

EU carbon pricing faces multiple challenges

ETS-2 risks falling short of emissions-reduction incentives



The EU's expanded carbon-pricing system risks falling short of the necessary incentives for individuals and small business to materially reduce carbon dioxide emissions from the use of buildings and transport.

Under the planned expansion of the EU's Emissions Trading system (ETS), known as ETS-2, the average EU household will have to budget for around EUR 363 more per year in carbon tax. That is equivalent to just 0.6% of disposable income, though that share rises toward 1% of disposable household income in countries such as Croatia, Estonia, Hungary and Latvia.

The central problem is that the current proposal includes a cap on the trading price at EUR 50 per carbon certificate until 2030, which is the EU's "Fit for 55" target date to reach its goal of reducing 55% of CO₂ emissions relative to 1990.

The cap is well below the carbon tax needed to keep the increase in global temperatures to below 1.5°C, estimated¹ at nearly EUR 250 per metric ton of greenhouse-gas emissions.

If ETS-2 were to significantly raise the carbon cap toward EUR 250, it would provide a stronger incentive to reduce CO₂ emissions. However, EU households and small businesses with the fewest resources and poorest access to alternatives could be hit with the heaviest cost of adapting to the energy transition in transport and real estate.

The EU's environmental and economic challenge in the two sectors is most urgent in Eastern Europe, in terms of the scheme's per capita costs, though not negligible in Western Europe.

Table 1: ETS-2 costs (EUR per household) vs IEA-estimated required net-zero tax

	EUR 50 per ton of CO ₂		EUR 250 per ton of CO ₂	
	Annual additional cost per household	Share of disposable income	Annual additional cost per household	Share of disposable income
Belgium	493	0.8%	2,465	4.0%
Germany	404	0.6%	2,019	3.0%
Hungary	359	0.9%	1,795	4.7%
Spain	273	0.6%	1,367	3.0%
Sweden	267	0.5%	1,333	2.4%
EU (avg)	363	0.6%	1,815	3.0%

Source: Scope ESG

ETS-2 essentials include climate fund, EUR 50/certificate price cap

Buildings and transportation make up 41% of EU emissions, but these sectors were excluded from the initial industry-focused carbon-pricing scheme. This is set to change now that the European Council and Parliament have agreed to create a separate ETS for these emissions, the so-called ETS-2, due to start in 2026. The scheme aims to help ensure that the EU reaches its "Fit for 55" goal of cutting 55% of carbon emissions by 2030 relative to 1990.

EU policy makers have additionally agreed to set up an accompanying EUR 86.7bn Social Climate Fund (SCF) to finance temporary direct income support for vulnerable households and micro-enterprises and support measures and investments to reduce emissions in road transport and buildings. The SCF is financed primarily from revenues from the sale of carbon emission allowances, with Member States providing a quarter of the funding.

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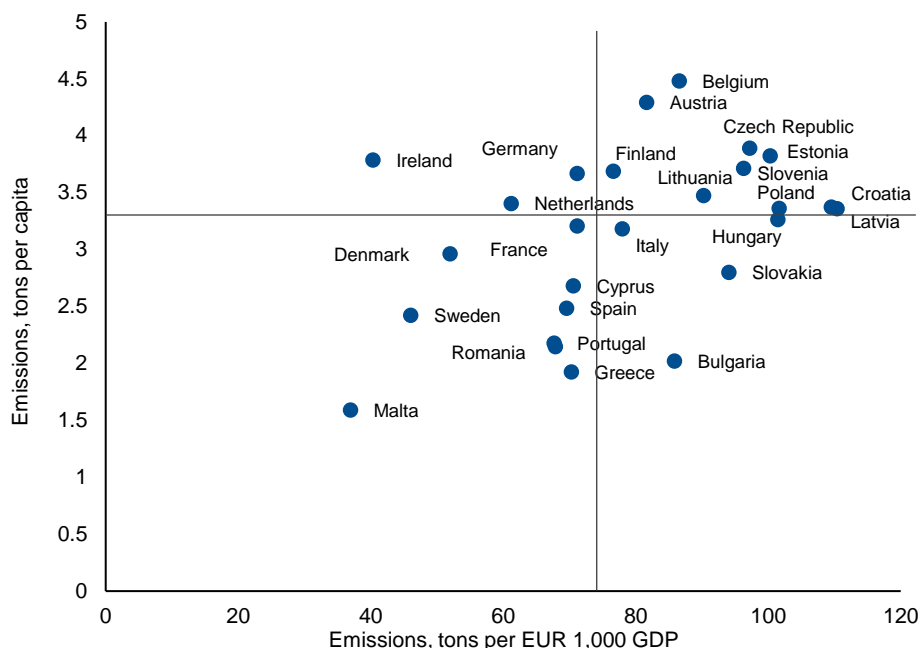
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¹ See: International Energy Agency (IEA): World Energy Outlook 2022
<https://iea.blob.core.windows.net/assets/830fe099-5530-48f2-a7c1-11f35d510983/WorldEnergyOutlook2022.pdf>

