

Jude Capper, PhD

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Power of the positive -
how do we improve sustainability on all dairy farms?

14th June 2022

Source: Dr. Jude L. Capper, 2022

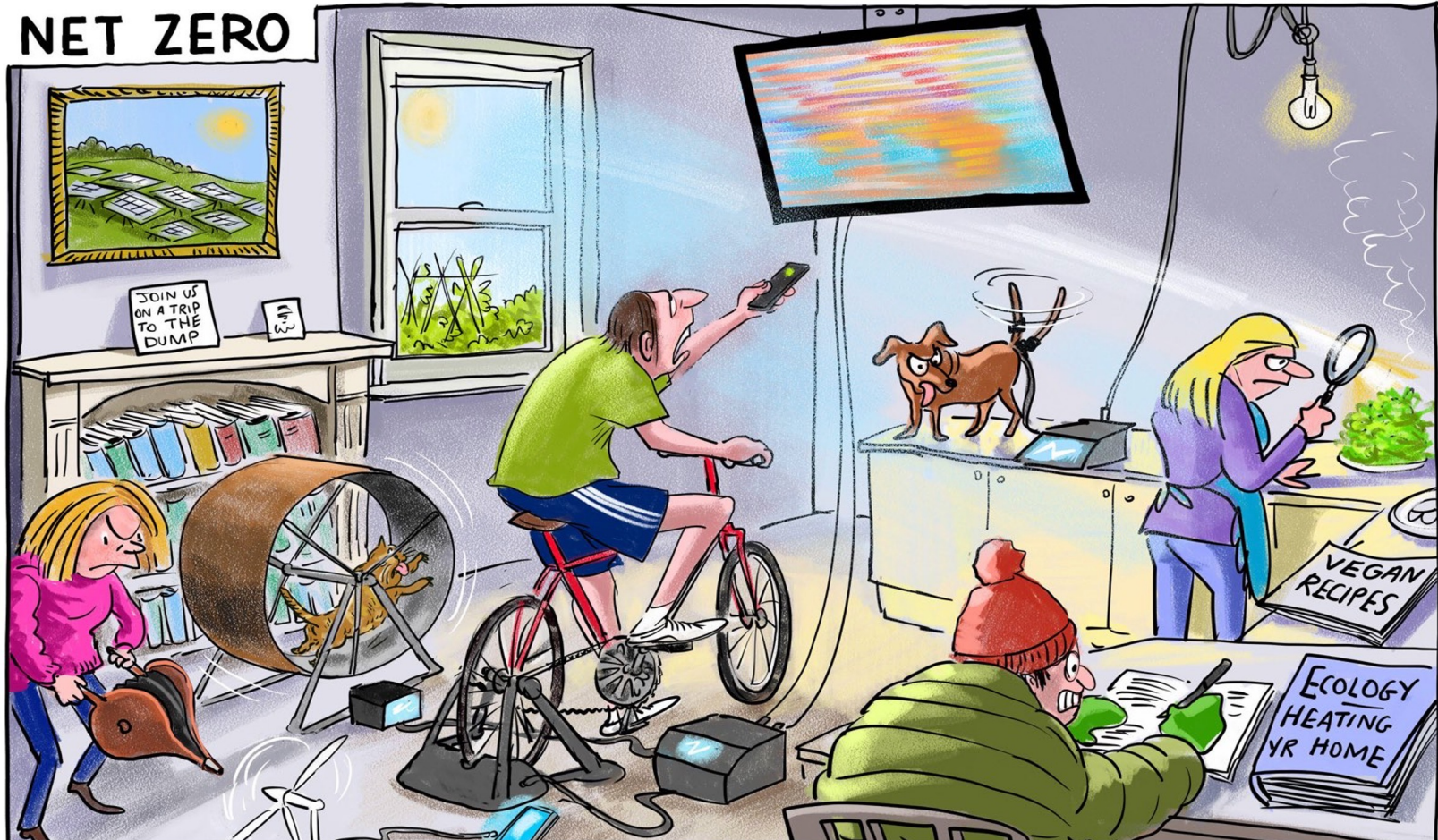
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S

