



Sustainability of UK livestock production – challenges and opportunities

12th June 2023

Source: Jude L. Capper, 2023

Trouw Nutrition GB Leadership Event



s

There is no definitive sustainable protein system – but every system can be sustainable

Trouw Nutrition GB Leadership Event

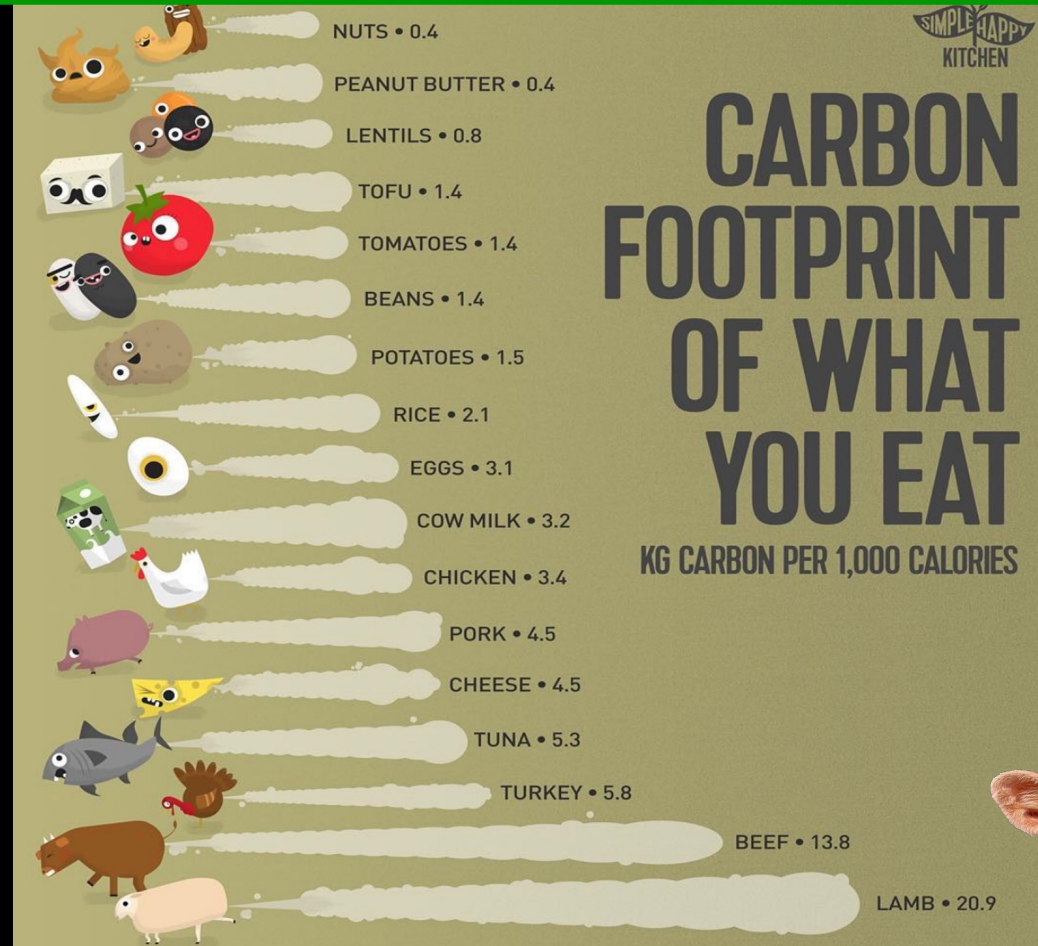


Source: Created and photos by Jude L. Capper, 2023.

B

Global averages are meaningless

The carbon footprints of the foods we eat vary considerably – global average figures are inappropriate when food production is regional

