How can we incentivise the architecture of a sustainable food system?

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Motivation: The dilemma of technology innovation

The challenge of environmental regulation

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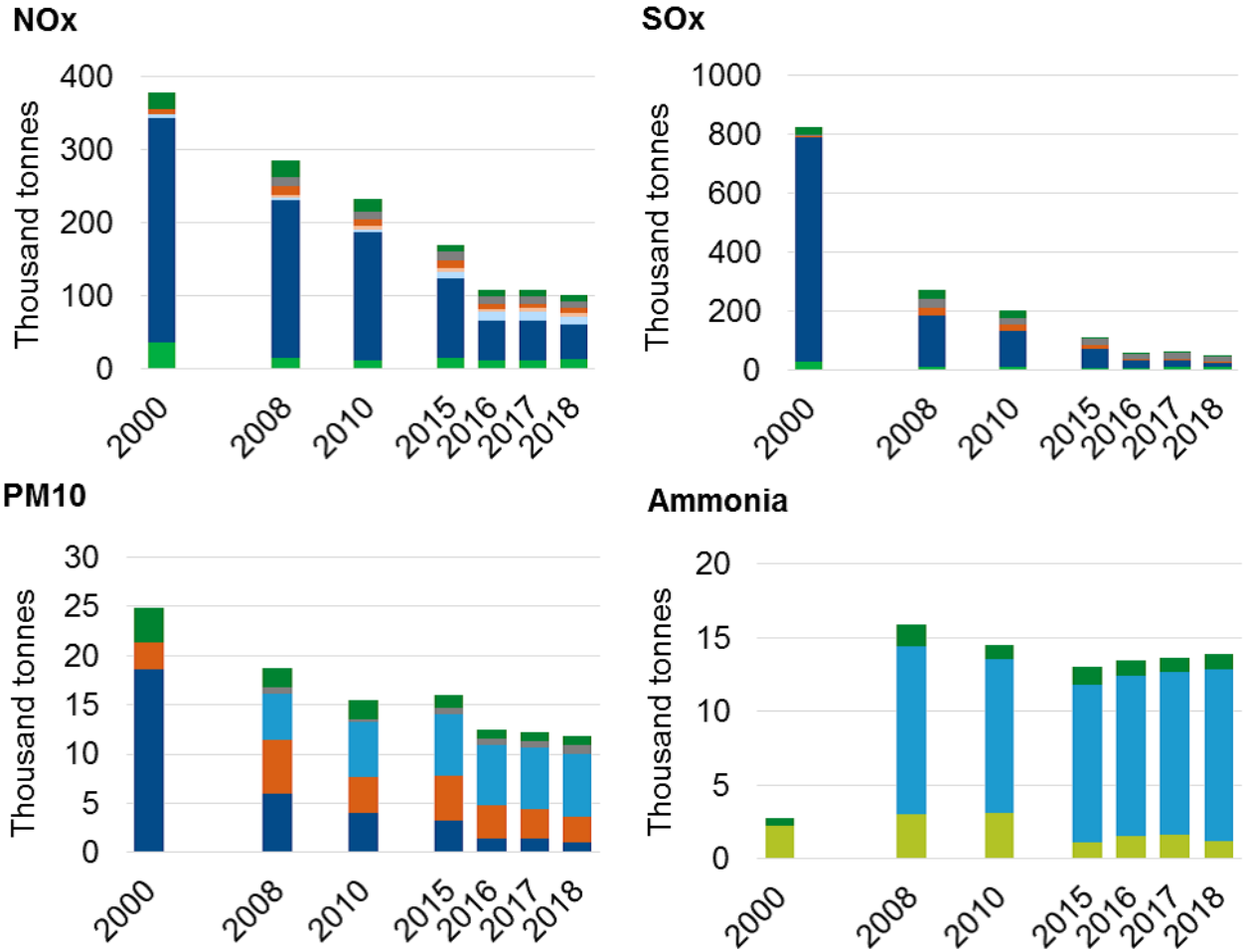
Stagnation of greenhouse gas emission reductions in the UK



Source: Environment Agency (2020)

Plastic bans

Price policy is not a panacea

Price policy has its limitations

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One contribution of 19 to a theme issue 'Material demand reduction'.

