

Unpacking the Dynamics of the Stagnant Adoption of Meat Alternatives in Norway

A system dynamics study of feedbacks, skepticism, and public policy

Food choices affect public health, land use, and climate. Consumption of meat alternatives can be central to sustainable food systems, yet adoption in Norway remains low.

This study develops a system dynamics model to explain this stagnation and uses policy scenarios to explore leverage points identified within the model.

Research Question: What feedback mechanisms explain the stagnation in the adoption of meat alternatives in Norway?

Causal Loop Diagram

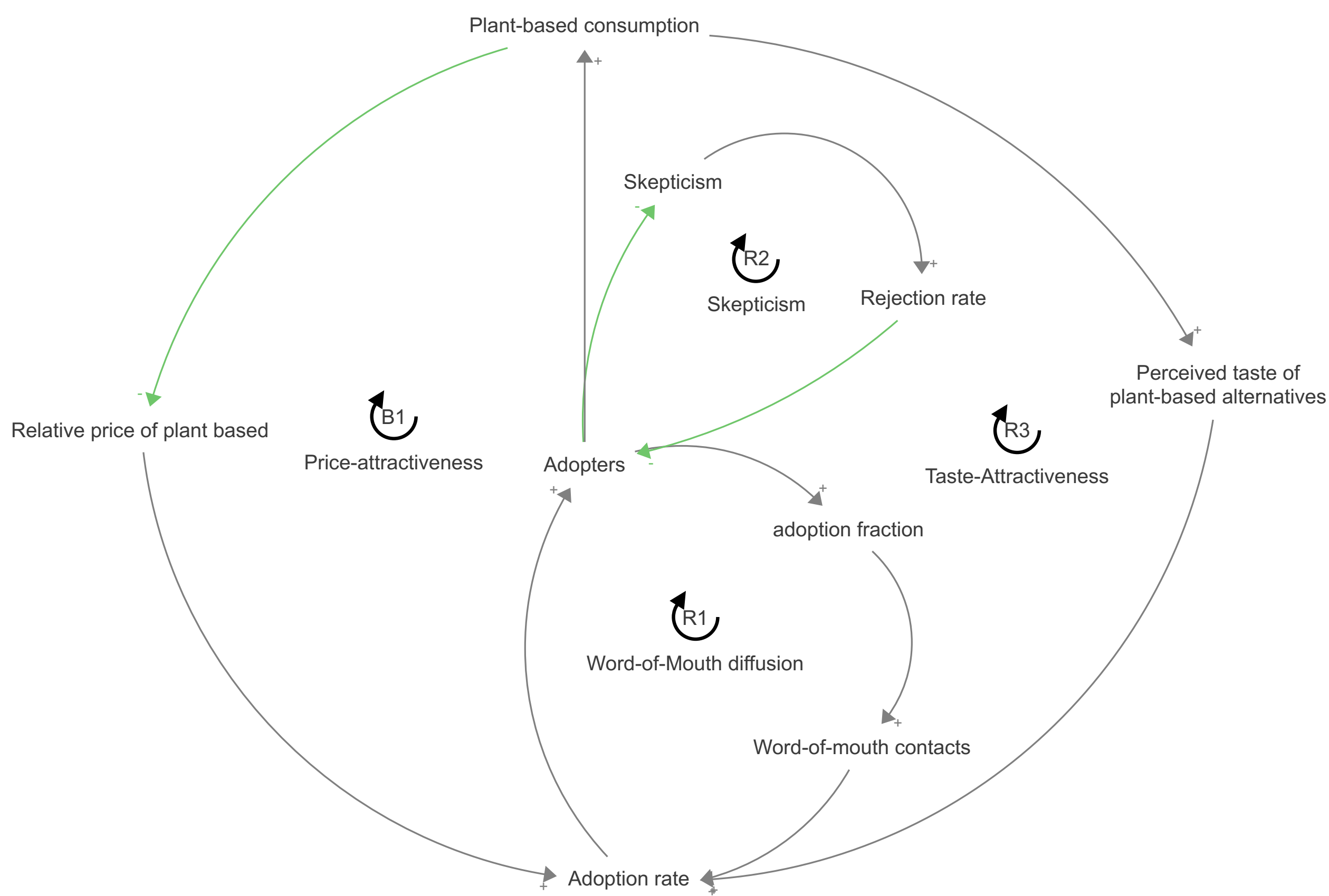


Figure 1. Causal loop diagram showing the main reinforcing loops (R1–R3) and balancing loop (B1) shaping the adoption dynamics of meat alternatives in Norway.

Policy to Normalize Adoption

The study evaluates a government-funded policy in which public schools regularly serve plant-based lunches. The goal is to increase familiarity through repeated exposure.

