MONETISING POTENTIAL EMISSION REDUCTIONS FROM ROMANIA'S TRANSPORT SECTOR: A VIEW OF THE GREEN TRANSPORTATION PROJECTS UNDER MODERNISATION FUND AND EUROPEAN FUNDS PROGRAMMES

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Abstract
Monetising emission reductions from Romania's European-funded green transportation projects remains narrowly quantified, while systemic barriers inhibit broader monetization potential. Evidence from the literature reviewed indicates that, while a range of green transportation interventions have been piloted or supported by European and national programmes, consistent methodologies for valuing their environmental benefits are either lacking or remain limited, fragmented, or highly project specific. The research addresses that gap by applying a harmonised methodology drawing on the European Investment Bank's (EIB) Project Carbon Footprint Methodology, the European Commission's *Handbook on the External Costs of Transport (2019)*, and JASPERS' *Economic Appraisal Vademecum* in order to quantify and monetise greenhouse gas (GHG) reductions achieved through Modernisation Fund investments. The analysis relies on verified data from all Romanian transport projects confirmed by the EIB and published on *modernisationfund.eu*. Results show that analysed investments deliver substantial climate benefits which can be monetised, with rail and metro investments providing the highest abatement potential per euro spent, while electrification projects offering the most cost-efficient decarbonisation path. The findings support the need for a standardised monetisation approach and highlight that, even under conservative assumptions, Romania's transport Modernisation Fund projects generate quantifiable and monetisable environmental benefits.

Keywords
Green deal, decarbonisation, transport sector, modernisation fund

JEL Classification
Q51, Q58

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Introduction

The European Union launched in 2019 a comprehensive strategy to become climate-neutral by 2050 by reducing greenhouse gas emissions to net-zero, promoting sustainable economic growth and ensuring a just transition that leaves no citizen or region behind.

The European Green Deal (EGD) aims to create a cleaner, healthier and climate-neutral Europe by transforming the way we produce and consume. According to Sikora (2020), the EGD is only a communication of the European Commission, its implementation ultimately belonging to each member state by introducing binding legislation and policies at the national level. The EGD is about forging a more resource-efficient and technologically advanced EU economy that will reinforce its position as a global economic leader, able to stand up to competing actors in a globalized world (Almeida et.al., 2023).

The transport sector is recognised as one of the most challenging sectors to decarbonise, given its rigidity of both infrastructure and end-use technologies, as well as the challenge of reaching cost-effective production of sustainable advanced renewable fuels (Chiaramonti et. Al., 2021). While other sectors have been partially decarbonised, the transport sector will continue to increase its emissions, due to transport demand for both passenger and freight services, which is driven by population growth, rapid urbanisation and increases in economic activity and standards of living. Even though alternatives are being identified, current trajectories may not be sufficient enough in order to produce a 90% emission reduction by 2050 (ITF 2023).

According to the Climate Action Report 2023 (climate.ec.europa.eu), the net GHG emissions per capita in Romania, in 2022, were 6 tonnes of CO2 equivalent, below the EU average of 8 tCO2-eq and are expected to decrease to 3.7 tonnes CO2 by 2050.

At the sector level, the same report identifies the transport sector (19%) as one of the main contributors to GHG emissions, alongside industry (25%) and energy (19%). Decarbonising Romania's economy (2024) mentions that electrifying the transport sector, reducing dependence on private cars and tackling wasteful energy consumption, especially from old vehicles will carry significant economic and social implications, varying across regions, but remains imperative to avert the substantially greater consequences associated with failing to meet global climate mitigation goals (IPCC, 2023).

The purpose of the paper is to support evidence-based prioritisation of green transport investments by showing how emission reductions can be quantified and monetised transparently and comparably. While different financing mechanisms have been put in place under the umbrella of the European Commission Sustainable Europe Investment Plan (Davidescu, Popovici and Strat, 2022), a consistent approach for monetising benefits at the project level remains limited.

The paper addresses the following research questions: What financial mechanisms are most effective, and how can Romania quantify and monetise potential CO_2 reductions from green transport projects?

1. Review of the scientific literature

The literature review examines the current state of research on monetizing transport emission reductions in Romania, evaluating funding mechanisms, carbon pricing instruments and implementation strategies that could enable Romania to capitalize on its green transport investments.

The transport sector represents a critical component of Romania's GHG emissions profile and offers substantial potential for emission reductions through strategic investments and policy interventions.

