

The Combustion-based CO₂ Emissions Data for GTAP Version 7 Data Base

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1. Introduction

This document describes the compilation of carbon emissions from fossil fuel combustion by users (or sectors) of all the 113 regions as covered in the GTAP version 7 data base (Badri and Walmsley, 2008). We calculate combustion-based CO₂ emissions from the GTAP energy volume data (file named gsdvole.har among the GTAPAgg decrypted files), which is hoped to ensure an internal consistency in terms of classification of uses as well as consistency between values and volumes. We adopt the Tier 1 method of the revised 1996 IPCC Guideline (IPCC/OECD/IEA, 1997) in the calculation. We explain in section 2 how we calculate CO₂ emissions from the GTAP energy volume data. We summarize in section 3 the top five CO₂ emitting countries in the world and discuss briefly some eye-catching facts as the data reveal.

2. Calculation of CO₂ emissions from fossil fuel combustion

The procedure we take for calculating CO₂ emissions from the GTAP energy volume data (i.e., the gsdvole.har) is as follows.

We follow the Tier 1 method as suggested in the revised 1996 IPCC Guidelines (IPCC/OECD/IEA, 1997) to estimate CO₂ emissions, based on the GTAP energy volume data. The formula to calculate CO₂ emissions is as follows:

$$CO2_{ijr} = \left(FC_{ijr} \times CC_i \times (1 - CST_{ijr}) \times EF_i \times FOC_i \times \left(\frac{44}{12} \right) \right) / 1000, \\ i \in EGY_COMM, j \in ALLSEC, r \in REG. \quad (1)$$

Set EGY_COMM contains six energy commodities by the GTAP sector classification: coal (eoa), crude oil (eoil), natural gas (egas), petroleum products (ep_c), electricity (eely), and gas distribution (egdt);

set ALLSECT contains all producers (set TRAD_COMM) and private households; and

set REG contains all 113 regions of the GTAP version 7 data base classification.

Coefficients are defined as follows:

CO₂_{ijr}: CO₂ emissions (giga gram, or Gg) from energy commodity i used by sector j of region r;

FC_{ijr}: fuel consumption (1000 tons of oil equivalent, or 1000 toe) of energy commodity i by sector j of region r;

CC_i: conversion coefficient (tera joule per 1000 toe) of energy commodity i;

CST_{ijr}: ratio of carbon stored of energy commodity i used by sector j of region r;

EF_i: emission factor (tones Carbon per tera joule, or tC/TJ) of energy commodity i; and

FOC_i: fraction of carbon oxidized of energy commodity i.

GTAP-commodity-specific values of coefficients CC, EF, and FOC are listed in Table A1.

Coefficient CST in Equation 1 accounts for fuels used as feedstocks—natural gas (egas) and petroleum products (ep_c) used by petrochemical sector. Ratios of feedstock usage of the petrochemical sector are derived from the energy balance tables (OECD/IEA, 2006a; OECD/IEA, 2006b). We list the feedstock ratios in Table A2 in the appendix.

Primary energy commodities are largely used for energy transformation. We specify non-zero values of CST to avoid double-counting of CO₂ emissions for energy transformation activities. Due to dearth of information, we arbitrarily assume unity for the CST's corresponding to energy transformation activities.

3. Top five CO₂ emitting countries/regions

We select the top five emitting countries/regions to show their CO₂ emissions and associated energy consumption. Tables 1 - 6 show the country-specific data of CO₂ emissions and energy consumption by sectors (following classification of GTAP version 7 data base). Unit of CO₂ emissions is giga-gram (Gg). Unit of energy consumption is ton of oil equivalent (toe). Tables 1a - 6a show the country-specific sectoral significance of CO₂ emissions in terms of percentage in country total CO₂ emissions.

Figure 1 shows the shares of the top five emitting countries/regions:

- (1) U.S.A.: total CO₂ emissions in 2004 is 6,069,543 Gg, which accounts for 23.35% of the world total;
- (2) China (shorthand as CHN): total CO₂ emissions in 2004 is 4,414,122 Gg, which accounts for 16.98 % of the world total;
- (3) EU27: total CO₂ emissions in 2004 is 3,967,078 Gg, which accounts for 15.26% of the world total;
- (4) Russia Federation (shorthand as RUS): total CO₂ emissions in 2004 is 1,552,470 Gg, which accounts for 5.97% of the world total;
- (5) Japan (shorthand as JPN): total CO₂ emissions in 2004 is 1,095,640 Gg, which accounts for 4.21% of the world total;
- (6) India (shorthand as IND): total CO₂ emissions in 2004 is 1,061,474 Gg, which accounts for 4.08% of the world total;

Figure 2 shows that petroleum products and coal are the key sources of combustion-based CO₂ emissions of the U.S., which take 40.40% and 33.49% respectively. Figure 3 shows that electricity (ELY), private households and transport nec (OTP) sectors contributed significantly to the U.S. CO₂ emissions of 2004, which takes 41%, 20% and 13% respectively. From Table 1a, we can see that petroleum-based CO₂ emissions of the U.S. are mainly from the households sector and the transport nec (OTP) sector; and coal-based CO₂ emissions are mainly from the electricity (ELY) sector.

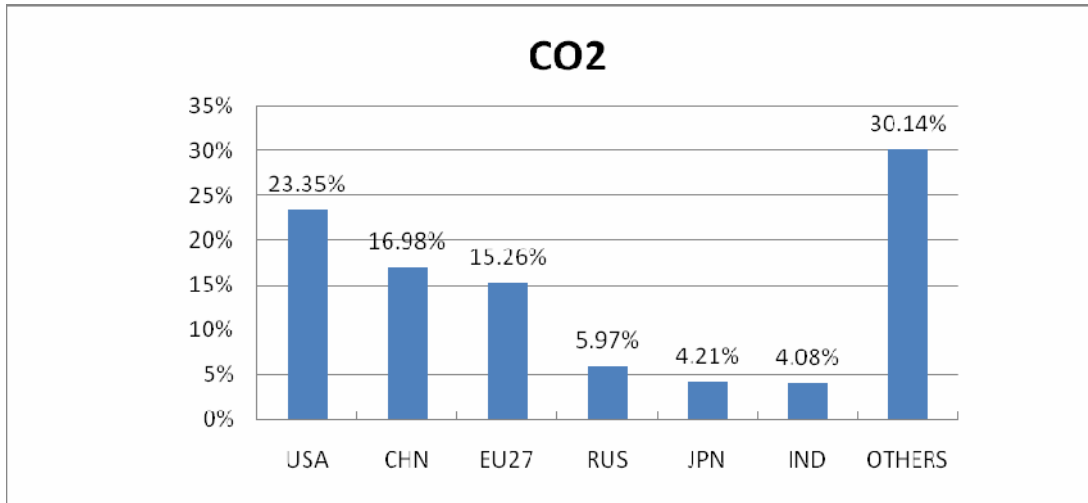


Figure 1. The top five CO₂ emitting countries

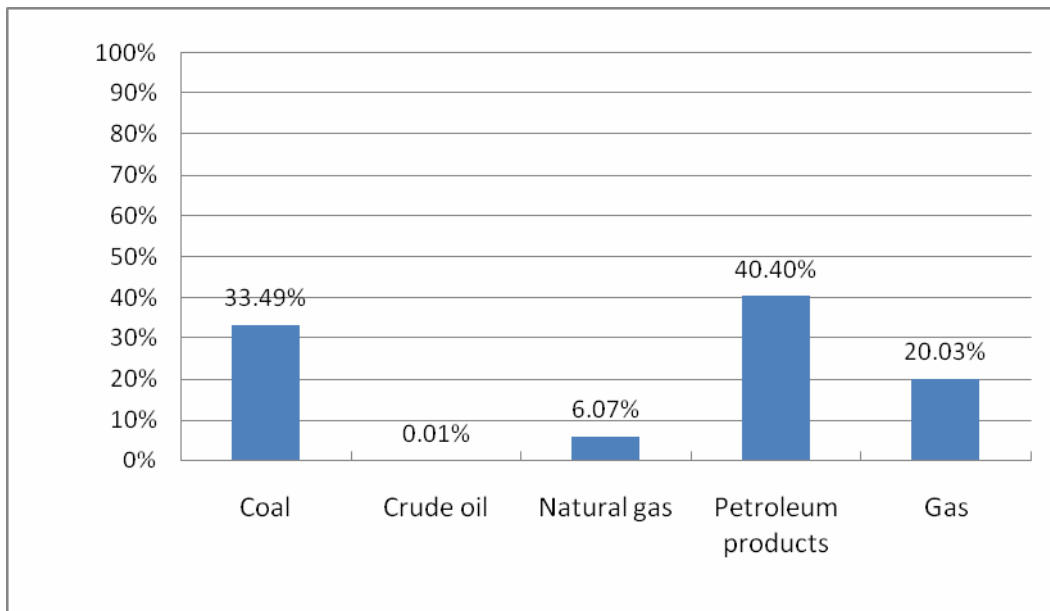


Figure 2. Energy-specific CO₂ emitting shares: U.S.A.

