



The role of farm vets in sustainability

17th May 2023



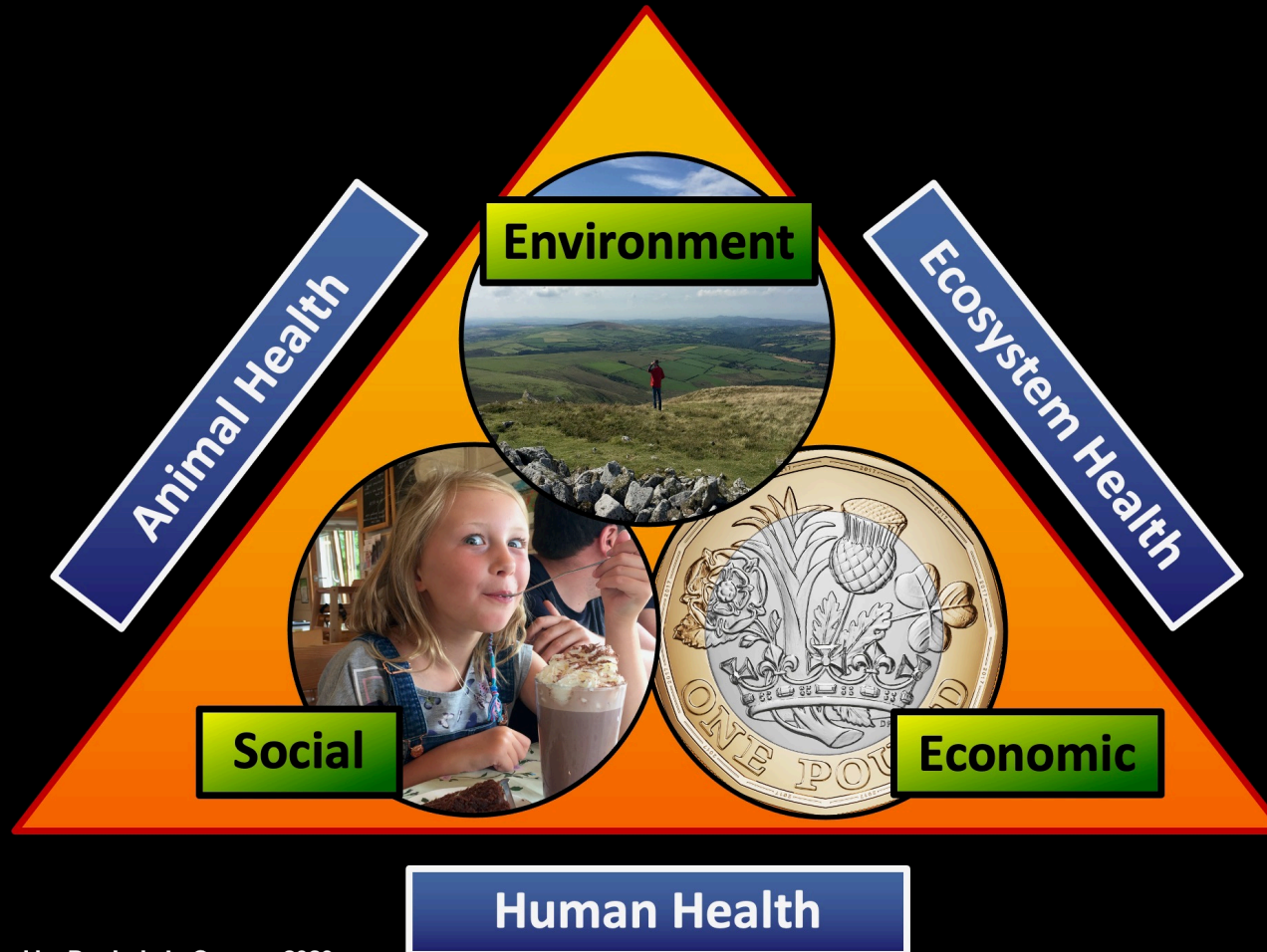
Source: Jude L. Capper, 2023

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Sustainability comprises three pillars, all under the umbrella of One Health



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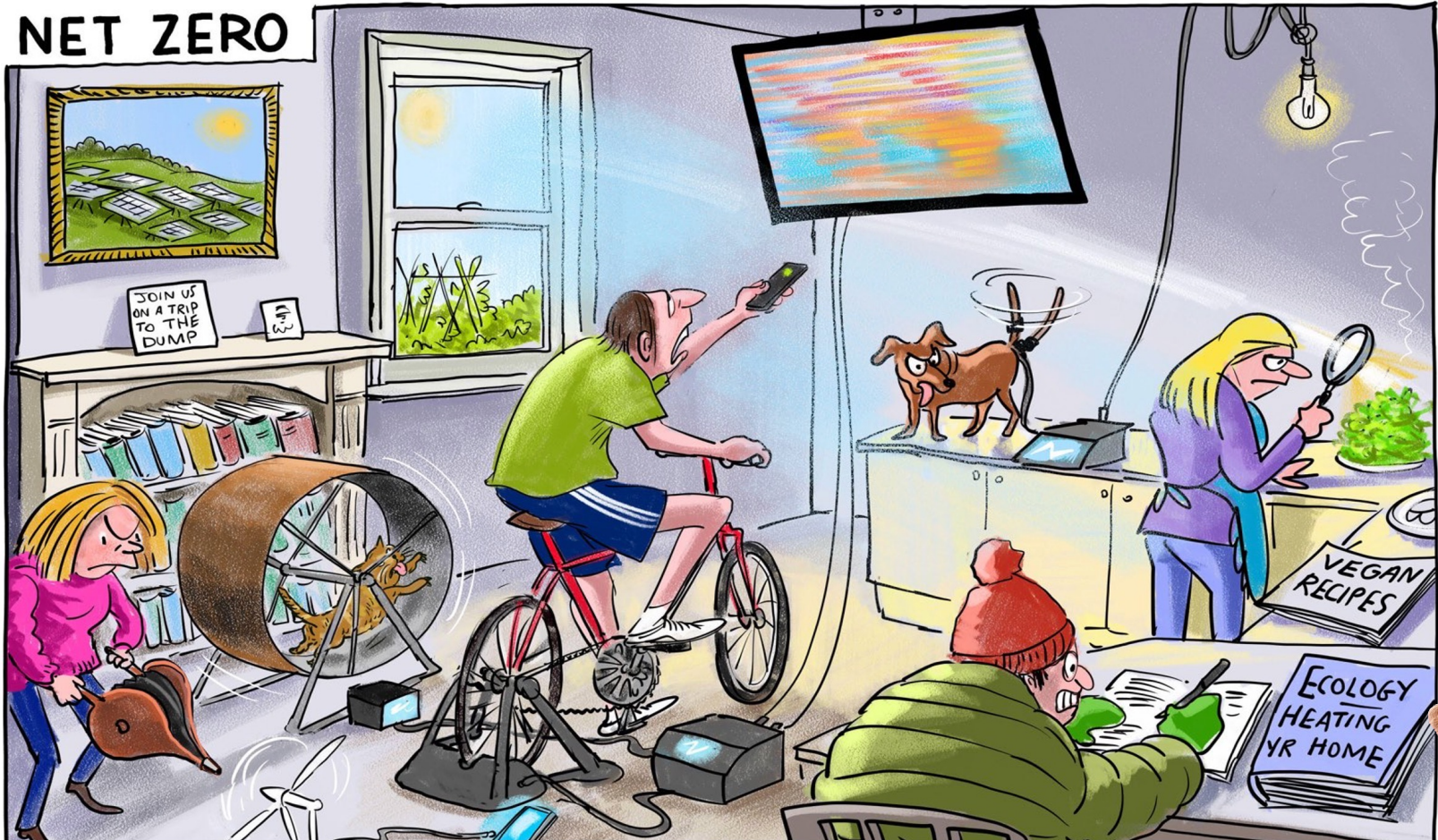


Source: Created by Dr. Jude L. Capper, 2020.



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Net Zero is a clear priority



Source: Created by Dr. Jude L. Capper, 2021. Cartoon from: <https://twitter.com/Cartoon4sale/status/1384537729460056067?s=20>

