

# Sustainable Food Consumption

## Relevance, Challenges, and Strategies

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ÖGA

Security of Supply in the Context  
of Rising Demand and Limited Resources

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# Introduction

**Ecological Footprint: Number of Earths (2024)**  
**World: 1.78**



Picture: 3D Bild des Planetenerde mit Schatten, die isoliert auf weißem Blick auf Europa und Afrika | Stock Bild | Colourbox

Source: Lo et al. 2025

# (Un)Sustainability: Relevance in the Food Sector

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- **Ecological problems** (von Braun et al. 2021) :
  - 30% of global greenhouse gases, 80% of tropical deforestation, main cause of biodiversity loss, land degradation, and water scarcity
  - 1/3 of food produced worldwide is lost or wasted

# (Un)Sustainability: Relevance in the Food Sector

- **Ecological problems** (von Braun et al. 2021):
  - 30% of global greenhouse gases, 80% of tropical deforestation, main cause of biodiversity loss, land degradation, and water scarcity
  - 1/3 of food produced worldwide is lost or wasted
- **Social problems** (UN 2022; Palumbo & Sciurba 2018; Keeling et al. 2019):
  - Child labor, human trafficking, critical animal welfare conditions
- **Health problems** (Swinburn et al. 2019):
  - Malnutrition-undernutrition, micronutrient deficiencies and obesity

# True Costs of Food\*



\* This estimate excludes relevant externalities (e.g. costs resulting from social exploitation of child labor or forced labor), and estimates of included externalities include uncertainty

Source: Hendriks et al. (2023)

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# **Sustainability Transition Needed**

**A complex, systemic challenge**

**Involves all stakeholders in the food sector**

**Consumers play a key role**

# What is Sustainable Food?



Source: Warner et al. 2017

# Agenda

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1. Sustainability and Food Consumption
2. Challenges and Strategies for Sustainable Food Consumption
  - Recognizing Importance
  - Building Knowledge
  - Strengthening Perceived Responsibility
  - Ensuring Accessibility and Availability
  - Navigating Trade-Offs and Habits
  - Addressing the Free Rider Problem and Perceived Efficacy
3. Conclusions and Final Thoughts

# Status Quo vs. Desirable Future

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## **Desirable Future**

Sustainable  
food  
consumption

## **Status Quo**

Unsustainable  
food  
consumption

# Overcoming Barriers: Recognizing Importance

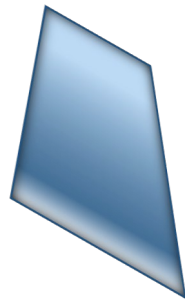
**Desirable future**

Sustainable  
food  
consumption

Importance

**Status Quo**

Unsustainable  
food  
consumption



# Perceived Importance

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- The majority of consumers recognize sustainability's importance
  - 94 (53/41) % state that protecting the environment is very/fairly important to them (European Commission 2020a).
  - 93 (77/16) % state that climate change is a very/fairly serious problem (European Commission 2023a).
  - 91 (52/39) % to state that it is very important/important to them to protect the welfare of farmed animals to ensure that they have decent living conditions (European Commission 2023b).
- Only a minority see no need for change

# Overcoming Barriers: Building Knowledge



# Eating Less Meat – Sustainable?

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What do you think “eating a healthy and sustainable diet” involves?

(Multiple answers possible, coverage EU-27)

**Eating less meat: 35% of Respondents**

European Commission. (2020b)

# Sustainable Food Labels ...

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- ... should provide consumers with “access to understandable, relevant, credible information...”  
(European Commission 2001, p.12).
- ... are aimed at reducing information asymmetry on the consumer side (Van Amstel et al. 2008).

# Sustainability Information on the Rise

- In 2022, every second new product launched in the EU has a sustainability related information (text, logo, claim), (2011: 20%);
- In 2021, about 12% of new product launched in the EU have a sustainability related logo – organic label not included (2015: 6%).

Source: European Commission, Joint Research Centre (2024)



Pictures: [NABU Siegel-Check - Informationen zu Logos und Label für umweltfreundliche Lebensmittel](#) ; [Labels - Verbraucherportal-BW](#) ; [Liste der Labels](#) | [labelinfo.ch](#); [Nutri-Score und andere mehrstufige Labels](#) | [Lebensmittelklarheit](#)

# What Makes a Label Effective?

## Label effectiveness depends on

- Trust in labels (e.g. Gorton et al. 2021)
- Recognition/Awareness of labels (e.g. Hartmann et al. 2018).
- Perception and understanding of the label
  - Might be compromised for labels abstract in nature that lack concreteness, e.g. the Green Leaf EU organic logo (Hartmann et al. 2025).



