Policy Brief

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The role of policy in reducing household carbon emissions

SUMMARY

To date, international policies for mitigating greenhouse gas emissions have focused largely on technological innovation and economic incentives. Whilst the potential for individual and household behaviour change is recognised, opportunities for individuals to be at the heart of mitigation policies have often been left as an afterthought. This is despite the fact that, through their consumption behaviour, households are responsible for 72% of global greenhouse gas emissions[1].

CONTEXT

Current climate change mitigation policies, and nationally determined contributions (NDCs) under the Paris Agreement, are inadequate to meet both the 1.5°C and 2°C global temperature rise targets[3]. To date, emissions policy has tended to focus on the supply side - technical changes in energy production and supply infrastructure.

Academic debates have now begun to stress the need to supplement these supply-side climate policies with those that address behavioural changes[4]. Despite this, the possible contribution that households can make in emission reductions is not well understood, and households are still not seen as a priority in current climate policy strategies. Additionally, existing policies tend to individualise responsibility for an issue that is difficult to address in the absence of coordinated collective action.

Key Findings

Our research explored the possible contribution households could make to emissions reduction, revealing that:

1. **Transport, food and heating dominate household carbon footprints**
   Our carbon footprint assessments found the mobility sector to be the most significant contributor to a household's emissions, followed by food and domestic heating. This highlights key areas where the greatest opportunity for mitigation lies, especially relating to aviation.
2. **Emissions reductions are more strongly linked to a household's characteristics than its location**
   Variation in willingness to reduce household emissions shows stronger links to household characteristics (e.g. demographics and income) than geographical location and national context. This suggests that European level policies aimed at particular household types could be effective in meeting emission targets.
3. **Voluntary action is not enough**
   Most households will not make the necessary changes through altruism alone. Voluntary actions are limited and insufficient in the greenhouse emissions reductions they can secure. This emphasises the need for a strong policy framework which incentivises and requires households to reduce emissions.
4. **Emissions vary through a household's lifecycle and lifestyle**
   Key moments in a household's lifecycle cause its emissions to rise or fall. These moments include when people move house, have a child or retire. This presents opportunities to target key decision points at these moments. It also highlights the role that intermediaries involved in these key decision points play in shaping people's preferences.

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CARBON FOOTPRINT AND PREFERENCES FOR REDUCING EMISSIONS AT THE HOUSEHOLD LEVEL

Our research identified 250 distinct climate policy measures that potentially influence household emissions. They were divided into market-based (economic instruments, information policies) and command and control (regulatory approaches and public goods and services) policies. With regards to sectors, the mobility sector had a high share of command and control policies, whereas the food and housing sector was dominated by market-based approaches. These market-based approaches individualised responsibility for mitigation, leaving consumers to make the decision whether to mitigate or not. These decisions are based on prices, values, culture, habits and knowledge.

MOBILITY, FOOD AND HEATING DOMINATE HOUSEHOLD CARBON FOOTPRINTS

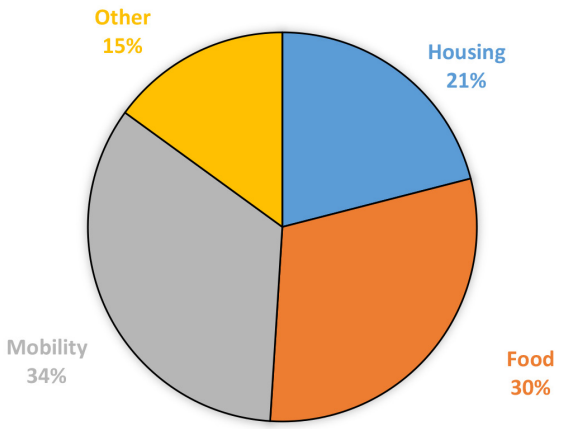
The carbon footprint assessment of households participating in the study—in France, Germany, Sweden and Norway— found the mobility sector to be the most significant contributor to a household's average footprint, as shown in figure 1. The biggest single source of transport emissions was not driving cars, but international travel.

Within housing, the average carbon footprint of households is dominated by heating, covering 44% of total emission in this sector. Emissions largely derived from energy consumption, which created some variations between countries depending on the energy mix (nuclear, hydropower, gas, etc) and household technologies used (district heating, individual boilers, etc.).