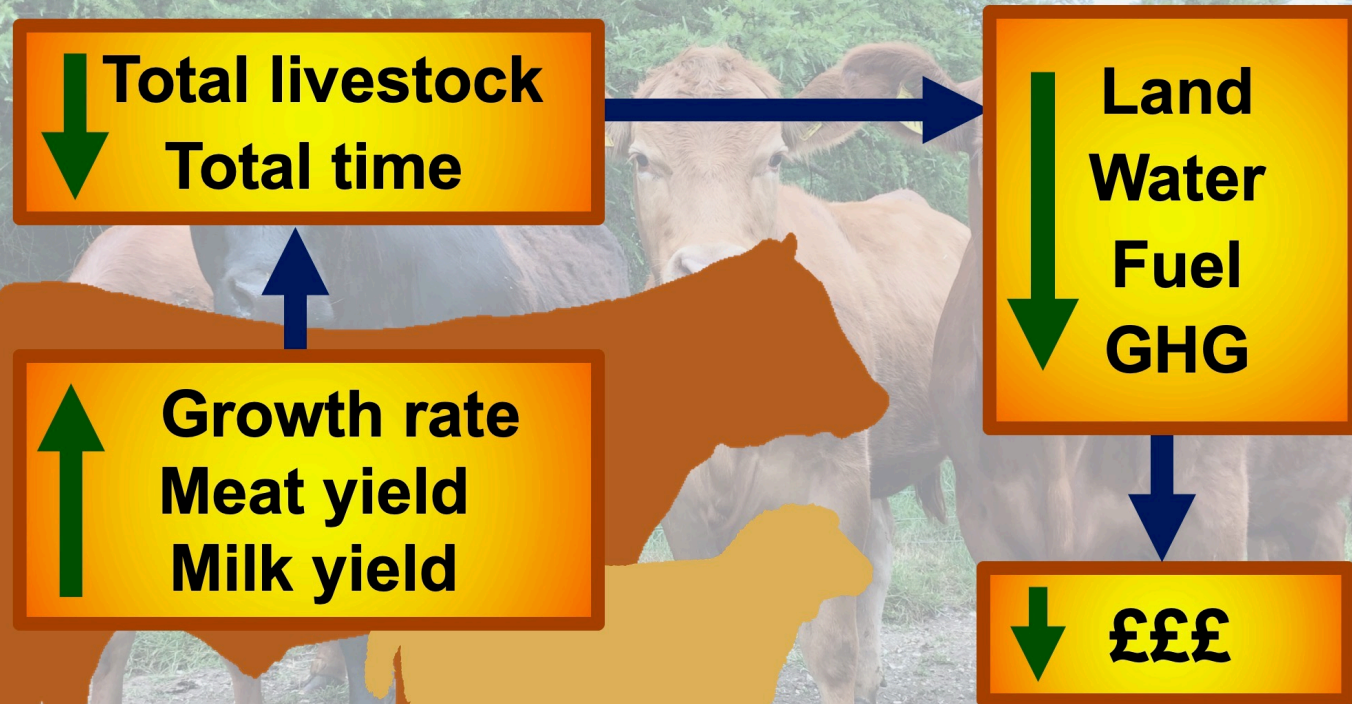


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Improving animal productivity reduces the environmental impact of milk and meat

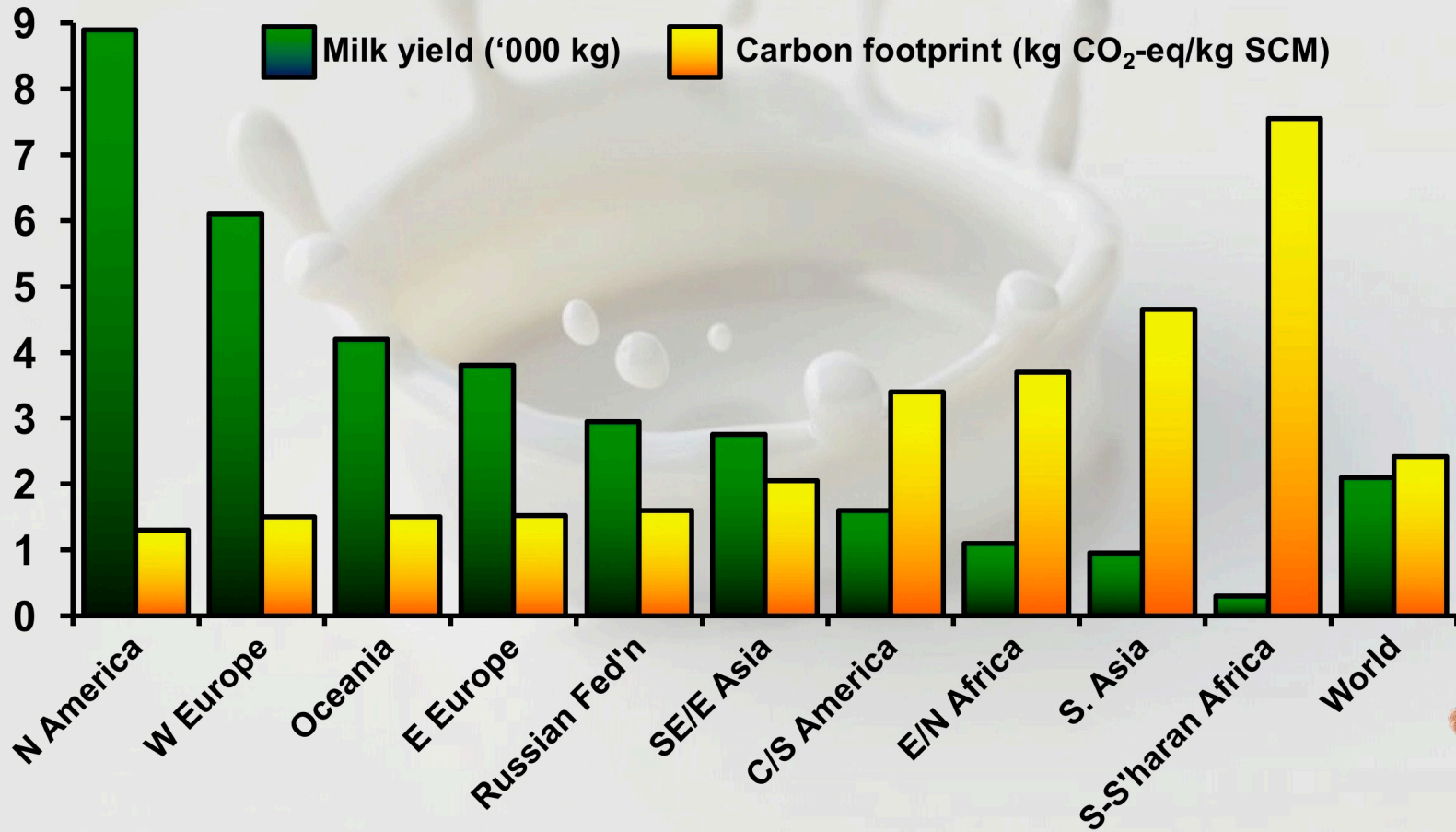


Source: Created by Dr. Jude L. Capper, 2020. Data from: Capper, JL. 2015. Sustainability and One Health. In: Cockcroft, P. *Bovine Medicine*. Wiley-Blackwell, Oxford, UK.



DS

A negative correlation exists between milk yield and carbon emissions

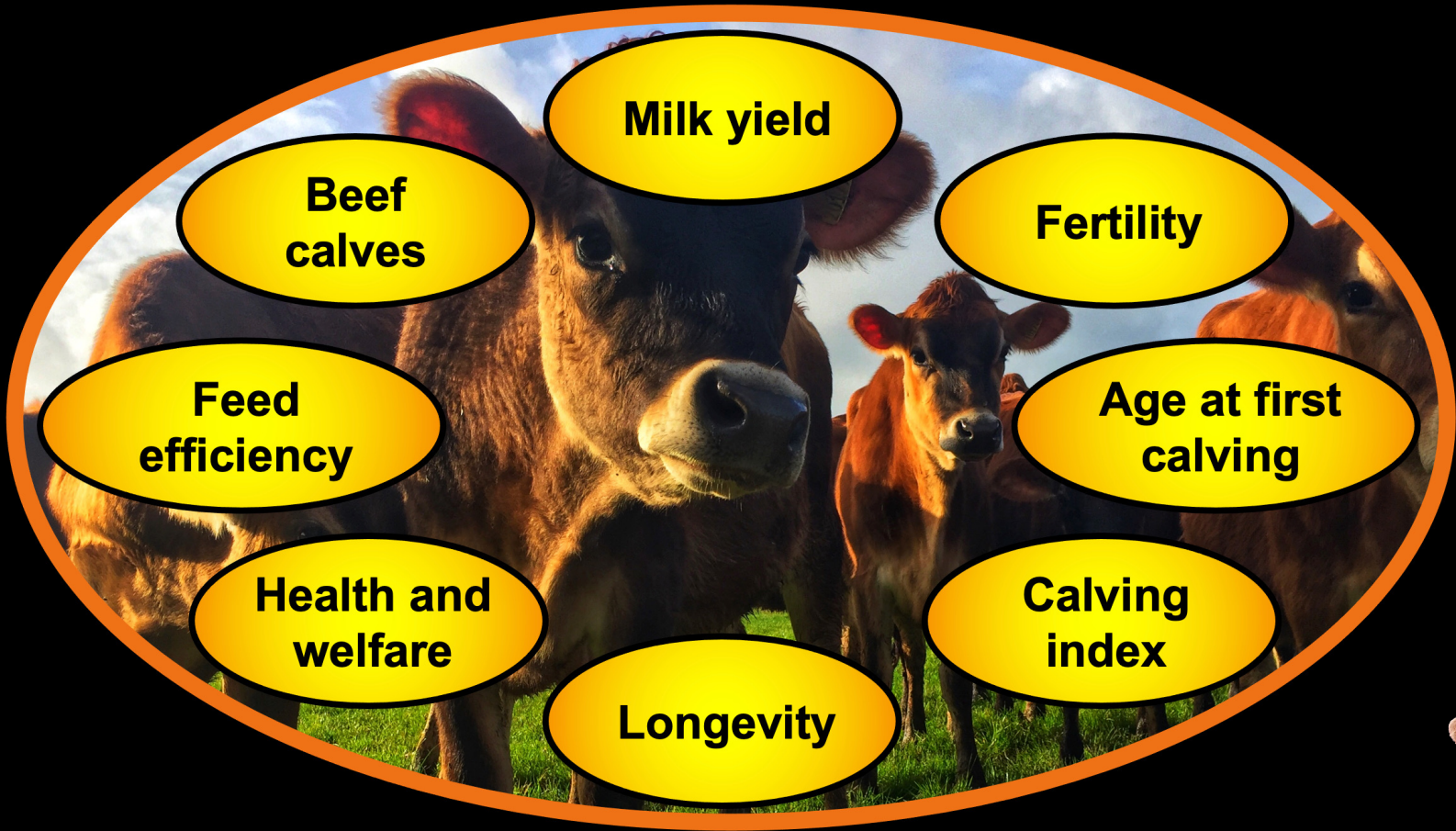


Source: Created by Dr. Jude L. Capper, 2016; data from: FAO (2010) Greenhouse Gas Emissions from the Dairy Sector. FAO, Rome, Italy.