Two scenarios are tested starting in 2028. Full implementation is assumed to raise the adoption rate to 0.3 per year.

The effect is mainly driven by stronger word-of-mouth and lower skepticism effects, while taste remains largely unchanged.

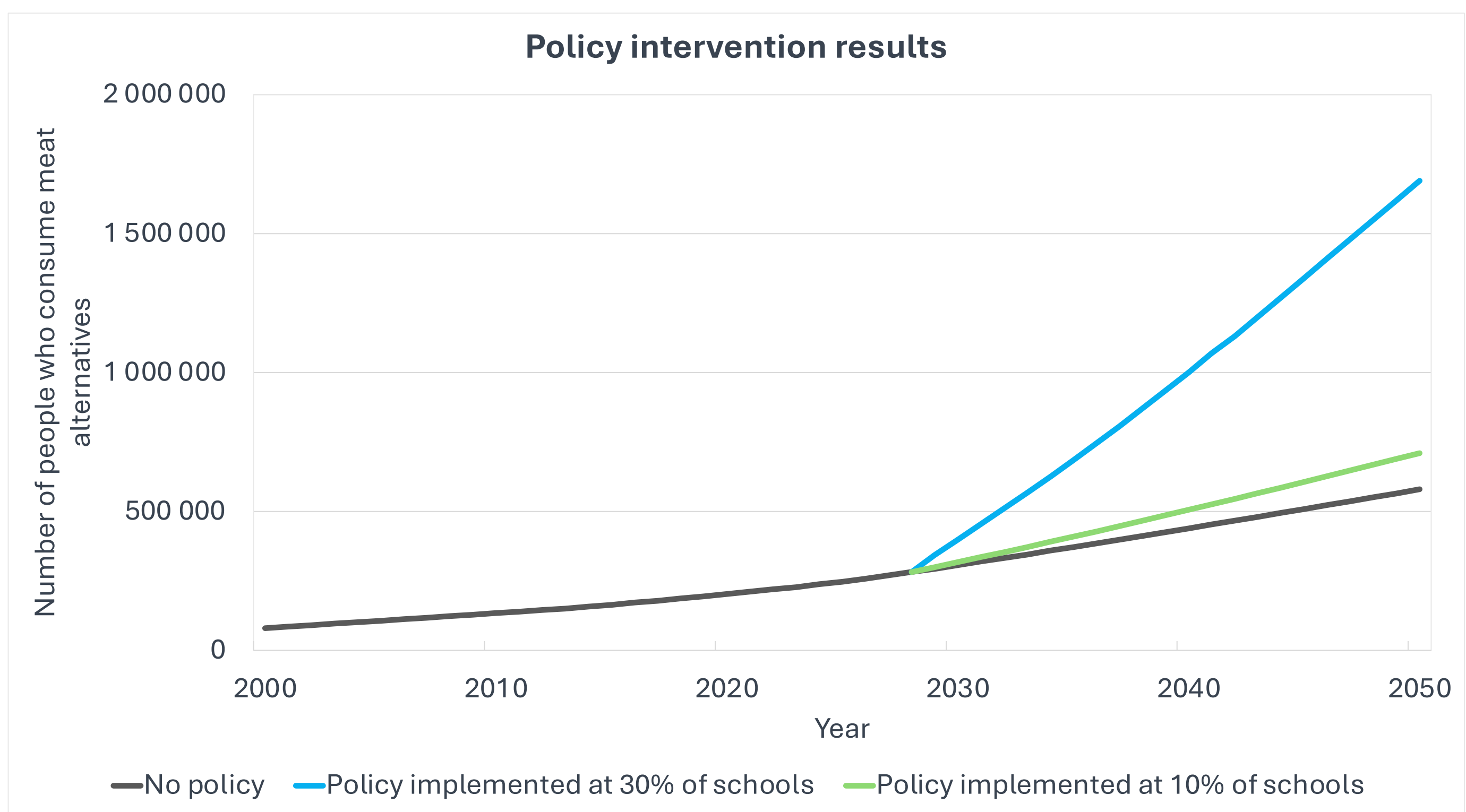


Figure 2. Simulated impact of a Norwegian school-lunch policy on plant-based adoption from 2028 to 2050. The 30% implementation scenario produces the strongest growth by 2050.

Goal

This study uses system dynamics to examine why adoption of meat alternatives in Norway remains slow despite growing availability, and under what conditions diffusion can become self-sustaining.

