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MORE MONEY MORE MEAT – HIGH INCOME COUNTRIES MUST LEAD ON REDUCTION

Appendix document: Methodology and additional

data

Contents

Appendix I Methodology

Animal-sourced food consumption for meat (Bovine Meat; Mutton & Goat Meat; Pigmeat; Poultry Meat; Meat, Other), dairy (Butter, Ghee; Cream; Milk – excluding butter), eggs, and fish/seafood (Freshwater Fish; Demersal Fish; Pelagic Fish; Marine Fish, Other; Crustaceans; Cephalopods; Molluscs, Other; Aquatic Animals, Others) was estimated from the food availability data for 103 high- and middle-income countries from the FAO's food balance sheets (see Table 1 for the list of countries and income status) (1).

Table 1. Income Status for 2018 (according to the World Bank) for the high- and upper-middle-income Countries with food availability data in the FAO's Food Balance Sheets

Income Status	Country
High	Antigua and Barbuda; Australia; Austria; Bahamas; Barbados; Belgium; Canada; Chile; Croatia; Cyprus; Czechia; Denmark; Estonia; Finland; France; French Polynesia; Germany; Greece; Hungary; Iceland; Ireland; Israel; Italy; Japan; Kuwait; Latvia; Lithuania; Luxembourg; Malta; Netherlands; New Caledonia; New Zealand; Norway; Oman; Panama; Poland; Portugal; Republic of Korea; Saint Kitts and Nevis; Saudi Arabia; Seychelles; Slovakia; Slovenia; Spain; Sweden; Switzerland; Trinidad and Tobago; United Arab Emirates; United Kingdom of GB and NI; United States of America; Uruguay
Upper-middle	Albania; Algeria; Argentina; Armenia; Azerbaijan; Belarus; Belize; Bosnia and Herzegovina; Botswana; Brazil; Bulgaria; China; Colombia; Costa Rica; Cuba; Dominica; Dominican Republic; Ecuador; Fiji; Gabon; Georgia; Grenada; Guatemala; Guyana; Iran; Iraq; Jamaica; Jordan; Kazakhstan; Lebanon; Libya; Malaysia; Maldives; Mauritius; Mexico; Montenegro; Namibia; North Macedonia; Paraguay; Peru; Romania; Russian Federation; Saint Lucia; Saint Vincent and the Grenadines; Samoa; Serbia; South Africa; Sri Lanka; Suriname; Thailand; Türkiye; Turkmenistan; Venezuela

The food balance sheets represent the quantities of food reaching the consumer at the household level, but do not include food wasted. Food availability was adjusted for the amount of food wasted (including edible and inedible

parts) at the point of consumption, calculated based on the equations used by Springmann and colleagues for meat, dairy, fish & seafood and eggs (2). All calculations and descriptive statistics were done in R Version 4.2.1 (3).

Previously estimated food waste proportions (4) per country were halved according to SDG target 12.3 ("By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses"). Instead of accounting for individual country food waste, a global average was calculated, based on 176 countries in the FAO food balance sheets to reflect the need for high waste, high consumption country to reduce to a greater extent. Food waste percentages, edible food fractions, and processed fish & seafood percentages used to estimate the consumption of animal-sourced foods are shown in the appendix (Table 2).

Table 2. Food waste (4), edible fractions and processed fish & seafood percentages used to calculate the consumption of animal-sourced foods from the FAO's Food Balance Sheets (Table adapted from SI Table 7 in (2)). Caribbean countries were grouped with Latin America for food waste percentage.