Net Zero is a clear priority

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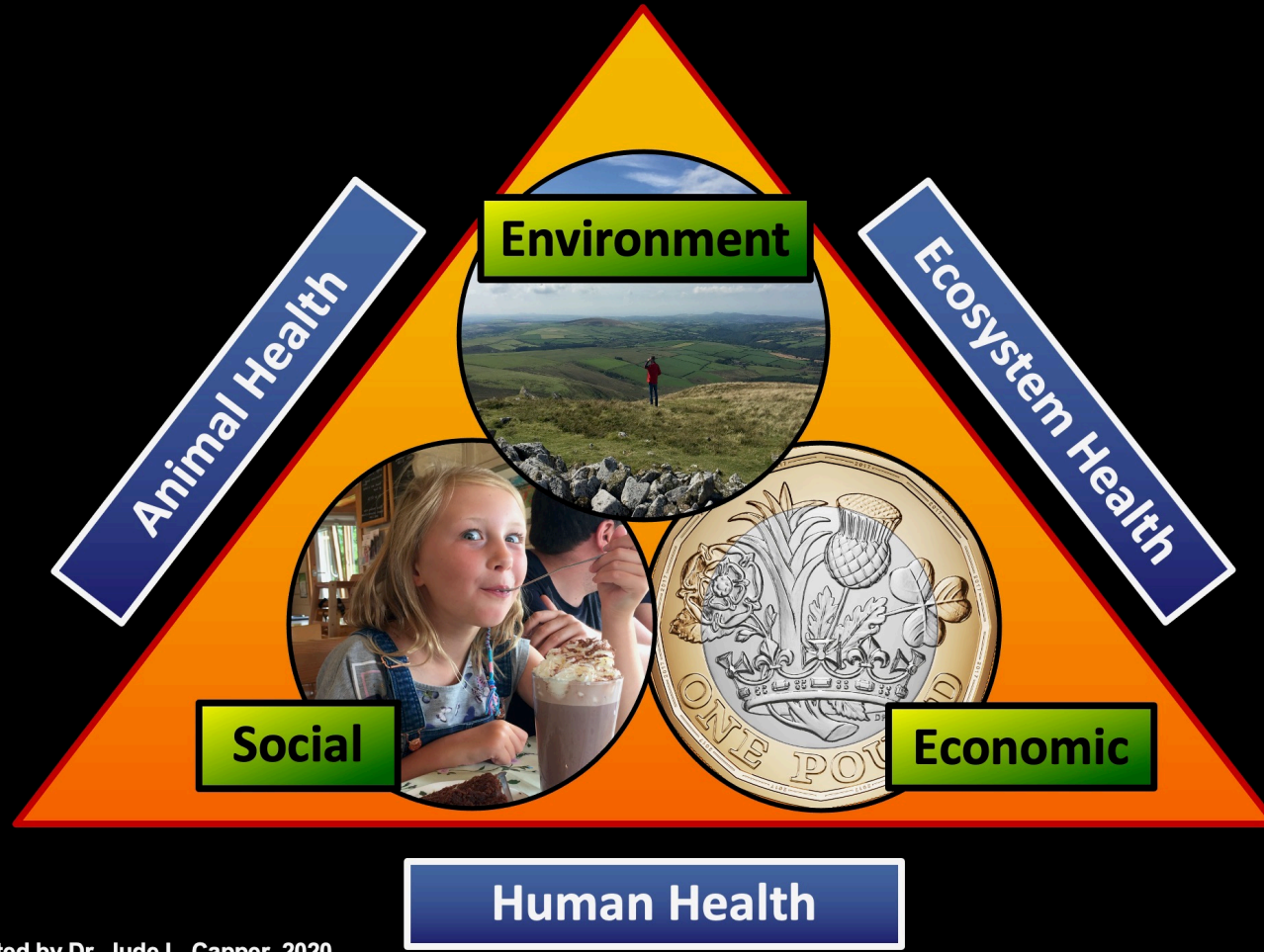
Source: Created by Dr. Jude L. Capper, 2021. Cartoon from: <https://twitter.com/Cartoon4sale/status/1384537729460056067?s=20>

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



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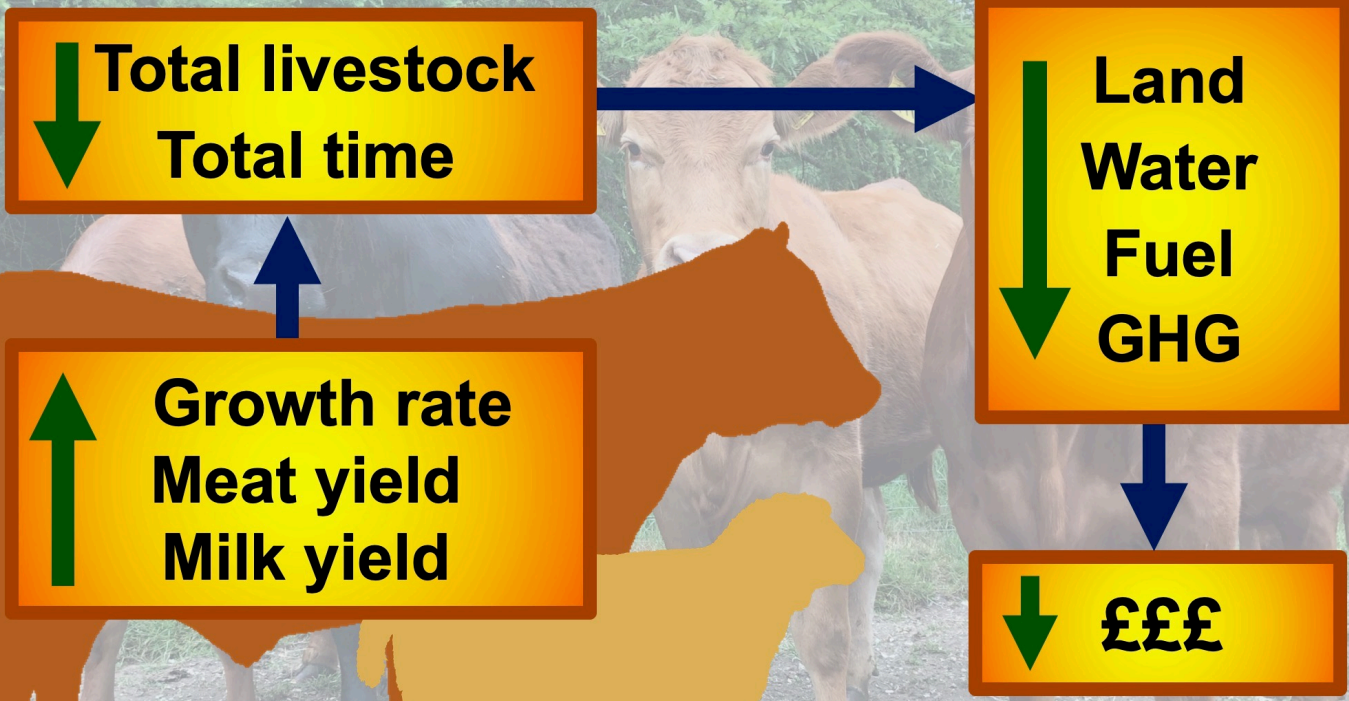
Source: Created by Dr. Jude L. Capper, 2020.

