EATING FOR NET ZERO

TECHNICAL REPORT

DETAILED METHODOLOGY

Eating for net zero: how diet shift can enable a nature positive net-zero transition in the UK is a report is based on technical analysis commissioned by WWF-UK and conducted by Blonk Sustainability Tools in 2021-22, developed with the help of Optimeal 3.0 – an optimisation tool applying a technique called quadratic programming. This approach finds a unique combination of foods in the diet (in this case Livewell) that meet a number of constraints while staying as close to the current diet as possible.[1]

REFERENCE DIET

The basis of the analysis are the current diet scenarios modelled using the most recent National Diet and Nutrition Survey (NDNS) data available: Rolling Programme Years 9-11 (2016-2019).[2] To derive nutritional composition data, dietary intake data was linked to the UK Nutrient Databank, which includes product composition data on a larger range of processed foods and composite dishes compared to the UK food composition tables.[3] Efforts were also made to expand on the UK Nutrient Databank, creating additional categories and assigning food products to disaggregated categories where necessary.

Eatwell Guide category	Food Group	Disaggregation category	Comment
Potatoes, bread, rice, pasta and other starchy carbohydrates	Cereal and cereal based products	Cereal and cereal based products	No disaggregation data available in NDNS RP, looked at Main Food Group
	Potato and potato products	Potato and potato products	No disaggregation data available in NDNS RP, looked at Main Food Group
Fruit and vegetables	Vegetable and vegetable products	Brassicaceae, other vegetables, tomatoes, tomato puree, yellow, red & dark green leafy vegetables	
	Fruit and fruit products	Fruit, dried fruit, smoothie fruit	
	Meat and meat products	Beef, burgers, lamb, offal, other red meat, pork, processed red meat, sausage, poultry, processed poultry, game birds	
Beans, pulses, fish, eggs, meat and other proteins	Fish and other seafood	White fish, oily fish, canned tuna, shellfish	
	Eggs and egg products	Eggs and egg products	No disaggregation data available in NDNS RP, looked at Main Food Group
	Legumes, nuts and oilseeds	Beans and nuts	
	Meat and dairy alternatives	Meat alternatives	No disaggregation data available in NDNS RP, looked at Main Food Group
Dairy and alternatives	Meat and dairy alternatives	Dairy alternatives	No disaggregation data available in NDNS RP, looked at Main Food Group
	Milk and dairy products	Cottage cheese, cheddar cheese, other cheese, milk and dairy products	No disaggregation data available for milk and dairy products other than cheese in NDNS RP. Looked at Main Food Group for milk and milk products.
Oils and spreads	Animal and vegetable fats and oils	Animal and vegetable fats and oils	No disaggregation data available in NDNS RP, looked at Main Food Group
	Snacks, desserts, and other foods	Snacks, desserts, and other foods	No disaggregation data available in NDNS RP, looked at Main Food Group
	Sugar and confectionary	Sugar and confectionary	No disaggregation data available in NDNS RP, looked at Main Food Group
	Fruit juice and smoothies	Fruit juice	
	Non-alcoholic beverages	Water, coffee, tea; soft drinks (including fruit drinks)	No disaggregation data available in NDNS RP, looked at Main Food Group
	Alcoholic beverages	Alcoholic beverages	No disaggregation data available in NDNS RP, looked at Main Food Group
	Miscellaneous	Miscellaneous (includes sauces, gravies, and spices)	No disaggregation data available in NDNS RP, looked at Main Food Group

Table 1.
Eatwell Guide categories, food groups and disaggregation categories used in this analysis.

The NDNS comprises detailed dietary data for more than 3,000 food products grouped into 61 main food groups. The main food groups categories were aggregated to 26 main food groups and the number of food products was reduced by aggregating similar food products and selecting those contributing to >1% of consumed weight in grams per day (g/d) of the respective food group for each age group. The quantity of the food items contributing to <1% g/d was proportionally distributed across the remaining items in the respective food groups. The final dataset comprised 393 food products across all age groups.

