

**Dr. Jude Capper**

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**Net zero via vet  
heroes - how  
can veterinary  
professionals  
mitigate  
environmental  
impacts?**

**Dr. Jude L. Capper**

***26<sup>th</sup> February 2021***

Source: Slide and photo by Dr. Jude L. Capper, 2021

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# The UK government has pledged to reach net zero

Climate change: Top 10 tips to reduce carbon footprint revealed

By Roger Harrabin  
BBC environment analyst

20 May 2020 | Science & Environment

Climate change can still be tackled – but only if people are willing to embrace major shifts in the way we live, a report says.

The authors have put together a list of the best ways for people to reduce their carbon footprints.

The response to the report is that the public is willing to consider it necessary.

And the report must be read.

Protecting all deer.

The report says it's no wonder experts have studied...



THE SCOTTISH Farmer  
Supporting farmers in Scotland since 1893

DIVERSIFICATION

10th February

Miscanthus is key to farmer's net zero ambitions

By Gordon Wilson

THE BIG ISSUE

CLIMATE CRISIS Environment

Net-zero emissions: What is and how will the UK achieve it

Most of us know the UK wants to reach net zero emissions, but the details are murky. Here we set out the facts of the most important target in the fight to stop the climate crisis

f t p +

News story

UK becomes first major economy to pass net zero emissions law

New target will require the UK to bring all greenhouse gas emissions to net zero by 2050.

Published 27 June 2019

From: Department for Business, Energy & Industrial Strategy and The Rt Hon Chris Skidmore MP

Chris Skidmore signs legislation to commit the UK to a legally binding target of net zero emissions 2050

UK's net zero carbon targets need immediate action, says National Grid

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Source: Created by Dr. Jude L. Capper, 2021; Screenshots from various publications.



# All foods have an environmental impact



Source: Created by Dr. Jude L. Capper, 2013

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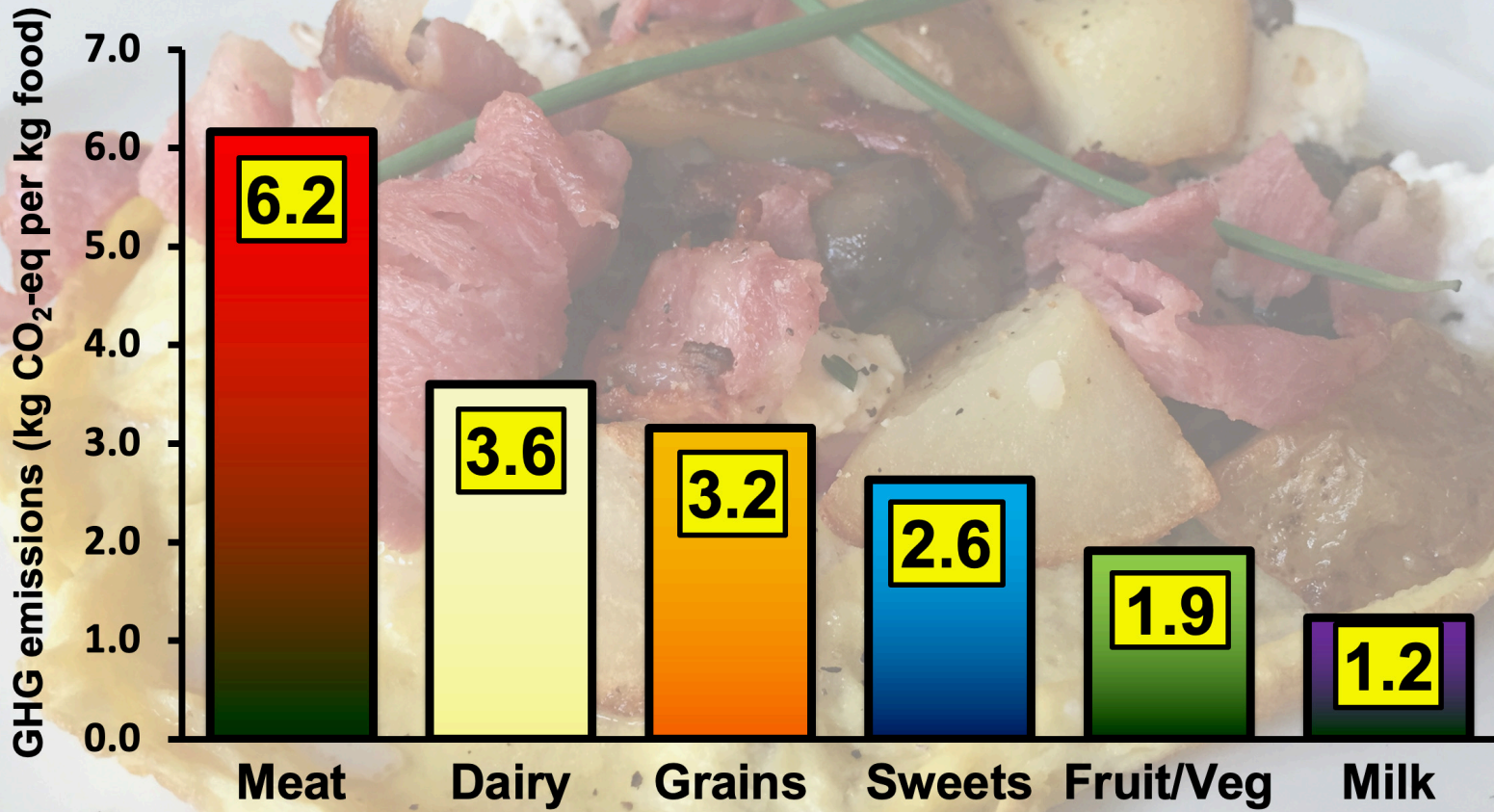


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DS

# Carbon footprints vary between foods



Source: Created by Dr. Jude L. Capper, 2021. \*All food groups refer to product categories (i.e. dairy products rather than milk) and fruit/veg refers to processed products. Product data from: Drewnowski et al (2015) Energy and nutrient density of foods in relation to their carbon footprint. *American Journal of Clinical Nutrition*. Milk data from: DairyCo (2013) Greenhouse gas emissions on British dairy farms. AHDB, Stoneleigh, UK.

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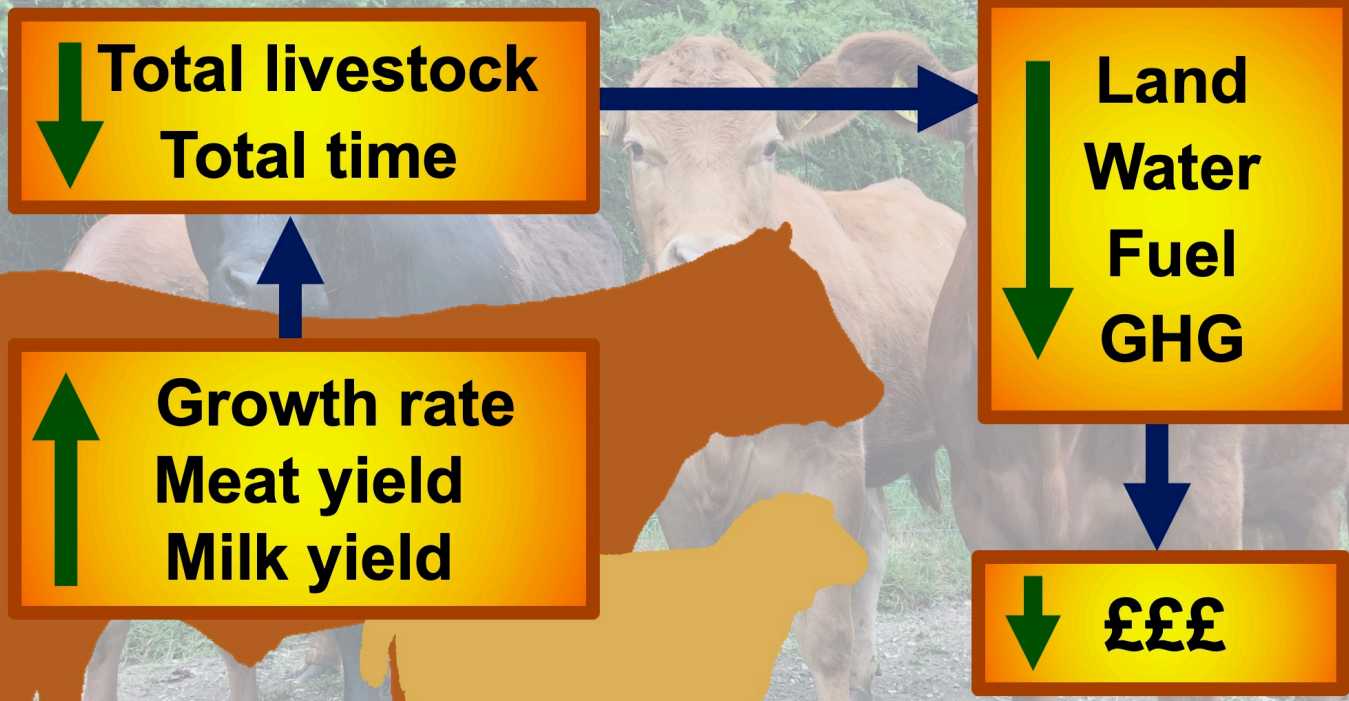


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B

# Improving animal productivity reduces the environmental impact of milk and meat



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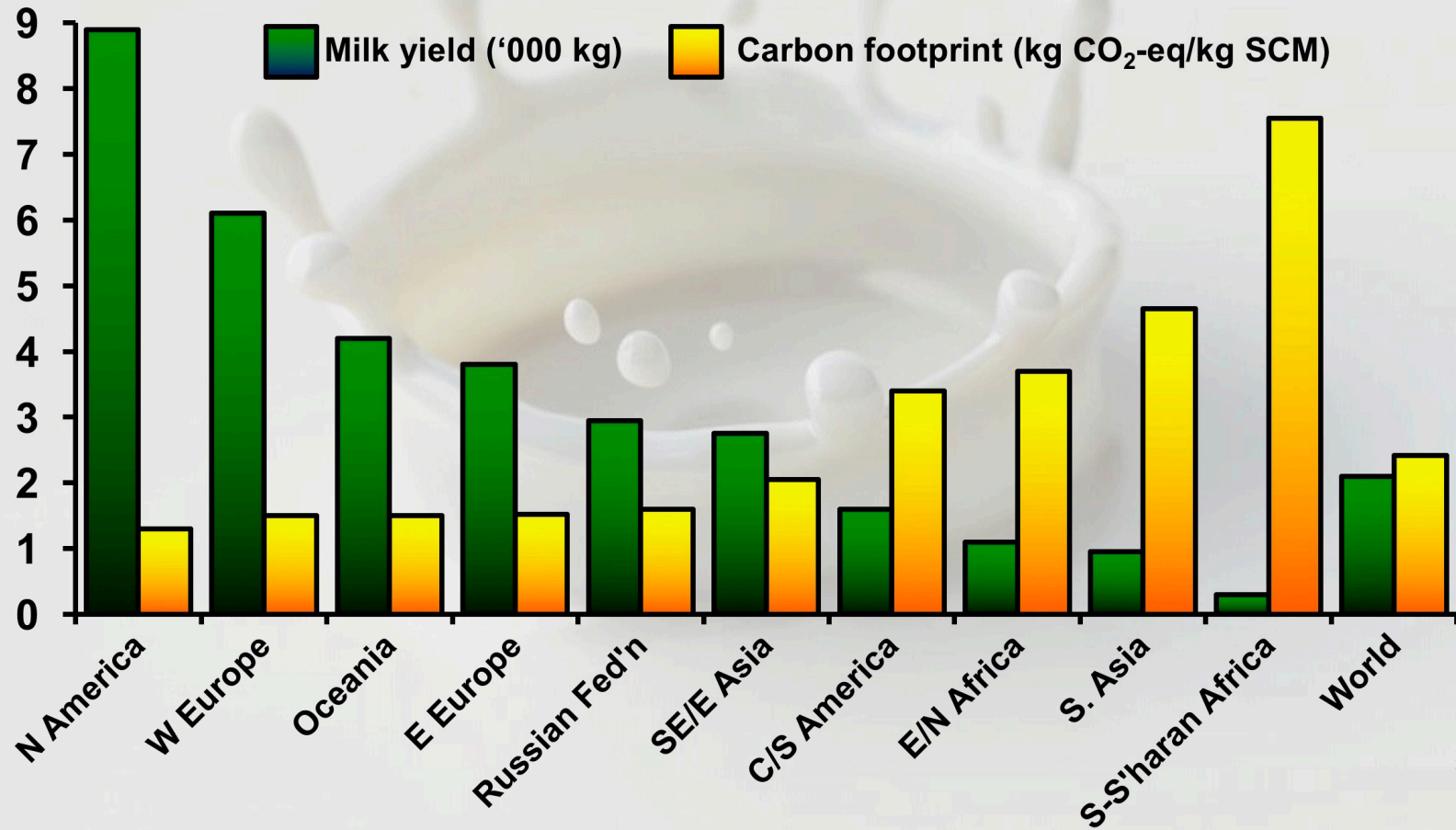
Source: Created by Dr. Jude L. Capper, 2020. Data from: Capper, JL. 2015. Sustainability and One Health. In: Cockcroft, P. *Bovine Medicine*. Wiley-Blackwell, Oxford, UK.

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# 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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What could global dairying look like if we improved health, nutrition and genetics?

Global average yield

2,577  
kg

UK average yield

8,140  
kg

Dairy cows

-181  
million

If all dairy cattle had UK yields, global milk supply could be maintained using 181 million fewer cows (69%).

At US average yields, 200 million fewer cows (75%)

Source: Created by Dr. Jude L. Capper, 2020. Data from: FAOSTAT (2020) <http://www.fao.org/faostat/en/>

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D

# Improving key performance indicators reduces environmental impact and economic cost

- Nutrition**
- Reproduction**
- Lameness**
- Mastitis**
- Metabolic disease**
- Infectious disease**
- Dry period length**
- Age at first calving**
- Antibiotic residues**
- Feed wastage**
- Pasture management**



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

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AH

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



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

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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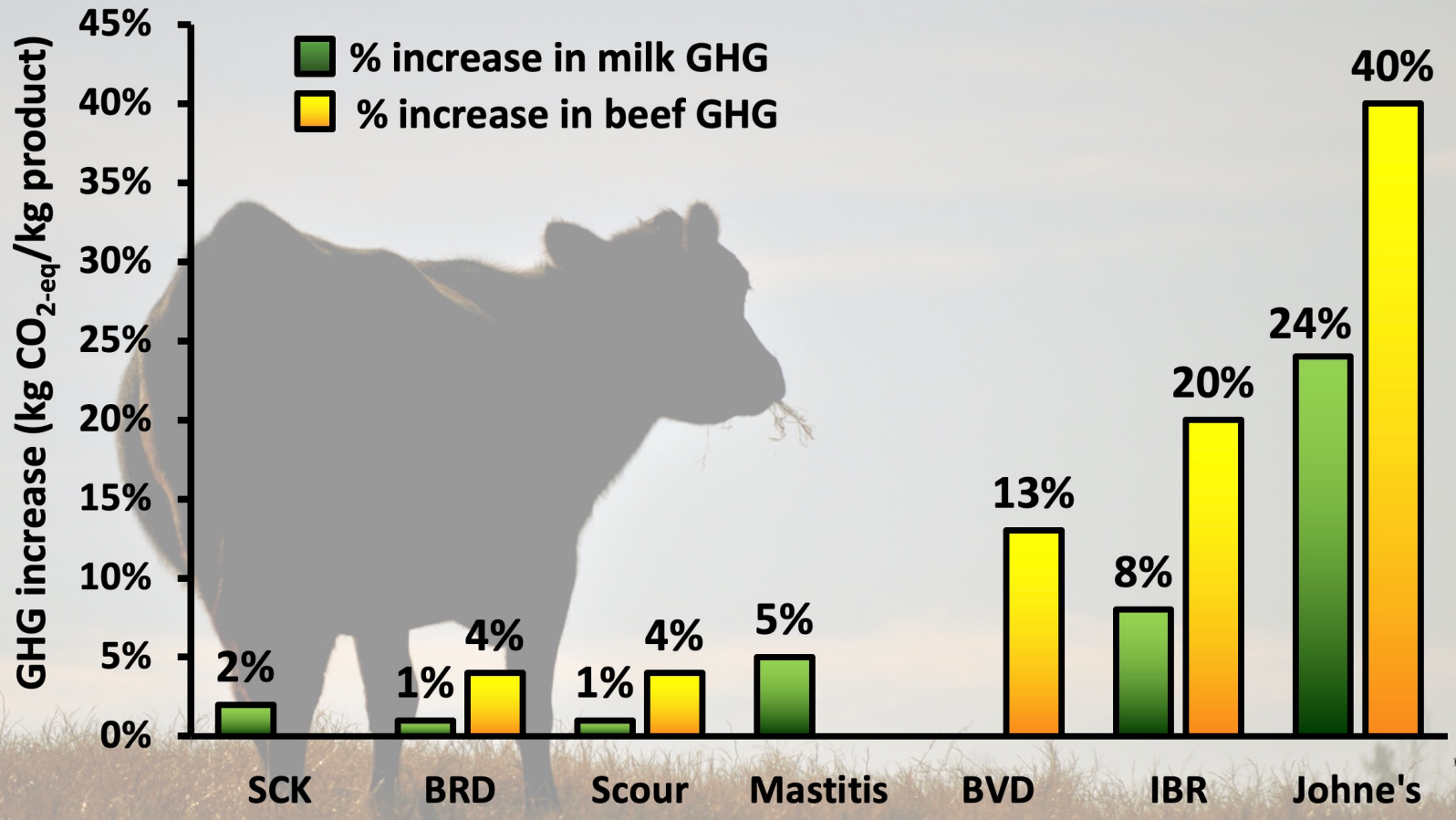


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# Impacts of disease on greenhouse gas emissions per unit of beef or milk



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

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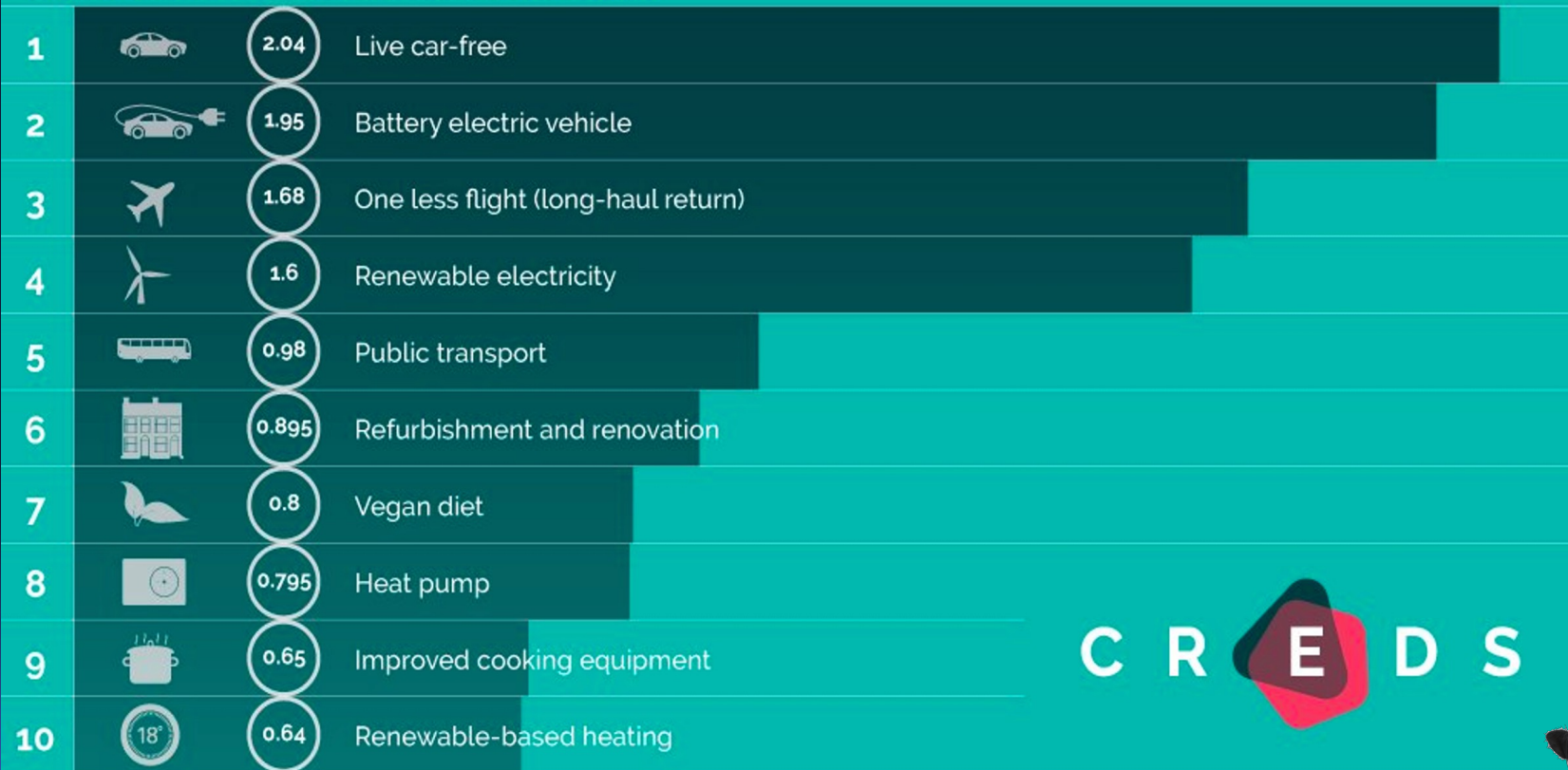
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CV