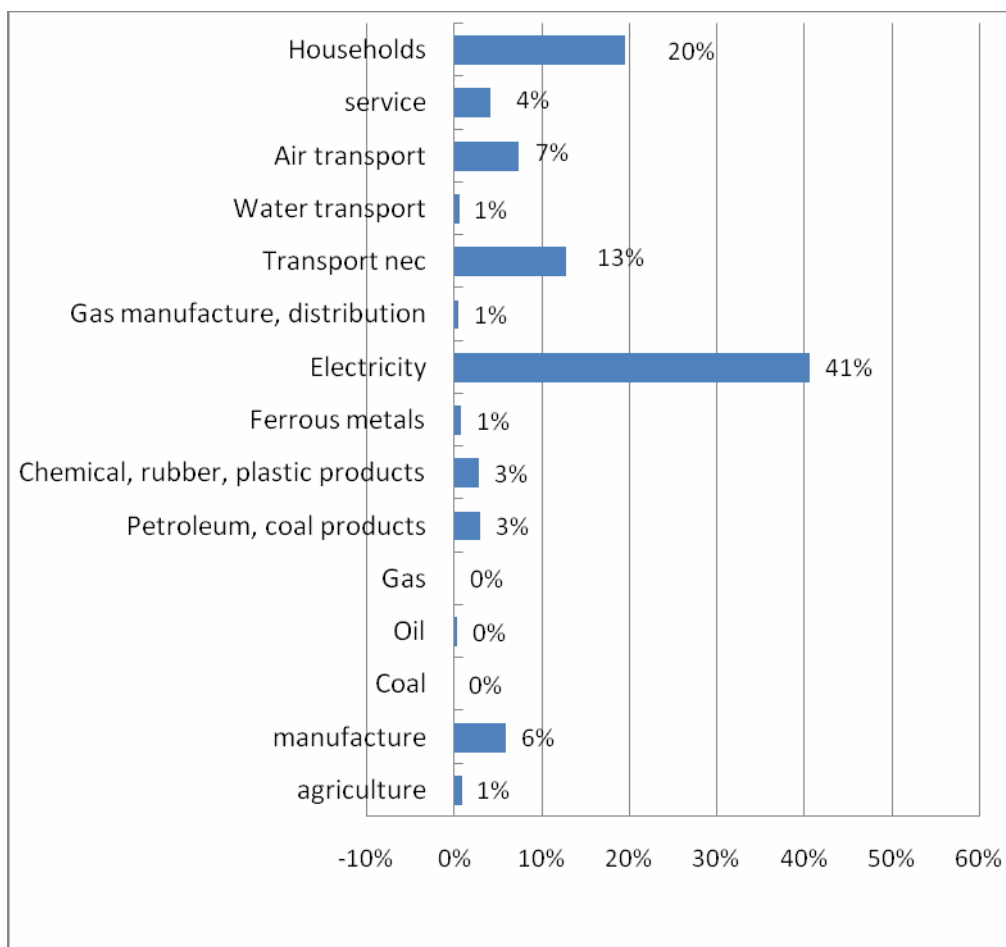


Figure 3. Sectoral CO₂ emitting shares: U.S.A.

Figure 4 shows that coal and petroleum products are the key sources of China's combustion-based CO₂ emissions, which take 75.75% and 20.48% respectively. Figure 5 shows that electricity (ELY) and the manufacture sectors contributed significantly to China's CO₂ emissions of 2004, which takes 52% and 15% respectively. From Table 2a, we can see that China's coal-based CO₂ emissions are mainly from the electricity (ELY) sector; and petroleum-based CO₂ emissions are mainly from the private households, transport nec (OTP) and water transport (WTP) sectors.

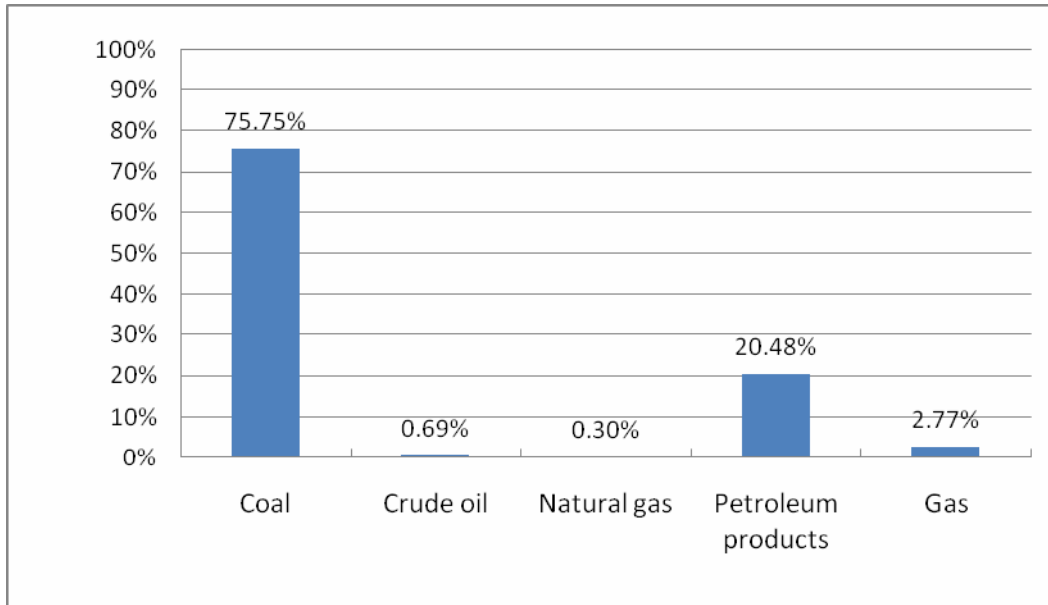


Figure 4. Energy-specific CO₂ emitting shares: China

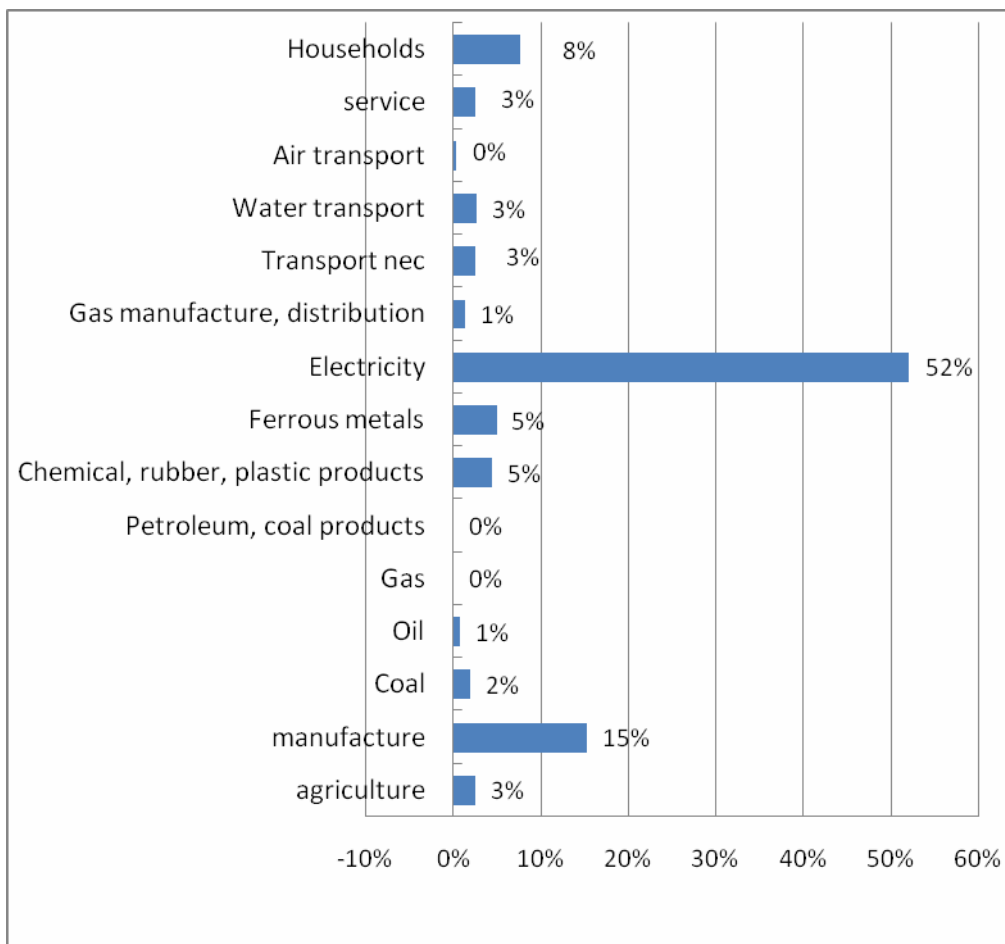


Figure 5. Sectoral CO₂ emitting shares: China

Figure 6 shows that petroleum products, coal and natural gas are the key sources of EU27's combustion-based CO₂ emissions, which take 45.38%, 26.31%, and 17.14% respectively. Figure 7 shows that electricity (ELY), private households and the transport nec (OTP) sectors contributed significantly to EU27's CO₂ emissions of 2004, which takes 35%, 23%, and 15% respectively. From Table 3a, we can see that EU27's petroleum-based CO₂ emissions are mainly from the transport nec (OTP) and private households sectors; and coal-based CO₂ emissions are mainly from the electricity (ELY) sector.

Figure 8 shows that natural gas, petroleum products, gas distribution as well as coal contribute quite evenly to Russia's combustion-based CO₂ emissions, which take 33.81%, 23.02%, 22.53% and 19.99% respectively. Figure 9 shows that electricity (ELY), private households and the transport nec (OTP) sectors contributed significantly to Russia's CO₂ emissions of 2004 as an individual sector, which takes 55%, 14%, and 11% respectively. From Table 4a, we can see that Russia's natural gas based CO₂ emissions are mainly from the electricity (ELY) sector; petroleum-based CO₂ emissions are mainly from the transport nec (OTP), private households and electricity (ELY) sectors; gas distribution based CO₂ emissions are mainly from the electricity (ELY) and private households sectors; and coal-based CO₂ emissions are mainly from the electricity (ELY) sector.

