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Distribution of Household Greenhouse Gas Emissions in Belgium

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Understanding the distribution of increasing greenhouse gas (GHG) emissions between households is key to design fair and equitable environmental policies. In this study we identify the distribution of consumption-related GHG emissions on the household level in Belgium.

We use a dataset that combines household-level consumption data with an input-output model which quantifies the life cycle GHG emissions of goods and services that households consume.

In order to quantify distribution of household consumption-related emissions, we calculate concentration coefficients of emissions; for this purpose, we rank households according to equivalised income and expenditures, but also according to emissions. We decompose total emissions over size and intensity. In order to assess the redistributive effects of environmental taxation, we calculate the marginal propensity to emit and investigate how it changes over the income/expenditure distribution. The concept measures the growth in household emissions as a result of an incremental change in income (Brännlund & Ghalwash, 2008).

We find that emission intensity (emissions per euro of expenditures) of households at the lower part of the income distribution is slightly lower than that of richer households. This is mainly due to the fact that poorer households spend higher share of their expenditures on emissions intensive products, especially in energy and housing. The analysis of the distribution of GHG emissions show that food, energy and housing, and transport have lower, goods has similar, and services has higher concentration coefficient that the Gini of expenditure and income. This means that emissions form services is relatively more important in the higher expenditures group, and while emissions from food, energy and housing and transport are relatively more important in the lower income groups.

References

Brännlund, R., & Ghalwash, T. (2008). The income–pollution relationship and the role of income distribution: An analysis of Swedish household data. Resource and Energy Economics, 30(3), 369–387. https://doi.org/10.1016/J.RESENEECO.2007.11.002