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

## Top 10 options for reducing your carbon footprint



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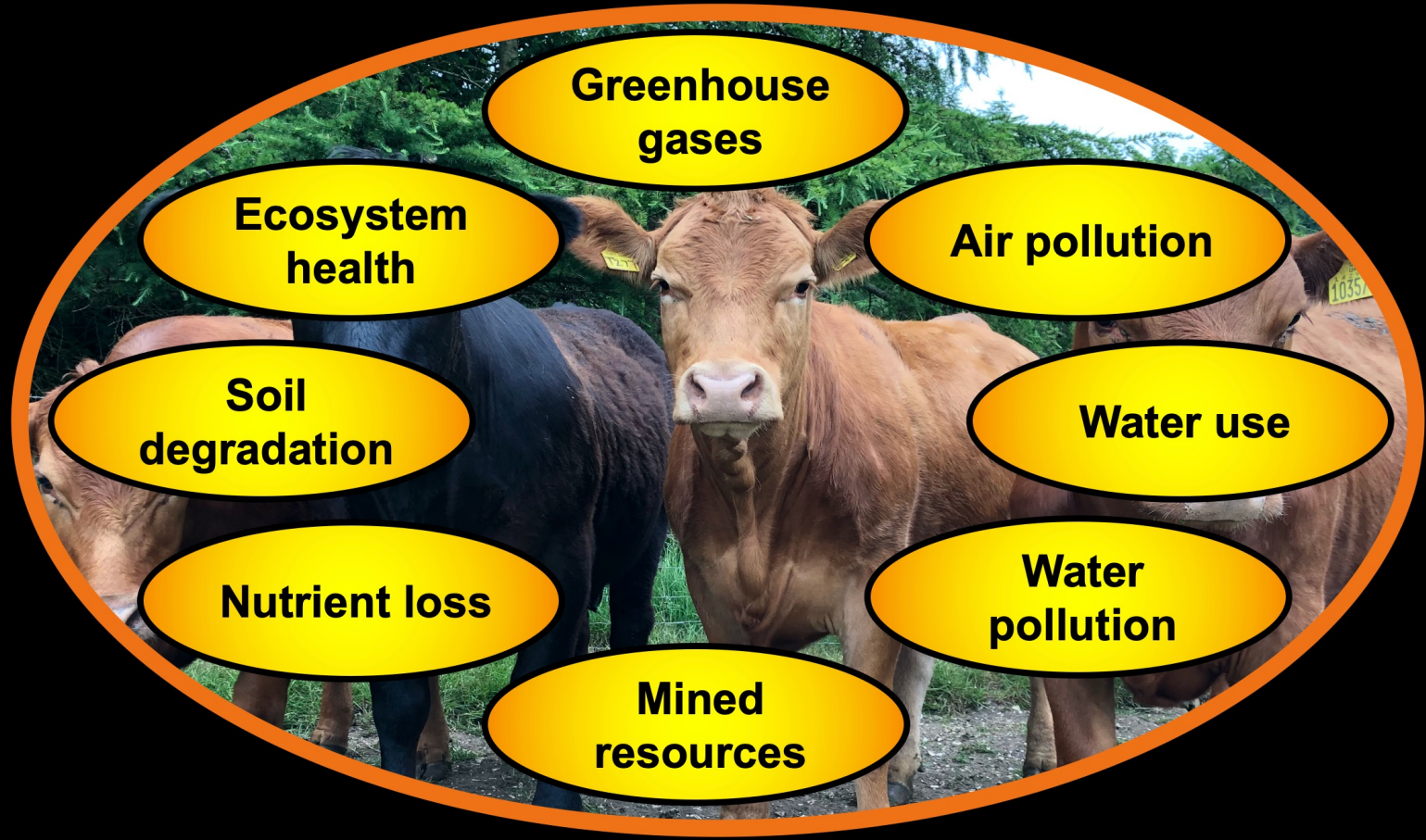
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Source: Created by Dr. Jude L. Capper, 2020. . Infographic adapted from Centre for Research into Energy Demand Solutions (2020). Available at: [https://twitter.com/CREDS\\_UK/status/1262984570175176704?s=20](https://twitter.com/CREDS_UK/status/1262984570175176704?s=20)



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# Environmental impacts are not limited to greenhouse gas emissions



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



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# Can we grow human food crops everywhere?