Food group	Household food waste percentages							
	Europe	North America, Oceania	Industrial-ised Asia	Sub-Saharan Africa	North Africa, West & Central Asia	South & Southeast Asia	Latin America	World average ½ waste, %
Dairy	7	15	5	0.1	2	1	4	1.9425
Meat	11	11	8	2	8	4	6	3.3017
Eggs	8	15	5	1	12	2	4	2.9385
Fish & seafood – fresh	11	33	8	2	4	2	4	3.0279
Fish & seafood – processed	10	10	7	1	2	1	2	2.0000
Edible fraction conversion factors: beef = 0.715; lamb = 0.71; pork = 0.68; other meat = 0.7; fish % seafood = 0.5								
Processed fish & seafood percentages: 40% for low-income countries and 96% for all others								
Region	**Countries/region (for China)**							
Europe	Albania; Austria; Belarus; Belgium; Bosnia and Herzegovina; Bulgaria; Croatia; Cyprus; Czechia; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; Ireland; Italy; Latvia; Lithuania; Luxembourg; Malta; Montenegro; Netherlands; North Macedonia; Norway; Poland; Portugal; Republic of Moldova; Romania; Russian Federation; Serbia; Slovakia; Slovenia; Spain; Sweden; Switzerland; Ukraine; UK							
North America, Oceania	Canada; United States of America; Australia; Fiji; French Polynesia; Kiribati; New Caledonia; New Zealand; Papua New Guinea; Samoa; Solomon Islands; Vanuatu							
Industrialised Asia	China; Japan; Republic of Korea							

Sub-Saharan Africa	Angola; Benin; Botswana; Burkina Faso; Burundi; Cabo Verde; Cameroon; Central African Republic; Chad; Comoros; Congo; Côte d'Ivoire; Democratic Republic of the Congo; Djibouti; Eswatini; Ethiopia; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Kenya; Lesotho; Liberia; Madagascar; Malawi; Mali; Mauritania; Mauritius; Mozambique; Namibia; Niger; Nigeria; Rwanda; Sao Tome and Principe; Senegal; Seychelles; Sierra Leone; South Africa; Togo; Uganda; United Republic of Tanzania; Zambia; Zimbabwe
North Africa, West & Central Asia	Algeria; Armenia; Azerbaijan; Egypt; Georgia; Iraq; Israel; Jordan; Kazakhstan; Kuwait; Kyrgyzstan; Lebanon; Libya; Morocco; Oman; Saudi Arabia; Sudan; Syrian Arab Republic; Tajikistan; Tunisia; Türkiye; Turkmenistan; United Arab Emirates; Uzbekistan; Yemen
South & Southeast Asia	Afghanistan; Bangladesh; Cambodia; Democratic People's Republic of Korea; India; Indonesia; Iran; Lao People's Democratic Republic; Malaysia; Maldives; Mongolia; Myanmar; Nepal; Pakistan; Philippines; Sri Lanka; Thailand; Timor-Leste; Viet Nam
Latin America and the Caribbean	Antigua & Barbuda; Argentina; Bahamas; Barbados; Belize; Bolivia; Brazil; Chile; Colombia; Costa Rica; Cuba; Dominica; Dominican Republic; Ecuador; El Salvador; Grenada; Guatemala; Guyana; Haiti; Honduras; Jamaica; Mexico; Nicaragua; Panama; Paraguay; Peru; St. Kitts & Nevis; St. Lucia; St. Vincent & the Grenadines; Suriname; Trinidad & Tobago; Uruguay; Venezuela

To calculate targets for reduction (%), the EAT-Lancet planetary health diet targets for diary (250g/day), meat (43g/day), eggs (13g/day), and fish/seafood (28g/day) were subtracted from the actual consumption, divided by the actual consumption and multiplied by 100. Countries were ordered by the level of reduction needed across the categories of animal-sourced foods (dairy, meat, eggs, fish & seafood) and the percentage of calories from animal products. This was done by scoring all reduction targets for calories from animal products, then diary, meat, eggs and fish & seafood, giving a score or 4 for a reduction of over 50%, 3 for a 25-49% reduction, 2 for a 11-24% reduction, one for ±10% of the target and 0 for 10 % or move below the target. This gave a score of up to 20. Then reductions target percentages were then added up for dairy, meat, eggs and fish & seafood to allow the data to be ordered more accurately for countries with the same score. The countries were then ordered by score, then reduction target total from largest to smallest. High- and Upper-middle income countries data in order are shown in the appendix II.