As presented in the introduction, there is an obligation for Romania to adhere to EU climate targets and leverage available funding mechanisms. Understanding the monetization potential of transport emission reductions becomes essential for maximizing both environmental and economic benefits.

Since the introduction of EGD, much attention has been given to climate finance. Climate finance refers to the financial resources mobilised to support mitigation and adaptation to climate change. However, there has been relatively little analysis of what types of climate finance flow into the transport sector and what barriers there are in accessing it (Zhang et al., 2024).

The role of result-based and creditable GHG reductions is crucial for attracting climate finance to investments that can contribute significantly to the decarbonisation of the transport sector, such as rail, sustainable urban mobility and other sustainable transport projects.

Green transportation projects in Romania's transport sector concentrate on diverse interventions. Electric vehicle purchase subsidies, such as the Rabla Plus program, incur costs near €7,034.17 per ton of CO_2 reduced, while studies using damage cost approaches or econometric modelling offer qualitative support without clear monetization figures (Sechel and Mariasiu, 2021).

According to the same authors (Sechel and Mariasiu, 202), financing for the transition to green transport in Romania has been dominated by the Environmental Fund and by European programmes such as Horizon 2020, Large Infrastructure Operational Programme (LIOP 2014- 2020), with allocations reaching significant amounts, but with slow absorption due to bureaucratic barriers and limited administrative capacity.

In the opinion of Barbu (2020), even though the Environmental Fund has been criticised for inefficiencies, low uptake, and a lack of strategic prioritisation, it remains the main pivot in supporting electric vehicle acquisition, charging infrastructure, and modal shift initiatives.

Monetisation remains narrowly quantified, often limited to single projects, without systemic application across the Romanian transport sector, due to a significant number of factors, mainly represented by:

- high upfront costs and limited market penetration of low-emission technologies (Sechel and Mariașiu, 2021; Popescu et al., 2025).
- Insufficient recharging and support infrastructure, particularly outside major urban areas (Barbu, 2022).
- Bureaucratic inefficiencies and low fund absorption, especially under EU programmes (Turi and Bogluț, 2024).

- Lack of harmonised monetisation methodologies, leading to incomparable or absent cost-effectiveness assessments (Tafidisa et al., 2017; Khurshid et al., 2023).

Panton (2023) has estimated that fiscal measures such as carbon pricing have estimated effective rates of €25–75/tCO_2, while implicit taxation in Romania has been calculated at €59/tCO_2 ("Decarbonising Romania's Economy," 2024), significantly lower than €7,034.17/ tCO_2 calculated for Rabla Plus. Intermediate values have been calculated by Guler and Boloș (2021) for urban mobility projects in Oradea, resulting in a shadow price of €96/tCO_2, with quantified annual savings of 10,583 tCO_2.
The research shows that non- road means of transport are also beginning to be studied. The downside is that monetisation is rarely seen. Even so, the screening captured interventions across rail, maritime, aviation, intermodal freight, and even carbon capture and storage transport chains. In their paper, Țîțu et al. (2024) assessed baseline maritime emissions for tugboat fleet decarbonisation in Constanța Port, showing that maritime manoeuvre activity represents an insignificant share of emissions in the transport sector. Compared to Romania's carbon footprint, 107.3 million tCO_2 and 20.4 million tCO_2, maritime towing activities contribute to just over 19 tCO_2 per year (Țîțu et al., 2024).
Another analysed sector is the aviation sector. Aviation emissions mapping for TAROM (Matuz-Vitus & Máthé, 2025) emphasised operational assessment rather than monetisation. The research presented an emission production of 238,701 tCO_2 in 2023, for flights operated by TAROM. The result was based on data from the FEIS system (Flight Emissions Inventory System). No information or methodology regarding the monetisation of these emissions has been found.
In terms of analysing the Modernisation Fund as a source of financing, the findings emphasise that the effectiveness and efficiency of such financial interventions differ by region. Developed/transition regions often post stronger outcomes, while less-developed regions benefit from tailored designs and explicit benchmarks (Dueñas and Mandel, 2024; Henriques et al., 2022; Dębkowska et al., 2022). Even though research has touched upon the notion of the Modernisation Fund and the way it is financed, no study from the screened selection has been able to compute economic value for these emission reductions or has targeted its research on Romania's case.