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B

Improving animal productivity reduces the environmental impact of milk and meat



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

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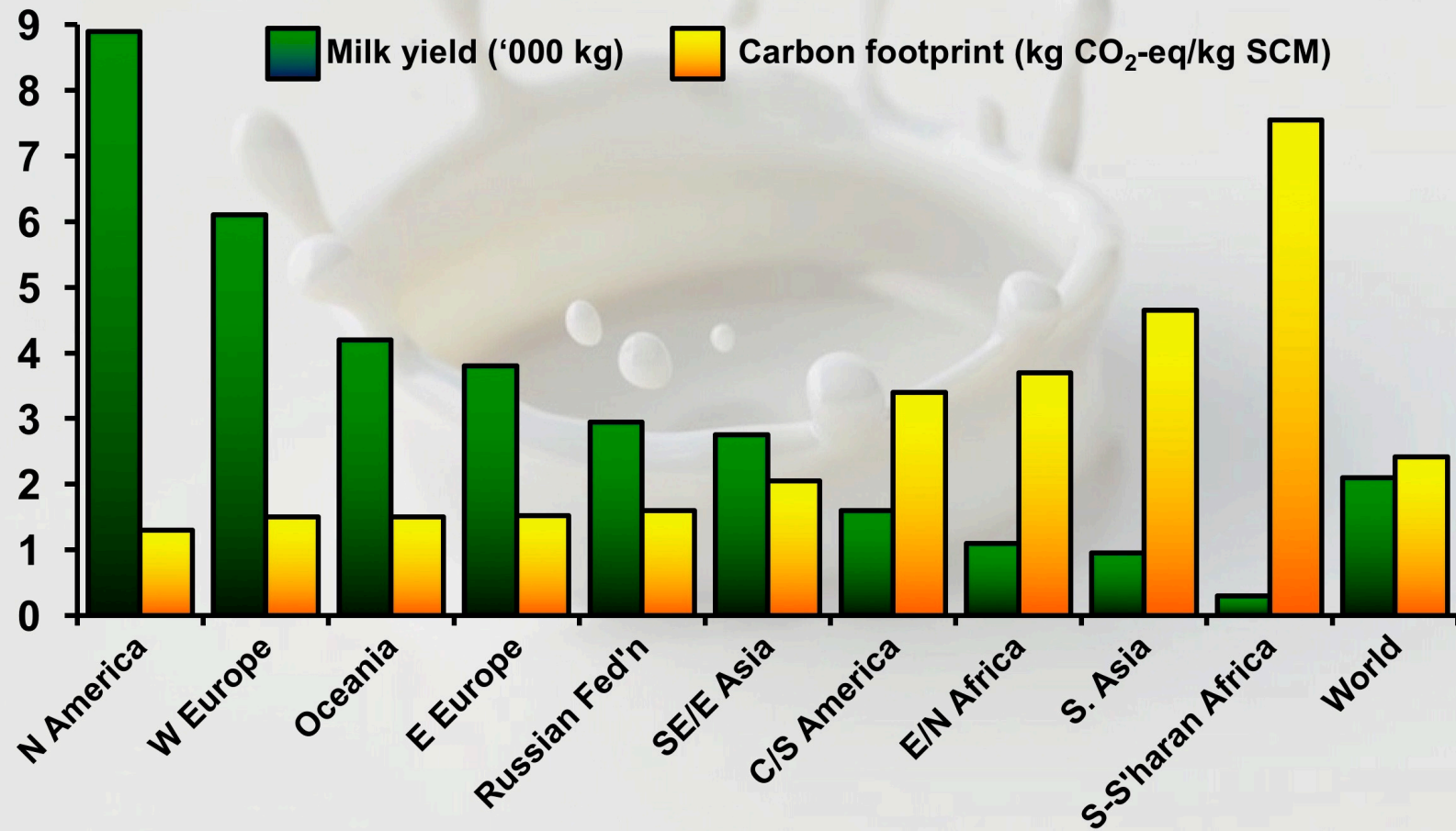