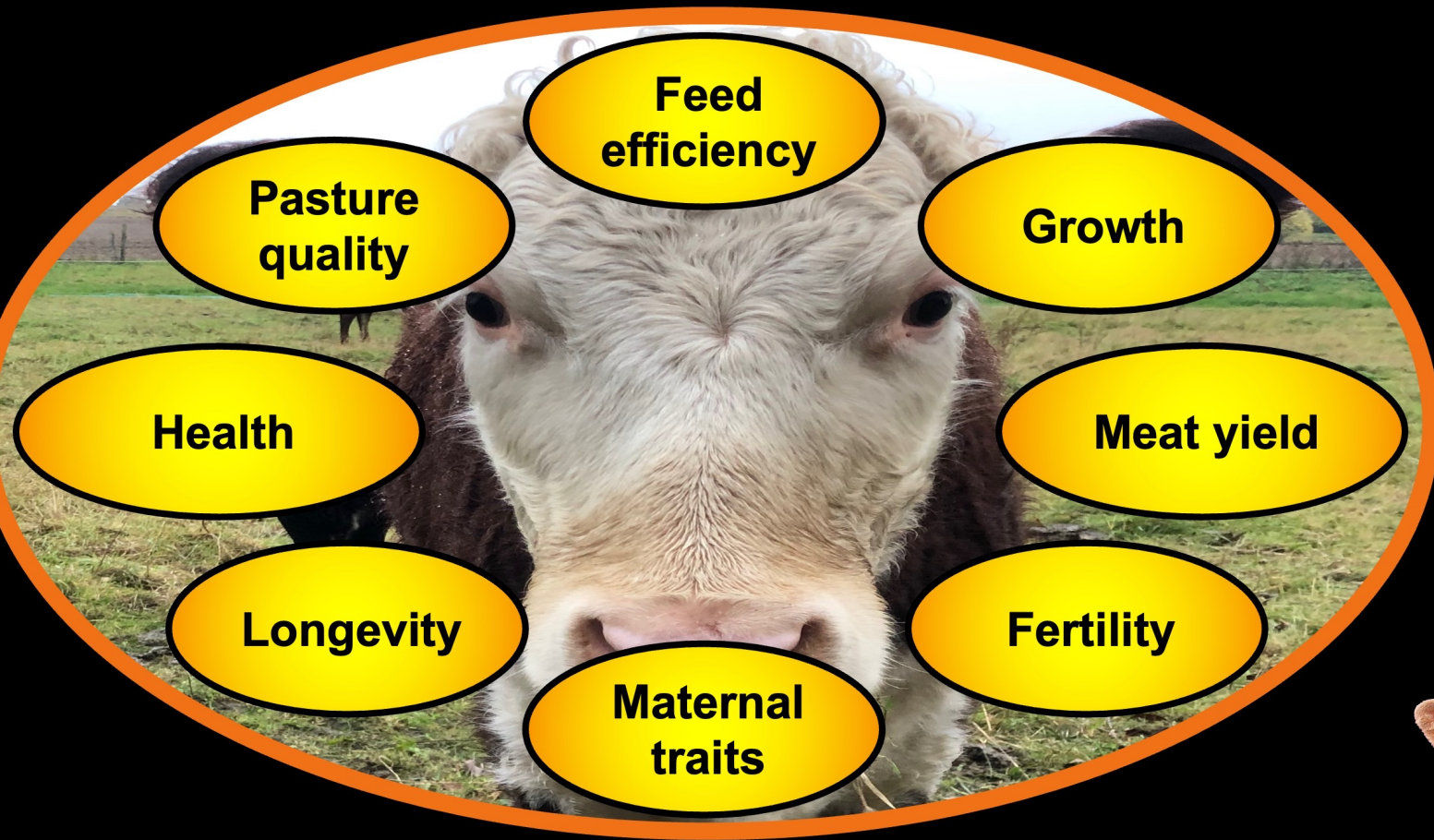


Source: Created by Jude L. Capper, 2023. Infographic from https://www.instagram.com/simple_happy_kitchen/



B

Improving key performance indicators reduces environmental impacts



B

Reducing age at slaughter has both economic and environmental benefits

91 fewer days of feed, land and greenhouse gases. Opportunity cost?

23 mo

26 mo

Birth weight
 Slaughter weight
 Total gain
 Age at slaughter
 Daily liveweight gain
 Maintenance feed needed

40 kg
 670 kg
 630 kg
 23 months
 0.90 kg/d
 702 days

40 kg
 670 kg
 630 kg
 26 months
 0.80 kg/d
 793 days



B

GHG benefits of dairy-beef now recognized – sucklers will need to demonstrate benefits

Annual requirements of one suckler cow:

- 3,954 kg feed DM
- 20,047 litres water
- 2,459 kg CO₂

Need to justify these impacts vs. beef from dairy.



Source: Created by Jude L. Capper, 2023. Calculation based on feed and water requirements of one Angus cow weighing 544 kg producing 7.8 kg of milk per day, with calf weaned at 207 days of age.

s

Can we grow human food crops everywhere?



Source: Created by Jude L. Capper, 2023

Trouw Nutrition GB Leadership Event



s

>60% of UK land is not suitable for growing arable crops



Trouw Nutrition GB Leadership Event

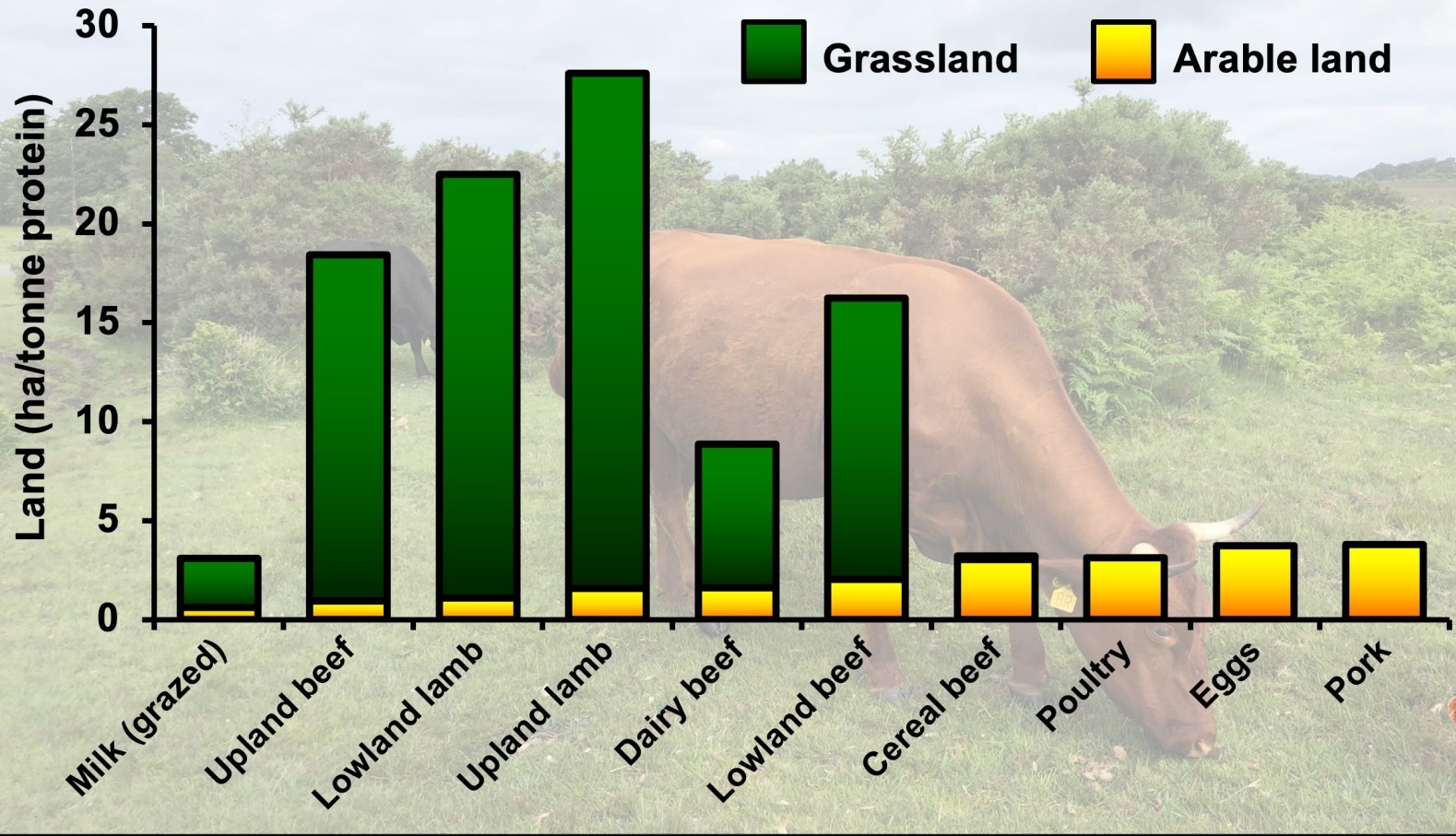


Source: Created by Jude L. Capper, 2023. Grazing land includes temporary grass on arable land (5% of total). Data from DEFRA. 2020. Farming statistics - provisional crop areas, yields and livestock populations at 1 June 2020 – United Kingdom.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/946161/structure-jun2020final-uk-22dec20.pdf



