

Appendix: apportioning the responsibility for global warming

The following table¹ shows the increases in organic matter required to reduce atmospheric carbon dioxide levels to the magic “two nines” (299 ppm) where the problems of global warming and climate change end. Atmospheric carbon dioxide used to be 280 ppm. It’s now climbing past 380 ppm.

The measure of a country’s obligation must be determined by how much carbon it is responsible for extracting from deep within the Earth and adding it to the planet’s biosphere. It is imperative that every country must cease consuming fossil-carbon-based materials and adding more carbon to the biosphere. However, our immediate global warming problems are caused by the carbon dioxide that is there now, and that quantity of carbon we are stuck with. So our immediate and urgent requirement is to realign the proportions of carbon within the biosphere. Atmospheric carbon must become soil organic carbon. We have no other option. Each country must accept its individual responsibility and make that realignment happen.

The Two Nines Table—299 ppm

% contrib. = country’s percentage contribution to global warming through fossil fuel consumption, 1950–2000

ppm = country’s contribution to global warming in parts per million of atmospheric carbon dioxide

land = crop and pasture land available to fix global warming, in millions of hectares (1 hectare = about 2.5 acres)

OM = organic matter percentage point rise, in the top 12 inches of the country’s crop and pasture land, to end global warming

¹This table and Appendix is excerpted from *Priority One: Together We Can Beat Global Warming* by Allan J. Yeomans (published 2007 by Biosphere Media, www.biospheremedia.org, ISBN 0979479932).

Country	% contrib.	ppm	land	OM
World	100	80	5096	1.6*
Europe	37.4	30	474	5.9
Albania	0.02	0	1.12	1.5
Austria	0.32	0	3.39	7.0
Belarus	0.43	0	8.92	3.6
Belgium	0.72	0	1.54	35
Bosnia	0.08	0	2.10	2.8
Bulgaria	0.36	0	5.31	5
Croatia	0.09	0	3.13	2.25
Czechoslovakia	0.86	1	4.33	15
Denmark	0.32	0	2.67	8.9
Estonia	0.11	0	0.72	11
Finland	0.26	0	2.13	9
France	2.38	2	29.7	6
Germany	6.01	5	16.75	27
Greece	0.27	0	8.51	2.35
Hungary	0.39	0	5.89	4.9
Iceland	0.01	0	2.31	0.34
Ireland	0.15	0	4.41	2.6
Italy	1.87	1	15.6	9.0
Latvia	0.06	0	2.48	1.9
Lithuania	0.1	0	3.50	2.0
Macedonia	0.05	0	1.25	2.8
Moldova	0.08	0	2.53	2.4
Netherlands	0.82	1	1.97	31
Norway	0.15	0	1.23	9.4
Poland	2.0	2	18.1	8.4
Portugal	0.16	0	4.21	2.9
Romania	0.75	1	14.7	3.8
Russia	9.8	8	203	3.6
Serbia	0.22	0	5.61	2.9
Slovakia	0.29	0	2.50	9.2
Slovenia	0.06	0	0.50	9.5
Spain	0.98	1	30.0	2.5
Sweden	0.39	0	3.29	8.8
Switzerland	0.22	0	1.54	10.8
Ukraine	2.7	2	41.7	4.8
United Kingdom	3.8	3	16.9	17

Country	% contrib.	ppm	land	OM
Europe excl. Russia	27.6	22	272	7.61
North America	29.3	24	470	4.7
Canada	2.21	2	64.5	2.6
United States	27.13	22	412	4.9
Cent. Amer. & Caribbean	1.57	1	143	0.82
Belize	0.001	0	0.137	0.70
Costa Rica	0.01	0	2.86	0.35
Cuba	0.15	0	6.59	1.68
Dominican Republic	0.04	0	3.68	0.83
El Salvador	0.01	0	1.70	0.63
Guatemala	0.02	0	4.55	0.35
Haiti	0.004	0	1.60	0.19
Honduras	0.01	0	2.91	0.29
Jamaica	0.03	0	0.51	5.1
Mexico	1.18	1	107	0.83
Nicaragua	0.01	0	7.04	0.11
Panama	0.02	0	2.23	0.60
Trinidad and Tobago	0.05	0	0.133	28
South America	2.65	2	630	0.32
Argentina	0.55	0	178	0.23
Bolivia	0.03	0	36.9	0.05
Brazil	0.94	1	262	0.29
Chile	0.15	0	15.0	0.77
Colombia	0.23	0	45.7	0.38
Ecuador	0.05	0	8.03	0.50
Guyana	0.008	0	1.77	0.32
Paraguay	0.009	0	25.0	0.03
Peru	0.11	0	30.7	0.26
Suriname	0.01	0	0	–
Uruguay	0.03	0	14.9	0.16
Venezuela	0.54	0	22.0	1.8