Figure 10 shows that petroleum products, coal and natural gas are the key sources of Japan's combustion-based CO₂ emissions, which take 58.69%, 22.85%, and 15.63% respectively. Figure 11 shows that electricity (ELY), private households, transport nec (OTP) and service sectors contributed significantly to Japan's CO₂ emissions of 2004, which takes 36%, 16%, 16% and 9% respectively. From Table 5a, we can see that Japan's petroleum-based CO₂ emissions are mainly from the transport nec (OTP), private households and electricity (ELY) sectors; coal-based CO₂ emissions are mainly from the electricity (ELY) sector; and natural gas based CO₂ emissions are mainly from the electricity (ELY) sector.

Figure 12 shows that coal and petroleum products are the key sources of India's combustion-based CO₂ emissions, which take 65.49%, and 28.44% respectively. Figure 13 shows that electricity (ELY), private households, and manufacture sectors contributed significantly to India's CO₂ emissions of 2004, which takes 59%, 13%, and 9% respectively. From Table 6a, we can see that India's coal-based CO₂ emissions are mainly from the electricity (ELY), mineral products nec (NMM) and Ferrous metals (I_S) sectors; and petroleum-based CO₂ emissions are mainly from the private households and transport nec (OTP) sectors.

Figures 14 - 18 show the top 10 emitting countries/regions of CO₂ from various fossil fuel commodities. China and U.S.A.'s coal-based CO₂ emissions are remarkably high, which respectively accounts for 36% and 21.90% of the world's coal-based

emissions. The U.S. and EU27 lead the world in petroleum-based CO₂ emissions, which respectively take 24.50% and 18% of the world total petroleum-based CO₂ emissions.

