Supplementary Materials for

From Future Diets To Dishes: Communicating Dietary Shift Associated With A 1.5□C Scenario For Brazil, China, Sweden And The UK

Lee, S.E.[a], Freer, M.[a], Wood, R.[a], Edelenbosch, O.[bc], Sharmina, M.[a], van Vuuren, D.[bc], Wilson, C.[de],

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1. Country Analysis

1.1. Brazil

Brazil is the fifth largest country in the world and is one of the rapidly developing economies in BRIC (Brazil, Russia, India and China). It ranks seventh in terms of its population (1). In 2018, around 30% of the land was agricultural (23% pasture land) and around 60% was forested (1). Methane largely from cattle accounts for a third of Brazil's GHG emissions (2). Meat consumption dominates the Brazilian diet often consumed twice daily for every day of the week. Diets are also high in locally produced fruits and grains (3).

Brazilians traditionally tend to combine foods of plant origin with similar nutrition such as grains and legumes (rice and beans) as well as coarsely ground cassava known as 'grits' with beans. To reflect the traditional way of Brazilian eating, as well as demonstrating how meat consumption is changing in this country, we select several different recipes containing meat, grains and fruit and vegetables. These recipes reflect commonly eaten foods in the country according to a variety of websites and commentators. Supplementary Table 7 lists the Brazilian recipes selected, their ingredients and reference sources. A popular main dish, Feijoada (Brazilian meat and bean stew) (4), was selected to be the basis for a visual representation of the modelled changes in daily food consumption for the protein items in the dish, together with fruit and vegetables and staples. The results are shown in Fig. 2a and 2b. The other dishes selected, reflect the range of diets across Brazil as described by (5) who references studies on Brazilian food eaten for different meals of the day as well as providing ingredients within specific dishes.

1.2. China

China is the third largest country in the world and is one of the rapidly developing economies in BRIC (Brazil, Russia, India, and China) with the largest population. Around 55% of the land is agricultural of which 42% is pastureland and just over a fifth is forested. Around 10% of China's GHGs are from methane from agriculture (6). There are wide differences between the level of urbanisation across the country and there are regional differences in food culture and diet (7). Plant-derived foods form 83% of the total Chinese food intake and are responsible for 62% of the carbon footprint whereby beef, fish and shellfish accounted for 3% of the intake but 16% to the carbon footprint(7). Group meals are common and little meat is eaten (8). The most popular meat is pork though beef consumption is

increasing in the form of hot pots or steak (9). Supplementary Table 7 lists the Chinese recipes selected, their ingredients and reference sources. A popular main dish, Sweet and Sour Pork (10) was selected to be the basis for a visual representation of the modelled changes in daily food consumption for the protein items in the dish together with pineapple and vegetables and staples. The results are shown in Fig. 2c and 2d. The other dishes selected, reflect the range of diets across China (10-13).

1.3. Sweden

Sweden ranks 58th in the world in terms of land area and has a population of around 10 million people(14). Much of the land is forested (around 68%) with a small amount of arable land (6 %). It is a prosperous economy based around natural resources such as timber and mineral ores. Methane emissions are low. Sweden emits 4.6 Million $MtCO_2$ equivalent which puts it as the 114th worst emitter globally (15).Total meat consumption has decreased from the Swedish record level of 88.4 kg per capita in 2016 to 80.1 kg per capita in 2021 (16) which equates to around 775g per person per week. This decrease is attributable to greater awareness of animal husbandry as well as health and environmental sustainability. More meat is however being produced domestically with fewer imports. The Swedes consume many meat-based (beef, and pork sausages) dishes as well as chicken. Fish is also the base for many dishes. They are becoming increasing aware of environmental issues with meat and a meat guide has been produced to provide an environmental impact assessment (17-19).

The focus of this paper is on the changes in meat consumption so, although there are many types of fish eaten in Sweden, (e.g. salmon and herring) we have extracted recipes on meat (beef, pork, poultry) based dishes (See Supplementary Table 7). The popular main dish, Köttbullar (Swedish meat balls) (20), was selected to be the basis for a visual representation of the modelled changes in daily food consumption for the protein items in the dish together with fruit and vegetables and staples. The results are shown in Fig. 2e and 2f. The other dishes selected, reflect the different protein foods eaten in Sweden (20-22).

1.4. UK

The UK ranks 80th in the world in terms of land area and has a population of around 68million people (23). Around 71% of the land is agricultural with 25% arable land, 46% pastureland and 12% is forested. The UK emits 51.2 Million $MtCO_2$ equivalent which puts it as the 30th worst emitter globally (15). Meat consumption has fallen over the last 10 to 15 years from 103.7 g/capita/day in 2008 to 86.3 g/capita/day (604 g/capita/week) in 2019, specifically in red meat and processed meat, though there has been an increase in white meat consumption over the same period (24). The UK diet was traditionally based on “meat and 2 vegetables”(25) but with foreign travel and the development of a multi-cultural society, the diet is more varied and talks influences from many countries around the World (25). Like many countries across northern Europe, Britain has an obesity problem (26) and there is increasing awareness that meat consumption needs to decrease from a health point of view (27). We have extracted recipes on meat (beef, pork, poultry) based dishes (See Supplementary Table 7 in the SI). The popular main dish, Chicken Korma containing tomato and onion with rice (28, 29), was selected to be the basis for a visual representation of the modelled changes in daily food consumption for the protein items in the dish together with fruit and vegetables and staples. The results are shown in Fig. 2g and 2h. The other dishes selected, reflect the different protein foods eaten in the UK (30, 31).

2. Data validation

Due to the global COVID-19 pandemic, any data for FAO 2020 would be distorted by this event. We therefore use 2019 data as proxy for 2020. Our intention was: i) to assess the total modelled food demand values from IMAGE for 2020 against the FAO 2019 total food supply data and to ensure that the data were quantitatively similar within +/- 15% of each other and ii) to provide a present-day starting point for UK and Sweden.

We extracted the FAO 2019 food supply data for Brazil, China, (t/yr) (FAO, 2021) for each food item and totalled these for each country). We repeated this process for all the WEU countries used within IMAGE, including UK and Sweden (Supplementary Data files 1, 2 and 3). Within WEU there were eight smaller countries (Andorra, Faroe Islands, Gibraltar, Holy See, Liechtenstein, Malta, Monaco, San Marino) for which no FAO data were available. An estimate of their food supply was calculated from their population and the food supply of their nearest neighbouring country. We followed the methods from Bijl et al.(32) to determine the allocation of all the food items in the FAO Food balance sheet. These data were converted to g/cap/day for total food supplied (2459 g/cap/day). Given that the total population of these countries is so small (around 710,000) which equates to 0.6% of the total WEU population, we focussed our analysis on the 18 WEU countries that have FAO food data. The average FAO food supply for all WEU countries is 2397 g/cap/day. This is slightly lower than the modelled IMAGE FD value (inclusive of HH waste) of 2527 g/cap/day, but within 5% of this value (see Supplementary Table 1).

Supplementary Table 1: FAO Food supply values for 2019 and modelled IMAGE Food demand including household (HH) waste for 2020 for Brazil, China and Western Europe (WEU)

Country	FAO 2019 Total food supplied (g/cap/day)	IMAGE 2020 Total Food demand incl HH waste) (g/cap/day)	Difference (g/cap/day)	% Difference/Total Food demand
Brazil	2105	2067	38	2
China	2706	2406	300	11
Western Europe	2397	2527	-130	-5

The total food supplied for Brazil (2105 g/cap/day) was close to the LiStCh data for Brazil (2067 g/cap/day) and within the 15% threshold for China (LiStCh value of 2406 g/cap/day) (Supplementary Table 1) which was deemed acceptable given the unknowns within the actual data as to the amount of wastage. Our main interest is the distribution of the main food groups and the specific protein food items within these groups.