Food footprints were dominated by red meat and dairy and did not show country-wide variation. Mobility was predominantly composed of air, car and other motorised travel.

This improved understanding of household emissions sources helps illustrate the potential of households to contribute to emission mitigation, and thus, towards identifying key areas of policy focus.

Figure 1: Initial media carbon footprint (kg CO2e per consumption unit per year) of households.



HOUSEHOLD EMISSIONS REDUCTIONS VARY BY HOUSEHOLD TYPE

Preferences for emissions reduction activities were identified according to household demographic categories.

One example of a factor influencing preferences was home ownership, inevitably meaning household footprints vary depending on level of income. Many actions with a high potential for emissions reduction were not realistically feasible for renters, especially younger renters living close to city centres.

> Interviews indicated that renters often thought that it was hard to find an apartment meeting the highest energy efficiency standards and that renovation of their current apartment was up to their landlord. Landlords themselves argued for subsidies for their investments in energy efficiency and asked for simpler procedures.

This suggests that despite differences in national climate policy, the variations in both emissions and mitigation opportunities are largely linked to household type. This presents an opportunity for the development of policies addressing household emissions at the European level, which runs counter to the commonly held idea that policies aimed at changing behaviour need to be targeted at relatively small geographical areas.

VOLUNTARY ACTIONS BY HOUSEHOLDS

Research participants showed a high willingness to accept some moderate lifestyle changes, for instance those related to food. However, in areas such as mobility (especially air travel) voluntary changes in lifestyles are more difficult to achieve. Generally, the greater the CO^2 reduction potential of mitigation actions, the less the household was willing to implement them, as these reflect greater lifestyle changes.

Examples of this were that 30% of participants voluntarily chose to eat 30% more vegetarian food, yet only 4% chose to become a vegetarian. Similarly, 34% of participants voluntarily chose to buy a lower emission car but only 4% would give up their private car. Mobility was shown to be more complicated to decarbonise, as people attach personal values to it; such as having good relations with friends and relatives, experiencing cultural and natural diversity or getting a better education.

> One household in Germany explained when interviewed: *"It is important to have a semester abroad in your CV. The companies think: Hey, this guy is motivated, he wants to learn, he is flexible, he has been to the US for a year. It sounds better than saying: Oh well, yes, this guy is organic, he is climate-friendly, he decided to stay at home and not pollute the air."*

Accompanying interviews found that individuals accept their responsibility to make changes, but call for government action to create consumption changes in areas with large untapped mitigation potential. To achieve a 50% reduction in carbon footprints, households needed "forced" solutions. For example, households called for stronger policy interventions that would make it easier to reduce their meat consumption and thus have a more climate-friendly diet. In less preferred mitigation areas, such as flying, stronger policy interventions (e.g. higher taxes or reduced availability of air travel) were only perceived to be acceptable if they applied to "everyone".

Our work implies that voluntary efforts from individuals and households will not be enough to meet carbon reduction targets. People are only ready to make the decision to reduce their household consumption if other societal players, such as businesses and governments act collectively, emphasising that action is needed on the European or even international scale. Altruism needs to be underpinned by a strong policy framework that sets a common baseline for mitigation measures a household is expected to meet.

In sum: our research highlights that voluntary actions are limited and insufficient in the greenhouse emissions reductions they can secure.