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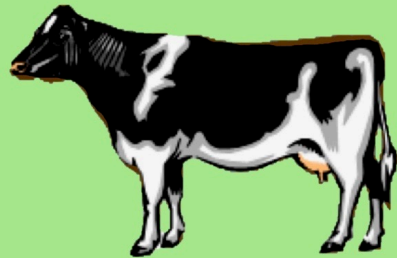
Improving performance indicators reduces GHG emissions...but how do they compare?



DS

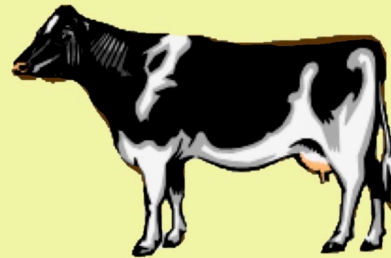
Dairy heifer losses are significant in UK herds

Birth



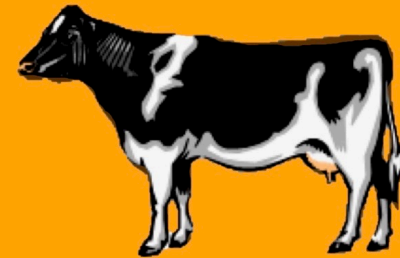
**100 heifers
are born**

Calving



**81 heifers
enter herd**

100 d lactation



**77 survive
past 100 days**

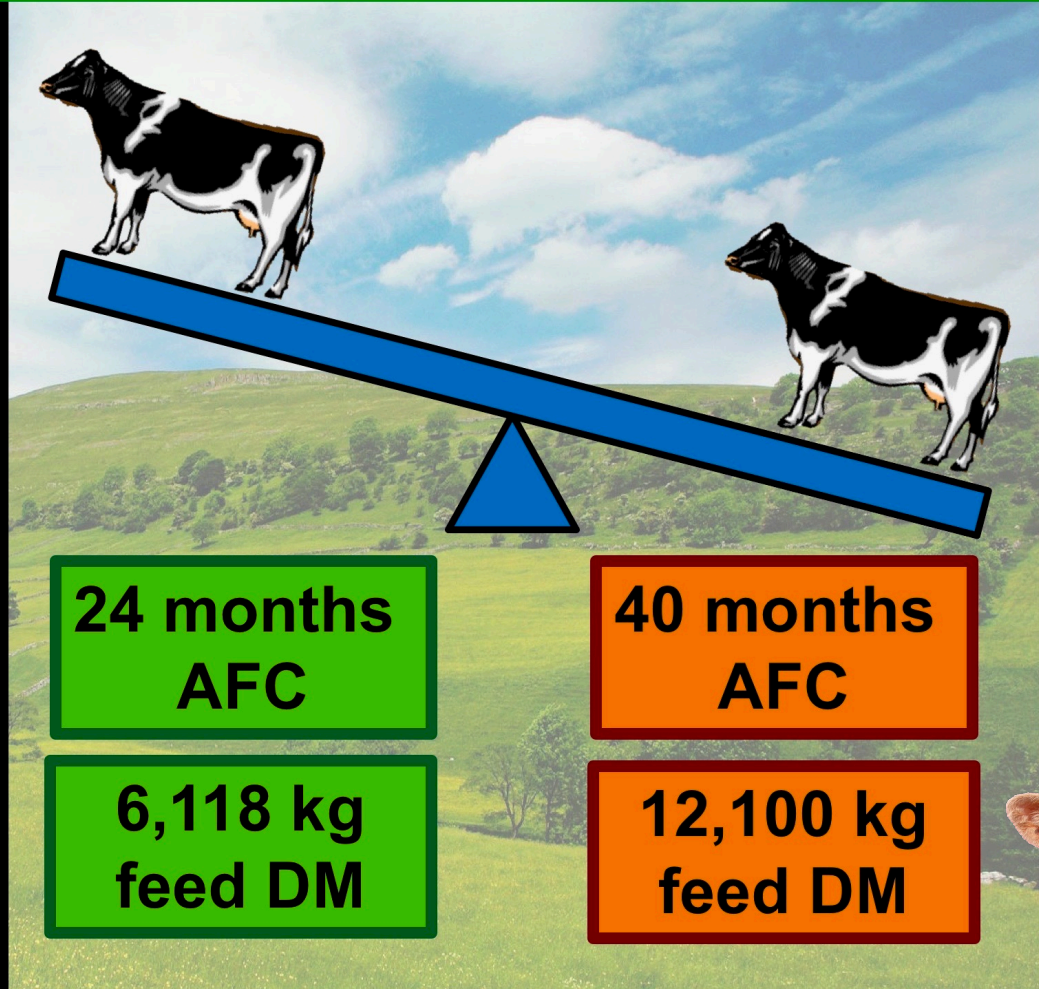
**Each heifer requires 6,118 kg feed DM to rear it
from birth to calving**



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Age doesn't matter – unless you're a heifer

Calving a heifer at 40 months of age requires an extra 5,982 kg feed DM. Inefficiency increases resource use and GHG emissions.



Source: Created by Dr. Jude L. Capper, 2017. Based on analysis of feed use to 24 months or 40 months at DMI = 3% of bodyweight from 24-40 months.



AH

Disease losses are significant and preventable, but the sustainability impacts aren't quantified

Lost: 20%

Harvested: 80%

At the worldwide level, average losses due to animal diseases are more than 20% (OIE, 2008)



AH

Impacts of disease on maintaining livestock production

Reduced milk/meat yield = need more animals

Increased mortality = need more animals

Failure to wean = need more animals

Failure to conceive = need more time

Reduced growth rates = need more time

Greater resource use
Higher economic cost

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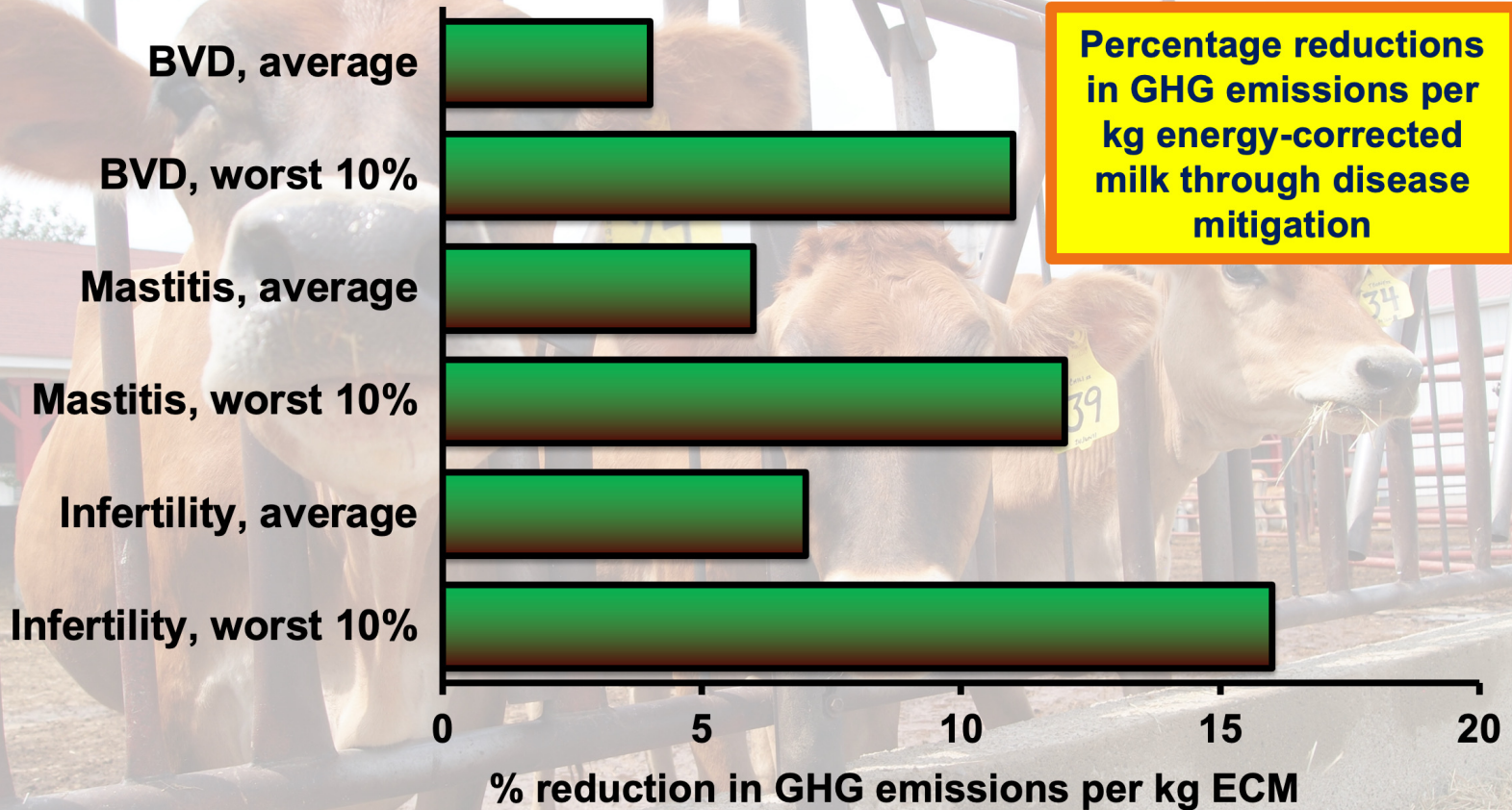


