

## Appendix A. Tables on nutrition requirements, food composition, and emission factors

Table A1. Recommended Dietary Allowance (RDA) for India (per day). Data source: Nutrient requirements and recommended daily allowances for Indians. Report of the Expert Group of the Indian Council on Medical Research, 2009.

Group	Calorie (kcal)	Protein (g)	Vitamin A (µg)	Zinc (mg)	Iron (mg)	Consumption unit
female_adult	2065	55	600	10	21	0.8
male_adult	2525	60	600	12	17	1.2
female_child	1813	40	600	9	23	0.67
male_child	2010	43	600	9	23	0.67

Table A2. Indian states in each region

Region	States
E	Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim, Tripura, West Bengal
N	Bihar, Chandigarh, Chhattisgarh, Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Madhya Pradesh, Punjab, Uttar Pradesh, Uttarakhand
S	Andaman and Nicobar, Andhra Pradesh, Karnataka, Kerala, Lakshadweep, Puducherry, Tamil Nadu
W	Dadra and Nagar Haveli, Daman and Diu, Goa, Gujarat, Maharashtra, Rajasthan

Table A3. Shannon's diversity index for cereal consumption by population group (region/income). Calculated as  $S = -\sum_{i=1}^F p_i \ln p_i$  where  $p_i$  is the average calorie share for each of the  $F$  cereals. Higher number implies more diversity.

Region	Income Group	Urban/Rural	Shannon's Index
E	1	R	0.271
E	1	U	0.545
E	2	R	0.428
E	2	U	0.720
E	3	R	0.565
E	3	U	0.846
E	4	R	0.694
E	4	U	1.062
N	1	R	0.967
N	1	U	0.885
N	2	R	0.967
N	2	U	0.917
N	3	R	0.971
N	3	U	0.943
N	4	R	0.961
N	4	U	1.000
S	1	R	0.669
S	1	U	0.838
S	2	R	0.870
S	2	U	0.718
S	3	R	0.705
S	3	U	0.748
S	4	R	0.768
S	4	U	0.930
W	1	R	1.390
W	1	U	1.104
W	2	R	1.416
W	2	U	1.215
W	3	R	1.352
W	3	U	1.190
W	4	R	1.331
W	4	U	1.241

Table A4. Nutrition and emission information per edible kg of food item. Emission factors derived from Gerber et al. (2013), Ministry of Agriculture & Farmers Welfare (2016), and Indian input data survey. Nutritional content information is compiled from the Indian food composition tables, 2017, developed by the National Institute of Nutrition. Edible portions is from the Bangladesh Food Composition tables (Institute of Nutrition and Food Science 2013).

