Estimating Consumption-based Emissions Emissions are estimated using household expenditure data and product-based multipliers (in tCO2e/£).

To calculate the multipliers, we first need to estimate the total indirect consumption-based emissions from UK households using environmentally-extended multi-regional input-output (EEMRIO) analysis. For this we use the UK’s multi-regional input-output model (UKMRIO). After indirect emissions are estimated, we add direct household emissions to the products associated with fuel burning. Once total household emissions are calculated at a product-level, we can divide these emissions by the total spend of UK households for each product, to generate conversion factors in tCO2e/£. We multiply the conversion factors by household spends from different households. This data comes from the Living Costs and Food Survey (LCFS). At the time of writing the detailed, household-level LCFS is not yet published. However, versions of the LCFS expenditures and incomes are available via the Office for National Statistics. To estimate 2020 emissions, we therefore use such aggregated LCFS data. To compare emissions across household types, we weigh the number of people in a household by their household composition. We calculate emissions per single adult person household (SPH) by using the OECD-modified scale, which accounts for the non-proportional relationship between additional household members and income or expenditure. This assigns a weighting of 1 for the first adult, 0.5 for every other adult, and 0.3 for every child. Longitudinal comparisons For the longitudinal comparisons we calculate two sets of emission estimates. First, we calculate emissions using the UKMRIO and LCFS from the same year to estimate emissions for each year. Second, we calculate emission estimates using the 2007 multipliers. Using multipliers from the same year allows for a more direct comparison of consumption behaviours and the emissions these would have caused in 2007. To ensure that inflation and price changes over time do not impact our results, we adjust income and expenditure to 2007 values. We do this at a product level using the Consumer Price Inflation tables from the Office for National Statistics.

This includes data from the Living Costs and Food Survey, the Consumer Price Index, and the UK's multi-regional input-output model.

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