# Label clarity: Experimental study

## Investigating label perception with and without modification

- 2 Pan-European online consumer surveys
  - Seven countries: France, Germany, Hungary, Italy, Norway, Serbia and the UK
  - 2017 & 2018; N=9,578 valid responses (N=2,228 both surveys).

Original  
organic label



Modification 1:  
Explicit reference to  
organic



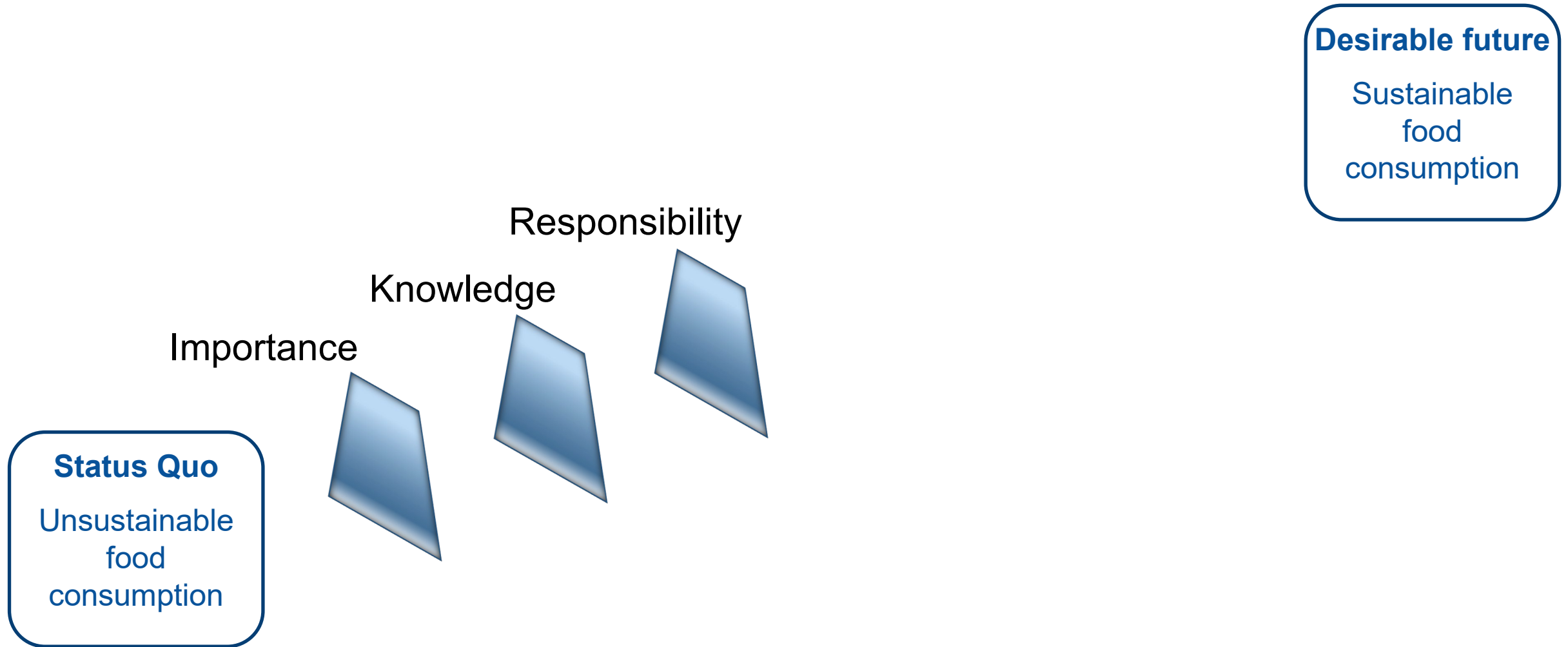
Modification 2:  
Explicit reference to  
organic and  
certification



**Strong and significant positive effects on  
consumers' label evaluation of both modified labels**

Source: Hartmann et al. 2025

# Overcoming Barriers: Strengthening Perceived Responsibility



# Limited Perceived Responsibility

In your opinion, who should take responsibility for animal husbandry through their actions?\*

Consumers (me) 31%

Which actors have a role to play in making food systems more sustainable?\*\*

Consumers 43%

In your opinion, who within the EU is responsible for tackling climate change?\*\*

You personally 41%

0% 10% 20% 30% 40% 50%

**Multiple answers possible;** depending on the area other actors to take responsibility were e.g. national governments, business and industry, European Union, regional and local authorities, environmental groups, farmers

\* Germany; \*\* EU-27

Source: European Commission (2023a); European Commission (2020b); Klink et al. (2022).