3. Food categorization

Supplementary Table 2: Food categorizations used in this paper (column 1) and by FAO (33) (32) and (34) within the IMAGE model 1.5 °C lifestyle scenario, and the corresponding FAO FBS food item categories.

Food group as used for Tables 1, 2, Supplementary Table 8 to 11; Supplementary Figure 1a-f; supplementary data files 1 to 4	FAO Food Item (33)	IMAGE Food items outputs (32)	Household Waste Food categories (32, 34)
Beef	Bovine meat	Cattle meat	Animal
Dairy	Butter, Ghee	Butter and cream	Animal
	Cream		
	Milk - Excluding Butter	Milk	
Pork	Pigmeat	Pig meat	Animal
Lamb	Mutton and goat meat	Sheep and goat meat	
Eggs	Eggs	Eggs	
Poultry	Poultry meat	Poultry meat	
Fish and seafood	Freshwater Fish	Fish and seafood	Animal
	Demersal Fish		
	Pelagic Fish		
	Marine Fish, Other		
	Crustaceans		
	Cephalopods		
	Molluscs, Other		

other meat and animal fat	Meat, Other	Other meat and animal fat	Animal
	Offals, Edible		
	Fats, Animals, Raw		
	Fish, Body Oil		
Nuts and seeds	Sunflower seed	Sunflower seed	Oils and oilcrops
	Sesame seed	Sesame seed	
	Groundnuts	Groundnuts	
	Nuts [1]	Nuts [1]	Fruit and vegetables
Pulses	Beans	Pulses	Pulses
	Peas		
	Pulses, Other and products		
Soyabeans	soyabeans	oils and oilcrops	Oils and oilcrops
Food group			
Fruit and Vegetables	Aquatic plants	Aquatic plants	Fruit and vegetables
	Fruits[2]	Fruits	
	Grapes and products excluding wine	Grapes	
	Vegetables [3]	Vegetables	
Luxuries	Beer	Luxuries	Luxuries
	Wine		
	other alcohol		
	Spices		
	Stimulants		
	sugar beet		
	sugar cane		
	sugar raw		
	sugar other		
Staples	Plantains	Plantains	Staples
	Temperate cereals	Temperate cereals	
	Barley	Barley	
	Rice (milled eq)	Rice (milled eq)	
	Maize	Maize	
	Tropical cereals	Tropical cereals	
	Roots and tubers	Roots and tubers	

[1] Tree nuts

(2) Not listed all fruits in FAO (FAO Item group: 2919) (10 in total excluding grapes)

(3) Not listed all vegetables in FAO (FAO Item group: 2918) (3 in total)

4. FAO Food supply

We are following on from the work carried out by Bijl and colleagues on their Food Demand model (32). We are assuming that the food suppled to a population will reflect the food consumed by that population, and that there will be waste in transporting and delivering (distribution waste) as well as waste in the household before the food is consumed. “Food availability” as defined in the Food Balance Sheet (FBS setting)(33) refers to the quantities of food available for human consumption at the retail level by the country’s resident population. Food availability also includes any loss or waste at the retail or consumer level. For this reason, total food availability estimates derived from the FBS are likely to be higher than actual average food consumption(35). Bijl et al. (32) calculated household waste, and the food demand data includes this component. This is included in the IMAGE Food demand data. FAO food supply is equivalent to IMAGE Food Demand including household (HH) waste.

5. Household Waste (HW)

The data within IMAGE is of food demand (potential future use) including household waste (in effect, food supply) together with household waste for each of the main food categories. To calculate this household waste, Bijl et al (32) adopted the life-cycle analysis approach used by (36) whereby they assumed at each stage of the supply chain and for each food category the lowest waste fraction achieved by any region can be achieved by all other regions. This approach was used within (34). Food waste as a fraction of total demand is reduced in households (10% less avoidable waste per year starting in 2011, reaching 98% reduction in 2050), and in storage and distribution systems (5% less waste per year starting in 2011, reaching 86% in 2050). The modelled IMAGE household waste data are available for each food category.

6. Food consumption calculations for food items

For each of the four countries, food consumption (FC) was calculated for each decade: 2020, 2030, 2040 and 2050 by using IMAGE food demand including household waste (FD) and IMAGE household waste (HW) data calculated by (32) for each of the six main food categories (see Supplementary Table 2) . To determine the household waste for selected items within these categories we used the percentage of household waste of total FD for the main category (equation (2)) and applied it to each food item in that category for each decade to determine HW for each food item. Finally, to determine food consumption for all the food items and food groups of interest we used equation (4).

The following equation (1) shows the calculation of food consumption for the food category: *Animal* (FC(A)):

$$FC(A) = (FD\ (A)) - (HW\ (A)) \quad (1)$$

Key: Food category (cat)

Cat	Food category
A	Animal
FV	Fruit and Veg
LX	Luxuries
OC	Oils and oilcrops
P	Pulses
S	Staples

Calculation of HH waste percentage for each food category

$$HW\ (cat)\ \% = (HW\ (cat)/\ (FD\ (cat)) * 100 \quad (2)$$

repeated for each category

Calculation of HH waste percentage for each food item (FI) within the appropriate food category

HW (FI) = HW (cat) % * FD (FI) (3)

Calculation of food consumption for each food item

FC (FI) = FD (FI) – HW (FI) (4)

This was repeated for all food items within their food category (see Supplementary Table 2)

7. Household Waste Quantities

Supplementary Table 4a: IMAGE Household Waste (g/cap/day) 2020 for Brazil, China, Sweden (calculated) and UK (calculated) See Extended data files 2 to 4 for individual food items for UK and Sweden

Region\Food category	HH Waste Brazil (g/cap/day)	HH Waste China (g/cap/day)	WEU	
			HH Waste UK (calculated) (g/cap/day)	HH Waste Sweden (calculated) (g/cap/day)
Animal	20	18	46	46
Fruits and vegetables	32	87	42	38
Luxuries	6	2	6	6
Oils and oilcrops	1	0	1	0
Pulses	1	0	0	0
Staples	23	39	48	38
Total	82	146	143	129

Supplementary Table 4b: IMAGE Household Waste (g/cap/day) 2050 for Brazil, China, Sweden (calculated) and UK (calculated) See Extended data files 1 to 4 for individual food items (See Extended Data files 1 to 4 for individual food items)

Region\Food category	Brazil	China	WEU	
			UK (calculated)	Sweden (calculated)

Animal	3	2	10	10
Fruits and vegetables	21	53	24	24
Luxuries	2	0	1	1
Oils and oilcrops	1	1	1	1
Pulses	2	0	1	1
Staples	6	9	10	10
Total	34	65	47	47

8. Downscaling WEU to UK and Sweden

The available data from IMAGE gives food demand for Western Europe. Before establishing the baseline for the UK and Sweden we downscale the 2020 LiStCh data to the UK (Supplementary Data file 3) and Sweden (Supplementary Data file 2) using the ratios of UK and Swedish food supply to the total for Western Europe from the FAO 2019 Food Supply (33).

Once the baseline was established, we then apply the changes associated with the LiStCh scenario to give g/cap/annum for each food category and protein food item. For Brazil and China the LiStCh was used directly. For UK and Sweden, the scenario states by 2050 that diets converge, hence a linear trajectory of food demand changes from 2020 to converge on the 2050 Western Europe LiStCh food demand was applied. Once the food demand has been calculated for each decade, calculated HH waste was deducted to determine a food consumption value. The HH waste calculated for UK and Sweden used the percentage values from IMAGE Western Europe for 2020 shown in Supplementary Table 3a and Supplementary Table 3b respectively and for 2050 in Supplementary Table 4a and Supplementary Table 4b respectively. Note by 2050 UK and Sweden have the same HH waste values that are consistent with the regional changes in Western Europe.