ENVIRONMENTAL IMPACT OF FOOD PRODUCTS

Life cycle assessment (LCA) is a methodological framework that assesses the environmental impacts of a food product throughout its entire life, from production through to processing, distribution, retail, consumption and waste. LCAs were conducted for 244 food products, including both whole foods and processed foods, and were performed by filling existing LCA models developed by Blonk consultants for the Optimeal EU dataset.[4] In line with LCA best practice, all relevant information across the life cycle of a food was collected as life cycle inventory data using the ReCiPe 2016 Midpoint v1.00 method.[5] The LCAs had an attributional approach and hierarchical perspective and were performed following the ISO 14040 and 14044 guidelines. The functional unit was mass related, meaning the environmental impact is explained per 100g of food product. The economic allocation was used, which is commonly used for LCAs of food products. Import/export data as well energy and other background processes were adjusted to be UK specific for the calculation of environmental impact. This was achieved by performing the final LCAs with UK-specific life cycle inventory data, including a mix of home produce and imports, and UK-specific background processes (e.g., electricity, water, etc.). By using some of the products as a proxy for other products, we were able to include 393 food products in the calculations for the Livewell Plates.

USING HESTIA DATA

HESTIA is a new online platform that stores data on the environmental impacts and productivity of food products and producers. The data available is primarily researcher-generated data and is all open access and freely available. Importantly, all the data is stored in a consistent filetype and has been validated for errors. The HESTIA database was used to describe activity and impact data for strawberry production in the UK.

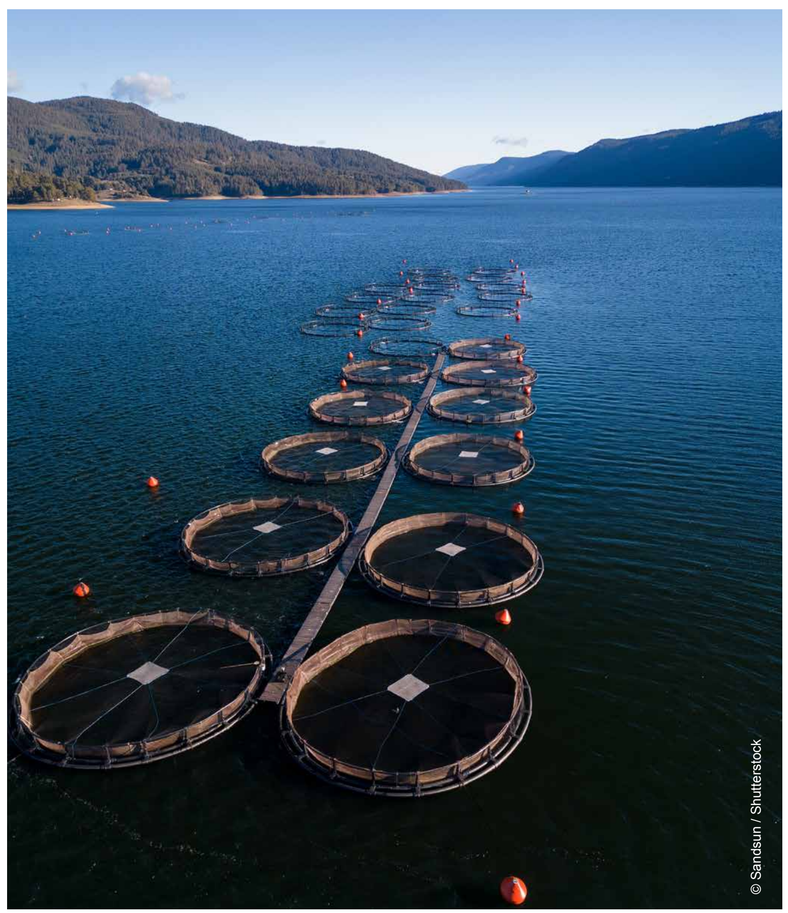
CONSTRAINTS

The optimisation process requires targets which are referred to as constraints or boundaries. We added nutritional, environmental, cost and acceptability constraints to the analysis in this report.