Source: Created by Dr. Jude L. Capper, 2020. More information available at: <https://www.msd-animal-health-hub.co.uk/TimeToVaccinate>



DS

GHG emissions could be cut significantly by mitigating dairy diseases - UK

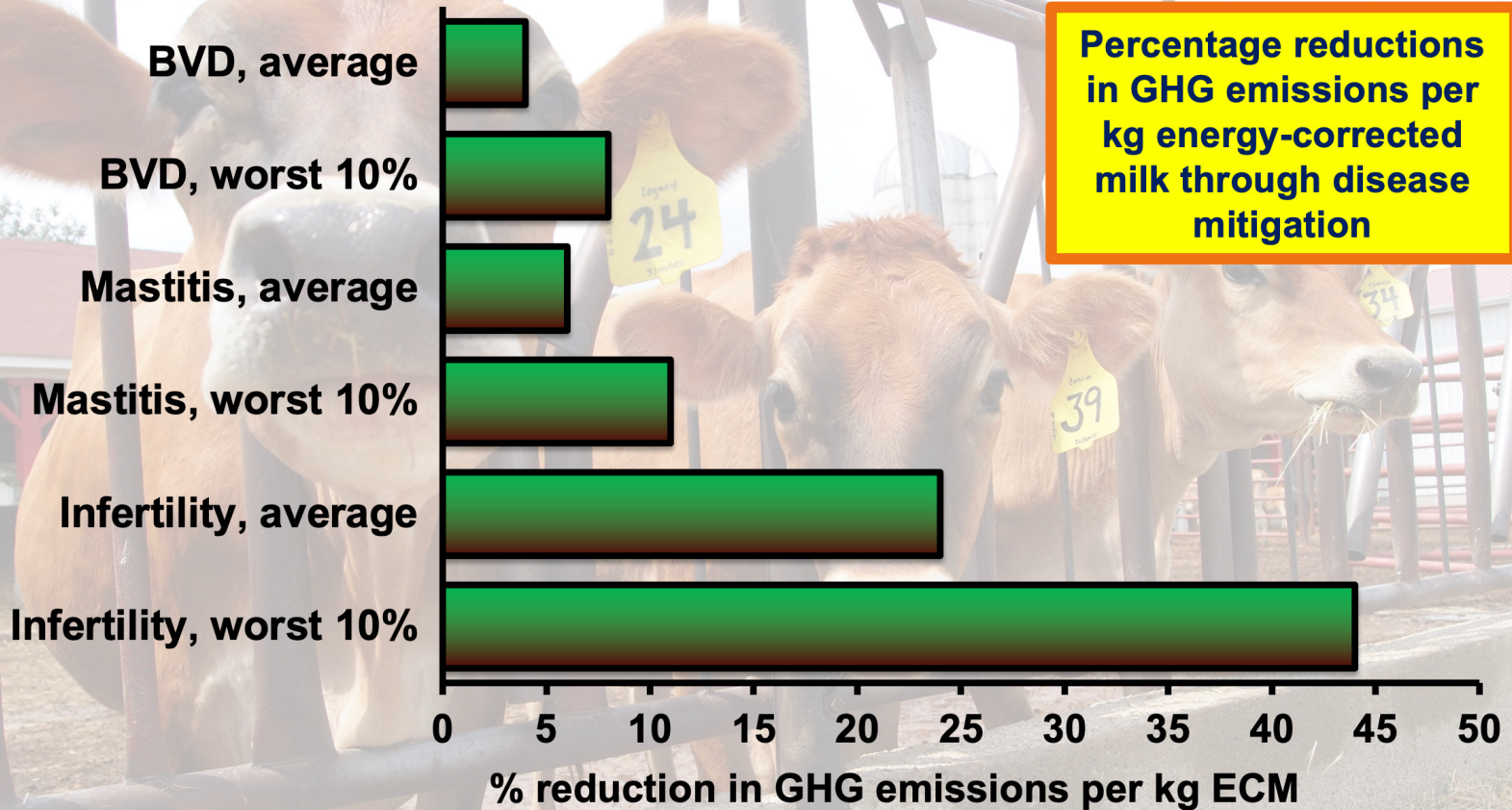


Source: Created by Dr. Jude L. Capper, 2021. Data from: Statham et al. 2021. Dairy Cattle Health and Greenhouse Gas Emissions Pilot Study: Chile, Kenya and the UK. Available from: <https://dairysustainabilityframework.org/wp-content/uploads/2020/10/Dairy-Cattle-Health-and-GHG-Emissions-Pilot-Study-Report.pdf>



DS

GHG emissions could be cut significantly by mitigating dairy diseases - Kenya



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Source: Created by Dr. Jude L. Capper, 2021. Data from: Statham et al. 2021. Dairy Cattle Health and Greenhouse Gas Emissions Pilot Study: Chile, Kenya and the UK. Available from: <https://dairysustainabilityframework.org/wp-content/uploads/2020/10/Dairy-Cattle-Health-and-GHG-Emissions-Pilot-Study-Report.pdf>



HfA

“Real life” application – African swine fever

The recent African swine fever outbreak, in which 100-150 million pigs died, led to:

17-38% increase
in global pork
prices

Pigmeat losses
would have fed
550-824 million
people

Greenhouse
gases invested in
animals that died
or were culled
were equal to
annual emissions
of 16.7-25.1
million cars

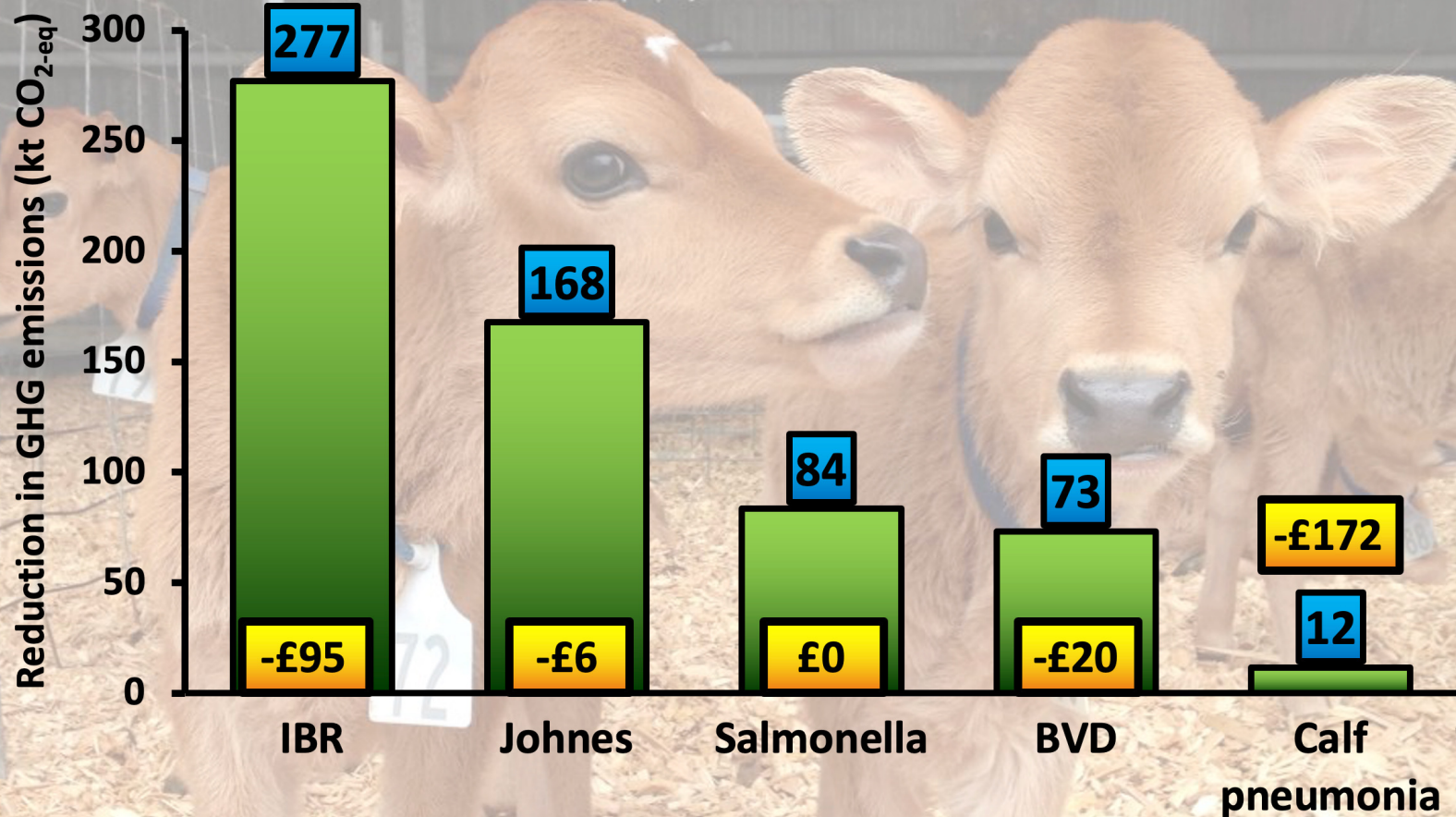


Source: Created by Jude L. Capper, 2023. Economic data from Mason-D’Croz et al. 2020. *Nature Food* 1:221-228. Other data – J. Capper – submitted.



