

When Complexity Rules Simplicity Wins



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Brenntag Food & Nutrition Americas

Brenntag Intro Video





Agenda

Brenntag overview

Sustainability and Food Insecurity

Technology

Supply Issues

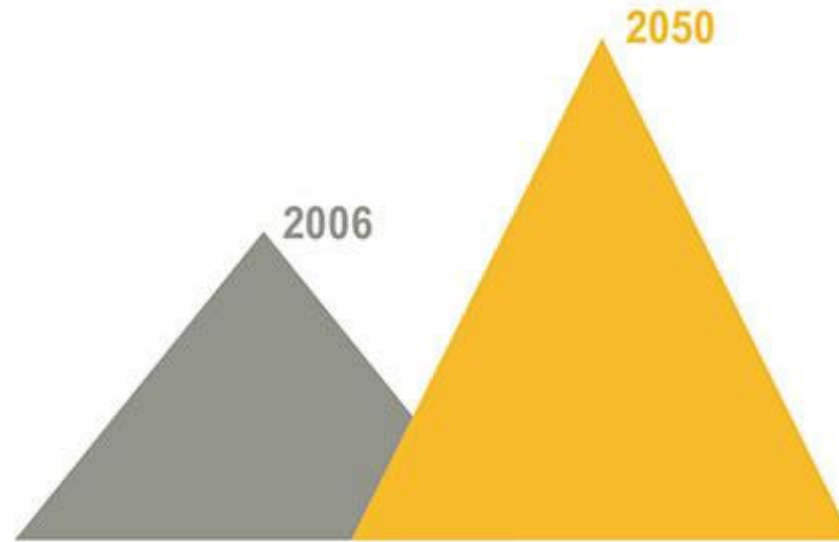
Consumer Trends

Path Forward



Sustainability & Food Insecurity





69%

Required increase
in food calories
to feed 9.6 billion
people by 2050



WORLD RESOURCES INSTITUTE

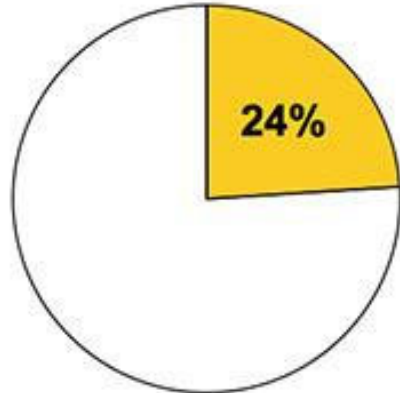
Sources: <http://ow.ly/rpfMN>





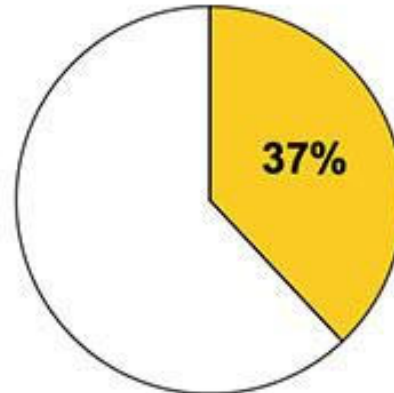
Agriculture's Share of Global Environmental Impact (2010)

GREENHOUSE GAS
EMISSIONS



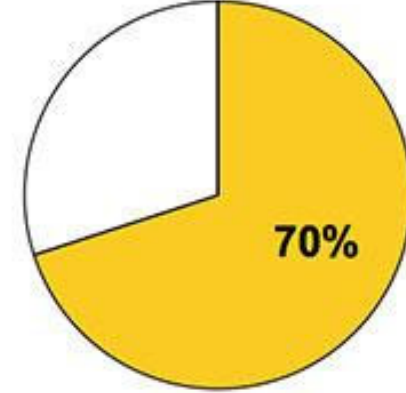
100% = 49 Gt CO₂e

EARTH'S LANDMASS
(EX-ANTARCTICA)