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DS

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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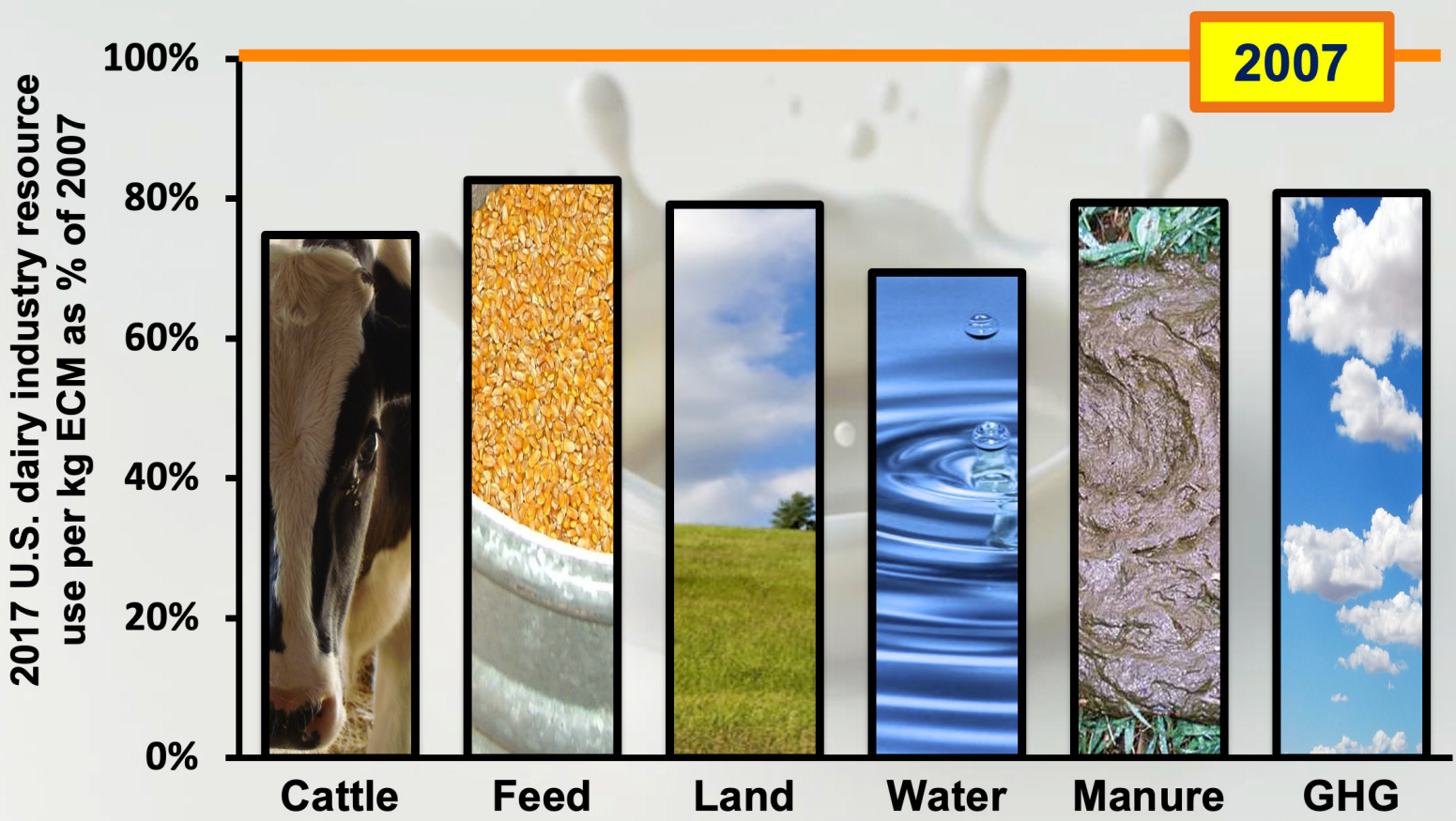
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U.S. dairy producers cut greenhouse gas emissions by 19% between 2007-2017



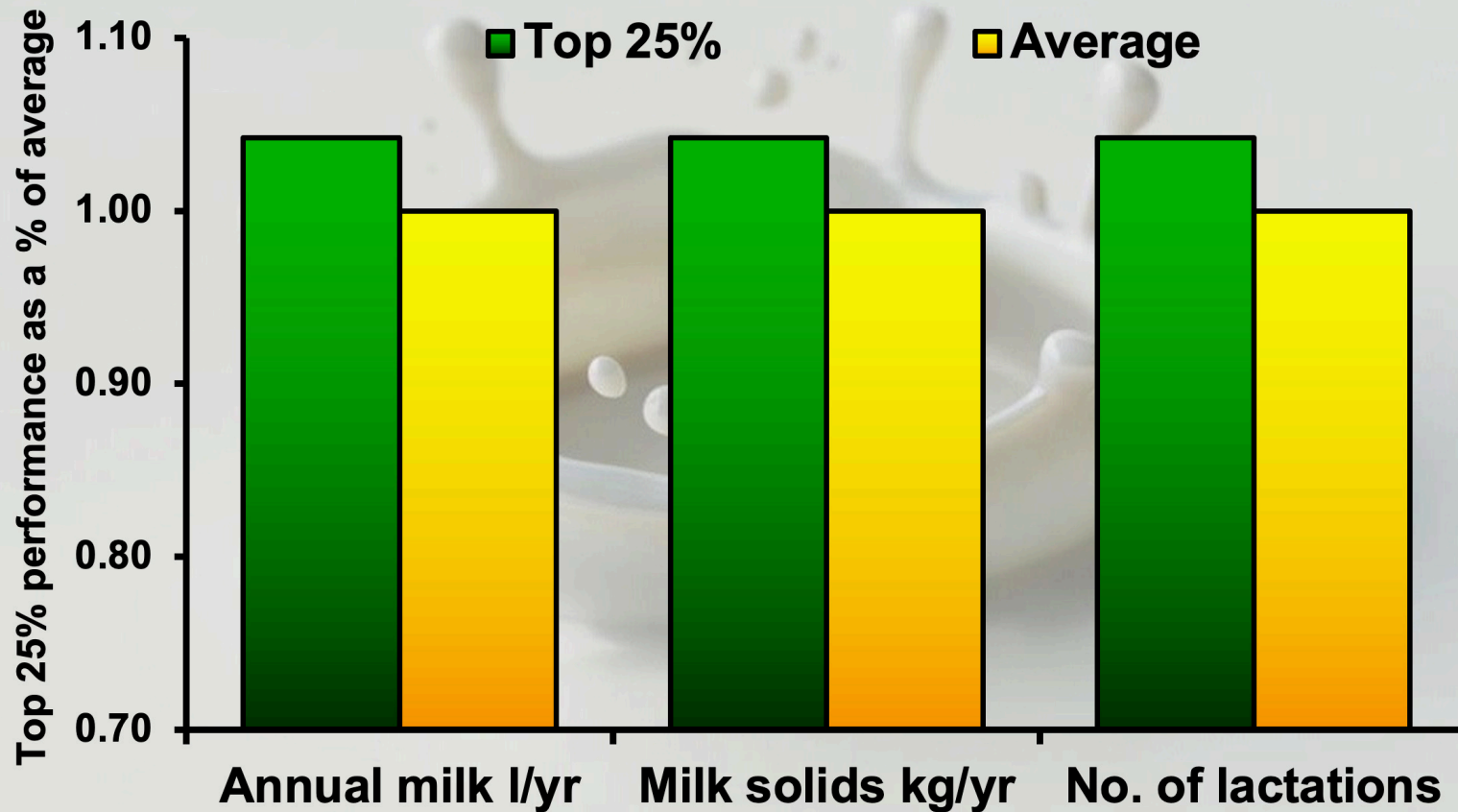
Source: Created by Dr. Jude L. Capper, 2021. Data from: Capper, J. L. and Cady, R. A. 2019. The effects of improved performance in the U.S. dairy cattle industry on environmental impacts between 2007 and 2017. *Journal of Animal Science*. <https://doi.org/10.1093/jas/skz291>

