



Jigsaw Nurseries Food Sustainability Report

September 2020

Foreword

The twin environmental crises of climate change and the extinction of species are no longer looming future threats: they are upon us now. There is clearly tremendous public demand for action, but what can we – as individuals, families and businesses – practically do to make a real difference? One simple but powerful answer comes from the changes Jigsaw Day Nurseries has made to its menu. Protein that comes from animals carries a disproportionately high environmental footprint. This means that when the

Jigsaw team removed meat and dairy and replaced them with nutritionally-balanced plant-based alternatives they reduced the climate footprint of their meals by over half. The land area used to grow the ingredients - a key determinant of their impact on nature – fell almost as much. And the water footprint fell by one-third. Stabilising our climate and leaving enough room for the millions of other species that live on Earth requires each of us to do what we can, right now. Jigsaw's story is a wonderful example of how to start.



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Contents

1. Introduction
2. Overall Changes
3. Impact by Food Type
4. Carbon Footprint Breakdown
5. Mealtime Changes
6. Spotlight on Breakfast
7. Spotlight on Lunch
8. Stepwise Changes
9. Conclusions

1. Introduction

In view of the current environmental crisis, it cannot be ignored that the food that we eat affects more than just our own personal health. It is also a major contributor to our impact on the natural world. Global food production accounts for roughly 25% of greenhouse gas (GHG) emissions, 70% of freshwater extraction and is the leading driver of natural habitat loss around the world. Putting this into a more local context, the WWF holds the food economy directly responsible for 17% of the UK's total GHG emissions.*

Driven by these eye-opening statistics, Foodsteps aims to help food providers assess the environmental impact of their food and make the vital transition to more sustainable choices. Our methodology derives from our team's research at the University of Cambridge, and aims to unpack the complex life-cycle impacts of food - from farm to transport, packaging, processing, and

waste. In this report, we measured the impact of Jigsaw Nurseries' transition to a plant-based menu according to the carbon footprint, land use and water use of food ingredients. The impacts were measured from farm to purchase, including last-mile delivery from the supermarket to Jigsaw's kitchen.

In keeping with its core philosophy, Jigsaw has embraced plant-based eating in a bid to secure a sustainable future for the generations to come. By removing animal products from the menu, we demonstrate how Jigsaw has managed to cut the carbon footprint of food by 56%, land use by 47% and water use by 31%. This places them well ahead of the curve in the drive for sustainable consumption, and provides an example of how it is possible to prioritise the environment while maintaining the quality and nutrition of food on offer.†

* https://fcrn.org.uk/sites/default/files/WWF_environmental_impacts_of_UK_Food.pdf, p. 31

† Please note - there continues to be a small amount of dairy served across the nurseries to support bottle feed requirements for babies. However, the impact of these have been excluded given their negligible impact and the new menu is referred to as entirely plant-based throughout this report.



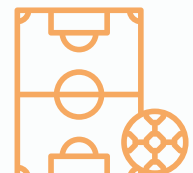
2. Overall Changes

Since switching to a plant-based menu in January 2020, Jigsaw Nurseries has managed to dramatically reduce its environmental impact. In fact, at the point of completing this report, the percentage reduction in environmental impacts achieved by Jigsaw has been the largest ever evaluated by Foodsteps. This has been calculated for three impacts: carbon footprint, land use and water use – as shown below.



Reduction Equivalents (Annually)

↓ 56% That's equivalent to... 160
Reduction in carbon footprint  Return flights to Malaga

↓ 47% That's equivalent to... 7
Reduction in land use  Football pitches

↓ 31% That's equivalent to... 45,000
Reduction in water use  Baths of water being saved each year

3.

Impact by Food Type

Where are the impacts coming from?