Item	Group	Calorie (kcal/kg)	Protein (g/kg)	Iron (mg/kg)	Zinc (mg/kg)	Vitamin A (µg/kg)	Emi. factor (kgCO <sub>2</sub> e/kg)	%kg Edible
Apple	FV	624	2.9	2.6	0.9	0	0.076	90%
Banana	FV	1160	12.0	3.6	1.5	195	0.021	74%
Beans, barbati	FV	260	17.0	6.1	4.2	330	0.014	100%
Brinjal	FV	240	14.0	3.8	2.2	185	0.002	94%
Cabbage	FV	270	18.0	8.0	4.0	300	0.002	88%
Carrot	FV	332	9.5	6.0	2.5	4725	0.012	83%
Cauliflower	FV	229	21.5	9.6	3.1	75	0.005	45%
Coconut	FV	4089	38.4	13.0	5.8	0	0.365	78%
Coconut, copra	FV	6240	72.7	31.3	14.1	0	1.677	100%
Dates	FV	2861	11.8	8.9	4.2	65	0.102	75%
Dhania	FV	311	35.2	53.0	6.8	17295	0.040	70%
Fruit juice and shake	FV	450	0.0	2.0	1.0	0	0.056	100%
Gourd, pumpkin	FV	250	14.0	4.4	1.0	125	0.005	80%
Grapes	FV	580	6.0	5.0	0.7	0	0.050	95%
Guava	FV	466	11.9	4.0	1.2	0	0.011	100%
Jackfruit	FV	722	27.4	3.6	1.7	438	0.024	81%
Kharbooza	FV	170	3.0	14.0	0.0	423	0.001	90%
Ladys finger	FV	275	20.8	8.4	4.5	130	0.004	100%
Leechi	FV	538	9.9	7.9	2.4	0	0.028	68%
Lemon	FV	570	10.0	2.6	0.7	0	0.060	76%
Mango	FV	418	5.4	5.1	1.2	6858	0.015	69%
Orange, mausami	FV	373	7.0	8.1	0.4	2760	0.009	67%
Other dry fruits	FV	1270	9.1	10.2	1.9	0	0.085	90%
Other vegetables	FV	280	17.0	14.0	0.6	210	0.033	70%
Palak/other leafy vegetables	FV	244	21.4	29.5	4.6	13950	0.040	70%
Papaya	FV	239	4.2	2.3	0.8	1665	0.003	75%
Pears/nashpati	FV	375	3.6	2.8	0.7	70	0.000	85%
Pineapple	FV	430	5.2	2.8	1.0	0	0.003	60%
Radish	FV	323	7.7	3.6	2.2	8	0.022	99%
Raisin, kishmish, monacca, etc	FV	2966	27.6	42.6	2.5	0	0.188	100%
Tomato	FV	200	9.0	3.0	1.2	878	0.007	100%
Watermelon	FV	203	6.0	2.2	1.0	0	0.077	78%
Beef/buffalo meat	MF	1140	226.0	8.0	0.0	180	75.556	100%
Chicken	MF	1683	207.5	8.3	18.5	0	3.333	75%
Fish, prawn	MF	1000	181.0	17.0	11.0	300	1.507	75%

Goat meat/mutton	MF	1180	214.0	28.0	41.0	0	42.857	70%
Other meat, birds, crab, oyster, tortoise, etc	MF	1129	203.0	16.5	19.2	96	3.214	70%
Pork	MF	1140	187.0	22.0	25.7	0	3.222	100%
Curd	MP	600	31.0	2.0	5.9	305	4.500	100%
Milk, condensed/powder	MP	4960	258.0	6.0	37.1	4200	45.000	100%
Milk, liquid	MP	729	32.6	1.5	3.0	500	4.500	100%
Beer	OTH	290	2.5	0.0	0.0	0	0.004	100%
Black pepper	OTH	2175	101.2	119.1	12.4	2700	0.194	100%
Butter	OTH	7290	0.0	0.0	0.9	9600	90.000	100%
Candy, misri	OTH	3440	51.0	21.0	8.7	0	0.148	100%
Coconut oil	OTH	9000	0.0	0.0	0.0	0	2.375	100%
Coffee, powder	OTH	3510	116.0	38.0	1.1	0	8.787	10%
Cold beverages, bottled/canned	OTH	370	0.0	0.0	0.0	0	0.004	100%
Curry powder	OTH	3250	142.9	191.0	47.0	0	0.194	100%
Dry chillies	OTH	2460	159.0	23.0	24.8	863	0.303	94%
Foreign/refined liquor or wine	OTH	380	1.0	4.0	1.0	0	0.004	100%
Garlic	OTH	1450	63.0	12.0	10.8	0	0.026	84%
Ghee	OTH	9000	0.0	0.0	0.3	4350	90.000	100%
Ginger	OTH	550	22.2	19.0	3.9	100	0.036	86%
Green chillies	OTH	423	23.6	12.0	2.7	438	0.403	91%
Groundnut oil	OTH	9000	0.0	0.0	0.0	0	0.264	100%
Gur	OTH	3830	4.0	26.4	0.0	0	0.148	100%
Honey	OTH	3190	3.0	7.0	2.0	0	0.148	100%
Jeera	OTH	3560	187.0	117.0	38.9	1305	0.194	100%
Khesari	OTH	3450	282.0	63.0	30.0	300	0.541	100%
Mustard oil	OTH	9000	0.0	0.0	0.0	0	2.402	100%
Onion	OTH	480	15.0	4.3	3.5	0	0.014	87%
Other edible oil	OTH	9000	0.0	0.0	0.0	0	2.402	100%
Pan, leaf	OTH	440	31.0	106.0	0.0	4350	0.307	100%
Refined oil	OTH	9000	0.0	0.0	0.0	0	2.402	100%
Salt	OTH	0	0.0	0.0	0.0	0	0.194	100%
Sauce, jam, jelly	OTH	2610	0.0	10.0	2.0	0	0.075	100%
Singara	OTH	970	16.0	4.8	5.3	0	0.036	100%
Sugar, non-PDS	OTH	3980	1.0	1.6	0.0	0	0.148	100%
Sugar, PDS	OTH	3980	1.0	1.6	0.0	0	0.148	100%
Tamarind	OTH	2830	31.0	170.0	3.0	150	0.091	41%
Tea, leaf	OTH	10	0.0	0.0	0.0	0	0.484	10%
Toddy	OTH	241	1.8	4.2	0.1	0	0.004	100%
Turmeric	OTH	2806	76.6	460.8	26.4	75	0.194	100%
Vanaspati, margarine	OTH	9000	0.0	0.0	0.3	4350	0.720	100%
Arhar, tur	PRTN	3350	223.0	27.0	9.0	330	0.601	100%

