared to S1, S2 and S3, respectively) ->Decrease in international and domestic air transport activity (pkm): -10% in 2040 compared to S1, S2 and S3

Appendix C Policies reviewed, key policy areas and targeted solutions

We reviewed the policies pertaining to intermodal/multimodal mobility at the EU level with a view to:

- Identify the key policy areas or recurring themes in the current policy landscape
- Extract the targeted solutions supporting the shift dimension
- Extract the targeted solutions supporting the avoid dimension

This high-level analysis concluded in the identification of the following policy areas, which seem to be least addressed in the current policy context:

- Financial disincentives
- Financial incentives
- Behavioural change and information campaigns
- R&I support
- Standards and Regulations (e.g. for new mobility services)

Secondary areas, considered as prerequisites for the development of multimodality, which need reinforcement in order to achieve EU targets include the expansion of infrastructure, digital solutions, as well as collaboration and partnership development. Through our analysis, we also identified the coverage of rural mobility and related solutions as a gap. These insights and more are presented in the following table.

Overview of existing policies

Policy name	Description	Key policy areas	Targeted solution(s)
Regulatory and strategic frameworks			
Sustainable and Smart Mobility Strategy (SSMS)	Aims to establish an efficient, interconnected multimodal transport system prioritising affordable and clean transport options. Applies three approaches to all modes of transport. First, to reduce the dependence on fossil fuels by replacing existing fleets with low- and zero-emission vehicles and increasing the use of renewable and low-carbon fuels. Second, to increase the use of less-polluting modes and shift a substantial part of today's inland freight carried by road (75%) onto rail and inland waterways. And third, to internalise the external costs. Strategy milestones include:	<ul style="list-style-type: none"> - Expansion of infrastructure. - Financial (dis)incentive. - Prioritisation of low(zero)-carbon modes. - Digital solutions. - R&I support. - Standards and Regulation for New Mobility Services. 	<p><u>Shift</u></p> <p>Passenger/urban and interurban:</p> <ul style="list-style-type: none"> - Active mobility - High-speed rail expansion - Multimodal ticketing - Cycling infrastructure - Zero-emission zones - MaaS platforms, shared mobility services - Smart traffic management systems and ITS <p>Passenger/long distance:</p> <ul style="list-style-type: none"> - Cross-border rail connections, improved rail services and infrastructure upgrades <p>Freight/urban/long distance:</p> <ul style="list-style-type: none"> - Carbon pricing - Use of zero-emission vehicles for last-mile delivery, promotion of cargo bikes

	<p>->By 2030, the Commission aims to have in Europe at least 30 million zero-emission cars on the road and 100 climate-neutral cities, double high-speed rail traffic (compared to 2015), achieve carbon neutrality for scheduled, collective travel for journeys under 500 km, and ensure that automated mobility is deployed at large scale, and that zero emission marine vessels are ready for the market.</p> <p>->By 2035, zero-emission large aircraft should be market-ready.</p> <p>->By 2050, the Commission expects that in the EU, nearly all cars, vans, buses and new trucks are to be zero-emission, rail freight traffic will double and high-speed rail traffic triple, while the multimodal trans-European transport network (TEN-T) should be fully operational thus ensuring high-speed connectivity.</p>		<ul style="list-style-type: none"> - Automated deliveries and Drones - Economic incentives and performance-based measures to make cargo operations more sustainable and efficient <p><u>Avoid</u></p> <ul style="list-style-type: none"> - Promoting teleworking and videoconferencing - Promoting sustainable urban planning for active mobility
<p>Urban Agenda for the EU (Urban Mobility)</p>	<p>Addresses urban mobility via competitive, resource-efficient approaches, supporting Sustainable Urban Mobility Plans and Intelligent Transport System solutions.</p>	<ul style="list-style-type: none"> - R&I support - Collaboration and partnership development - Enabling behavioural change - Enhancing capacities - Digital solutions - Urban planning 	<p><u>Shift</u></p> <p>Passenger/urban:</p> <ul style="list-style-type: none"> - Scaling up innovative clean buses - Promoting sustainable and active mobility behaviour - Promoting car sharing clubs, ride-hailing, car-pooling and free-floating bikes, e-scooters - New mobility services including Mobility as a Service - Promoting public transport (including clean buses) and accessibility
<p>Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the regions – the new EU urban mobility framework COM (2021) 811 final</p>	<p>The new urban mobility initiative complements the proposal for revised guidelines for the Trans-European Transport Network (TEN-T revision). That proposal foresees that all major cities ('urban nodes') on that network must develop by 2025 a sustainable urban mobility plan. The new European Urban Mobility Framework outlines a common a list of measures and initiatives for these cities, as well as the remaining cities in the EU, to meet the challenge of making their mobility more sustainable.</p>	<ul style="list-style-type: none"> - Urban planning - R&I support - Digital solutions - Information campaigns - Collaboration and partnership development - Expansion of infrastructure - Prioritisation of low-carbon modes 	<p><u>Shift</u></p> <p>Passenger/urban:</p> <ul style="list-style-type: none"> - Active mobility - Public transport enhancement (urban rail, buses, trams, and ferries, supported by digital tools for real-time information and smart ticketing) - Micromobility - Passenger transport-on-demand - Multimodal passenger hubs (including park and ride facilities) - Multimodal digital mobility services such as MaaS applications - Promotion campaigns and workplace incentive schemes, supported by the necessary infrastructure investment to facilitate walking and cycling to work <p>Freight/urban:</p> <ul style="list-style-type: none"> - Development of Multimodal freight terminals <p>Freight/long distance:</p> <ul style="list-style-type: none"> - Development of multimodal freight terminals and freight consolidation centres

<p>Commission Staff Working Document EU Urban Mobility State of Play. Accompanying the document, a Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – The New EU Urban Mobility Framework SWD (2021) 470 final</p>	<p>Gives an overview of the Commission services' assessment of the challenges that urban mobility faces as well as analysis and data underpinning the new urban mobility framework.</p>	<ul style="list-style-type: none"> - Urban planning - R&I support - Digital solutions - Information campaigns - Collaboration and partnership development - Expansion of infrastructure - Prioritisation of low-carbon modes - Enabling behavioural change - Enhancing capacities 	<p><u>Shift</u> Passenger/urban:</p> <ul style="list-style-type: none"> - Car based services such as station based or free-floating car-sharing or ride hailing (taxi services) - Shared, demand responsive transport (DRT) minivans - Carpooling platforms - Micromobility: dockless (electric) two-wheelers (bikes and e-scooters), electric mopeds and other personal mobility devices - Private shuttles, especially to business parks and large employers - Traffic Management as a Service (TMaaS) helping to monitor and manage traffic for all transport modes, including parking management <p>Freight/urban:</p> <ul style="list-style-type: none"> - Urban air mobility (UAM) and commercial drone services - Intelligent and automated systems for fleet and traffic management through the integration of cooperative connected and automated mobility (CCAM) <p>Freight/long distance:</p> <ul style="list-style-type: none"> - Efficient interconnection of long distance and last mile freight transport <p><u>Avoid</u></p> <ul style="list-style-type: none"> - Urban vehicle access regulations (UVARs) discouraging unnecessary car use in city centres - Low emission zones (LEZs) - Remote work and flexible work arrangements
<p>Regulations on trucks and vehicles</p>	<p>Promotes intermodal transport through regulations enhancing its cost-effectiveness and environmental efficiency.</p>	<p>Regulatory and strategic frameworks</p>	<p><u>Shift</u> Freight (urban/long distance)/Passenger (urban/ long distance):</p> <ul style="list-style-type: none"> - Moving away from high-emission vehicles to more low-carbon solutions (buses, trucks)
<p>Revision of the Directive on Harmonised River Information Services (was expected by end of 2023)</p>	<p>As part of the sustainable and smart mobility strategy, establishes rules on the harmonised river information services (RIS) in order to ensure the safety, efficiency and environmental friendliness of inland waterways in the EU.</p>	<p>Regulatory and strategic frameworks</p>	<p><u>Shift</u> Freight (long distance):</p> <ul style="list-style-type: none"> - Incentivising moving towards inland shipping by harmonising the infrastructure of inland waterways - More environmentally friendly inland shipping harmonised information systems for inland shipping
<p>Directive (EU) 2023/2661 amending Directive 2010/40/EU on the Framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport</p>	<p>Provides a framework for the adoption of common standards and specifications in the European Union for the creation of Intelligent Transport Systems (ITS) in the field of road transport. It emphasises facilitating intermodality in the context of deploying ITS. It underscores the importance of considering the coordination of various modes of transport where appropriate when deploying ITS solutions.</p>	<ul style="list-style-type: none"> - Digital solutions - Standards and regulation for new mobility services - Collaboration and partnership development 	<p><u>Shift</u> Passenger/freight/urban/long distance:</p> <ul style="list-style-type: none"> - EU-wide multimodal digital mobility services - Road traffic information and navigation services - Mobility management services by public authorities - Enhanced traffic and incident management services - ITS for cooperative, connected, and automated mobility <p>Freight specific:</p> <ul style="list-style-type: none"> - Information and reservation services for safe and secure parking places for trucks and commercial vehicles - Development of ITS applications specifically for tracking and tracing freight - Integration of positioning results into traffic management tools and centres - Promoting the need for cargo-related data

<p>Commission Delegated Regulation (EU) 2017/1926 of 31 May 2017 supplementing Directive 2010/40/EU of the European Parliament and of the Council with regard to the provision of EU-wide multimodal travel information services</p>	<p>Establishes the necessary specifications in order to ensure that EU-wide multimodal travel information services are accurate and available across borders to ITS users.</p>	<p>- Regulatory and strategic frameworks</p>	<p><u>Shift</u> Passenger/urban/long distance: - Establishing the availability of EU-wide multimodal travel information services - Adoption of specifications and standards for reporting travel and traffic data - Covering: Coach, rail, ferry, metro, tram, bus, taxi, car-sharing, bike-sharing, bike-hire</p>
<p>COMMISSION IMPLEMENTING REGULATION (EU) 2022/1426 of 5 August 2022 laying down rules for the application of Regulation (EU) 2019/2144 of the European Parliament and of the Council as regards uniform procedures and technical specifications for the type-approval of the automated driving system (ADS) of fully automated vehicles</p>	<p>It introduces a range of mandatory advanced driver assistant systems to improve road safety. It also establishes the legal framework for the approval of driverless and automated vehicles in the EU.</p>	<p>- Digital solutions - Standards and regulation for new mobility services</p>	<p><u>Shift</u> Passenger/freight/urban: - Automated driving systems (ADS) for fully automated vehicles including: ->Vehicles designed for passenger or goods carriage within a predefined area ->'Hub-to-hub' transport, which involves vehicles designed for passenger or goods carriage on a predefined route with fixed start and end points ->Automated valet parking applications within predefined parking facilities, where the system may utilise external infrastructure (like localisation markers and perception sensors) to perform the dynamic driving task</p>
<p>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 cost-savings and generation of aggregated data</p>	<p>The Combined Transport Directive supports the shift from road freight to lower emission transport modes such as inland waterways, maritime transport, and rail. In light of the European Green Deal's call for higher ambition and the need to implement the 'polluter pays' and 'user pays' principles, this initiative will review which transport operations should be supported and which support measures would be most effective in this regard.</p>	<p>- Regulatory and strategic frameworks</p>	<p><u>Shift</u> Freight: - Providing support to a wider range of intermodal operations - Improving reporting on intermodal transport - Increasing the competitiveness of intermodal transport to reduce external costs - Improving transparency and simplifying market entry</p>