AH

Vaccination against endemic disease reduces GHG emissions and is cost-effective

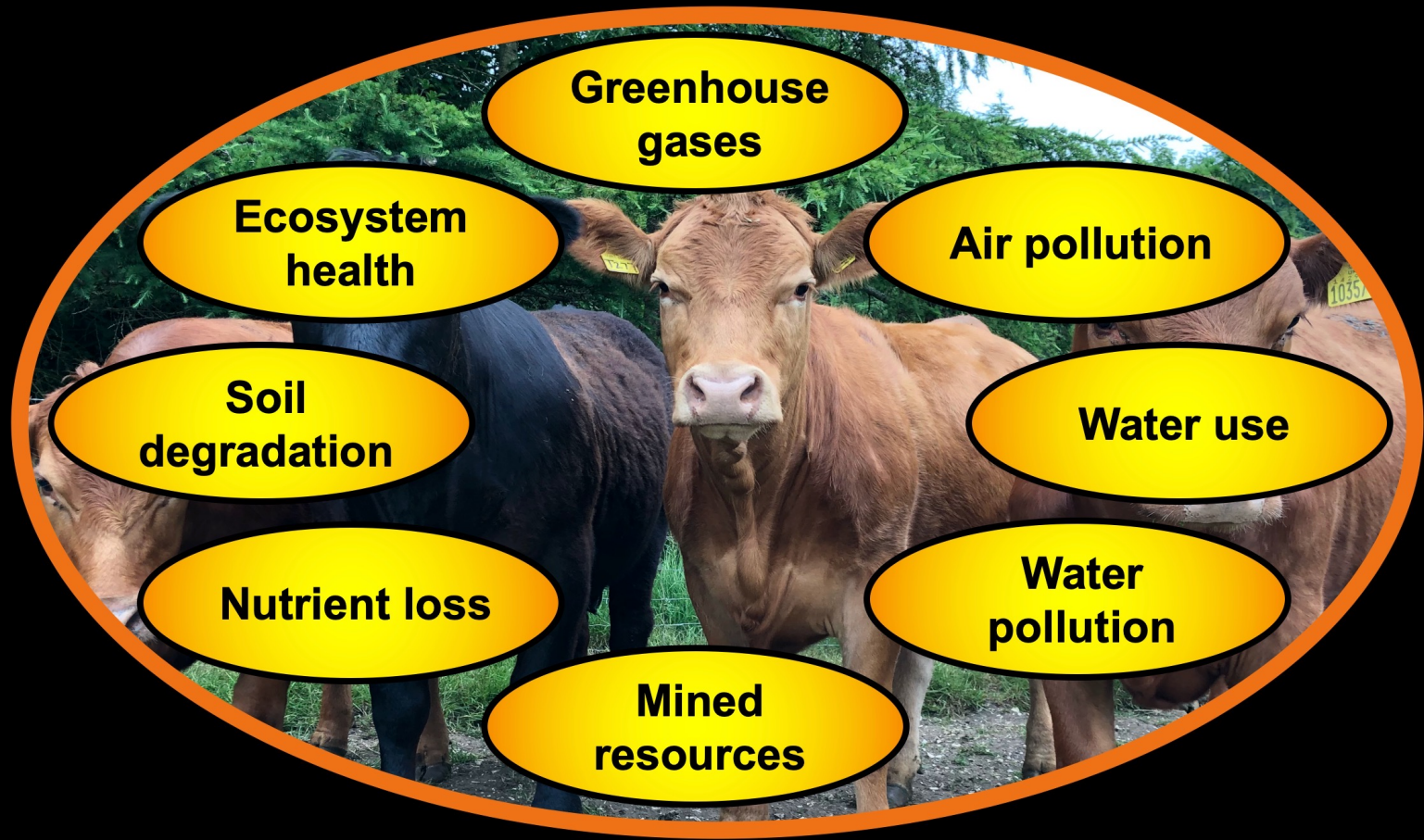


Source: Created by Dr. Jude L. Capper, 2020. Data from: ADAS (2015) Study to Model the Impact of Controlling Endemic Cattle Diseases and Conditions on National Cattle Productivity, Agricultural Performance and Greenhouse Gas Emissions. ADAS UK Ltd, Herts, UK.



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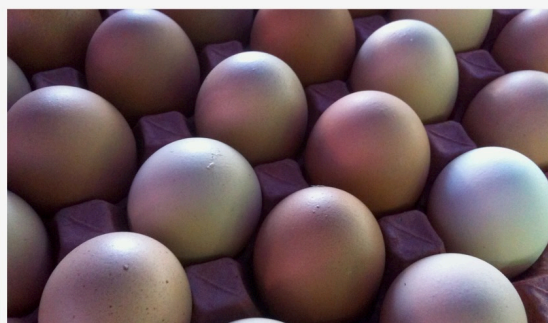
Environmental impacts are not limited to greenhouse gas emissions



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(Almost) all of our food comes from the soil

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Source: Created by Jude L. Capper, 2023.

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Dung beetles have myriad benefits

**Improved soil quality,
herbage yields and
cattle productivity**

**Reduced fertilisers,
pest flies and GI
parasites**

**Dung beetles may
save UK cattle
farmers £367
million/year**

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Enhancing biodiversity provides significant sustainability kudos

Ground-nesting birds depend on lightly grazed pasture - curlew and dunlin on UK red list

Manage land to avoid nest trampling, enhance sward diversity and provide wader scrapes

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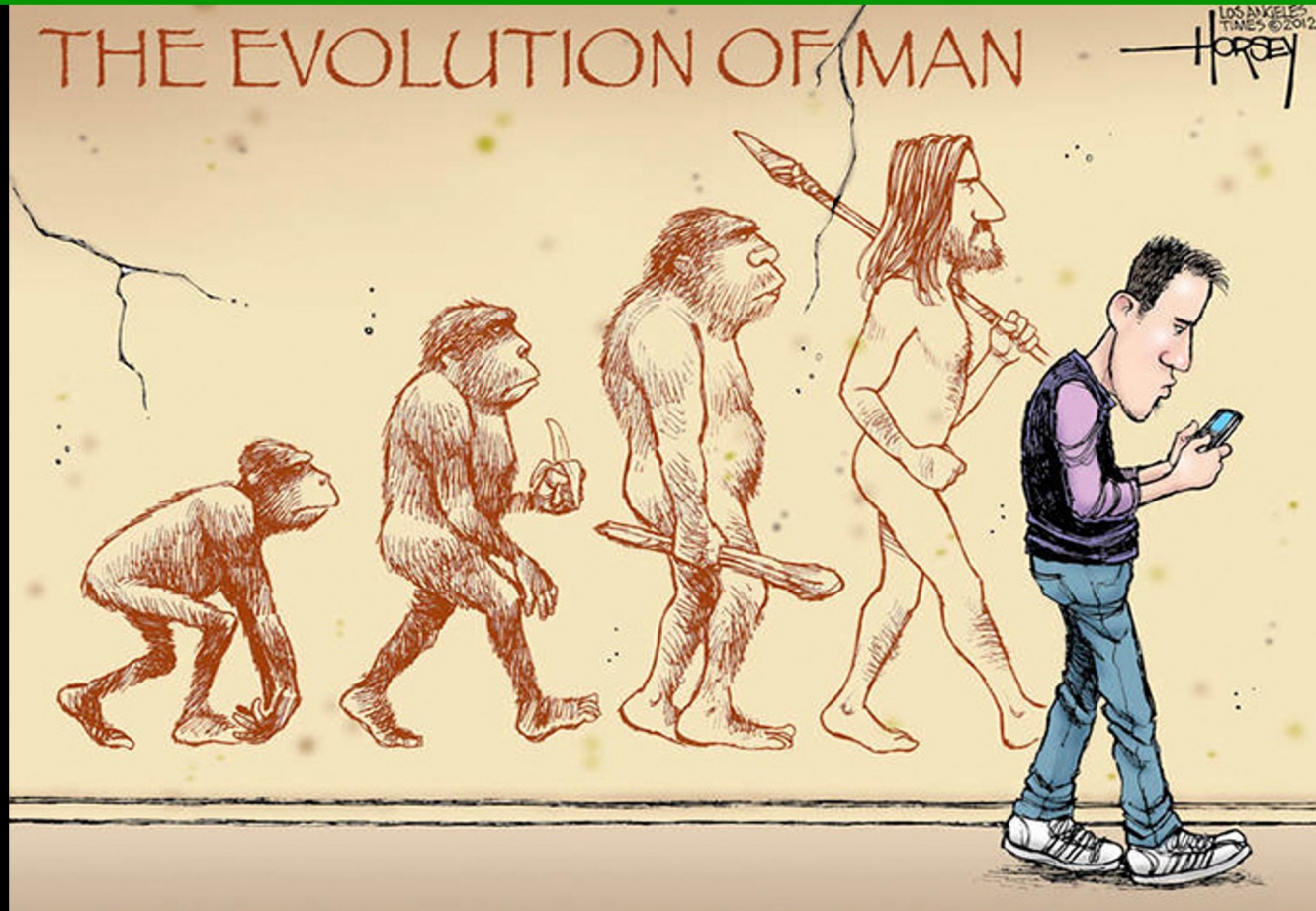


Source: Created by Jude L. Capper, 2023. Photo from: Charles J. Sharp, CC BY-SA 4.0



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We've got the technology –
now we need to use it to its potential



Source: Created by Dr. Jude L. Capper, 2021. Cartoon from: https://static.boredpanda.com/blog/wp-content/uploads/2016/02/funny-satirical-evolution-charles-darwin-day-251_700.jpg



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Sustainability indices will be increasingly present on meat labels in future

Beef (animal-based) patty

Nutritional value*

Serving size: 227 g (8 oz) steak

78%

Pure beef protein
– contains no
lab-based
ingredients!