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

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65% of UK land is not suitable for growing arable crops



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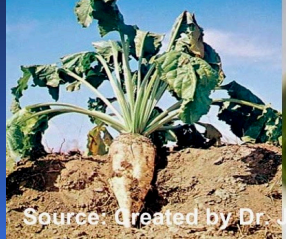
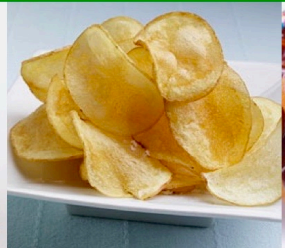
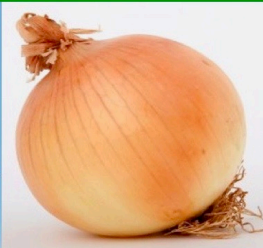
Source: Created by Dr. Jude L. Capper, 2020. Grazing land includes temporary grass on arable land (6% of total), land used for outdoor pigs or non-agricultural purposes not shown (1.7% of total). Data from DEFRA. 2019. Farming statistics - provisional crop areas, yields and livestock populations at 1 June 2019 – United Kingdom.

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/837834/structure-jun2019prov-UK-10oct19.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/837834/structure-jun2019prov-UK-10oct19.pdf)



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# What do these industries have in common? They all provide by-products fed to animals



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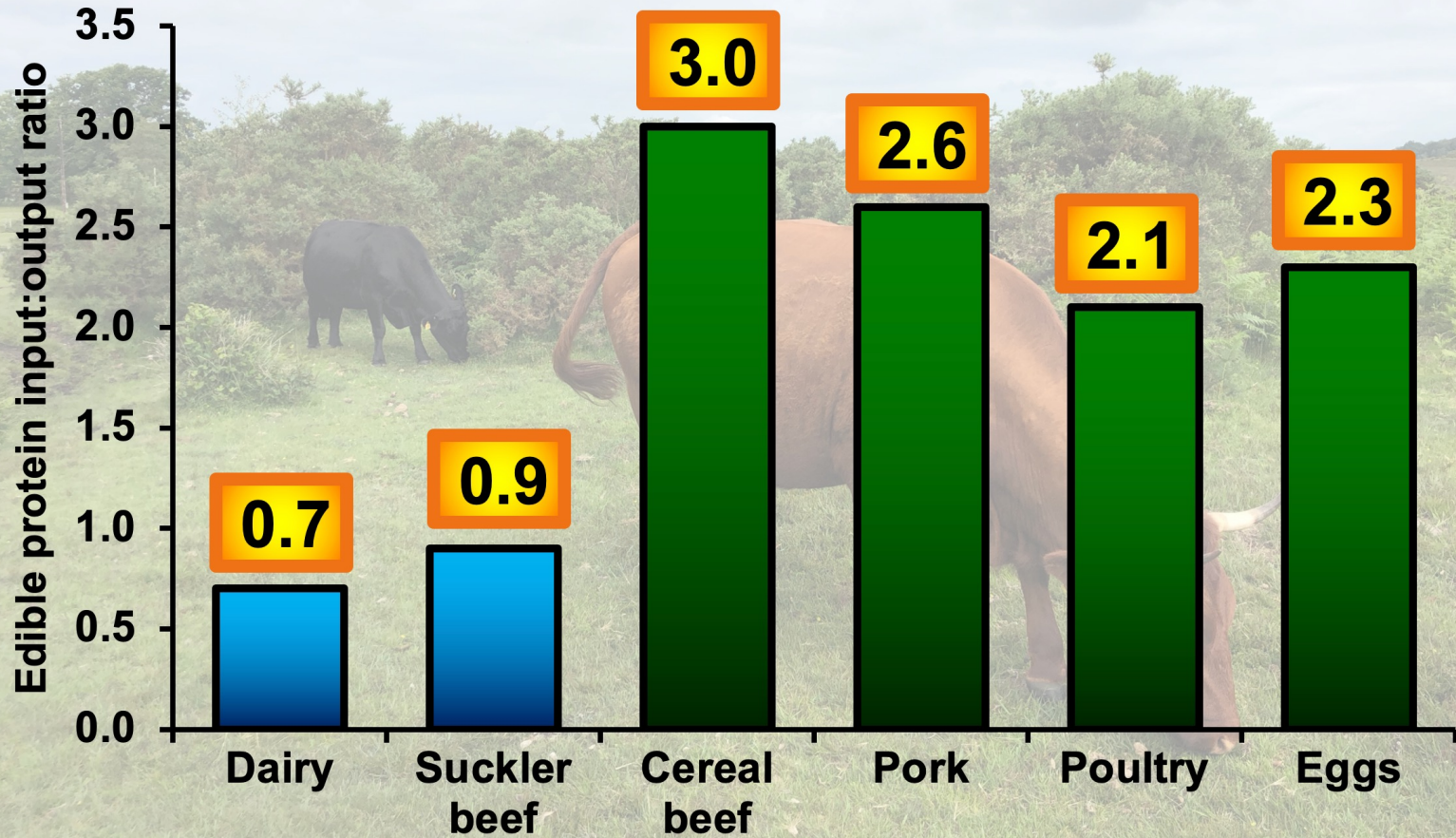


Source: Created by Dr. Jude L. Capper, 2013

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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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# Can we grow human food crops everywhere?