<p>Proposal for a directive amending Directive 92/106/EEC on the establishment of common rules for certain types of combined transport of goods between MS. (Withdrawn)</p>	<p>The objective of the initiative is to further increase the competitiveness of combined transport compared to long-distance road freight and therefore strengthen the shift from road freight to other modes of transport.</p>	<p>Regulatory and strategic frameworks</p>	<p><u>Shift</u> Freight/long distance: - Optimising transport system efficiency through digitalisation and greater promotion of multimodality - Implementing concrete measures outlined in the Strategy for Low-Emission Mobility - Proposing additional measures, such as the revision of the Clean Vehicles Directive and the amendment of the Combined Transport Directive</p>
<p>FuelEU Maritime Regulation 2023/1805</p>	<p>Proposes a common EU regulatory framework to increase the share of renewable and low-carbon fuels for international maritime transport without creating barriers to the Single Market. Acknowledges that efficient maritime transport connections are essential to the mobility of EU citizens.</p>	<p>- Regulatory and strategic frameworks</p>	<p>- Improve focused but includes elements of shift, as it positions maritime shipping further as a low-carbon alternative to aviation and road</p>
<p>Commission Work Programme 2023, A Union standing firm and united</p>	<p>Clear commitment to improving mobility. It acknowledges that digitalisation can be a catalyst for seamless multimodality. It also suggests the proposition of a common European mobility data space and an EU regulatory framework for hyperloop to be ready to accommodate high-speed, low-carbon transport solutions.</p>	<p>- Digital solutions - Standards and regulation for new mobility services</p>	<p><u>Shift (support)</u> - Proposal of common European mobility data space - Proposal of EU regulatory framework for hyperloop technology - Actions for the implementation of the SSMS</p>
<p>ReFuelEU Aviation Regulation 2023/2405</p>	<p>Main objective to increase both demand for and supply of sustainable aviation fuels (SAF).</p>	<p>- Regulatory and strategic frameworks</p>	<p><u>Improve (focused)</u></p>
<p>Regulation (EU) 2020/1056 of the European Parliament and of the Council of 15 July 2020 on electronic freight transport information (Text with EEA relevance)</p>	<p>Focuses on the digitalisation of freight transport information across the EU. It mandates that relevant transport information, required by legislation, must be exchangeable in electronic format between businesses and competent authorities, aiming to reduce administrative costs and enhance the efficiency of transport logistics. This regulation applies to all transport modes and is designed to support the EU's goals for a digital and efficient freight transport system by ensuring interoperability and minimising the environmental impact of transport documentation processes.</p>	<p>- Regulatory and strategic frameworks</p>	<p><u>Shift</u> - Harmonisation of transport data exchange - Lowering the administrative costs - Increasing efficiency of transport logistics</p>
<p>Greening Freight Package</p>	<p>Proposed by the European Commission on 11 July 2023, it aims to make freight transport more efficient and sustainable. The package focuses on improving rail</p>	<p>- Regulatory and strategic frameworks</p>	<p><u>Shift</u> - Encouraging a shift from road to rail freight transport: ->Optimise the utilisation of the rail network, ->Improve the quality of capacity and operations</p>

	infrastructure management, offering incentives for low-emission lorries, and providing better information on freight transport greenhouse gas emissions.		->Enhance the performance of rail transport services ->Strengthening infrastructure improvements ->Supporting digital tools for better traffic management
CountEmissionsEU proposal ((Part of Greening Freight Package))	The new regulation aims to implement a common EU framework for calculating and disclosing GHG emissions deriving from passenger and goods transport services.	- Regulatory and strategic frameworks	<u>Shift</u> Supports the shift to low-carbon modes of transport by: ->Incentivising the uptake and use of comparable GHG emission data for transport ->Encouraging the customers and businesses to reduce GHG emissions from transport services
Trans-European Transport Network (TEN-T)	Aims for a comprehensive, connected transport infrastructure network across the EU, with a focus on sustainability and tech deployment, targeted for 2030 completion of the core network.	- Infrastructure development	<u>Shift</u> - Improving connectivity in Europe by establishing a network to connect all EU regions - Supporting the establishment of a multimodal high-quality transport infrastructure Freight: - Enabling lorry transport by trains - Alternative fuel infrastructure for trucks - Increasing the number of multimodal trans-shipment hubs Passenger/long distance: - High-speed trains on main TEN-T stretches - Connection of all large airports to rail and where possible high-speed rail - Increasing the number of multimodal stations for passengers
Proposal to update the rules on rail capacity management Regulation of the European Parliament and of the Council on the use of railway infrastructure capacity in the single European railway area, amending Directive 2012/34/EU and repealing Regulation (EU) No 913/2010	Aims at boosting passenger and freight transport by rail.	- Infrastructure development	<u>Shift</u> Freight/passenger: - Incentivising the shift to rail transport by optimising efficiency and quality: ->More effective capacity management procedures in the legal framework ->Strengthened incentives to improve performance of rail infrastructure and rail transport services ->More effective mechanisms for coordination between stakeholders, particularly across borders ->Support for the deployment of digital tools enabling better capacity and traffic management
Communication from the commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of	Aims to facilitate data access, pooling and sharing for more efficient, safe, sustainable and resilient transport. It builds on initiatives and applications related to transport data and will be supported by initiatives to boost interoperability, security, and the	- Digital solutions - R&I support - Standards and regulation for new mobility services - Collaboration	<u>Shift</u> Passengers/urban/long distance: - Enabling local authorities to use data for monitoring progress towards sustainable mobility plans - Up-to-date data on cycling infrastructure and improving access to interoperable tickets across all transport modes - Informing travellers about UVARs, accessibility of infrastructure and

<p>the Regions Creation of a common European mobility data space COM(2023) 751 final</p>	<p>availability and provision of data and services.</p>	<p>and partnership development</p>	<p>transportation services for persons with disabilities, and providing real-time and dynamic information on accessibility, schedule changes, and disruptions</p> <ul style="list-style-type: none"> - Supporting the development and operation of safe, increasingly connected, automated and ultimately autonomous mobility - Management of traffic and tourist flows through multimodal and coordinated mobility services, integrating shared and micro-mobility into the public transport offer <p>Freight/urban/long distance:</p> <ul style="list-style-type: none"> - Integration and combination of different transport modes in multimodal supply chains for efficient and resilient logistics and freight transport - Enabling access to freight data and urban infrastructure data, facilitating dynamic rerouting of freight across modes, and improving estimated times of arrival (ETAs) and interchange (ETIs) - Helping port authorities to manage inland port infrastructure and assisting fleet owners and skippers in planning voyages to maximise fleet usage
<p>Advocacy, initiatives and platforms</p>			
<p>Communication from the Commission to the European parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Proposing a European Declaration on Cycling</p>	<p>It aims to unleash the full potential of cycling in the EU. This Declaration recognises cycling as one of the most sustainable, accessible and inclusive, low-cost and healthy forms of transport and recreation, and its key importance for European society and the economy.</p>	<ul style="list-style-type: none"> - Expansion of infrastructure - - Financial incentives - Digital solutions - R&I support - Standards and regulation for new mobility services - Collaboration and partnership development - Information campaigns - Enabling behavioural change - - Enhancing capacities 	<p><i>Shift</i></p> <p>Passengers/urban:</p> <ul style="list-style-type: none"> - Building safer, more extensive, and better-connected cycling paths and networks - Implementing measures to protect cyclists, including safer road designs and strict enforcement of traffic laws - Increasing financial support for cycling infrastructure and promotion through various EU funds and programmes - Encouraging innovation and growth in the cycling sector, including manufacturing and services - Facilitating the combination of cycling with other forms of transport, enhancing connectivity and accessibility (multimodal integration) - Promoting cycling as a sustainable form of tourism with economic and environmental benefits - Improving the gathering of cycling-related data for better planning and policymaking <p>Freight (sustainable urban transport of goods):</p> <ul style="list-style-type: none"> -Strengthening the role of cycle logistics in city logistics systems to enhance the efficiency and sustainability of urban goods transport -Encouraging the use of cargo bikes for parcel deliveries and shopping, thereby reducing congestion and emissions associated with traditional delivery vehicles
<p>European Cyclists' Federation (ECF)</p>	<p>The ECF is a prominent non-profit organisation that advocates for improved cycling conditions in Europe and beyond. It represents the interests of cyclists at the international, European, and national levels, aiming to promote cycling as a sustainable and healthy means of transportation and recreation. The ECF works on a wide range of issues including</p>	<p>Expansion of Infrastructure, Financial Incentives, Digital Solutions, R&I Support, Standards and Regulation for New Mobility</p>	<ul style="list-style-type: none"> - Development of the EuroVelo network - Advocacy for cycling-friendly policies - Promotion of cycling tourism - Organisation of the Velo-city conference - Implementation of safety and infrastructure projects - Cycling data collection and research