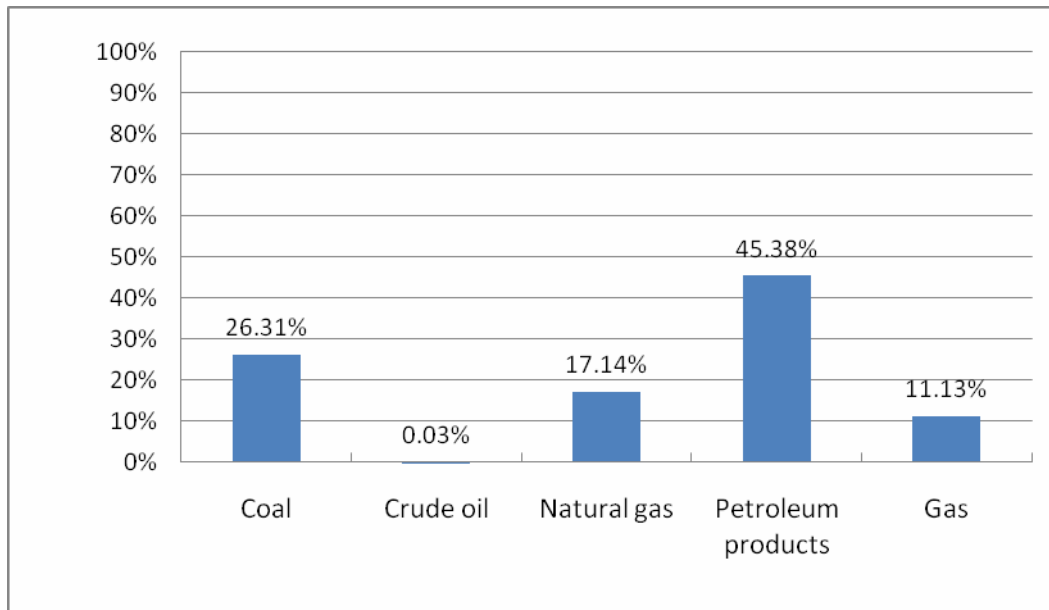


Figure 6. Energy-specific CO₂ emitting shares: EU27

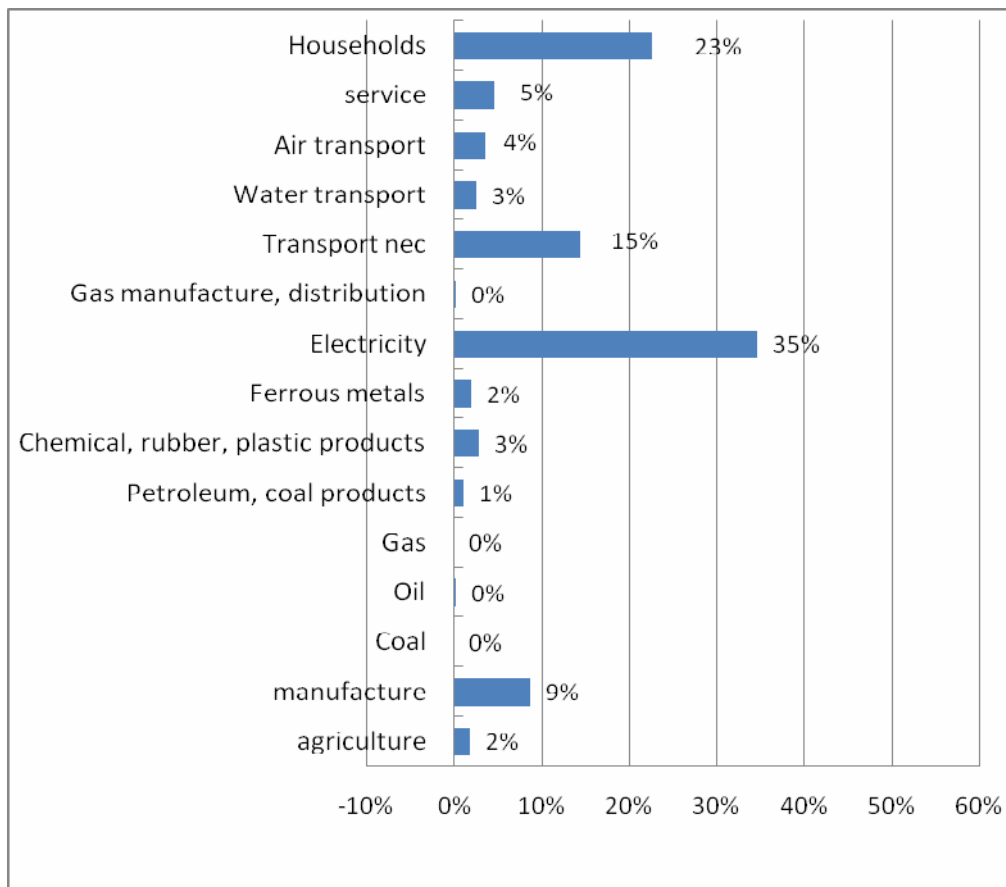


Figure 7. Sectoral CO₂ emitting shares: EU27

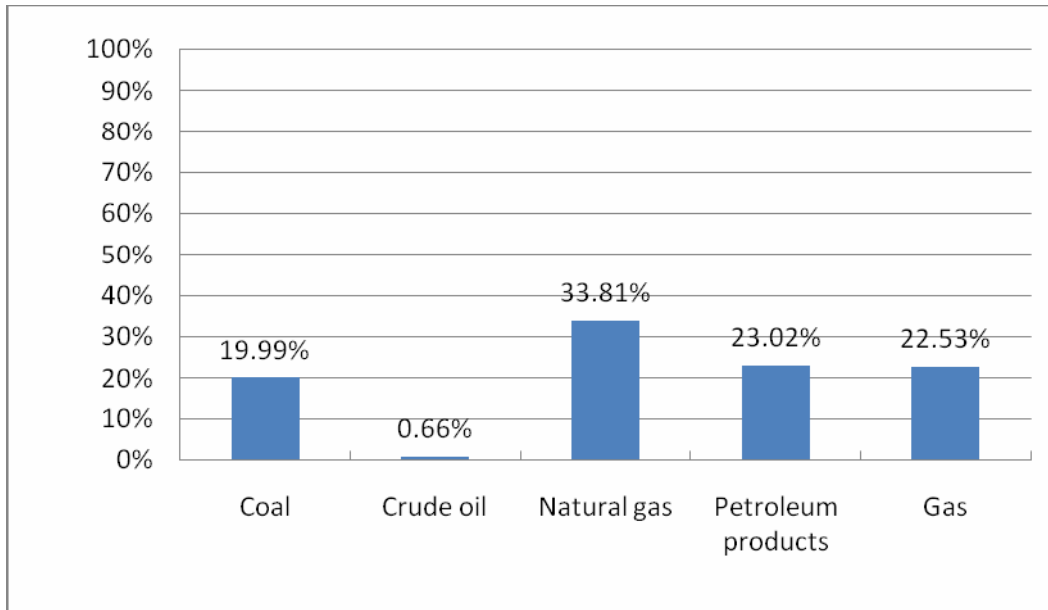


Figure 8. Energy-specific CO₂ emitting shares: Russia

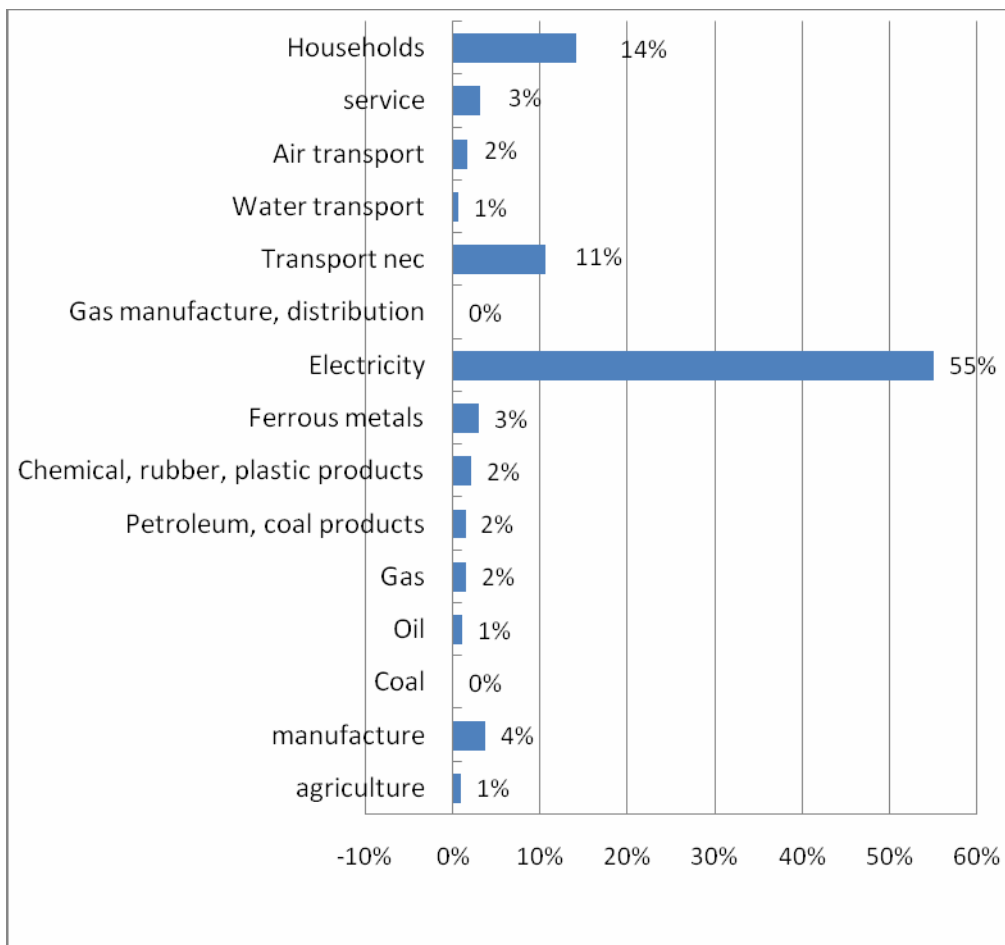


Figure 9. Sectoral CO₂ emitting shares: Russia

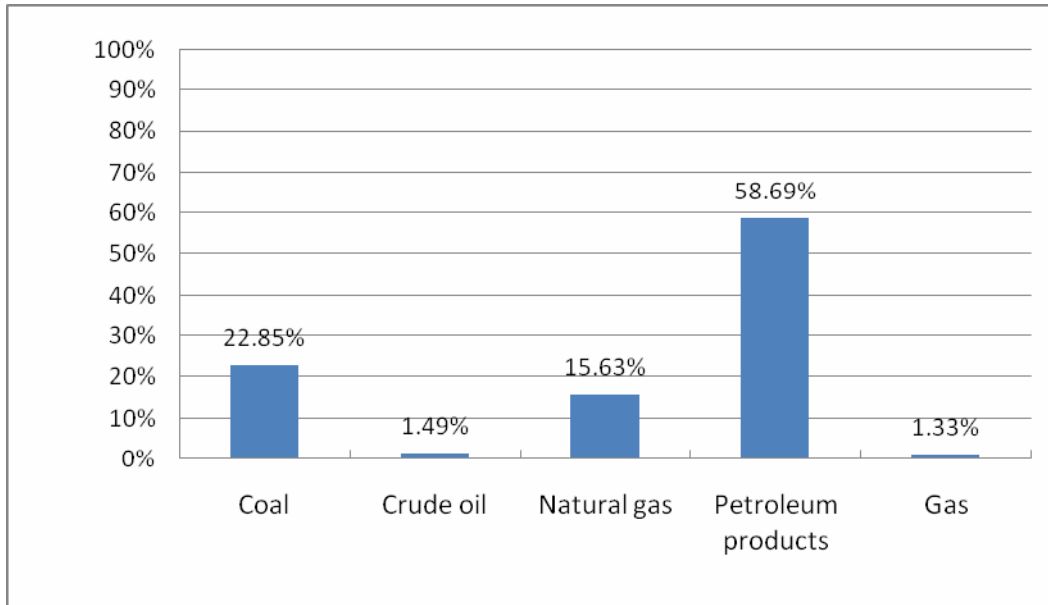


Figure 10. Energy-specific CO₂ emitting shares: Japan

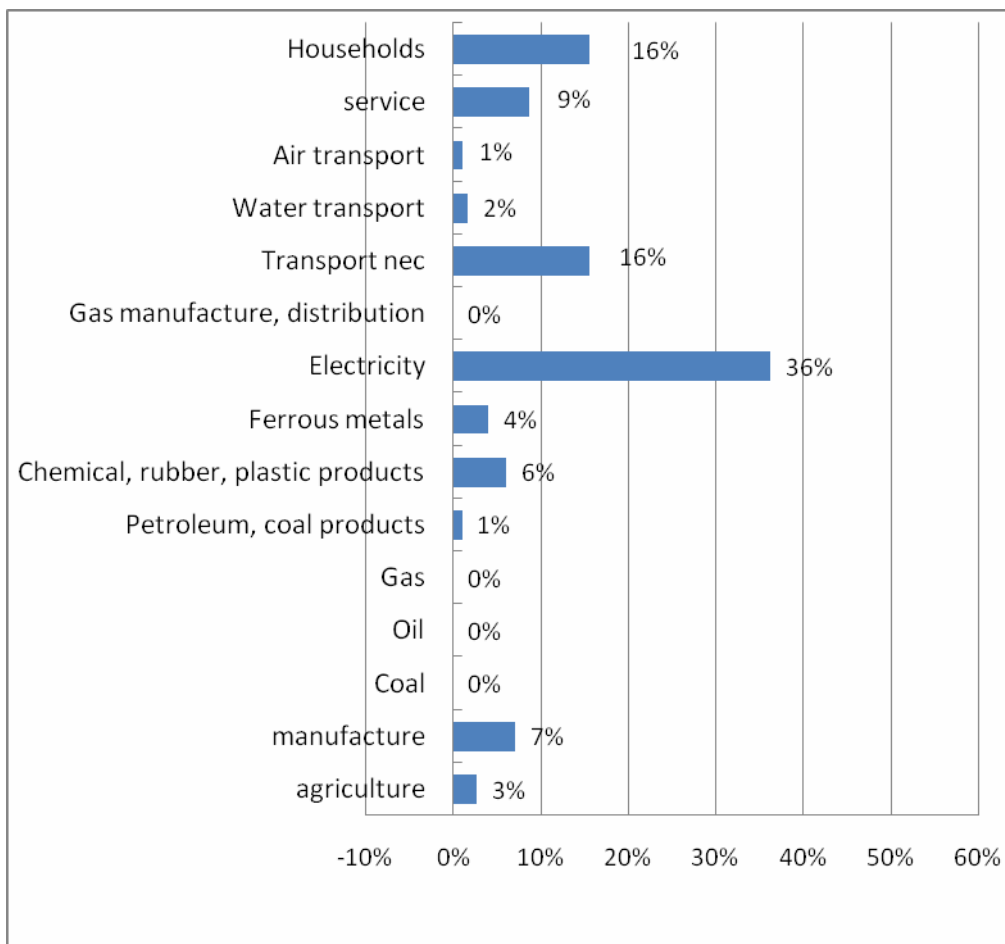


Figure 11. Sectoral CO₂ emitting shares: Japan

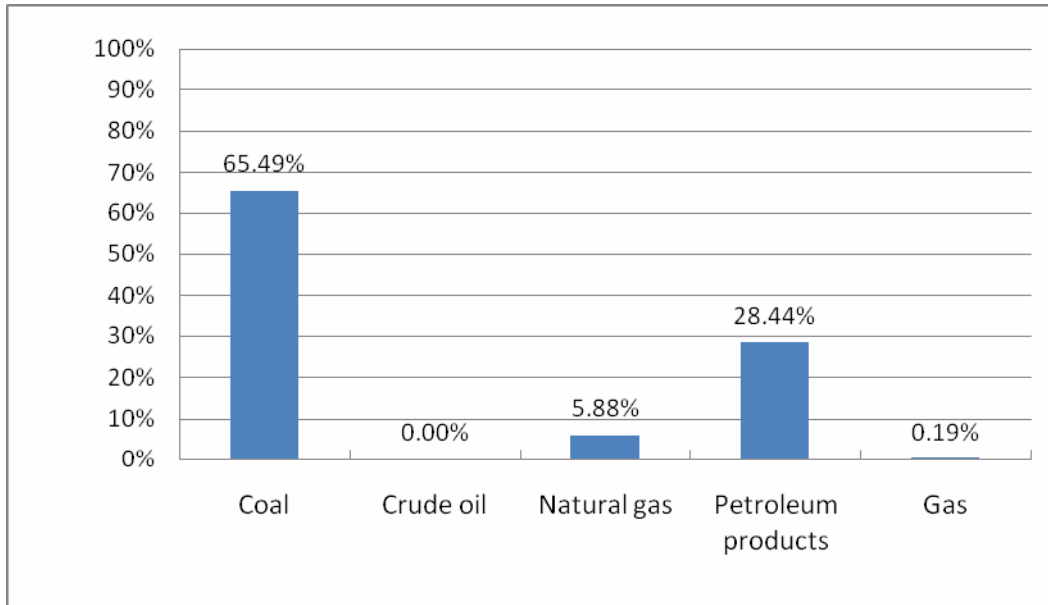


Figure 12. Energy-specific CO₂ emitting shares: India

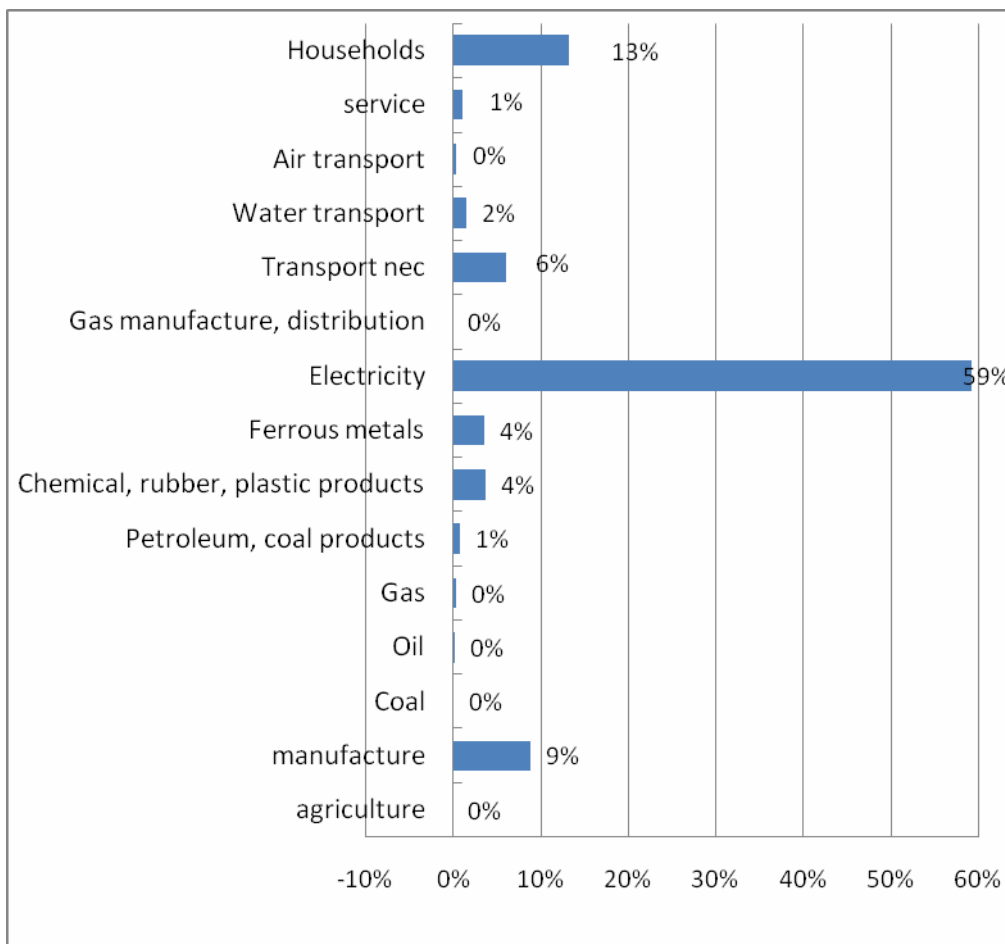


Figure 13. Sectoral CO₂ emitting shares: India

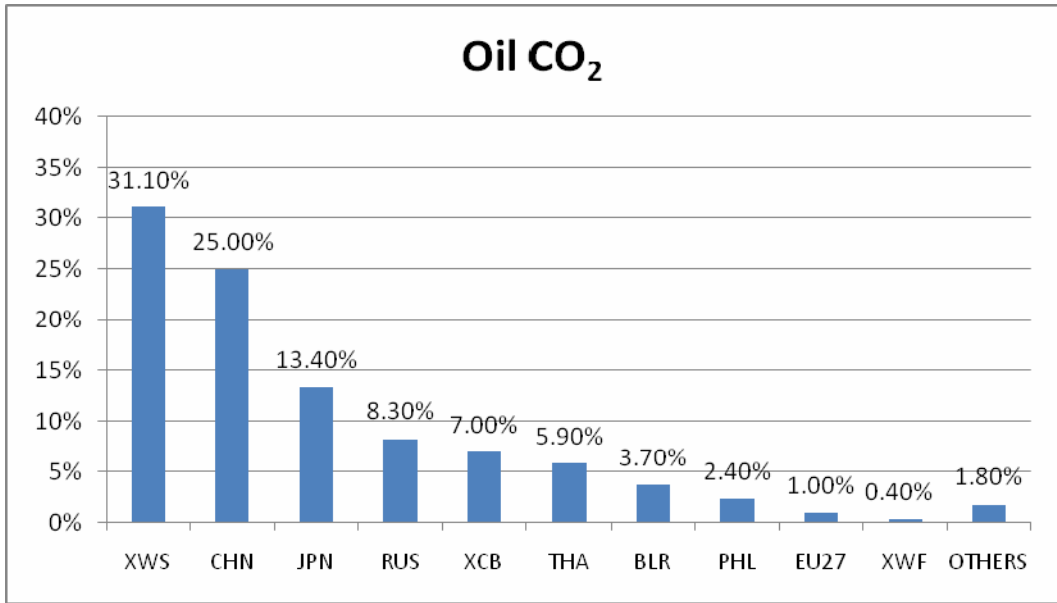


Figure 14. Top 10 emitting countries/regions of oil-based CO₂

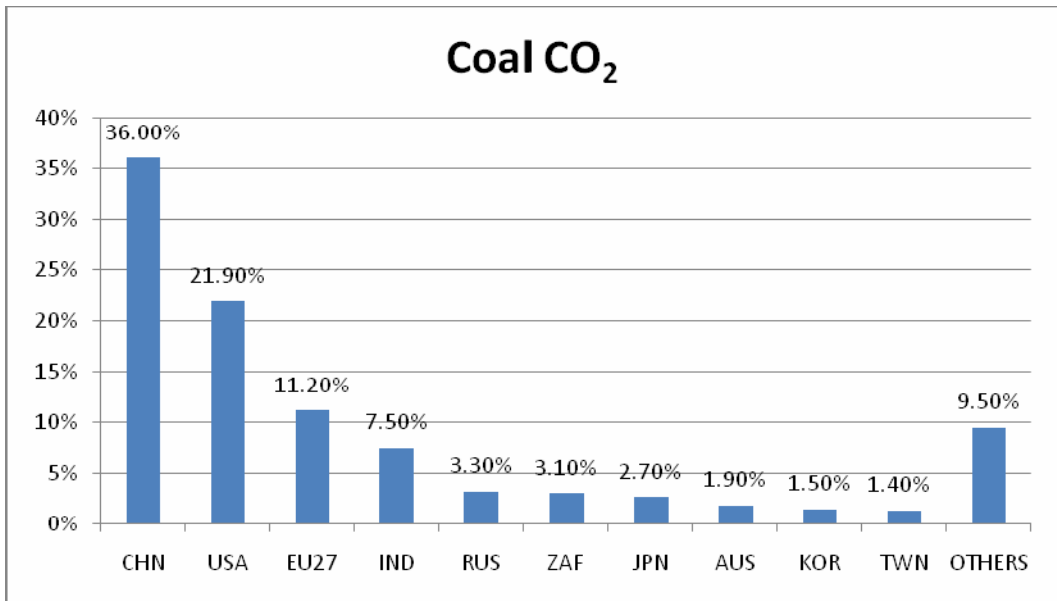


Figure 15. Top 10 emitting countries/regions of coal-based CO₂

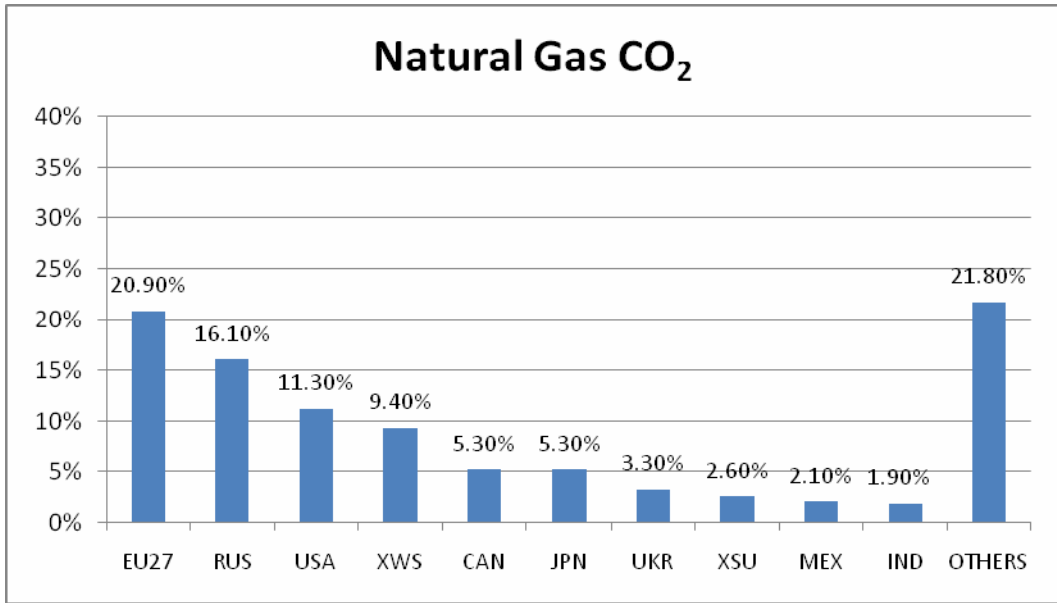


Figure 16. Top 10 emitting countries/regions of natural gas-based CO₂

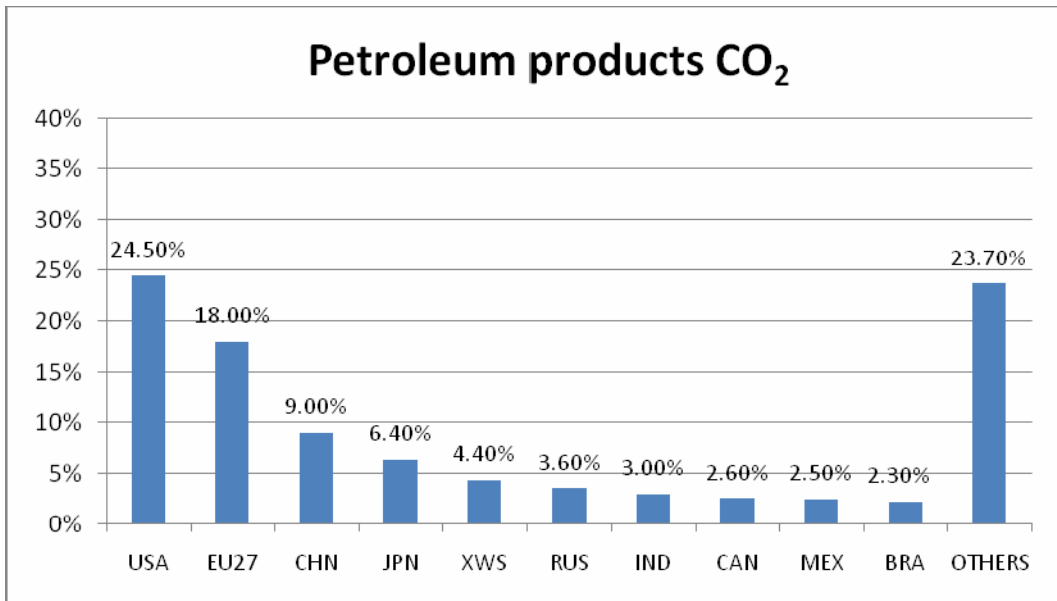


Figure 17. Top 10 emitting countries/regions of petroleum-based CO₂

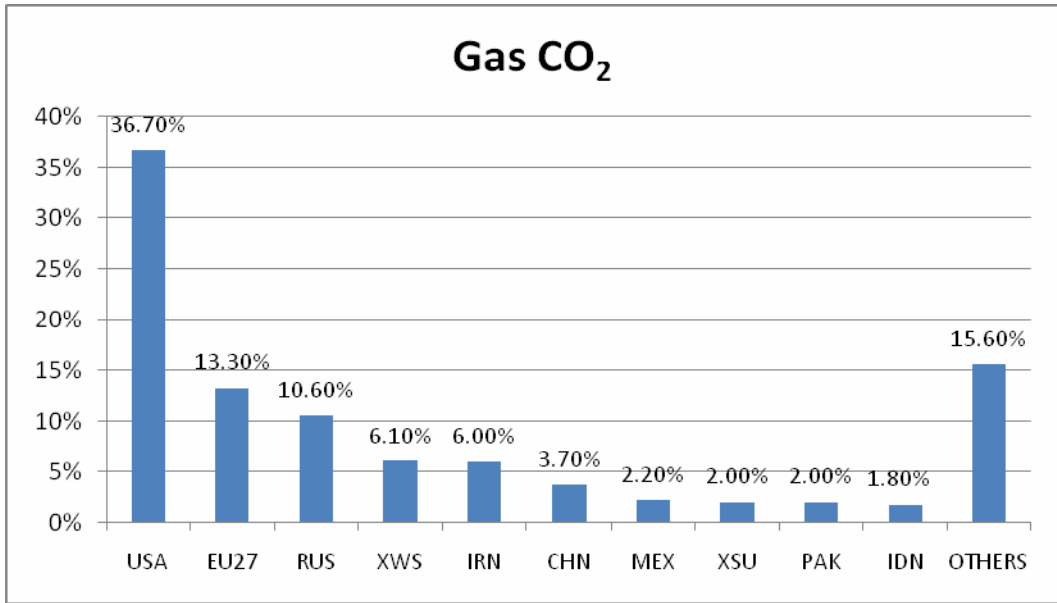