Figure 1: EU transport & residential sector emission intensities, 2021²



Sources: OECD, European Database for Global Atmospheric Research (EDGAR), Scope ESG Analysis GmbH

Price cap of EUR 50 until 2030 risks impairing effectiveness

The current ETS-2 proposal includes an upper cap for the trading price at EUR 50 per certificate until 2030, which is significantly below the IEA’s USD 250 estimate of the carbon tax necessary to achieve net zero emissions by 2050.

The risk for the EU is that the price cap of EUR 50 limits both carbon-reduction incentives and revenues from the scheme.

How are EU citizens affected by ETS-2?

To assess the impact of ETS-2 impact on households, we consider per capita emissions from building and road transport, as well as emissions relative to disposable incomes.

The first measure serves as a proxy to assess the absolute financial burden per citizen, whereas the second is a proxy for the impact on household budgets.³

With the current proposal of EUR 50 per ton, an average EU household must budget an additional EUR 363 a year for carbon tax (0.6% of disposable income).⁴

If a price of EUR 250 per ton were assumed to ensure alignment with the 1.5° objective by 2050, an average EU household would have to budget an additional EUR 1,815 (3.0% of income), assuming no adaptation.⁵

On a country level, the highest absolute burden is likely to fall to people in Central and Western Europe (Figure 2). Those in Austria and Belgium look the most vulnerable.

Average energy bill rises by EUR 363 per household

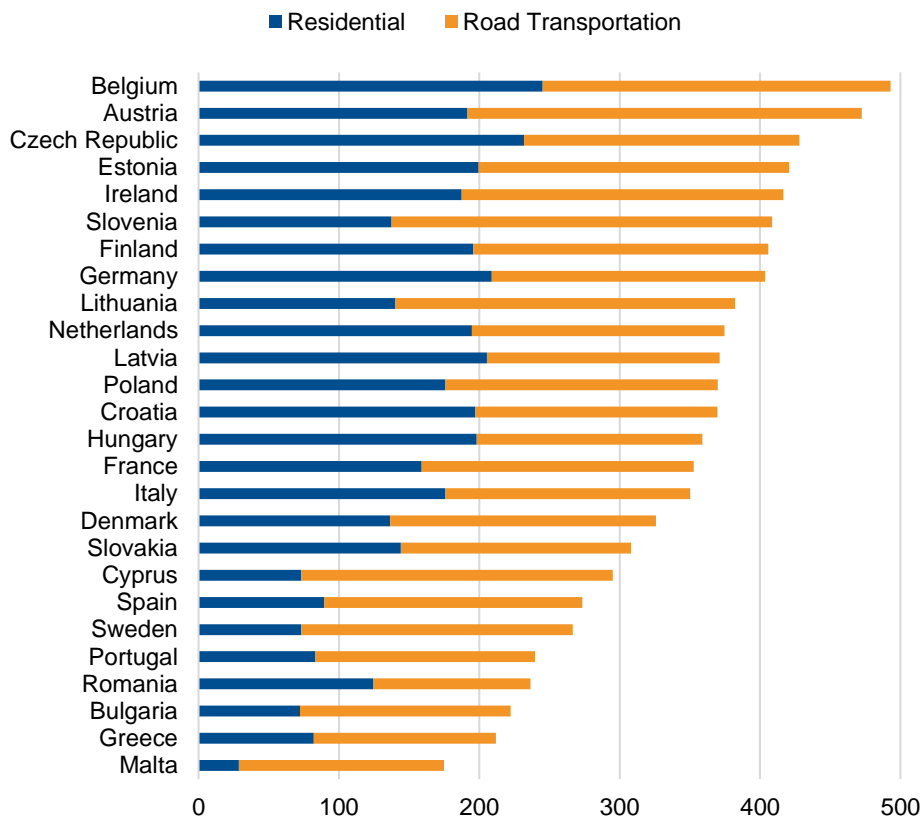
² Note: Luxembourg is excluded as an outlier in emissions per capita.

³ Road transport emissions also encompass commercial transport emissions and are not directly attributable to citizens or households. However, we assume that price increases in commercial transportation costs will eventually be passed on to households and citizens.

