Reshaping consumption for climate goals: European householdsâ€™ carbon footprints and future pathways

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With the continuous rise in household consumption (HC) across Europe, it remains uncertain how long efficiency improvements could sustain the feasibility of the EUâ€™s climate objectives for 2030 and 2050. While technological innovation is vital, the European Green Deal (European Commission, 2019) makes it clear: achieving climate neutrality will also require fundamental changes in how households consume goods and services.

In this paper, we provide a deeper analysis of the CO2 effects from recent changes in final demand from EU households, identifying main trends. From the COVID-19 crisis as a real-life example of a major decrease in demand coupled with a drastic reduction in transport to the changes that are taking place as a result of the policies implemented within the framework of the European Green Deal. For a detailed assessment of the carbon footprint (CF) of European households, we distinguish between direct emissions from private transport and housing, and indirect emissions embedded in goods and services consumed. Besides, we disentangle the effects of changes in final demand levels, consumption patterns, emission intensities, and trade origin with a structural decomposition analysis.

Building upon established literature and key mitigation benchmarks, we evaluate the CF across various HC scenarios to determine the feasibility of achieving emission targets without compromising living standards. Our analysis focuses on (1) private transport electrification, (2) household energy-use reduction through building efficiency improvements (upgrading heating and cooling systems), and (3) reductions in emission intensities consistent with existing national mitigation measures.

To do so, we use FIGARO database provided by EUROSTAT (2024 edition) (Remond-Tiedrez and Rueda-Cantuche, 2019). We use multiregional input-output tables from 2018 to 2022 and households' carbon footprint for the same years. Information for direct CO2 emissions (heating/cooling, private transport and other activities) is obtained from EUROSTAT (2025a).

The results show that short-term important shocks, such as the COVID-19 crisis only temporarily lowered household emissions, as consumption quickly rebounded. In contrast, policy scenarios demonstrate a more durable potential for reductions, though their effectiveness varies significantly across countries.
Transport electrification emerges as the main driver of change, while improvements in housing efficiency also deliver notable gains, particularly where fossil fuels still dominate energy use. However, the overall effectiveness of these measures ultimately depends on the pace of electricity decarbonisation across member states: the reduction in housing and transport can only be fully realized with cleaner energy production.