s

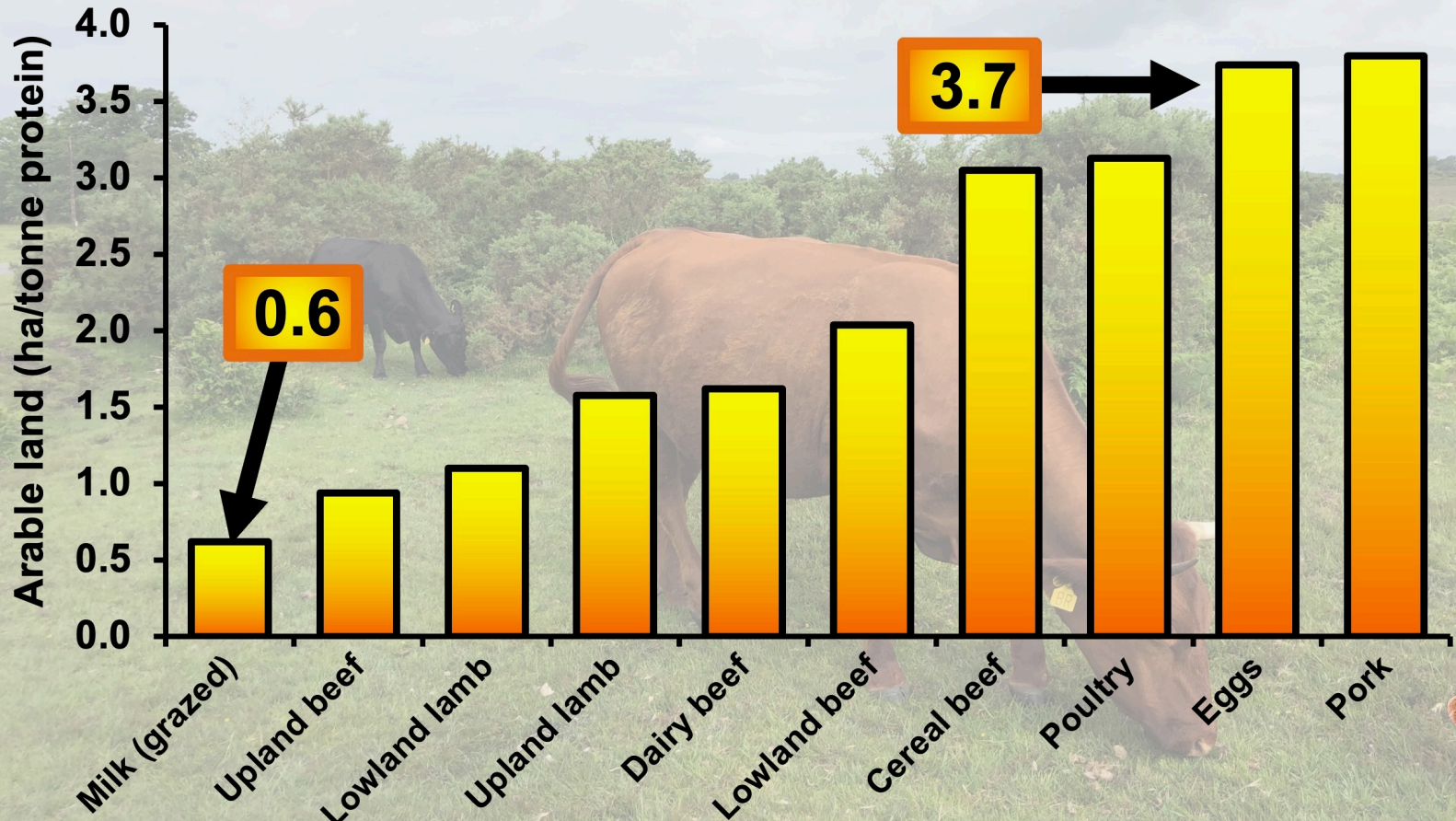
Livestock systems vary widely in arable and grassland use



Source: Created by Jude L. Capper, 2023; data from Wilkinson and Lee (2018) Review: Use of human-edible animal feeds by ruminant livestock. *Animal*.