NUTRITIONAL CONSTRAINTS

Optimisations were conducted isocalorically, meaning that the energy intake matched current energy intake. This is done to focus on the changes in the composition of the diet to improve nutritional and environmental outcomes. Dietary reference values used were based on recommendations from the Scientific Advisory Committee of Nutrition (SACN) and its predecessor, the Committee on Medical Aspects of Food and Nutrition Policy (COMA) and were obtained from a compilation published by Public Health England.[6] Eatwell Guide recommendations were used to establish nutritional constraints for certain food groups.[7] For example, a constraint on protein of > 14.5 and < 15.5% of energy was used. This constraint is aligned to the approach taken in several academic papers that have quantified the Eatwell Guide recommendations.[8, 9, 10] Constraints on food groups were also applied, for example a constraint on fruit and vegetable portions to match the recommendation to 'eat at least five portions a day'. It covers a maximum of one portion of juice, one portion of beans and one portion of dried fruit. Portion sizes were adjusted for children aged 1.5-3 and 4-10.[11]

The constraint for protein used in the main analysis is higher than the reference nutrient intakes (RNI) for protein that were established by the Department of Health in 1991,[12] so a sensitivity analysis was conducted to understand how aligning protein consumption with the RNI would influence the composition of the diet.



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	Children (1.5 - 3yrs)		Children (4 - 10yrs)		Adolescents (11 - 18yrs)		Adults (19 - 64yrs)		Adults (65+yrs)	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Daily nutrient requirements [a]										
Energy (kcal) [b]	1073	1073	1480	1480	1678	1678	1910	1910	1740	1740
Protein >14.5 & <15.5 E% (g)	38.91	41.60	53.65	57.35	60.84	65.04	69.23	74.00	63.08	67.43
Reference nutrient intake (g)	-	14.50	-	24.61	-	45.98	-	50.14	-	49.90
Fat total (<35 E%, g)	-	42.0	-	57.6	-	65.7	-	74.3	-	67.7
Saturated fatty acids (<11 E%, g)	-	13.2	-	18.1	-	20.7	-	23.3	-	21.3
Fatty acids n-3 (0.2 E%, g)	0.2	-	0.3	-	0.4	-	0.4	-	0.4	-
Fatty acids n-6 (1 E%, g)	1.2	-	1.6	-	1.9	-	2.1	-	1.9	-
Carbohydrates (>50 E%, g)	135.0	-	185.0	-	211.3	-	238.7	-	217.5	-
Free sugars (<5 E%, g)	-	13.5	-	18.5	-	21.1	-	23.9	-	21.8
Fibre (g)	15.0	-	19.3	-	26.3	-	30.0	-	30.0	-
Retinol equivalents (ug)	400.0	-	457.1	-	625.0	1500.0	650.0	1500.0	650.0	1500.0
Vitamin B1 (mg)	0.5	-	0.7	-	0.9	-	0.88	-	0.9	-
Vitamin B2 (mg)	0.6	-	0.9	-	1.2	-	1.20	-	1.2	-
Niacin (mg)	8.0	-	11.6	-	14.8	-	14.7	-	14.0	-
Vitamin B6 (mg)	0.7	-	1.0	-	1.2	-	1.30	-	1.3	-
Vitamin B12 (ug)	0.5	-	0.9	-	1.4	-	1.50	-	1.5	-
Folate (ug)	70.0	200.0	128.6	-	200.0	700.0	200.0	1000.0	200.0	1000.0
Vitamin C (mg)	30.0	-	30.0	-	37.5	-	40.0	-	40.0	-
Calcium (mg)	350.0	-	507.1	-	900.0	-	700.0	1500.0	700.0	1500.0
Phosphorus (mg)	270.0	-	407.1	-	700.0	-	550.0	3000.0	550.0	3000.0
Magnesium (mg)	85.0	-	165.7	-	290.0	-	285.0	-	285.0	
Sodium (mg)	500.0	800.0	985.7	1657.1	1600.0	2400.0	1600.0	2400.0	1600.0	2400.0
Potassium (mg)	800.0	-	1614.3	-	3300.0	-	3500.0	-	3500.0	
Iron (mg)	6.9	-	7.6	-	13.1	-	10.8	25.0	8.7	25.0
Zinc (mg)	5.0	7.0	6.8	11.7	8.6	20.0	8.25	25.0	8.3	25.0
Copper (mg)	0.4	-	0.7	-	0.9	-	1.20	-	1.2	
Selenium (ug)	15.0	60.0	25.7	-	55.0	225.0	67.5	300.0	67.5	300.0
Iodine (ug)	400.0	-	105.7	300.0	135.0	475.0	140.0	600.0	140.0	600.0
Eatwell guide daily requirements [c]										
Fruit and vegetables (g) [d]	-	-	-	-	-	-	-	-	-	-
Grams [e]	200	-	300	-	-	-	-	-	-	-
Portions (g) [f]	-	-	-	-	-	5	-	5	-	5
Fruit juice & smoothies (g) [g]	-	60	-	137	-	150	-	150	-	150
Red & processed meat (g) [h]	-	-	-	70 or 150% current intake	-	70 or 150% current intake	-	70 or 150% current intake	-	70 or 150% current intake
Oily fish [i]	7	-	9	-	12	-	20	-	20	-
Other fish [i]	7	-	9	-	12	-	20	-	20	-
Soft drinks (including fruit drinks) (g) [j]	-	0	-	0	-	-	-	-		-