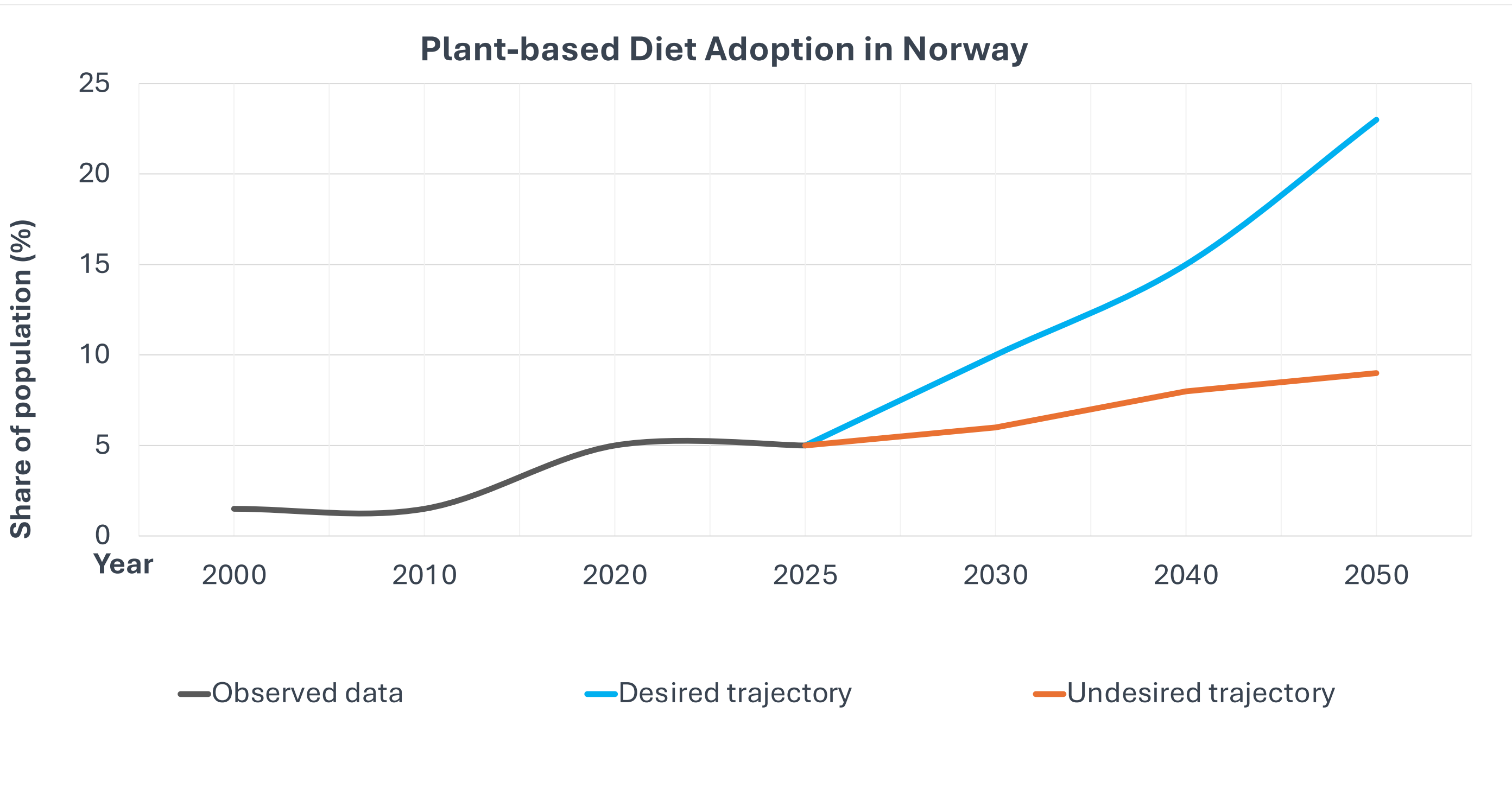


Figure 3. Reference mode showing observed and desired trajectories for plant-based diet adoption in Norway.

Method

- Bass diffusion structure:** We developed a system dynamics model based on Bass diffusion, with stocks representing potential adopters, those considering adoption, and adopters. A skepticism stock was added to capture resistance to adoption.
- Literature review and calibration:** The model was informed by an extensive literature review and calibrated against Norwegian data from 2000 to 2020.
- Policy testing:** The model was used to test school-lunch policies introducing free plant-based meals in 300 or 1000 schools per year from 2028 to 2050.

Results

Word-of-mouth generates strong growth only when plant-based products are affordable, tasty, and socially normalized, and when skepticism is moderate.

The model shows that innovation and imitation become effective only under these conditions. In that case, word of mouth and everyday product experience create reinforcing feedback loops that accelerate adoption, while skepticism declines.

Next Steps

- The model is deliberately small and leaves questions open for future research.
- The Norwegian population is treated as homogeneous. Future work could segment the population by economic constraints and baseline skepticism to test policies tailored to these groups.

Conclusion

Diffusion stalls when price, taste, and skepticism reinforce one another. Targeted policy interventions can break this pattern and accelerate adoption.

Scan for references:

