House of Commons Catering: Greenhouse Gas Assessment

Prepared by Foodsteps on behalf of Humane Society International UK

November 2020

FORWARD FOOD
CREATING HEALTHY. SUSTAINABLE MENU OPTIONS

HUMANE SOCIETY INTERNATIONAL
UNITED KINGDOM

foodsteps

Contents

1

Introduction

Current patterns of food consumption play a significant role in the escalating environmental crisis. Recent studies show that the production of food accounts for 19-29% of global greenhouse gas (GHG) emissions[1], while in Britain, similar estimates suggest food is responsible for 19% of consumption related GHG emissions[2].

The Environmental Audit Committee's 2019 report 'Our Planet, Our Health' highlights the importance of adopting healthy and sustainable diets as a step towards achieving net-zero emissions by 2050[3]. This includes meeting the recommended 20% reduction in meat and dairy consumption and shifting away from intensive livestock production systems, which the report states should be reflected in the Government's own procurement policies.

It has widely been recognised that animal-based products have, on average, higher GHG emissions than plant-based products[4]. As will become evident in this report, reducing meat and dairy consumption therefore presents a critical opportunity to reduce the GHG emissions associated with food consumption in House of Commons Catering (hereafter "HoC Catering").

This report is presented within the context of the UK's 2050 net zero commitment, and the opportunity that HoC Catering has to lead by example on the vital transition to climate-friendly food. Here, we present a baseline GHG assessment of HoC Catering's food consumption, and some simple options of how a sustainable food transition can be achieved for HoC Catering's own catering operations.

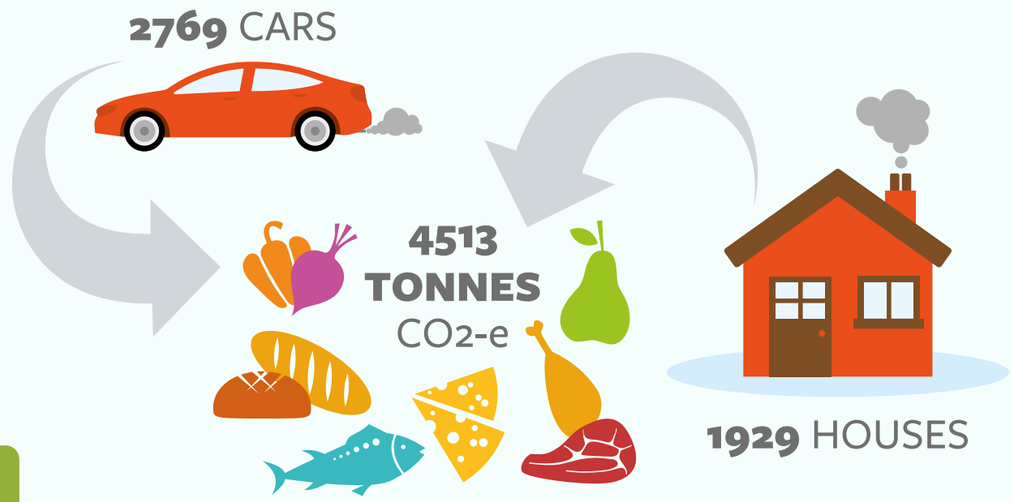
2

Summary of Results

This report used HoC Catering's catering procurement data from February 2020 to calculate the GHG emissions of food and drinks purchased by HoC Catering during this period.

The report begins with the overall GHG emissions of food and drink purchased by HoC Catering, which were found to be **376 tonnes CO_2-e per month**. By breaking this down into food groups, we find that animal-based products (meat, fish, dairy and eggs) account for **72%** of the GHG emissions of food purchased by HoC Catering, while plant-based products (grains, pulses, fruit, vegetables and alternatives) account for **28%** of the GHG emissions.

HoC Catering's annual food footprint is estimated at **4513 tonnes CO_2-e**, equivalent to the footprint of **2769 cars** driven an average annual mileage in the UK, or alternatively, equivalent to heating **1929 homes** in the UK for a year.