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Top 25% of dairy farms have higher yields, higher milk solids and lower cow turnover



Source: Created by Dr. Jude L. Capper, 2021. Data from: AHDB (2020) Dairy performance results 2018/19.
https://projectblue.blob.core.windows.net/media/Default/Dairy/Publications/DairyPerformResults3265_200317_WEB.pdf

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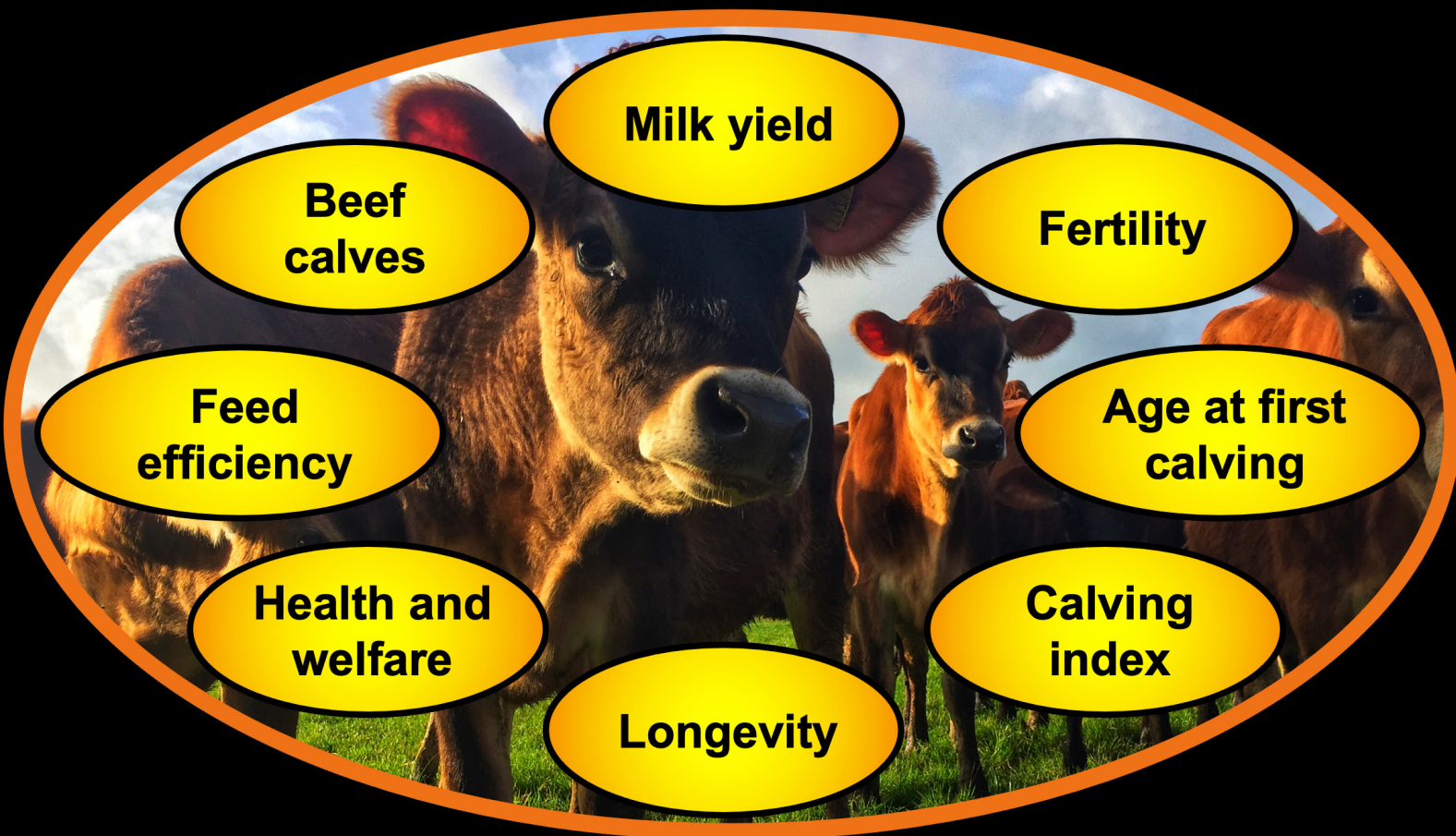
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Improving performance indicators reduces GHG emissions...but how do they compare?



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Source: Created by Dr. Jude L. Capper, 2021

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What about smallholders?



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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)

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Source: Created by Dr. Jude L. Capper, 2020. Data from: World Organization for Animal Health. 2008. <http://www.oie.int/for-the-media/editorials/detail/article/feeding-the-world-better-by-controlling-animal-diseases>

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What are the milk, meat and greenhouse gas implications of global dairy cow mortality?



