

Inequalities and household carbon footprint: the allocation of emissions embodied in investment

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The consequences of rising greenhouse gases emissions, increasing (income) inequalities and the relationship between the two have attracted a growing interest in recent years. In this global context, it is important to develop climate policies that do not cause rise in economic inequalities and, at the same time, to promote inequality reduction policies that reduce carbon emissions. However, an international environmental database that would allow comparable estimates of household carbon footprints at different income level and for different countries is still missing. As a result, research on inequality and emissions remain either too theoretical or too narrow-focused.

Any international environmental database aimed at orienting empirically the debate on to whether a more equitable society could be also a less carbon-intensive one needs to be grounded in a robust and systematic method that enables cross-country comparison of household carbon footprints. Filling this data gap requires, among other things, solving some outstanding methodological issues such as how should be considered emissions of non-monetary activities, government expenditure, under-reported top income expenditures, or capital investments. The latter is particularly important for emerging economies, where capital investment is a relatively high share of carbon footprint of final demand.

This paper explores one of these methodological issues, the emissions embodied in investment. In particular we focused on the estimation of carbon emissions of gross fixed capital formation of industries and how these emissions should be allocated to final consumption expenditures of different income-level households. This issue has been recurrently omitted in household carbon footprints. There are two very different aspects. On the one hand, carbon footprints of households classified by income-level implicitly assume that emissions related to household savings are zero; however, through the financial sector part of those savings are typically borrowed by industries to buy capital goods, such as equipment, machinery, or buildings whose production involves emission of different gases. And on the other hand, standard input-output models account for the consumption of circulating capital, i.e. the consumption of intermediate goods, but not for the consumption of fixed capital, i.e. depreciation of capital goods, which is required for linking emissions embodied in investment of capital goods and the consumption of that capital goods in the production processes of industries. This paper will offer a theoretical discussion of how these aspects can be addressed in input-output models, and provide empirical evidence using the case of Spain. We choose a European country because of our expertise and access to data.