Figure 18. Top 10 emitting countries/regions of gas distribution-based CO₂

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Table 1. CO₂ emissions and fossil fuel consumption of U.S.A., 2004

No.	Code	Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
1	PDR	Paddy rice	22.64	0.01	0.00	0.00	0.00	0.00	1199.85	0.39	0.08	0.00
2	WHT	Wheat	37.99	0.01	0.00	0.00	0.00	0.00	6744.91	2.20	0.47	0.00
3	GRO	Cereal grains nec	137.26	0.04	0.00	0.00	0.00	0.00	10140.60	3.30	1.07	0.00
4	V_F	Vegetables, fruit, nuts	476.88	0.12	0.00	0.00	0.00	0.00	10383.29	3.38	1.11	0.00
5	OSD	Oil seeds	79.16	0.02	0.00	0.00	0.00	0.00	3871.15	1.26	1.01	0.00
6	C_B	Sugar cane, sugar beet	4.54	0.00	0.00	0.00	0.00	0.00	293.92	0.10	0.07	0.00
7	PFB	Plant-based fibers	31.33	0.01	0.00	0.00	0.00	0.00	2010.57	0.66	0.76	0.00
8	OCR	Crops nec	64.82	0.02	0.00	0.00	0.00	0.00	4320.58	1.41	0.14	0.00
9	CTL	Bovine cattle, sheep and goats, horses	45.78	0.01	0.00	0.00	0.00	0.00	2189.20	0.71	0.05	0.00
10	OAP	Animal products nec	57.48	0.01	0.00	0.00	0.00	0.00	6752.48	2.20	0.01	0.00
11	RMK	Raw milk	27.22	0.01	0.00	0.00	0.00	0.00	1814.95	0.59	0.01	0.00
12	WOL	Wool, silk-worm cocoons	1.03	0.00	0.00	0.00	0.00	0.00	4.92	0.00	0.00	0.00
13	FRS	Forestry	855.27	0.22	0.00	0.00	0.00	0.00	883.95	0.29	0.06	0.00