⁴ Assuming an average carbon footprint per capita of 3.3 tons per year in the EU and an average household size of 2.2 members per household.

⁵ Assumed carbon price between 2025-2030 in alignment with a 1.5° global warming target, https://www.ngfs.net/sites/default/files/media/2021/08/27/ngfs_climate_scenarios_phase2_june2021.pdf

Figure 2: Absolute ETS-2 cost burden for EU households
EUR per year



Sources: OECD, European Database for Global Atmospheric Research (EDGAR), Scope ESG Analysis GmbH

Austrians, Belgians face some of highest absolute costs

In contrast, it is the citizens of Estonia, Croatia, Latvia or Poland which may have to spend the largest share of disposable incomes (**Figure 3**) on emissions-related costs.

Hence, two contrasting pictures emerge: whereas people in Central and Northern European countries are paying the highest carbon taxes in absolute terms, those in Eastern European countries face a more adverse impact on their budget.

Low-income households in Western Europe will likely be hit relatively hard: their disposable incomes range below the average while having few options to reduce or adjust energy consumption, with structural obstacles (such as little recourse to working from home, insufficient public transport) as well as little financial means available to invest in low carbon housing or transportation.

Why are countries affected differently?

The uneven cost implications of the ETS-2 reflect the specific characteristics of buildings, climate, and transport infrastructure in Europe which vary significantly across the region.

EU member countries in the Nordic, Mediterranean & South-Eastern regions have relatively low per capita emissions, due mainly to widespread use of heating networks for buildings in the north and milder winters in the south.

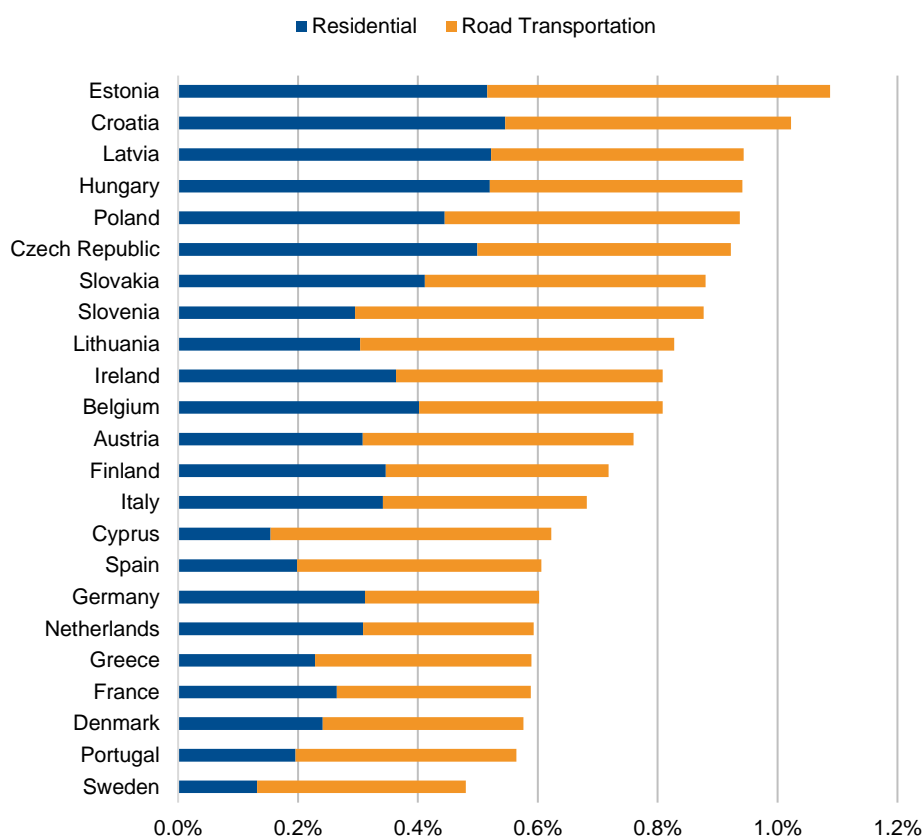
So, the main burden of carbon tax will fall on people in Central and Eastern Europe.

Weather, infrastructure explain differences in emissions intensity

In addition, countries in Eastern Europe face more challenges if they are to replace their carbon consumption by other means, i.e., greater reliance on renewable energy supplies and use of public transport.

Construction of near-zero emissions buildings lags that of Western Europe and thus offers little room for households to find low-carbon alternatives while extent of public transport networks, notably rail infrastructure, is relatively modest.