Appendix II Full list of data for the 103 high- and upper-middle income countries

Table 3. Consumption of animal-sourced foods for 103 high- and upper-middle income countries in order from highest to lowest across the categories for meat, dairy, fish and seafood, and eggs

| Area | Consumption in grams per person per day and % reduction needed to meet the EAT-Lancet Planetary Health Diet | | | | Percentage of calories from Animal Products in the diet | Percentage reduction to meet the EAT-Lancet target of 12% |
	Meat	Dairy	Seafood	Eggs		
1. Iceland	170.29g; 75%	595.02g; 58%	123.22g; 77%	30.74g; 58%	45	73
2. Finland	138.92g; 69%	967.42g; 74%	45.03g; 38%	28.74g; 55%	40	70
3. Spain	191.90g; 78%	434.08g; 42%	56.95g; 51%	37.34g; 65%	26	54
4. Norway	127.99g; 66%	479.54g; 48%	68.40g; 59%	31.76g; 59%	33	64
5. Portugal	173.90g; 75%	395.27g; 37%	76.52g; 63%	27.35g; 52%	30	60
6. Sweden	133.01g; 68%	522.58g; 52%	43.75g; 36%	37.50g; 65%	33	64
7. France	146.67g; 71%	517.96g; 52%	45.16g; 38%	31.41g; 59%	32	62
8. Italy	140.70g; 69%	529.15g; 53%	39.98g; 30%	30.71g; 58%	24	50
9. Denmark	144.39g; 70%	671.48g; 63%	35.73g; 22%	40.62g; 68%	37	68
10. Latvia	127.77g; 66%	520.54g; 52%	32.84g; 15%	34.17g; 62%	30	60
11. USA	233.25g; 82%	622.50g; 60%	29.88g; 6%	42.97g; 70%	28	58
12. Netherlands	107.92g; 60%	807.00g; 69%	29.46g; 5%	50.91g; 74%	34	64

13. Israel	194.15g; 78%	471.46g; 47%	34.25g; 18%	33.52g; 61%	24	50
14. Australia	214.75g; 80%	600.05g; 58%	35.49g; 21%	22.00g; 41%	32	63
15. Luxembourg	149.00g; 71%	316.53g; 21%	42.41g; 34%	43.82g; 70%	34	65
16. Lithuania	152.80g; 72%	316.78g; 21%	43.08g; 35%	37.32g; 65%	29	58
17. New Zealand	167.55g; 74%	371.69g; 33%	33.23g; 16%	29.33g; 56%	29	59
18. Malta	139.03g; 69%	285.27g; 12%	43.77g; 36%	32.21g; 60%	28	57
19. Canada	171.38g; 75%	461.17g; 46%	29.57g; 5%	39.84g; 67%	26	54
20. Ireland	148.74g; 71%	760.00g; 67%	31.03g; 10%	23.38g; 44%	29	58
21. UK	148.53g; 71%	566.74g; 56%	24.96g; +12%	29.96g; 57%	29	59
22. Greece	141.98g; 70%	634.88g; 61%	26.22g; +7%	24.31g; 47%	24	51
23. Russia	141.14g; 70%	385.31g; 35%	26.95g; +4%	43.62g; 70%	25	53
24. Switzerland	127.13g; 66%	783.73g; 68%	22.60g; +24%	26.99g; 52%	33	64
25. Estonia	122.93g; 65%	769.50g; 68%	19.71g; +42%	34.12g; 62%	35	65
26. Montenegro	141.99g; 70%	959.96g; 74%	18.91g; +48%	28.50g; 54%	35	66
27. Austria	155.10g; 72%	525.93g; 52%	18.78g; +49%	38.12g; 66%	32	62
28. Uruguay	102.23g; 58%	496.82g; 50%	12.34g; +127%	32.04g; 59%	26	53
29. Romania	124.12g; 65%	627.40g; 60%	11.00g; +155%	35.88g; 64%	26	55
30. Armenia	97.11g; 56%	587.48g; 57%	7.80g; +259%	30.91g; 58%	28	58
31. Belgium	106.01g; 59%	479.16g; 48%	30.74g; 9%	25.54g; 49%	32	62
32. Croatia	148.93g; 71%	594.42g; 58%	25.32g; +11%	21.26g; 39%	30	60
33. Germany	145.82g; 71%	492.88g; 49%	17.03g; +64%	33.69g; 61%	30	60
34. Japan	92.78g; 54%	129.08g; +94%	61.64g; 55%	52.63g; 75%	21	43
35. Slovenia	130.56g; 67%	416.77g; 40%	16.05g; +74%	26.08g; 50%	26	54
36. Slovakia	105.64g; 59%	469.80g; 47%	13.00g; +115%	33.96g; 62%	31	61
37. French Polynesia	169.65g; 75%	112.86g; +122%	63.34g; 56%	20.62g; 37%	29	58
38. Albania	75.91g; 43%	855.39g; 71%	11.59g; +142%	40.48g; 68%	31	61
39. Brazil	187.37g; 77%	378.07g; 34%	12.10g; +131%	30.99g; 58%	27	55
40. Argentina	210.13g; 80%	442.56g; 44%	9.71g; +188%	42.33g; 69%	31	62
41. Hungary	152.23g; 72%	468.20g; 47%	8.49g; +230%	36.93g; 65%	33	63

