

SUPPLEMENTARY MATERIALS

Table S1 – Country-specific cumulative per capita CO₂ emissions from 2011-2050 and the modeled increased prevalence of zinc and protein deficiency resulting from elevated atmospheric CO₂ concentrations.

Country	Cumulative Per Capita CO ₂ (2011-2050) (MtCO ₂)	% Increase in Prevalence of Zinc Deficiency [14]	% Increase in Prevalence of Protein Deficiency [14]
Albania	79	0.8	0.5
Algeria	154	4.4	1.7
Angola	42	1.9	0.8
Antigua and Barbuda	228	1.3	0.7
Argentina	196	0.2	0.4
Armenia	77	0.8	0.4
Australia	639	0.3	0.1
Austria	311	0.5	0.2
Azerbaijan	149	1.2	0.4
Bahamas	268	1.3	1.2
Bangladesh	28	2.5	3.1
Barbados	212	2.1	1
Belarus	255	0.4	0.1
Belgium	347	0.6	0.2
Belize	54	2.9	1.2
Benin	21	1.4	0.6
Bolivia (Plurinational State of)	75	1.4	1
Bosnia and Herzegovina	266	2.4	1.8

Botswana	116	1.9	0.8
Brazil	100	0.8	0.5
Brunei Darussalam	1303	1.4	1
Bulgaria	271	2.4	1.5
Burkina Faso	6	1.9	0.2
Cameroon	11	2.3	0.6
Canada	618	0.6	0.3
Cape Verde	40	2.5	1
Central African Republic	3	1.1	0.3
Chile	181	1.1	1
China	288	1.2	1.6
Colombia	74	1.2	0.9
Congo, Rep.	23	1.6	1.3
Costa Rica	70	1.2	0.8
Cote D'Ivoire	18	1.4	1.2
Croatia	181	1	1.1
Cuba	146	2.2	1.4
Cyprus	219	1.6	0.6
Czech Republic	408	0.8	0.4
Denmark	258	0.2	0
Djibouti	32	3.2	2.8
Dominican Republic	87	1.8	1.2
Ecuador	98	0.7	0.8
Egypt	90	2.5	0.6
El Salvador	45	2.8	0.6
Estonia	526	0.7	0.3

Ethiopia	4	1.9	0.9
Fiji	84	2.8	1.3
Finland	330	0.4	0.1
France	208	0.2	0.1
Gabon	105	1.3	0.5
Gambia, The	9	2	1.3
Georgia	95	2	1.5
Germany	398	0.5	0.3
Ghana	20	1.3	0.7
Greece	272	0.4	0.2
Grenada	106	3.1	1.3
Guatemala	42	3.1	0.7
Guinea	7	2.3	2.8
Guinea-Bissau	6	2	2.6
Guyana	118	3	1.7
Haiti	11	2.6	1.2
Honduras	42	2.7	0.8
Hungary	209	1.2	1
Iceland	388	0.2	0.1
India	87	2.7	2.1
Indonesia	109	2.8	2
Iran (Islamic Republic of)	345	2.3	1.2
Iraq	157	3	2.4
Ireland	317	0.2	0
Israel	286	1.4	0.4
Italy	252	0.5	0.3

Jamaica	123	2.1	1.3
Japan	346	1.5	0.7
Jordan	109	2	0.9
Kazakhstan	459	0.4	0.3
Kenya	11	2.5	0.9
Korea, Rep.	587	1.2	0.7
Kuwait	1031	1.4	0.6
Kyrgyzstan	58	1	1.1
Lao People's Democratic Republic	16	2	2.6
Latvia	162	1	0.7
Lebanon	194	2.1	1.3
Libya	398	2.1	3.1
Lithuania	187	0.4	0.1
Luxembourg	609	0.4	0.2
Macedonia (The Former Yugoslav Republic of)	150	1.9	1.8
Madagascar	4	1.8	2.4
Malawi	3	2.6	0.6
Malaysia	457	1.7	1.2
Mali	3	1.2	0.3
Malta	171	1	0.4
Mauritania	24	2	1.1
Mauritius	154	3	1.3
Mexico	133	2.2	0.3
Moldova	52	2.2	1.2
Mongolia	471	0.4	1.1
Morocco	72	4.6	1.3

