

Lektioita

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Steering household consumption with carbon footprint data – A critical assessment

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The spring days of May are very special to me. The long wait is over, and it is time to take off for the summer season's first overnight bicycle tour. Being on the road and outdoors simplify my daily practices: cooking meals on a camping gas stove, washing in one of the lakes or the sea, sleeping outside, and waking up listening to the soundscape of the early morning hours. I carefully consider the need for every item I take with me as there are hills to climb even in this country. At home, cooking and other daily practices are not as simple. Standards of comfort are higher. I never take a cold shower at home as hot water is available.

The environmental consequences of ordinary daily life are my professional passion. When I started this PhD project, I had worked almost a decade on projects developing and using environmental footprint calculators for a public audience. During the first years of my professional career, I was excited by knowing how to estimate the footprint of a person's consumption. Consumption here refers to housing and energy use at home, food, transport, and other goods and services. Footprinting illustrates how consumption contributes to harmful emissions and resource use leading to impacts near and far.

If only people knew how much our normal everyday consumption contributed to environmental problems, wouldn't they realise that change is required? With the experience I gained from various projects, I became puzzled about opportunities and roles of data-based tools in steering consumption. Many people involved in projects who used a moment of their time to explore their carbon footprint with a calculator agreed that the large footprint of consumption is an issue. These people were concerned about environmental crises. I kept wondering what happened afterwards.

This is the problem I wanted to explore in my dissertation: what consumption-steering opportunities are provided by tools such as calculators and consumption-based data. Further, what are the limitations which should be addressed with aligned policies and other steering measures? I wanted to raise my gaze from the calculators as such, and understand their relation to the prevalent patterns of everyday life and consumption. I want to believe

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that people do not intend to create unsustainably large environmental footprints. Having a large footprint is just a side effect of our going about our daily doings. We make use of the opportunities we have available in our everyday environment.

To extend my researcher's gaze from the characteristics of calculators and consumption data, I adopted the concept of practice as my academic sensitising device. Practice theory is often applied in studies exploring the mundane and ordinary, such as various aspects of daily life: ways of shopping and preparing food, patterns of doings and energy use at home, washing and cleanliness, and so on. According to the theory, our everyday practices build upon the material characteristics, shared meanings of decent, normal and desirable, and skills required to navigate our everyday environment. The ways we conduct our everyday lives have evolved in interaction with these material and social elements. Importantly, practices are perceived as something collective. Our daily doings are not only a matter of individual, rational consideration.

Practices are not fixed and stable. Perceptions of normal and ordinary ways of living change, even during a person's lifetime, due to transformations in our environments and related skills. Think, for instance, about changes in communication, travel, diets and so on. Thanks to technological advancements and improved regulatory frameworks, many environmentally harmful emissions and impacts have decreased per unit of output in recent decades; that includes, for example, emissions per vehicle kilometre. At the same time, the increases in total demand and consumption tend to outpace many positive developments in curbing environmental problems. The increase is the result of growing populations but also affluence and rising standards of living.

If we are interested in how consumption-based data and tools help us to make our footprints smaller, why should we bother with discussing what there is beyond them? The data and tools are not an end as such; their value depends on their ability to steer doings and consumption in the direction of environmental sustainability. Think about the sheer plethora of devices, vehicles, infrastructure, social relationships and personal intentions that shape our everyday life. Now, add a carbon footprint calculator to that picture. That helps to put into perspective what a single data or digital tool must compete with in daily life.

In my dissertation, I discuss sustainable consumption policies, which are formal means of affecting our consumption patterns. They vary from restrictions to voluntary measures such as information distribution. The data-based steering measures and their use in the studied initiatives represent soft, informational, sometimes procedural, but always voluntary measures for steering consumption.

My research is directed towards household consumption and the role of consumption-based data in steering it, focusing on carbon footprints as they are one of the key indicators of environmental sustainability. The data are drawn from affluent countries where the average carbon footprints are far from the 1.5 degrees targets of the Paris Agreement. The methodologies, databases and derived applications for estimating carbon footprints are relatively well-developed compared to other environmental indicators, so I use them as an example of an environmental measure that is well-suited to steering consumption. The findings are potentially relevant for steering using other environmental indicators because the same logic applies: consumption patterns rely on global supply chains, and the negative implications are often not visible at the time and place of consumption.