Annual milk yield
4,500
kg

Milk lost if cow dies
8,537
kg

Meat lost if cow dies
430
kg CW

Extra GHG emissions
3,751
kg
CO₂e

Source: Created by Dr. Jude L. Capper, 2021. Calculated as an example based on a 4,500 kg annual milk yield, 26 mo age at first calving, 14 mo calving interval, 248 kg carcass weight, 0.69 live calves born/yr, 0.50 calves reared for beef, and average of 1,731 kg CO₂e GHG emissions per heifer/yr.

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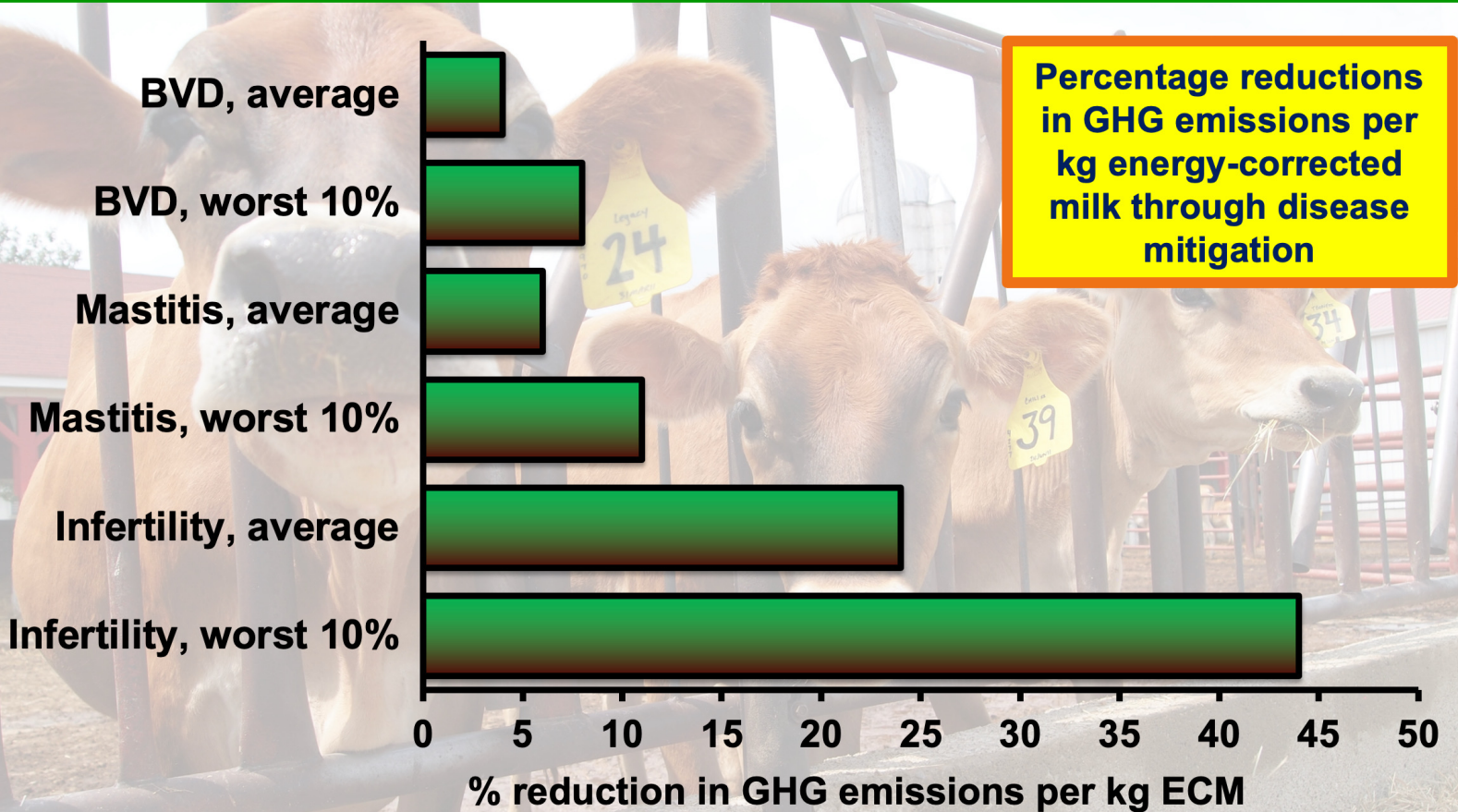


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DS

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>

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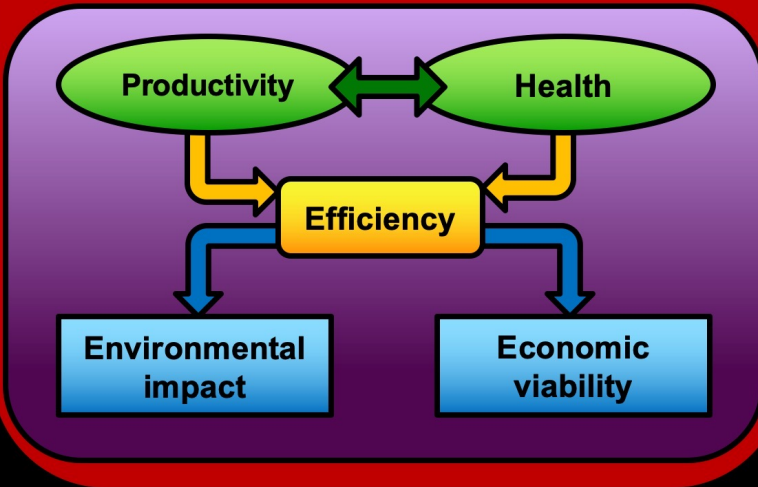
Social acceptability and consumer trust are vital for sustainable livestock production