Sustainability index



Carbon footprint (under GWP*)



Water footprint



Antibiotic footprint



Community support rating



Farm webcam and sustainability assessment data



*compared to ideal protein



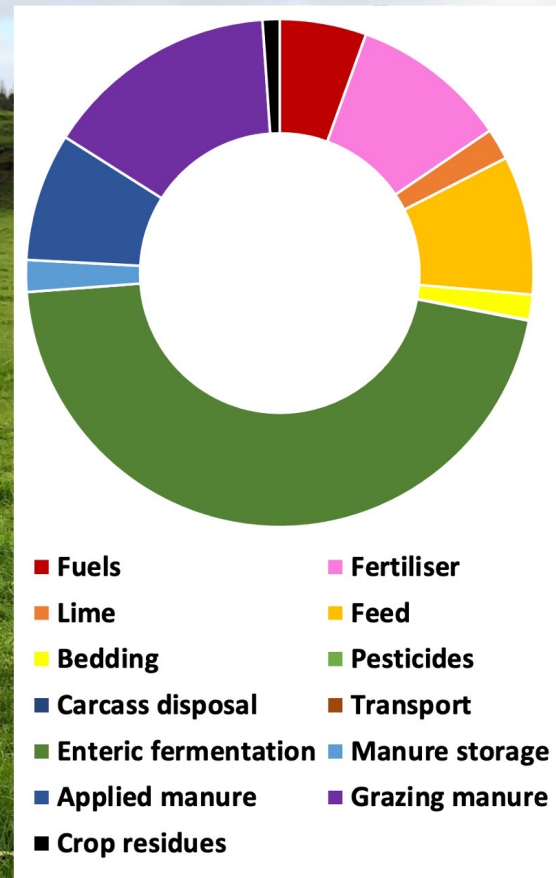
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Source: Created by Dr. Jude L. Capper, 2020.

S

Standard footprinting tool urgently needed across the industry



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Source: Created by Dr. Jude L. Capper, 2021. Example carbon footprint results based on a beef finishing farm.



A variety of sustainability tools, checklists and policies already exist

GREENER VETERINARY PRACTICE CHECKLIST

The **Vet Sustain Greener Veterinary Practice Checklist** outlines the points a veterinary practice may consider to become more sustainable.



PRACTISE RESPONSIBLE RESOURCE USE

- Reduce fossil fuel use for energy and heating by remembering to turn appliances off and switching to renewable energy
- Reduce disposable materials usage, including single-use plastics, such as disposable surgical textiles, where possible
- Use paper-free management systems where possible and ensure responsible paper sourcing, use and disposal
- Put water-saving measures in place
- Make sustainable choices when purchasing equipment or consumables
- Review and optimise waste management:



USE MEDICINES RESPONSIBLY

- Practise responsible antimicrobial and parasiticide use
- Avoid drug wastage through good stocking principles
- Dispose of drugs correctly (avoid ecotoxicity).



EMPOWER THE TEAM

- Support staff wellbeing and development, eg through sustainability education and projects, and encourage formation of a



Source: Slide created by Jude L. Capper, 2023.
Greener Veterinary Practice Checklist from Vet Sustain: <https://vetsustain.org/resources/vet-practice-checklist>



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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%**



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Source: Created by Dr. Jude L. Capper, 2020. Information from: YouGov (2019) Is the future of food flexitarian?
[https://yougov.co.uk/topics/resources/articles-reports/2019/03/18/future-food-flexitarian?](https://yougov.co.uk/topics/resources/articles-reports/2019/03/18/future-food-flexitarian)



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Welfare, health and environmental concerns are paramount for people giving up dairy

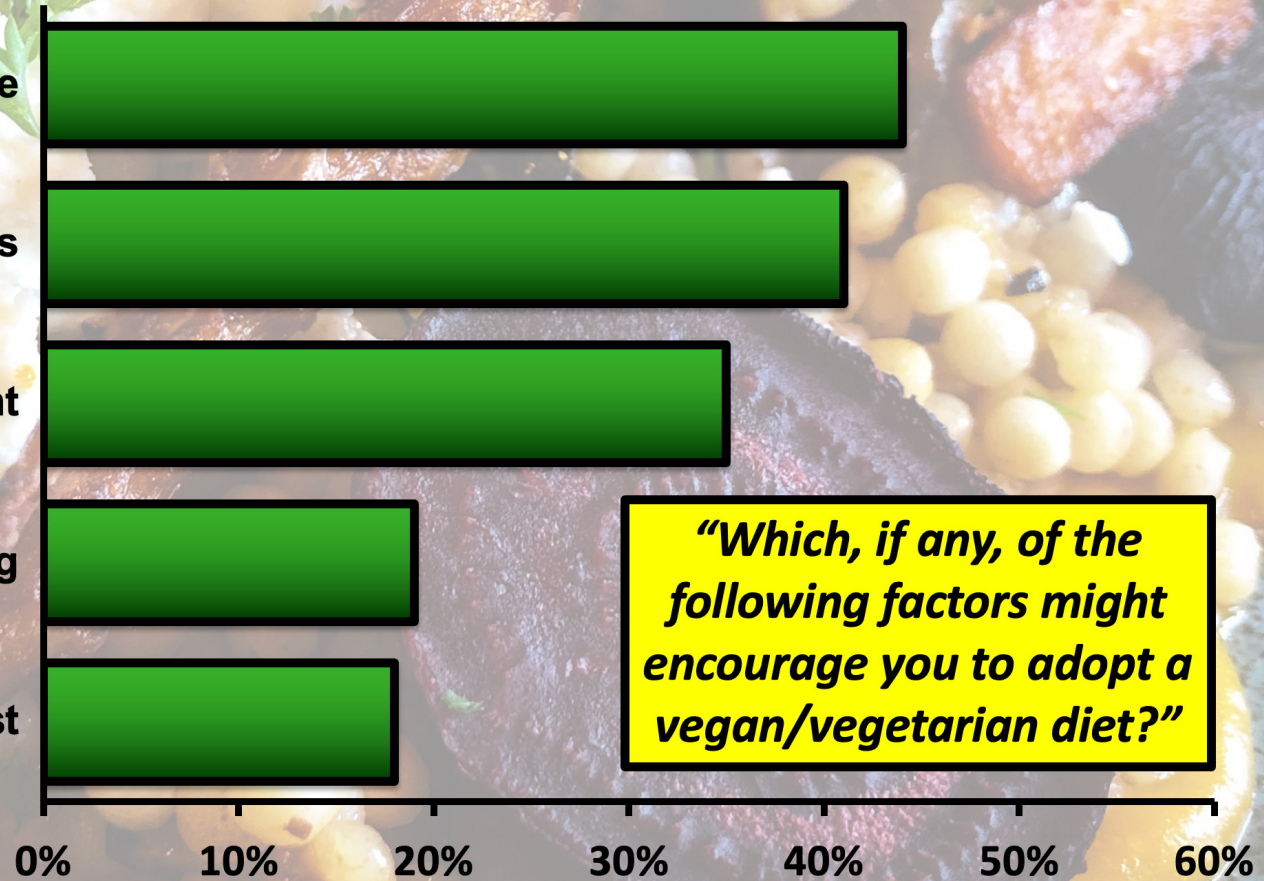
Animal welfare

Healthiness

Environment

Labelling

Economic cost



Source: Created by Dr. Jude L. Capper, 2021. Information from: YouGov (2019) Is the future of food flexitarian?
<https://yougov.co.uk/topics/resources/articles-reports/2019/03/18/future-food-flexitarian>