Subject Areas:
materials science, environmental engineering

Keywords:
material efficiency, economic efficiency, policy choices, CO_2 reductions

Are prices enough? The economics of material demand reduction

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Recent policy proposals to achieve carbon targets have emphasized material demand reduction strategies aimed at achieving material efficiency. We provide a bridge between the way economists and engineers think about efficiency. We use the tools of economics to think about policies directed at material efficiency and to evaluate the role and rationale for such policies. The analysis highlights when prices (or taxes) can be used to induce changes in material use and when taxes may not work. We argue that the role of taxes is limited by concerns about their distributional consequences, by international trade and the lack of international agreement on carbon prices, and by investment failures.

This article is part of the themed issue 'Material demand reduction'.

1. Price may have very **limited** impact on the demand, e.g. plastic packaging.
2. The indirect impacts of price policy are often ignored leading to **counterproductive** consequences.
3. The price effect prediction is based on historical technology while the **innovation** of technology cannot be considered in the model.

Characteristics demand theory

Kelvin Lancaster

1. The good, per se, does not give utility to the consumer; it possesses **characteristics**, and these characteristics give rise to **utility**.
2. In general, a good will possess **more than one** characteristic, and many characteristics will be **shared** by more than one good.
3. Goods in **combination** may possess characteristics different from those pertaining to the goods separately.

Behavioural incentives are critical to establishing a sustainable food system

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Environmental warm-glow

nature climate change

LETTERS

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Acting green elicits a literal warm glow

Danny Taufik[1]*, Jan Willem Bolderdijk[2] and Linda Steg[1]

Environmental policies are often based on the assumption that people only act environmentally friendly if some extrinsic reward is implicated, usually money[1,2]. We argue that people might also be motivated by intrinsic rewards: doing the right thing (such as acting environmentally friendly) elicits psychological rewards in the form of positive feelings, a phenomenon known as warm glow[3,4]. Given the fact that people's psychological state may affect their thermal state[5,6], we expected that this warm glow could express itself quite literally: people who act environmentally friendly may perceive the temperature to be higher. In two studies, we found that people who learned they acted environmentally friendly perceived a higher temperature than people who learned they acted environmentally unfriendly. The underlying psychological mechanism pertains to the self-concept: learning you acted environmentally friendly signals to yourself that you are a good person. Together, our studies show that acting environmentally friendly can be psychologically rewarding, suggesting that appealing to intrinsic rewards can be an alternative way to encourage pro-environmental actions.

and makes one feel good about oneself, thus being intrinsically rewarding as one's psychological state improves. Hence, if pro-environmental actions are indeed experienced as truly intrinsically rewarding, this should activate the insula and subsequently affect temperature perception (the literal warm glow). This suggests that the warm glow as it was originally formulated[3,4] is part of the underlying mechanism for pro-environmental actions being intrinsically rewarding, leading to perceiving a higher temperature. If our reasoning is correct, we should first find that compared to people who learn they act environmentally unfriendly, people who learn they act environmentally friendly experience more warm glow in the form of perceiving a higher temperature. Second, we expect that learning that one acts environmentally friendly is intrinsically rewarding, as it serves as a positive self-signal; we test whether this is indeed the process underlying perceiving a higher temperature after acting environmentally friendly. Pro-environmental actions may affect not only perceived, but also actual physical warmth (skin temperature[12]), which we will also explore. Skin temperature can increase by vasodilation and decrease by vasoconstriction—respectively, the widening and narrowing of one's blood vessels.