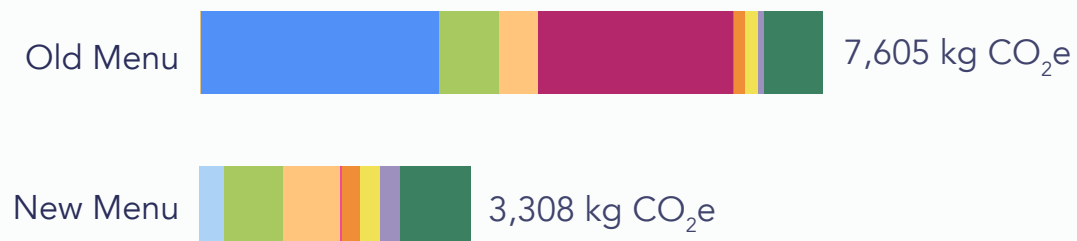
Generally speaking, meat and dairy products have a higher carbon footprint, land use and water use than plant-based products. The graphs on the right-hand side show the impacts of Jigsaw's old and new menus according to different food types.

Jigsaw's 56% reduction in carbon footprint is almost entirely attributable to the removal of meat and dairy products on the new menu.

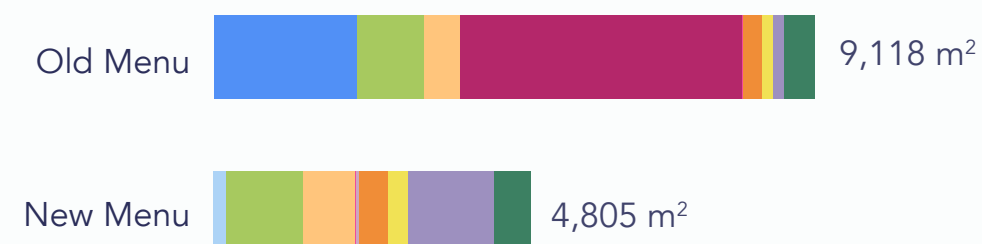
Previously, meat, dairy and egg items accounted for 5,301 kg CO₂e per month, which is higher than the total footprint of the new plant-based menu, at 3,308 kg CO₂e per month.

Similar trends were found for land use and water use. Across all three impacts, the additional footprint from purchasing more pulses, vegetables and grains was more than outweighed by the removal of animal products.

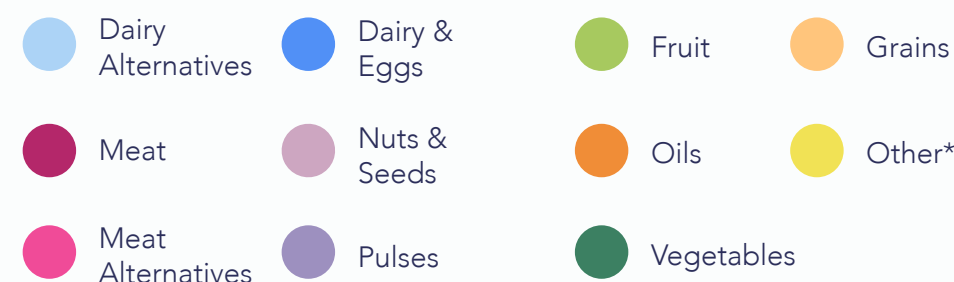
Carbon Footprint (per month)



Land Use (per month)



Water Use (per month)



* Includes seasoning, spices, starches, sugar and yeast.

4.

Carbon Footprint Breakdown

What is the source of greenhouse gas emissions from Jigsaw's menu?

Food has a complex life-cycle, and greenhouse gases are released at multiple different stages from farm to fork. When looking at the impact of an ingredient, it's important to take into account where the food was sourced from, how far it has travelled, how it was processed and packaged, and how much may have been wasted. In these calculations, we looked at the impact from farm to delivery at Jigsaw, including final transportation from the supermarket.



Emissions from feed have disappeared

Feeding animals is often a major contributor to the carbon footprint of meat and dairy products, as the feed itself has to be grown, packaged and transported. The emissions contributed by the feed stage have completely disappeared from Jigsaw's menu since the removal of animal products.



Emissions from transport have remained the same

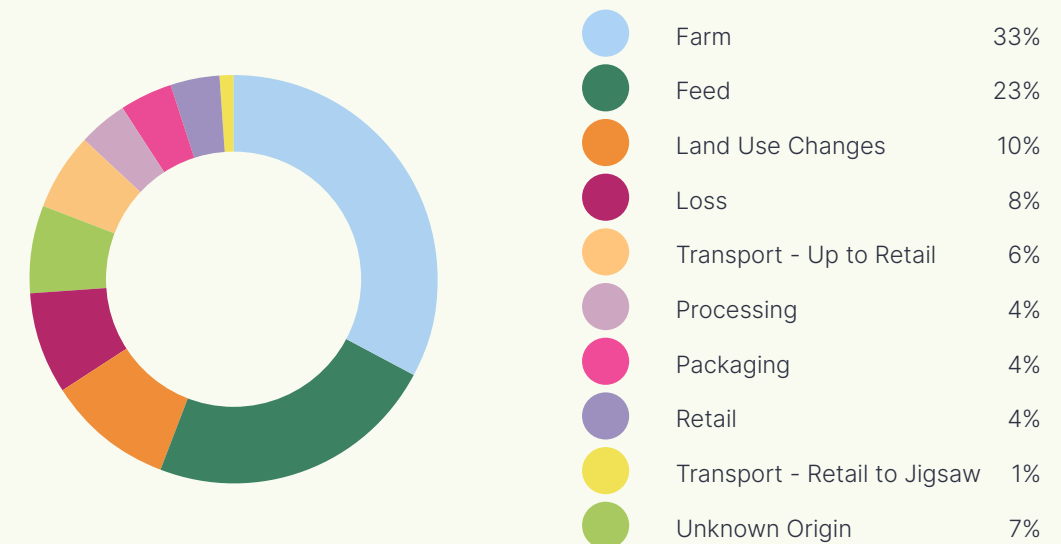
Although the carbon footprint from transport has increased as a proportion of total emissions, the actual figures remain roughly constant between the old and new menu. This shows that plant-based menus do not necessarily involve higher transport emissions.



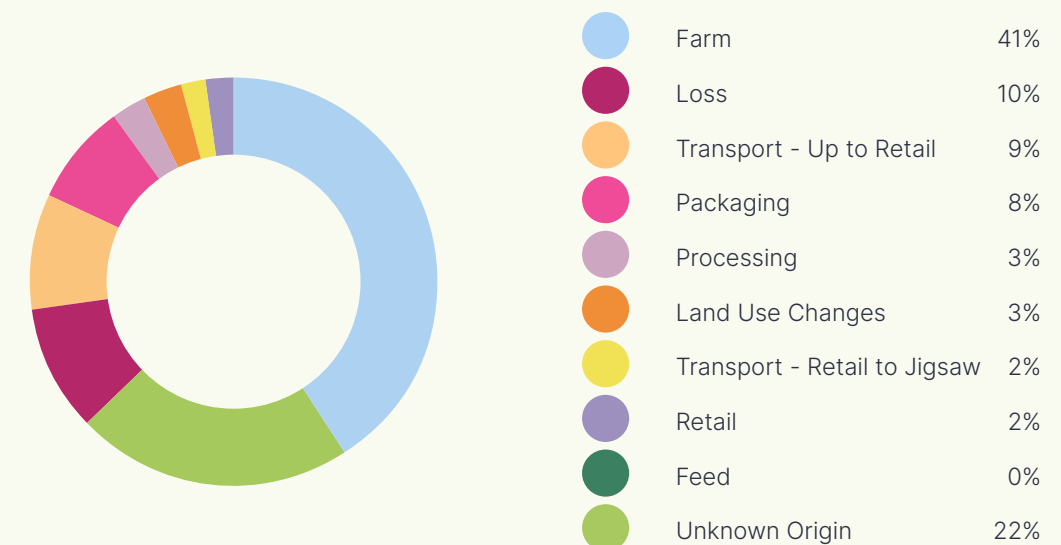
Emissions from packaging also remain unchanged

The carbon footprint from packaging remains constant between the menus, despite increasing as a proportion of total emissions in the new menu.

Old Menu



New Menu











5. Mealtime Changes

Which mealtime has seen the biggest reduction in impact?