14	FSH	Fishing	21.32	0.01	0.00	0.00	0.00	0.00	3628.28	1.18	0.00	0.00
15	COA	Coal	1187.60	0.31	0.00	0.00	0.00	0.00	10.11	0.00	0.44	0.00
16	OIL	Oil	0.01	0.00	42.22	0.01	21433.94	9.17	3.72	0.00	1320.70	0.44
17	GAS	Gas	0.19	0.00	20.94	0.01	3603.01	1.54	2.25	0.00	200.93	0.07
18	OMN	Minerals nec	109.12	0.03	0.00	0.00	0.02	0.00	190.49	0.06	37.36	0.01
19	CMT	Bovine meat products	1657.70	0.43	0.03	0.00	6.73	0.00	1171.70	0.38	5188.22	1.75
20	OMT	Meat products nec	667.18	0.17	0.01	0.00	2.19	0.00	465.86	0.15	2400.72	0.81
21	VOL	Vegetable oils and fats	532.89	0.14	0.02	0.00	5.60	0.00	202.21	0.07	1564.77	0.53
22	MIL	Dairy products	2125.12	0.55	0.08	0.00	15.71	0.01	1467.66	0.48	4320.59	1.46
23	PCR	Processed rice	49.12	0.01	0.00	0.00	0.49	0.00	46.62	0.02	107.90	0.04
24	SGR	Sugar	2266.62	0.58	0.00	0.00	0.61	0.00	793.29	0.26	6247.48	2.10
25	OFD	Food products nec	5566.37	1.43	0.78	0.00	141.82	0.06	5789.90	1.89	19869.48	6.69
26	B_T	Beverages and tobacco products	2304.50	0.59	0.02	0.00	34.07	0.01	1564.03	0.51	3878.43	1.31
27	TEX	Textiles	480.27	0.12	0.02	0.00	1.43	0.00	1663.22	0.54	5731.20	1.93
28	WAP	Wearing apparel	178.51	0.05	0.00	0.00	0.18	0.00	667.36	0.22	2782.43	0.94
29	LEA	Leather products	16.37	0.00	0.00	0.00	0.07	0.00	187.97	0.06	340.35	0.11

...continued

Table 1 (continued)