# Consumer Responsibility Core Driver

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Theoretical and empirical research show that  
consumer responsibility  
is a critical driver of sustainable related behavior

Stern et al. 1999; Kaiser and Shimoda 1999; López-Mosquera et al. 2012; Verma et al. 2019;  
Syropoulos and Markowitz 2022; Shimul and Cheah 2022; Hess et al. 2025



**How can we empower consumers  
to see themselves as active agents of change**

# Increase Agency with Boosts?

Boosts are interventions that in order “to extend the decision-making competences ... target the individual’s skills and knowledge...” (Grüne-Yanoff & Hertwig 2016, p. 152)

- Boosts aim to strengthen personal agency and thus perceived responsibility (Hertwig 2017)
- Potential for longer-term positive effects (Hertwig 2017)

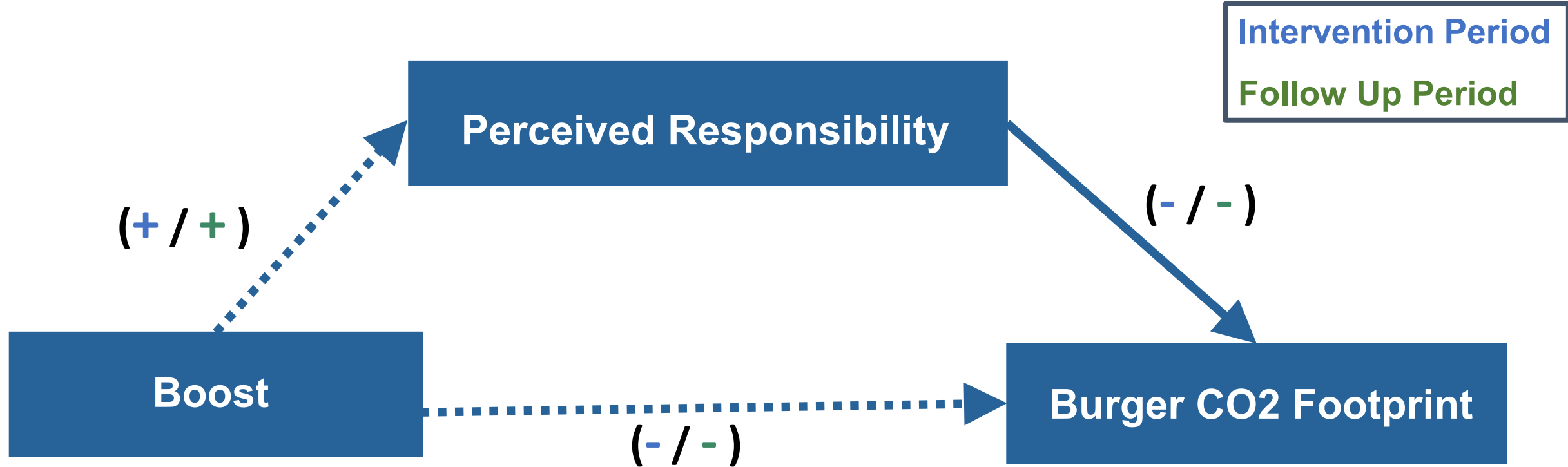
**Experimental study: Online consumer study, 2024, N=664\*** (Hess et al. 2025)

- **Setting:** Food Delivery App to order burgers
- **2 survey rounds:** Intervention and follow-up survey
- **Boost Intervention aimed at reducing CO<sub>2</sub> footprint of burger meal**
  - Information (primary component): Rules of thumb for choosing a climate-friendly diet
  - Self-efficacy: Banner “your choice makes a meaningful difference”
  - Feedback: CO<sub>2</sub> emissions are displayed on a colour coded scale