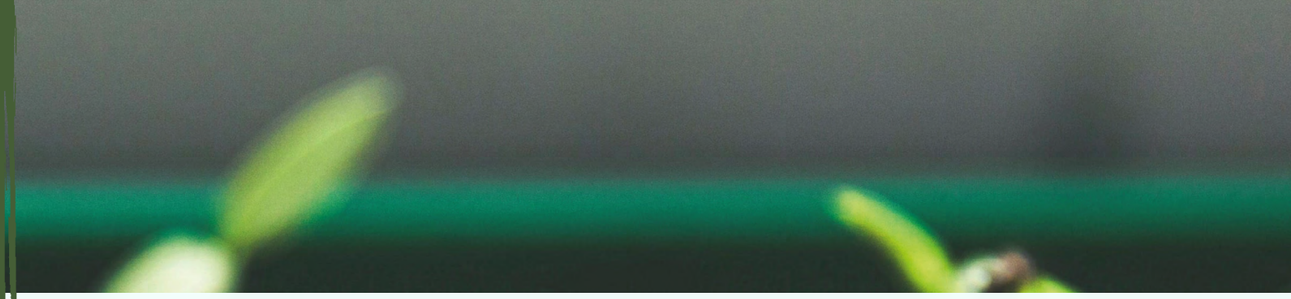
The report takes a closer look at the sources of GHG emissions within HoC Catering's food and drink, followed by strategies to reduce these emissions. We find that by exchanging 50% of meat, dairy, fish and eggs with plant-based foods, HoC Catering could reduce its food GHG emissions by 31%, or **115 tonnes CO_2-e per month**. We also consider GHG hotspots in HoC Catering's procurement across both animal-based and plant-based foods, including unseasonal fruit and vegetables.

3 Baseline GHG Emissions

The food group contributing the largest proportion of the GHG emissions of HoC Catering's food is dairy, which accounts for **30%** of the GHG emissions. Meat and fish together contribute **39%** of the overall GHG emissions of HoC Catering's food, despite these products accounting for just 12% of the purchase weight.

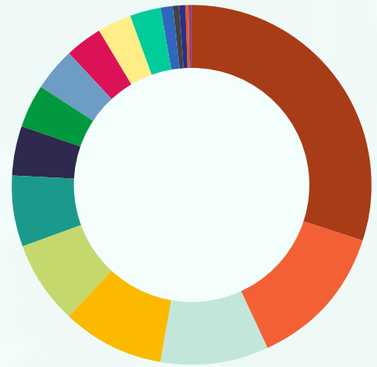
The proportion of total weights shows that HoC Catering is currently purchasing a very small amount of plant-based protein, with pulses and dairy and meat alternatives constituting just 2% and 1% of the purchase weight respectively.

The meat, dairy and fish purchased by HoC Catering was found to have a GHG emissions intensity of **9.31 kg CO_2-e/kg** product purchased, compared with a GHG emissions intensity of **1.91 kg CO_2-e/kg** product purchased for the plant-based products. The overall GHG emissions intensity is **4.45 kg CO_2-e/kg** product purchased. This presents a significant opportunity for improvements in efficiency.



	GHG Emissions	Total Weight
Dairy	30%	19%
Beef	13%	2%
Pork	10%	4%
Fruit & Vegetables	9%	34%
Lamb	7%	1%
Drinks	7%	2%
Poultry	4%	2%
Oils	4%	5%
Grains	4%	11%
Fish	3%	2%
Other	3%	9%
Eggs	3%	3%
Shellfish	1%	<1%
Pulses	1%	2%
Dairy & Meat Alternatives	1%	1%
Nuts & Seeds	<1%	1%
Game Meat	<1%	<1%

Proportion of GHG Emissions



Proportion of Total Weight

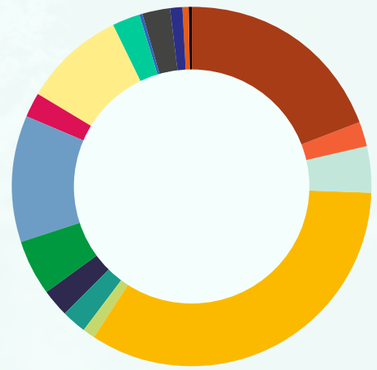
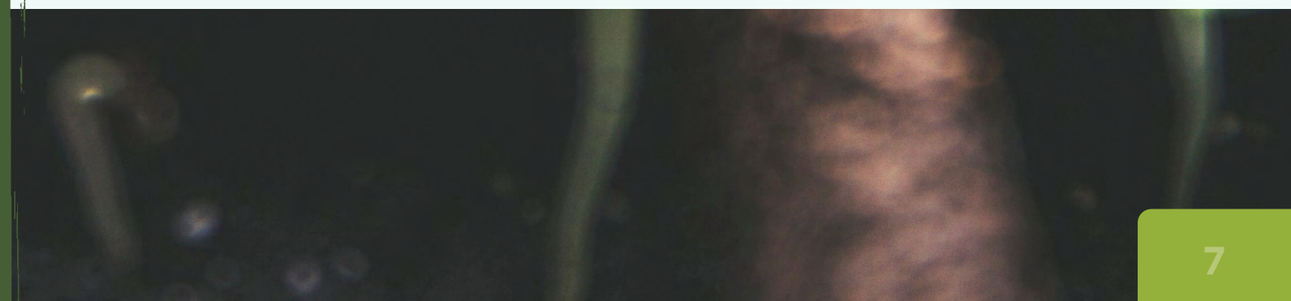