Figure 3: ETS-2 costs as share of per capita EU disposable income, 2021⁶
% (PPP)



Sources: OECD, European Database for Global Atmospheric Research (EDGAR), Scope ESG Analysis GmbH

Wide EU disparities in low-emission buildings

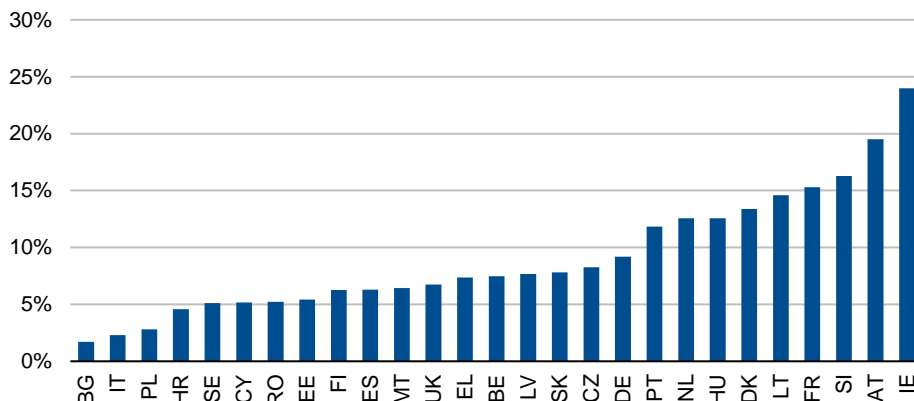
Buildings: Austria, Ireland led EU in terms of low-energy homes, offices in 2015

Ireland and Austria had the highest share of new buildings with the lowest energy consumption in 2015 (20-25%) while Bulgaria, Italy, and Poland the proportion of near zero energy buildings (NZEB) was just 3%, according to the most recent available data.

Across the EU, only 9% of new buildings were defined as NZEB. A small share of NZEB construction in previous years increases the pressure especially for governments in countries like Germany and Eastern Europe to adjust more quickly to compensate for earlier inaction.

⁶ Excluding Luxembourg, given the importance of foreign commuters and freight transport in road-transport emissions for Luxembourg.

Figure 4: Construction of new low-carbon (NZEB) buildings in the EU, 2015
Share of NZEB among newly constructed residential buildings (%)



Sources: EU Buildings Database, Scope ESG Analysis
Note: No data for new total dwellings were available for Luxembourg

Road transportation still dominant across EU

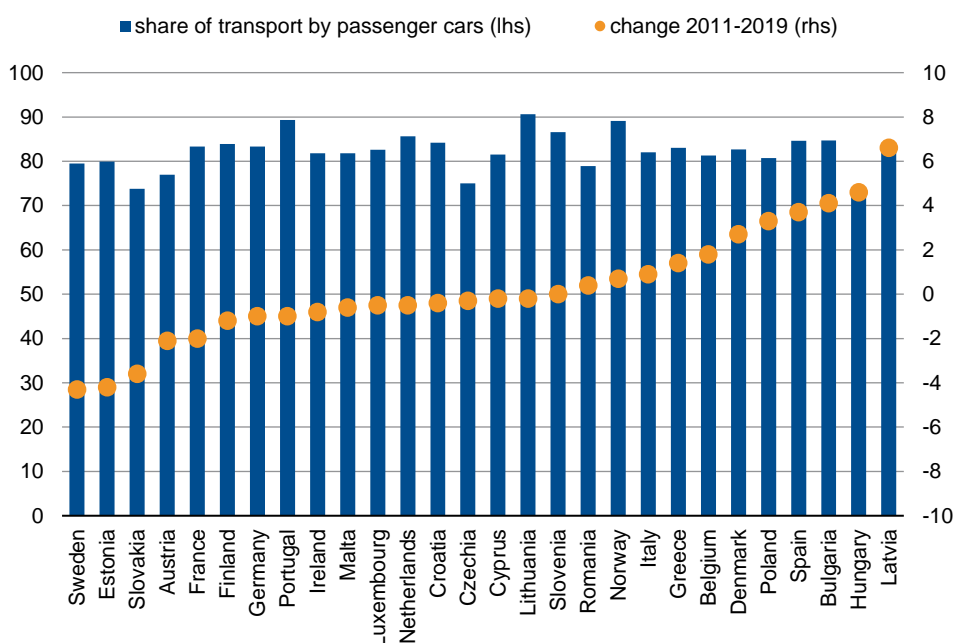
Transport: passenger car use drives emissions higher in Eastern Europe

Emissions intensity has grown in Eastern Europe where the share of transport by passenger cars has increased at the expense of public transport since the countries joined the EU (Figure 5). On average, 82% of transportation is by car in the EU.