Supplementary Table 3a: Calculated IMAGE UK 2020 Food consumption for the LiStCh scenario for the six food categories See Supplementary Table 2 above and Supplementary Data File 2 for individual food items

UK

Food category	UK/WEU FAO 2019	IMAGE UK FD 2020 calculated (g/cap/day)	IMAGE 2020 (HH Waste)/ IMAGE 2020 FD (%)	Calculated UK 2020 HH Waste (g/cap/day)	Calculated IMAGE UK 2020 FC (g/cap/day)
Animal	1.00	1039	4	46	993
Fruit and Veg	0.83	492	8	42	450
Luxuries	1.01	403	2	6	397
Oils and oilcrops	0.77	30	2	1	29
Pulses	1.01	7	2	0	7
Staples	1.11	500	10	48	452
Total		2471	28	143	2328

Supplementary Table 3b: Calculated IMAGE Sweden 2020 Food consumption for the LiStCh scenario See Table Supplementary Table 2 above and Supplementary Data File 1 for individual food items

Sweden

Food category	Sweden/WEU FAO 2019	IMAGE Sweden FD 2020 calculated (g/cap/day)	IMAGE 2020 (HH Waste)/ IMAGE 2020 FD (%)	Calculated Sweden 2020 HH Waste (g/cap/day)	Calculated IMAGE Sweden 2020 FC (g/cap/day)
Animal	0.99	1034	4	46	988
Fruit and Veg	0.76	448	8	38	410
Luxuries	1.01	400	2	6	394
Oils and oilcrops	0.47	18	2	0	18
Pulses	0.60	4	2	0	4
Staples	0.87	394	10	38	356
Total		2298	28	129	2169

9. Portion sizes for different food groups

Each country has the same portion of meat, fruit and vegetable, and staples. These are based on amounts used in recipes and from the BNF (37)

Supplementary Table 5: Portion sizes (g) for different food types

Food group	Portion (g)
Meat	100
Dairy (milk on cereal or yoghurt)	125
Egg	60
Fish	120
Other meat and animal fat (mostly offal)	100
Fruit and vegetables	80
Oils and oilcrops (1 tablespoon of vegetable oil)	15
Luxuries – chocolate (4 squares/5 teaspoons of sugar))	20
Staples (dry weight)	75
Pulses (lentils)	50
Nuts and seeds	20
Soyabean (tofu)	80

10. Mixed Dishes

Supplementary Table 7 shows the popular dishes (mixed, primary meat and vegetarian dish) selected by country.

Supplementary Table 7: Popular Dishes by country

Country	Dishes	Dish type	Dish Ingredients by food category			Reference
			Protein	**Fruit and Vegetables**	**Staples**	
Brazil						
	Feijoada (Brazilian meat stew)	MD	Beef Pork Black beans	Tomato salsa Collard beans	Rice	(4) Replacement by more beans, sweet potato, black-eyed peas
	Galinha Ensopada (Stewed Chicken)	MD	Chicken Beans	Onion	Rice, Potato	(38)
	Feijão Tropeiro (Brazilian Beans with Sausage and Collard Greens)	MD	carioca beans, calabresa sausage, bacon	Onion, Garlic	Flour	(39)
	Baked chicken leg with salad	S	Chicken	Lettuce, tomato, cucumber and onion	Rice	(40)
	Churrasco Barbequed beef	S	Beef	Salad	Rice	(41)
	Vegetarian Feijoada	V	Black beans	Pepper, Onion, kale	Rice Sweet potato	(42)
China						
	Sweet and sour pork	MD	Pork	Pineapple, Red and green peppers, Onions	Rice	(10) Replacement by tofu
	Kung Pao Chicken	MD	Chicken Peanuts	Onion Garlic Snow peas Red Pepper		(11)NB For vegetarian version can substitute tofu for chicken
	Hot Pot	MD	Beef	Onions Turnips		(12)

				Carrots Spinach		
	Peking Roast Duck	S	Duck	Spring onions	Pancakes	(13)
	Crispy orange beef	S	Beef	Orange, Onions, Broccoli	Rice	(43)
	Fried Tofu and vegetables	V	Tofu	Onions, carrots, pepper, garlic	Rice	(44)
Sweden						
	Köttbuller (Meat Balls)	MD	Beef Pork	Green beans	Potato	(20) Replaced by lentils, nuts and seeds
	Swedish Kalops (stew)	MD	Beef	Onions Garlic Carrots Berries	Potato	(21)
	Sausage stroganoff (Korvstroganoff)	MD	Pork	Onion, Tomatoes	Rice	(45)
	Swedish Chicken with Mushrooms & Cream	S	Chicken	Mushroom Beetroot	Potato	(46)
	Steak on a plank (Plankstek)	S	Beef	Asparagus Tomatoes	Potato	(47)
	Lentil and Mushroom Meatballs	V	Lentil	Mushrooms	Pasta	(22)
UK						
	Chicken Korma	MD	Chicken	Tomatoes Onions Garlic	Rice	(28, 29)
	Spaghetti Bolognese	MD	Beef mince	Tomatoes and onions	Pasta	(48)
	Full English	MD	Pork, Egg, Beans	Tomato Mushrooms	Toast	(49)
	Roast Beef	S	Slice of Beef	Broccoli and carrots	Yorkshire pudding and potatoes	(50-52)
	Roast Chicken	S	Slice of chicken	Broccoli and carrots	Potatoes	(53)

	Vegetarian Spaghetti Bolognese	V	Beans	Tomatoes and onions	Pasta	(54)

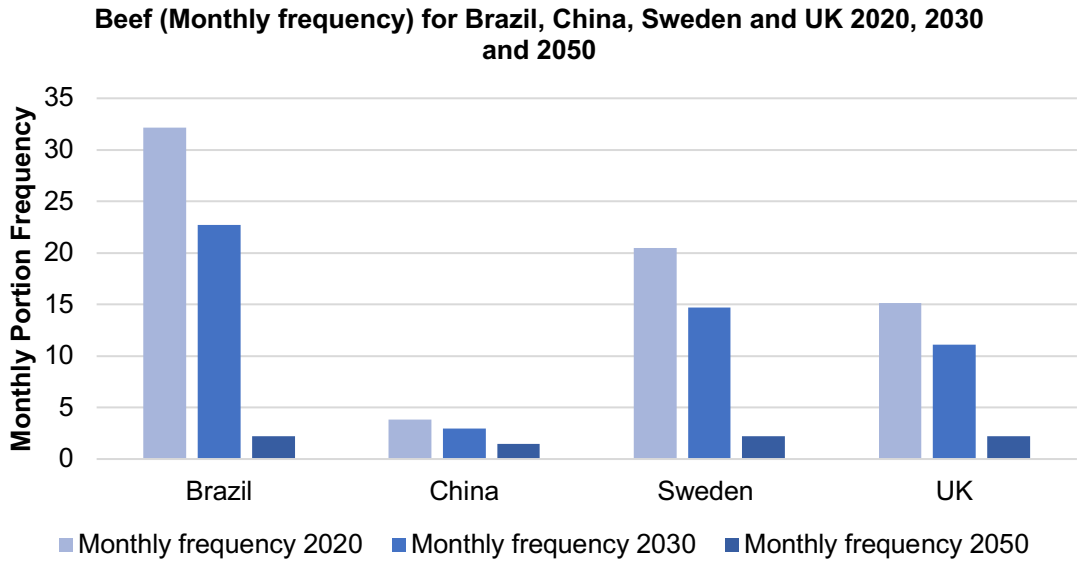
MD: Mixed dish; V: Vegetarian dish; S – Primary meat dish

11. Primary meat dish

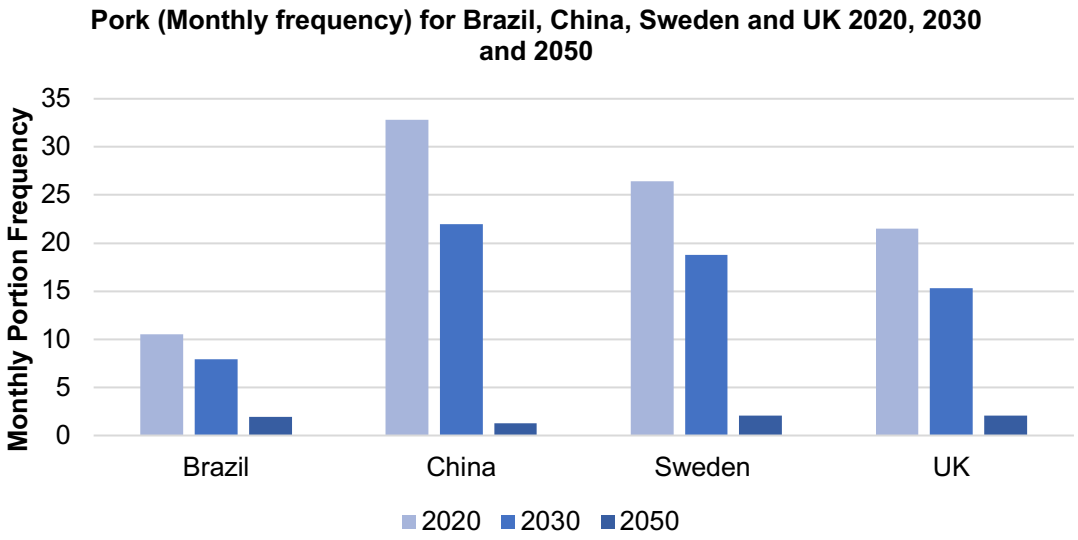
The following charts show how the monthly frequency of protein food items consumed within different popular and traditional dishes change between 2020 and 2030 and up to 2050 for each country.

Supplementary Figures: Bar charts of changes for different popular food items for each country – selection of meats

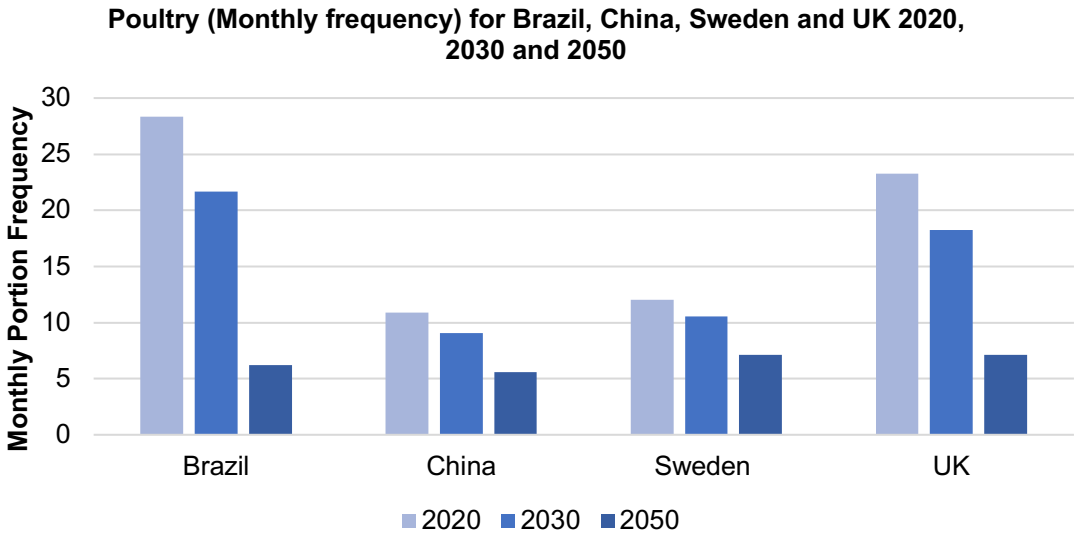
a) Beef; b) Pork c) Poultry d) Pulses e) Soybeans f) Nuts and seeds g) Fish h) Eggs



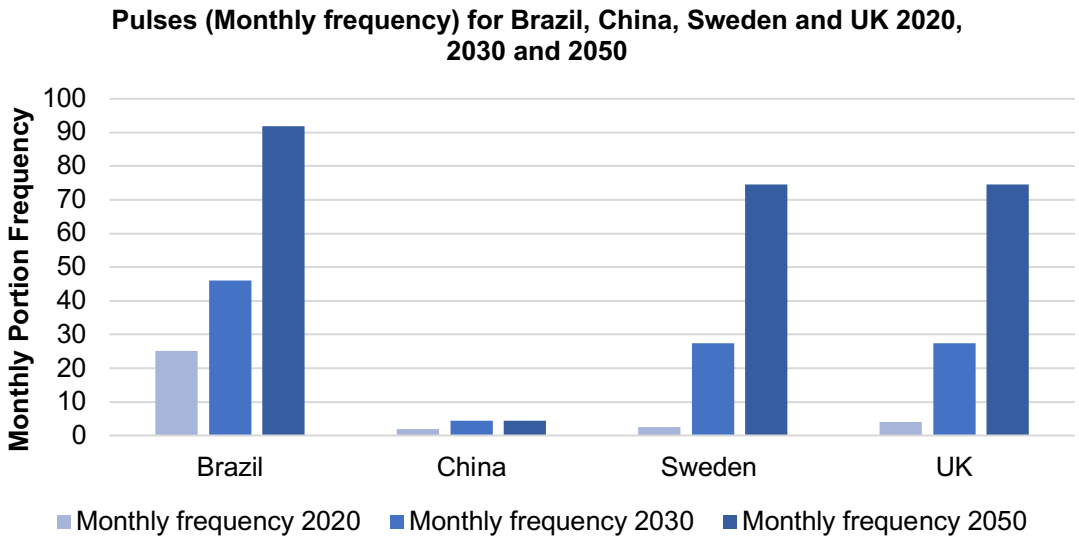
Supplementary Figure 1a: Monthly frequency of beef consumption for Brazil, China, Sweden and UK (2020, 2030, 2050)



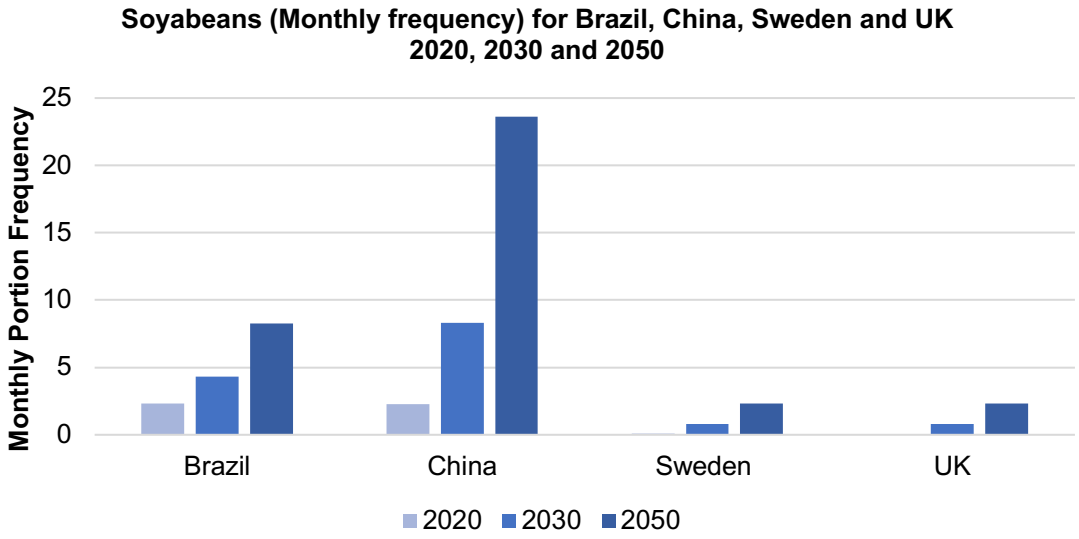
Supplementary Figure 1b: Monthly frequency of pork consumption for Brazil, China, Sweden and UK (2020, 2030, 2050)



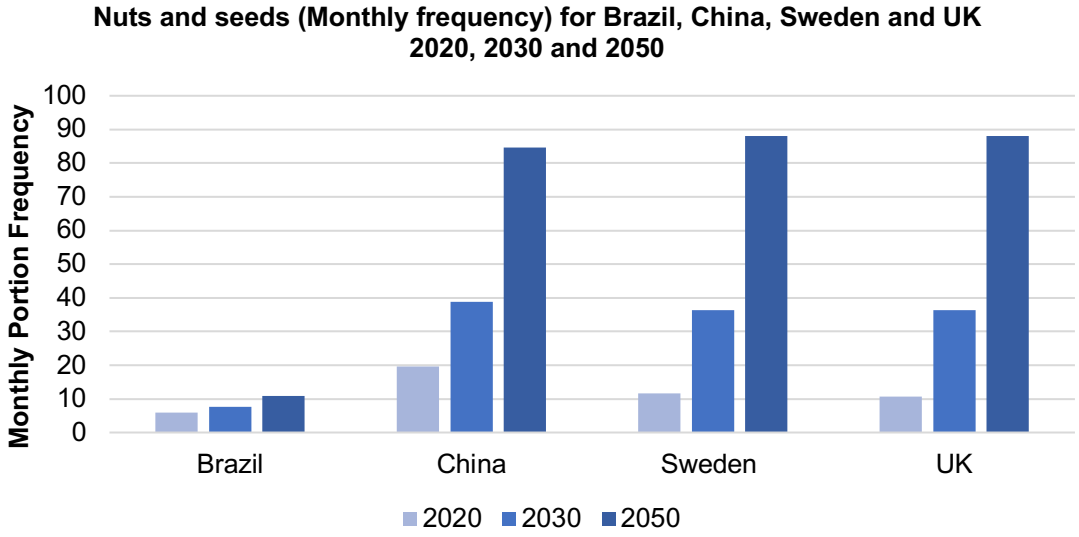
Supplementary Figure 1c: Monthly frequency of poultry consumption for Brazil, China, Sweden and UK (2020, 2030, 2050)



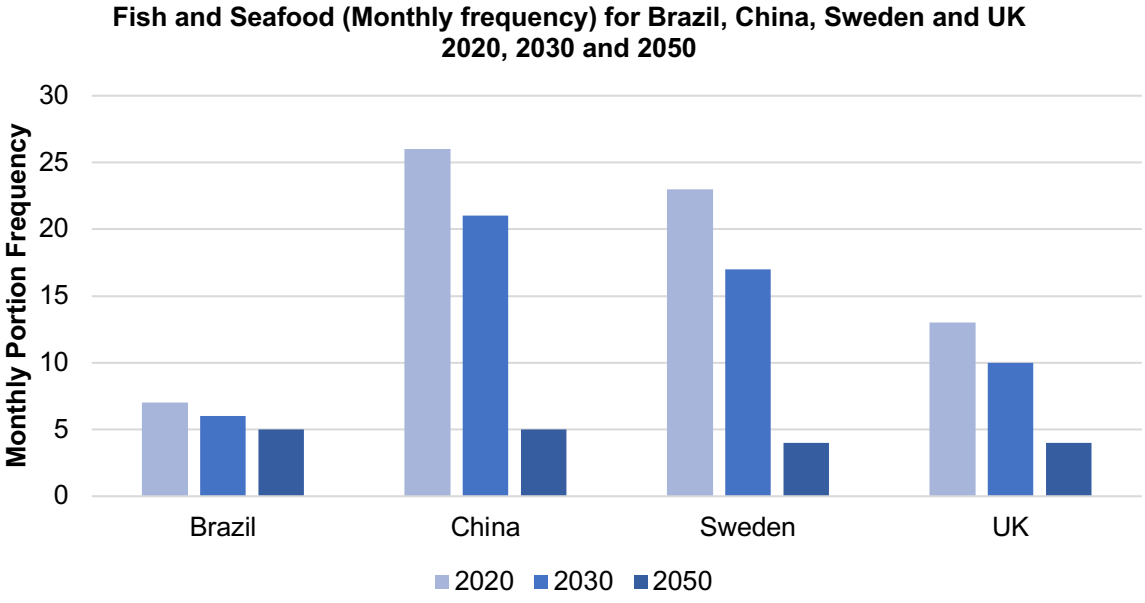
Supplementary Figure 1d: Monthly frequency of pulses consumption for Brazil, China, Sweden and UK (2020, 2030, 2050)



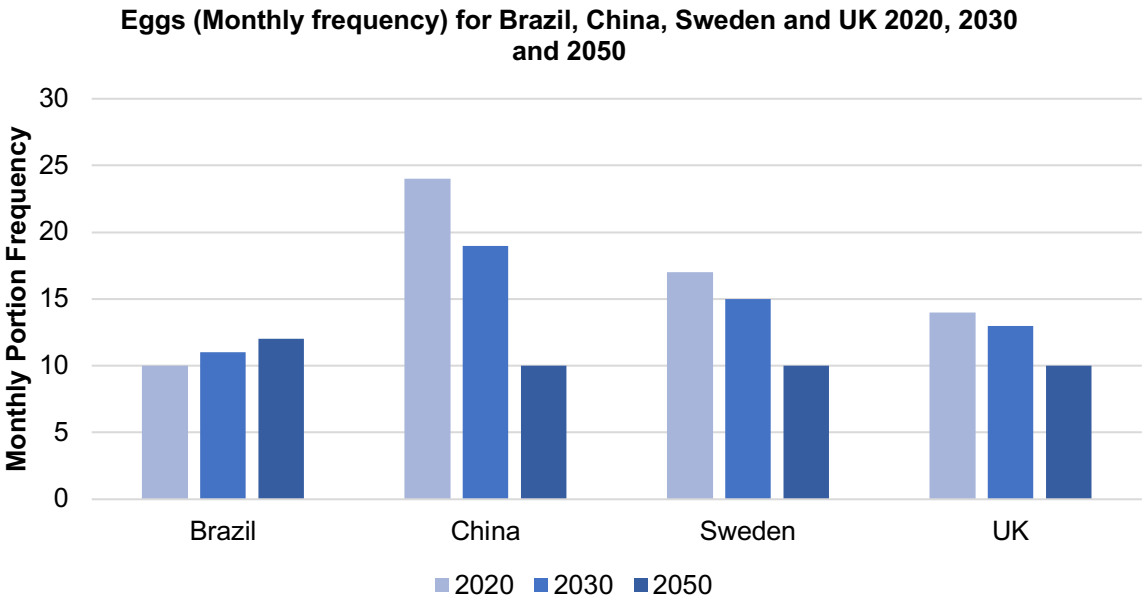
Supplementary Figure 1e: Monthly frequency of soyabeans consumption for Brazil, China, Sweden and UK (2020, 2030, 2050)



Supplementary Figure 1f: Monthly frequency of nuts and seeds consumption for Brazil, China, Sweden and UK (2020, 2030, 2050)



Supplementary Figure 1g: Monthly frequency of fish and seafood consumption for Brazil, China, Sweden and UK (2020, 2030, 2050)



Supplementary Figure 1h: Monthly frequency of egg consumption for Brazil, China, Sweden and UK (2020, 2030, 2050)

12. Mixed Dishes

12.1. Mixed Dish calculations

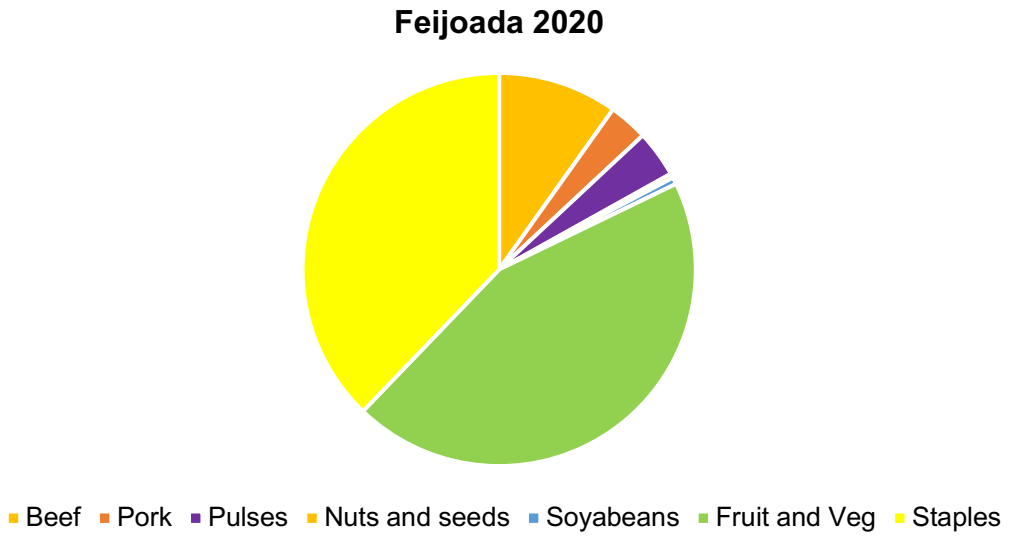
To determine the projected amount of a particular recipe food item for 2030 and 2050, we extracted the IMAGE modelled daily food consumption (g/cap/day) for 2020, 2030 and 2050 for each country from the Supplementary data files 1 to 4. These data were then plotted on a pie chart which formed the basis for the illustrations of the changes in the dishes in the period 2020 to 2050. See Figures 2 to 5 in the main paper

A selection of different recipes is shown to highlight the dietary change for each country as it moves towards a healthier and more sustainable diet.

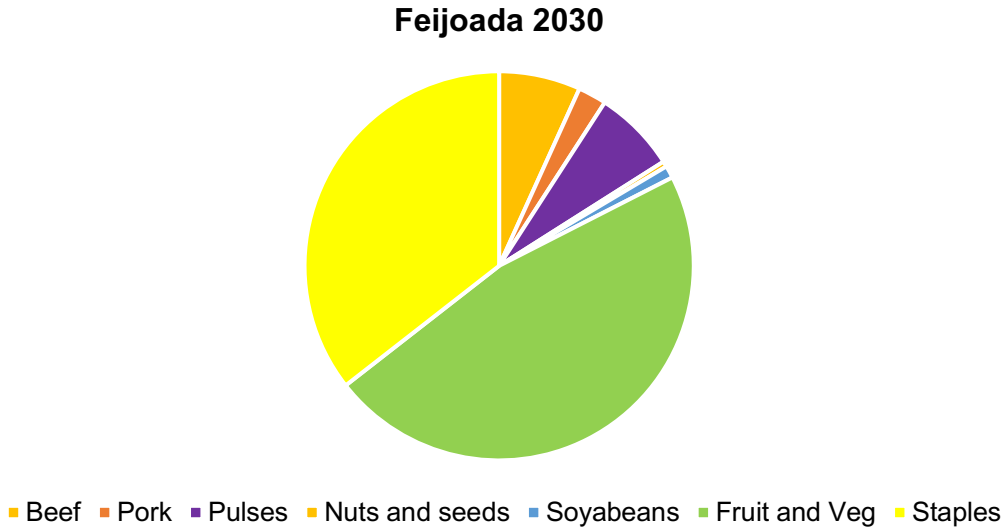
12.2. Brazil

Supplementary Table 8: Brazilian Feijoada ingredient changes 2020 to 2050 based on national food consumption (g/cap/day)

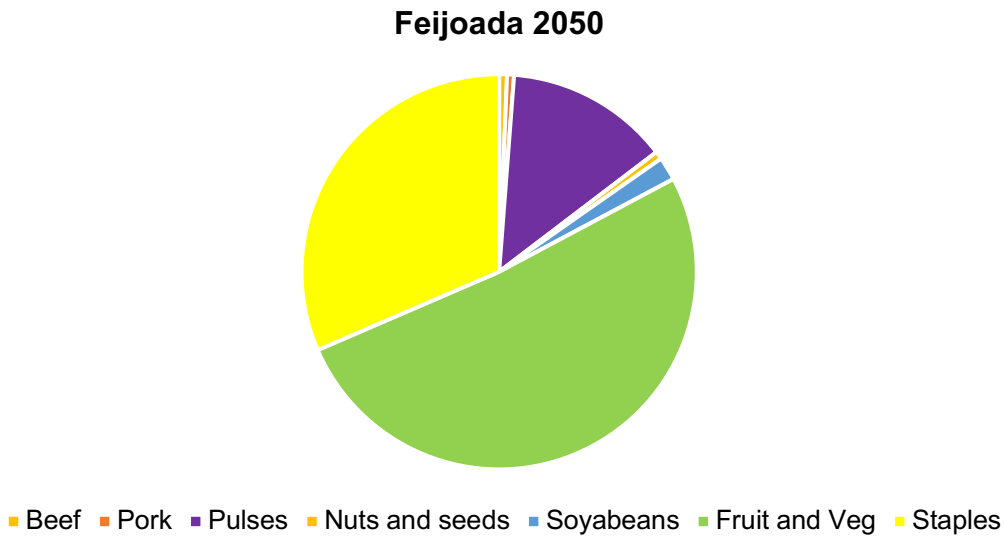
Recipe: Feijoada	Amount (g)	2030 Amount (g) calculated	2050 Amount (g) calculated
Beef	106	75	7
Pork	35	26	6
Pulses	41	76	151
Nuts and seeds	4	5	7
Fruit and Veg	476	517	577
Staples	406	391	354
Total	10744	1101	1124



Supplementary Figure 2a: Brazilian Feijoada 2020 protein food items based on national food consumption



Supplementary Figure 2b: Brazilian Feijoada 2030 protein food items based on national food consumption

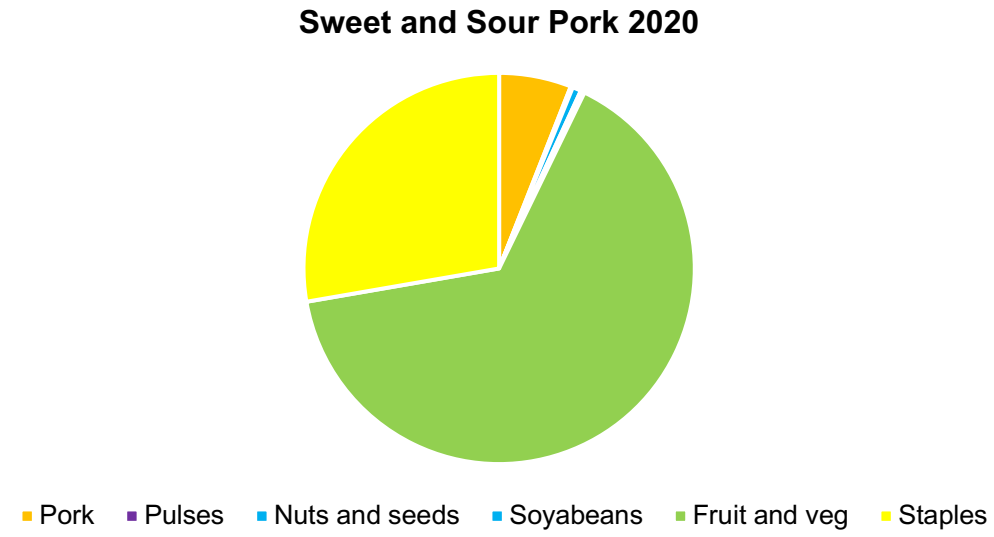


Supplementary Figure 2c: Brazilian Feijoada 2050 protein food items based on national food consumption

