Human behavioural drivers of meat consumption: Using group model building to capture lived realities

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Extended Abstract

Introduction

There is considerable recognition that pro-environmental behaviour change, particularly through demand-side mitigation strategies, is a critical lever to addressing climate change —see [1–3]. Existing integrated assessment models (IAMs) predominantly represent human behaviour as technoeconomic decisions and activities [4,5]. Recently, modellers have looked towards behavioural theories from social psychology to model behaviour change, namely, Theory of Planned Behaviour and/or Protection Motivation Theory [6,7]. We argue that such abstract, parsimonious, and generalisable theories do not fully account for nor resonate with people's lived experiences.

To address this gap, we seek to investigate people's lived realities in the existing system of social practices underpinning meat consumption, an environmentally significant behaviour. Here, we begin with people and their mental models: what are the systemic factors that influence behaviour and how do they manifest in lived experiences? To that end, we conducted participatory modelling to co-produce a behaviour-specific model of meat consumption choices. By focusing on people's lived experiences within existing behavioural regimes, we can better understand the various social-cultural-economic processes in the system that explain "how environmentally problematic ways of life are reproduced and how they change" [8](p.1277).

Methods

We conducted two participatory modelling workshops at the University of Bergen with two sets of participants to collect data on people's mental model of the drivers of meat consumption. The first workshop was on November 16, 2023, with 25 students from the Master programme in System Dynamics. The second was on February 16, 2024, with 13 students from the Master programme in Sustainability. We worked with master students for rapid prototyping and these two groups were useful for our purposes: the system dynamics students came from diverse disciplinary as well as cultural backgrounds, while the sustainability students have an interest (and experience) in pro-environmental behaviour change.

We audio-recorded the group discussions with informed consent obtained from all participants. The transcripts from the recordings were analysed in NVivo 14 using a deductive-inductive approach to coding from qualitative content analysis methods [e.g., 9–11]. Across the two workshops and the six co-produced maps (causal loop diagrams, CLDs), a new integrated CLD was built by cross-referencing feedback loops in the co-produced maps with the feedback stories identified from coding the discussions. Our selection of variables for each loop in the new CLD reflects the level of detail or abstraction necessary to capture the full range of stories embedded within. This method ensures that more weight is given to what people have expressed during the discussion. In doing so, we adequately capture the nuances of their lived realities that may have been lost if we had relied solely on the raw causal maps for integration.

Results

Our integrated CLD **(see Figure 1)** consists of a total of 15 main feedback loops, spanning five themes: economic, sociocultural, socioeconomic, health and nutrition, and environmental perspectives.