2. Research methodology

The research methodology relies on verifiable institutional sources and it follows a transparent valuation workflow. The calculations presented below result from the EIB Project Carbon Footprint Methodologies, shadow carbon pricing per EU appraisal guidance, and the European Commission's Handbook on the External Costs of Transport (2019). The empirical base is complemented by literature identified through searches in Web of Science and Scopus.
The paper documents the Romanian transport investments confirmed by the EIB as priority investments under the Modernisation Fund (MF) using official confirmation and decision letters and annual reports found on modernisationfund.eu.
This study quantifies and monetises GHG reductions and wider external benefits generated by the Modernisation Fund investments in the transport sector in Romania,

focusing on the most relevant project pipeline such as "Supporting the reduction of energy consumption through energy efficiency in the transport sector – sustainable rolling stock," which the EIB confirmed as a priority project (MF 2023-2 RO 0-008), and a subsequent long-distance rolling-stock tranche confirmed in the next decision cycle (MF 2024-1 RO 0-005). These confirmations and their subsequent disbursement decisions provide information regarding the transport allocation from MF.

Based on the official MF submissions and EIB confirmation letters, the analysis uses a consistent set of primary quantitative inputs including: baseline and with-project energy and emissions; diverted traffic or modal shift assumptions, network and service descriptors and asset life.

The information was taken from the official MF submissions for Romania's transport investments (railway electrifications, rolling-stock renewal for regional and long-distance services, metro rolling stock for urban rail, and airport PV plus storage for self-consumption), ensuring traceability. The search included keywords such as "emission monetisation," "shadow price of carbon," and "external costs". Together with the MF and EIB governance sources, the research ensures the methodology is scientifically transparent.

For the research, the inputs were then processed following the EIB Project Carbon Footprint Methodologies, which is based on Baseline emissions (Be) for a "without-project" counterfactual and With-project emissions (Wp) for the asset operation, yielding Relative emissions ($Re = Wp - Be$) in tonnes of CO_2 per year.

For the rail network electrification investment targeting, the research treated the removal of diesel traction and auxiliary diesel use, which was captured within the baseline and reflected as a structural reduction in emissions once the project becomes operational.

The airport PV scheme has been evaluated using a different method, that of avoided emissions through the implementation of the investment, specifically through annual generation of solar energy and the approved grid factor.

Through carbon pricing, annual relative emissions (Re) were converted into an annual climate value using shadow carbon pricing consistent with the Handbook on the External Costs of Transport (2019), to value air pollution, noise, congestion and safety differentials for modal shift components, expressed in euros per passenger-km or vehicle-km by mode and environment. The methods are considered most relevant in the context of rail and metro projects, because both direct energy/emissions effects and induced modal shift are present.

3. Results and discussion

The project portfolio analysed in this paper reflects Romania's decarbonisation trajectory in the transport sector.

Information regarding projects was extracted from the official Modernisation Fund website (modernisationfund.eu). Between 2023 and 2025, Romania submitted four distinct categories of transport projects, as follows:

- Railway electrifications (Constanța–Mangalia, Rădulești–Giurgiu Nord, and Chiajna–Jilava)

- Rolling stock acquisition, including 62 EMU RE-R (regional services), 9 EMU RE-IR (inter-regional), and 23 new electric locomotives for passenger transport
- Sustainable urban mobility through renewal of metro fleet (12 new metro trains replacing 15 outdated IVA trains)
- installation of photovoltaic and battery systems at Romanian airports for self-consumption

All projects were assessed using the EIB Project Carbon Footprint Methodology (2023), which defines the net annual GHG reduction (Re) as:

$$Re = Be - Wp$$

where:

- Be= baseline emissions (tCO_2/year) under "without project" conditions,
- Wp= emissions after project implementation ("with project").

Rail investments tend to deliver predictable emissions reductions because they either remove diesel traction or improve traction efficiency. On the other hand, photovoltaic investments tend to generate high annual avoided emissions due to the scale of energy generation, but are more sensitive to baseline assumptions, being dependent on grid emission factors, capacity and utilisation levels. The two measures have different risk profiles and long-term reliability.

For the electrification of the three railway lines, Wp = 0 because diesel traction is fully replaced by electric traction. The baseline results from the baseline are Be = 26,624.4 tCO_2e/year, for both direct emissions and emissions by diverted traffic.