Besan	PRTN	3600	171.0	46.0	61.0	473	0.282	100%
Cashewnut	PRTN	5827	187.8	59.5	53.4	150	0.433	100%
Eggs	PRTN	1348	132.8	18.2	12.3	4200	1.839	87%
Gram products	PRTN	3340	240.0	44.0	30.0	235	0.282	100%
Gram, split	PRTN	3340	240.0	44.0	30.0	235	0.282	100%
Gram, whole	PRTN	3340	240.0	44.0	30.0	235	0.282	100%
Groundnut	PRTN	5201	236.5	34.4	31.8	93	0.163	73%
Masur	PRTN	3430	251.0	75.8	38.9	675	0.541	100%
Moong	PRTN	3340	240.0	44.0	30.0	235	0.541	100%
Oilseeds	PRTN	6200	198.0	50.0	50.0	0	11.265	70%
Other nuts	PRTN	6000	191.0	80.0	30.0	170	0.186	70%
Other pulse products	PRTN	3300	232.0	74.0	30.0	80	0.362	100%
Other pulses	PRTN	3340	240.0	44.0	30.0	235	0.362	100%
Papad, bhujia, namkeen, mixture, chanachur	PRTN	3340	240.0	44.0	30.0	235	0.541	100%
Peas, pulse	PRTN	3033	204.3	50.9	31.0	235	0.362	100%
Peas, vegetable	PRTN	813	72.5	15.8	10.9	208	0.005	91%
Urd	PRTN	3470	240.0	38.0	30.0	95	0.541	100%
Walnut	PRTN	6714	149.2	32.1	29.4	15	0.022	45%
Baby food	SS-C	3480	110.0	27.0	6.0	63	9.000	100%
Bajra and its products	SS-C	3480	109.6	64.2	27.6	330	0.156	100%
Barley and its products	SS-C	3157	109.4	15.6	15.0	25	0.048	100%
Bread	SS-C	2440	78.0	22.0	0.0	0	0.309	100%
Cereal substitutes, tapioca, etc	SS-C	3480	110.0	27.0	6.0	63	0.221	100%
Jowar and its products	SS-C	3341	99.7	39.5	19.6	118	0.347	100%
Maida	SS-C	3480	110.0	27.0	6.0	63	0.309	100%
Maize and its products	SS-C	3341	88.0	24.9	22.7	80	0.210	100%
Other cereals	SS-C	3290	102.0	97.0	0.0	20	0.276	100%
Other rice products	SS-C	3450	68.0	7.0	14.0	80	1.752	100%
Other wheat products	SS-C	2440	88.0	22.0	0.0	0	0.309	100%
Potato	SS-C	698	15.4	5.7	2.8	60	0.021	84%
Ragi and its products	SS-C	3207	71.6	46.2	25.3	105	0.156	100%
Rice, non-PDS	SS-C	3564	79.4	6.5	12.1	80	1.752	100%
Rice, PDS	SS-C	3564	79.4	6.5	12.1	80	1.752	100%
Sewai, noodles	SS-C	3564	79.4	6.5	12.1	80	0.309	100%
Small millets and their products	SS-C	3610	116.0	80.0	31.0	330	0.156	100%
Suji, rawa	SS-C	3460	118.0	53.0	22.0	0	0.309	100%
Wheat/atta, non-PDS	SS-C	3203	105.7	41.0	28.5	73	0.290	100%
Wheat/atta, PDS	SS-C	3203	105.7	41.0	28.5	73	0.290	100%