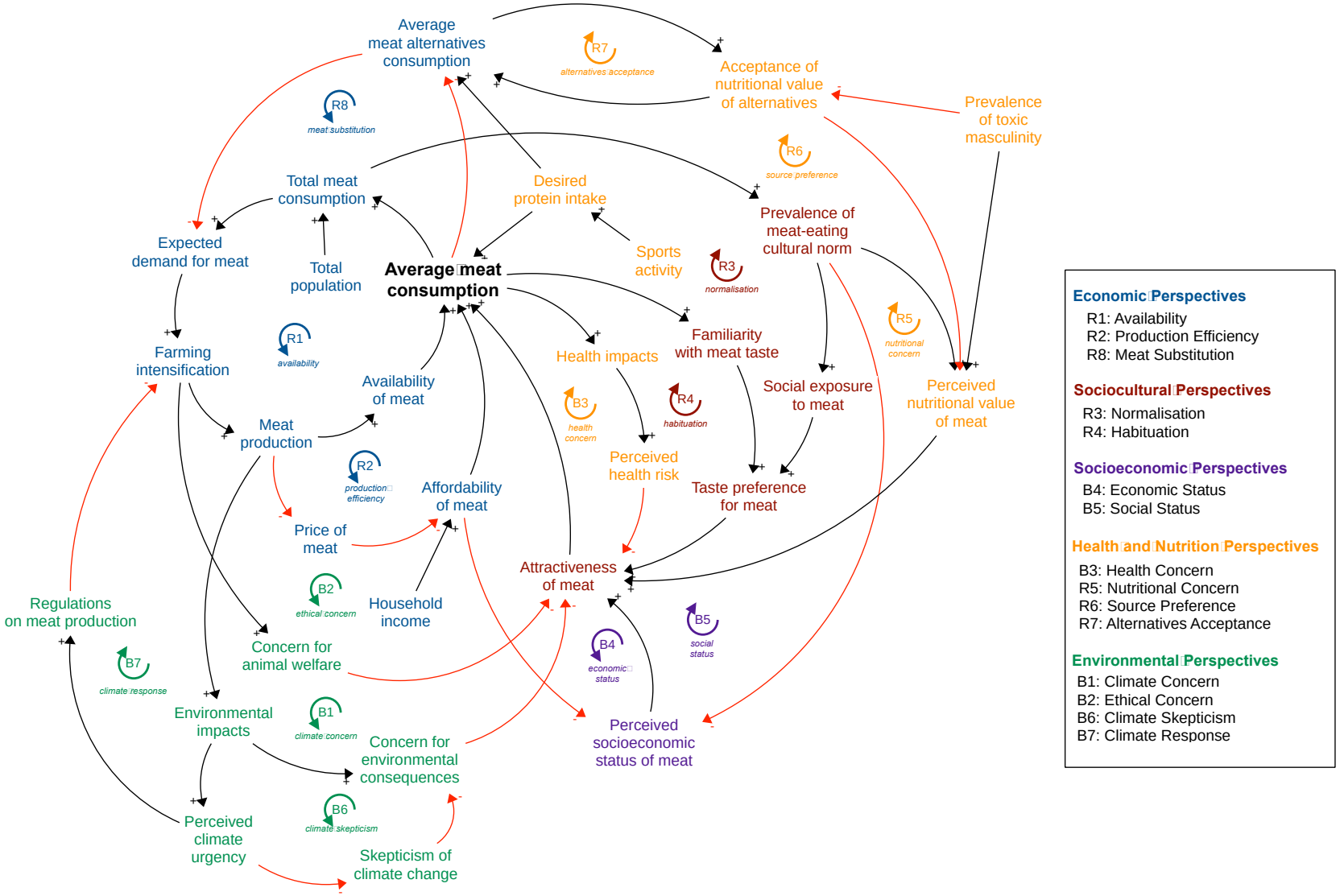

Figure 1. Integrated causal loop diagram depicting the feedback structure of meat consumption, generated from participatory modelling workshops

Discussion

Through participatory modelling, we were able to explore people's mental models on the drivers of meat consumption —in a way that is grounded on lived experiences. The outcomes of the workshops facilitate us our understanding of how the various feedback processes embedded within social arrangements influence people's behaviour.

Based on the feedback stories we collected, we can surmise that the current meat consumption regime is propped up by the economic and sociocultural processes that are favourable to reproduction of this social practice. R1 (availability) and R2 (production efficiency) work in concert to incentivise further meat production, reinforcing the accessibility of meat in society. The strength of these loops is further bolstered by three other reinforcing loops that come into effect. R3 (normalisation) socialises people to meat in their diets thus shaping their taste preferences. The more people continue to consume meat, and become familiarized to the taste, the more meat-eating becomes habituated on the individual level (R4: habituation). Moreover, the cultural norm for meat-eating shapes individual perception of the superior nutritional value of meat for daily protein requirements (R5: nutritional concern). Together, they synergistically dominate the system, over the other competing processes, and influence people's ability and willingness to consume meat products in their diets. Widespread pro-environmental behaviour change, therefore, can be enabled by disrupting the dominance of these feedback processes in the system.

Such disruption is achieved by strengthening the balancing loops that limit meat consumption. For one, emphasising the adverse health impacts from excessive meat consumption could encourage reduced meat intake (B3: health concern). Making apparent the poor treatment of animals, in intensified livestock farming, could activate ethical concerns (B2) and reduce the attractiveness of meat consumption. Similarly, environmental concerns (B3) could be activated by emphasising the environmental impacts of mass production and consumption. By working towards limiting meat consumption, these loops allow R8 (meat substitution) to gain strength over time as more people shift their consumption towards meat alternatives. However, such changes are expected to be gradual since there are delays involved in the feedback processes and shifting the direction of the dominant reinforcing loop requires accumulating enough resources to go beyond critical threshold level. Socio-political obstacles such as climate scepticism or even toxic masculinity further hinder the accumulation of such momentum.

Nevertheless, a tipping point could occur in the long-term as climate consequences become more readily felt in society, compelling people to take climate concerns more seriously (B6) and passing regulations to limit unsustainable production (B7). In turn, the regime could shift towards a society that mainly consumes alternatives to meat. And enduring shift would entail a system that is dominated by R8 (meat substitution), propped up by R7 (alternatives acceptance) and R6 (source preference). Only then would people in such society value meat alternatives as a viable and attractive source of daily nutrition. Without a shift in such cultural valuations, the system could shift towards meat-eating again if the threat of climate change is mitigated and the pressure to limit consumption wanes. This approach to pro-environmental behaviour, therefore, emphasises the need to account for the socio-cultural-economic-ecological feedback processes that influence people's choices. Only then can we arrive at a more complete representation of behaviour change in IAMs for assessing demand-side mitigation.

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