Re = 0 – 26,624.4 = -26,624.4 tonnes CO2e/year

Table no. 1: Climate change mitigation (cost / tCO2e)

Climate change mitigation					
Year	EUR/tCO_2e	Year	EUR/tCO_2e	Year	EUR/tCO_2e
2020	80	2030	250	2040	525
2021	97	2031	278	2041	552
2022	114	2032	306	2042	579
2023	131	2033	334	2043	606
2024	148	2034	362	2044	633
2025	165	2035	390	2045	660
2026	182	2036	417	2046	688
2027	199	2037	444	2047	716
2028	216	2038	471	2048	744
2029	233	2039	498	2049	772

(*) prices in Euro 2016

Source: General Principles and Sector Applications (n.d.)

Therefore, for the exemplified investment, the results are as follows:

Table no. 2 Climate mitigation for railway investment

Year	EUR/t CO_2e	Tonnes of CO_2e	Monetary value (euro)
2027	199	26,624	5,298,256
2028	216	26,624	5,750,870
2029	233	26,624	6,203,485
2030	250	26,624	6,656,100
2031	278	26,624	7,401,583
2032	306	26,624	8,147,066
2033	334	26,624	8,892,550
2034	362	26,624	9,638,033
2035	390	26,624	10,383,516
2036	417	26,624	11,102,375
2037	444	26,624	11,821,234
2038	471	26,624	12,540,092
2039	498	26,624	13,258,951
2040	525	26,624	13,977,810
2041	552	26,624	14,696,669
2042	579	26,624	15,415,528
2043	606	26,624	16,134,386
2044	633	26,624	16,853,245
2045	660	26,624	17,572,104
2046	688	26,624	18,317,587
2047	716	26,624	19,063,070
2048	744	26,624	19,808,554
2049	772	26,624	20,554,037
2050	772	26,624	20,554,037
2051	772	26,624	20,554,037
2052	772	26,624	20,554,037

Source: Author's own calculations

Applying Jasper's Vademecum shadow prices over the monetisation horizon (2027-2052), the total monetised value is EUR 351,149,211.60, making rail electrification one of the most sustainable decarbonisation options.

For the installation of PV panels and storage system, the priority investment confirmation indicates an installed capacity of 244 MW with a minimum annual usage of 1,000 h, implying anannual generation equal to244,000 MWh. Using the national weighted CO_2 factor of 0.6119 tCO_2/MWh, the estimated avoided annual CO_2e is 149,303 tCO_2/year and 2,986,072 tCO_2 for the lifetime of the investment (20 years). With requested financing of EUR 200,000,000, the abatement cost equals EUR 1,339/tCO_2.

Using the ETS price explicitly referenced on the Modernisation Fund website (the MF revenue baseline assumes €75/tCO_2 for 2021–2030), we have an annual monetised value of EUR 11,197,725/year and a lifetime monetised value of EUR 223,954,500. Compared to the electrification project, the PV project produces the highest avoided emissions, but with a higher cost per tonne.

For the project concerning the acquisition of 12 metro trains for sustainable urban mobility (METROREX), the official MF data enables the following calculations:

$Re = Be - Wp$, therefore 3,170.4−11,559.9=−8,389.5 tCO_2e/year. Using the climate mitigation costs presented in table no.1, assuming the investment will be implemented by 2027, with an expected lifetime until 2056, it resulted in 218,127.0 tCO_2e, with a monetised value of EUR 110,649,115.50. From a comparative perspective, the metro renewal project offers lower total reductions than the other projects but remains highly relevant.

The rolling stock projects (62 EMU RE-R trains, 9 EMU RE-IR and 23 locomotives) were assessed using the same EIB approach and monetised according to the Vademecum in table no. 1, with the following results:

For the 62 RE-R trains, the relative emissions are equal to =−19,352.8 tCO_2e/year. The total emission reduction is calculated at 503,172.8 tCO_2e for the 26 years that are recorded in the vademecum, resulting in a monetised value of EUR 255,244,079.20 between 2027- 2052.

For the 9 EMU RE-IR and 23 locomotives, the relative emissions are −24,804 tCO_2e/yr. Throughout the 26 years, the total emission reduction achieved is 644,904 tCO_2e, resulting in a monetised CO_2 reduction of EUR 327,139,956. Aggregating the monetised CO_2 emissions from the approved transport sector projects under the Modernisation Fund, we can estimate the portfolio value at EUR 1.26 billion.

