

Why we need to know more about individual carbon footprints

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Most countries, including Switzerland, record their greenhouse gas emissions by source and sector. In absolute terms, Swiss greenhouse gases make up less than 1% of global emissions. With an average of 12 metric tons of CO₂ equivalents per capita per year, however, the Swiss are polluting the climate about twice as much as the average person globally if we take into account the emissions of our imported goods. This average value is useful for international comparisons, but it ignores differences between individuals or groups of people within Switzerland.

Such differences between individuals or societal groups are important from a political perspective and also require explanation. The reason is that specific climate policy measures, such as a ban on oil heating systems or a [carbon tax](#) on fossil fuels, will affect individuals differently depending on how much they currently impact the climate. For example, the CO₂ Act passed by parliament and the Federal Council was rejected in a national referendum in 2021 at least in part due to opposition from the rural population, who feared [high costs](#).

To design policy measures that take these differences into account and are ultimately politically acceptable to the majority, I consider reliable estimates of the emissions of individuals and different segments of the population to be indispensable. However, such data isn't available in most countries.

A question of income and other factors

As part of the Swiss Environmental Panel, my research group estimated the individual climate footprint in a representative sample of about 7,500 people in Switzerland using a survey and a CO₂ calculator. We then attempted to describe and explain differences in the areas of mobility, nutrition, housing and consumption.

As expected, differences in the [carbon footprint](#) are large. They range from just under two to several dozen tons per capita per year. By far the biggest driver is income: people with high incomes emit far more greenhouse gases than those with medium to low incomes. Mobility behavior, and air travel in particular, is the strongest cause.

Other factors also play a role, but to a lesser extent. Interestingly, carbon emissions increase less with income if respondents hold strong pro-environmental attitudes. Women and older people cause slightly fewer emissions, while people with a higher level of education cause slightly

more. Another noteworthy point is that people's political self-classification on a left-right scale plays no role. This means that right-wing voters don't emit more than voters on the center and left.

Our findings call into question at least two widespread assumptions that were prominent in the debates on the two national votes on the CO₂ Act (2021, rejected) and the Climate Protection and Innovation Act (2023, accepted) respectively.

No city-country divide and driving for all

First, the rural population's seemingly greater skepticism of the two climate policy proposals is often interpreted as an expression of a more fundamental urban-rural divide in climate policy. I think this assumption is questionable.

That's because the behavioral changes required for effective climate action are considerable across the board in all regions of Switzerland. For example, our data shows that, contrary to the common stereotype, the urban population doesn't emit less CO₂ than the rural population, as is often assumed, but in fact slightly more: although city dwellers cycle more and drive less, they also fly more, while people in rural areas drive more but fly less.

This means that someone's place of residence in and of itself has hardly any influence on their carbon footprint or the cost of climate policy. In my opinion, the sometimes stronger opposition in rural areas is based primarily on ideologically distorted perceptions of the costs of climate action, whereas there is hardly any evidence that the rural population thinks and acts in a less environmentally friendly way more generally.

Second, it is often argued that climate policy burdens poorer people more; during the 2021 referendum, the opposing poster campaign,

"Driving only for the rich?" suggested as much. This assumption hardly fits with our findings that people with high incomes have a much larger carbon footprint and are therefore affected much more by climate policy.

Our data shows that a carbon-intensive lifestyle doesn't necessarily lead to a stronger rejection of climate policy measures, however, and that high earners and the well-educated tend to have a more positive attitude towards climate action. Yet, for poorer people, the cost argument still seems to resonate. One reason for this could be that they often overestimate their own climate footprint, while higher earners often underestimate theirs.

One thing's for sure: the most important challenge for [climate policy](#) is to design measures in such a way that the costs and benefits are distributed more or less equally across all regions and fairly across different segments of the population. A deeper understanding of the emissions of different social groups can help to identify more precisely those groups that would or could bear higher costs. This in turn makes it possible to provide targeted support to those affected so that they become more supportive of climate action.

Provided by ETH Zurich

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