	<p>cycling infrastructure development, policy advocacy, promotion of cycling tourism (such as through the EuroVelo network), and pushing for cycling-friendly legislation and standards. Through its efforts, the ECF seeks to increase cycling's mode share, improve safety for cyclists, and contribute to the sustainability and liveability of urban environments.</p>	<p>Services, Collaboration and Partnership Development, Information Campaigns, Enabling Behavioural Change and Enhancing Capacities</p>	
<p>Alliance for Logistics Innovation through Collaboration in Europe (ALICE)</p>	<p>Develops and implements a comprehensive industry-led strategy for research, innovation and market deployment in the field of logistics and supply chain management in Europe.</p>	<ul style="list-style-type: none"> - Expansion of infrastructure - Enabling behavioural change - Enhancing capacities - Prioritisation of low-carbon modes - Digital solutions - collaboration and partnership development 	<ul style="list-style-type: none"> - Increased use of rail (working on the reasons behind the important difference on perception on those competitiveness criteria, increase rail capacity) - Support current and create new intermodal corridors/solutions - Urban mobility solutions (webinars on the combination of freight and passenger transport, collaborative urban logistics, zero emission zones and urban logistics solutions, urban space and dynamic kerbside management) - Explore the relevance of effective realisation of the fifth transport mode (hyperloop, tube transport, underground transport, etc.) for the physical internet - Increase the use of inland waterways transport - Integration of maritime and inland freight transport - Artificial intelligence - 5G applications to logistics - Data-sharing (incl. standardisation and interoperability of data-sharing applications) <p><i>Other solutions mentioned in the strategy:</i></p> <p>IoT and ITS big data and data analytics, blockchain applications to logistics, autonomous logistics operations, transshipment technology and handling of logistics units, increased use of short sea shipping and inland waterways, modular road transport, cargo bike multi-modal optimisation, and synchro-modality.</p>
<p>CIVITAS Initiative</p>	<p>Flagship programme helping the European Commission achieve its ambitious mobility and transport goals, and in turn those in the European Green Deal.</p>	<ul style="list-style-type: none"> - Prioritisation of low-carbon modes - Information campaigns - Standards and regulation for new mobility services - Expansion of infrastructure 	<ul style="list-style-type: none"> - 'Soft' measures, such as awareness raising and marketing campaigns, mobility info-points, and school and company travel plans, to complement 'hard' measures - Integrating collective (including train taxi schemes and demand-responsive transport) and shared transport services (car-sharing, ride-sharing, bike-sharing, etc.) in multimodal cities - Promoting cleaner urban freight vehicles and more efficient goods distribution: micro-depots and cargo bikes last-mile distribution - smart, sustainable, connected and shared mobility: C-ITS (cooperative intelligent transport systems, CCAM (European partnership on Connected, Cooperative and Automated Mobility), MaaS, and the use of a learning by

		<ul style="list-style-type: none"> - Digital solutions - Enabling behavioural change - Enhancing capacities 	<p>doing approach</p> <ul style="list-style-type: none"> - Involving citizens and stakeholders in planning to improve the quality and acceptance of urban mobility measures: consultations, people focused-planning approaches to ensure the measures are relevant, serve the citizens and are accepted (behaviours)
EU Urban Mobility Observatory	Facilitates the exchange of information, knowledge and experience in the field of sustainable urban mobility in Europe.	<ul style="list-style-type: none"> - Enabling behavioural change - Enhancing capacities - Prioritisation of low-carbon modes - Expansion of infrastructure - Digital solutions 	<ul style="list-style-type: none"> - Provides reference materials to empower towns and cities to develop a Sustainable Urban Mobility Planning. (https://transport.ec.europa.eu/transport-themes/urban-transport/sustainable-urban-mobility-planning-and-monitoring_en) - Based on eight principles, including of interest to the study the need to involve citizens and stakeholders, developing all transport modes in an integrated manner https://urban-mobility-observatory.transport.ec.europa.eu/document/download/87adaa0c-cd13-4ce0-9a15-d138ea31bb2c_en?filename=sump_guidelines_2019_second%20edition.pdf) <p><i>Case studies deal with:</i></p> <ul style="list-style-type: none"> - Autonomous and connected vehicles - Collective passenger transport - Intermodality - Public and stakeholder involvement - Shared mobility - Urban vehicle access regulations - Walking and cycling
EIT Urban Mobility (Urban mobility living labs and test beds)	Initiative of the European Institute of Innovation and Technology working to encourage positive changes in the way people move around cities in order to make them more liveable places.	<ul style="list-style-type: none"> - Enabling behavioural change - Enhancing capacities - Digital solutions - R&I support - Prioritisation of low-carbon modes - Expansion of infrastructure - Standards and regulation for new mobility services 	<p><i>EIT urban actions include:</i></p> <ul style="list-style-type: none"> - Trainings on AI in urban mobility - Trainings on mobility data spaces - Doctoral training network: PhD students can connect with international peers during the DTN Annual Forum (see page 21) as well as build connections with industry, city governments and international mobility providers through international placements of up to six months. - Urban mobility consultancy: access to a pool of doctoral students and recent graduates specialised in the field of urban mobility, sustainability and energy to cities, start-ups, SMEs and other organisations - Valuable insights and develop customised solutions tailored to the specific needs of organisations that aim to innovate - Running pilots, accelerating time to market and scaling solutions - Competition for start-ups/SMEs - Projects to support SMEs to enter into commercial relations with cities, transport operators, logistics, mobility providers, etc. <p><i>Expected impacts:</i></p> <ul style="list-style-type: none"> - Contribute to knowledge infrastructure, enabling the effective and safe creation, distribution, and maintenance of knowledge, information and data, (e.g. MaaS platforms)

			<ul style="list-style-type: none"> - Enable, encourage, or practice the creation and distribution of data, information, or knowledge (e.g. transport planning and optimisation software); autonomy software; route and freight optimisation and management software - Offer data-driven solutions that help decision-makers optimise routes, reduce transit times and enhance resource allocation, overall improving transportation and logistics efficiency - Promote sustainable active mobility solutions, such as biking and walking - Indirectly improve human relationships through mobility services like car-sharing and electric scooter rentals
Digital Transport and Logistics Forum (DTLF)	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.	<ul style="list-style-type: none"> - Digital solutions - Standards and regulation for new mobility services 	<p>The DTLF's overall objective is full-scale digital interoperability and data exchange in a shared, secured and trusted transport and logistics dataspace. For this purpose, the DTLF splits currently into two strands of work organised under two subgroups, including one that interests us: Corridor freight information systems.</p> <p><i>Objective:</i></p> <ul style="list-style-type: none"> - Create a common framework for information sharing in multimodal transport and logistics chains. This dataspace will integrate existing or emerging platforms into a federated network, allowing all private and public players to easily connect and share data in a neutral and trusted environment. The idea is to enable full supply chain visibility, thus triggering innovation, supporting cost reduction, and contributing to societal challenges like safety, security, and sustainability. - By 2022, the Subgroup 2 experts will develop technical specification for the data-sharing framework and prepare relevant implementation guidelines from a public and private sector perspective.
Funding and financial support			
EU funding instruments: Social Climate Fund (SCF); Innovation Fund; Connecting Europe Facility (CEF); Horizon Europe; Regional and cohesion policy (ERDF, CF, Interreg); Recovery and Resilience Facility (RRF); InvestEU	These instruments provide multifaceted financial support targeting various aspects of low-carbon intermodal mobility, from infrastructure to technology development and deployment, and aiding citizens and SMEs in adopting sustainable mobility.	<ul style="list-style-type: none"> - Funding and financial support 	<ul style="list-style-type: none"> - Innovation fund: providing funding to decarbonisation projects in the field of transport (various) - CEF: funding the TEN-T development and CEF digital solutions - Cohesion policy funds: providing funding for avoid, shift and improve dimension for urban/regional development, infrastructure, digital solutions, and jobs/skills development
EU Taxonomy for Green Financing	Supports financial products supporting sustainable transformation.	<ul style="list-style-type: none"> - Funding and financial support 	Substantial contribution criteria for transport activities ensure contribution of transport investments to decarbonisation.
Revision of the Energy Taxation Directive (ETD)	The rules it lays down support and complement other initiatives in the EU's July 2021 package in support of the EU's climate targets by ensuring that the taxation of motor and heating fuels, and	<ul style="list-style-type: none"> - Funding and financial support 	<p><i>Shift support:</i></p> <ul style="list-style-type: none"> - Introducing higher taxation for inefficient and polluting fuels - Removing disadvantages for clean technologies - Reviewing tax reductions and exemptions for fossil fuels

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	electricity in the EU reflects their impact on the environment and on our health.		
ETS and SCF	Facilitates demand change for low-carbon mobility by setting a carbon price and assists adaptation through SCF financing.	- Funding and financial support	ETS 2 incentivises the shift to low-carbon alternatives by including road transport into the ETS. Fuel suppliers will be obliged to purchase allowances.

Appendix D Literature

Passenger mobility

Name of publication	Year	Organisation/Author	Link
All aboard – travelling Europe by night: Towards cheaper night train tickets for people	2023	Transport & Environment	https://www.transportenvironment.org/discover/new-study-solo-travelers-could-save-up-to-20-on-the-cost-of-night-train-tickets-in-europe/
Amsterdam Schiphol Can't Reduce Summer 2023 Flights After Court Ruling	2023	Simple Flying	https://simpleflying.com/court-rules-amsterdam-schiphol-cant-cut-summer-2023-flights/
Bestandsaufnahme zu den Auswirkungen von Fernbusreisen auf Verkehrsentwicklung und Emissionen in Deutschland	2018	UBA	https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/2018-04-26_texte_33-2018_vergleich_verkehrstraeger_fernbusse_teil3.pdf
Boosting passenger preference for rail	2022	UIC	https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/boosting-passenger-preference-for-rail
Changing tracks: identifying and tackling bottlenecks in European rail passenger transport	2022	Witlox et al.	https://etr.springeropen.com/articles/10.1186/s12544-022-00530-9
Cities call for improved regulation of foreign drivers in UVARs	2023	POLIS	https://www.polisnetwork.eu/news/polis-calls-for-improved-regulation-of-foreign-drivers-in-uvars/
Contribution to a European Cycling Declaration	2023	POLIS	https://www.polisnetwork.eu/wp-content/uploads/2023/07/20230711_POLIS_Letter-European-Cycling-Declaration.pdf
Cross-Border Public Transport Services	2023	2Celsius and Climate Analytics	https://wise-europa.eu/wp-content/uploads/2024/06/2celsius_horizpaper_cbpt.pdf
Envisioning Tourism in 2030 and Beyond. The changing shape of tourism in a decarbonising world.	2023	The Travel Foundation	https://www.thetravelfoundation.org.uk/envision2030/
Equitable bike share means building better places for people to ride	2016	National Association of City Transportation Officials	https://nacto.org/wp-content/uploads/2016/07/NACTO_Equitable_Bikeshare_Means_Bike_Lanes.pdf
European Declaration on Cycling	2023	European Commission	https://transport.ec.europa.eu/document/download/60033b3b-0652-495c-add3-ffea2388ff81_en?filename=European_Declaration_on_Cycling_text.pdf
European rail: more central than ever	2021	FSR	https://fsr.eui.eu/publications/?handle=1814/73549
How foreign registered vehicles get away with it	2024	Eurocities	https://eurocities.eu/latest/how-foreign-registered-vehicles-get-away-with-it/