The results indicate that the MF transport pipeline in Romania delivers substantial monetizable climate benefits, while providing a basis for a clear prioritisation. Rail electrification and fleet renewal provide the highest long term abatement efficiency, whereas renewable energy generation serves as a complementary intervention to support operational decarbonisation.

Conclusions

The literature on transport sector decarbonisation consistently identifies barriers that constrain monetisation, such as high operational costs, limited market penetration,

inadequate infrastructure, and administrative inefficiencies. In the case of Romania, studies remain largely qualitative, with few translating environmental benefits into financial values. Studies applying damage cost approaches (Tafidisa et al., 2017) suggest that emission reductions could be valued using the European Commission's standard methodologies. However, the findings from the literature review in the Romanian context have not produced transparent monetisation values.

The empirical evidence reviewed indicates that there is a pressing need for a unified, harmonised monetisation framework that integrate cost-per-tonne values, carbon pricing, and external cost methodologies into transport project appraisal. Without such an approach, Romania risks continuing to allocate resources through fragmented schemes with limited transparency that deliver uncertain cost-effectiveness. The abatement costs reported in the literature review demonstrate that cost-effectiveness in Romanian transport projects varies by orders of magnitude, underscoring the importance of harmonised appraisal frameworks.

The combined results from railway electrifications, rolling-stock renewal, metro trains, and airport PV installations yield a total monetised emission reduction exceeding EUR 1.26 billion over the 2027–2052 period.

There is a strong financial case for electrification and renewable integration in Romania's transport infrastructure. Electrification projects not only deliver permanent removal of diesel traction but also offer long-term operational efficiency and grid integration benefits.

Based on the findings identified in the paper, it should be acknowledged that a standardised monetisation of emission reductions should become mandatory for all future Romanian and EU-funded transport projects, using a harmonised methodology to ensure comparability and transparency. Furthermore, investment prioritisation should take into consideration interventions that have sustainability and mitigation effects, which help deliver long term abatement per euro spent. This type of measures would contribute to a more efficient allocation of national and EU funds, maximising both climate and social benefits.

References

[1] Agnieszka Dembicka-Niemiec, Edyta Szafranek and Антонина Калиниченко (2023). Structural and Investment Funds of the European Union as an Instrument for Creating a Low-Carbon Economy by Selected Companies of the Energy Sector in Poland. Energies, 16(4), pp.2031–2031.doi:https://doi.org/10.3390/en16042031.

[2] Barbu, L. (2022). Environmental Fund in Romania: How Public Money ere Spend for a 'Green' National Transport?. Revista Economica, 74(1), pp.18–39. doi:https://doi.org/10.56043/reveco-2022-0002.

[3] Chiaramonti, D., Talluri, G., Scarlat, N. and Prussi, M. (2021). The challenge of forecasting the role of biofuel in EU transport decarbonisation at 2050: A meta-analysis review of published scenarios. *Renewable and Sustainable Energy Reviews*, 139, p.110715. doi:https://doi.org/10.1016/j.rser.2021.110715.