Livestock systems vary widely in arable land use

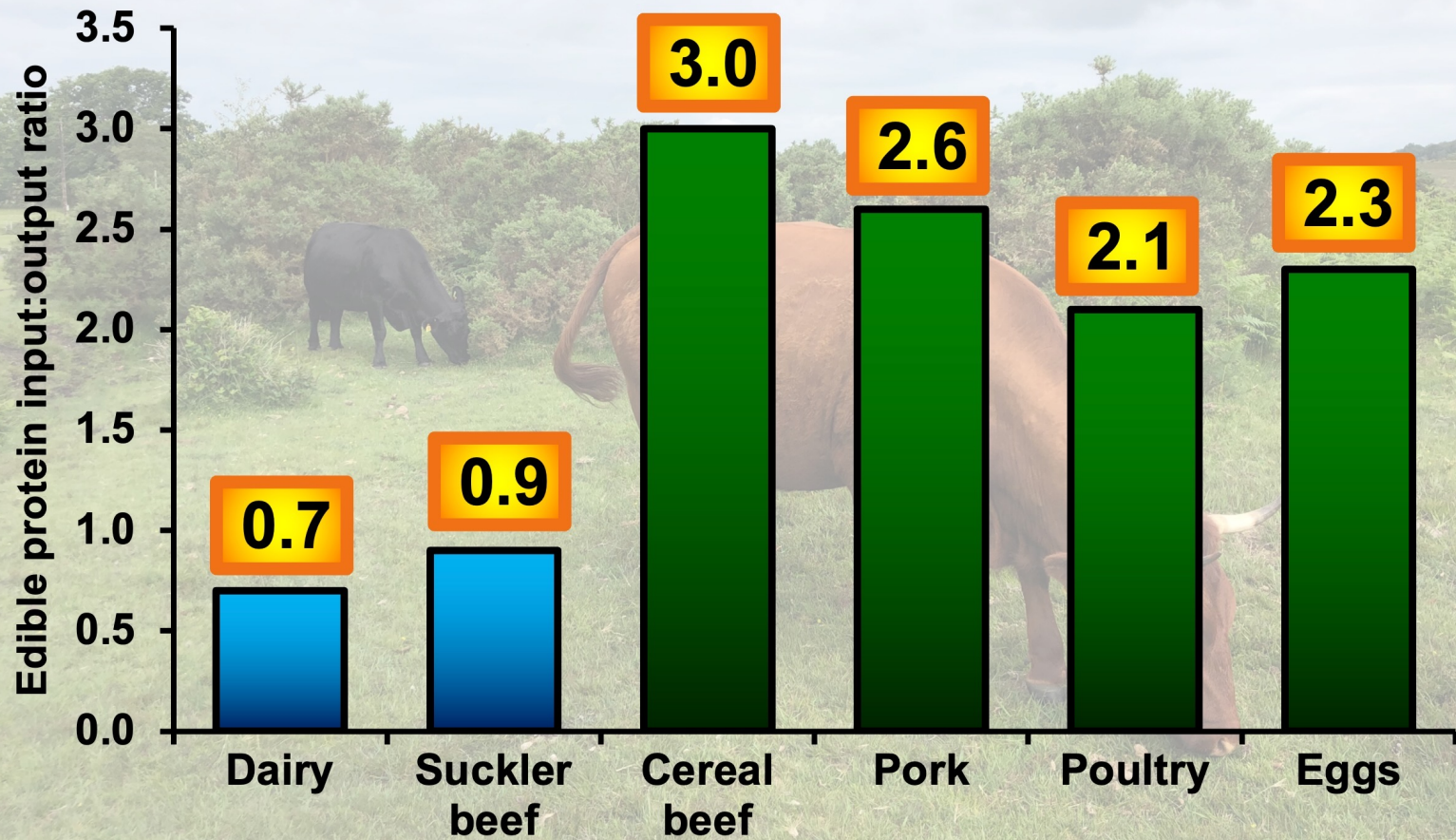


Source: Created by Jude L. Capper, 2023; data from Wilkinson and Lee (2018) Review: Use of human-edible animal feeds by ruminant livestock. *Animal*.



s

Grazing cattle systems produce more human-edible protein than they consume



Source: Created by Jude L. Capper, 2023; data from Wilkinson (2011) Re-defining efficiency of feed use by livestock. *Animal*.



s

Removing cattle from pasture disadvantages ground-nesting birds

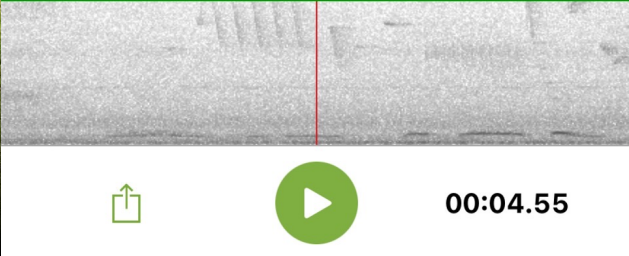


Source: Created by Jude L. Capper, 2023. Photo from Odd Falch <https://www.pexels.com/photo/brown-bird-on-brown-grass-12084162/>

Trouw Nutrition GB Leadership Event



Merlin app is a great example of ecosystem data gathering



Anna Kerruish @ManxShepherdess · May 31
 Slightly addicted to the **#merlin app**, to the point that there's an on farm competition. Whoever gets most **birds** by 14/6 gets a box of French Fancies 🍰
 Now leaving my phone at the gate of each field while I drive the quad round checking sheep, because I'm that competitive 😂

BEST MATCHES

	Common Chaffinch	✓
	Common Wood-Pigeon	✓
	Eurasian Wren	✓
	European Goldfinch	✓
	Eurasian Blackbird	✓
	Eurasian Collared-Dove	✓
	European Robin	✓

	Common Buzzard 7 May 2023 - Scotland, United Kingdom			Herring Gull 29 May 2023 - Scotland, United Kingdom	18
	Willow Warbler 7 May 2023 - Scotland, United Kingdom	25		Eurasian Oystercatcher 29 May 2023 - Isle of Man, Isle of Man	17
	House Sparrow 7 May 2023 - Scotland, United Kingdom	24		Ring-necked Pheasant 31 May 2023 - Meadow	5
	Bank Swallow 29 May 2023 - Isle of Man, Isle of Man			Common House-Martin 31 May 2023 - Home	4
	Eurasian Wren 29 May 2023 - Isle of Man, Isle of Man	11		Mistle Thrush 31 May 2023 - Magher Breck	
	European Starling 29 May 2023 - Isle of Man, Isle of Man	10			

Manx Wildlife Trust



Source: Created by Jude L. Capper, 2023. Screenshots from Merlin app and Twitter.

COM

Our biggest challenge is to keep meat and dairy in the diets of future food purchasers



Source: Created by and photo from Jude L. Capper, 2023.

Trouw Nutrition GB Leadership Event



COM

Guilt is a primary motivator for people considering going vegetarian or vegan

"I sometimes feel guilty when consuming meat and dairy products"

66% of meat-eaters and flexitarians thinking of giving up meat said "yes" compared to 25% of national population