42. Barbados	134.59g; 68%	68.79g; +263%	57.66g; 51%	25.01g; 48%	24	50
43. Kazakhstan	123.65g; 65%	729.07g; 66%	3.80g; +636%	22.45g; 42%	27	56
44. Republic of Korea	141.00g; 70%	30.93g; +708%	76.65g; 63%	33.02g; 61%	20	39
45. Malaysia	100.58g; 57%	15.62g; +1501%	76.58g; 63%	49.03g; 73%	18	32
46. Costa Rica	96.93g; 56%	414.21g; 40%	24.54g; +14%	29.89g; 57%	23	48
47. Cyprus	141.35g; 70%	288.93g; 13%	33.22g; 16%	21.11g; 38%	23	47
48. Poland	159.99g; 73%	492.27g; 49%	16.68g; +68%	19.77g; 34%	29	58
49. Czechia	149.40g; 71%	409.68g; 39%	12.48g; +124%	23.68g; 45%	28	57
50. Bulgaria	108.53g; 60%	377.48g; 34%	9.74g; +188%	22.07g; 41%	24	51
51. Serbia	106.05g; 59%	432.28g; 42%	8.32g; +237%	25.41g; 49%	28	57
52. Grenada	110.67g; 61%	77.03g; +225%	36.24g; 23%	27.21g; 52%	24	50
53. China	115.61g; 63%	61.66g; +305%	51.89g; 46%	53.24g; 76%	23	47
54. Peru	95.13g; 55%	148.21g; +69%	33.08g; 15%	27.57g; 53%	16	26
55. Chile	160.17g; 73%	237.36g; +5%	15.89g; +76%	26.45g; 51%	26	53
56. New Caledonia	139.09g; 69%	90.88g; +175%	32.02g; 13%	21.87g; 41%	26	55
57. Colombia	112.61g; 62%	296.02g; 16%	9.34g; +200%	35.45g; 63%	19	35
58. Seychelles	121.44g; 65%	74.26g; +237%	77.22g; 64%	16.29g; 20%	20	41
59. Maldives	42.62g; +1%	70.57g; +254%	117.26g; 76%	37.82g; 66%	25	52
60. Bahamas	165.86g; 74%	75.18g; +233%	33.14g; 15%	17.99g; 28%	29	59
61. Turkmenistan	97.82g; 56%	338.03g; 26%	3.87g; +623%	18.33g; 29%	23	47
62. Fiji	96.87g; 56%	31.57g; +692%	40.38g; 31%	18.38g; 29%	18	33
63. Oman	82.91g; 48%	255.11g; 2%	37.07g; 24%	23.28g; 44%	20	41
64. Mexico	128.57g; 67%	247.27g; +1%	19.48g; +44%	53.26g; 76%	22	45
65. Belarus	149.04g; 71%	217.65g; +15%	15.89g; +76%	35.88g; 64%	25	53
66. Georgia	63.21g; 32%	386.38g; 35%	11.94g; +134%	24.58g; 47%	19	38
67. Dominican Republic	99.50g; 57%	228.22g; +10%	11.25g; +149%	29.02g; 55%	17	28
68. United Arab Emirates	86.19g; 50%	84.47g; +196%	34.96g; 20%	18.34g; 29%	16	27
69. Bosnia and Herzegovina	75.66g; 43%	521.31g; 52%	7.78g; +260%	14.84g; 12%	18	35
70. Türkiye	74.54g; 42%	472.30g; 47%	6.49g; +331%	23.82g; 45%	16	25