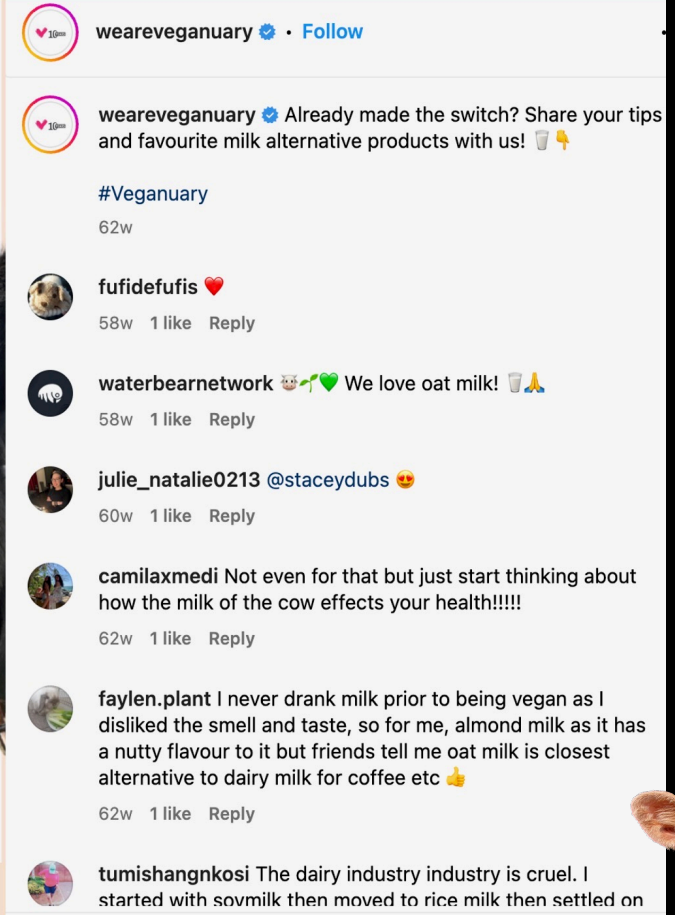


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Activist groups make numerous (outdated?) claims about dairy

5 REASONS TO SWITCH TO PLANT MILKS

- 1 Cows must be made pregnant to produce milk, which they make specifically to feed their young, just like humans
- 2 The calf is taken away from the mother within 48 hours of birth
- 3 Many male calves are shot at birth. Others may be reared for veal or low-grade beef
- 4 The mother will be milked and reimpregnated - until she is 'spent'. Then, she will be sent to slaughter
- 5 Producing a glass of dairy milk results in almost three times the greenhouse gas emissions of any non-dairy milks



TRY VEGAN THIS MONTH



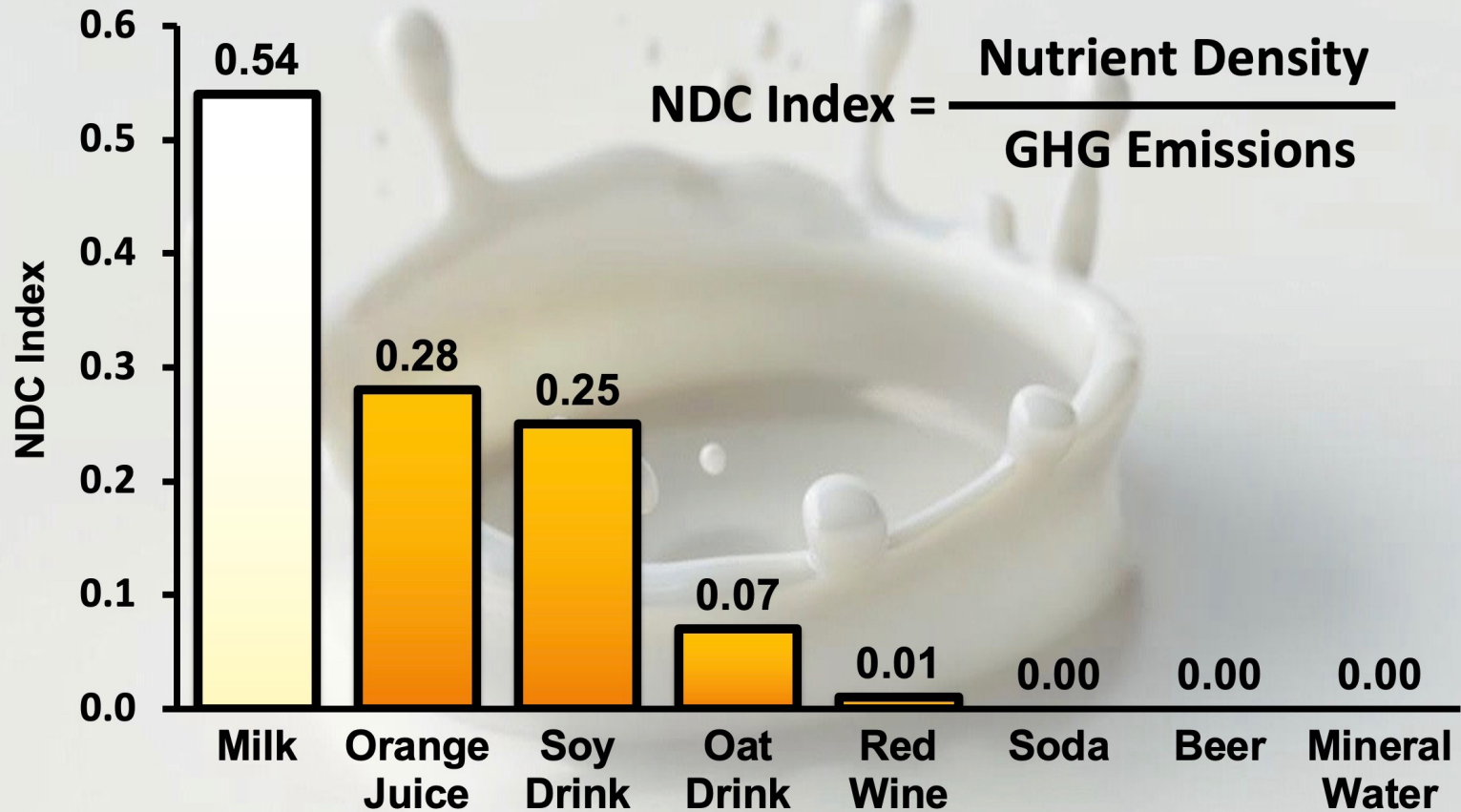
Source: Created by Jude L. Capper, 2023. Infographic from: <https://www.instagram.com/weareveganuary/>

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Nutrient density should be included when assessing carbon footprint

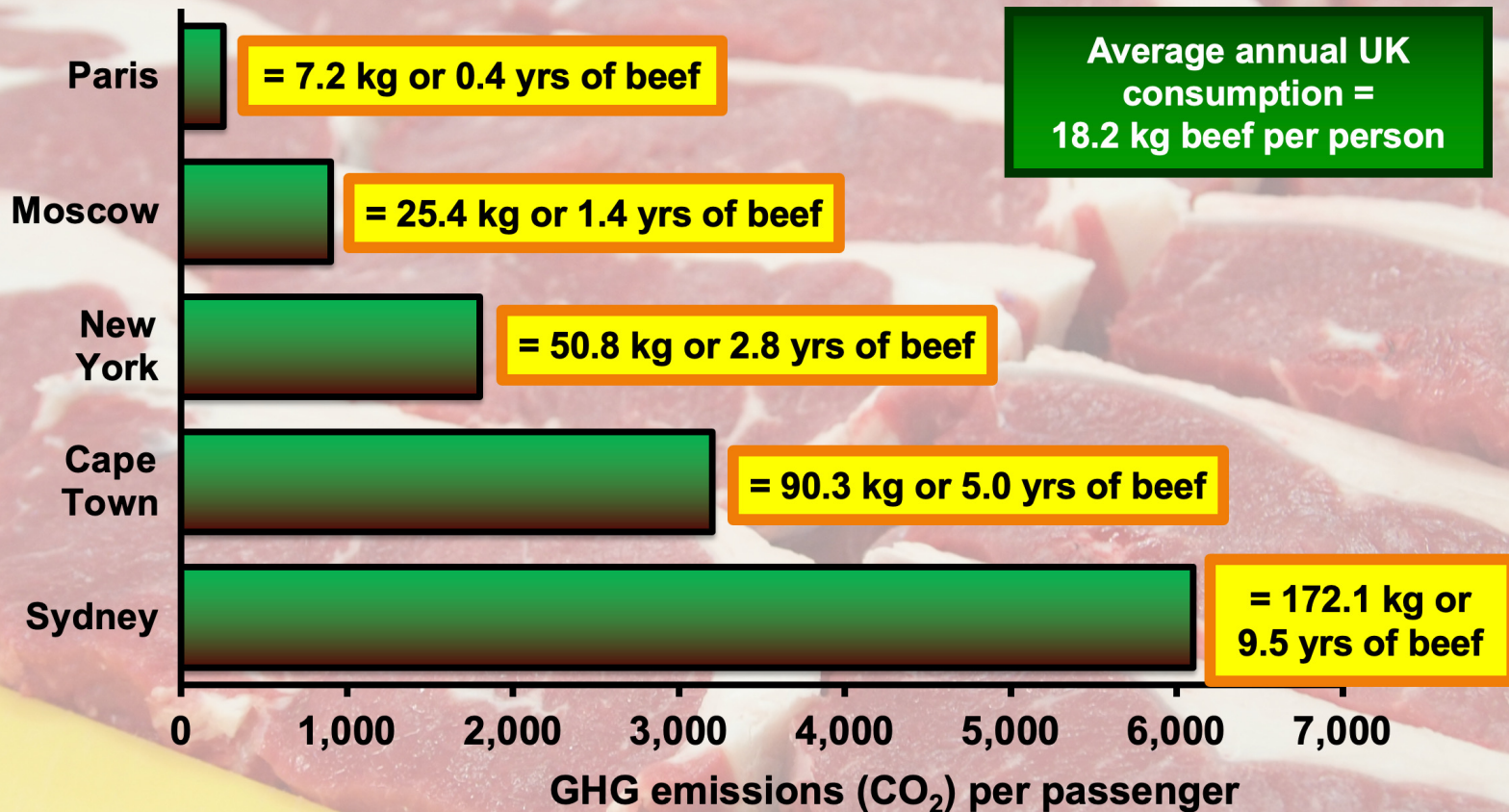


Source: Created by Dr. Jude L. Capper, 2020. Data from: Smedman et al. (2010). Nutrient density to climate impact (NDCI) index of beverages. Food & Nutr. Res.