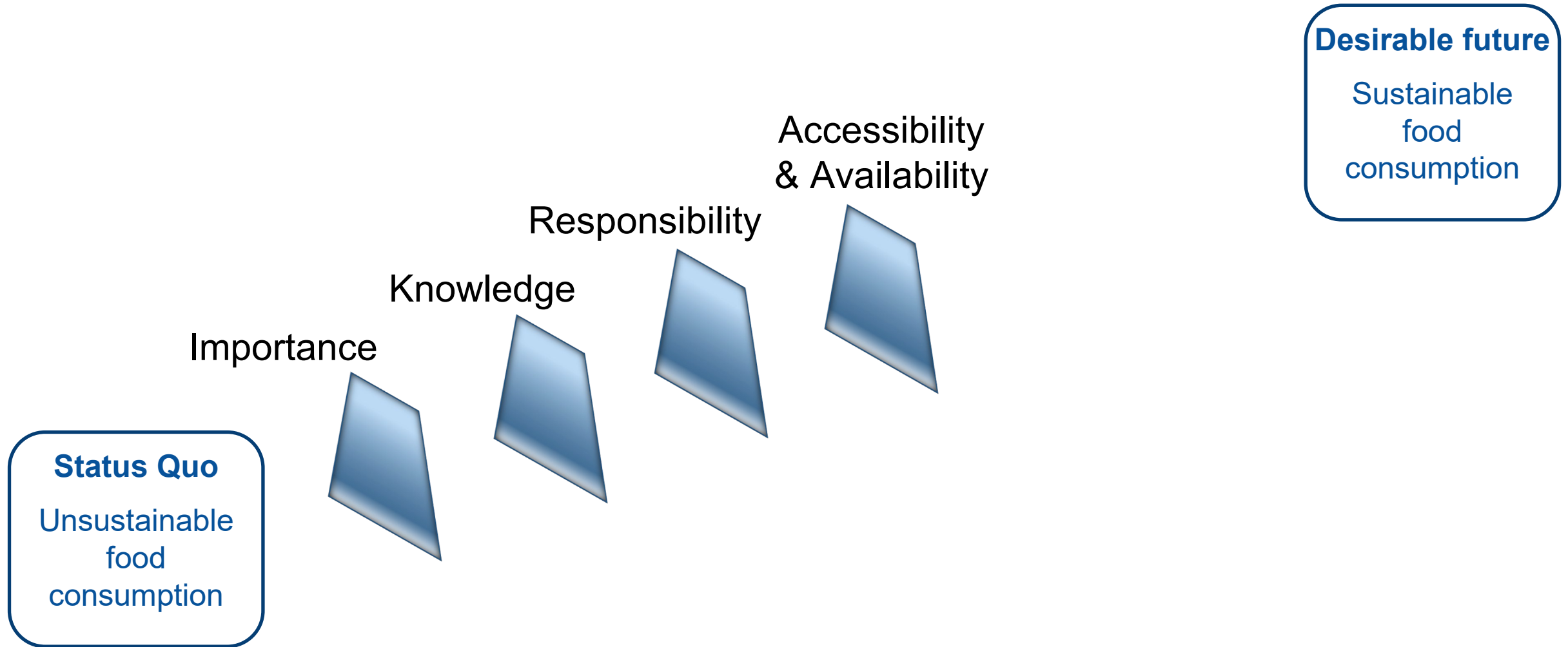
\* the study also included a nudge intervention

# One Time Boost: No Effect on Responsibility



Source: Hess et al. 2025

# Overcoming Barriers: Ensuring Accessibility and Availability



# Virtual Supermarket: Mixed Results



Picture: Bach et al. 2024

e.g. Arrazat et al. (2023), Vellinga et al. (2022); Hoenink et al. (2020); Bach et al. (submitted); Weingarten et al. (submitted); Weingarten et al. (2024).

**In general, it needs a combination of several interventions to be successful**

# Increasing Salience in the Retail Sector

## Large German retailer introduces in-store changes to support its #AttitudeShift goals

Restructures fresh meat displays by husbandry method, not animal type

Three sections:

- **Red** – Promotions (all husbandry levels)
- **Green** – Higher welfare (husbandry level 3–5)
- **Blue** – Conventional (husbandry level 1–2)

Uses ceiling hangers & door stickers to highlight higher-welfare products

### Stated goal of the retailer

Increase transparency by highlighting animal-welfare products and encourage active purchasing decisions in their favor

# Accompanying Study: Increasing Salience in the Retail Sector

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- Independent study (online consumer surveys in Germany; ongoing)
- Before/after analysis of the store adjustment
- Preliminary results indicate
  - Stated purchase behavior for meat with higher animal welfare standards in the past four weeks remained unchanged.
  - Perceived ease of finding such meat products also remained unchanged.
  - Consumer perceptions: interventions are viewed as necessary to improve animal welfare, supportive of purchase decisions, and having a slightly positive effect on stated loyalty and trust in the retailer.