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Impact assessment on Regulation (EC) No 1073/2009	2017	European Commission	https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52017SC0358&from=FR
In search of sustainable and inclusive mobility solutions for rural area	2022	Poltimäe et al.	https://etrr.springeropen.com/articles/10.1186/s12544-022-00536-3
Innovations for Better Rural Mobility	2021	ITF	https://www.itf-oecd.org/innovations-better-rural-mobility
Joint letter: We can make travelling by rail cheaper by reducing rail tolls	2024	ALLRAIL	https://www.allrail.eu/policies/joint-letter-we-can-make-travelling/
Liberalised bus services has created a new demand for transport in France (Arafer survey)	2017	ARAFER	https://www.autorite-transport.fr/wp-content/uploads/2017/02/Press-release-Arafer-Bus-survey.pdf
Methodology for GHG Efficiency of Transport Modes	2020	EEA	https://www.isi.fraunhofer.de/content/dam/isi/dokumente/ccn/2021/Methodology%20for%20GHG%20Efficiency%20of%20Transport%20Modes.pdf
Mobi-mix and the need for a guide on shared mobility – From vision to implementation	2022	POLIS	https://www.polisnetwork.eu/wp-content/uploads/2022/12/MOBI-MIX-Guide-Final-Version-4.pdf
Modal shift: the moment of truth	2022	FSR	https://fsr.eui.eu/publications/?handle=1814/74040
New rules for better rail capacity management	2023	FSR	https://fsr.eui.eu/publications/?handle=1814/76024
Opening national and international Markets for Bus and Coach Services COM(2017) 647	2018	Centrum für Europäische Politik	https://www.cep.eu/fileadmin/user_upload/cep.eu/Analysen/COM_2017_647_Oeffnung_der_Busverkehrsmaerkte/cepPolicyBrief_COM_2017__647_Opening_Markets_for_Bus_and_Coach_services.pdf
Pathways to a multimodal lifestyle: reinforcing public transport with active and micromobility	2023	UITP	https://cms.uitp.org/wp/wp-content/uploads/2023/10/Policy-Brief-Pathway-to-Multimodal-Oct-2023.pdf
Policy Recommendations for Sustainable Shared Mobility and Public Transport in European rural areas	2021	SMARTA	https://ruralsharedmobility.eu/wp-content/uploads/2021/03/Smarta-Policy-Recommendations_Final-Version_web.pdf
Re-shaping urban mobility – Key to Europe’s green transition	2022	Tsavachidis & Le Petit	https://www.sciencedirect.com/science/article/pii/S2667091722000024
Regulation (EC) No 1073/2009 on common rules for access to the international market for coach and bus services	2009	European Parliament	https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009R1073
Safe, smart, and green: Boosting European passenger rail’s modal share	2021	Ott et al.	https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/safe-smart-and-green-boosting-european-passenger-rails-modal-share#
Study to support the impact assessment for the revision of Regulation (EC) No 1071/2009 and Regulation (EC) No 1072/2009	2017	European Commission	https://transport.ec.europa.eu/document/download/b2dc2b3d-93c7-46f2-8df6-054e9c1c0a1e_en?filename=2017-04-support-study-ia-revision-haulage.pdf

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The Economic Impacts of Road Tolls	2017	Transport & Environment	https://www.transportenvironment.org/wp-content/uploads/2021/07/2017_04_road_tolls_report_briefing.pdf
The Relationship Between Bicycles and Traffic Safety for all Road Users	2014	Jasmine Stitt	https://www.researchgate.net/publication/323368548_The_Relationship_Between_Bicycles_and_Traffic_Safety_for_all_Road_Users
The rural mobility challenge for public transport: How combined mobility can help	2022	UITP	https://cms.uitp.org/wp/wp-content/uploads/2022/02/Knowledge-Brief-Rural-Mobility_FEB2022-web.pdf
Think local, act European Contribution to the development of the New EU Urban Mobility Framework	2021	POLIS	https://www.polisnetwork.eu/wp-content/uploads/2021/09/New-Urban-Mobility-Framework-POLIS.pdf
Ticket prices of planes vs trains	2023	Greenpeace	https://www.greenpeace.de/publikationen/report-ticket-prices-of-planes-vs-trains-in-europe.pdf
Time for the EU to press ahead on the cycling declaration	2023	Eurocities	https://eurocities.eu/resources/time-for-the-eu-to-press-ahead-on-the-cycling-declaration/
Traffic Calming Strategies	2024	Global Designing Cities Initiative	https://globaldesigningcities.org/publication/global-street-design-guide/designing-streets-people/designing-for-motorists/traffic-calming-strategies/
Transforming Transport to Ensure Tomorrow's Mobility	2017	Agora Verkehrswende	https://www.agora-verkehrswende.de/fileadmin/Projekte/2017/12_Thesen/Agora-Verkehrswende-12-Insights_EN_WEB.pdf
What we can learn from five naturalistic field experiments that failed to shift commuter behaviour	2020	Kristal & Whillans	https://www.nature.com/articles/s41562-019-0795-z

Freight transport

Name of publication	Year	Organisation/Author	Link
All aboard – travelling Europe by night: Towards cheaper night train tickets for people	2023	Transport & Environment	https://www.transportenvironment.org/discover/new-study-solo-travelers-could-save-up-to-20-on-the-cost-of-night-train-tickets-in-europe/
Intermodal Freight Transport – EU still far from getting freight off the road	2023	European Court of Auditors (ECA)	https://www.eca.europa.eu/Lists/ECADocuments/SR-2023-08/SR-2023-08_EN.pdf
Analysis of the barriers to multimodal freight transport and their mitigation strategies	2023	Karam, A., Klejs Jensen, A. et al.	
Comparative evaluation of transshipment technologies for intermodal transport and their cost	2022	European Commission, Directorate-General for Mobility and Transport	https://op.europa.eu/en/publication-detail/-/publication/d37790ea-b6ef-11ec-b6f4-01aa75ed71a1
State aid in the rail, inland waterway and multimodal transport sector	2023	European Commission – EUR LEX	https://eur-lex.europa.eu/EN/legal-content/summary/state-aid-in-the-rail-inland-waterway-and-multimodal-transport-sector.html
Public policy instruments to promote freight modal shift in Europe: evidence from evaluations	2023	Takman, J., & Gonzalez-Aregall, M.	https://www.tandfonline.com/doi/full/10.1080/01441647.2023.2279219
The Governance of Rail Freight Corridors	2021	FSR Transport	https://cadmus.eui.eu/bitstream/handle/1814/69796/PB_2021_03_FSR.pdf?sequence=1&isAllowed=y
Improving European Rail Freight	2018	FSR Transport	https://cadmus.eui.eu/bitstream/handle/1814/56704/PB_2018_10.pdf?sequence=1&isAllowed=y
Fostering the Railway Sector through the European Green Deal	2020	European Union Agency for Railways	https://www.era.europa.eu/system/files/2022-09/Report%20-%20Fostering%20the%20railway%20sector%20through%20the%20European%20Green%20Deal.pdf?t=1715773675
Cross-border Rail Transport Potential	2022	European Union Agency for Railways	
Briefing – Revision of the Combined Transport Directive	2023	EPRS	https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747446/EPRS_BRI(2023)747446_EN.pdf
Mode Choice Freight Transport	2022	ITF-OECD	https://www.itf-oecd.org/sites/default/files/docs/mode-choice-freight-transport.pdf
Traffic and Modal Shift Optimisation in the EU – Summary of the Study	2023	FERRMED	https://ferrmed.com/wp-content/uploads/2023/11/FERRMED-study-summary-1.pdf

Appendix E Policy rating

The following criteria were used for the rating:

- **Effectiveness:** This criterion evaluates the policy's potential impact. This includes the scale of greenhouse gas emission reductions, the scope of the policy, implementation timelines, and the expected longevity of the policy's impact. The goal of reducing greenhouse gas emissions in a timely and lasting manner is a central objective in the context of low-carbon intermodal mobility solutions. Assessing effectiveness thus helps prioritise policies that contribute significantly to this goal.
- **Efficiency/Targeting:** This examines the resources used to achieve the results, while minimising deadweight effects¹⁸⁸. Efficient policies are cost-effective and result in a more targeted allocation of resources.
- **Innovativeness:** This assesses the degree of novelty or innovation within the policy. It can be measured by assessing the prevalence of these policies in the Member States or at the local level, as well as the degree to which novel policy elements are included in the regulation design. Additionally, a policy may represent a novel combination of already existing policies. Innovation within policies is important as it leads to more effective and sustainable solutions to achieve emissions reductions in the transport sector.
- **Technical feasibility:** This criterion assesses the practicality of implementing a policy, including considerations related to administrative burden, monitoring costs, and expected compliance levels. Policies must be technically feasible to be successfully implemented and achieve their intended outcomes. While a fully-fledged analysis of technical feasibility is outside the scope of the analysis with the High-level Scoring Table, a rough categorisation of administrative burden and expected compliance can be inferred by, for example, analysing the target group of the policy (very targeted vs. broad scope), as well as the type of the policy (e.g. regulation that needs to be monitored vs. incentive scheme that is offered).
- **Social justice:** This examines the impact of a policy on the accessibility and mobility of vulnerable groups. It assesses whether the policy promotes equitable access to low-carbon intermodal mobility solutions. Ensuring that policies do not disproportionately disadvantage vulnerable groups is essential for promoting social equity and inclusivity in mobility solutions.

¹⁸⁸ Deadweight effects refer to a potential loss of total welfare or the social surplus often resulting from factors such as taxation, government subsidies, price ceilings or floors, external effects, and monopoly pricing.