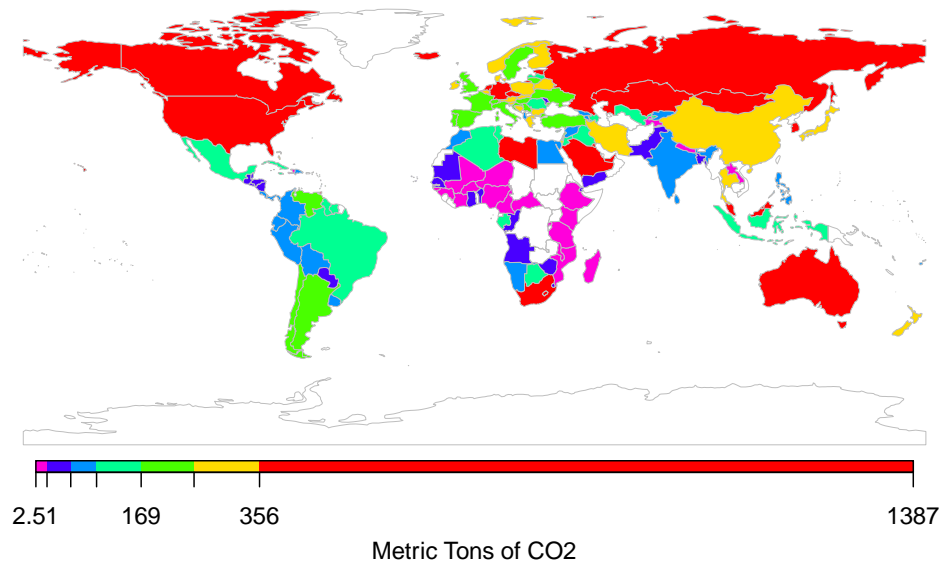
Mozambique	10	2.2	0.9
Namibia	60	1.6	0.5
Nepal	17	2.8	1.3
Netherlands	392	0.2	0.1
New Zealand	308	0.3	0.1
Nicaragua	34	2.5	0.7
Niger	3	1.4	0.1
Nigeria	20	1.2	0.9
Norway	316	0.7	0.2
Pakistan	50	1.8	1
Panama	91	1	0.7
Paraguay	36	1.5	0.5
Peru	85	2.2	1.5
Philippines	64	1.9	1.6
Poland	354	0.9	0.4
Portugal	206	0.6	0.3
Romania	164	1.1	0.6
Russian Federation	458	0.8	1
Rwanda	3	2.2	0.8
Saint Lucia	106	2.2	1
Saint Vincent and the Grenadines	90	1.7	1.3
Saudi Arabia	768	2.1	0.8
Senegal	21	2.2	1.5
Serbia	185	2	1.5
Slovakia	260	1.7	1.3
Slovenia	277	0.8	0.3

South Africa	357	2.4	0.7
Spain	231	0.5	0.3
Sri Lanka	61	3.5	2.7
Sudan (former)	15	0.9	0.4
Suriname	158	2.6	2
Swaziland	35	2.7	1.2
Sweden	176	0.4	0.2
Switzerland	173	0.4	0.4
Syrian Arab Republic	63	0.7	0.2
Tajikistan	19	3.9	4.1
Tanzania	7	2.4	0.9
Thailand	294	2.4	2.2
Trinidad and Tobago	1387	3.2	1.7
Tunisia	117	4	1.3
Turkey	188	2	0.6
Ukraine	229	1.1	0.7
United Arab Emirates	1001	2.8	0.9
United Kingdom	233	0.6	0.7
United States	585	0.3	0.5
Uruguay	91	0.4	0.4
Uzbekistan	121	1.6	1.9
Venezuela (Bolivarian Republic of)	228	1	0.4
Yemen	30	2.7	1.6
Zimbabwe	26	2.7	0.8