100% = 13.3 bn ha

WATER
WITHDRAWAL



100% = 3862 km³ H₂O



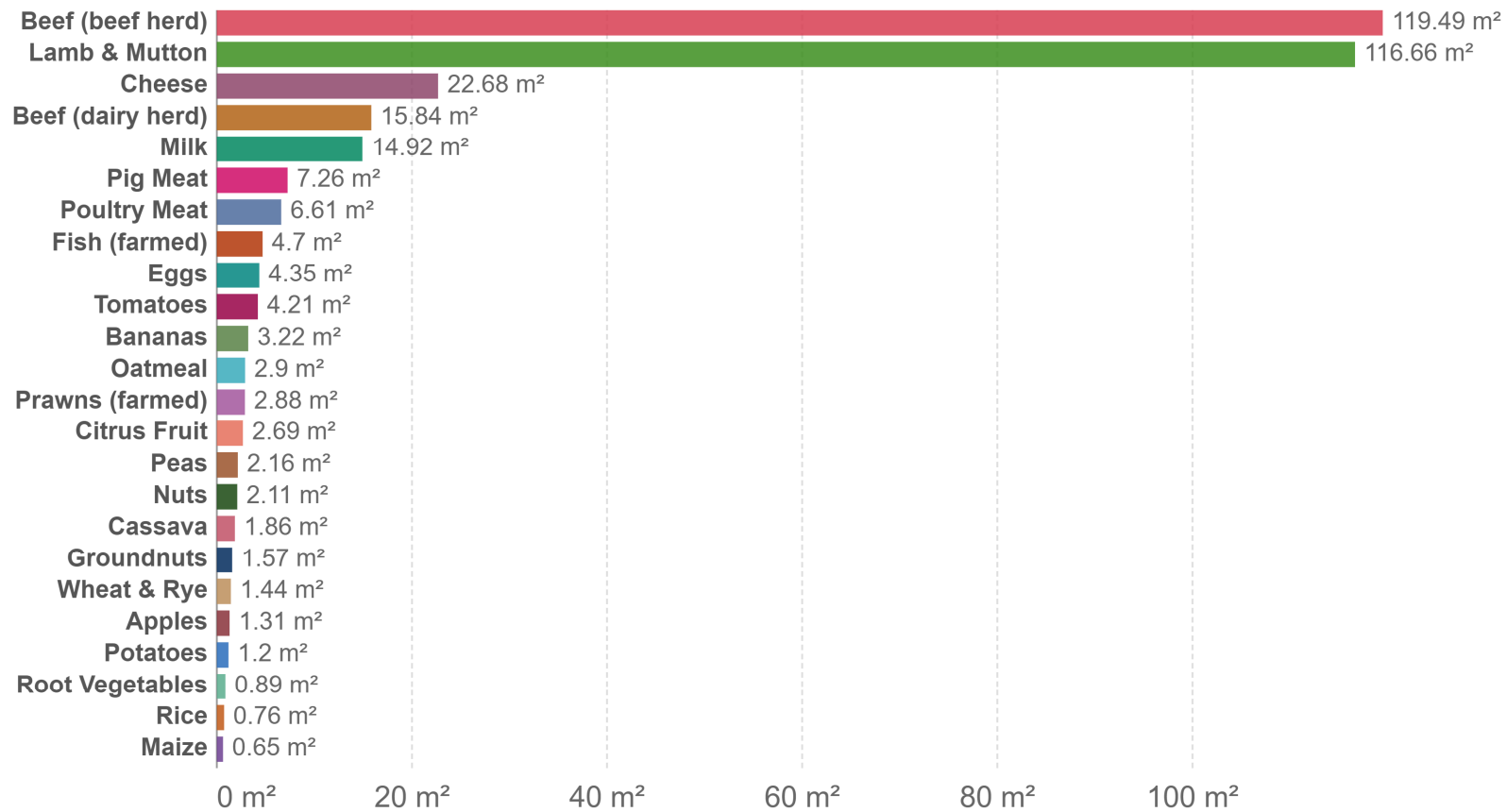
WORLD RESOURCES INSTITUTE

Sources: <http://ow.ly/rpfMN>

Land use of foods per 1000 kilocalories

Our World
in Data

Land use is measured in meters squared (m^2) required to produce 1000 kilocalories of a given food product.



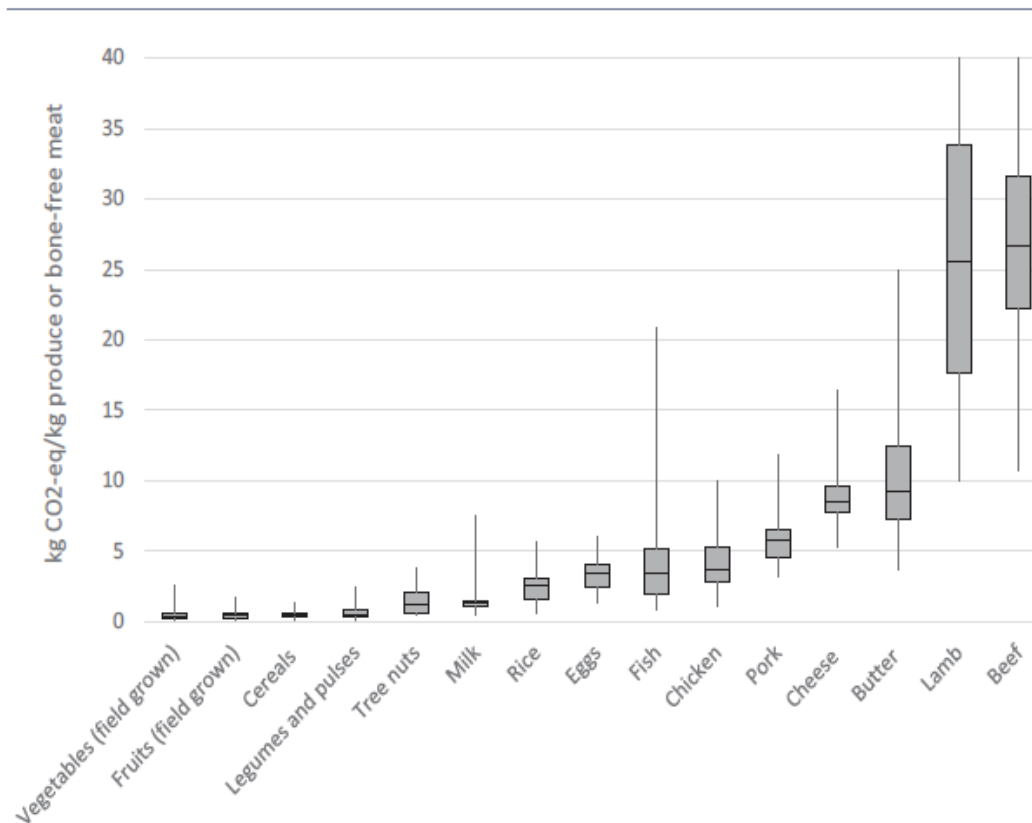
Source: Poore, J., & Nemecek, T. (2018). Additional calculations by Our World in Data.

Note: The median year of the studies involved in this research was 2010.