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			Criteria	Effectiveness			
			Subcriteria	Expected impact on GHG emissions reductions	Scope (transport modes addressed, emitters addressed)	Timely/Required time to implementation	Long-lasting change
Policy	Policy focus area	Score (weighted)	Explanation	1 = Minor emission reduction 2 = Rather minor emission reductions 3 = Significant emission reductions 4 = Very substantial emission reductions Policy should be rated relative to other policies targeting similar policy focus areas (i.e. passenger rail, coaches, rural mobility, long-distance freight, urban)	1 = Very small scope (few modal options, few mobility participants addressed, emission intensive modes not addressed) 2 = Limited scope (some modal options, some mobility participants addressed, emission intensive modes somewhat addressed) 3 = Significant scope (main modal options, main mobility participants addressed, emission intensive modes partly addressed) 4 = Very substantial scope (many modal options, many mobility participants addressed, many emission-intensive modes addressed)	1 = Long time frame until implementation 2 = Relatively long timeframe until implementation 3 = Rather short time required until implementation 4 = Very short frame until implementation or instant implementation possible => Clarification: Time required for the policy to have an impact on emissions	1 = Short-lived effects 2 = Effect tends to fade with time 3 = Effect tends to last with minor fading over time 4 = Effect lasts over time with no or very limited fading
			Weight	0,2	0,08	0,12	0,12
Linking EU regional funding to rural mobility policies + providing dedicated assistance	Rural mobility	2,8	Rating	4	4	1	3
		2,8	Explanation	Policy could have significant indirect impacts if it triggers a significant expansion of rural policies. At the same time, it needs to be assured that tailored and efficient measures are being supported. Not every policy and project is appropriate. Hence, monitoring and guidance is key to effectively use the funding for rural mobility.	Rural policies could potentially target a wide range of modes and participants	Policy is indirect (after implementation at EU level, planning will have to happen at MS/regional level, before actual measures can be implemented) => will probably take some time (borderline 1-2)	Depends on quality of strategies implemented, but in principle it can be expected that resulting changes will be structural/long-lasting (borderline 3-4)
Promoting the development of Sustainable Regional Mobility Plans (SRMPs)	Rural mobility	2,8	Rating	4	4	1	3
		2,9	Explanation	Very dependent on how many SRMPs are actually created/implemented, which in turn depends on how the policy is formulated (EU recommendation vs. compliance mechanism forcing MS to create SRMPs) => High variance, scoring needs to be revisited potentially depending on final formulation of the policy (borderline 3-4)	Rural policies could potentially target a wide range of modes and participants	Policy is indirect (after implementation at EU level, planning will have to happen at MS/regional level, before actual measures can be implemented) => will probably take some time (borderline 1-2)	Depends on quality of strategies implemented, but in principle it can be expected that resulting changes will be structural/long-lasting (borderline 3-4)
Promoting target-bound rural mobility policies	Rural mobility	3,0	Rating	4	4	1	4
		3,1	Explanation	Policy could have significant indirect impacts if it triggers a significant expansion of rural policies due to ambitious target setting.	Dedicated targets and ambitions for low-carbon mobility in rural areas can potentially target a wide range of modes and participants.	Policy is indirect (after implementation at EU level, planning will have to happen at MS/regional level, before actual measures can be implemented) => will probably take some time (borderline 1-2)	Depends on quality of targets implemented, but in principle it can be expected that resulting changes will be structural/long-lasting (borderline 3-4)
Promoting the adaptation of effective local legal frameworks to foster low-carbon mobility in rural areas	Rural mobility	2,9	Rating	3	3	3	4
		3,0	Explanation	Policy could have significant indirect impacts if it triggers a significant improvement in multimodal mobility options in rural areas. E.g. actors such as smaller operators and community transport services are able to provide their services and fill mobility gaps in rural areas.	Better legal frameworks could potentially target a wide range of modes and participants.	Legal frameworks can be relatively easily at the local level with support from the EU level; concrete changes	After implementing more suitable legal frameworks, it's reasonable to anticipate that their impact will amplify over time, allowing more providers to identify and address gaps in the market. Once established, these frameworks should maintain their effectiveness without experiencing significant diminishing effects.
EU-wide market opening of national long-distance coach markets	Coaches	3,3	Rating	3	-Excluded from rating since all coach policies only target coaches	3	4
		2,9	Explanation	A revision of Regulation 1073/2009 would impact countries such as Romania, Bulgaria, Croatia, Greece, the Baltics and Spain / ~1/4 of the EU. Magnitude of effect depends on level of existing coach services in these countries (borderline 3-4)		Depending on the political willingness, it could be implemented relatively quickly, since it could build on an existing COM proposal (borderline 3-4)	Market opening will have long-lasting effects
Establishing an EU-wide definition of coach terminals	Coaches	3,3	Rating	3	-Excluded from rating since all coach policies only target coaches	2	4
		2,9	Explanation	Issue of coach terminals major issue identified in expert workshop		First standards have to be defined, then implemented into national law (borderline 2-3)	Once minimum standards are set, they are there to stay (and can be updated in the future)

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			Efficiency	Degree of novelty/Innovation	Technical feasibility	Social Justice	
			Cost-efficiency of resources/ deadweight effects	Innovativeness	Administrative burden/ Monitoring costs	Expected compliance/implementation risk	Accessibility for/targeting of vulnerable groups
Policy	Policy focus area	Score (weighted)	1 = Low cost-efficiency / high risk of deadweight effects 2 = Moderate cost-efficiency / moderate risk of deadweight effects 3 = High cost-efficiency / low risk of deadweight effects 4 = Very high cost-efficiency / minimal risk of deadweight effects For cost-efficiency, we consider the total cost for the public (i.e. EU spending, as well as national/regional funds spent or admin effort)	1 = Policy mostly established, limited new features, limited new mechanisms 2 = Policy rather established, some new features, some new mechanisms 3 = Policy rather uncommon, some new features, some new mechanisms 4 = Policy very innovative, many new features, many new mechanisms	1 = High burden 2 = Rather high burden 3 = Rather low burden 4 = Low burden We consider the total administrative burden (both for the EU and the MS/regions)	1 = Very little compliance expected 2 = Limited compliance expected 3 = Some compliance expected 4 = High compliance expected For a support measure/subsidy, compliance means how many people/administrations/organisations are expected to take advantage of the policy	1 = Vulnerable groups rather excluded/disadvantaged in access 2 = Vulnerable groups may be excluded/disadvantaged in access 3 = Vulnerable groups tend to have better access than other participants 4 = Policy specifically targets vulnerable groups/vulnerable groups have better access than other participants
			0,08	0,12	0,08	0,12	0,08
Linking EU regional funding to rural mobility policies + providing dedicated assistance	Rural mobility	2,8 2,8	3 Very little costs for EU (change of rules); administrative costs for planning at the MS/regional level; actual costs of measures depends on policies that will be implemented (borderline 3-4)	3 Few regional policies exist at the moment => Can be expected to trigger innovative policies	3 Depending on formulation of policy (soft encouragement vs. mandate for all MS), administrative burden could be rather high	2 Unclear how much compliance can be expected => Is incentive from regional development funds alone large enough to trigger development of rural policies?	2 Depends very much on the policies developed by MS/regions
Promoting the development of Sustainable Regional Mobility Plans (SRMPs)	Rural mobility	2,8 2,9	3 Very little costs for EU (change of rules); administrative costs for planning at the MS/regional level; actual costs of measures depends on policies that will be implemented (borderline 3-4)	3 Few regional policies exist at the moment => Can be expected to trigger innovative policies	2 Depending on formulation of policy (soft encouragement vs. mandate for all MS), administrative burden could be rather high	3 Depends on formulation of policy (soft encouragement vs. mandate for all MS) => if it becomes an EU mandate, compliance is expected to be higher	2 Depends very much on the policies developed by MS/regions
Promoting target-bound rural mobility policies	Rural mobility	3,0 3,1	3 Very little costs for EU (change of rules); administrative costs for planning at the MS/regional level; actual costs of measures depends on policies that will be implemented to reach the defined targets (borderline 3-4)	3 Few regional policies exist at the moment => Can be expected to trigger innovative policies	2 Depending on formulation of policy (soft encouragement vs. mandate for all MS), administrative burden could be rather high (such as monitoring and evaluating)	3 Depends on formulation of policy (soft encouragement vs. mandate for all MS) => if it becomes an EU mandate, compliance is expected to be higher	3 Depends very much on the targets developed by MS/regions. It is reasonable to anticipate that policies such as minimum access targets to public transport are likely to benefit households without cars.
Promoting the adaptation of effective local legal frameworks to foster low-carbon mobility in rural areas	Rural mobility	2,9 3,0	2 Depending on the formulation, relatively high costs for the EU, such as providing guidance and evaluating, mentoring legal frameworks. Very little costs for local level (change of rules).	3 Policy would represent a novel approach to address rural mobility and can be expected to trigger innovative mobility services and operator constellations.	2 Depending on the formulation, relatively high administrative burden for the EU, such as providing guidance and evaluating, monitoring legal frameworks. Very little costs for local level (change of rules).	3 Depends on the formulation of the policy, but for interested actors, compliance is expected to be high. Once more established, the legal adaptation can be seen as a good practice and	3 Depends very much on the policies developed by MS/regions. However, it can be expected that a better legal framework will lead to more efficient and hence more affordable mobility services which is especially relevant for low-income households.
EU-wide market opening of national long-distance coach markets	Coaches	3,3 2,9	4 Costs are very low (no subsidies required); potentially some novel funding model for PSO system such as in Spain will be required.	1 Revision of existing policy, which has already been proposed in the past	4 Regulation needs to be adopted, no larger monitoring costs	4 For clearly formulated regulation, high compliance can be expected	3 Depends on effects of policy => If it lowers ticket prices for coach travels altogether, then positive effects.
Establishing an EU-wide definition of coach terminals	Coaches	3,3 2,9	4 Costs mainly borne by private actors, or by municipalities constructing the infrastructure.	3 EU-wide definition of coach terminals/minimum standards don't exist so far	4 Admin costs should be limited	3	3 Indirectly affects vulnerable groups, since coaches are used predominantly by less affluent groups (students, pensioners)