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Social Acceptability



Sustainability



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

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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>

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COM

Animal welfare and human health are major concerns for people giving up animal products



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>

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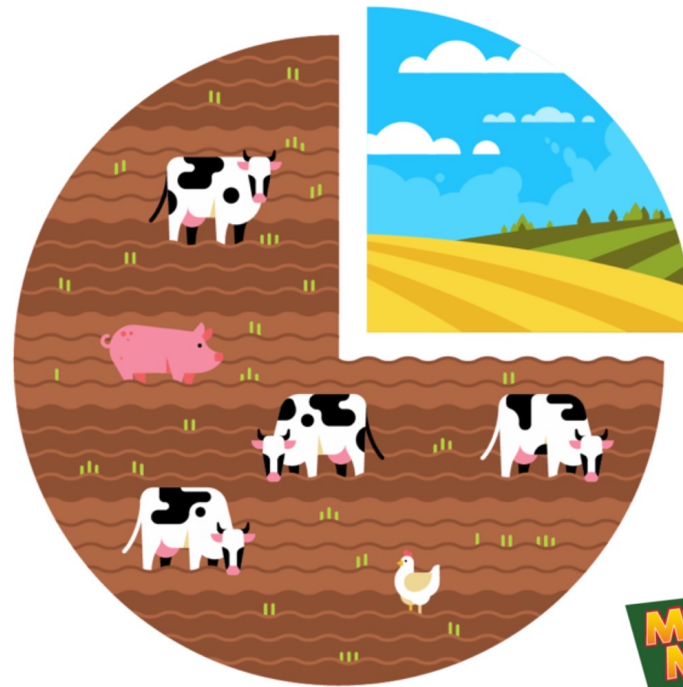


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Bad news bias – need five positive stories to cancel out each negative

We are programmed to believe bad news stories. Tidal wave of factual information needed to overcome them.

LIVESTOCK PRODUCTION USES 75% OF THE EARTH'S AGRICULTURAL LAND.



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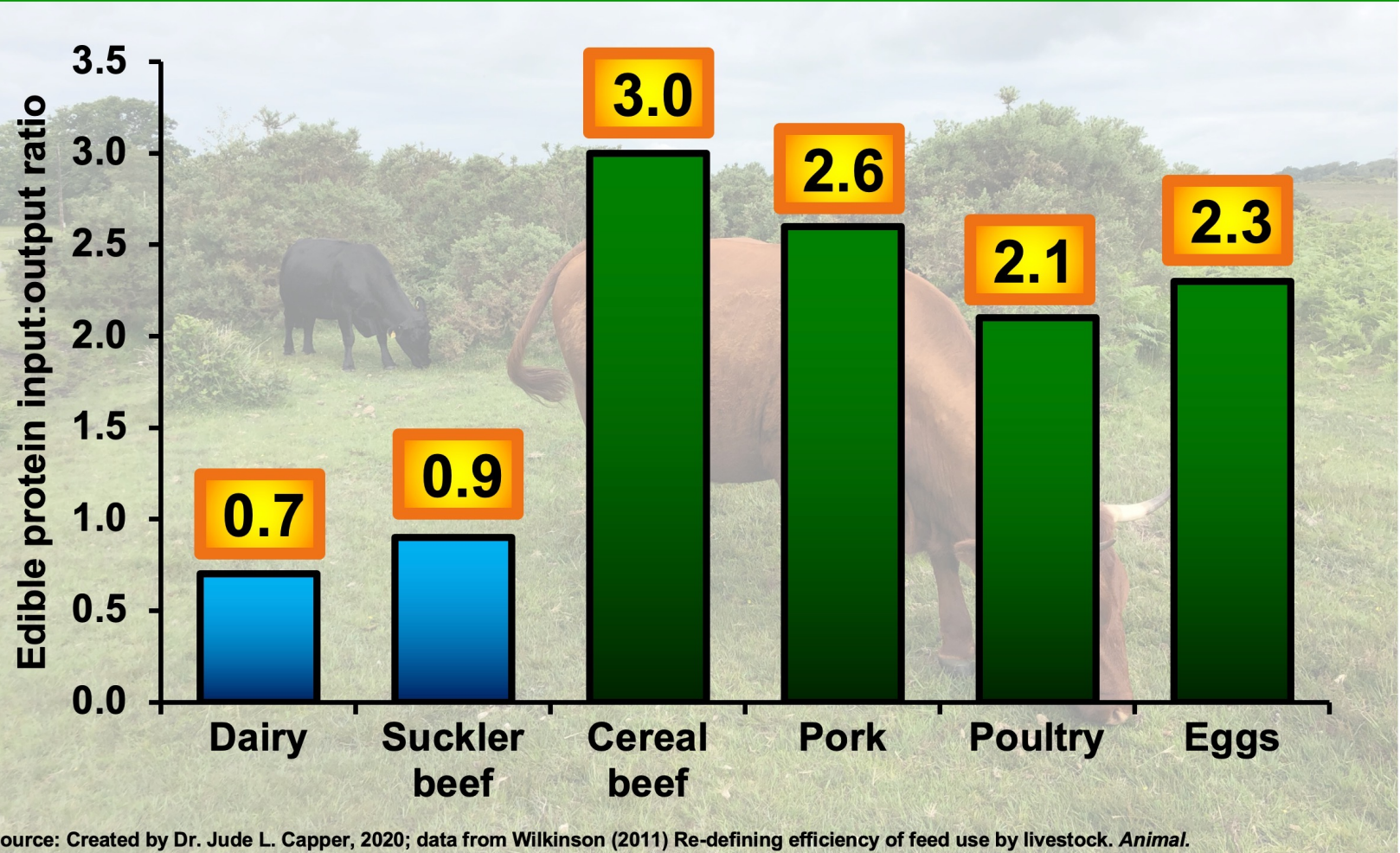
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Source: Created by Dr. Jude L. Capper, 2020. Infographic from: <https://www.pinterest.co.uk/pin/254383078939543245/>

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



Source: Created by Dr. Jude L. Capper, 2020; data from Wilkinson (2011) Re-defining efficiency of feed use by livestock. *Animal*.