Figure 1. Breakdown of HoC Catering's GHG emissions and total procurement weight by food group.



4

How Does HoC Catering Compare?

Comparison with the National Average

HoC Catering's purchase weight of food groups broadly aligns with the national average, as taken from the UK National Diet and Nutrition Survey 2019 (NDNS)[5].

Our calculations suggest that HoC catering procurement is particularly in line with the UK national dietary average with regard to dairy products. We estimate that HoC Catering is purchasing more plant-based products and fewer animal-based products than the average. However, as this report demonstrates, there remains significant progress to be made.

Table 1. Comparison of HoC Catering's food procurement weight to the national average.

Food Group	Proportion of Procurement Weight	
	HoC Catering	NDNS 2019
Animal Products	15%	21%
Dairy Products	19%	19%
Plant-Based Products	66%	60%

CASE STUDY

Comparison with the University of Cambridge Catering Service

The GHG emissions intensity of HoC Catering's food is currently estimated at **4.45 kg CO2-e/kg** product purchased. Last year, the University of Cambridge estimated its food GHG emissions intensity to be **4.78 kg CO2-e/kg** predating its Sustainable Food Policy in 2016[6].

Following the introduction of its Sustainable Food Policy, which included the removal of beef, lamb and unsustainable fish from its menu, the University of Cambridge reduced the GHG emissions intensity of its food purchased to below that of HoC Catering. The university currently has a food GHG emissions intensity of **3.22 kg CO2-e/kg** product purchased. In Section 5, we demonstrate that HoC Catering could reduce the GHG emissions intensity of their food to **3.09 kg CO2-e/kg** by adopting a 50% reduction in animal-based products.

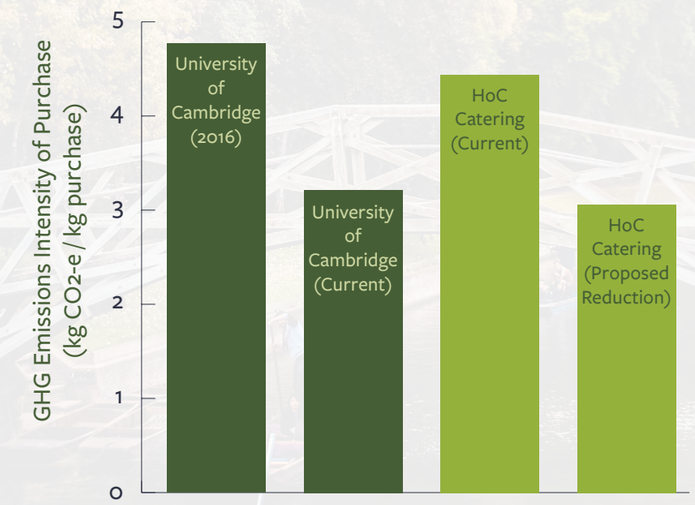


Figure 2. Comparison of HoC Catering's food GHG emissions intensity to the University of Cambridge Catering Service.

5

50% Meat Reduction: GHG Savings

This section shows the GHG emissions savings from Forward Food's suggested 50% reduction in the consumption of animal-based products at HoC Catering.