# Digital Tools: Opportunities to Increase Salience

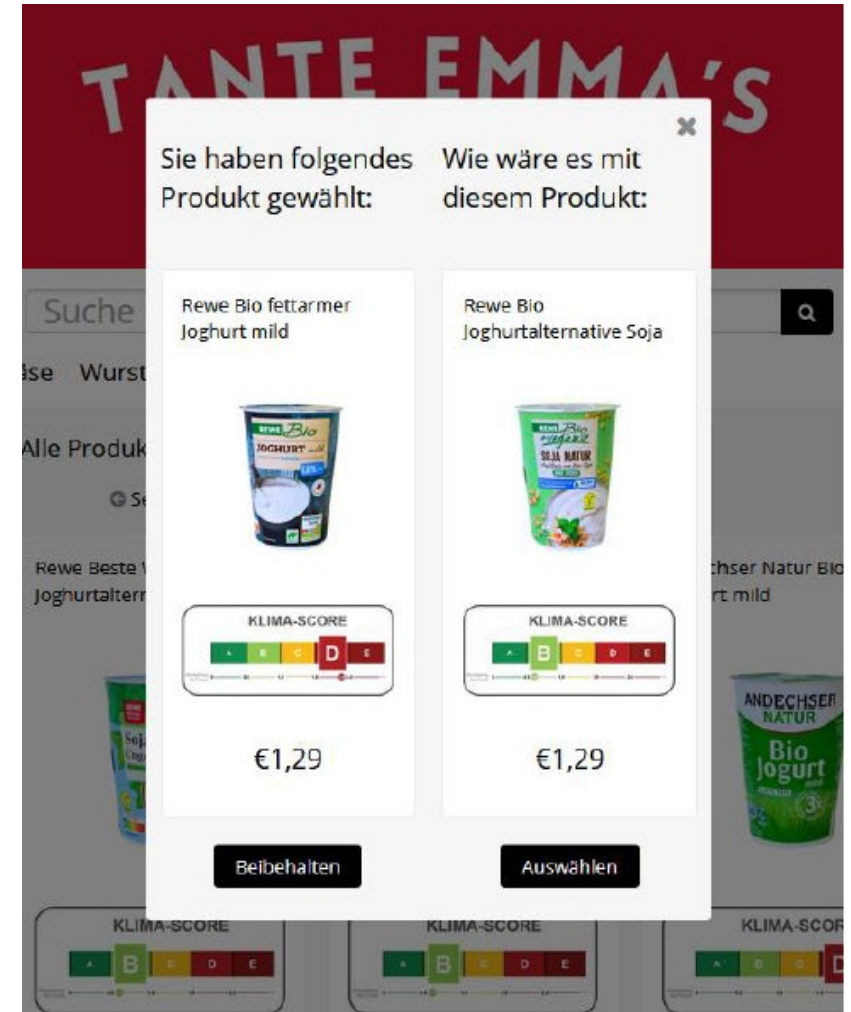
## FOOD SWAP RECOMMENDATIONS

### Food Swap Definition:

Offering alternative products with desired attributes (e.g., healthier or eco-friendly) at the point of selection (e.g. in an online supermarket)

(Jansen, van Kleef, & Van Loo, 2021).

Picture: Barg et al. (Manuscript in preparation)