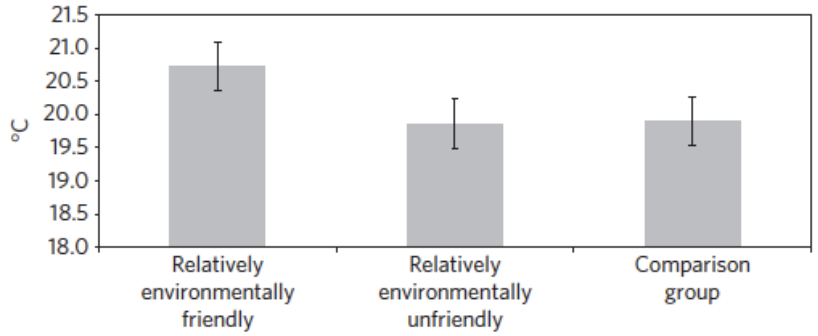


Figure 1 | Means of temperature perception (including standard error bars; Study 1).

Warm-glow effects for organic food consumers

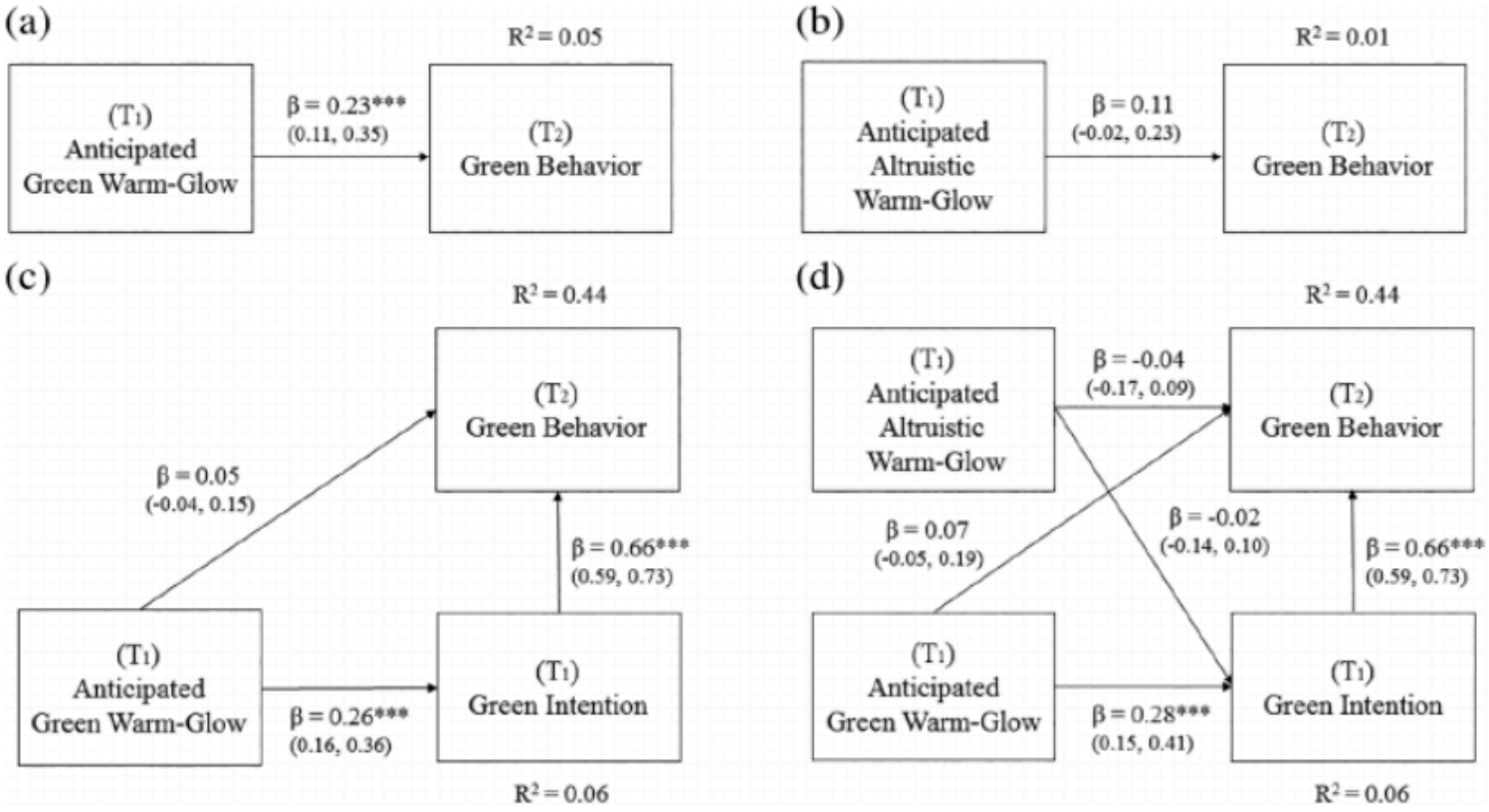
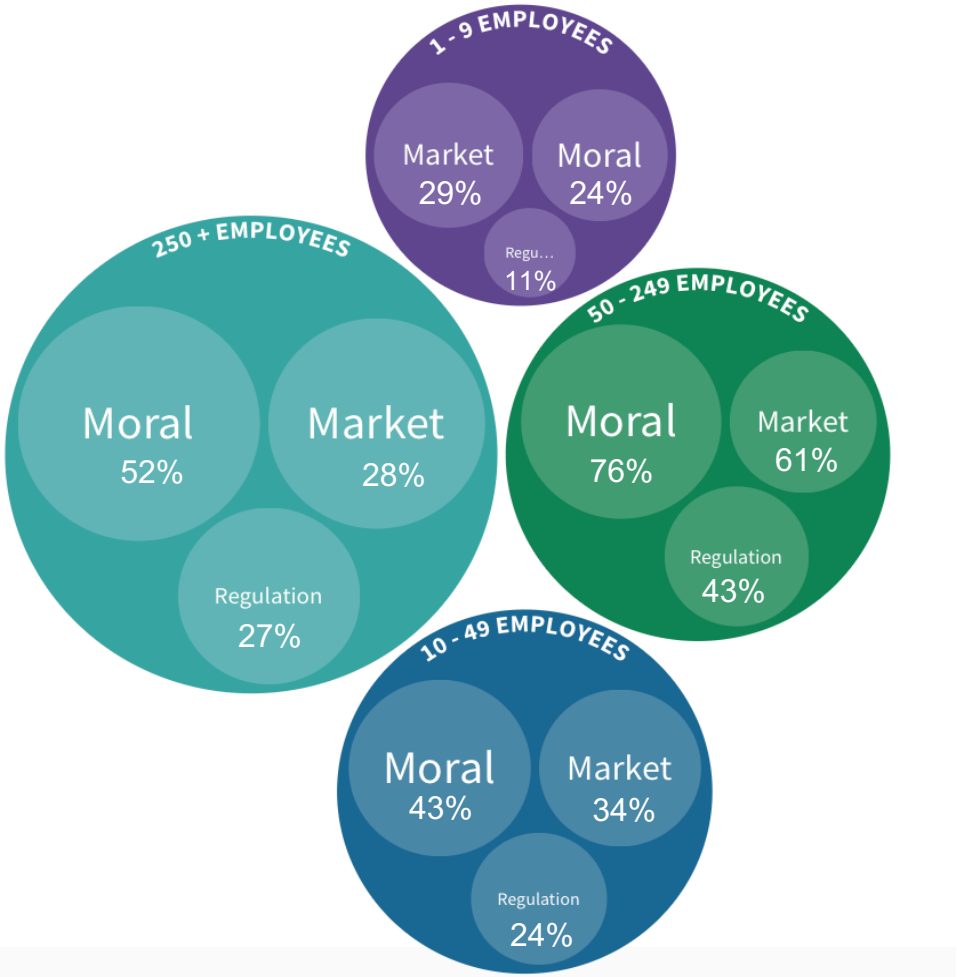


FIGURE 1 The influence of anticipated warm-glow on green behavior. *Note*: $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$. $N = 341$. Coefficients are standardized. Bootstrapped 95% confidence intervals are provided in parentheses. $T_2 - T_1 = 4$ weeks. To address panel attrition, a full information maximum likelihood (FIML) procedure was used to estimate the mediation models

