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LEVERAGING THE EU EMISSIONS TRADING SYSTEM TO FUND RAILWAY PROJECTS: AN ECONOMIC PERSPECTIVE

Università della Svizzera Italiana (USI)/Scuola universitaria professionale della Svizzera italiana (SUPSI)
Lugano 10, Ottobre 2025

Oliviero Baccelli
Responsabile area trasporti GREEN

Università Bocconi
GREEN
Centro di ricerca sulla geografia, le risorse naturali, l'energia, l'ambiente e le reti

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Introduction

Well funded railways infrastructure and railway services are essential for decarbonizing mobility, through modal shift, and support the most efficient energy transport sector.

Demand for funding has to be moderated by **more efficient infrastructures**, through **complementarities and synergies with other public utilities infrastructure in the energy, water, digital sectors**, and services (supporting intermodality). This requires **coordinated institutional management** arrangements, a strong focus on competition, a well functioning multimodal mobility system, public investment decisions determined with efficiency in mind and efficient financing choices.

Funding should come from three sources

1. **Users through fares** (but in the infrastructure railway sector fares usually covers only the maintenance and renewal of the tracks and signaling systems)
2. **Governments** through general budgets and earmarked taxes
3. **And taxes on indirect beneficiaries,** including owners of land that increases in value when its accessibility improve, and including all the beneficiaries of the reduction of the GHGs and pollution

The focus of this presentation is the analysis of the opportunities and threats of using carbon market revenues for investment in the railway infrastructure sector.

The rail industry presents many advantages in terms of measurability and permanence of the emission reductions and sustainable development benefits. These are strong arguments for using EU Emissions Trading System (ETS) revenues to support rail investments dedicated to modal shift and energy efficiency

The carbon market for the development of the railway sector

Climate change is a market failure because the costs and impacts of greenhouse gas emissions are not borne by those causing them. To overcome these externalities, global stakeholders are engaging in **carbon pricing and implement market -based initiatives** to expose the social and environmental costs of GHG emissions and provide financial incentives to address these costs. This is been done through regulations and instruments that also allow voluntary action.

The European Green Deal outlines major climate objectives up to 2040 and 2050: achieving climate neutrality by 2050 (zero net emissions –"ZNE"– of greenhouse gases); reducing transport emissions by 90% by 2050. It specifically mentions **supporting a modal shift to rail**, encouraging the use of effective tools to implement **'user pays'** and **'polluter pays'** principles, a proper funding for clean mobility and other supporting measures.

A variety of **climate-specific financing instruments and incentive mechanisms** have already been developed to support green investments in the railway sector (e.g. green bonds, sustainability-linked bonds and loans, Green Rail Investment Platform offered by the European Investment Bank, etc).

Carbon pricing is one of the most efficient solutions to facilitate the transition towards low carbon industries by providing an economic incentive. EG: In **Germany CO_2-Maut**: from 2024, 80% of the CO_2 surcharge on lorry tolls (*Lkw-Maut*) is allocated to rail investments—a break with the principle of "roads finance roads".

The goal of the presentation is to explain the economic rationale for crediting the CO_2 rail savings and present a proposal for **using ETS revenues to support the development of the railway sector**.

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Member States are obliged to use 100 % of ETS revenues for climate and energy purposes

The role of EU Emissions Trading System

The EU ETS is the world's first major carbon market and its main scopes are the following:

- makes polluters pay for their greenhouse gas emissions, helps bring emissions down and generates revenues to finance the EU's green transition,
- operates in all EU countries plus Iceland, Liechtenstein and Norway (EEA-EFTA states),
- covers emissions from around 10,000 installations in the energy sector and manufacturing industry, as well as **aircraft operators flying within the EU** and departing to Switzerland and the United Kingdom – or around 40% of the EU's emissions and since 2024 it also covers emissions from **maritime transport**. Starting from 2027, **freight road transport** will be included.

The EU ETS is currently in its fourth phase that covers the period 2021-28: During this period, the number of emission allowances will be reduced by 2.2% each year, starting from 2021.