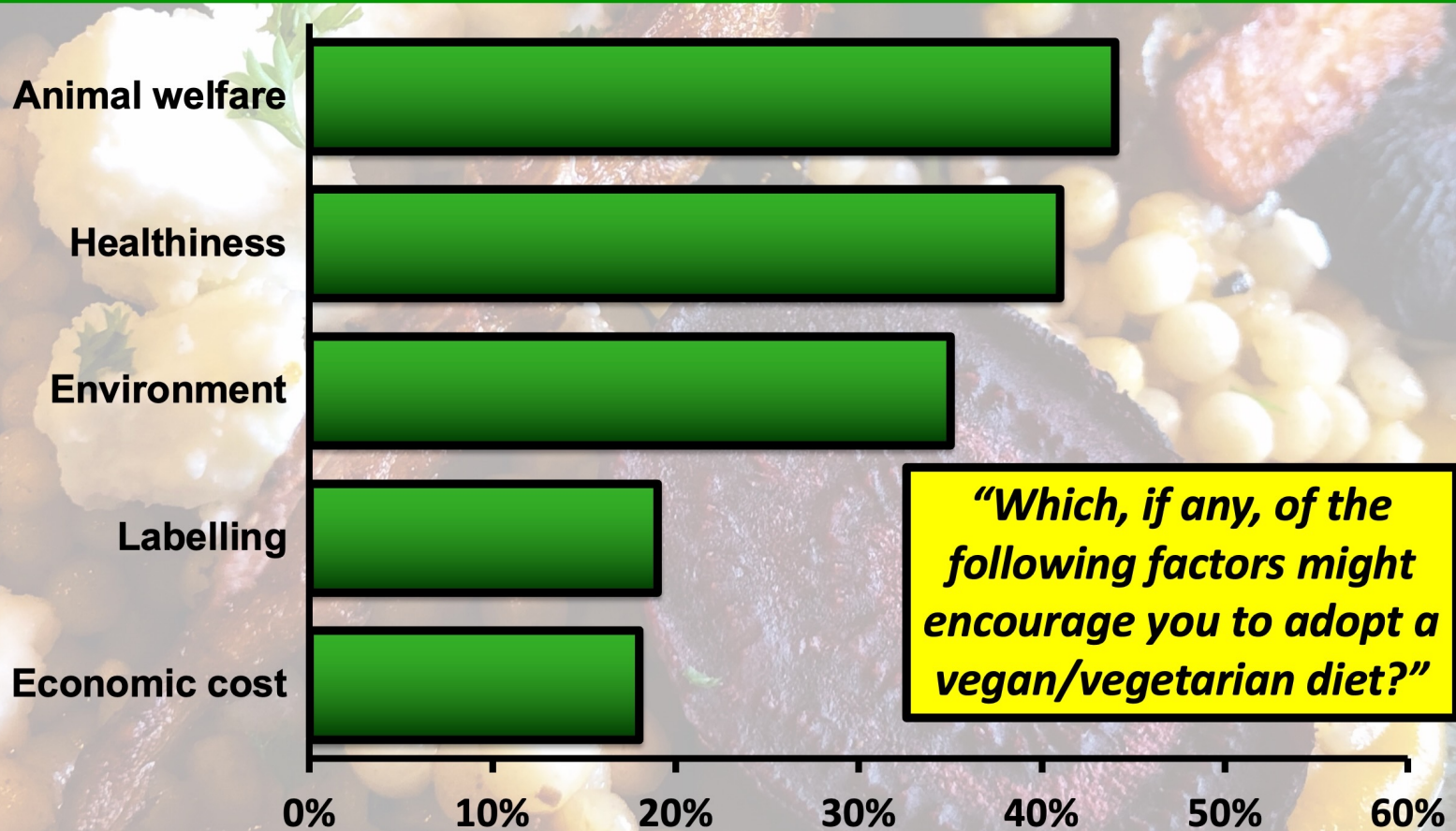
**No guilt
34%**

**Feel guilty
66%**



COM

Animal welfare, health and the environment are primary consumer concerns



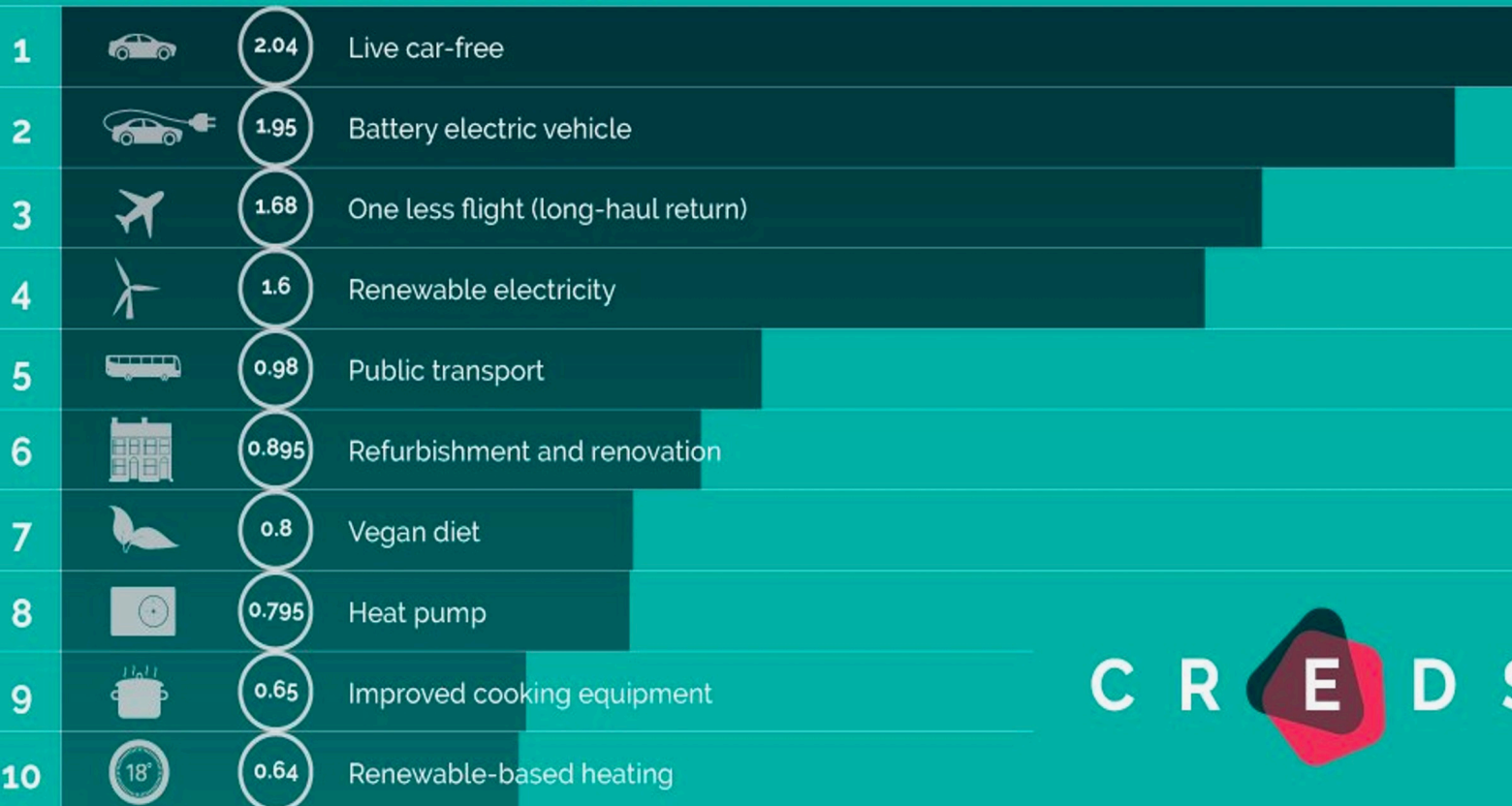
Source: Created by Jude L. Capper, 2023. Information from: YouGov (2019) Is the future of food flexitarian?
<https://yougov.co.uk/topics/resources/articles-reports/2019/03/18/future-food-flexitarian>