a The constraints are based on age-specific dietary reference values (DRVs) that estimate energy and nutrient requirements for healthy population groups. DRVs were set for 26 nutrients in 1991.[13] Subsequent updates were published for energy in 2011,[14] carbohydrates, free sugars and fibre in 2015,[15] and vitamin D in 2016.[16] Vitamin D was not included as a constraint given that a limited amount comes from the diet.

b Constraints on energy (kcal) are based on current energy intake to conduct isocaloric optimisations.

c The Eatwell Guide does not apply to children under 2 because they have different nutritional needs. Between the ages of 2 and 5, children should gradually move to eating the same foods as the rest of the family in the proportions shown in the Eatwell Guide. Portion sizes were scaled down for children aged 1.5-3 and 4-10.

d Eatwell recommends five portions of fruit and vegetables a day.

e For children aged 1.5-3 and 4-10, we assumed one portion is 30g and 60g respectively.

f This includes a maximum of one portion of juice (150ml, from fruit juice or smoothie), one portion beans (80g) and one portion dried fruit (30g). One portion = 80g for all other fruits and vegetables. No recommendation is provided for children under 11.

g For children aged 1-4, fruit juice should be diluted (1 part juice to 10 parts water) and kept to mealtimes (assumed 200ml/serving three times a day).

h When the maximum acceptability constraint of 150% of current intake was lower than 70 g/d, the acceptability constraint was used.

i One portion of fish is 140g. We assumed one portion = 50g for ages 1.5-3, 60g for ages 4-10, 85g for ages 11-18.

j Children should avoid fizzy drinks, squashes and juice drinks completely.

Table 2.
Nutrient and food group constraints applied in the optimisation.

ENVIRONMENTAL CONSTRAINTS

The following environmental impacts were included as constraints in the optimisation process:

- Greenhouse gas emissions excluding land-use change or carbon footprint (kg CO_2e/d)
- Greenhouse gas emissions including land-use change (kg CO_2e/d)
- Total land occupation (in m^2*year/d)
- Water use (m^3/d)
- Acidification (kg SO_2e/d)
- Freshwater eutrophication (kg P-e/d)
- Marine eutrophication (kg N-e/d)
- Biodiversity loss (species*year/d)

Constraints for these impacts were set so they would not exceed the impacts of the current diet. The only constraint that varied was for greenhouse gas emissions, where a progressive emission reduction was applied. Environmental impacts were calculated using the ReCiPe 2016 method.[17] The first five indicators are midpoint impacts, whereas biodiversity loss is an endpoint impact. Midpoint indicators focus on single environmental problems (e.g. climate change), whereas endpoint indicators show the environmental impact on a higher aggregation level.

Biodiversity loss is measured as damage to ecosystems caused by the impact of global warming, water use, freshwater ecotoxicity, freshwater eutrophication, tropospheric ozone formation, terrestrial ecotoxicity, terrestrial acidification and land use. It is measured as a temporary loss reflecting that if food is produced on a smaller area, then the impacts on biodiversity are reduced by a comparable amount, and different production methods and/or different crops or livestock on a given piece of land will impact biodiversity differently depending on levels of intensification and inputs used. The changes are considered temporary because, for example, if 1 hectare of land is under intensive wheat, then biodiversity is significantly impacted; but if left fallow the following year, some of that biodiversity can return.