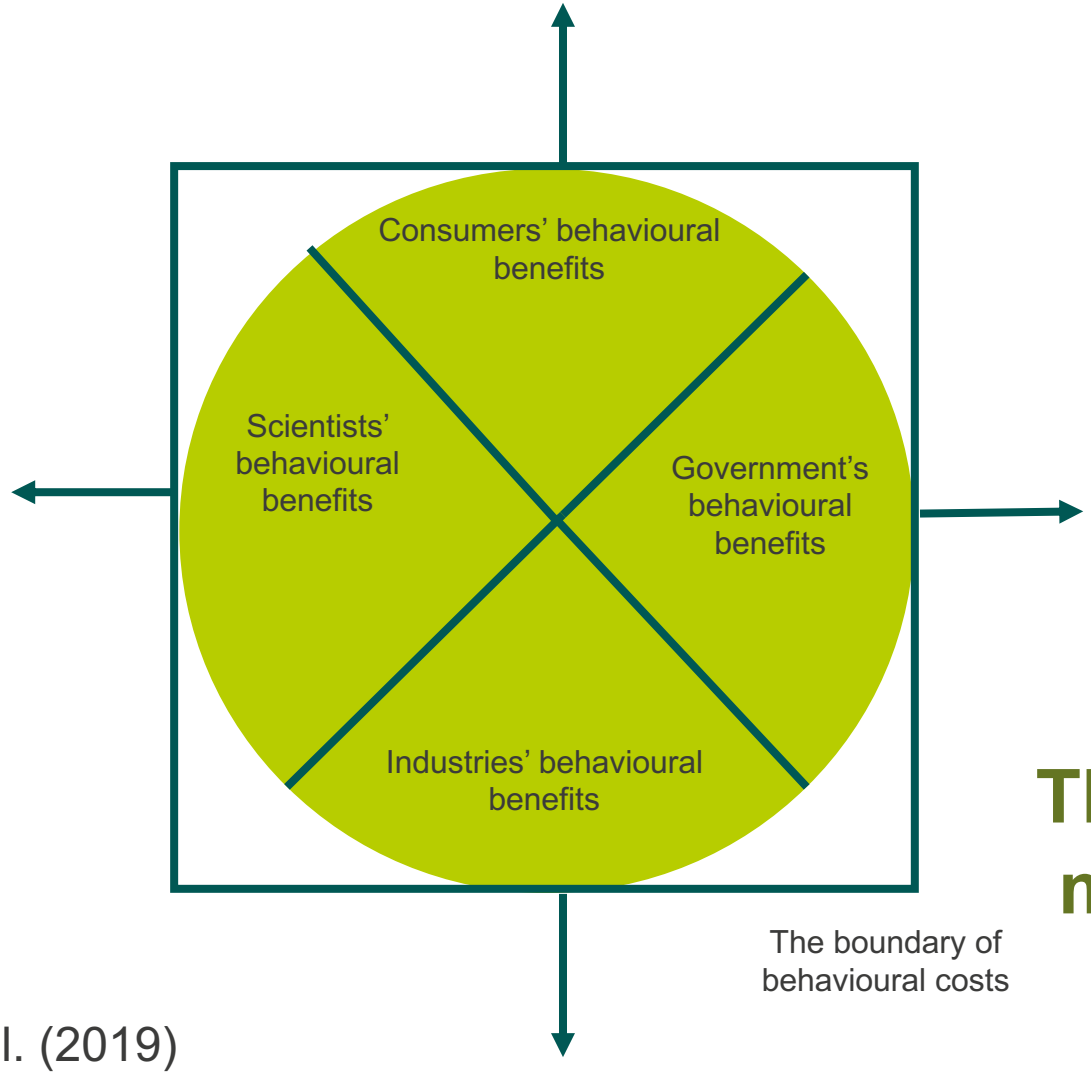
Source: Jia and van der Linden (2020)

Moral and market rather than regulation provide a stronger driver for adopting Environmental Management System (EMS)



Note: Percentage within each company size group. 12
Source: Environmental Management System Survey (505 sites).

Behavioural cost and benefit model



Source: Lili Jia et al. (2019)

Thank you very much for your attention!