Novel policy ideas for a shift to low-carbon mobility

		Criteria	Effectiveness				
		Subcriteria	Expected impact on GHG emissions reductions	Scope (transport modes addressed, emitters addressed)	Timely/Required time to implementation	Long-lasting change	
Policy	Policy focus area	Score (weighted)	Explanation				
			1 = Minor emission reduction 2 = Rather minor emission reductions 3 = Significant emission reductions 4 = Very substantial emission reductions Policy should be rated relative to other policies targeting similar policy focus areas (i.e. passenger rail, coaches, rural mobility, long-distance freight, urban)	1 = Very small scope (few modal options, few mobility participants addressed, emission intensive modes not addressed) 2 = Limited scope (some modal options, some mobility participants addressed, emission intensive modes somewhat addressed) 3 = Significant scope (main modal options, main mobility participants addressed, emission intensive modes partly addressed) 4 = Very substantial scope (many modal options, many mobility participants addressed, many emission-intensive modes addressed)	1 = Long time frame until implementation 2 = Relatively long timeframe until implementation 3 = Rather short time required until implementation 4 = Very short frame until implementation or instant implementation possible => Clarification: Time required for the policy to have an impact on emissions	1 = Short-lived effects 2 = Effect tends to fade with time 3 = Effect tends to last with minor fading over time 4 = Effect lasts over time with no or very limited fading	
		Weight	0,2	0,08	0,12	0,12	
Supporting more attractive and integrated infrastructure for bus and coach terminals	Coaches	2,9 2,5	Rating Explanation	2 Issue of coach terminals major issue identified in expert workshop - but possibly impact somewhat smaller than an EU-wide definition/minimum standards (borderline 2-3)	3 -Excluded from rating since all coach policies only target coaches	3 Funding can be adjusted relatively quickly	3 Depends on availability of funding - if limited, effects may fade over time (borderline 2-3)
Targeted support for infrastructure bottlenecks	Passenger Rail	2,3 2,4	Rating Explanation	3 Will lead to long-term emission reductions by increasing the operational efficiency of train tracks, and making them more attractive/accessible to passengers.	3 Is expected to induce a shift from private cars/flights to rail	3 Infrastructure projects are time and budget intensive.	4 When implemented, the infrastructure improvements are expected to have long-term effects
Dedicated subsidies for public transport tickets	Passenger Rail	2,4 2,3	Rating Explanation	1 Studies of existing schemes show that the GHG savings generated by the shift are rather low	3 Leads to a shift from car - train; short distance flights-train (if long-distance trains are part of the scheme).	4 Studies show that the implementation happened fairly quickly	2 Difficult to assess. Behavioral changes, may counteract some of the benefits. Some studies show that also a positive long-term behavioural change may be induced. Highly dependent on funding being available in the long term, as well as additional funds to expand services to meet increasing demand.
Limiting airport capacity (combine with 34, frame positively)	Passenger Rail	3,0 2,8	Rating Explanation	4 Limiting airport capacity is expected to increase ticket prices of flights and therefore induce a modal shift to rail.	3 Induces a shift from emission intensive aviation to rail/coaches (but not from car to rail)	3 Will need to be embedded in long-term infrastructure plans.	3 Long term effect expected (as long as policy is upheld), other unintended external factors may have an impact.
Adapting rail access charges to the occupation rate of trains	Passenger Rail/Pricing	2,9 2,9	Rating Explanation	3 The emission reduction potential is twofold. On the one hand, the adapted access charges would lead to higher emissions saving per capita due to the higher occupation of trains. On the other hand rail, capacity can be freed to accommodate more trains for both freight and passenger, ultimately leading to a higher modal shift. (borderline 3-4)	3 If effective, this could have a significant impact on the modal shift share for both passenger and freight transport.	3 After the policy adoption rail access charges by operators would have to be adapted across Europe.	3 Effect is expected to last for a long time, but could be outbalanced by other market dynamics.

Novel policy ideas for a shift to low-carbon mobility

		Efficiency	Degree of novelty/Innovation	Technical feasibility		Social justice
		Cost-efficiency of resources/ deadweight effects	Innovativeness	Administrative burden/ Monitoring costs	Expected compliance/implementation risk	Accessibility for/targeting of vulnerable groups
Policy	Policy focus area	Score (weighted)				
		0,08	0,12	0,08	0,12	0,08
Supporting more attractive and integrated infrastructure for bus and coach terminals (combine with line 20)	Coaches	2,9 3	3	4	2	3
		2,5	Some deadweight effects can be expected for funding policies	Admin costs should be limited	Limited compliance, since it is a carrot measure	Indirectly affects vulnerable groups, since coaches are used predominantly by less affluent groups (students, pensioners)
Targeted support for infrastructure bottlenecks	Passenger	2,3 3	1	1	2	3
	Rail	2,4	Infrastructure projects can turn out to be more expensive than expected, experience challenges in the implementation. But public funding in the implementation. Comparable recommendations have been made in the past, e.g. by the ERA and by the ECA.	The needs assessment+technical assistance+funds absorption and implementation involve high administrative burdens.	Projects implemented through EU funds may experience compliance issues	In the long-term better connectivity and affordable, attractive rail-transport benefits all societal groups.
Dedicated subsidies for public transport tickets	Passenger	2,4 1	2	3	2	4
	Rail	2,3	The CO2 abatement cost for most of the ticketing schemes is very high. Subsidised flat-fare ticketing schemes already exist in Germany, Austria, Luxembourg, Estonia.	The ticket is a flat-fare, therefore the sales and administration are rather straight forward. In federalist member states, the financing split may lead to additional administrative efforts.	no compliance issues identified. However, the number of additional subscribers is comparatively low (borderline 2-3)	High benefits for vulnerable groups have been identified by studies. The ticketing schemes ease the access to mobility for all.
Limiting airport capacity (combine with 34, frame positively)	Passenger	3,0 4	4	2	3	
	Rail	2,8	There are no immediate major costs for the implementation of the policy, apart from potential negative medium/long-term economic effects. Radical new policy, which is unprecedented (also compared to other sectors)	Infrastructure plans in the whole EU would need to be monitored, to assess whether investments increase the capacity of airports or not.	Compliance issues may occur, as the definition of capacity increase may be questioned in MS.	Policy doesn't affect vulnerable groups very much, since the majority of the population (those with lower income) does not fly. However, it also does not explicitly support
Adapting rail access charges to the occupation rate of trains	Passenger	2,9 3	1	3	4	3
	Rail/Pricing	2,9	Only the legislative changes and implementation by infrastructure operators need to be accounted for. The administrative costs are therefore expected to be moderate. Concept already exists to a certain extent in Germany, Switzerland, Netherlands, Sweden.	the implementation would probably require additional monitoring to adapt the charges according to trains. Costs expected to be limited	no immediate compliance issues identified	Would lead to additional capacity for trains, and increase connectivity. This would benefit all societal groups.

Novel policy ideas for a shift to low-carbon mobility

			Effectiveness			
			Expected impact on GHG emissions reductions	Scope (transport modes addressed, emitters addressed)	Timely/Required time to implementation	Long-lasting change
Policy	Policy focus area	Score (weighted)	1 = Minor emission reduction 2 = Rather minor emission reductions 3 = Significant emission reductions 4 = Very substantial emission reductions	1 = Very small scope (few modal options, few mobility participants addressed, emission intensive modes not addressed) 2 = Limited scope (some modal options, some mobility participants addressed, emission intensive modes somewhat addressed) 3 = Significant scope (main modal options, main mobility participants addressed, emission intensive modes partly addressed) 4 = Very substantial scope (many modal options, many mobility participants addressed, many emission-intensive modes addressed)	1 = Long time frame until implementation 2 = Relatively long timeframe until implementation 3 = Rather short time required until implementation 4 = Very short frame until implementation or instant implementation possible	1 = Short-lived effects 2 = Effect tends to fade with time 3 = Effect tends to last with minor fading over time 4 = Effect lasts over time with no or very limited fading
			Policy should be rated relative to other policies targeting similar policy focus areas (i.e. passenger rail, coaches, rural mobility, long-distance freight, urban)	=> Clarification: Time required for the policy to have an impact on emissions		
			0,2	0,08	0,12	0,12
EU-wide tax alignments for aviation	Pricing	3,4	4	3	3	4
			3,1	Expected to have a very high impact on prices and thus demand for aviation. Is revenues are partly used to fund rail infrastructure, the policy would give a double dividend.	Targets the most emission intensive mode (aviation) in favour of a low-emission mode (Rail).	In principle, can be introduced relatively quickly. However, depends on political will.
Obligatory minimum road tolls	Pricing	3,0	3	3	2	4
			3,0	High effect for the countries where policy is implemented. Since several countries already have road tolls in place, the overall effect would be somewhat limited. However, as cars are responsible for most emissions, effects still expected to be significant (3-4).	Targets the mode currently responsible for most emissions (cars)	Infrastructure to introduce tolls would have to be built in some cases
Promoting the phase-out of fossil fuel subsidies	Pricing	3,0	4	4	2	4
			3,0	Expected to have a very high impact, if fossil fuel subsidies are phased out altogether	Fossil fuel subsidies exist across modes, therefore high impact expected	Phase-out will probably not happen overnight, thus it will take time until the policy is fully effective
Support of synchromodality approaches	Long-distance Freight	3,0	3	4	2	4
			2,7	Supporting synchromodality is expected to increase reliability of and trust in rail/IWW transport and accordingly lead to a shift from road transport to rail/IWW	Addresses a shift from road transport to rail/IWW.	Systems and infrastructure to support this will require time for implementation.
[Targeted subsidies for modal shift infrastructure]	Long-distance Freight	2,9	3	4	1	4
			2,6	Increases the capacity for modal shifts.	Involves all low-carbon modes, and helps to shift from road- rail and IWW	Infrastructure projects are time and budget intensive.
Quantitative binding targets for share of intermodal freight in Member States	Long-distance Freight	3,0	4	4	1	4
			2,8	Depending on the height of the target, the emission reductions could be very significant.	This would address the whole range of freight transport.	The policy would need long time for implementation, as time for implementation by MS will need to be granted.
EU funding/support for long-distance cycling infrastructure	Active Mobility/Rural mobility	2,6	2	2	2	4
			2,5	Secure cycling infrastructure is a crucial precondition to move people towards active modes of mobility. However, the share of people that can be convinced to switch to a bicycle for their daily (work) trips is probably limited.	Directed at (potential) cyclists	Can be implemented relatively easily at the EU level, however the planning and implementing of the infrastructure at the local level will take some time.
Indirect promotion of active mobility through safety and pollution regulation	Active Mobility	3,1	3	3	3	4
			3,1	Safe infrastructure is a prerequisite for increasing the share of active mobility and making it an effective and convenient mode of transport.	This policy is aimed at a wide range of mobility options and a wide target group. Particularly in the urban context, active mobility can significantly replace the use of the private car, leading to a significant reduction in emissions.	Improving the safety of active transport modes can be relatively straightforward. For example, normal traffic lanes can be converted into cycle lanes without any major infrastructure investment.