We did not see a reduction in water use due to the large increase in water consumption from fruit in the Livewell diet, as well as an increase in water consumption from cereals, fats and oils, and vegetables.

	Current	Livewell	% reduction
Carbon footprint (kg CO_2e)	4.84	3.12	36%
GHG including land-use change (kg CO_2e)	5.54	3.50	37%
Land occupation (m^2*year/d)	4.75	3.67	23%
Water use (m^3/d)	0.15	0.15	nil
Acidification (kg SO_2-eq/d)	0.07	0.03	57%
Freshwater eutrophication (kg P-eq/d)	1.05×10^{-3}	6.04×10^{-4}	45%
Marine eutrophication (kg N-eq/d)	8.28×10^{-3}	4.42×10^{-3}	47%
Biodiversity loss excluding land-use change (species*year/d)	7.81×10^{-8}	6.21×10^{-8}	20%
Biodiversity loss including land-use change (species*year/d)	9.62×10^{-8}	7.27×10^{-8}	24%

Table 3.
The daily impact for current consumption and the adult Livewell diet (19-64y) on selected environmental indicators

Further, constraints were placed on wild fish products so that their quantities would not increase compared to current intake. The distinction between wild and farmed fish was made by expert judgement by Blonk research specialists.

COST OF DIETS

The cost of the food items was estimated to calculate the price of each diet. This was done by collecting >2,700 prices of 280 food items on sale in 14 UK online supermarkets using a price comparison website[18] in November and December 2021 using automated data collection techniques. For composite foods that may be homemade, like macaroni and cheese, a price was assigned equivalent to ready-made foods that can be purchased. To convert the price data from £ per 100g sold to £ per 100g consumed, conversion factors were applied from raw to cooked weight and inedible waste. After this, the mean price of each food was calculated. The optimised diets were constrained so that they did not exceed the cost of current diets.

ACCEPTABILITY

To attain realistic dietary changes, the dietary solutions were kept close to the current diet by limiting dietary changes to 33-150% of the current amount (g) of each food group. This range was chosen given the asymmetric distribution of food group intake, similar to what was done in Broekema et al.[19] If the lower or upper boundary determined by the nutritional constraints conflicted with the 33-150% range, the nutritional constraints had preference. The data on disaggregated foods was used to calculate the acceptability constraints.

OPTIMISATION ALGORITHM AND STRATEGY

To identify the greatest possible greenhouse gas emission reduction that is culturally acceptable, a 0.1kg CO_2e/d-step reduction was applied, calculating a new optimised diet after each step until no solution was possible within the constraints. This 0.1kg CO_2e/d-step is equivalent to emissions from 15 minutes of driving[20] or from 100ml of milk. The stepwise reduction was applied to the individual carbon footprint and to greenhouse gas emissions including land-use change.

Nutritional, environmental, cost and acceptability constraints were applied at each step. For each reduction step, more changes to the diet are required. Changes from the current diet to the optimised diets were translated into a penalty score (calculated as the Euclidean distance), which is a weighted sum of quantity changes from each product. The 'critical point' where a further emissions reduction requires proportionally more changes to the diet, making it less acceptable for the average consumer, was then identified. This point is identified applying the concept of elasticity, borrowed from economics science. Before this critical point, the changes in the diet are more effective in reducing greenhouse gas emissions. The critical point determined the diets presented in this report.