OurWorldInData.org/environmental-impacts-of-food • CC BY



Figure 3
CO₂ emissions for selected broad food categories



Source: Stephen John Clune, Enda Crossin, and Karli Verghese, "Systematic review of greenhouse gas emissions for different fresh food categories", *Journal of Cleaner Production*, vol. 140, No. 2 (2017).

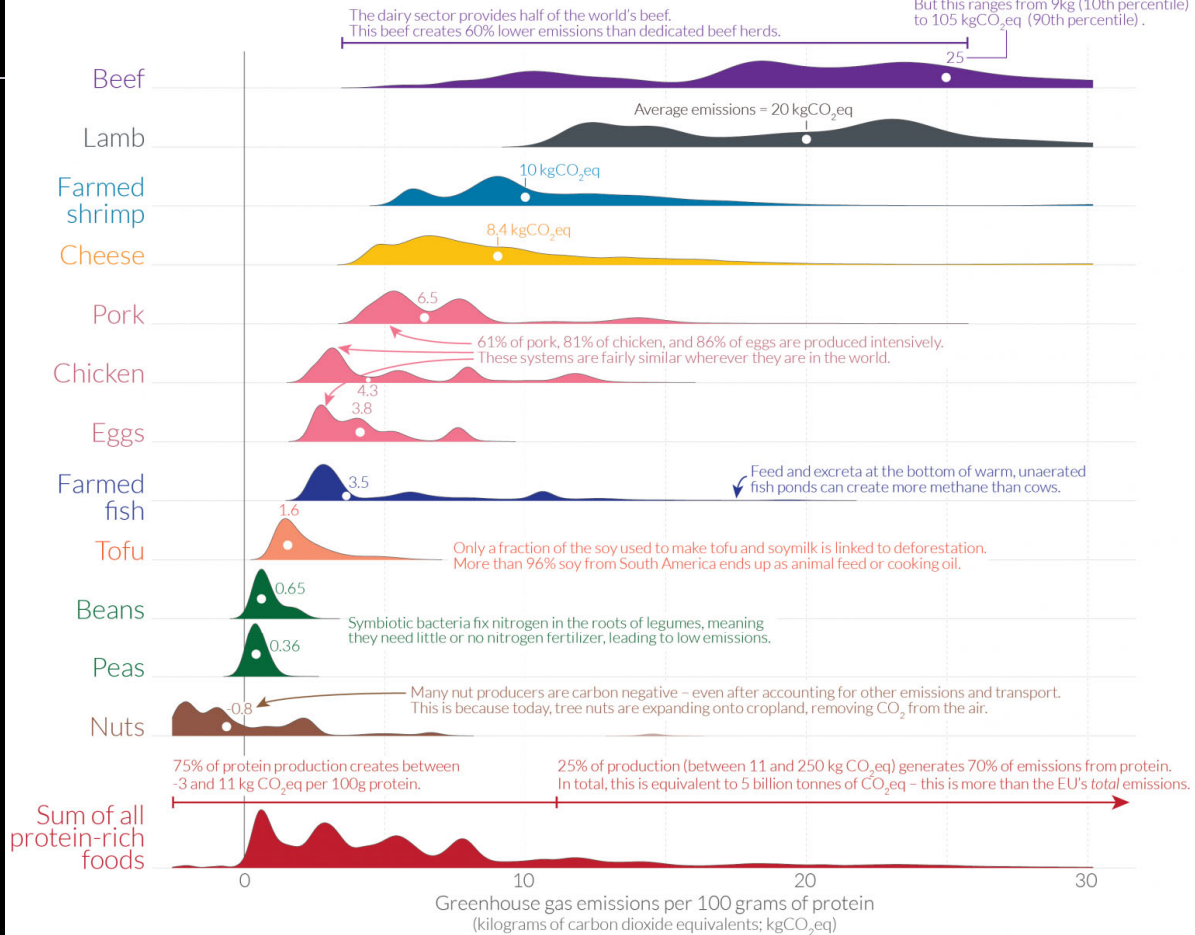
How does the carbon footprint of protein-rich foods compare?



Greenhouse gas emissions from protein-rich foods are shown per 100 grams of protein across a global sample of 38,700 commercially viable farms in 119 countries.

The height of the curve represents the amount of production globally with that specific footprint. The white dot marks the median greenhouse gas emissions for each food product.

Producing 100 grams of protein from beef emits 25 kilograms of CO₂eq, on average. But this ranges from 9kg (10th percentile) to 105 kgCO₂eq (90th percentile).



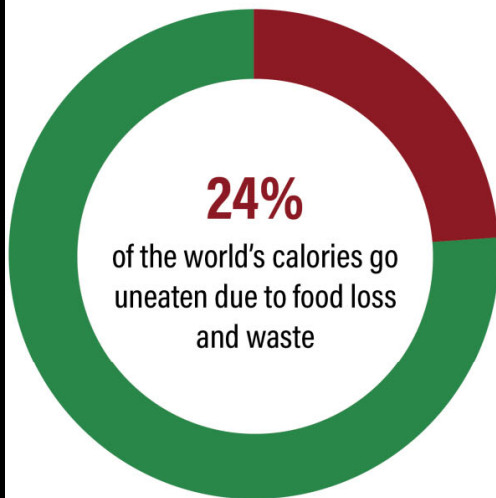
Note: Data refers to the greenhouse gas emissions of food products across a global sample of 38,700 commercially viable farms in 119 countries. Emissions are measured across the full supply-chain, from land use change through to the retailer and includes on-farm, processing, transport, packaging and retail emissions. Data source: Joseph Poore and Thomas Nemecek (2018). Reducing food's environmental impacts through producers and consumers. *Science*. OurWorldinData.org - Research and data to make progress against the world's largest problems. Licensed under CC-BY by the authors Joseph Poore & Hannah Ritchie.



