Position Paper

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Railway contribution to the EU climate target for 2040

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Summary

CER Position Paper underlines that European railways are a key to tackle EU decarbonisation challenge in the next two decades and asking the EU policy makers to facilitate a regulatory framework by cost-effectively reducing emissions in transport. CER and member companies are ready to support the Commission impact assessment with technical inputs and further expertise.

- With its Fit for 55 package the EU is scheduled to agree on key climate and energy legislation. It is now time to fully implement carbon pricing under the EU Emissions Trading System (ETS), the use of ETS revenues, including pre allocation of future revenues for decarbonising transport such as contribution to a long-term investment plan for railway infrastructure for the next two decades.
- Railways, both at the company level and at sectorial, have put forward their ambitious decarbonisation strategies to further reduce carbon footprint and improve their energy efficiency throughout their operations.
- CER calls for the Commission to set a legally binding GHG reduction target for the transport sector. It is crucial to reverse the trend and reduce transport GHG emissions by at least 65% by 2040 compared to 1990 levels.
- Today's policies need to be enhanced to enable progress towards achieving EU's climate and energy goals in transport. Zero-emission rail transport should serve as the backbone of a multimodal transport system.

1. Introduction

Community of European Railways and Infrastructure Companies (CER) welcomes the work of the Commission on a new impact assessment, which will inform the legislative proposal on setting the 2040 climate target.

Climate science clearly states that greenhouse gas (GHG) emissions need to be reduced to limit global warming to 1.5°C above pre-industrial levels. The United Nations called for "massively fast-track climate efforts" during the publication of the latest report by the Intergovernmental Panel on Climate Change on March 2023. The developed countries must commit to reaching net zero as close as possible to 2040. No climate ambition is possible without urgently addressing GHG emissions in transport, which followed an increasing trend since 2013 with the exception of 2020 due to the COVID-19 pandemic restrictions on mobility. According to the European Environment Agency the GHG emissions from transport already rebound in 2021 with an increase of 8% compared to 2020, but they remain 7% below the 2019 levels. EU's report card for reducing transport GHG emissions is nevertheless poor since transport emissions in 2021 were 15% higher than in 1990 baseline. Railways together with domestic navigation are the only exemptions with decreased GHG emissions since 1990.

In its latest Transport Outlook, the International Transport Forum (ITF) warned that the current policies in place will not make enough difference to deliver against the Paris Agreement goals. ITF Outlook also noted that the decoupling of transport activity and GHG emissions must happen sooner in all regions and transport sectors. This is why acceleration of EU's climate ambition for 2030-2040 need to take into account the international co-operation to achieve global decarbonisation goals. For the EU, it will be crucial to implement the Fit for 55 package in the next years, while seeking an acceleration of EU's climate ambition for 2040 as proposed by the European Scientific Advisory Board on Climate Change.

2. Further decarbonisation of railways

Railways, both at the company level and at sectorial, have put forward their ambitious decarbonisation strategies to further reduce GHG footprint and improve their energy efficiency throughout their operations. European railways represented by CER and the International Union of Railways (UIC) in their long-term strategy Moving Towards Sustainable Mobility already pledged for their climate mitigation, while increasing volumes of rail traffic towards 2030 and 2050. Railway operators will further improve their energy efficiency by an estimated 5% from today to 2030 and further 20% until 2050 in order to halve specific energy consumption by 2050 compared to 2005 levels. Railways are committed to reduce their specific average CO_2e emissions from train operation by 50% by 2030 compared to base year 2005 measured per passenger-km (passenger service) and gross tonne-km (freight service). By 2030, the European railways will also reduce their total CO2e emissions from train operation by 30% in absolute terms compared to base year 2005. The European railways will strive towards carbon-free train operation by 2050 the latest, majority already by 2040, and provide society with a climate neutral transport alternative by taking the following actions:

- Electrification of the rail network
- Modernisation of the vehicle fleet
- Deployment of renewable energy sources
- Utilisation of alternative propulsion technologies and fuels such as hydrogen and biofuels

- Energy efficiency improvements such as regenerative braking and energy efficient driving

Approximately 60% of Europe's railway network is electrified and already more than 80% of the total railway operation is using electricity. Especially in urban areas rail is the only transport mode that is almost completely electrified offering recovery of large amounts of the energy used during rail operation to be fed back into the grid. There are no technical obstacles to continue with rail electrification but a positive cost benefit analysis is needed to address low-density lines to justify carbon savings through electrification. On non-electrified lines there are alternative propulsion technologies already in use. Battery electric and hybrid vehicles offer the possibility to operate using electricity and battery. Integrated battery systems can be charged from regenerative braking when running on electrified lines and at terminal stations.

Hydrogen is also considered zero emission alternative technology for passenger and freight rail. Experimentation of hydrogen fuel cell trains already started with regional lines. A hydrogen-driven fuel, ammonia is an attractive alternative for rail since it is easier to transport and store but requires research and development. Both solutions need to fulfil sustainability criteria so that they are produced without emissions.