COMPOSITION OF LIVEWELL PLATES COMPARED TO CURRENT CONSUMPTION

	Adults (19 - 64yrs)		Children (1.5 - 3yrs)		Children (4 - 10yrs)		Adolescent (11 - 18yrs)		Adults (65+yrs)	
Food group	**Current (g/d)**	**Livewell (g/d)**	**Current (g/d)**	**Livewell (g/d)**	**Current (g/d)**	**Livewell (g/d)**	**Current (g/d)**	**Livewell (g/d)**	**Current (g/d)**	**Livewell (g/d)**
Beef	19.25	6.35	5.32	1.76	9.33	3.08	15.76	5.20	17.13	5.65
Lamb	4.00	1.32	1.07	0.35	1.51	0.50	3.55	1.17	4.79	1.58
Pork	6.65	2.19	1.08	0.70	2.89	1.68	6.17	2.04	5.65	1.86
Offal	1.02	1.53	0.05	0.07	0.14	0.21	0.37	0.55	2.32	3.48
Poultry	45.40	17.58	19.36	15.23	28.96	27.30	43.06	14.21	28.73	11.69
Processed red meat	22.79	7.52	12.58	4.15	21.82	7.20	23.26	7.68	20.54	6.78
Total meat	100.82	36.51	40.44	22.52	66.51	44.14	94.68	30.85	81.28	31.11
Milk and milk products	177.60	140.78	306.18	294.50	220.97	205.79	171.67	177.60	224.80	205.46
Cheese	19.80	6.53	10.03	3.31	11.17	3.69	13.83	11.91	15.56	5.14
Total dairy	197.40	147.32	316.21	297.81	232.14	209.47	185.50	189.51	240.36	210.60
Egg and egg products	26.68	17.91	10.80	9.48	11.66	9.91	13.00	19.49	23.08	23.49
White fish	11.67	20.00	6.03	7.00	11.88	10.00	9.37	12.14	13.87	20.00
Oily fish	8.14	20.00	1.63	7.00	2.17	8.57	2.57	12.14	12.34	20.00
Shellfish	2.55	0.84	0.13	0.04	0.48	0.16	1.65	2.48	2.16	0.71
Total fish and other seafood	22.35	40.84	7.78	14.04	14.54	18.73	13.60	26.77	28.36	40.71
Cereal and cereal products	210.45	279.04	111.77	138.73	161.85	193.42	220.53	286.57	149.44	196.02
Fruit	107.16	158.58	113.34	136.21	109.24	145.03	75.09	106.89	127.60	150.37
Vegetables	184.77	265.81	57.50	110.18	84.98	154.97	102.38	248.32	172.62	203.73
Total fruit and vegetables	291.93	424.39	170.84	246.39	194.22	300.00	177.47	355.21	300.22	354.10
Legumes, nuts and oilseeds	24.27	36.40	9.87	14.81	12.07	18.10	13.80	20.69	14.68	22.02
Potatoes	79.49	111.56	38.56	52.62	66.60	70.33	73.39	110.08	97.32	114.57
Meat alternatives	3.21	4.81	0.69	1.04	1.51	2.27	1.73	2.60	1.05	1.24
Milk alternatives	8.92	3.68	6.96	6.13	3.26	1.14	5.99	8.99	8.40	6.88
Total meat and dairy alternatives	12.12	8.48	7.65	7.16	4.78	3.42	7.72	11.59	9.45	8.12
Animal and vegetable fats and oils	16.28	23.53	8.41	9.25	12.24	18.36	13.22	9.20	19.09	26.90
Snacks, desserts, and other foods	41.32	19.41	54.29	26.31	75.04	42.53	53.98	25.20	54.78	18.08
Sugar and confectionary	26.75	14.12	14.76	8.75	29.17	17.02	29.14	15.90	19.52	8.88
Miscellaneous	45.34	24.71	15.93	6.34	22.58	15.11	32.98	10.88	49.22	56.93
Fruit juice and smoothies	50.05	26.83	42.15	26.77	65.24	42.90	82.50	48.15	41.23	27.32
Non-alcoholic beverages	1619.62	1591.73	443.56	239.10	643.70	396.42	1000.78	961.48	1409.73	1393.32
Coffee, tea	642.74	641.21	9.43	9.33	20.28	20.22	81.61	88.06	870.30	869.82
Water	706.41	705.73	229.91	229.76	377.00	376.90	622.62	620.70	459.08	458.59
Soft drinks	270.47	244.71	204.22	0.00	246.42	0.00	296.55	252.94	80.36	64.63
Alcoholic beverages	187.22	158.87	-	-	-	-	-	-	157.31	143.02

Table 4.
Composition of the Livewell Plates compared to current consumption for each age group.