The scale and impact of food loss and waste

GLOBAL SCALE

Over **1 billion tonnes** of food is **lost or wasted** each year



GLOBAL IMPACT

Wastes **1/4 of fresh water** used in agriculture



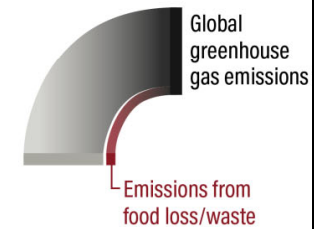
Uses an amount of land greater than the **area of China**



Wastes **1/4 of all fertilizer** used in agriculture

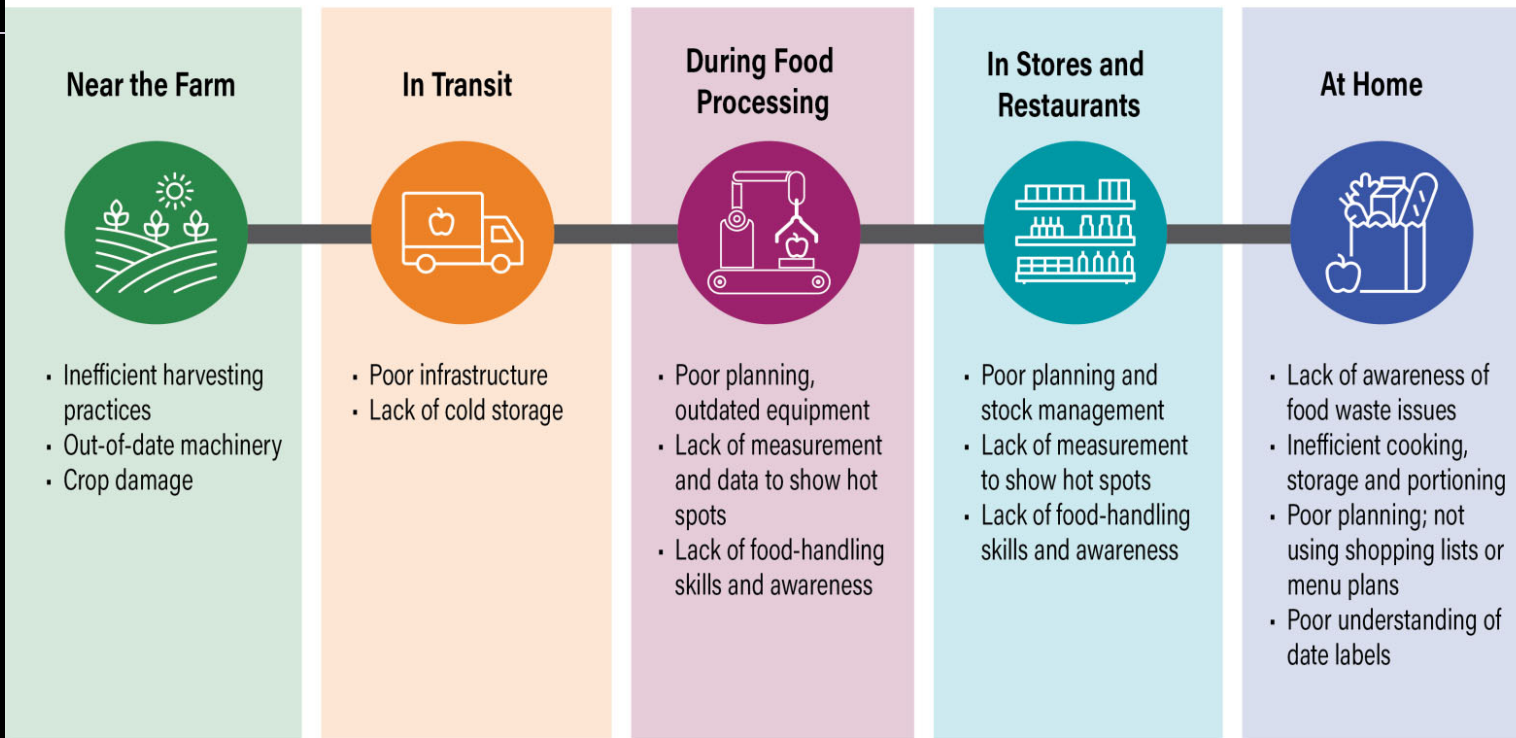


Drives **8-10%** of global **greenhouse gas emissions**



Source: WRI.
23.04.10

Main drivers of food loss and waste throughout the supply chain

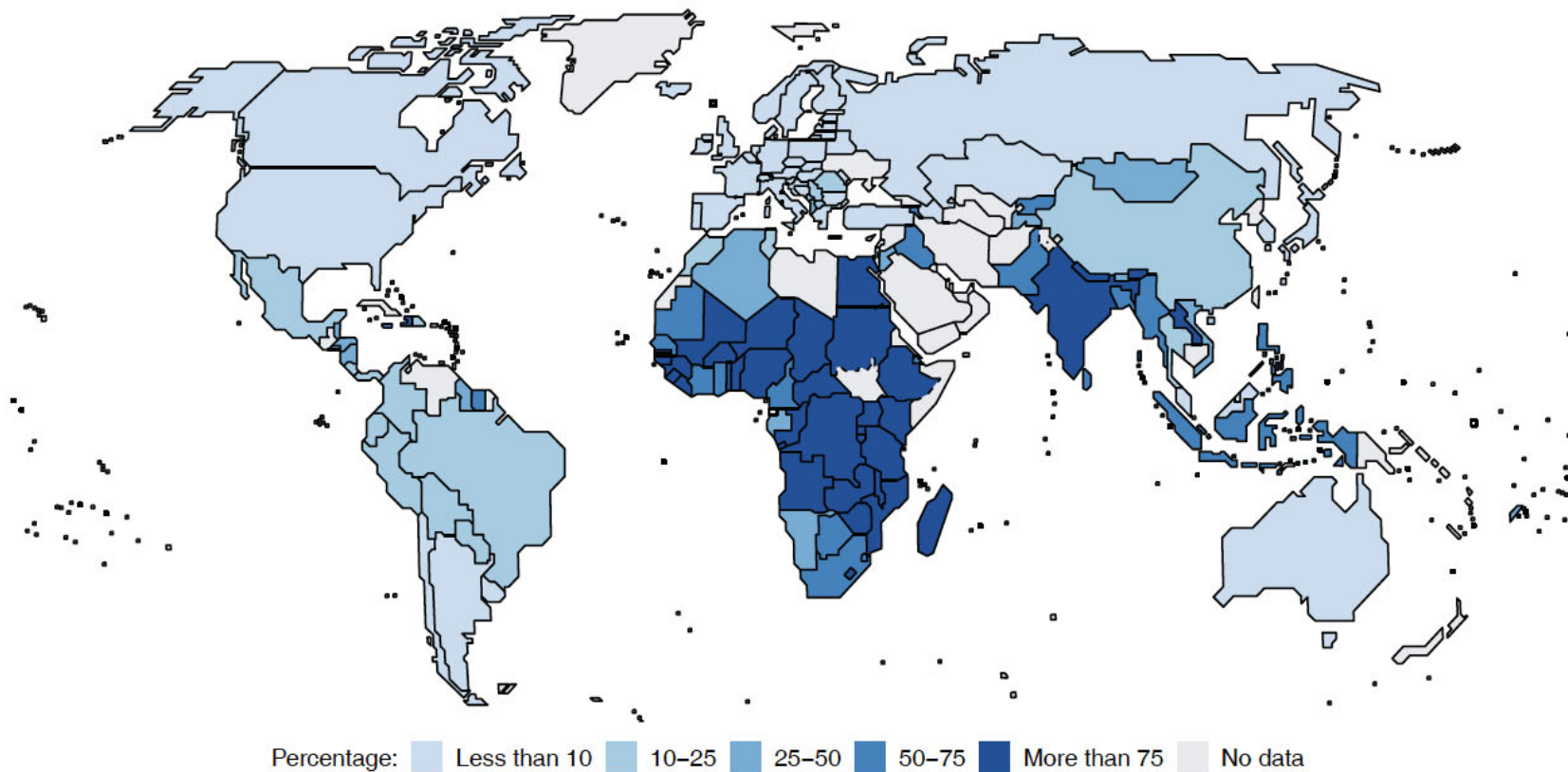


Source: WRI.