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

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# The UN Sustainable Development Goals are key to a better world

	<b>1</b> NO POVERTY 	<b>2</b> ZERO HUNGER 	<b>3</b> GOOD HEALTH AND WELL-BEING 	<b>4</b> QUALITY EDUCATION 	<b>5</b> GENDER EQUALITY 
<b>6</b> CLEAN WATER AND SANITATION 	<b>7</b> AFFORDABLE AND CLEAN ENERGY 	<b>8</b> DECENT WORK AND ECONOMIC GROWTH 	<b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE 	<b>10</b> REDUCED INEQUALITIES 	<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 
<b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION 	<b>13</b> CLIMATE ACTION 	<b>14</b> LIFE BELOW WATER 	<b>15</b> LIFE ON LAND 	<b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS 	<b>17</b> PARTNERSHIPS FOR THE GOALS 

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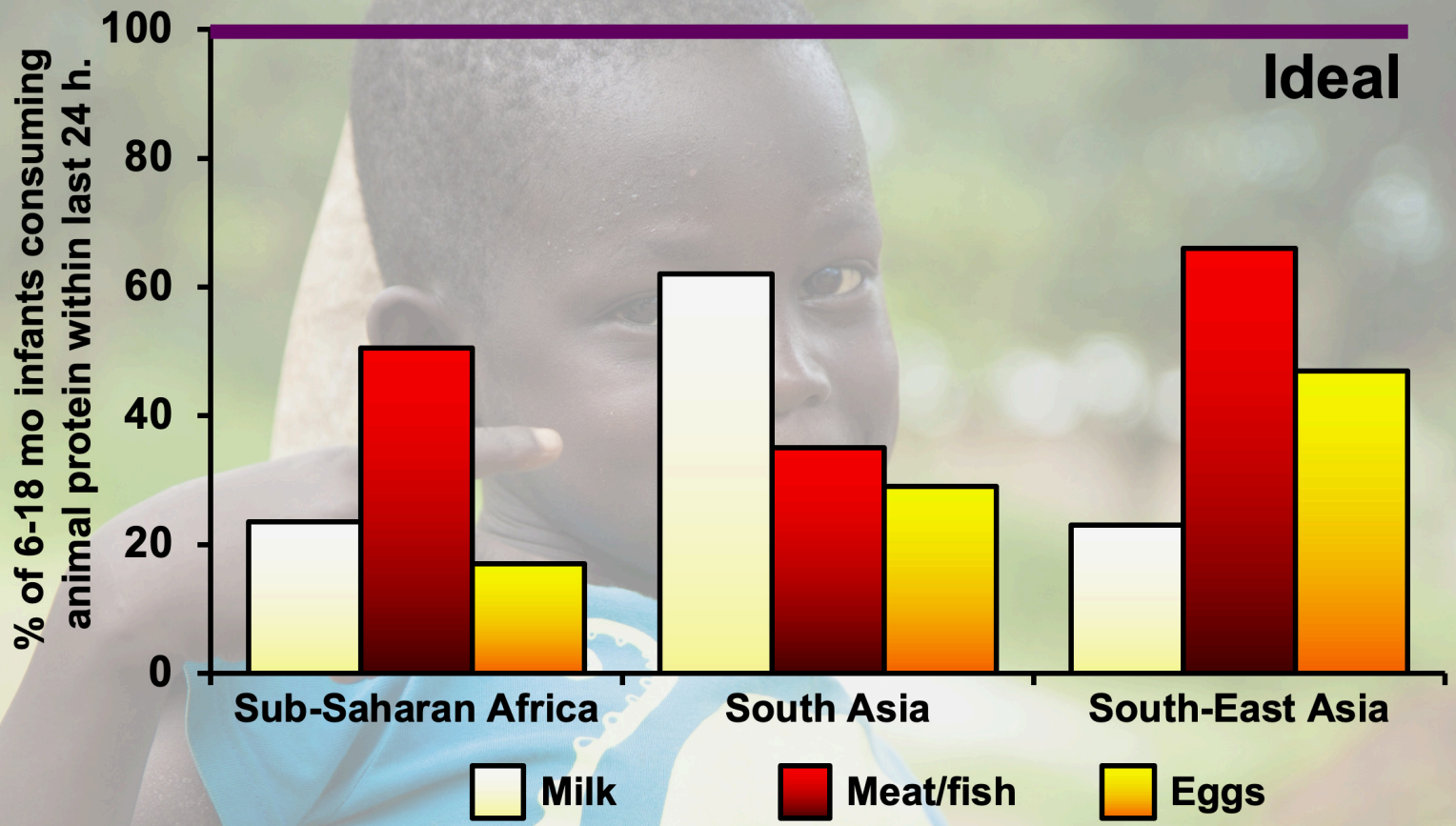
Source: Created by Dr. Jude L. Capper, 2021; Infographic from: <https://sdgs.un.org/goals>

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# Infants in developing regions are not getting enough animal protein



Source: Created by Dr. Jude L. Capper, 2021; Data from ILRI (2016) "The influence of livestock products (LP) on nutrition during the first 1000 days."  
 Available at: <https://news.ilri.org/2016/05/31/livestock-for-better-nutrition-and-disease-control-one-health-colloquium-held-this-week-at-chatham-house/> Photo from: <https://pixabay.com/photos/child-village-africa-boy-people-4781932/>