Only a few countries such as Sweden, Estonia and Slovakia managed to reduce emission by more than three percentage points between 2011-2019. Overall, transportation emissions remained high across the bloc, despite a sudden pandemic-related drop in 2020.

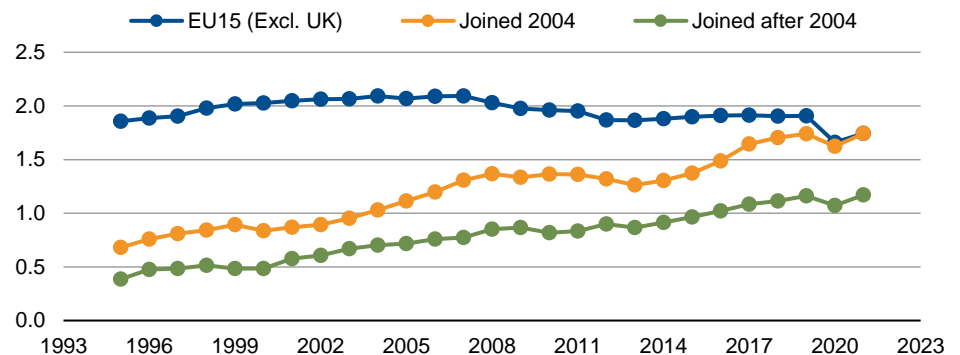
The growth in emissions from transport in 2021 (see Figure 6) underlines the difficulty for households to reduce or shift mobility patterns over the long term as people return to commuting predominantly by using cars.

Figure 5: Road transport remains preferred means of travel in EU



Sources: EU Transportation Statistics, Scope ESG Analysis GmbH

Figure 6: Emissions from road transport in EU countries, 1995-2021
tons of CO₂ per capita



Sources: OECD, European Database for Global Atmospheric Research (EDGAR), Scope ESG Analysis GmbH

Exploring potential for further building, transport CO₂ reductions

Contrasting building, transport emission trends

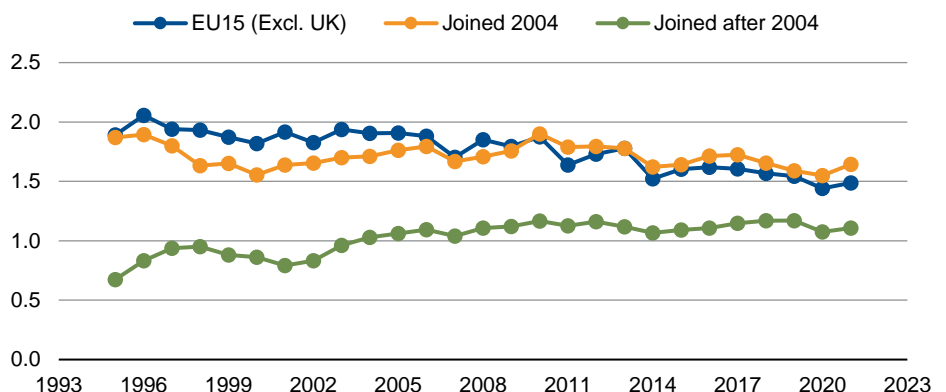
Per capita emissions from road transport and residential buildings have proved persistently high. Road transport emissions have risen in tandem with economic growth, especially in Eastern Europe. A lack of alternative modes of transport is another factor. Moreover, under the “Fit for 55” proposal, the EU’s zero-carbon target for vehicle emissions is 2035.⁷ Until that date, rising car ownership in Eastern Europe may lead to further rises in transport emissions.

The higher burden of carbon taxes in Eastern Europe explains the EU’s decision to offer temporary subsidies for households, in tandem with investment in public transport infrastructure and climate-smart policies e.g.: countries with good rail networks could offer subsidised tickets to help lower emissions, following the example of Germany.

Residential building emissions on the decline

Emissions from residential buildings have fallen slightly since 1995, due to better heating and overall energy efficiency (see **Figure 7**). Future reduction in emissions intensities per capita seems more realistic and affordable for households than any changes in how they travel. Future reductions in buildings emissions will rely on deploying public funding for renovation, new construction, and/or installation of renewables depending on affordability.

Figure 7: Emissions from residential buildings in EU countries, 1995-2021
tons of CO₂ per capita



Sources: OECD, European Database for Global Atmospheric Research (EDGAR), Scope ESG Analysis

⁷ <https://www.consilium.europa.eu/en/press/press-releases/2022/10/27/first-fit-for-55-proposal-agreed-the-eu-strengthens-targets-for-co2-emissions-for-new-cars-and-vans/>



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