

MCC Press Release

How Germany should allocate financial aid for climate-friendly home heating

Study shows costs of a hypothetical carbon price path in line with EU climate targets. On average 15 percent of basic rents, enormous range depending on the building.

Berlin, 08/04/2024. The statutory target of climate neutrality by 2045 affects heating in Germany: everyone needs to move away from oil and gas and towards heat pumps or other fossil-free solutions. The state is signalling this through bans and regulation, as well as through carbon pricing (i.e. making the fossil fuels more expensive) while also increasing financial aid. A new study shows how support of climate-friendly heating can be optimised with regard to those in need. It was led by the Berlin-based climate research institute MCC (Mercator Research Institute on Global Commons and Climate Change) as part of the research project FEIRE – *Financing Ecological Investments in Real Estate*, funded by the federal government. The study is available through the MCC website.

National carbon pricing for the heating (and transport) sector – currently 45 euros per tonne of CO₂ – will be transferred to a new, second EU emissions trading scheme in 2027; the extent to which the price should then increase is still politically controversial. The new study is not based on a price forecast, but on a hypothetical price path: 200 euros per tonne in 2025, while still in the national system, increasing to 275, 400 and 450 euros in 2030, 2040 and 2045 respectively.

“With this price path, the EU climate targets would be met without any other measures to significantly reduce CO₂ emissions,” explains [Matthias Kalkuhl](#), Co-Chair of MCC, head of the MCC working group Economic Growth and Human Development, and lead author of the study. “At the same time, the price path would be economically optimal: the cost of emitting one tonne of CO₂ by exactly the same amount as the cost of avoiding one extra tonne of CO₂ emission. With this economically sound approach, we avoid distorting our distributional analysis with inefficiently low prices, and provide guidance for an efficient targeting of funding programmes. This guidance makes sense from a regulatory perspective, even if the price rises less.”

For this scenario, using empirical data on private households, the study calculates the heating transition through to climate neutrality by 2045. Over the entire period, for an average household, the carbon price component of heating bill (i.e. the cost of not renovating) could come to as much as 148 euros per square metre of living space when using the old heating equipment. Compared with the rental or residential value of the unit (i.e. the real or imputed basic rent that will be incurred in the period to 2045) the impact becomes even clearer: an average of 15 percent of the property value, defined in this way. However, the

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analysis is not primarily concerned with this particular price level, which reflects the assumption of the steep price path. Rather, it focuses on the enormous range: the relative CO₂ costs are between 0 and 30 percent of the property value, excluding statistical outliers. Compensating households through uniform per-capita climate money, as an [earlier MCC study](#) from 2023 already showed, may not be nuanced enough to function as the only relief instrument in the heating sector.

To illuminate this cost range with unprecedented precision, the research team uses machine learning methods to create “regression trees”: the entire set of households is subdivided in several steps – always based on the characteristic that results in subgroups with the most uniform values possible. This shows, for example, that flats heated with oil and rented out are particularly cost-intensive per square metre of living space. In the case of gas heating systems in newer buildings – constructed from 2001 onwards – carbon pricing is 55 percent more costly for rented residential units than for owner-occupied properties, calculated per square metre.

Analysis at the fine-grained district level also shows that need for financial support varies from region to region. In relative terms (i.e. CO₂ costs measured against rental values), parts of Rhineland-Palatinate, Hesse, northern Bavaria, Lower Saxony and North Rhine-Westphalia are particularly challenged. By contrast, the financial consequences are less severe in eastern Germany, with its large district heating networks, and in some regions in northern and southern Germany. “Regional differentiation of financial support will not be easy politically,” says MCC researcher Kalkuhl. “But it is important to ensure that the social balancing of the climate transition is as economically sound and cost-efficient as possible.”

Reference of the cited article:

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www.mcc-berlin.net/Publications/2024_MCC_FEIRE_TechnicalReport_MCC_typology.pdf

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MCC explores and provides solution-oriented policy portfolios for climate mitigation, for governing the global commons in general, and for enhancing the many aspects of human wellbeing. Our six working groups are active in fields like economic growth and development, resources and international trade, cities and infrastructure, governance, and scientific policy advice. Co-founded by the Mercator Foundation and the Potsdam Institute for Climate Impact Research. | www.mcc-berlin.net/en | https://twitter.com/MCC_Berlin

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