To gain a broad understanding, I have examined household consumption patterns from various perspectives, using both quantitative and qualitative methods to capture the dynamics of everyday life and footprints.

One approach was to study household expenditures and related carbon footprints in Finland (Salo *et al.*, 2021). Higher incomes translate into greater footprints. Affluence increases not only the opportunities to choose low-carbon goods, but all kinds of consumption and its total volume. Compared to income, other household characteristics have a smaller effect on the size of the footprint.

Carbon footprint calculators and tools to track consumption have been developed for public use among non-professional audiences (Mela *et al.*, 2018; Salo *et al.*, 2019). The tools and applications rely on information distribution and rational reflection on consumption patterns and doings, and many provide tailored feedback and advice to help users decrease harmful outcomes. However, while the tailored information is valuable, engaging in consistent, long-term use has proven to be a challenge. Another limitation is that digital tools as such can do little to solve the real-life inconveniences related to changes in consumption and doings. That is why improved data collection and feedback alone are unlikely to overcome all the current limitations of calculators and data-based tools.

Expert intermediaries such as energy advisers have a valuable role in helping interpret consumption and footprint data and in pointing out relevant responses, and are able to take into account the life-situation and needs of each household (Salo *et al.*, 2016). At the same time, intermediaries have limited scope to change broader social pressures and the environment which influence current patterns of consumption and generate the friction that deters changing them.

My findings indicate, however, that steering consumption footprints does not necessarily mean that the data must be presented directly to people whose consumption we want to steer. Instead, as one of the cases I examine indicates, it can be used to direct the procurement and menu design in a restaurant, for instance, where personnel can tune the menu and recipe design to serve tasty and filling vegetable and fish-based meals (Käljönen *et al.*, 2020). Food presentation on a buffet can also be used to nudge customers to make more sustainable choices.

Ultimately, consumption-based data and the tools to present it are valuable in terms of raising awareness and helping to identify priorities for remedial action. These issues are relevant for policy making, professional intermediaries, and non-professionals alike. The data and tools can support committed actors in taking meaningful actions. At the same time, the potential of the tools is hindered as they are rarely adopted for repeated use.

I suggest that the use of the tools and the actions they recommend should be considered in relation to established practices. Policy design should pay close attention to the skills and characteristics in our social and material environment that support established practices and resist change. Consumption-based data and tools can point out where the problems lie and suggest alternatives, but they can do little to solve the real-life inconveniences that impede the realisation of change. What is required is a broad, inclusive policy mix to steer consumption and practices in the same direction.

Another way forward would be to develop more two-way communication. That would mean integrating the tools into processes with assigned resources to tackle the hindrances in the world outside. Such hindrances do not only affect the forerunners using these data and tools because the doings of other people are also affected by the same material and social environment.

I reflect briefly in the dissertation on how the current voluntary-use approach would completely change if mandatory carbon footprint quotas were introduced. The idea is to illustrate how calculators and apps can be used in different ways and purposes. On the other hand, I see opportunities in renegotiating the role of data and calculators to contribute to sustainable consumption policies and steering initiatives.

I started by mentioning how taking off on a bicycle tour changes how I cook, wash, and sleep. I think no digital tool could ever convince me to simplify to the same level of consumption in my own home environment, yet, once I encounter the material constraints that these tours impose, change follows naturally. And I must say the relaxed social code of what is acceptable dress and habitus for a person on a bike tour is a bit different to what is expected in the office. I offer the anecdote with the aim of illustrating the potential of our surroundings to steer our doings.

I hope my research will provide insights for future developments in the use of consumption data and tools such as calculators to steer consumption. I would be especially keen to see if the tools and data could be integrated and contribute to processes that would help to make our everyday environments support and prioritise sustainable daily life and consumption for us all.

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