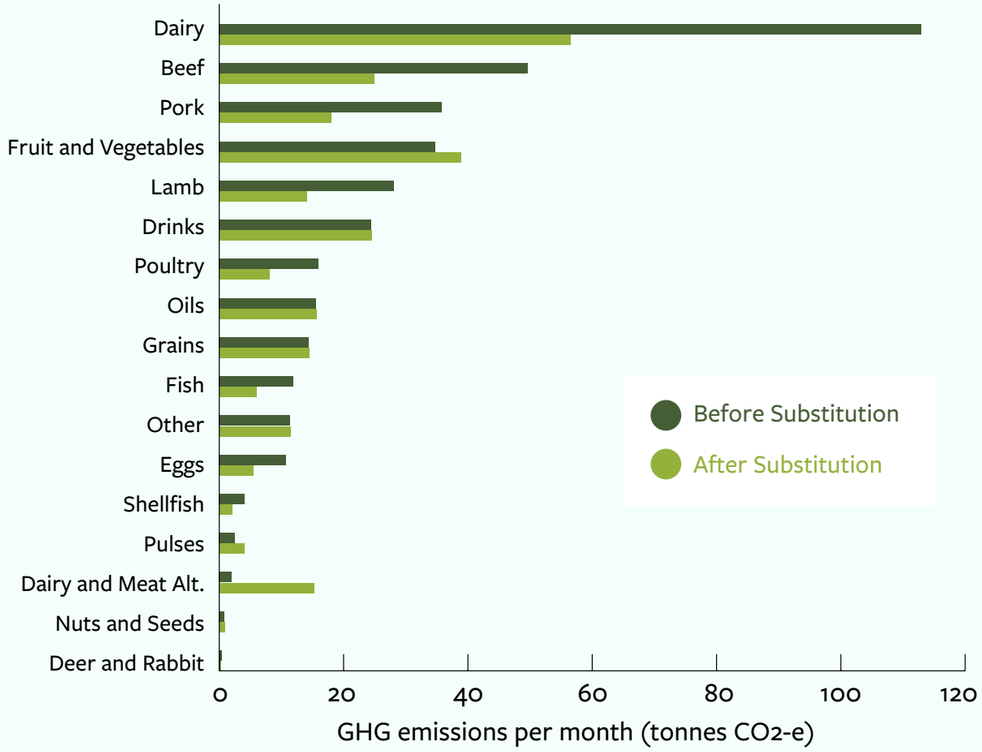


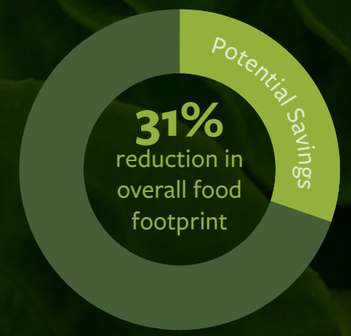
Figure 3. GHG emissions per month by food group, before and after 50% substitution.

What to Substitute With?

In this analysis, we have substituted 50% of HoC Catering's animal-based food products (meat, fish, dairy and eggs) with plant-based food groups according to suggested proportions in the EAT-Lancet Healthy Diets from Sustainable Food Systems report[7]. Meat and fish were substituted with 64% vegetables, 14% pulses, 13% plant-based alternatives and 9% nuts. Several British food suppliers specialise in British grown vegetables, pulses and even nuts, and several British companies are also considered leaders in plant-based alternatives.

GHG Savings

Replacing 50% of meat, dairy and fish with plant-based analogues would achieve a combined savings of **115 tonnes of CO2-e per month**, reducing the overall food footprint by **31%**.



Annually, this would amount to an estimated savings of **1382 tonnes of CO2-e**. To put this into context, this is equivalent to taking **848 cars** off the UK roads for an entire year. Additionally, animal to plant-based shifts lead to significantly reduced land use[8], and typically lead to lower water use and chemical use within the food supply-chain, particularly when the shift is coming from intensive animal farms.

Currently, meat, dairy, fish and eggs account for 72% of the GHG emissions of food purchased by HoC Catering, while plant-based products account for 28%. After a 50% reduction in animal-based products, this balance would shift to 52% of the GHG emissions coming from animal-based products and 48% coming from plant-based products.

6

Additional Sustainability Recommendations

If HoC Catering is to reduce its meat and dairy consumption and replace animal products with plant-based alternatives, it is essential that these alternatives are sustainable options. Adopting a more seasonal menu of items facilitates local sourcing of ingredients and lower energy requirements for growing produce.