Reductions in carbon footprint, land use and water use have been seen across all mealtimes for Jigsaw's new menu, including breakfast, main meals and snacks. Main meals have seen the biggest reduction in both carbon footprint and land use - over 60% - while breakfast has seen the biggest reduction in water use - of 55%.

Reduction Table

How much have impacts reduced for each meal time?

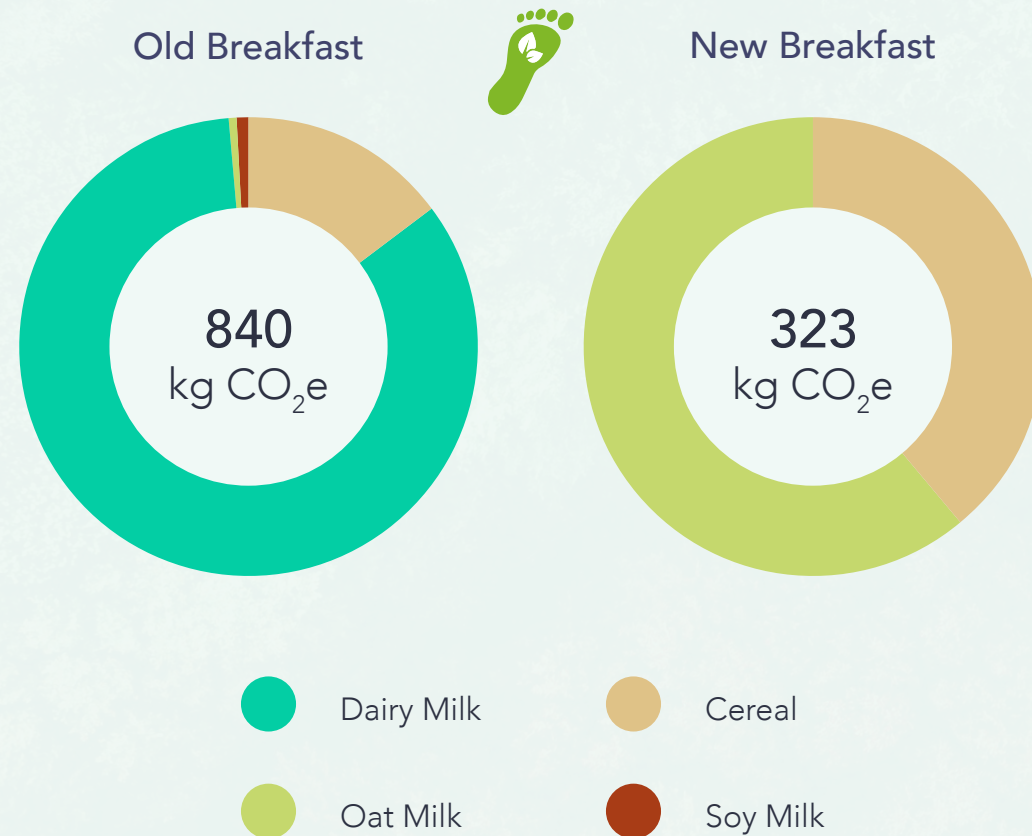
	 Breakfast	 Main Meals	 Afternoon Snack
 CO ₂ e	62%	63%	56%
 Land Use	57%	65%	37%
 Water Use	55%	12%	54%



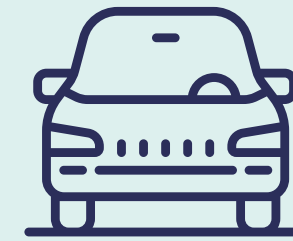
6. Spotlight on Breakfast

Why does the new breakfast have a lower impact than the old breakfast?

Dairy products have a high carbon footprint when compared with plant-based milk alternatives, being up to 3.5 times higher than oat milk. By replacing dairy milk with oat milk, Jigsaw has more than halved the carbon footprint of their breakfasts.



Jigsaw Nurseries is saving 6,203 kg CO₂e per year with their new plant-based breakfast.