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Drinks vary in nutrient density and greenhouse gas emissions

	Nutrient density	Carbon footprint g CO ₂ /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 Dr. Jude L. Capper, 2020. Data from: Smedman et al. (2010). Nutrient density to climate impact (NDCI) index of beverages. Food & Nutr. Res.

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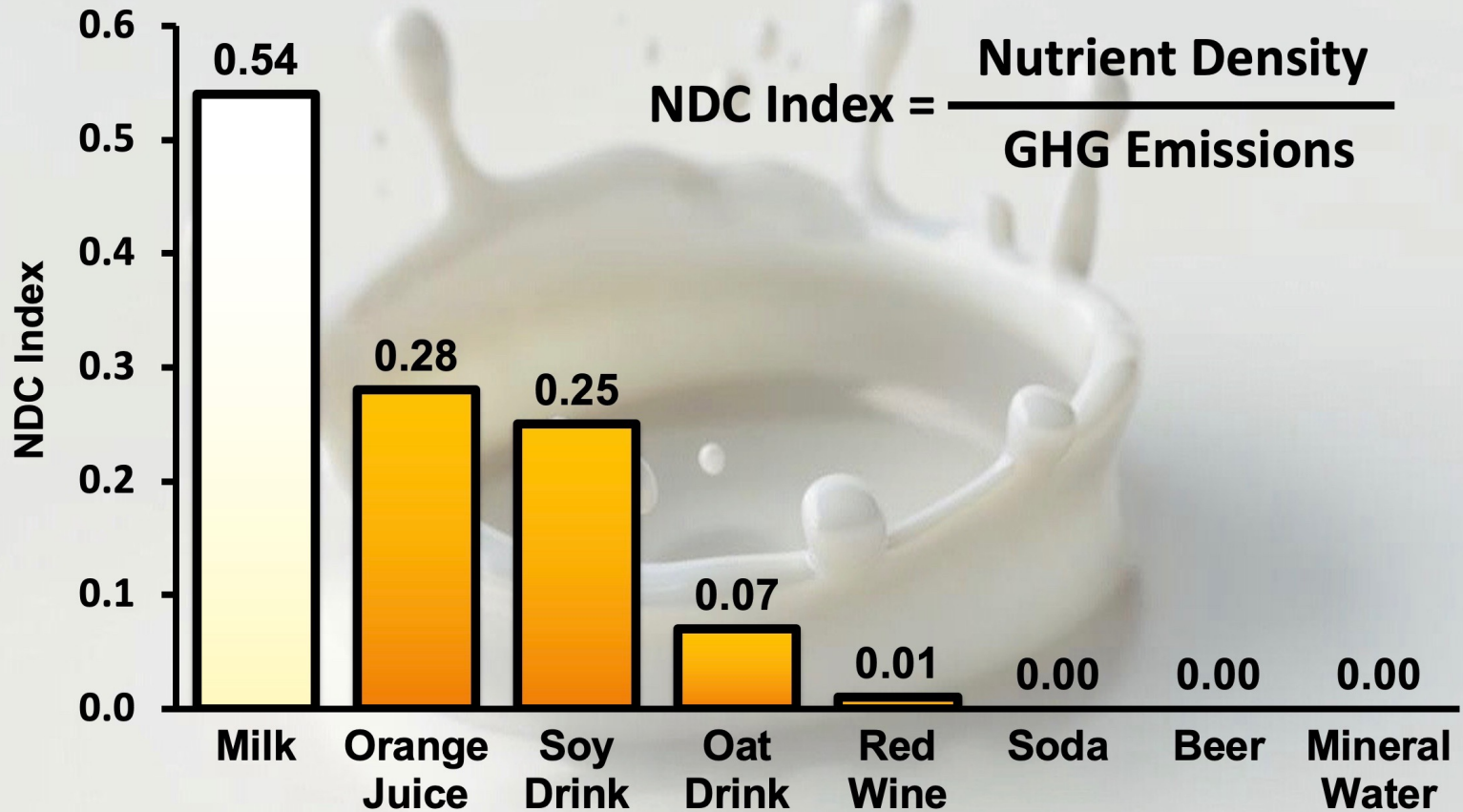
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Nutrient density should be included when assessing carbon footprint



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.

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Cultural cognition – we trust people with whom we share values and wish to emulate

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England rugby player credited <3 week recovery from broken leg to drinking 2 pints of milk per day

The Telegraph

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England prop Joe Marler reveals the secret behind his remarkable recovery in time for Six Nations



Source: Created by Dr. Jude L. Capper, 2019. Screenshot from: <http://www.telegraph.co.uk/rugby-union/2017/02/02/england-prop-joe-marler-reveals-secret-behind-hisremarkable/>

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



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B

Thank you!

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<http://bovidiva.com/presentationlinks>



Questions?

Source: Created by Dr. Jude L. Capper, 2020. Cartoon from: <http://RubesCartoons.com>

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Interreg Atlantic Area
European Regional Development Fund