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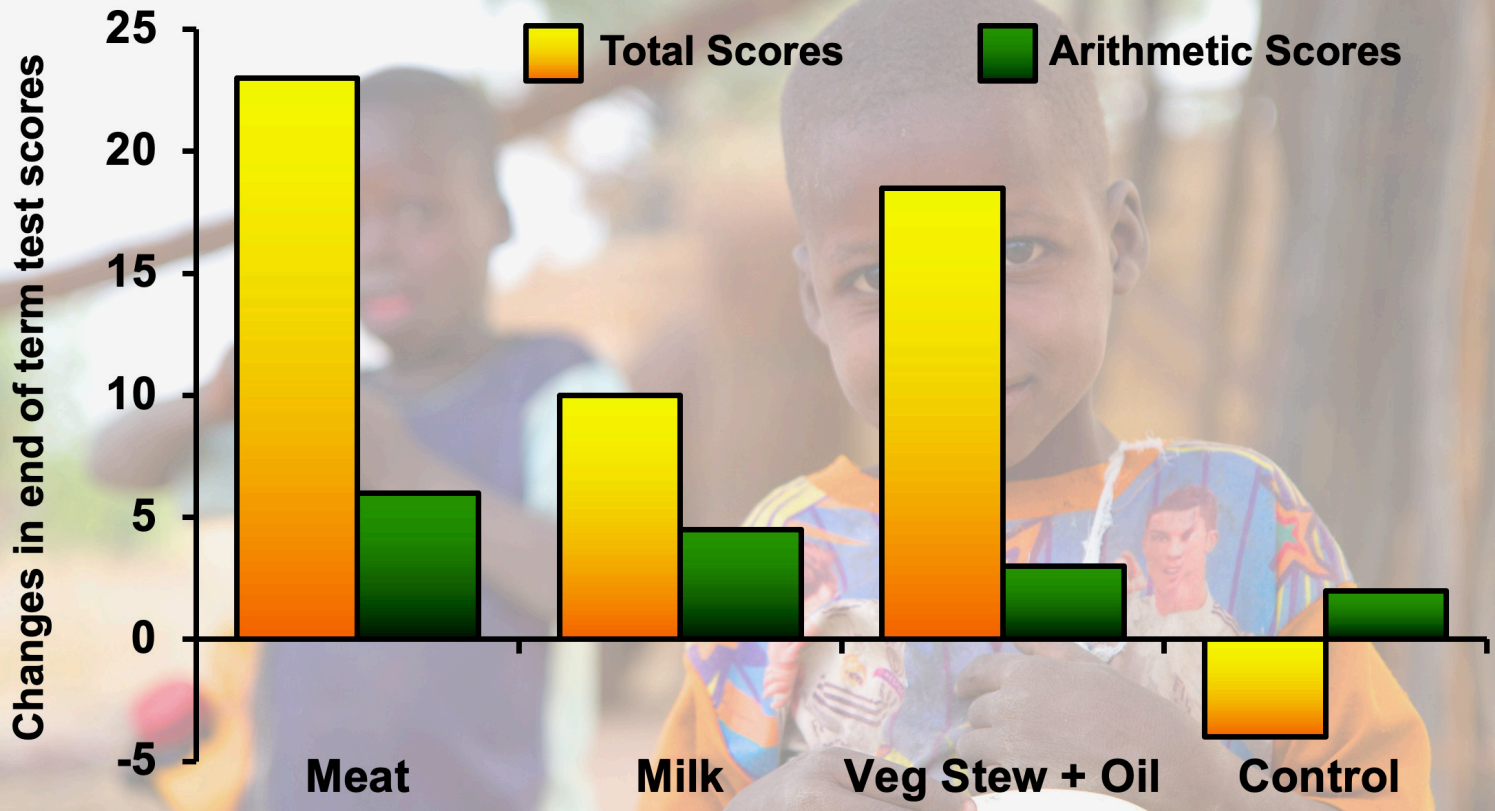


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# Supplementing schoolchildren with animal protein improves academic test scores



Source: Created by Dr. Jude L. Capper, 2021; Data from Neumann et al. 2007. Meat supplementation improves growth, cognitive, and behavioral outcomes in Kenyan children *J. Nutr.* Photo from: [https://upload.wikimedia.org/wikipedia/commons/thumb/1/1d/Happy\\_African\\_child.jpg/4096px-Happy\\_African\\_child.jpg](https://upload.wikimedia.org/wikipedia/commons/thumb/1/1d/Happy_African_child.jpg/4096px-Happy_African_child.jpg)

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# Livestock are a vital resource in developing regions



"For me, Send a Cow is everything"

Source: Created by Dr. Jude L. Capper, 2021. Photo from Send a Cow (2018) <https://www.sendacow.org/blog/for-me-send-a-cow-is-everything>



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# Livestock are a vital resource in developing regions



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**“I started secondary school without a petticoat; that cow bought me my first petticoat. I cannot forget that.”**

**"For me, Send a Cow is everything"**

Source: Created by Dr. Jude L. Capper, 2021. Photo from Send a Cow (2018) <https://www.sendacow.org/blog/for-me-send-a-cow-is-everything>



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**Thank you!**

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**Questions?**



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