23.04.10

Figure 2

Percentage of population that cannot afford a healthy diet^a

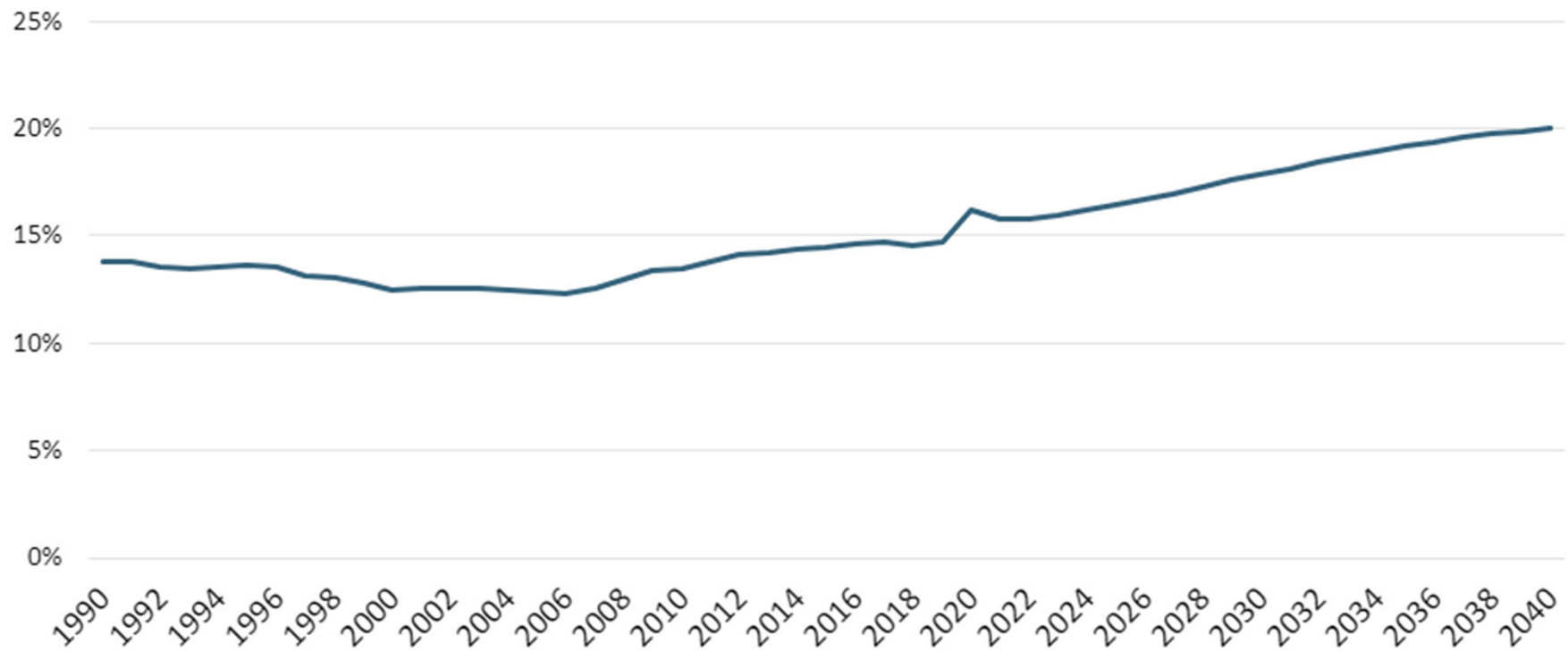


Source: FAO and others, The State of Food Security and Nutrition in the World 2020.

^a The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. The final boundary between South Sudan and the Sudan has not yet been determined. The dotted line represents approximately the line of control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