The revenues from the EU ETS feed mostly into national budgets. Starting in mid 2023 member States must use these revenues to support investments in renewable energy, energy efficiency improvements and **low-carbon technologies** that help reduce emissions further. The sale of allowances also supplies the EU ETS funds for low-carbon innovation and energy transition, the **Innovation Fund** and the **Modernization Fund**.

Total auctioning revenues generated under the ETS system amounted to EUR **38.8 billion in 2024**, of which EUR 25 billion went directly to EU Member States. The remaining went to the Innovation Fund (EUR 3 billion) and the Modernisation Fund (EUR 6 billion). For comparison CEF Transport budget proposal for 2028-2034 is EUR 45,7 billion, including15,7 for military mobility.

Carbon avoidance by rail is a strong argument for using ETS revenue to support electric rail investments

Targeted measures and investments beneficiaries of the EU ETS revenues

Fund	Amount	Target
Innovation Fund	ETS provides the revenues for the IF from the monetization of 530 million ETS allowances	IF was created to address the challenge of the hard to abate industries accounting for the majority of industrial emissions. IF awards grants through calls for proposals and through competitive bidding procedures (auctions). The IF also contributes to blending operations for the EU-Catalyst Partnership through the InvestEU Programme. Furthermore, projects falling under the scope of the IF can access Project Development Assistance (PDA) and benefit from high-quality technical and financial advisory support. The innovative projects are focused on: a) innovative low-carbon technologies and processes in energy-intensive industries, including products that can substitute carbon-intensive ones (e.g. **H2 Valcamonica rail project**) b) carbon capture and utilisation – CCU c) construction and operation of carbon capture and storage (CCS) facilities d) innovative renewable energy generation e) energy storage
Modernisation Fund	Revenues from the auctioning of 2.5 % of the total quantity of EU ETS allowances auctioned between 2024 and 2030	MF is an instrument to mitigate the societal impact of modernizing energy systems and improving energy efficiency in the EU. The MF aims to support 13 EU countries with lower incomes in their transition to climate neutrality. Beneficiary Member States will work in close cooperation with the European Investment Bank (EIB), with the European Commission (EC) and the Investment Committee set up for the fund. The majority of the resources of the MF (at least 80%) must be invested in priority areas specified in Article 10d(2) of the ETS Directive. Investments in these areas are referred to as 'priority investments': a) Renewable energy b) **Energy efficiency** c) Energy networks and storage (**including infrastructure for zero-emission mobility**) d) Energy equality e) Just transition in carbon-dependent regions

Targeted measures and investments beneficiaries of the EU ETS revenues

FUND	AMOUNT	TARGET
Social Climate Fund	SCF will pool revenues from the auctioning of allowances from the ETS2 as well as 50 million allowances from the existing EU ETS. Together with a mandatory 25% contribution of the Member States (MS) to their Social Climate Plans, the SCF should mobilize at least €86.7 billion over the 2026-2032 period	MS may use the SCF to support structural measures and investments in energy efficiency and renovation of buildings, clean heating and cooling and integration of renewable energy, as well as in zero- and low-emission mobility solutions. Moreover, MS will have the option of spending part of the resources on temporary direct income support. All these measures and investments will be compiled in national Social Climate Plans following a country-wide consultation. MS will submit these plans to the European Commission by June 2025. The Commission will assess the plans and disburse payments to the MS only if the milestones and targets set in the plans are achieved

The EU ETS is now an important source of funding for the green transition and is expected to become even more important in the future. **There has been only a single project of Modernisation Fund going to the railway sector** in 2021-2023, for a project in Romania with a budget of 475 million Euro. The investment concerns a project for the purchase of 62 new EMUs (Electrical Multiple Units) trains to replace 77 old electric trains (energy efficiency project).