		Adults (19 - 64yrs)		Children (1.5 - 3yrs)		Children (4 - 10yrs)		Adolescent (11 - 18yrs)		Adults (65+yrs)	
Eatwell Guide category	**Eatwell Recommendation (%) [b]**	**Current (%)**	**Livewell (%)**	**Current (%)**	**Livewell (%)**	**Current (%)**	**Livewell (%)**	**Current (%)**	**Livewell (%)**	**Current (%)**	**Livewell (%)**
Potatoes, bread, rice, past and other starchy carbohydrates	37	32	37	26	29	34	33	40	42	29	33
Fruit and vegetables	39	32	40	30	37	29	37	24	36	35	39
Beans, pulses, fish, eggs, meat and other proteins	12	20	13	12	9	16	13	19	9	17	12
Dairy and alternatives	8	14	8	31	24	20	16	15	12	17	13
Oils and spreads	4	2	2	1	1	2	2	2	1	2	3

Table 5.
Comparison of Eatwell Guide to current and optimised diets for each age group [a].

a The Eatwell Guide applies to most people regardless of weight, dietary restrictions/preferences or ethnic origin. However, it doesn't apply to children <2y because they have different nutritional needs. Between the ages of 2 and 5, children should gradually move to eating the foods in the proportions recommended by the Eatwell Guide.

b The proportions of Eatwell Guide categories come from Scarborough et al. (2016). Similar to what was done in Scarborough et al., we halved the weight of beverages for the calculation of their contribution to the percentages of the EWG categories.

ENVIRONMENTAL IMPACTS AND COST OF LIVEWELL PLATES COMPARED TO CURRENT CONSUMPTION

	Adults (19 - 64yrs)		Children (1.5 - 3yrs)		Children (4 - 10yrs)		Adolescent (11 - 18yrs)		Adults (65+yrs)	
	Current	Livewell	Current	Livewell	Current	Livewell	Current	Livewell	Current	Livewell
Individual carbon footprint (kg CO_2 eq/d)	4.83	3.12	2.59	1.86	3.27	2.45	4.10	2.52	4.63	2.91
GHG including land-use change (kg CO_2 eq/d)	5.52	3.50	2.94	2.10	3.7	2.8	4.65	2.80	5.27	3.30
Total land occupation (m^2*year/d)	4.74	3.67	2.19	1.93	2.92	2.54	3.74	2.60	4.55	3.49
Water use (m^3/d)	0.15	0.15	0.06	0.06	0.08	0.08	0.10	0.10	0.15	0.13
Acidification (kg SO_2-eq/d)	0.07	0.03	0.04	0.02	0.05	0.03	0.06	0.03	0.07	0.03
Freshwater eutrophication (kg P-eq/d)	$1.04*10^{-3}$	$6.04*10^{-4}$	$4.73*10^{-4}$	$3.20*10^{-4}$	$6.19E*10^{-4}$	$4.28*10^{-4}$	$7.92*10^{-4}$	$3.84*10^{-4}$	$1.04*10^{-3}$	$5.98*10^{-4}$
Marine eutrophication (kg N-eq/d)	$8.25*10^{-3}$	$4.40*10^{-3}$	$4.38*10^{-3}$	$3.04*10^{-3}$	$5.53*10^{-3}$	$3.96*10^{-3}$	$7.06*10^{-3}$	$3.49*10^{-3}$	$8.26*10^{-3}$	$4.53*10^{-3}$
Biodiversity loss excluding land use change (species*year/d)	$7.80*10^{-8}$	$6.21*10^{-8}$	$2.77*10^{-8}$	$2.30*10^{-8}$	$3.64*10^{-8}$	$3.04*10^{-8}$	$4.77*10^{-8}$	$3.33*10^{-8}$	$7.72*10^{-8}$	$6.10*10^{-8}$
Biodiversity loss including land use change (species*year/d)	$9.61*10^{-8}$	$7.28*10^{-8}$	$3.61*10^{-8}$	$2.86*10^{-8}$	$4.71*10^{-8}$	$3.78*10^{-8}$	$6.13*10^{-8}$	$4.04*10^{-8}$	$9.53*10^{-8}$	$7.20*10^{-8}$
Cost (£)	7.10	7.02	3.75	3.46	4.49	4.23	5.28	5.28	6.28	6.28

Table 6.
Environmental indicators and diet cost for all Livewell Plates compared to current consumption.

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