Global Consumer Expenditure on Food and Non-Alcoholic Beverages 1990-2040

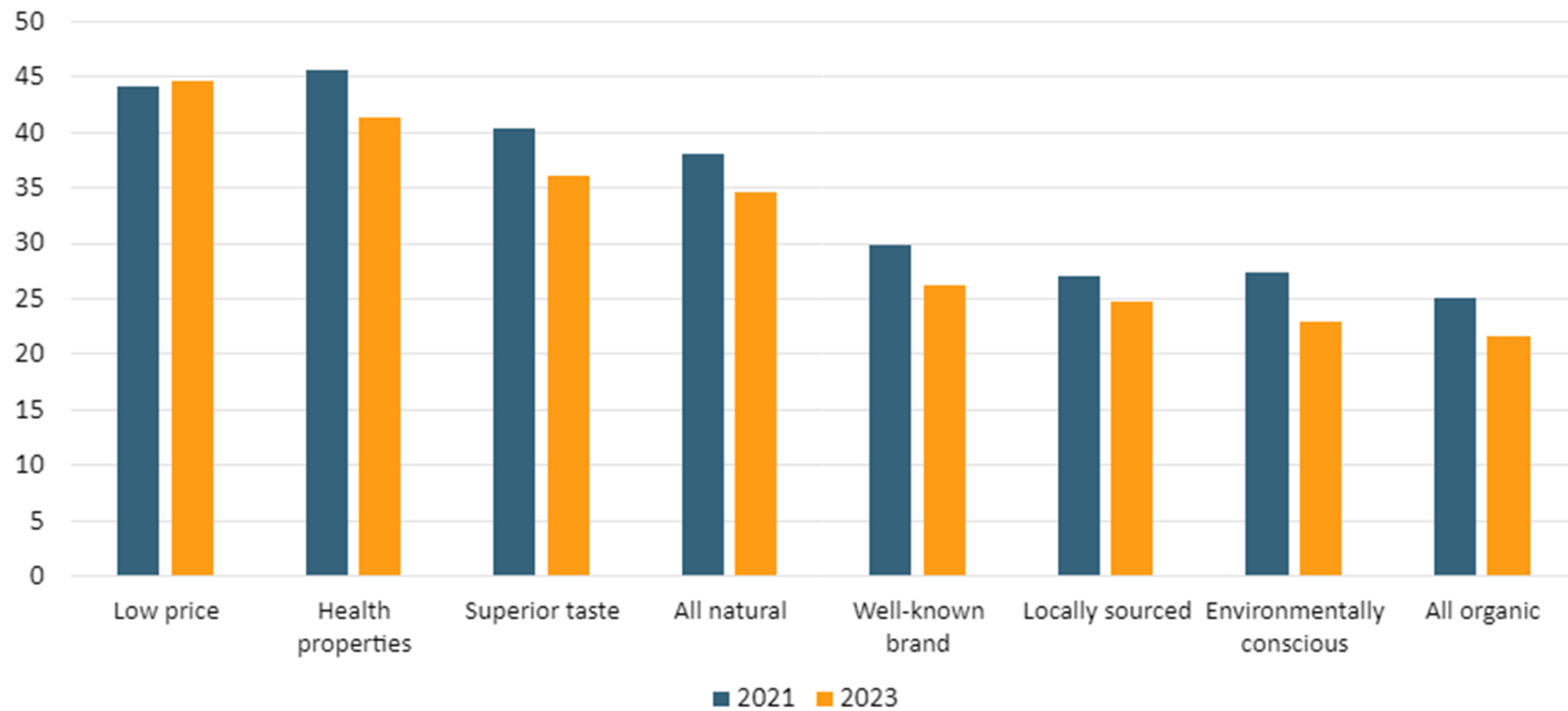
% of total consumer expenditure



Source: Euromonitor Economics and Consumers

Desired Attributes in a Food or Beverage Product Globally 2021 vs 2023

% of respondents

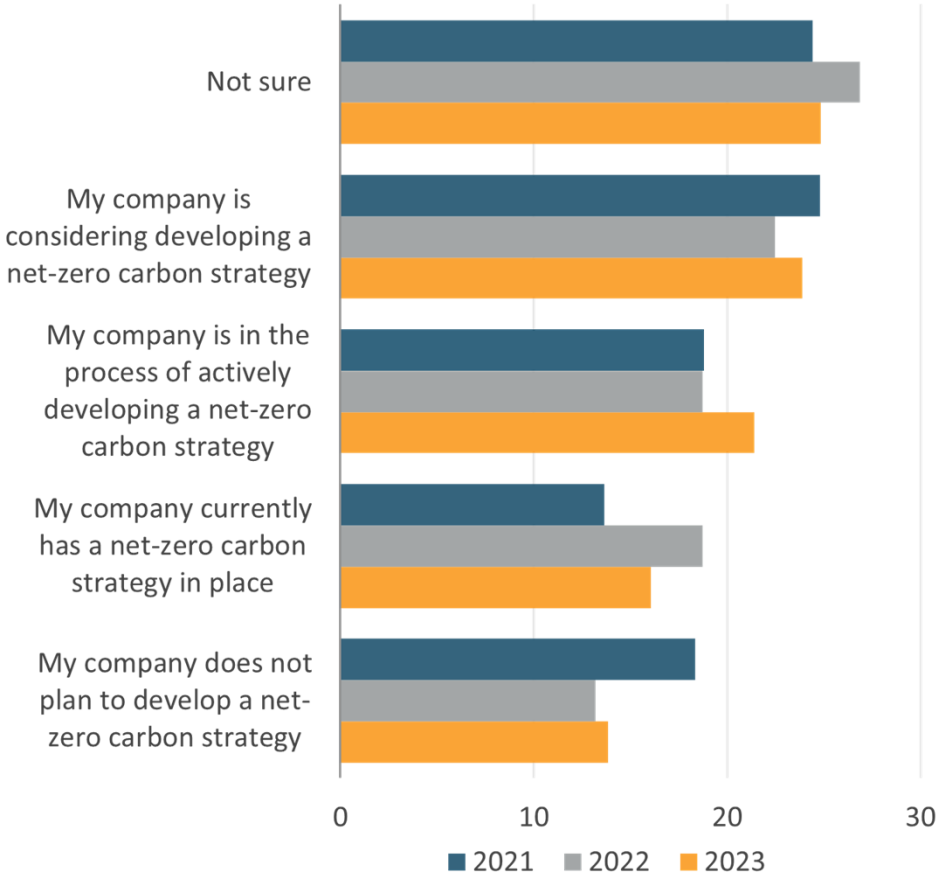


Source: Euromonitor International Voice of the Consumer: Lifestyles Survey, fielded January-March.
n=40,732 (2021) and 40,691 (2023)



Companies with net-zero carbon strategies 2021-2023

% of global respondents



Source: Euromonitor International Voice of the Industry: Sustainability Survey, fielded in May 2021 (n=1,069), January 2022 (n=614) and February 2023 (n=729)



Technology



Technology unlocks a new potential for sustainable farming



“The use of **advanced technology** in agriculture/farming is **more sustainable** than traditional farming methods.”

53%
of consumers, globally, strongly agree/agree

How we grow our greens.

With BoweryOS, the proprietary technology that powers our farms, every crop is the cream of the crop.

Growth starts indoors in our protected indoor environment where BoweryOS combines AI, software, and hardware to guarantee deliciousness. After our seeds have sprouted, our rafts are vertically arranged in the grow rooms while our OS leverages bespoke crop recipes to automatically create their perfect growing conditions.



VERTICALLY GROWN GREENS
ZERO PESTICIDES

Bowery Zesty Caesar Salad Kit

United States, Oct 2022

Sources: Innova Trends Survey 2023 (average of Brazil, Canada, China, France, Germany, India, Indonesia, Mexico, Spain, UK, US), Innova Database, [Bowery](#)

A close-up photograph of a pair of hands wearing grey work gloves, holding a cluster of bright yellow lemons. The background is blurred, showing more of the hands and lemons. The text is overlaid on the lower half of the image.

BLOCKCHAIN FOR AGRI-FOOD TRACEABILITY

Exploring the Technology's Potential for Sustainable Development

Food Supply Issues