[4] Davidescu, A.A., Popovici, O.C. and Strat, V.A. (2022). Estimating the impact of green ESIF in Romania using input-output model. International Review of Financial Analysis, 84, p.102336. doi:https://doi.org/10.1016/j.irfa.2022.102336.
[5] Dueñas, M. and Mandel, A. (2024). Are EU low-carbon structural funds efficient in reducing emissions? [online] arXiv.org. Available at: https://arxiv.org/abs/2408.01782 [Accessed 5 Oct. 2025].
[6] Henriques, C., Viseu, C., Trigo, A., Gouveia, M. and Amaro, A. (2022). How Efficient Is the Cohesion Policy in Supporting Small and Mid-Sized Enterprises in the Transition to a Low-Carbon Economy? Sustainability, 14(9), p.5317. doi:https://doi.org/10.3390/su14095317.
[7] Khurshid, A., Khan, K. and Cifuentes-Faura, J. (2023). 2030 Agenda of sustainable transport: Can current progress lead towards carbon neutrality? *Transportation Research Part D: Transport and Environment*, 122, pp.103869–103869. doi:https://doi.org/10.1016/j.trd.2023.103869
[8] Matuz, R. and Máthé, C. (n.d.). Tarom's operations in the context of Sustainable Development. [online] Available at: https://riscurisicatastrofe.reviste.ubbcluj.ro/Volume/XXV_Nr_35_2025/Matuz_Mathe_RCJ2025.pdf [Accessed 5 Oct. 2025].
[9] Panton, A. (2023). Making Romania Fit and Resilient for the Net-Zero Transition. Selected Issues Papers, 2023(063), pp.1–1. doi:https://doi.org/10.5089/9798400263736.018.
[10] Popescu, A.-F., Matei, E., Bădiceanu, A., Balint, A.I., Râpă, M., Coman, G. and Cristian Predescu (2025). An Optimistic Vision for Public Transport in Bucharest City After the Bus Fleet Upgrades. Environments, 12(7), pp.242–242. doi:https://doi.org/10.3390/environments12070242
[11] Sechel, I.C. and Mariasiu, F. (2021). Efficiency of Governmental Policy and Programs to Stimulate the Use of Low-Emission and Electric Vehicles: The Case of Romania. *Sustainability*, 14(1), p.45. doi:https://doi.org/10.3390/su14010045.
[12] Sikora, A. (2020). European Green Deal – legal and financial challenges of the climate change. *ERA Forum*, 21(4). doi:https://doi.org/10.1007/s12027-020-00637-3.
[13] Tafidis, P., Macedo, E., Coelho, M.C., Niculescu, M.C., Voicu, A., Barbu, C., Jianu, N., Pocostales, F.J.M., Laranjeira, C.M. and Bandeira, J. (2017). Exploring the impact of ICT on urban mobility in heterogenic regions. Transportation Research Procedia, 27, pp.309–316. doi:https://doi.org/10.1016/j.trpro.2017.12.030.
[14] Țîțu, A., Moldoveanu, A.., Stanca, C. and Pana, M. (2024). Analysis of towing activity impact on the environmental performance in Constanta Port. Review of Management and Economic Engineering, 23(3), pp.188–198. doi:https://doi.org/10.71235/rmee.1.
[15] Turi, A. and Geanina-Ioana Boglut (2024). Intermodal Transportation Challenges in Eastern Europe: Case Study of Romania. Proceedings of the International Conference on Business Excellence, 18(1), pp.2018–2031. doi:https://doi.org/10.2478/picbe-2024-0171.
[16] Vela Almeida, D., Kolinjivadi, V., Ferrando, T., Roy, B., Herrera, H., Vecchione Gonçalves, M. and Van Hecken, G. (2023). The 'Greening' of Empire: the European

Green Deal as the EU First Agenda. *Political Geography*, [online] 105(102925). doi:https://doi.org/10.1016/j.polgeo.2023.102925.
[17] Zhang, Y., Caldwell, M., Laxton, V., Welle, B. and Liu, K.Z. (2024). Access to Climate Finance in Low- and Middle-Income Countries: 14 Case Studies for the Transport Sector. doi:https://doi.org/10.46830/wriwp.23.00145.
[18] Climate Action Progress Report 2023 Country profile- Romania; Available at: /https://climate.ec.europa.eu/document/download/7c59d7a3-2602-4a2f-8072-df544554a13d_en?filename=ro_2023_factsheet_en.pdf
[19] Decarbonising Romania's economy. (2024). OECD Economics Department working papers. [online] doi:https://doi.org/10.1787/256205df-en.
[20] EIB Project Carbon Footprint Methodologies Methodologies for the assessment of project greenhouse gas emissions and emission variations. (n.d.). Available at: https://www.eib.org/attachments/lucalli/eib_project_carbon_footprint_methodologies_2023_en.pdf
[21] European Commission, Directorate-General for Mobility and Transport, CE Delft, Essen, H. v., Fiorello, D., El Beyrouty, K. et al. (2020) Handbook on the external costs of transport : version 2019 – 1.1. Publications Office. https://data.europa.eu/doi/10.2832/51388
[22] General Principles and Sector Applications. (n.d.). Available at: https://jaspers.eib.org/files/library/2021/economic-appraisal-vademecum-2021-2027-general-principles-and-sector-applications.pdf [Accessed 5 Oct. 2025].
[23] ITF 2023 Itf transport outlook 2023 (OECD)
[24] OECD. (2025). *Decarbonising Romania's economy*. [online] Available at: https://www.oecd.org/en/publications/decarbonising-romania-s-economy_256205df-en.html.