FV: fruits & vegetables; MF: meat & fish; MP: milk products; PRTN: other protein sources (lentils, pulses, nuts); SS-C: cereals, starches and roots; OTH: other (incl. oils, sugar, snacks, beverages, spices, etc.).

Table A5. Total GHG emissions and calorie shares of each food group by population group (region/income)

Region	Income Group	Urban/Rural	FV	MF	MP	OTH	PRTN	SS-C	kgCO2e/cap
E	1	R	1.7%	0.8%	0.7%	7.2%	2.5%	87.1%	142
E	1	U	1.4%	0.7%	0.5%	9.1%	3.0%	85.2%	114
E	2	R	1.9%	1.1%	1.5%	10.8%	3.3%	81.5%	219
E	2	U	1.7%	1.3%	1.4%	12.1%	3.7%	79.9%	198
E	3	R	2.3%	1.7%	2.4%	12.8%	3.8%	76.9%	366
E	3	U	2.4%	2.0%	3.0%	15.2%	4.6%	72.9%	390
E	4	R	3.0%	2.4%	3.8%	15.3%	4.8%	70.7%	622
E	4	U	3.9%	3.1%	5.2%	19.8%	5.9%	62.1%	700
N	1	R	1.1%	0.2%	4.0%	12.9%	4.5%	77.2%	231
N	1	U	1.3%	0.3%	3.1%	14.7%	4.9%	75.7%	211
N	2	R	1.5%	0.4%	5.7%	15.6%	5.1%	71.8%	365
N	2	U	1.7%	0.5%	5.5%	18.4%	5.7%	68.1%	391
N	3	R	1.9%	0.5%	9.1%	18.9%	5.7%	63.8%	665
N	3	U	2.4%	0.6%	9.1%	21.9%	6.4%	59.6%	681
N	4	R	2.7%	0.5%	13.1%	23.1%	6.9%	53.6%	1139
N	4	U	3.6%	0.6%	13.5%	25.3%	8.0%	48.9%	1218
S	1	R	3.5%	0.6%	2.0%	12.2%	4.1%	77.5%	166
S	1	U	5.6%	0.7%	2.6%	16.7%	5.0%	69.4%	182
S	2	R	5.3%	0.8%	3.3%	16.2%	5.5%	68.7%	266
S	2	U	7.4%	1.2%	3.9%	17.0%	5.9%	64.6%	308
S	3	R	7.4%	1.3%	4.4%	16.7%	6.2%	64.0%	398
S	3	U	8.8%	1.6%	5.6%	18.2%	7.0%	58.8%	485
S	4	R	12.2%	2.4%	5.8%	17.4%	7.1%	55.0%	717
S	4	U	11.0%	2.2%	7.8%	19.4%	8.3%	51.3%	817
W	1	R	0.9%	0.2%	4.4%	15.7%	4.4%	74.4%	236
W	1	U	2.1%	0.2%	4.9%	20.1%	5.1%	67.6%	274
W	2	R	1.8%	0.3%	6.7%	21.3%	5.7%	64.2%	400
W	2	U	2.5%	0.5%	5.6%	24.9%	6.7%	59.9%	407
W	3	R	2.8%	0.4%	7.4%	24.3%	7.1%	58.0%	539
W	3	U	4.1%	0.7%	7.9%	27.0%	7.7%	52.7%	626
W	4	R	4.4%	0.6%	8.9%	27.3%	8.3%	50.5%	830
W	4	U	6.0%	0.9%	10.6%	28.5%	9.0%	45.1%	985

FV: fruits & vegetables; MF: meat & fish; MP: milk products; PRTN: other protein sources (lentils, pulses, nuts); SS-C: cereals, starches and roots; OTH: other (incl. oils, sugar, snacks, beverages, spices, etc.).