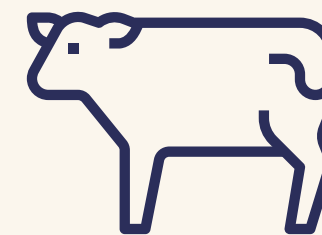


That's equivalent to driving 15,823 miles.

For a typical litre in the UK, dairy milk has a carbon footprint...



2x higher than **soy milk**



3.5x higher than **oat milk**

7. Spotlight on Lunch

How does each meal compare to others in terms of environmental impacts?

In the table on the right, you can see all of Jigsaw's main meals from both the old and new menu ranked in order of descending carbon footprint, with the highest first. Chilli Con Carne is the meal with the highest impact and the American Squash Casserole is the meal with the lowest carbon footprint. Take a look and see how your favourite meal compares!



Old Menu

	Recipe	Carbon Footprint	Land Use	Water Use	Impact Rating
1	Chilli Con Carne	2.02	2.32	245	Very High
2	Lamb Moussaka	2.01	6.71	139	Very High
3	Aloo Keema Curry	1.94	2.23	103	Very High
4	Minced Beef Pie	1.79	2.20	91	Very High
5	Irish Lamb Stew	1.67	5.92	104	High
6	Fishermans Pie	0.95	0.58	84	High
7	Chicken Paella	0.85	0.76	230	High
8	Sausage Cassoulet	0.83	1.08	155	High
9	Beef Lasagne	0.83	0.62	103	High
10	Leek & Potato Bake	0.81	0.64	83	Medium
11	Sweet and Sour Chicken with Rice	0.77	0.90	235	Medium
12	Canadian Veg & Bacon Pasta Bake	0.75	0.64	104	Medium
13	Chicken Goulash	0.75	0.68	89	Medium
14	Jamaican Curry and Rice	0.72	0.85	221	Medium
15	Chicken Pad Thai	0.72	0.91	109	Medium
16	Pork & Blackbean Stew	0.69	0.88	133	Medium
17	American Chicken Casserole	0.62	0.71	83	Medium
18	Chicken Casserole	0.53	0.64	78	Medium
21	Teriyaki Fish Noodles	0.48	0.43	82	Low

New Menu

19	Vegetable Pasta Bake	0.52	0.44	69	Medium
20	Chilli Sin Carne	0.51	1.28	257	Low
22	Vegetable Paella	0.46	0.36	171	Low
23	Plant-based Shepherdless Pie	0.42	0.80	71	Low
24	Sweet & Sour Vegetables with Rice	0.40	0.57	183	Low
25	Lentil and Chickpea Curry with Rice	0.38	0.37	166	Low
26	Vegetarian Cassoulet	0.37	0.89	81	Low
27	Hungarian Goulash	0.36	0.35	36	Very Low
28	Mango Curry & Rice	0.34	0.30	169	Very Low
29	Teriyaki Jackfruit Noodles	0.34	0.58	88	Very Low
30	Jamaican Fruity Vegetable Curry and Rice	0.33	0.45	161	Very Low
31	Aloo Matar Curry	0.31	0.18	22	Very Low
32	Doro Wat Curry	0.31	0.66	193	Very Low
33	Boerewars Casserole With Mash	0.29	0.33	40	Very Low
34	American Squash Casserole	0.26	0.35	25	Very Low

8. Stepwise Changes

How can I make a difference without completely eliminating meat and dairy from my meals?

"We appreciate that fully eliminating animal products from your entire menu may be too much for some. Making positive sustainable changes however does not need to be an all or nothing commitment. It is far more impactful to have lots of people making meaningful stepwise changes than to have just a handful making dramatic changes. These results show that starting with just one plant based day per week can reduce your food carbon footprint by up to 11%, with a further 11% being achieved for every additional plant based day you introduce beyond that. We truly believe that you are never too small to make a difference and no difference is ever too small"

- Jigsaw Day Nurseries

Dividing Jigsaw's overall impact reductions by five shows that each plant-based day reduces the weekly food carbon footprint by 11%, while land use is reduced by 9% and water use by 6%.