Advanced biofuels such as 2nd generation HVO (hydrotreated vegetable oils) are among the available options to decarbonise rail transport in the short to medium term. Diesel rail fleet could easily be converted to biofuels to substitute carbon-intensive diesel. HVO is produced exclusively from biological residues and waste materials and produces around 90% fewer GHG emissions than conventional diesel but requires investments e.g. in refuelling stations.

Almost two-thirds of total energy consumed in railways comes from renewable sources and more than half of railway companies have in place a target for renewable energy that is constantly monitored. The current energy crisis shows how important it is for security of energy supply and costs for not depending on imported fossil fuels. Railway companies already have expertise in power purchase agreement and have more potentials to deploy renewable energy (solar and wind) in the railway system.

3. Recommendation for policy makers

CER calls for the Commission to set a legally binding GHG reduction target for the transport sector. It is crucial to reverse the trend and reduce transport GHG emissions by at least 65% by 2040 compared to 1990 levels. In transport sector today's policies need to be enhanced to enable progress towards achieving this target. Zero-emission public transport and rail freight should serve as the backbone of a multimodal transport system.

Low-carbon railway infrastructure need to be massively developed in the next years. The revision of EU's Trans-European Transport Network Guidelines shall require Member States to fully electrify the railway infrastructure of the core network by December 2030 and extended core network by December 2040. Member States shall also aim to support the decarbonisation of transport through fleet that is powered by alternative and renewable fuels.

As pointed by the Net Zero by 2050 roadmap of the International Energy Agency (IEA), high-speed rail (HSR) will play a crucial role in decarbonising transport emissions. Investing in a comprehensive European HSR network will deliver added value to European society and massively reduce the environmental footprint of European passenger transport, especially given the projected increase in demand for regional and intercity

transport. Europe's Rail JU in 2023 studied a development of a HSR master plan in Europe and accession countries. Such comprehensive HSR network require investment costs averaging to €550 billion to triple the existing HSR network but in return deliver a net positive benefit in the range of €750 billion to European citizens[1].

While seeking for technological improvements, carbon price under the EU Emissions Trading System but also through the Energy Taxation Directive should make clean alternatives more attractive. The recent reform of the ETS Directive needs to be fully implemented to impose a comparable carbon price for all transport modes. Railways, being already highly electrified is paying the full ETS price. Aviation will be paying in the near future. Road emissions under the parallel ETS will start with a relatively lower carbon price. In return, ETS revenues and ETS funds must be spent for low-carbon transportation investments, including railway projects. EU's new carbon budget should go hand in hand with a climate budget. Future ETS revenues should be credited for a long-term financing plan for railway projects. Such plan at the EU level need to be coordinated among Member States and include both public and private funding. The new Railway State Aid Guidelines and the EU Taxonomy on climate change together with the EU multiannual financial framework should facilitate decarbonisation through providing strong incentives for modal shift to rail.

The mandatory exemption of kerosene taxation of aviation both for passenger and freight has to end. If, as is currently planned, freight aviation continues to be exempted, taxation of fuels used in rail freight should also be exempted. The current rules in the Energy Taxation Directive on volume-based taxation of energy need to change by carbon-intensity of fuels and promote electricity or HVO in railways.

Behaviour change remains one of the key pillars of decarbonisation. IEA has assessed the impact of behavioural changes by introducing measures by focussing on three key areas: keeping business travel to 2019 levels; capping long-haul flights (of more than 6 hours) for leisure at 2019 levels; and shifting demand HSR. As for road emissions, speed limits, congestion pricing, distance-based vehicle insurance and registration fees and parking rules and fees have been named as effective measures. CER calls for the Commission to guide Member States to implement such a comprehensive and ambitious policy mix. To this end, CER long time calls for a mandatory carbon labelling in transport services. The forthcoming proposal on the EU CountEmissions EU provides an excellent opportunity to have a EU harmonised calculator to be used for all modes to report energy-driven GHG emissions to incentivise transport users to make sustainable choices in their travel.

Climate target for 2040 could also consider the role of estimating and reporting avoided GHG emissions. European railways underline the importance of quantifying GHG savings and external costs in decarbonisation and the ecological transition. Carbon accounting should also be applicable to transport services. CER requests the Commission to guide the transport sector towards a credible methodology to quantify GHG savings and further develop incentives to phase out fossil fuels in transport.

[1] Smart and affordable rail services in the EU: a socio-economic and environmental study for High-Speed in 2030 and 2050 https://rail-research.europa.eu/publications/smart-and-affordable-rail-services-in-the-eu-a-socio-economic-and-environmental-study-for-high-speed-in-2030-and-2050/

About CER

The Community of European Railway and Infrastructure Companies (CER) brings together railway undertakings, their national associations as well as infrastructure managers and vehicle leasing companies. The membership is made up of long-established bodies, new entrants and both private and public enterprises, representing 78% of the rail network length, 81% of the rail freight business and about 94% of rail passenger operations in EU, EFTA and EU accession countries. CER represents the interests of its members towards EU policy makers and transport stakeholders, advocating rail as the backbone of a competitive and sustainable transport system in Europe. For more information, visit www.cer.be or follow us on Twitter @CER_railways or LinkedIn.