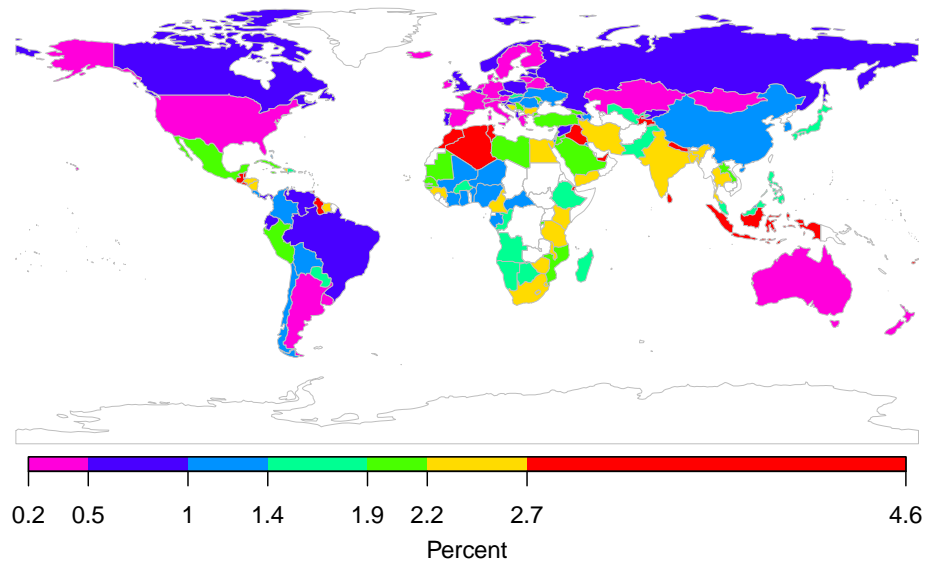
Note. CO₂ = Carbon dioxide; MtCO₂ = Metric tons of carbon dioxide

Figure S1 - Maps showing cumulative per capita CO₂ (A), the percent increase in prevalence of zinc deficiency (B), and the percent increase in protein deficiency (C) with a CO₂ concentration of 550 parts per million. Pink, blue and green colors indicate lower cumulative per capita CO₂ emissions and a lower percent increase in the prevalence of zinc and protein deficiency. Yellow and red colors indicate higher cumulative per capita CO₂ emissions and prevalence of zinc and protein deficiency. Data was unavailable for countries in white.

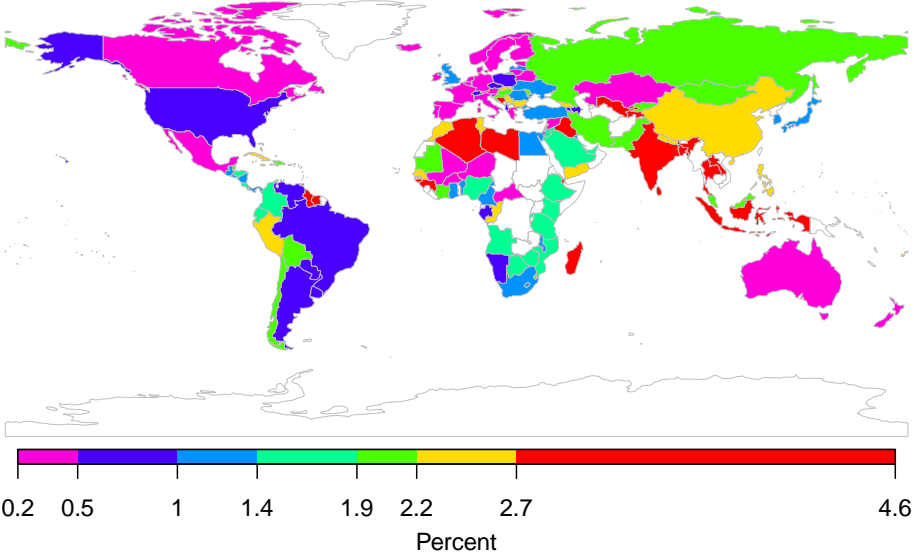
(a) Estimated Cumulative CO₂ Per Capita (2011–2050)



(b) Modeled % Increase in those at Risk of Zinc Deficiency with eCO₂



(c) Modeled % Increase in those at Risk of Protein Deficiency with eCO2



Note. eCO2 = elevated carbon dioxide