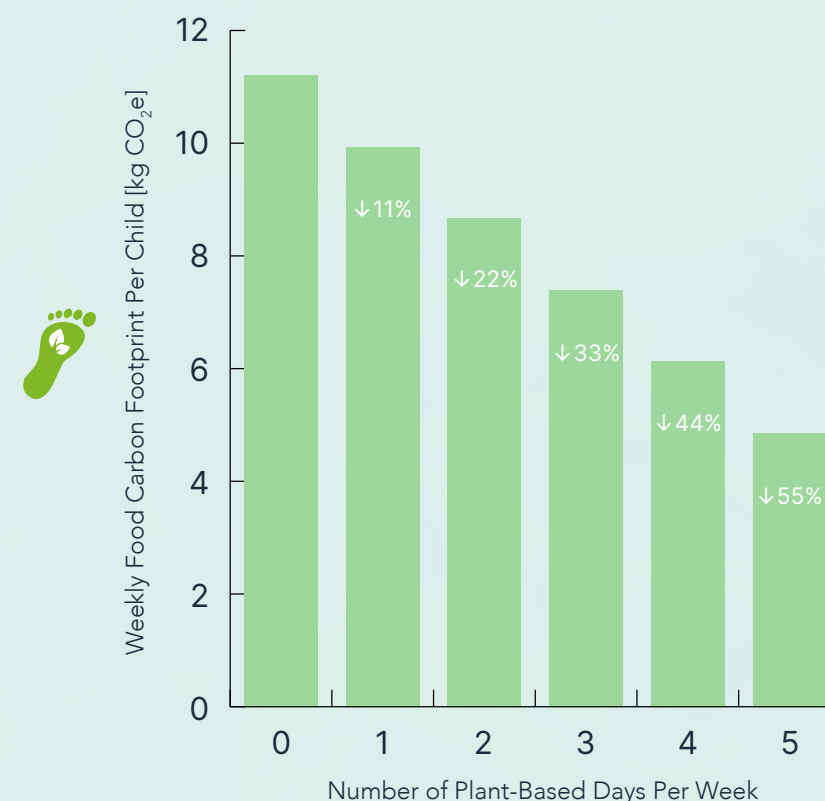
In light of this, we have put together some suggestions you can try to incorporate into your weekly menu (see right hand side).



11%

Each plant-based day reduces the carbon footprint by 11%.

Change in the Weekly Carbon Footprint by Number of Plant-Based Days



A Few Simple Suggestions

Savings per 1,000 meals



3,495 Miles

Substitute beef or any other meat with vegetables and pulses. Replacing an old classic, Minced Beef Pie with a Plant-based Shepherdless Pie generates a carbon footprint which is 77% smaller.



3,836 Miles

Replace meat with a plant-based alternative such as beans. The swap from a traditional Chilli Con Carne to a Mixed Bean Chilli Sin Carne reduces the meal's carbon footprint by 75%.



2,000 Miles

Replace dairy milk at breakfast with plant-based alternatives such as oat milk.

9. Conclusions

Jigsaw is not alone in its commitment to delivering a lower impact menu, forming part of a wider sustainability movement amongst schools and institutions. For example, the Swan School in Oxford has recently started serving vegetarian-only lunches to its students, while more than 200 schools across the UK have signed up to the Meat Free Monday campaign. Additionally, several leading institutions, such as the University of Cambridge and Goldsmiths University, have taken action to reduce the carbon footprint of their menus by eliminating sales of ruminant meat. For its small size, Jigsaw has shown an outstanding commitment to reducing the environmental impact of its menu - showing the largest percentage reductions we have

calculated so far. By doing this alongside careful attention to nutrition, Jigsaw has shown that detailed planning can achieve leading results.

Jigsaw's efforts highlight the role that each of us can play in making stepwise changes towards a more sustainable future, showing that actions such as introducing one plant-based day per week can bring about a measurable positive change.

Improving our environmental footprint is essential if we want to handover a healthy planet to today's children - and Jigsaw has certainly shown that no one is too small to make a difference.





If you would like to find out more, visit www.foodsteps.org.uk