CV

New CREDS report puts transport, energy and food choices into context

Top 10 options for reducing your carbon footprint



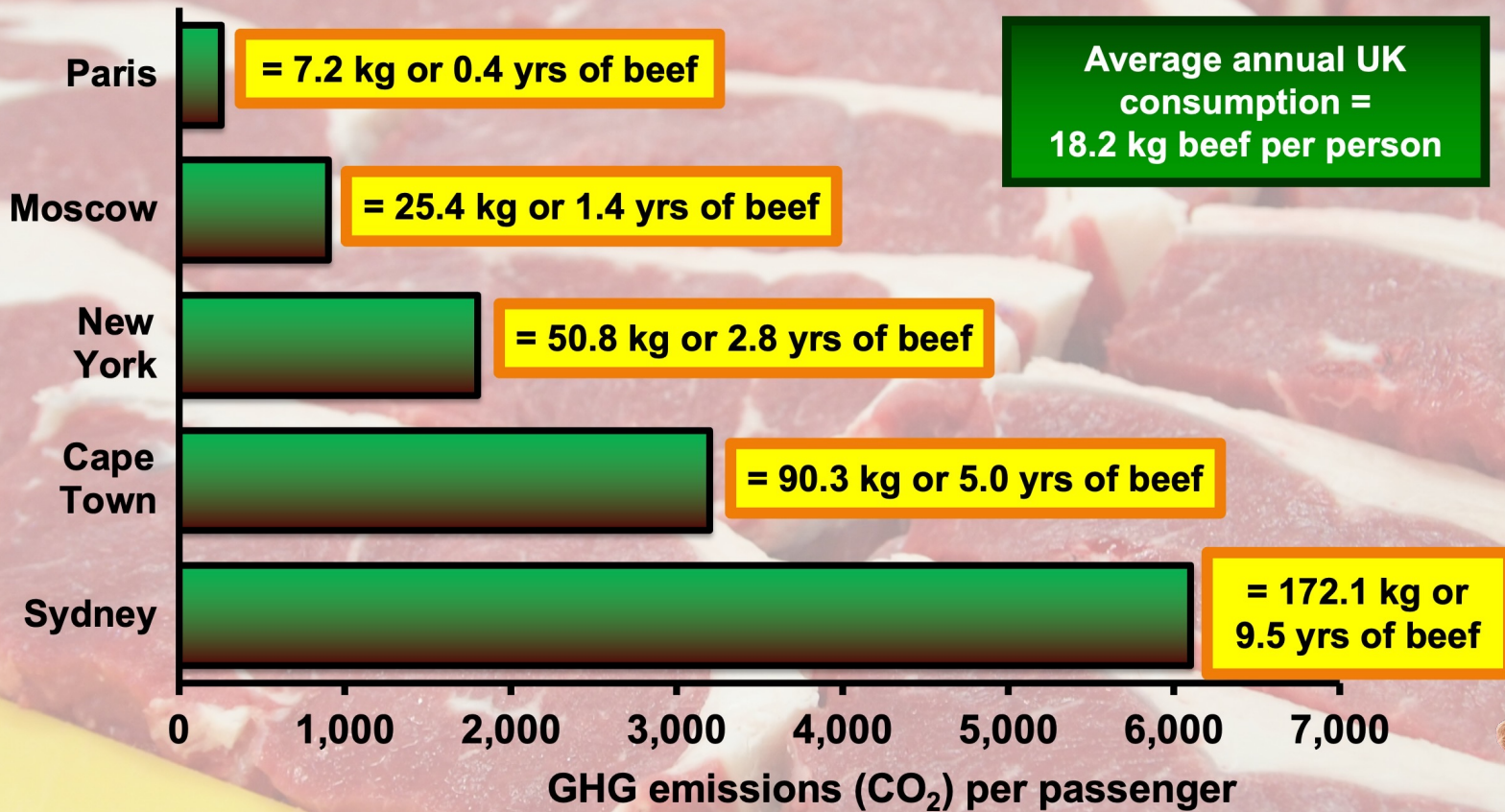
Source: Created by Jude L. Capper, 2023. Infographic adapted from Centre for Research into Energy Demand Solutions (2020). Available at: https://twitter.com/CREDS_UK/status/1262984570175176704?s=20

Trouw Nutrition GB Leadership Event



cv

International flights emit considerable quantities of carbon compared to beef production



Source: Created by Jude L. Capper, 2023. Calculations based on GHG emissions flight data from: https://co2.myclimate.org/en/flight_calculators/new and on a carbon footprint per kg of boneless beef of 35.5 kg CO₂-eq (under GWP100) from AHDB: http://beefandlamb.ahdb.org.uk/wp-content/uploads/2013/05/p_cp_down_to_earth300112.pdf



D

Plant-based dairy alternatives make environmental claims per unit of volume



The image displays four carton graphics comparing the environmental impact of switching 1,000,000 people to plant-based alternatives for one year. The first two are for 'MIGHTY M.LK' (white), and the last two are for 'M.LKOLOGY' (blue).

MIGHTY M.LK (Left Two):

- 1,000,000 people switched to MIGHTY M.LK for 1 year we could...
 - save enough water to fill over 38 Stadiums
 - as well as saving 19,000 Acres OF LAND
 - offset enough CO₂ emissions to fill 63,000 hot air balloons

M.LKOLOGY (Right Two):

- 1,000,000 people switched to M.LKOLOGY for 1 year we could...
 - offset enough CO₂ emissions to fill 54,000 hot air balloons
 - as well as saving 8,000 Acres OF LAND
 - save enough water to fill over 27 Stadiums

Each graphic includes a QR code and the text: "MIGHTY FOR YOU, AND THE PLANET TOO" and "scan to learn more or visit: www.mightypea.co".



Source: Created and photo by Jude L. Capper, 2023.





D

Drinks vary in nutrient density and greenhouse gas emissions

	Nutrient density	Carbon footprint g CO₂/100 g drink
Whole milk	53.8	99
Orange juice	17.2	61
Soya juice	7.6	30
Oat juice	1.5	21
Red wine	1.2	204
Soda	0.0	109
Beer	0.0	101
Water	0.0	10