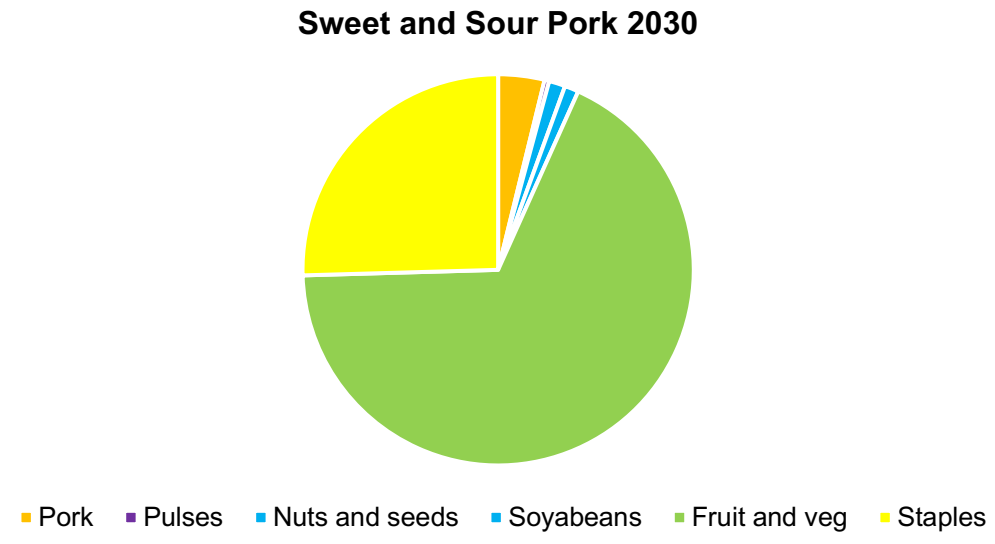
12.3. China

Supplementary Table 9: Chinese Sweet and Sour Pork ingredient changes 2020 to 2050 based on national food consumption (g/cap/day)

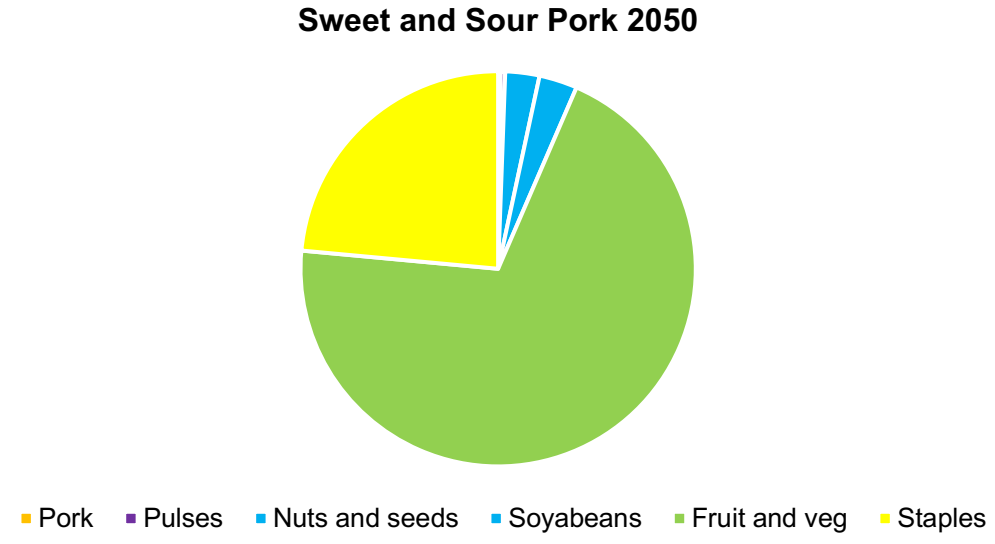
Recipe: Sweet and sour pork	Amount (g)	2030 Amount (g) calculated	2050 Amount (g) calculated
Pork	108	72	4
Pulses	3	7	7
Nuts and seeds	13	26	56
Soyabean curd	6	22	62
Fruit and veg	1175	1282	1391
Rice	501	481	468
Total	1805	1890	1987



Supplementary Figure 3a: Chinese sweet and sour pork 2020 protein food items based on national food consumption



Supplementary Figure 3b: Chinese sweet and sour pork 2030 protein food items based on national food consumption

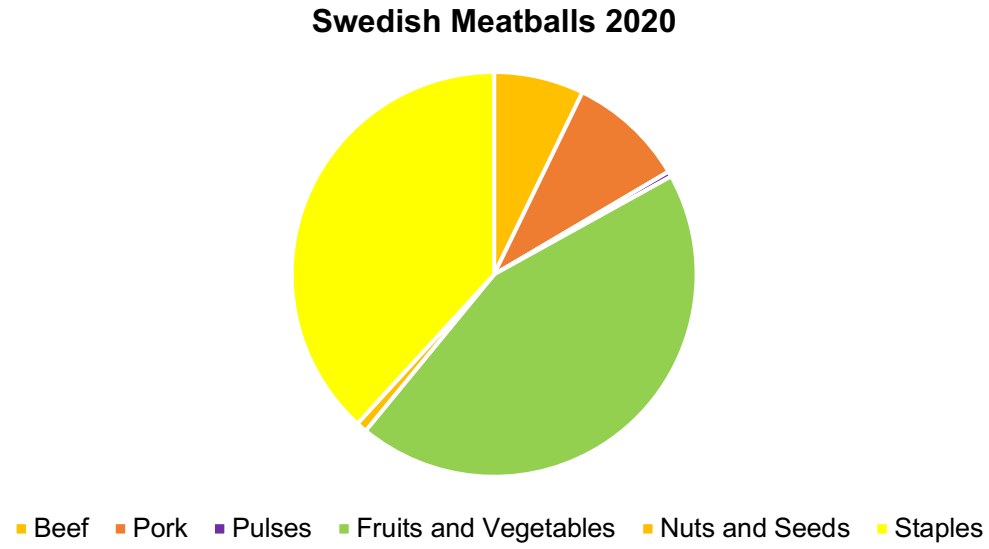


Supplementary Figure 3c: Chinese sweet and sour pork 2050 protein food items based on national food consumption

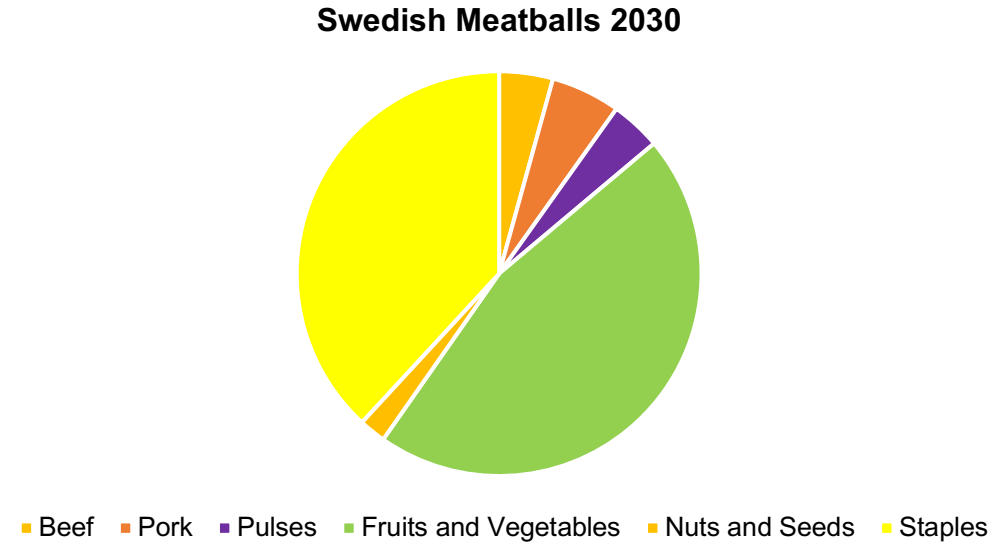
12.4. Sweden

Supplementary Table 10: Swedish meatballs (Köttbullar) ingredient changes 2020 to 2050 based on national food consumption (g/cap/day)