# Delisting Unsustainable Products

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FROG LEGS AND  
TURTLE SOUP

Tengelmann

**1984**

... CAGE EGGS

Aldi Süd

**2003**

... HUSBANDRY  
LEVELS 1 AND 2 FOR BEEF

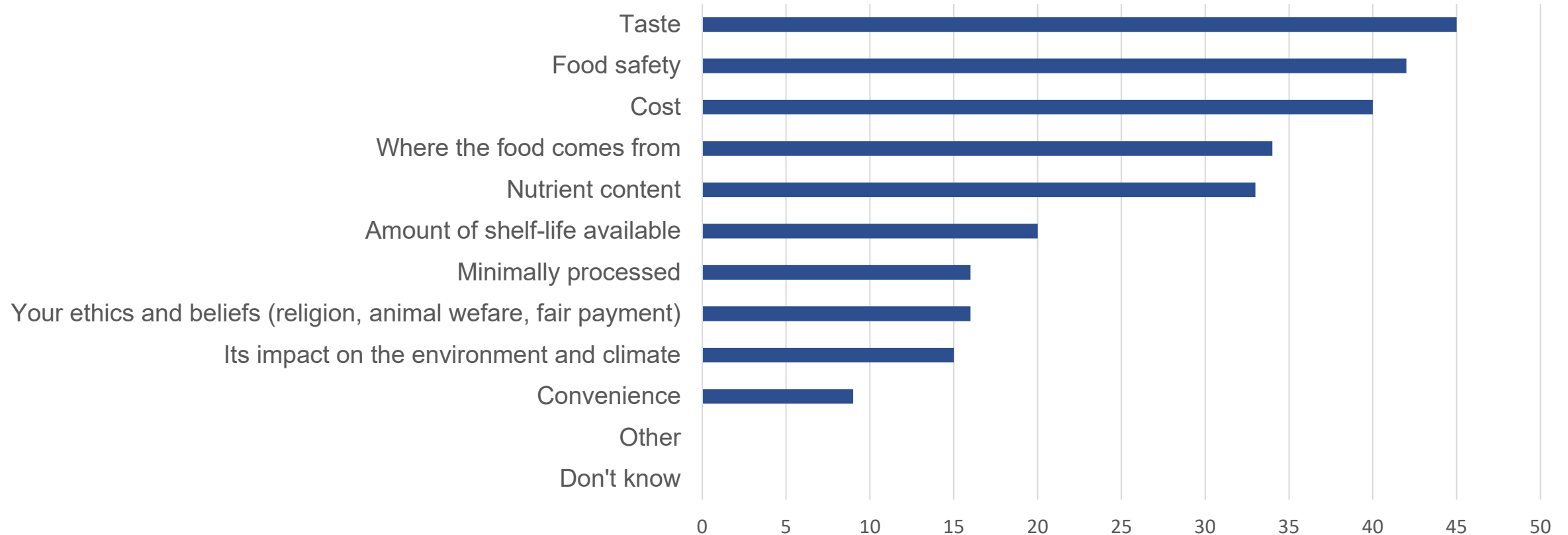
Aldi Süd

**2025**

# Overcoming Barriers: Navigating Trade-Offs and Habits



# Primary Drivers—taste, safety, and price\*



**Question: When you buy food, which of the following are the most important to you? Firstly? And then? (Max. 3 Answers)**

\* Data from (EU27)

Source: European Commission. (2020b).

# Shaping Habits for Sustainable Eating

- **Habits matter:**

- Many food choices are automatic, driven by routine rather than conscious evaluation
- Current food-environment hinder sustainable diet