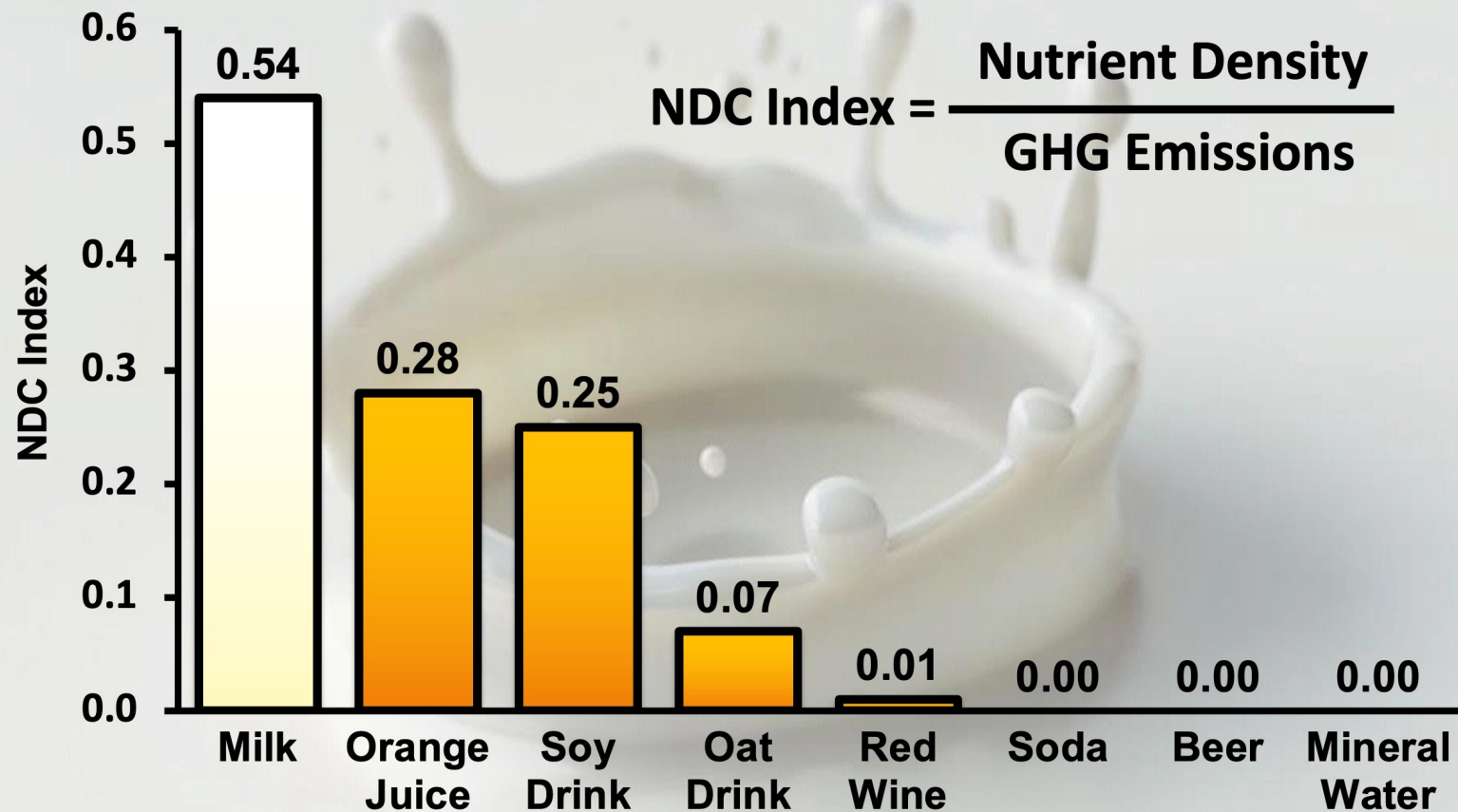
Source: Created by Jude L. Capper, 2023. Data from: Smedman et al. (2010). Nutrient density to climate impact (NDCI) index of beverages. <https://doi.org/10.3402/fnr.v54i0.5170>





D

Nutrient density should be included when assessing carbon footprint

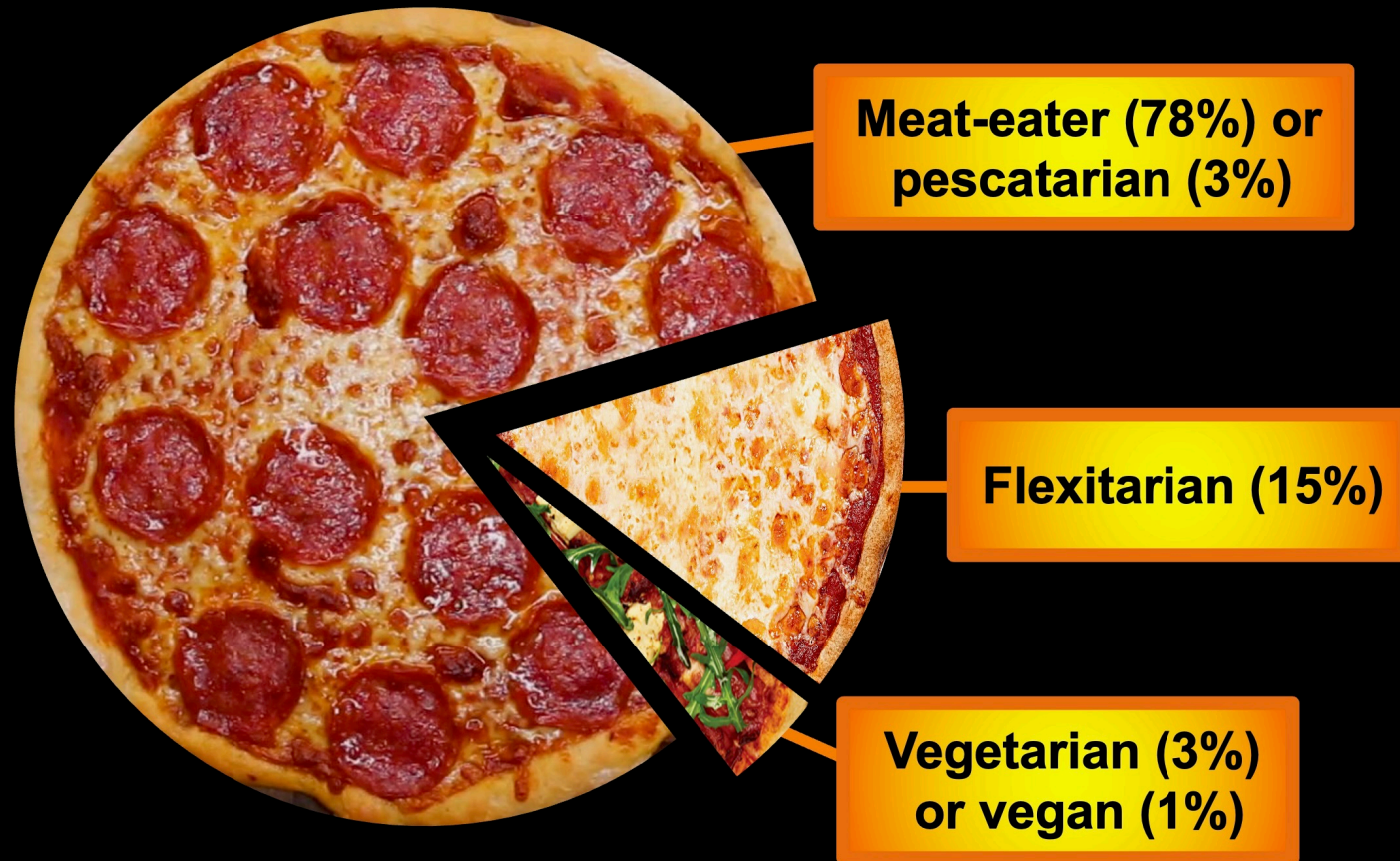


Source: Created by Jude L. Capper, 2023. Data from: Smedman et al. (2010). Nutrient density to climate impact (NDCI) index of beverages. <https://doi.org/10.3402/fnr.v54i0.5170>



B

The future probably isn't vegan, but it may be flexitarian?