Novel policy ideas for a shift to low-carbon mobility

			Efficiency	Degree of novelty/innovation	Technical feasibility	Social justice	
Policy	Policy focus area	Score (weighted)	Cost-efficiency of resources/ deadweight effects	Innovativeness	Administrative burden/ Monitoring costs	Expected compliance/implementation risk	Accessibility for/targeting of vulnerable groups
			1 = Low cost-efficiency / high risk of deadweight effects 2 = Moderate cost-efficiency / moderate risk of deadweight effects 3 = High cost-efficiency / low risk of deadweight effects 4 = Very high cost-efficiency / minimal risk of deadweight effects	1 = Policy mostly established, limited new features, limited new mechanisms 2 = Policy rather established, some new features, some new mechanisms 3 = Policy rather uncommon, some new features, some new mechanisms 4 = Policy very innovative, many new features, many new mechanisms	1 = High burden 2 = Rather high burden 3 = Rather low burden 4 = Low burden We consider the total administrative burden (both for the EU and the MS/regions)	1 = very little compliance expected 2 = Limited compliance expected 3 = Some compliance expected 4 = High compliance expected For a support measure/subsidy, compliance means how many people/administrations/organisations are	1 = vulnerable groups rather excluded/disadvantaged in access 2 = Vulnerable groups may be excluded/disadvantaged in access 3 = Vulnerable groups tend to have better access than other participants 4 = Policy specifically targets vulnerable groups/vulnerable groups have better access
			0,08	0,12	0,08	0,12	0,08
EU-wide tax alignments for aviation	Pricing	3,4	3,1	1	4	4	
			Only political will/political costs required	Has been discussed for a long time already, so far to no avail. Existing initiative at the EU level	Minimal costs can be expected	Full compliance can be expected	Policy doesn't affect vulnerable groups -- no rating
Obligatory minimum road tolls	Pricing	3,0	3	2	3	4	3
			3,0 Some countries already either have car tolls in place, or (less effective) vignettes	Policy exists in several MS already	Some costs for the additional infrastructure (although this is by far outweighed by the additional funds raised) (borderline 2-3)	Full compliance can be expected	More vulnerable groups may be dependent on cars. On the other hand, funds can be used for targeted support for vulnerable groups (2-3)
Promoting the phase-out of fossil fuel subsidies	Pricing	3,0	4	2	3	2	2
			3,0 Only political will/political costs required.	Economists have been calling for this for a long time, although so far without success.	Would require some monitoring at EU level to ensure compliance	MS can be expected to be creative in hiding fossil fuel subsidies	Vulnerable groups typically benefit from fossil fuel subsidies.
Support of synchromodality approaches	Long-distance Freight	3,0	3	2	3	3	
			2,7 Difficult to assess. But in theory the investments are more digitalisation rather than infrastructure heavy.	boosting synchromodality and using the physical internet has already been mentioned in some of the existing transport strategies.	As this would be embedded in existing EU funds, no high additional admin/monitoring costs are expected.	as the funds have existing structures and mechanisms, no additional compliance issues are expected.	No impact expected as this is purely freight related
[Targeted subsidies for modal shift infrastructure]	Long-distance Freight	2,9	3	1	3	4	
			2,6 Infrastructure investments are high, but are also expected to deliver on the long-term promotion of modal shifts.	Investments in this field have been made in the past, although with varying success.	The subsidies anchored in existing envelopes would not induce significant additional admin costs. New envelopes may induce additional costs.	no compliance issues identified	No impact expected as this is purely freight related
Quantitative binding targets for share of intermodal freight in Member States	Long-distance Freight	3,0	4	4	1	2	
			2,8 Costs of implementing the law from the EU-budget are considered low. Costs for being able to comply in Member States will however be	New and radical policy	Implementation burden for MS is high. Monitoring for EU-institutions are also expected to be high.	Compliance issues may occur for MS, as the implementation will be investment-intensive	No impact expected as this is purely freight related
EU funding/support for long-distance cycling infrastructure	Active Mobility/Rural mobility	2,6	3	2	3	2	3
			2,5 Relatively high costs for providing and maintaining infrastructure	Not exactly a radical innovation	Very limited admin burden, although planning for cycling infrastructure will require resources	Depends on whether formulated as a soft measure or a hard measure	Low-income households tend to have less money for buying a car => Could profit more from alternative infrastructure (uncertain - tbc)
Indirect promotion of active mobility through safety and pollution regulation	Active Mobility	3,1	4	3	3	2	3
			3,1 The costs of implementing the legislation from the EU budget are considered to be low. However, the cost of compliance in Member States may be high.	There are no clear targets and definitions of safety standards across EU Member States. But with Vision Zero, the idea of a safe mobility system is not completely new.	Very limited administrative burden, although planning for future safe infrastructure will require resources.	Depends on whether formulated as a soft measure (more funding) or a hard measure (regulation/directive) (borderline 2-3)	Low-income households tend to have less money to buy a car => could benefit more from alternative infrastructure (uncertain - tbc)

Appendix F Workshop information

Key findings of the workshop

The main findings from the workshop include:

- For **passenger rail and rail freight**, the discussion underlined the importance of competition and noted the more advanced liberalisation of freight transport compared to passenger transport. Despite growing demand, rail infrastructure is shrinking, especially outside the high-speed sector, and needs to be used efficiently, such as maximising the capacity of passenger and freight trains through the expansion of digital signalling tools. Recognising the challenges and costs associated with rail infrastructure construction and maintenance, the experts suggested prioritising rail for heavy axle loads, improving load factors and expanding infrastructure where feasible. They identified a lack of balance in investment, with more funds going to road than rail, and recommended policies to support cost competitiveness and intermodal transport, while expressing mixed views on binding modal shift targets.
- For **long-distance coach services**, participants agreed on the need for policies to improve coach terminals, targeting the uneven quality and access. They noted that current terminals were often unattractive and poorly connected. Recommendations included the establishment of EU guidelines for coach terminals to improve the customer experience, the integration of new technologies, and the improvement of intermodal connections. The revision of the TEN-T Regulation was seen as an opportunity to address terminal issues. Opinions were divided on market liberalisation, with some supporting EU-wide free access to national bus markets and others favouring country-specific decisions.
- On **rural mobility**, experts supported the proposed measures. They emphasised the need for a solid infrastructure base and the importance of national involvement in SRMPs. The development of walking and cycling infrastructure, especially for e-bikes, was considered crucial. To address the policy gap in rural mobility, the workshop called for EU support in capacity management, data collection, exchange of best practices, and creation of flexible regulatory frameworks. The discussion highlighted the intersection of rural mobility with broader rural development, emphasising integrated planning around public transport and setting binding targets to reduce vehicle kilometres travelled as a means of reducing greenhouse gas emissions. The green transition was linked to social equity, suggesting that improving rural mobility could foster community building and rebuild trust in shared mobility solutions.

Overview of the workshop

The workshop consisted of two main parts: A presentation and discussion of the key results of the study to that point, focusing on the results of the gap analysis and the relevant solutions facilitating a shift to low-carbon passenger and freight transport. Thematic breakout rooms were then used to discuss the proposed policy options in detail. For the breakout rooms, three specific thematic areas were chosen based on two criteria, namely (a) their relevance and in particular their potential to decrease emissions in transport, as well as (b) a critical potential for supplementary policies.

The three thematic areas discussed in parallel breakout sessions were described as follows to participants:

Long-distance rail (passenger + freight): Which action to make it the backbone of long-distance transport? Exploring additional EU policies to promote a more effective, reliable, and appealing long-distance rail service for both passenger and freight transport. The EU's Sustainable and Smart Mobility Strategy outlines its commitment to promoting rail as a primary

mode for long-distance transport. In particular, the EU aims to increase passenger rail usage, with the specific target of tripling high-speed rail traffic by 2050. However, despite these ambitions, the share of cross-border passenger rail traffic remains stagnant at 7%. Many challenges hindering the increase in rail transport shares relate to insufficient infrastructure and interoperability, which affects both passenger and freight rail transport.

The future of coach services: What's the role of the EU to promote long-distance bus travel?

Exploring additional EU policy options to develop an EU-wide network and infrastructure for long-distance bus services. Coaches currently receive relatively little political attention or sometimes political pushback. Accordingly, buses and coaches are the only mode where kilometres travelled are decreasing. At the same time, depending on the occupancy rate, coaches can have the lowest emissions of all modes for long-distance travel. Moreover, the expansion of infrastructure is less of a concern than for rail, since the existing road infrastructure can be used.

Low-carbon mobility in rural areas: How can the EU foster the establishment of a multimodal transportation system in rural regions?

Exploring additional EU policies to promote the potential of smart mobility solution such as public transport, mobility as a service and active modes to form a coherent mobility network and infrastructure for rural areas. In contrast to urban mobility, the legal and financial framework for rural mobility still lacks effective policies and responsibilities. So far, there are no dedicated EU-wide policies and targets for rural mobility, such as sustainable regional mobility plans (the equivalent to sustainable urban mobility plans). Aside from considerations of a just transitions, rural areas matter in terms of emissions: Around two-thirds of passenger-kilometres for short-distance car trips are currently made for non-urban trips.

Time: Tuesday, 7 May 2024, 10:00 – 12:00

Participants: see below

Agenda:

Time	Content
10:00 – 10:15	Welcome and introduction by DG CLIMA (panel)
10:15 – 10:30	Presentation of methodological scope and key results of the study (panel)
10:30 – 11:30	<p>Parallel sessions: Discussion of policy proposals on rail, coaches and rural mobility (3 parallel breakout rooms)</p> <ul style="list-style-type: none"> • Presentation of key findings of the study and proposed policies • Discussion of (a) Policies suggested by the study; (b) Further challenges/policy gaps not yet covered and corresponding additional policies
11:30 – 12:00	<p>Discussion, wrap-up and next steps of the study (panel)</p> <ul style="list-style-type: none"> • Panel discussion: Overall focus of the study and type of proposed policies • Conclusion and next steps concerning the project

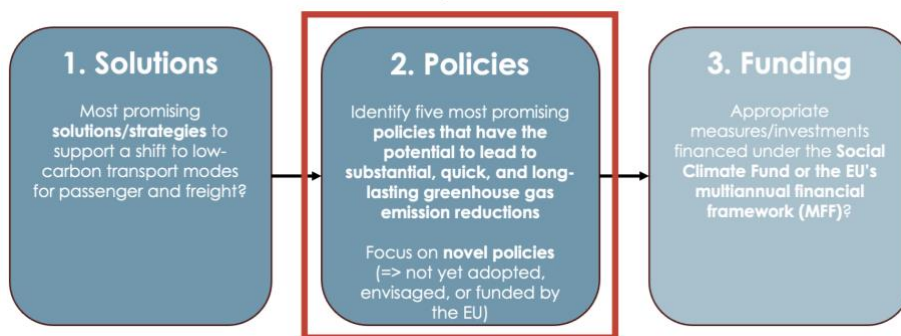
1. Welcome and introduction by DG CLIMA

- Short introduction of the experts, including their preferred EU-policy to enhance the shift towards low-carbon multimodal mobility. Policies named by the experts included:
 - Fair and efficient pricing across transport modes
 - The enhancement of train systems for combined transport
 - The rollout of the Trans-European Transport Network (TEN-T)

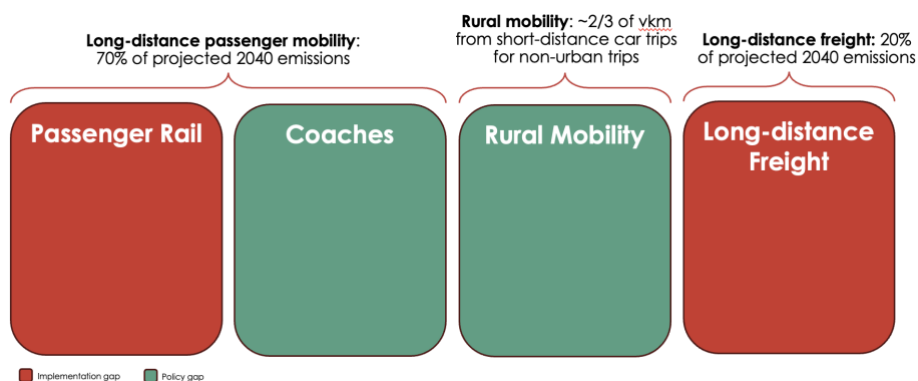
- Door-to-door booking for rail and coaches (one single platform)
- Development of rural mobility policies to reduce car mobility
- More support to multimodality (MaaS), policies reducing car dependency
- A socially just transition with affordable mobility options
- An increased consideration and integration of coach transport in mobility policies
- More support from the EU to transition to coaches
- A true European single market for coaches
- More competition rather than cooperation in rail transport

2. Presentation of methodological scope and key results of the study

- The focus of this workshop was on the discussion of novel policies:



- The thematic breakout sessions were derived from the most important policy focus areas, identified in the course of this project.