Country	% contrib.	ppm	land	OM
Oceania	1.31	1	467	0.21
Australia	1.17	1	446	0.20
Fiji	0.003	0	0.475	0.53
New Zealand	0.12	0	17.4	0.51
Papua New Guinea	0.008	0	0.906	0.70
Solomon Islands	0.0005	0	0.112	0.34
Asia excl. Middle East	22.4	18	1323	1.3
Armenia	0.028	0	1.4	1.5
Azerbaijan	0.21	0	4.6	3.4
Bangladesh	0.05	0	9.1	0.5
Bhutan	0.0005	0	0.6	0.06
Cambodia	0.002	0	5.3	0.03
China	9.17	7	560	1.23
Georgia	0.04	0	3.0	1.0
India	2.33	2	181	0.96
Indonesia	0.54	0	45.3	0.9
Japan	4.75	4	5.1	70
Kazakhstan	1.1	1	208	0.4
Korea, North	0.64	1	2.65	18
Korea, South	0.89	1	1.97	34
Kyrgyzstan	0.05	0	10.7	0.32
Laos	0.001	0	1.85	0.06
Malaysia	0.22	0	7.89	2.1
Mongolia	0.032	0	132	0.02
Myanmar	0.03	0	10.5	0.2
Nepal	0.004	0	5.0	0.06
Pakistan	0.23	0	27.0	0.65
Philippines	0.19	0	12.2	1.2
Singapore	0.12	0	.002	4360
Sri Lanka	0.03	0	2.4	0.8
Tajikistan	0.06	0	4.34	1.0
Thailand	0.3	0	20.4	1.1
Turkmenistan	0.18	0	32.4	0.43
Uzbekistan	0.64	1	27.3	1.8
Viet Nam	0.11	0	9.44	0.9

Country	% contrib.	ppm	land	OM
Middle East & N. Africa	3.54	3	465	0.57
Afghanistan	0.01	0	37.8	0.02
Algeria	0.20	0	38.1	0.39
Egypt	0.31	0	2.99	7.8
Iran	0.71	1	60.5	0.87
Iraq	0.22	0	10.1	1.6
Israel	0.15	0	0.59	19.3
Jordan	0.03	0	1.1	2.4
Kuwait	0.15	0	0.16	70
Lebanon	0.04	0	0.34	9.4
Libya	0.11	0	15.8	0.53
Morocco	0.083	0	30.3	0.21
Oman	0.033	0	0.93	2.6
Saudi Arabia	0.52	0	174	0.22
Syria	0.11	0	13.6	0.62
Tunisia	0.050	0	9.79	0.38
Turkey	0.52	0	41.6	0.94
United Arab Emirates	0.13	0	0.59	17
Yemen	0.03	0	17.4	0.14
Sub-Saharan Africa	1.77	1	1016	0.13
Angola	0.02	0	57.3	0.02
Benin	0.003	0	3.32	0.06
Botswana	0.007	0	26.1	0.02
Burkina Faso	0.002	0	10.4	0.02
Burundi	0.0006	0	2.36	0.02
Cameroon	0.01	0	8.84	0.08
Central Africa	0.001	0	4.98	0.01
Chad	0.001	0	49.1	0.001
Congo	0.004	0	10.2	0.03
Congo, Dem. Rep.	0.02	0	22.7	0.064
Côte d'Ivoire	0.02	0	20.0	0.064
Equatorial Guinea	0.0006	0	0.34	0.14
Eritrea	0.0008	0	7.47	0.008
Ethiopia	0.009	0	31.0	0.023
Gabon	0.009	0	5.15	0.13
Gambia	0.0008	0	0.72	0.08
Ghana	0.016	0	14.8	0.08

Country	% contrib.	ppm	land	OM
Guinea	0.005	0	12.3	0.03
Guinea-Bissau	0.0008	0	1.60	0.04
Kenya	0.03	0	26.2	0.09
Lesotho	0.0004	0	2.34	0.01
Liberia	0.005	0	2.60	0.13
Madagascar	0.006	0	27.3	0.02
Malawi	0.004	0	4.33	0.06
Mali	0.002	0	35.4	0.004
Mauritania	0.007	0	39.0	0.01
Mozambique	0.01	0	48.6	0.02
Namibia	0.002	0	38.7	0.004
Niger	0.003	0	16.5	0.02
Nigeria	0.14	0	72.0	0.14
Rwanda	0.001	0	1.85	0.06
Senegal	0.01	0	8.09	0.10
Sierra Leone	0.003	0	2.79	0.08
Somalia	0	0	44.5	0
South Africa	1.3	1	99.6	0.98
Sudan	0.02	0	133	0.01
Tanzania	0.01	0	40.6	0.02
Togo	0.003	0	3.59	0.06
Uganda	0.005	0	12.4	0.03
Zambia	0.02	0	34.9	0.05
Zimbabwe	0.06	0	20.5	0.22
World	100	80	5096	1.6*

SOURCES: Percentage contributions, 1950–2000, were calculated from table 8 (p. 204) of *World Resources 2005: The Wealth of the Poor—Managing Ecosystems to Fight Poverty* (World Resources Institute). Cropland and pastureland figures were taken from table 11, p. 216.

*We can allow for a nominal 10% extra to cover the rise in the greenhouse gases other than carbon dioxide that also derive from fossil carbon sources. Then to cure global warming the percentage point increase in organic matter content in the top 12 inches of the world's agricultural soils needs to average 1.6%.