An analysis of the seasonality of fruit and vegetables purchased by HoC Catering in February 2020 shows that **69%** of fruit and vegetable produce were 'out of season', meaning that British sourcing was not possible. Out of the **265** purchase orders of fresh fruit and vegetable products, only **83** were found to be 'in season', whereas **182** were 'out of season'.

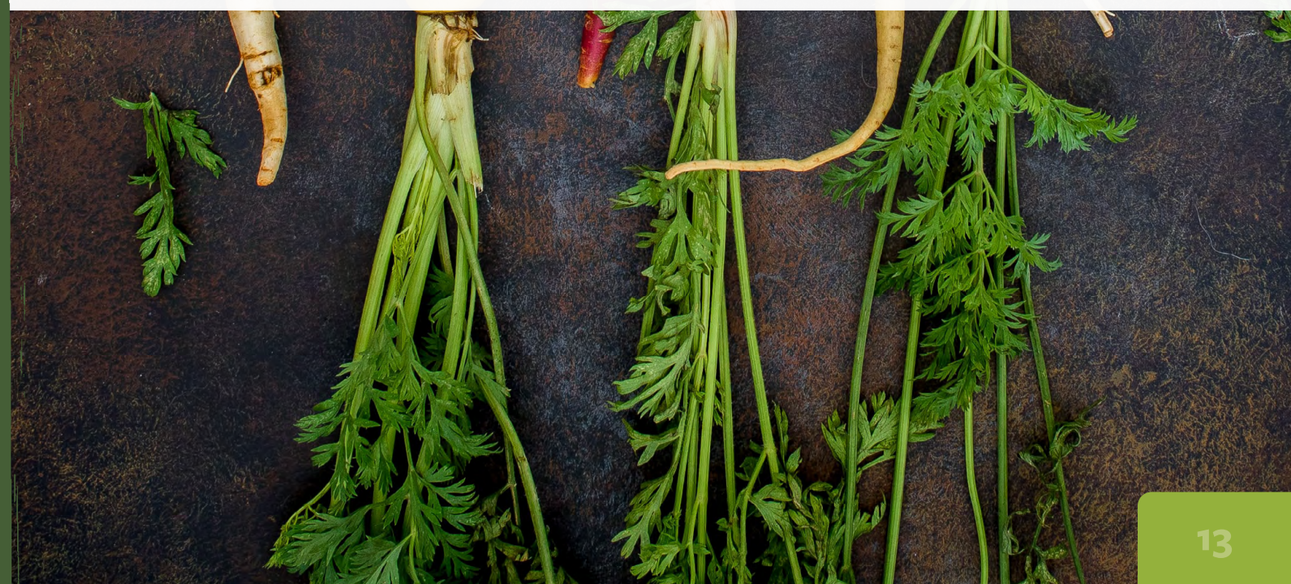
For example, runner beans purchased by HoC Catering in February were imported from South Africa, tomatoes from Morocco, and white grapes from Peru and South Africa.

Exotic Fruit & GHG Savings

Looking specifically at the exotic fruit purchased by HoC Catering, substituting the 200 kg of melons and kiwi fruit purchased in February 2020 with seasonally available and locally sourced apples (including braeburn, gala and cox apples) would reduce the GHG emissions of this purchase by **68%**, or **143 kg CO_2-e**. More specifically, emissions from transport would fall by **82%**, or **47 kg CO_2-e**, where apples are British-sourced.

Table 2. Seasonal analysis of selected food products purchased by HoC Catering in February 2020.

Unseasonal Produce	Example Countries of Origin	Seasonal Substitute
Avocado	Morocco, Mexico, Zimbabwe	Mushrooms
Berries	Netherlands, Italy, Morocco	Frozen Berries
Butternut Squash	Portugal, Argentina, South Africa	Swede
Green Chillies	Spain, India, Mozambique	Crushed Chillies
Chinese Leaves	Portugal	Cabbage
Melons	Brazil, Spain, Honduras	Apples
Spinach	Germany, Italy, Netherlands	Kale



7

GHG Hotspots

‘Hotspots’ are the 20 items in HoC Catering’s food purchase contributing the highest GHG emissions. Together, these **20 items** account for **44% of the total GHG emissions** of HoC Catering’s food.

This list includes coffee, meats, dairy products, oil and eggs, which highlights the importance of looking beyond single food groups for impact mitigation. These hotspots provide a useful starting point for guiding procurement decision-making towards more sustainable practices.