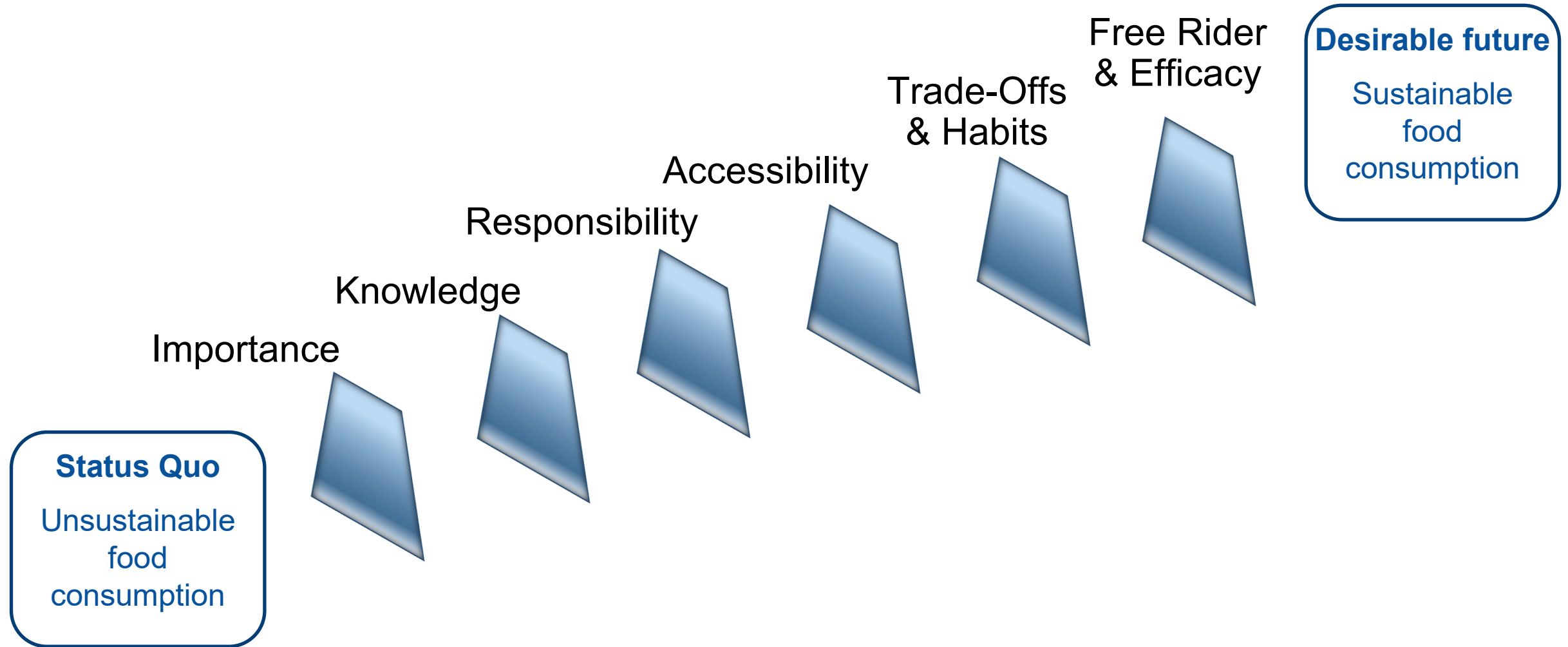
- **Changing food consumption habits:**

- **Boost salience:** Make sustainable options more visible at the point of sale (banners, prime shelf placement, labels)
- **Reduce salience:** Limit exposure to unsustainable products (e.g., restrict advertisement to children)
- **Increasing exposure:** Offer more sustainable menu options in public canteens; make meat-free menus a default or regular choice
- **Early interventions:** Introduce sustainable foods in kindergartens and schools to build familiarity and acceptance

**Long-term effect:** Exposure + positive experience can shift short-term choices and gradually reshape eating habits over time

Source: WBAE 2020

# Addressing the Free Rider Problem and Perceived Efficacy



**„It's difficult to make  
sustainable choices  
if it means sacrificing things  
we enjoy, particularly when  
others are not.“**

Michael (55), Germany  
Participant qualitative study 2021

Sources: EIT Food 2022.

# Free Rider Problem & Lack of Efficacy

- **Free Rider Problem**

- Sustainable food choices often require higher costs (money, time, effort)
- Benefits are collective (clean air, water, climate protection, biodiversity) and spread broadly across society
- Public good character

- **Lack of Perceived Efficacy**

- Consumers often think: “*My single choice has little impact on biodiversity*”
- Leads to discouraged or inconsistent sustainable consumption.

Source: Hartmann et al. 2014

# Free Rider Problem & Lack of Efficacy

## Policy Levers for Sustainable Food Systems

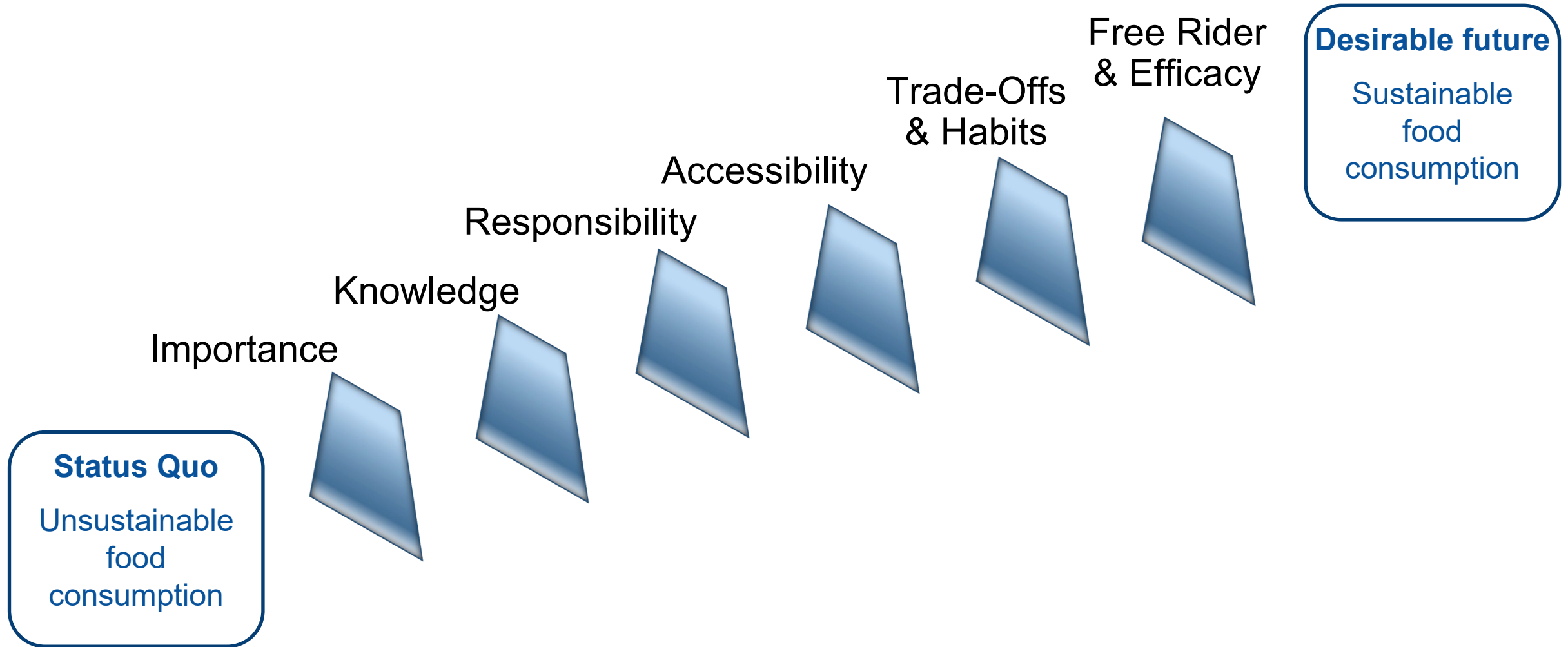
- Make sustainable products more affordable (subsidies)
- Discourage unsustainable options (taxes)
- Lead by example in public institutions (canteens, schools)
- Inform and engage citizens (awareness campaigns)
- Enforce sustainability standards  
(e.g., Corporate Sustainability Due Diligence Directive, Regulation on Deforestation-Free Products)