Takeaways on EU ETS revenues for rail investments in the EU

- Rail stakeholders (infrastructure managers, railways undertakings, long-term investors, etc) should **better emphasize and offer more details on the climate mitigation role of railways investment** in their **investment profile** and **social cost benefit analysis** in order to make more conscious investors and society of **rail crucial role in decarbonising transport emissions**.

- The methodology for quantifying emissions of land transport operators for both passenger and freight will be clarified through **CountEmissionEU** Regulation and specific policy programs for rail sector have been already implemented at national scale, such as the market mechanisms for verifying and trading carbon credits through government funding in European countries (e.g. **French Energy Savings Certificate** "TRA-SE-116 - Rail freight" for modal shift or **Swiss Federal Office Energy programme** – 5.1. **Improving the efficiency of passenger and freight transport**). The EU should consider also a scheme for directly purchasing carbon credits similar to the **Spanish Carbon Fund for a Sustainable Economy** (FES-CO2). According to FES CO2, the Spanish Government purchases carbon credits generated by energy efficiency projects in sectors the EU ETS does not cover.

- The EU should launch a debate about a **certification framework for carbon avoidance** along with the approval of the one for carbon removals. Avoidance is as relevant as removal in achieving the challenging objective of carbon neutrality: less GHG emission avoided means less GHG removed. The European Parliament and the Council are expected to approve the **Green Claims Directive** to increase transparency also in the carbon credits market.

The share of renewable energy in EU 27 rail sector is already 45% according to PRIME Benchmarking Report, with much higher target in coming years (e.g. FSI carbon neutral before 2040)

Recommendations on the potential use of transport ETS revenues for rail investments in the EU

The main reasons for **committing a percentage of transport ETS revenues to rail investments** in a coordinate manner among EU Member States fall in four main categories:

1. to accelerate sectoral decarbonization in the EU through **modal shift** and **energy efficiency (modal shift and CO2 reduction must be clearly measurable and railway infrastructures should be clearly considered in the infrastructure for zero-emission mobility)**;

2. to support **interoperability**, through **harmonization and standardization**, which help products reach sufficient volume to benefit from economies of scale (e.g. ERTMS)

3. to mitigate the adverse welfare impacts of the ETS on affected industries or communities **offering a lower cost of alternatives**;

4. to **mobilize additional sources of climate finance** offering also more opportunities for **long term private investors** in the sector. The supporting role of EIB (or of the new **Industrial Decarbonization Bank**) will be essential in order to favour synergies and complementarities with Innovation and Modernisation Fund and with long term private investors. The EIB great experience in railways sector is underlined by the specific **Green Rail Investment Platform**.

This topic should be considered a priority for member states in using the revenues of **Social Climate Fund** (SCF) because in the coming years **rail services could be considered a zero- or low-emission mobility solutions both for passengers and freight**.

Recommendations on the potential use of transport ETS revenues for rail investments in the EU

1. **State members transport ETS revenues of the transport sector (road, shipping, aviation) should be returned for a majority to transport sector** and not for general spending of governments **(revenue recycling to decarbonise an hard to abate sector)**.

2. One opportunity that should be considered is the creation of a **specific fund dedicated to rail investment that could disburse a percentage of compliance carbon market revenues in the transport sector**, but that means that a certain critical amount needs to be collected in order to make this fund impactful and economically efficient.

3. Another opportunity could come from **pooling ETS revenues from a number of Members States that have a common interest in promoting international programmes** (e.g. TEN-T rail corridors), which could lead to the formation of a very simple "**Carbon Club for cross financing initiatives in the transport sector**" to invest in long term sustainable solutions that meet specific priorities (e.g. cross-border project able to reduce greenhouse gas emissions and pollution and increase the social and economic benefits derived from transport, as indicated in **TEN-T** regulation for core network projects).

4. **Promote synergies with energy and digital infrastructures** (interconnectors in long railways tunnel), that could be considered as potential **complementary infrastructures, also for cross – financing** (e.g ElecLink in the Eurotunnel) and for reinforcing the energy transition using Innovation Fund (all these infrastructures are eligible for this Fund).