No.	Code	Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
30	LUM	Wood products	145.28	0.04	0.01	0.00	4.94	0.00	6161.33	2.01	5794.68	1.95
31	PPP	Paper products, publishing	18391.60	4.74	0.00	0.00	5.19	0.00	16714.77	5.45	37945.16	12.78
32	P_C	Petroleum, coal products	0.00	87.82	0.00	802.86	177527.70	75.96	0.00	86.15	7577.13	2.55
33	CRP	Chemical, rubber, plastic products	21906.66	5.64	66.91	0.02	69007.55	39.41	26012.86	99.45	57209.83	19.27
34	NMM	Mineral products nec	32108.22	8.27	0.31	0.00	71.96	0.03	14733.85	4.80	29432.05	9.91
35	I_S	Ferrous metals	3388.41	0.87	0.01	0.00	13.92	0.01	19966.63	6.51	31428.15	10.59
36	NFM	Metals nec	259.94	0.07	0.16	0.00	477.61	0.20	1992.18	0.65	17180.47	5.79
37	FMP	Metal products	164.71	0.04	0.01	0.00	2.64	0.00	1633.33	0.53	9811.77	3.30
38	MVH	Motor vehicles and parts	665.29	0.17	0.04	0.00	3.65	0.00	1610.70	0.52	9716.15	3.27
39	OTN	Transport equipment nec	285.68	0.07	0.22	0.00	18.45	0.01	1121.90	0.37	4344.19	1.46
40	ELE	Electronic equipment	120.55	0.03	0.05	0.00	46.24	0.02	1229.54	0.40	5520.11	1.86
41	OME	Machinery and equipment nec	732.13	0.19	0.07	0.00	59.93	0.03	3941.97	1.28	13876.44	4.67
42	OMF	Manufactures nec	513.72	0.13	0.01	0.00	0.17	0.00	1197.24	0.39	150.26	0.05
43	ELY	Electricity	1917905.00	494.11	33.56	0.01	65839.00	28.17	134463.70	43.81	349086.30	117.59
44	GDT	Gas manufacture, distribution	6889.43	1.77	220.89	0.07	0.00	14.40	7.66	0.00	28237.56	9.51
45	WTR	Water	1804.67	0.46	0.82	0.00	853.76	0.37	3070.25	1.00	16821.05	5.67
46	CNS	Construction	92.65	0.02	0.00	0.00	0.01	0.00	14957.50	4.87	15.59	0.01
47	TRD	Trade	1535.04	0.40	0.86	0.00	969.10	0.41	17302.79	5.64	50816.55	17.12
48	OTP	Transport nec	111.51	0.03	21.07	0.01	27887.46	11.93	744910.80	242.71	9190.45	3.10
49	WTP	Water transport	231.59	0.06	0.00	0.00	0.33	0.00	36031.74	11.74	2207.42	0.74
50	ATP	Air transport	52.15	0.01	0.01	0.00	0.70	0.00	444402.60	144.80	1876.31	0.63
51	CMN	Communication	53.82	0.01	0.00	0.00	0.56	0.00	420.13	0.14	1307.83	0.44
52	OFI	Financial services nec	496.59	0.13	0.00	0.00	0.27	0.00	1354.63	0.44	8512.99	2.87
53	ISR	Insurance	58.61	0.02	0.00	0.00	0.16	0.00	280.91	0.09	737.37	0.25
54	OBS	Business services nec	2074.17	0.53	2.16	0.00	188.03	0.08	4509.56	1.47	11258.30	3.79
55	ROS	Recreational and other services	1145.74	0.30	0.00	0.00	16.65	0.01	11559.13	3.77	21387.24	7.20
56	OSG	Public Administration, Defense, Education, Health	2554.85	0.66	0.00	0.00	8.37	0.00	23672.77	7.71	90617.95	30.52
57	DWE	Dwellings	0.12	0.00	0.00	0.00	0.00	0.00	4.21	0.00	6.43	0.00
58		Households	46.17	0.01	0.18	0.00	29.25	0.01	850474.70	277.10	339847.80	114.47
Total			2032738.57	611.51	411.48	803.00	368279.48	181.87	2452204.42	976.10	1215909.35	409.57

Table 2. CO₂ emissions and fossil fuel consumption of China, 2004

No.	Code	Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
1	PDR	Paddy rice	2854.34	0.74	0.00	0.00	0.00	0.00	3541.60	1.15	0.00	0.00
2	WHT	Wheat	2732.78	0.70	0.00	0.00	0.00	0.00	3072.64	1.00	0.00	0.00
3	GRO	Cereal grains nec	1766.84	0.46	0.00	0.00	0.00	0.00	2030.48	0.66	0.00	0.00
4	V_F	Vegetables, fruit, nuts	19254.29	4.96	0.00	0.00	0.00	0.00	22636.08	7.38	0.03	0.00
5	OSD	Oil seeds	1365.45	0.35	0.00	0.00	0.00	0.00	1555.59	0.51	0.00	0.00
6	C_B	Sugar cane, sugar beet	236.81	0.06	0.00	0.00	0.00	0.00	280.37	0.09	0.00	0.00
7	PFB	Plant-based fibers	2440.36	0.63	0.00	0.00	0.00	0.00	2856.89	0.93	0.00	0.00
8	OCR	Crops nec	271.21	0.07	0.00	0.00	0.00	0.00	314.09	0.10	0.00	0.00
9	CTL	Bovine cattle, sheep and goats, horses	761.95	0.20	0.01	0.00	0.00	0.00	350.62	0.11	0.00	0.00
10	OAP	Animal products nec	11054.08	2.85	0.10	0.00	0.01	0.00	4762.30	1.55	0.01	0.00
11	RMK	Raw milk	244.55	0.06	0.00	0.00	0.00	0.00	109.36	0.04	0.00	0.00
12	WOL	Wool, silk-worm cocoons	896.52	0.23	0.02	0.00	0.00	0.00	614.05	0.20	0.00	0.00
13	FRS	Forestry	2169.09	0.56	0.08	0.00	0.00	0.00	6893.36	2.25	0.12	0.00
14	FSH	Fishing	1900.04	0.49	0.00	0.00	0.00	0.00	19091.82	6.22	0.00	0.00
15	COA	Coal	87414.79	22.52	0.18	0.00	0.01	0.00	3019.27	0.98	0.05	0.00
16	OIL	Oil	20.78	0.01	15259.05	5.02	1098.15	0.47	7986.54	2.60	10772.65	3.63
17	GAS	Gas	459.40	0.12	397.90	0.13	26.79	0.01	1240.44	0.40	217.80	0.07
18	OMN	Minerals nec	10421.54	2.68	3.17	0.00	10.20	0.00	6377.73	2.08	388.92	0.13
19	CMT	Bovine meat products	236.49	0.06	0.00	0.00	0.01	0.00	62.51	0.02	9.92	0.00
20	OMT	Meat products nec	509.49	0.13	0.00	0.00	0.05	0.00	136.56	0.04	21.54	0.01
21	VOL	Vegetable oils and fats	3227.11	0.83	1.51	0.00	0.22	0.00	346.33	0.11	51.09	0.02
22	MIL	Dairy products	37.53	0.01	0.00	0.00	0.01	0.00	10.45	0.00	1.58	0.00
23	PCR	Processed rice	11238.46	2.90	4.53	0.00	0.73	0.00	1152.66	0.38	177.88	0.06
24	SGR	Sugar	84.06	0.02	0.04	0.00	0.01	0.00	9.13	0.00	1.35	0.00
25	OFD	Food products nec	19778.88	5.10	9.52	0.00	1.51	0.00	2143.98	0.70	314.33	0.11
26	B_T	Beverages and tobacco products	11189.51	2.88	5.57	0.00	0.83	0.00	1270.88	0.41	257.77	0.09
27	TEX	Textiles	33105.66	8.53	34.00	0.01	38.61	0.02	4143.53	1.35	117.95	0.04
28	WAP	Wearing apparel	3801.56	0.98	0.00	0.00	0.03	0.00	1163.36	0.38	39.11	0.01
29	LEA	Leather products	1789.92	0.46	0.00	0.00	0.03	0.00	1023.76	0.33	13.81	0.00

...continued

Table 2 (continued)