Many of these items can be considered as low-hanging fruit, with readily-available alternatives. For example, minced beef can be switched out in most recipes for British pulses, while butter can be easily swapped for non-dairy margarine.

Other items, such as coffee and oil have a low impact per serving, but a medium-to-high impact per kilogram. This means that when consumed at high volumes across an institution, the cumulative impact is significant. Reductions in consumption of these products could see considerable GHG savings.

17 of the top 20 products in terms of GHG emissions are animal products. Replacing these items with alternatives as per the methodology in Section 5 would generate a combined reduction in the overall carbon footprint of **31%**, or **117 tonnes CO2-e per month**. This is equivalent to the carbon saved by recycling **36 metric tonnes** of waste each month instead of sending it to landfill.

Hotspots

Table 3. GHG emissions hotspots in HoC Catering’s monthly food procurement (scaled to reflect the average month).

Ingredient	Total GHG Emissions (kg CO2-e)	Weight Procured (kg)
Coffee - Espresso Beans	18,236	639
Butter - Unsalted French 250gm	17,095	370
Cream - Double	13,273	638
Milk - Semi Skimmed	11,979	5,180
Pork	10,808	1,030
Lamb - Leg Diced 2 cm	10,099	267
Bacon - Back English kg	9,756	929
Cream - Whipping	9,478	455
Beef - Chuck Diced 2 cm	8,786	241
Beef - Topside B/R & Tied 3 - 4kg	8,446	232
Butter	6,112	132
Beef - Minced Lean 5 Fat	6,099	168
Oil - Long Life	5,781	1,760
Milk - Semi Skimmed 568ml / Pint	5,495	2,376
Lamb - Leg B/ R Gross Weight	4,326	114
Pork - Neck End Steak 170gm	3,919	373
Milk - Pergal Semi-Skimmed	3,782	1,636
Egg - Free Range Medium	3,761	881
Chicken - Leg Knuckle Off 200gm	3,621	540
Vegetable Oil	3,547	1,080

8

Notes & Methodological Assumptions

This greenhouse gas assessment accounted for the impacts of all food and drink items bought by HoC Catering in February 2020, excluding alcoholic beverages.

Published Life Cycle Assessments were used to calculate the GHG emissions for each product from farm to retail, including transportation, processing, storage and packaging. Processed food items were broken down into their constituent ingredients, and additional GHG emissions attributed to the processing stage.

This assessment should be considered an approximation rather than absolute, given that exact matches for Life Cycle Assessments and the specific Life Cycle inventory were not available.

The Life Cycle Assessment values used were for typical British procurement, including for all meat and dairy products, but excluding game. For a minority of ingredients where British impact values could not be obtained, average European values were used. This affected only oat milk, barley, nuts and game. For items with no British or European production, global average impact values were used.

All Life Cycle Assessment values were taken from Poore & Nemecek (2018)[8].

References

[1] Vermeulen S.J, Campbell B.M, Ingram J.S. (2012) Climate change and food systems. Ann. Rev. Enviorn. Res. 37:195-222

[2] Garnett, T. 2008. Cooking up a Storm: Food, greenhouse gas emissions and our changing climate. The Food and Climate Research Network, Centre for Environmental Strategy, University of Surrey.

[3] Environmental Audit Select Committee. (2019) Our Planet, Our Health Report, 17th Sept 2019, HC 1803. https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/1803/1803.pdf

[4] Clune S, Crossin E, Verghese K. (2017) Systematic review of greenhouse gas emissions for different fresh food categories. Journal of Cleaner Production 140:766-783

[5] Public Health England. (2019) NDNS Results From Years 1 to 9: Data Tables.

[6] The Cambridge Green Challenge. (2019) Our Sustainable Food Journey. https://www.environment.admin.cam.ac.uk/files/uoc_sustainable_food_journey_report.pdf

[7] EAT. (2019) Summary Report of the EAT-Lancet Commission. https://eatforum.org/content/uploads/2019/07/EAT-Lancet_Commission_Summary_Report.pdf

[8] Poore J, Nemecek T. (2018) Reducing food's environmental impact through producers and consumers.Science 360:987–992

FORWARD FOOD
CREATING HEALTHY, SUSTAINABLE MENU OPTIONS

HUMANE SOCIETY INTERNATIONAL
UNITED KINGDOM

If you would like to find out more, visit **www.forwardfooduk.org**