A word cloud on a black background. The most prominent words are 'supply' (large, grey), 'shortage' (large, teal), and 'climate' (large, white). Other significant words include 'ukraine' (teal), 'china' (white), 'crop' (teal), and 'labor' (grey). Smaller words include 'shut stock' (orange and teal), 'freight' (grey), 'deliveries' (grey), 'fuel' (grey), and 'power over' (grey).

supply

shortage

climate

ukraine

china

crop

labor

shut stock

freight

deliveries

fuel

power over

Consumer Trends



Enduring lifestyle shifts...



Shift towards **healthier lives** kick-started by the pandemic with more onus on the individual



More **conscious ways of living** with an eye on both planet and pocket



Changing occasions impacted by a different social focus and more flexible lives



The changing nature of **treating and reward**, and what consumers value most

Source: Innova Market Insights

Category insights through the lens of Innova's Top 10 Trends for 2023

Covering the full spectrum of the food and beverage industry, Innova's Top 10 Trends are the vital guide to future market opportunities. The trends are based on wide-ranging global consumer surveys and can, therefore, manifest differently across market categories. This report presents how **a selection of global top trends for 2023 are manifesting in Ready Meals & Side Dishes**, and what other factors may impact these category trends.



Source: Innova Market Insights

Trend 1. Quick Quality

Culinary creativity blossomed during the pandemic and now needs to come with added convenience to meet busier routines

The cooking from scratch trend that blossomed during the pandemic remains prevalent and now must fit in with “back to normal” routines. **Two in three consumers globally** are looking for simple and convenient ways to ensure their daily nutrients intake. There is a demand for **time-saving convenience** to combine with **fresh produce** and **recipes with flavorful impact, adding value** as well as **lending a helping hand**.