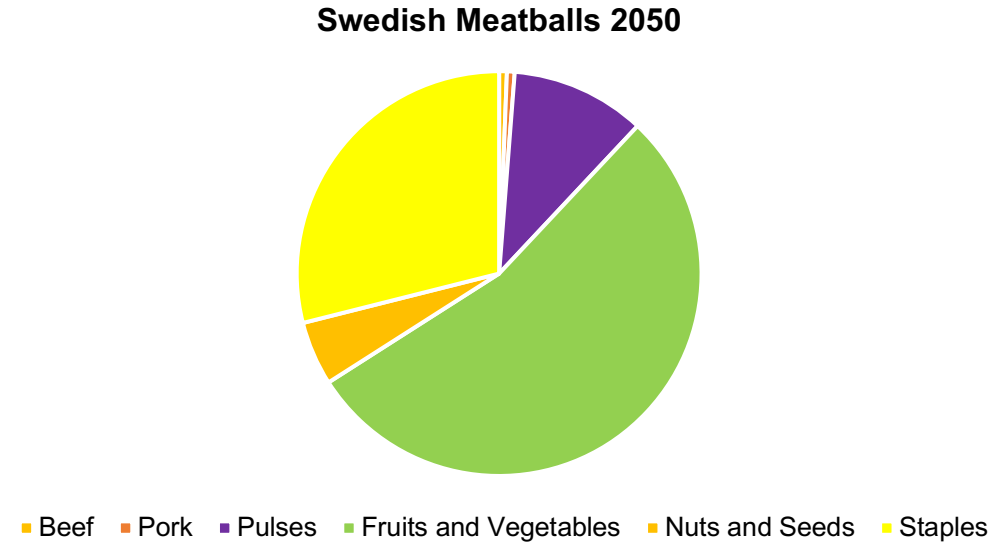
Recipe: Swedish meatballs	Amount (g)	2030 Amount (g) calculated	2050 Amount (g) calculated
Beef	67	48	7
Pork	87	62	7
Pulses	4	45	122
Fruits and Vegetables	410	512	612
Nuts and Seeds	8	24	58
Total	356	426	328



Supplementary Figure 4a: Swedish meatballs 2020 protein food items based on national food consumption



Supplementary Figure 4b: Swedish meatballs 2030 protein food items based on national food consumption

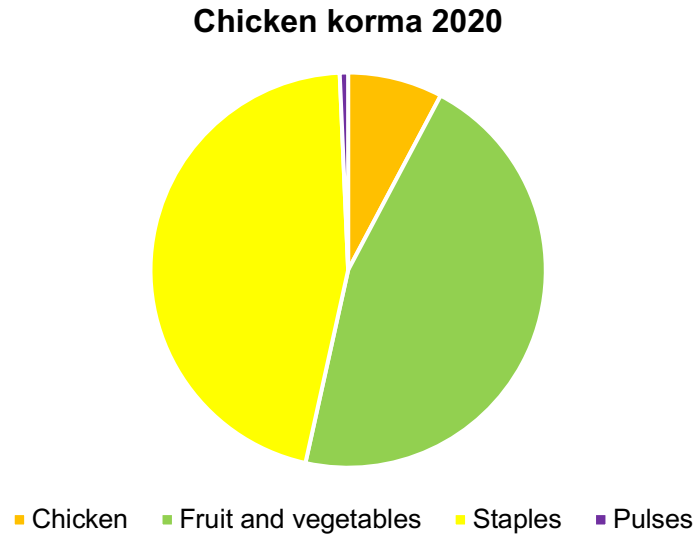


Supplementary Figure 4c: Swedish meatballs 2050 protein food items based on national food consumption

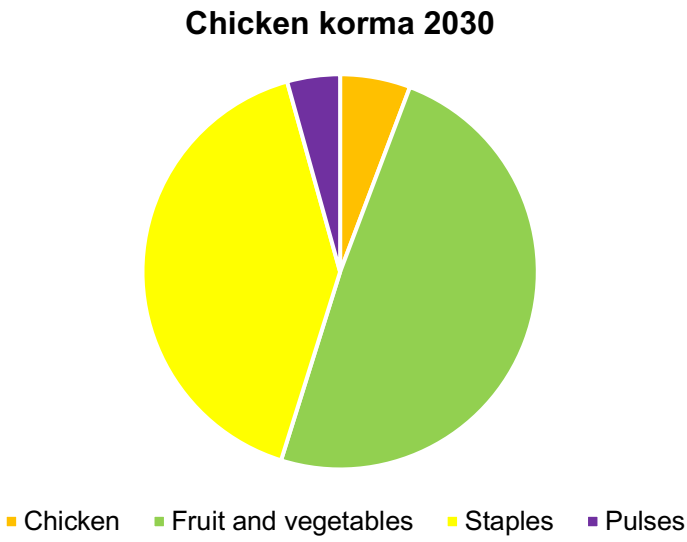
12.5. UK

Supplementary Table 3: UK Chicken korma ingredient changes 2020 to 2050 based on national food consumption (g/cap/day)

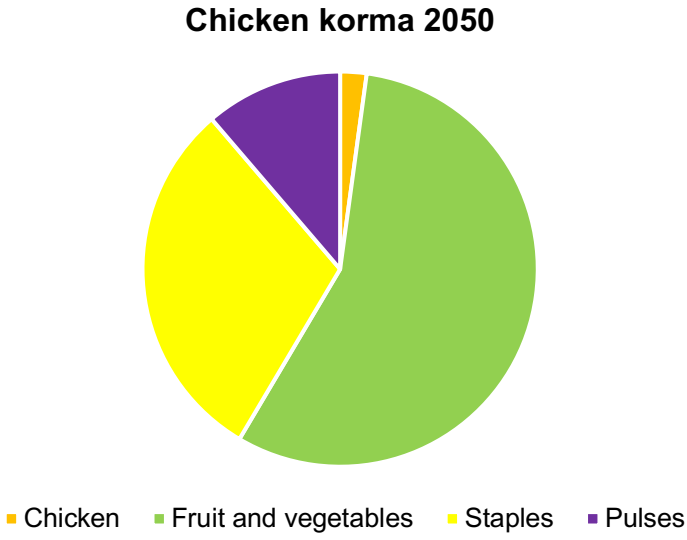
Recipe: Chicken Korma	Amount (g)	2030 Amount (g) calculated	2050 Amount (g) calculated
Chicken	76	60	23
Fruit and veg	450	512	612
Rice	452	426	328
Pulses	7	45	122
Total	979	997	1087



Supplementary Figure 5a: UK Chicken Korma 2020 protein food items based on national food consumption



Supplementary Figure 5b: UK Chicken Korma 2030 protein food items based on national food consumption



Supplementary Figure 5c: UK Chicken Korma 2050 protein food items based on national food consumption

13. Captions:

Supplementary data file S1: FAO 2019 WEU
Supplementary data file S2: FAO 2019 Sweden
Supplementary data file S3: FAO 2019 UK
Supplementary data file S4: IMAGE Brazil
Supplementary data file S5: IMAGE China
Supplementary data file S6: IMAGE Sweden
Supplementary data file S7: IMAGE UK

The FAO files contain g/cap/day data for all protein food items, and the 6 main food categories. In addition the UK and Sweden files contain the downscaling calculations from Western Europe (WEU).

The IMAGE files contain food consumption (g/cap/day) for all protein food items, and the 6 main food categories. In addition, they contain monthly servings calculations, change ratios for the period 2020 to 2050, three examples of mixed dish calculations for 2020, 2030, 2040 and 2050.

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