Source: WBAE 2020

Pictures: Modified based on [Stockfoto über fleisch, fleischer, ausgabe | Colourbox](#); [Stockfoto über und, obst, gemüse | Colourbox](#)

# Sustainable Food Consumption: Challenges

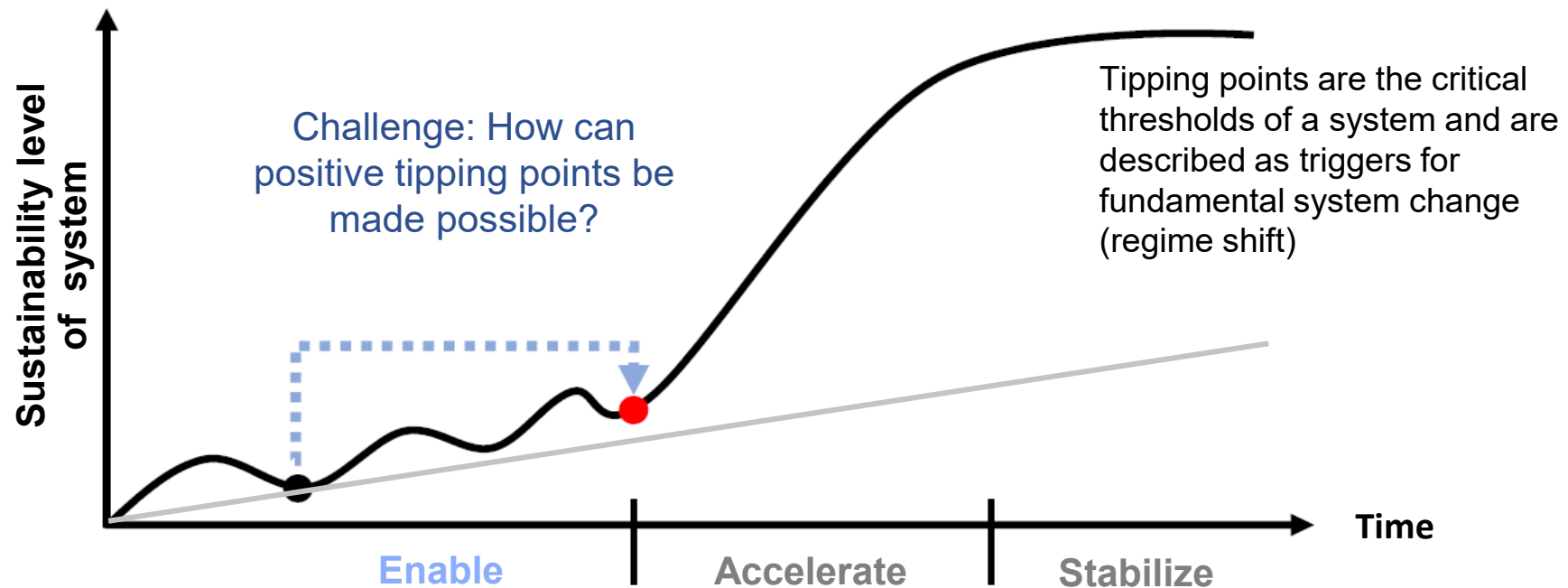


# Conclusions

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- Transforming the food system is vital, as key sustainability goals are unmet and at risk
- Sustainable consumer choices needs an enabling environment
- Research can drive change through innovation, evidence, and closing knowledge gaps
- A coordinated strategy involving all stakeholders is needed to enable systemic, sustainable food consumption

# Final thoughts: Enabling Tipping Points



Quelle: Fesenfeld et al. 2022; Schulze et al. 2024



[Picture: 3D Bild des Planetenerde mit Schatten, die isoliert auf weißem Blick auf Europa und Afrika | Stock Bild | Colourbox](#)

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