3. Parallel sessions: Discussion of policy proposals on rail, coaches and rural mobility

3.1. Passenger and freight rail

3.1.1 Feedback on the proposed policies

- Competition is an important part of this industry segment. Right now, the relevant rail market share is only 1/3, and passenger transport still has a long way to go. Rail-freight mainly serves transport across long-distances. Participants mentioned in this context that the liberalisation of freight rail is significantly more advanced than that of passenger rail transport.
- While the demand for transport services on rail is increasing, infrastructure is shrinking (with the exception of high-speed railway). It is therefore important to understand the physical

constraints of the existing rail network. At the same time, the rail network should be prioritised for the most suitable applications, e.g. transporting heavy axels on rail instead of on road.

- Constructing rail infrastructure is difficult and expensive. Therefore, there is a need to become more efficient, for instance by increasing the capacity of passenger trains, longer/double deck, especially on high-congested lines. There is also room to increase the load factor of freight trains.
- The potential to increase night trains to replace aviation is limited. Studies show that the storage track space needed is not sufficient to accommodate all night trains as a meaningful substitution for aviation.
- There is an imbalance of infrastructure investments in Member States: more investments in road than in rail infrastructure.
- Policies are needed to support cost-competitiveness and to foster intermodal transport competition. The need to enable competition was highlighted by all participants, in contrast to the need for subsidies.
- With regards to the policy suggestion on binding targets for modal shift, some participants disagreed, whereas others seemed to prioritise different policy suggestions.

3.1.2 Additional key aspects and potential policies

- In addition to the list of policy suggestions, participants stressed the need for policies targeting the following aspects:
 - Regulating the improved utilisation of existing infrastructure/rolling stock assets
 - Improving the information infrastructure on rail traffic: EFTI does only provide limited value
 - Improving the quality and distribution of intermodal hubs between transport modes
 - Linking the improvement of intermodal hubs complementarily to the de-prioritisation of investments in other high-carbon modes of transport (intermodal hubs instead of airports)
 - Assessing and evaluation the behavioural dimension more thoroughly: what is important to passengers – time, cost, comfort?
- Further stimulating/supporting market liberalisation of rail across the EU
- Accelerating the completion of TEN-T network for rail

3.2. Long-distance coach services

3.2.1 Feedback on the proposed policies

Coach terminals

- There was consensus that coach terminals are a very important topic. There is a huge variability in terms of quality, quantity and access to terminals:
 - Coach stations are often not very appealing/do not feel very safe
 - Paris is closing its main coach station (Paris Bercy), in many other cities terminals are moved to the outskirts

Vehicle access regulations such as traffic circulation plans or low-emission zones are increasingly introduced by cities; these may be an obstacle to coaches (i.e. some cities are introducing zero-emission zones before there is a large-scale rollout of electric coaches)

- Guidelines or minimum standards from the EU for coach terminals (EU regulation) would be important (common European definition of coach terminals):
 - The customer experience and service quality should be similar to that of airports
- Bus infrastructure (in particular coach terminals) needs to be adapted to new technologies (such as batteries or the availability for hydrogen chargers):
 - Currently, new buses sometimes cannot enter the terminals (e.g. in Madrid, zero-emission buses cannot go in the terminals)
- A good intermodal connection of coach terminals (with railway, tube, train etc.) is very important:
 - There are good practice examples in Spain and the UK for newly built or rebuilt terminals that are not in the city centre, but very multimodal (with trains, taxis, buses etc. that bring to the city centre)
- Future revisions of the TEN-T Regulation may be used as an entry point for terminal regulation (>400 cities will need to have a multimodal passenger hub, and a SUMP):
 - The TEN-T Regulation refers to coaches in relation to access to multimodal hubs and alternatively fuelled infrastructure at multimodal hubs
 - The revision also provides a definition of multimodal hubs
 - Financial instruments such as CEF or the CIVITAS programme may support the implementation of the TEN-T revision (such as the multimodal hubs)

Market liberalisation

- The Commission has proposed a revision of Regulation (EU) 1073/2009 on common rules for access to the international market for coach and bus services (COM(2017) 647). The proposal is on hold in the Council (working party on land transport), and seems unlikely to make further progress.
- There were conflicting views on the question of an EU-wide free access to national coach service markets, as proposed by COM(2017) 647:
 - Some participants were in favour of enforcing further market opening by the EU, others argued that each country should decide which system serves their needs best
 - In 2018, the IRU published a [position paper](#) in response to COM(2017) 647
- Due to time constraints, the issue of market liberalisation was not discussed in further detail.

3.2.2 Additional key aspects and potential policies

- There was agreement that coaches do not currently receive enough attention in the EU's policy agenda. The EU should integrate to a larger extent coach transport in mobility policies.
- Increased competition from coaches may also have positive knock-on effects for competing modes. The examples of France and Germany show that competition from the coach market also gave railway an incentive to change.
- The French regulatory authorities collect a lot of data from the operators, which leads to a very good overview of the coach market. This could be a model to learn from for the EU.

3.3. Rural mobility

3.3.1 Feedback on the proposed policies

- All experts agreed with the formulation of the suggested policies.
- However, concerns were raised regarding policy 4 concerning the use of public-private partnerships for Mobility as Service (MaaS) operators. It was noted that the concept of MaaS is inherently abstract, complex, and ambiguous, rendering the policy somewhat unclear. Additionally, MaaS may represent too ambitious a goal at this stage, given its emphasis on digital solutions that integrate various mobility options into a single service (such as public MaaS schemes). The experts underscored the importance of first establishing a robust infrastructure and providing necessary services, from quality mass public transport as regional and subregional backbone to more tailored and local services such as demand responsive transport (DRT).
- Furthermore, it was stressed that to enhance the potential of sustainable regional mobility plans (SRMPs) there can be a lot to learn from valuable insights with urban mobility plans (SUMP). The focus for SUMP has been predominantly at the local level, particularly in terms of funding and planning, while overlooking the significance of national involvement. The experts emphasised that a comprehensive national policy framework and governance structure are essential and should be supported by the EU. The EU should make sure that the national level is effectively integrated into the SRMP process.
- It was agreed that the development of safe and user-friendly walking and cycling infrastructure is crucial, especially for e-bikes that can cover longer distances and replace cars on shorter trips – i.e. a targeted approach that links villages, schools, main services among themselves and with main public transport stops and hubs.
- The first three policies were seen as a higher priority.

3.3.2 Additional key aspects and potential policies

- It was noted that there is a need to address the policy gap in rural mobility. The EU should facilitate a comprehensive debate across Member States regarding rural mobility and take a leading role in advancing policy development:
 - The EU's added value would be in supporting Member States and local authorities with aspects such as capacity management, competencies such as data collection, and the exchange of best practices
 - Discussing technical and legal shortcomings in legislation and frameworks is particularly important; legal frameworks must remain flexible to adapt to local needs

Concrete EU action with added value:

- Supporting the development of rural mobility policies at Member State level by:
 - Enabling regions and local governments to effectively plan and rapidly implement integrated measures fit for the local context (this is not only limited to transport supply but also smart land use measures with great potential)
 - Creating and enabling legal framework for regions and local governments
 - Supporting companies etc. to plan and implement complementary measures to help their employees and visitors to shift to sustainable mobility
- Sharing of experience, capacity building, and communication towards the public for raising awareness
- Investments and funding schemes to support the shift from a car-dependent system to a sustainable multimodal system

- Rural mobility is not solely a matter of transport; it intersects with rural development. It is a cross-sectoral issue involving DG MOVE, CLIMA, and AGRI. Thus, rural mobility should be incorporated into broader rural development planning.
- Integrated planning (especially inverse car-centred regional development with different layers of mobility) is crucial to put the decarbonisation of the rural mobility sector in focus. Land-use development should be reorientated around public transport corridors and hubs:
 - This requires dedicated governance and capacity building at the local and regional level as well as significant investments so that alternatives to car use are affordable
 - VKT needs to become the core metric for rural areas with mandatory targets to reduce VKT, thereby directly reducing GHG emissions; shared mobility is an essential element to reducing VKT, but so too is restoring services in rural areas so people do not need to travel so far, so often
- At the end, it was pointed out that a green transition and a just transition go hand-in-hand. Supporting regional mobility is a way of community-building. Rebuilding trust between people is a prerequisite to shared mobility. Thus, co-benefits are clearly to be gained by thinking regional mobility from a social equality perspective.

4. Discussion, wrap-up and next steps of the study

- Panel discussion: Overall focus of the study and type of proposed policies:
 - In general, consensus was reached regarding the relevance of the proposed policy focus areas and identified policies in advancing the transition towards low-carbon multimodal mobility
 - Additional considerations were highlighted:
 - Regarding rail transport, synchro-modality was named as an important aspect necessitating clear signals from the EU to provide operators with planning certainty
 - Both rail and coach transport require improved intermodal hubs to facilitate seamless transitions between ground transport modes, extending beyond the conventional emphasis on airports as primary intermodal hubs
 - With regard to rural mobility, it was emphasised that the EU should take a proactive role at the Member State level, acting as an advocate and driving forward the development of an appropriate framework for rural mobility
 - Furthermore, there was a call for increased focus on policy forecasting of forthcoming regulations, particularly in evaluating the impact of specific measures such as the establishment of new terminals
 - Overall, it was underscored that the behavioural dimension should be considered, including factors such as user decision-making processes, including factors such as cost considerations, comfort, and time efficiency
- Conclusion and next steps concerning the project:
 - The next steps of the project were outlined, including the eventual selection and in-depth analysis of the most promising five novel policies
 - Following these analyses, a dedicated exploration of potential funding options was also undertaken.

5. List of participants

Experts:

Name	Organisation	Session
Akos Ersek	International Union for Road-Rail Combined Transport	Rail
Henrik Sylvan	Technical University of Denmark	Rail
Nick Brooks	ALLRAIL	Rail
Torben Holvad	European Union Agency for Railways	Rail
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