Source: Created by Jude L. Capper, 2023. Data from YouGov (2019) Is the future of food flexitarian? <https://yougov.co.uk/topics/resources/articles-reports/2019/03/18/future-food-flexitarian> Question: "Which, if any, of these best describes your usual eating habits?" Results adjusted for people who answered "don't know" (3%) or "other" (3%).

B

How do we make meat sexy?



Source: Created by Jude L. Capper, 2023.

Trouw Nutrition GB Leadership Event



B

How do we make meat sexy?



Source: Created by Jude L. Capper, 2023.



Trouw Nutrition GB Leadership Event



B

How do we make meat sexy?



Source: Created by Jude L. Capper, 2023.

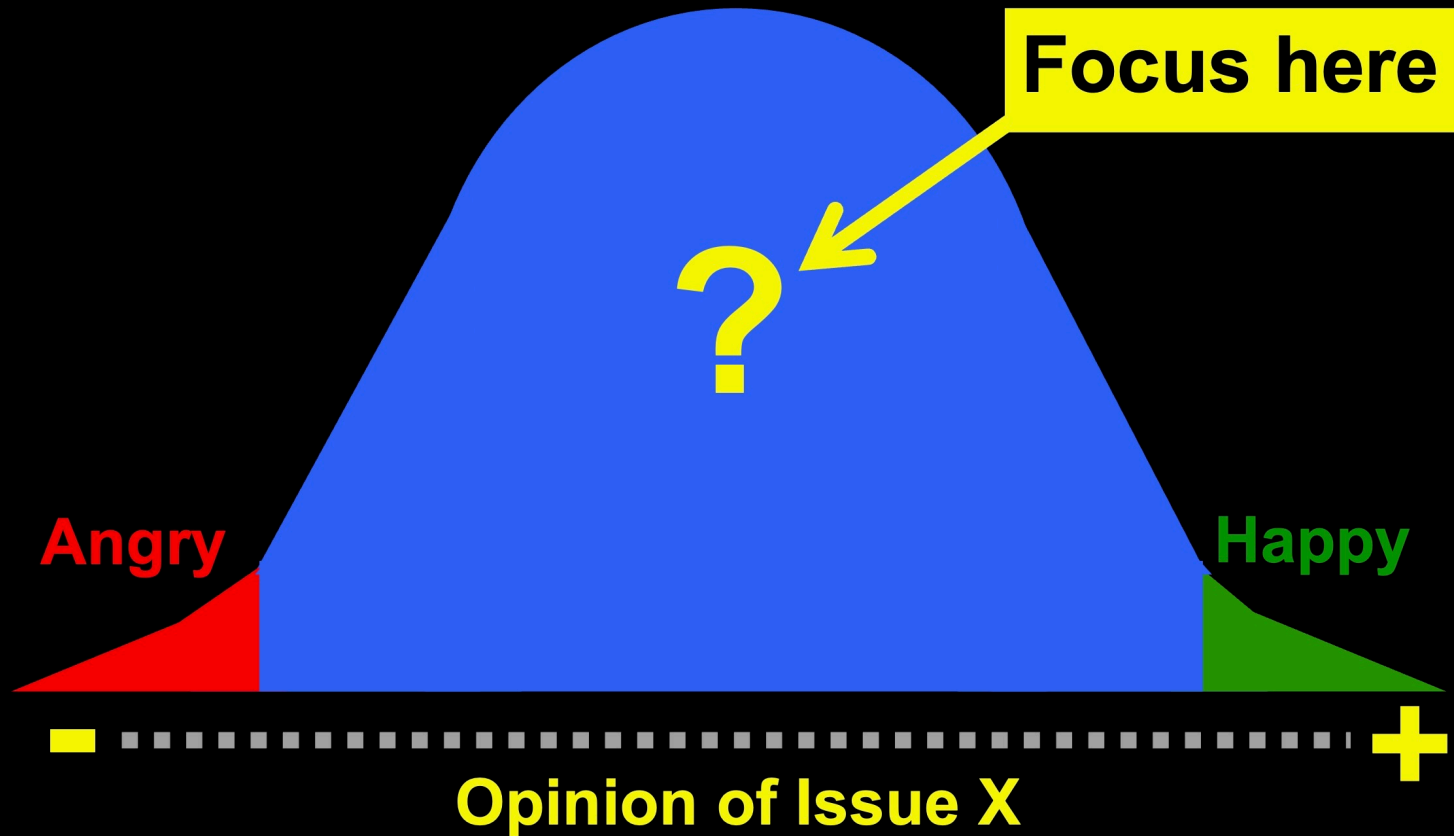
Trouw Nutrition GB Leadership Event



COM

We need to communicate with consumers who don't yet have fixed opinions of agriculture

Trouw Nutrition GB Leadership Event



Source: Created by Jude L. Capper, 2023



COM

5 tips for positive communication

Share your values

Stay positive, polite and personal

Keep it short, simple and see-through

Focus on the important

Know when to walk away

Trouw Nutrition GB Leadership Event



Source: Created by Jude L. Capper, 2023. Adapted from: Capper and Yancey (2015). Communicating Animal Science to the General Public.
<https://doi.org/10.2527/af.2015-0028>



B

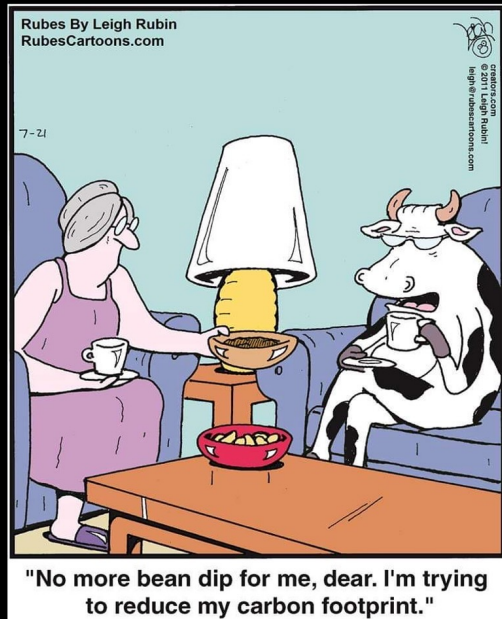
Thank you!



@Bovidiva

<http://bovidiva.com/presentationlinks>

Trouw Nutrition GB Leadership Event



Questions?



Source: Created by and photo from Jude L. Capper, 2023. Cartoon from: <http://RubesCartoons.com>