cv

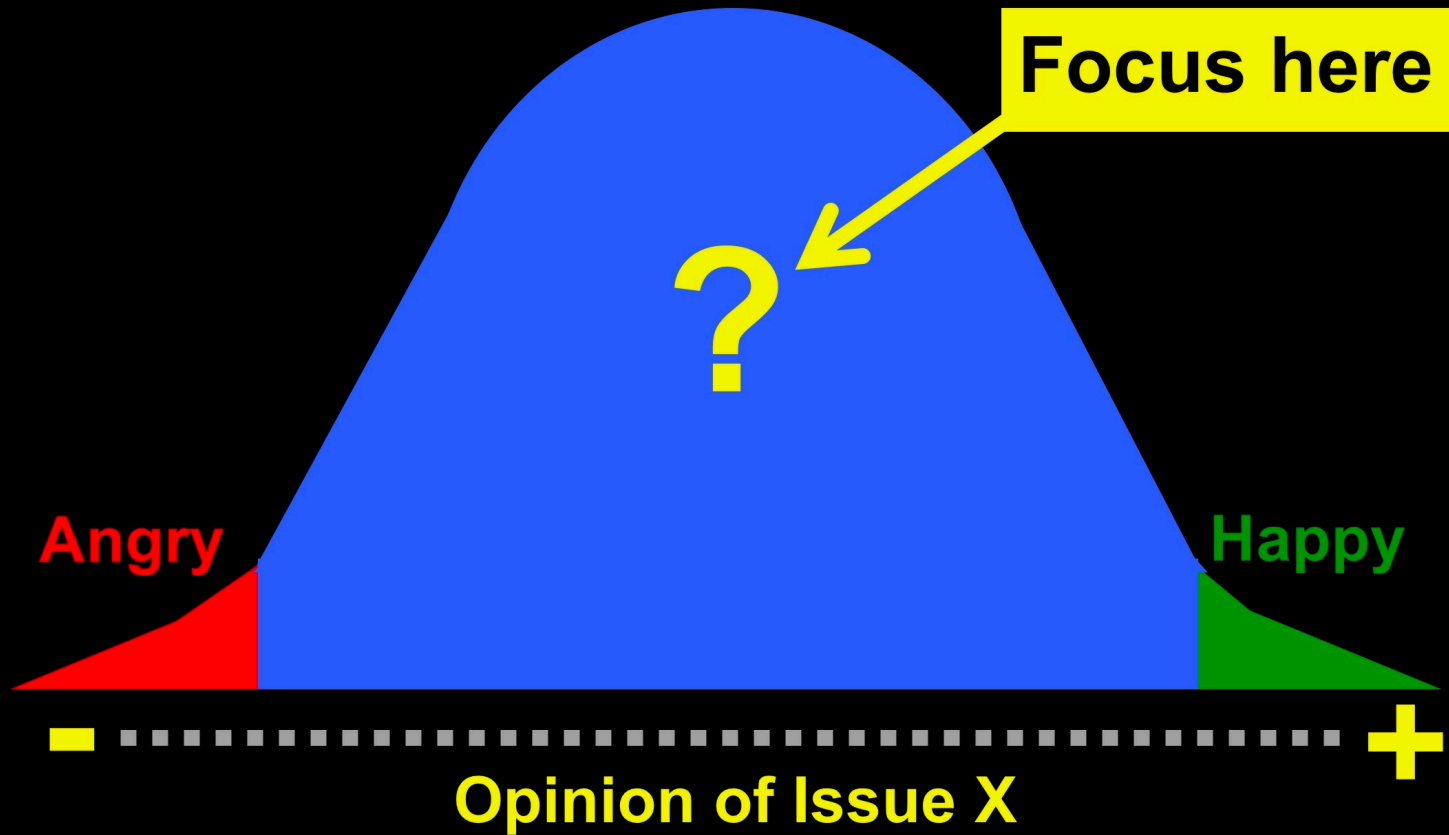
International flights emit considerable quantities of carbon compared to beef production



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

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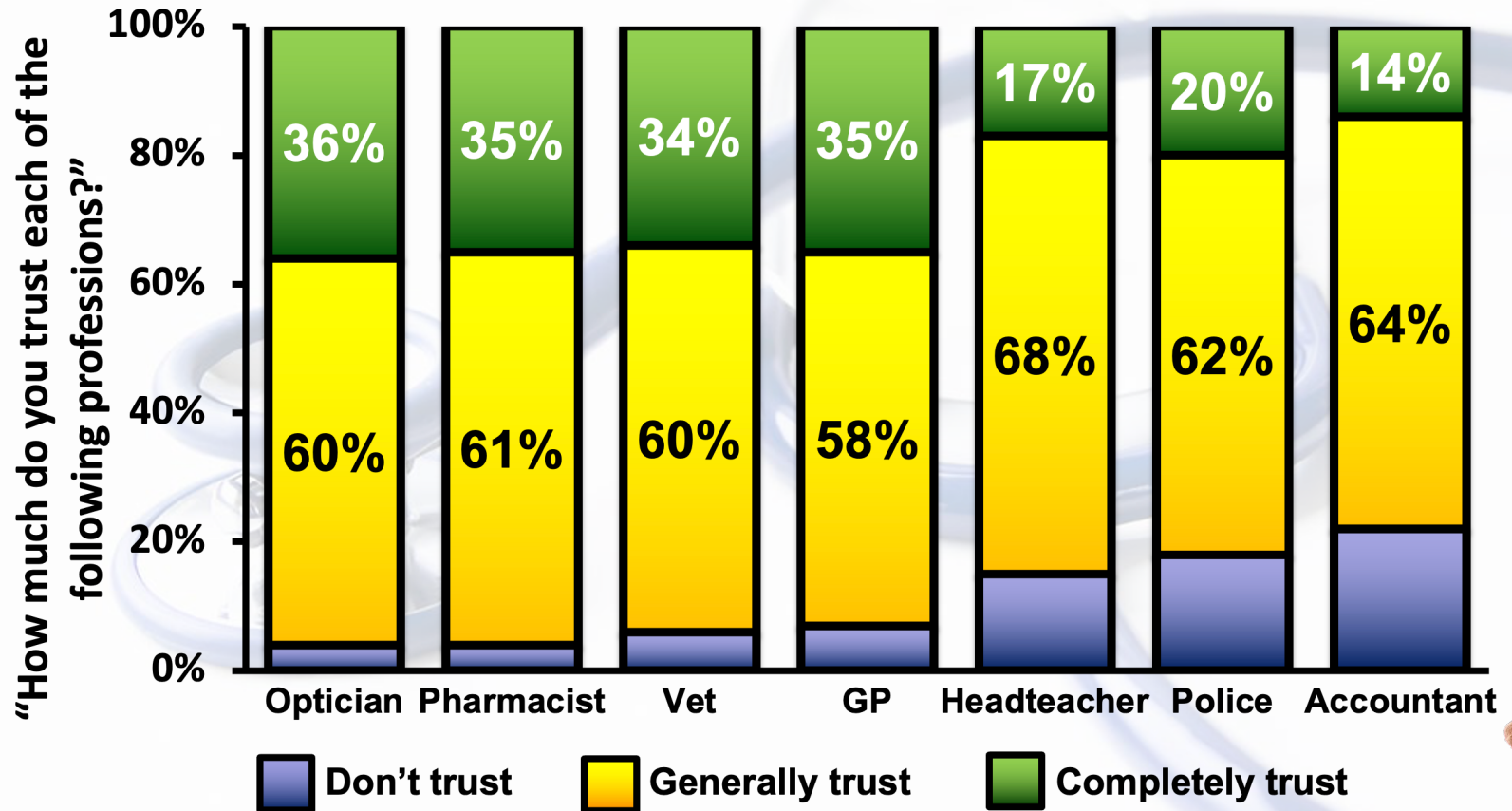


Source: Created by Dr. Jude L. Capper, 2017



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Consumer trust in the veterinary profession is extremely high (2019 RCVS survey)



Source: Created by Jude L. Capper, 2023.
Data from: RCVS (2019) Trust in the Profession. <https://www.rcvs.org.uk/news-and-views/publications/the-2019-survey-of-the-veterinary-profession/>



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5 easy 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

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Source: Created by Dr. Jude L. Capper, 2019. Adapted from: Capper and Yancey. 2015. Communicating Animal Science to the General Public. *Animal Frontiers*.



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You don't have to be the biggest,
you do need to do your best

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Source: Created by Dr. Jude L. Capper, 2023.

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Thank you!

JCapper@Harper-Adams.ac.uk

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Questions?



Source: Created by Dr. Jude L. Capper, 2021. Cartoon from: <http://RubesCartoons.com>