71. Mauritius	100.90g; 57%	55.49g; +351%	32.31g; 13%	17.35g; 25%	16	25
72. Samoa	181.35g; 76%	80.16g; +212%	64.71g; 57%	4.50g; +189%	26	54
73. Azerbaijan	65.60g; 34%	408.45g; 39%	4.25g; +559%	22.55g; 42%	18	34
74. Kuwait	131.53g; 67%	115.65g; +116%	19.39g; +44%	42.10g; 69%	19	36
75. Ecuador	89.39g; 52%	291.18g; 14%	11.40g; +146%	15.67g; 17%	21	44
76. Saint Lucia	152.37g; 72%	83.17g; +201%	45.52g; 38%	10.47g; +24%	29	59
77. Saint Kitts and Nevis	146.71g; 71%	95.15g; +163%	52.99g; 47%	6.59g; +97%	29	58
78. Dominica	115.30g; 63%	208.28g; +20%	37.55g; 25%	9.14g; +42%	23	47
79. North Macedonia	69.95g; 39%	361.02g; 31%	8.33g; +236%	12.89g; +1%	19	37
80. Thailand	51.10g; 16%	41.74g; +499%	39.50g; 29%	31.98g; 59%	13	10
81. Libya	77.13g; 44%	137.40g; +82%	19.69g; +42%	25.76g; 50%	14	13
82. Jamaica	115.76g; 63%	194.26g; +29%	34.08g; 18%	7.12g; +83%	19	37
83. Panama	149.25g; 71%	118.89g; +110%	18.97g; +48%	17.11g; 24%	23	47
84. Saudi Arabia	92.27g; 53%	123.31g; +103%	14.94g; +87%	20.71g; 37%	14	13
85. St. Vincent & the Grenadines	178.45g; 76%	75.78g; +230%	26.22g; +7%	13.38g; 3%	21	43
86. Trinidad & Tobago	143.92g; 70%	78.87g; +217%	31.88g; 12%	10.08g; +29%	21	42
87. Cuba	111.58g; 61%	222.57g; +12%	7.64g; +267%	24.59g; 47%	16	24
88. Guyana	89.55g; 52%	190.80g; +31%	33.83g; 17%	3.51g; +270%	17	30
89. South Africa	118.59g; 64%	123.99g; +102%	8.53g; +228%	16.66g; 22%	16	25
90. Paraguay	77.09g; 44%	119.20g; +110%	5.52g; +408%	48.58g; 73%	14	14
91. Gabon	115.88g; 63%	24.82g; +907%	40.47g; 31%	2.53g; +415%	14	16
92. Belize	89.36g; 52%	69.91g; +258%	18.47g; +52%	12.71g; +2%	21	43
93. Suriname	103.44g; 58%	31.59g; +691%	22.57g; +24%	16.31g; 20%	14	15
94. Guatemala	66.42g; 35%	90.97g; +175%	4.13g; +577%	39.95g; 67%	11	+7
95. Iran	71.96g; 40%	64.47g; +288%	15.56g; +80%	21.47g; 39%	11	+5
96. Venezuela	65.35g; 34%	236.47g; +6%	13.39g; +109%	13.95g; 7%	13	8
97. Jordan	68.30g; 37%	122.76g; +104%	7.05g; +297%	12.09g; +8%	13	10
98. Botswana	47.18g; 9%	292.78g; 15%	3.82g; +634%	3.48g; +273%	15	18
99. Lebanon	56.83g; 24%	194.33g; +29%	11.67g; +140%	12.34g; +5%	12	1

100. Namibia	59.25g; 27%	143.64g; +74%	16.52g; +70%	3.03g; +329%	13	5
101. Algeria	36.90g; +17%	199.85g; 25%	5.07g; +452%	18.20g; 29%	11	+5
102. Iraq	28.69g; +50%	77.89g; +221%	5.14g; +444%	29.08g; 55%	8	+46
103. Sri Lanka	19.48g; +121%	40.62g; +515%	40.51g; 31%	11.61g; +12%	8	+60

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