CHANGING PATTERNS OF DEMAND THROUGHOUT HOUSEHOLD LIFECYCLES AND LIFESTYLES

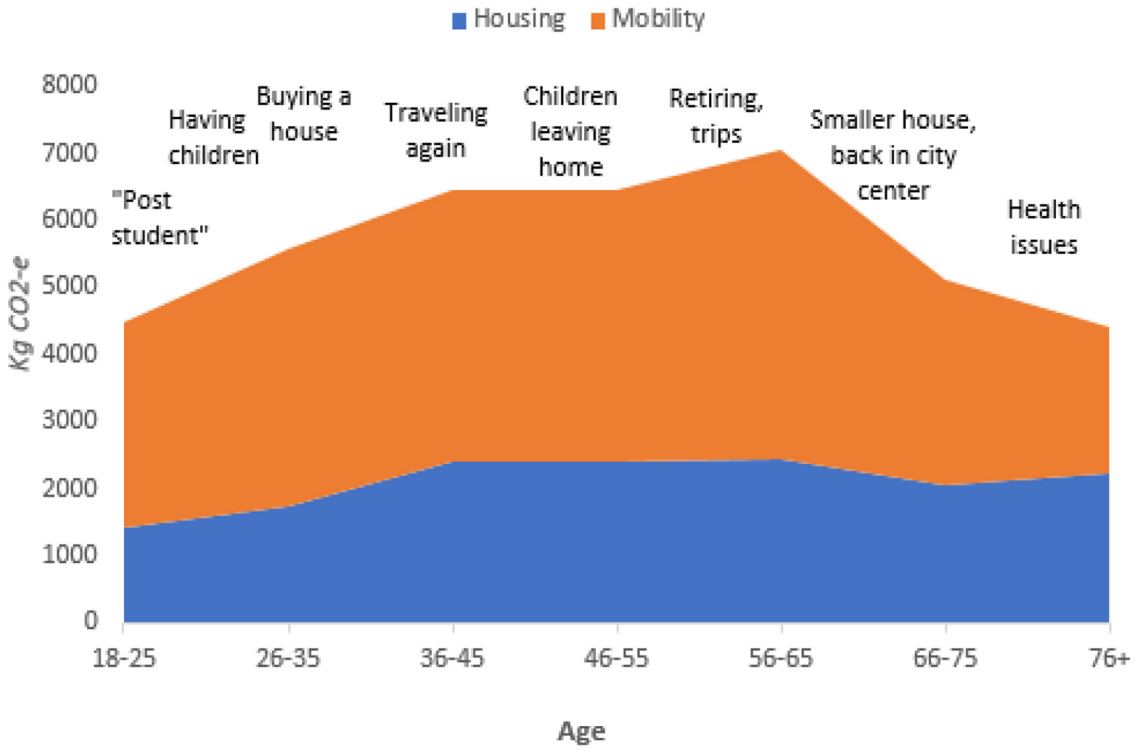
Our research illustrates that household carbon footprints are not static, showing significant variation over a household's lifecycle. There are key strategic moments that can be significant, such as when a person decides where to live and whether to buy a car or not. Major life events such as graduating from university, having children, buying a house, retiring or suffering from a medical condition can also substantially affect emissions (see figure 2).

Key events in a household's lifecycle – such as moving house or buying a car - can offer opportunities for policies to be targeted at intermediaries involved in these events e.g. estate agents, retirement planners and car dealerships[5]. Policies incentivising intermediaries to offer low carbon options can be key in influencing a household's emissions trajectory, especially at important "windows" of opportunity.

CONCLUSION

Households have the potential to become active agents of decarbonisation, but this cannot be achieved through goodwill alone. Knowing how willing households are to change, and to what extent proactive behavioural changes will be mobilised by policymaking, is important in creating effective climate change mitigation policies.

Figure 2



RECOMMENDATIONS

- Emission mitigation strategies need to take a more balanced approach between measures targeted at consumption and production, with the former often having been neglected in favour of the latter.
- Policy should expand its focus, with more weight on emissions from road vehicles, aviation and meat consumption in addition to traditional areas of focus such as household appliances, heat and electricity provision.
- A strong policy framework is needed to support voluntary emission reduction efforts - voluntary action alone is not enough to meet carbon reduction targets. The framework should improve infrastructure, create incentives and regulating specific areas.
- Policies should target intermediaries such as estate agents and car dealerships to help them influence households at key stages of their lifecycle, finding the right "window" of opportunity.

OUR RESEARCH

This briefing is based on a four-year comparative mixed methods project called HOPE (HOusehold Preference for reducing greenhouse gas emissions in four European high-income countries), summarized in (2). This project investigated the preferences of households across four cities in France, Germany, Norway and Sweden. Households were asked to complete questionnaires, interviews and an interactive mitigation simulation game. The simulation game involved households selecting and rating an array of tailored mitigation actions. The results from this were then compared with an analysis of current climate policies.

The full paper is available online: https://www.sciencedirect.com/science/article/pii/S2214629618310314

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