Sainsbury's new nutritional food range

Sainsbury's

United Kingdom,
Jan 2023



“Introducing Flourish, our newest nutritional food range – designed to support a balanced diet and help people make healthy choices easily. **Simple to prepare and delicious to eat!**”

Frozen ready meals brand ByRuby making its grocery debut

The Grocer

8 Nov 2022

ByRuby launches 30-strong frozen ready meal range into Waitrose.

- Recently acquired by Charlie Bigham's, UK business ByRuby goes from DTC to B2C by securing Waitrose listings for 30 SKUs across its range of **handmade meals** that have been “**designed with total convenience in mind.**”
- The launch is said to be supported with the rollout of **branded freezers** in key stores.



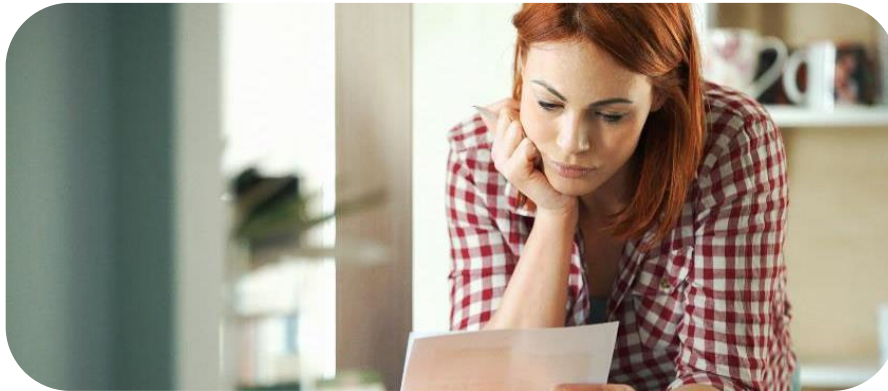
Sources: Innova Trends Survey 2023 (average of Brazil, Canada, China, France, Germany, India, Indonesia, Mexico, Spain, UK, US), Innova Database, Sainsbury's, The Grocer (1) and (2), ByRuby

Trend 2. Redefining Value

Combating instability requires a deep understanding of where consumers draw the line on compromise

“Which **claims** most influence your purchasing decision when buying the following **ready meal products** (Select up to 5)?”

Clean label claims are the top product attribute for consumers that they value most in ready meal products



#1

Product safety

#2

Made with real ingredients/natural

#3

No artificial colors or flavors



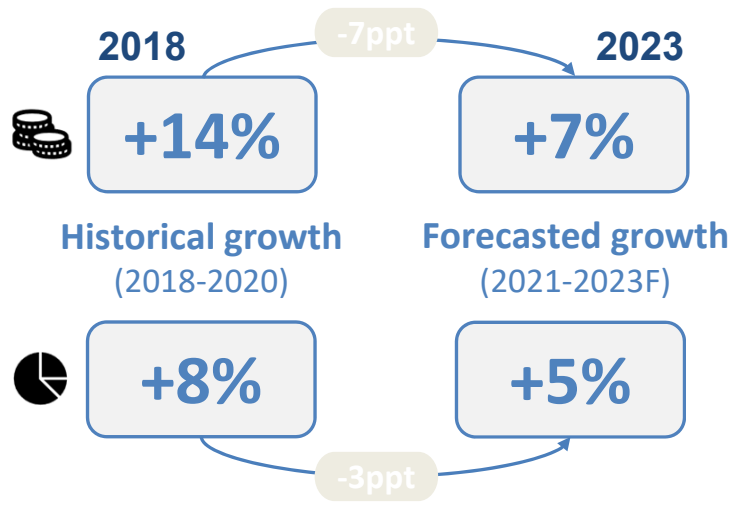
Spain, Sep 2022

Sources: Innova Category Survey 2023 (average of 35 countries), Innova Database

Trend 3. Plant-Based: Innovations in Ready Meals

Underused ingredients and technology-enabled new formats open up wider spaces for standalone plant-based innovation

Global market value and volume of meat substitutes show signs of slowing down



Game changers:

- 1. Improved flavor
 - 2. Improved texture
 - 3. Standalone products (not mimicking meat/dairy)
 - 4. More regional specialties
- higher ranking ↑
- 6. Better mimicking of meat/dairy products
- lower ranking ↓

Sources: Innova Trends Survey 2023 (average of Brazil, Canada, China, France, Germany, India, Indonesia, Mexico, Spain, UK, US); Innova Market Sizing

Notes: Growth rates based on estimated market value sales (M USD) and volume sales ('000s tonnes).

Game changers: "What would you like to see more of in plant-based products?"

Consumers seek out brands that respond to their core values economically

Consumers are looking to reduce cost in a conscious way



“I am taking more actions* to...”

1. Minimize food waste
2. Recycle/upcycle/repurpose products
3. Choose products with environmentally friendly/less packaging.



Sweden, Feb 2023



“Zero food waste: reuse of all production leftovers as animal feed.”

Source: Innova Trends Survey 2023 (average of Brazil, Canada, China, France, Germany, India, Indonesia, Mexico, Spain, UK, US)

Note: * “If you are looking to **reduce your spending/cut costs**, how will it affect your actions regarding these social or choices?”

What Does It All Mean for Us

**How Do We Make the Most of
These Complexities**



What does it all mean for us

How do we adapt to make the most of it

Sustainable food design

- Product life cycle
- Upcycling / Zero waste
- Supplier partnership
- Portfolio rationalization
- Increase plant-based components

Voice of customer

- Long term trend vs. flavor of the day
- Influence the market, don't just follow

Technology

- Embrace data / AI / GPS / PLM / PD and Sales tools

Supply security

- Diversify sourcing
- Long term planning
- Alternates / Offsets





Panel Discussion



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