No.	Code	Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
30	LUM	Wood products	8095.63	2.09	7.35	0.00	0.03	0.00	878.81	0.29	37.81	8095.63
31	PPP	Paper products, publishing	36253.16	9.34	0.47	0.00	2.80	0.00	2831.45	0.92	188.73	36253.16
32	P_C	Petroleum, coal products	0.00	161.14	0.00	271.27	3581.54	1.53	0.00	87.08	616.78	0.00
33	CRP	Chemical, rubber, plastic products	96590.64	24.88	9363.42	3.08	2000.76	2.05	58794.44	43.67	32060.17	96590.64
34	NMM	Mineral products nec	334700.80	86.23	18.01	0.01	77.59	0.03	32036.90	10.44	6600.56	334700.80
35	I_S	Ferrous metals	100405.60	25.87	47.95	0.02	48.61	0.02	118634.70	38.65	2381.64	100405.60
36	NFM	Metals nec	22236.40	5.73	51.95	0.02	64.34	0.03	12144.09	3.96	2125.03	22236.40
37	FMP	Metal products	4042.63	1.04	195.00	0.06	16.77	0.01	5625.13	1.83	239.87	4042.63
38	MVH	Motor vehicles and parts	9571.03	2.47	0.85	0.00	7.99	0.00	3104.88	1.01	645.91	9571.03
39	OTN	Transport equipment nec	1836.81	0.47	0.31	0.00	3.07	0.00	1926.93	0.63	547.28	1836.81
40	ELE	Electronic equipment	1882.27	0.48	11.26	0.00	3.59	0.00	4078.71	1.33	1225.04	1882.27
41	OME	Machinery and equipment nec	21017.24	5.41	274.57	0.09	23.38	0.01	13900.51	4.53	2571.53	21017.24
42	OMF	Manufactures nec	1446.69	0.37	409.23	0.13	0.03	0.00	488.35	0.16	22.72	1446.69
43	ELY	Electricity	2210053.00	569.38	583.92	0.19	1154.45	0.49	79102.95	25.77	11076.12	2210053.00
44	GDT	Gas manufacture, distribution	31406.48	8.09	2844.02	0.94	0.00	0.09	10601.25	3.45	17866.15	31406.48
45	WTR	Water	186.61	0.05	2.03	0.00	0.08	0.00	184.74	0.06	351.69	186.61
46	CNS	Construction	13165.78	3.39	25.73	0.01	0.16	0.00	13980.95	4.56	439.95	13165.78
47	TRD	Trade	7320.15	1.89	398.28	0.13	5.30	0.00	31134.45	10.14	3984.28	7320.15
48	OTP	Transport nec	17307.74	4.46	4.67	0.00	6.94	0.00	96202.29	31.34	362.69	17307.74
49	WTP	Water transport	785.02	0.20	0.85	0.00	1.20	0.00	118343.70	38.56	132.98	785.02
50	ATP	Air transport	219.46	0.06	0.01	0.00	0.03	0.00	15456.81	5.04	90.53	219.46
51	CMN	Communication	155.31	0.04	0.01	0.00	0.03	0.00	1234.85	0.40	563.88	155.31
52	OFI	Financial services nec	424.07	0.11	0.01	0.00	0.01	0.00	2379.34	0.78	190.07	424.07
53	ISR	Insurance	19.88	0.01	0.01	0.00	0.00	0.00	786.86	0.26	1.13	19.88
54	OBS	Business services nec	4456.88	1.15	58.90	0.02	0.83	0.00	5994.06	1.95	830.56	4456.88
55	ROS	Recreational and other services	6580.79	1.70	192.64	0.06	2.83	0.00	5499.17	1.79	1151.33	6580.79
56	OSG	Public Administration, Defense, Education, Health	16780.34	4.32	375.94	0.12	4.87	0.00	20078.77	6.54	1805.21	16780.34
57	DWE	Dwellings	37.51	0.01	0.01	0.00	0.00	0.00	2.89	0.00	2.60	37.51
58		Households	165631.30	42.67	0.00	0.00	5231.60	2.24	150345.30	48.99	21782.53	165631.30
Total			3343872.68	1022.63	30583.09	281.34	13416.04	7.02	903969.63	406.13	122280.69	3343872.68

Table 3. CO₂ emissions and fossil fuel consumption of EU27, 2004

No.	Code	Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
1	PDR	Paddy rice	1.52	0.00	0.00	0.00	59.85	0.03	197.35	0.06	8.20	0.00
2	WHT	Wheat	179.57	0.05	0.03	0.00	139.30	0.06	2859.37	0.93	230.40	0.08
3	GRO	Cereal grains nec	381.67	0.10	0.01	0.00	208.81	0.09	3516.52	1.15	185.82	0.06
4	V_F	Vegetables, fruit, nuts	669.13	0.17	0.57	0.00	240.88	0.10	11939.59	3.89	2371.57	0.80
5	OSD	Oil seeds	96.71	0.02	0.01	0.00	221.21	0.09	1789.97	0.58	55.11	0.02
6	C_B	Sugar cane, sugar beet	158.32	0.04	0.02	0.00	9.63	0.00	820.44	0.27	191.57	0.06
7	PFB	Plant-based fibers	40.86	0.01	0.04	0.00	199.01	0.09	874.05	0.28	97.32	0.03
8	OCR	Crops nec	515.09	0.13	0.45	0.00	480.31	0.21	11595.24	3.78	5758.23	1.94
9	CTL	Bovine cattle, sheep and goats, horses	253.96	0.07	0.06	0.00	103.30	0.04	3050.47	0.99	419.97	0.14
10	OAP	Animal products nec	600.83	0.15	0.08	0.00	288.37	0.12	6941.25	2.26	529.14	0.18
11	RMK	Raw milk	431.96	0.11	0.14	0.00	68.49	0.03	4708.79	1.53	195.17	0.07
12	WOL	Wool, silk-worm cocoons	3.52	0.00	0.01	0.00	253.45	0.11	19.63	0.01	6.18	0.00
13	FRS	Forestry	184.40	0.05	0.10	0.00	240.89	0.10	3571.48	1.16	176.37	0.06
14	FSH	Fishing	11.51	0.00	0.03	0.00	723.10	0.31	7204.86	2.35	132.99	0.04
15	COA	Coal	1529.72	0.39	1.58	0.00	17.22	0.01	300.67	0.10	55.95	0.02
16	OIL	Oil	6.97	0.00	411.03	0.14	7898.02	3.38	428.37	0.14	1705.24	0.57
17	GAS	Gas	2.63	0.00	1.84	0.00	470.36	0.20	58.79	0.02	6.98	0.00
18	OMN	Minerals nec	712.38	0.18	8.08	0.00	1028.62	0.44	5102.04	1.66	931.22	0.31
19	CMT	Bovine meat products	129.53	0.03	0.52	0.00	1664.61	0.71	783.26	0.26	436.49	0.15
20	OMT	Meat products nec	338.99	0.09	0.66	0.00	1625.67	0.70	1120.70	0.37	857.03	0.29
21	VOL	Vegetable oils and fats	102.05	0.03	0.32	0.00	1462.32	0.63	833.98	0.27	330.40	0.11
22	MIL	Dairy products	1721.43	0.44	1.07	0.00	4340.83	1.86	3088.61	1.01	1986.68	0.67
23	PCR	Processed rice	15.80	0.00	0.37	0.00	117.70	0.05	127.58	0.04	46.42	0.02
24	SGR	Sugar	317.26	0.08	1.53	0.00	908.32	0.39	518.33	0.17	421.42	0.14
25	OFD	Food products nec	4057.34	1.05	8.47	0.00	14952.58	6.40	12003.61	3.91	9693.14	3.27
26	B_T	Beverages and tobacco products	209.48	0.05	1.44	0.00	1603.37	0.69	1679.35	0.55	1133.08	0.38
27	TEX	Textiles	619.67	0.16	7.00	0.00	5547.02	2.37	2423.30	0.79	1774.63	0.60
28	WAP	Wearing apparel	129.71	0.03	0.57	0.00	1593.39	0.68	1655.11	0.54	819.89	0.28
29	LEA	Leather products	92.10	0.02	1.14	0.00	631.25	0.27	885.75	0.29	442.95	0.15

...continued

Table 3 (continued)

No.	Code	Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
30	LUM	Wood products	601.86	0.16	0.51	0.00	1071.79	0.46	2187.35	0.71	817.19	0.28
31	PPP	Paper products, publishing	5461.53	1.41	2.47	0.00	17468.54	7.47	8077.28	2.63	7625.25	2.57
32	P_C	Petroleum, coal products	0.00	55.84	0.00	655.45	46255.17	19.79	0.00	198.56	1392.66	0.47
33	CRP	Chemical, rubber, plastic products	12636.47	3.26	89.57	0.03	48014.71	33.35	29737.98	80.63	25356.17	8.54
34	NMM	Mineral products nec	20701.66	5.33	7.20	0.00	36692.50	15.70	43764.16	14.26	9320.79	3.14
35	I_S	Ferrous metals	11115.09	2.86	7.26	0.00	19897.92	8.51	40766.56	13.28	9585.79	3.23
36	NFM	Metals nec	1519.95	0.39	1.36	0.00	6238.19	2.67	5428.51	1.77	1562.03	0.53
37	FMP	Metal products	279.17	0.07	2.76	0.00	8612.74	3.69	4603.70	1.50	2875.52	0.97
38	MVH	Motor vehicles and parts	531.27	0.14	1.79	0.00	4728.22	2.02	2334.16	0.76	2397.61	0.81
39	OTN	Transport equipment nec	238.17	0.06	0.83	0.00	1822.14	0.78	1115.09	0.36	983.96	0.33
40	ELE	Electronic equipment	23.65	0.01	0.99	0.00	930.23	0.40	1441.06	0.47	596.70	0.20
41	OME	Machinery and equipment nec	507.06	0.13	3.65	0.00	6106.02	2.61	7420.34	2.42	4737.21	1.60
42	OMF	Manufactures nec	80.38	0.02	0.82	0.00	656.42	0.28	2046.50	0.67	335.34	0.11
43	ELY	Electricity	935334.40	240.97	109.78	0.04	229144.60	98.05	115707.50	37.70	93665.20	31.55
44	GDT	Gas manufacture, distribution	2550.14	0.66	434.86	0.14	0.00	7.54	1265.91	0.41	6440.85	2.17
45	WTR	Water	659.15	0.17	1.67	0.00	5592.68	2.39	724.58	0.24	522.08	0.18
46	CNS	Construction	135.17	0.03	9.08	0.00	1616.02	0.69	17886.33	5.83	1192.68	0.40
47	TRD	Trade	1801.01	0.46	22.07	0.01	18270.64	7.82	30028.71	9.78	10128.12	3.41
48	OTP	Transport nec	263.58	0.07	7.70	0.00	4099.38	1.75	567597.80	184.94	3370.40	1.14
49	WTP	Water transport	26.48	0.01	1.77	0.00	119.28	0.05	102623.60	33.44	289.08	0.10
50	ATP	Air transport	8.61	0.00	0.43	0.00	37.03	0.02	144072.10	46.94	480.57	0.16
51	CMN	Communication	92.84	0.02	0.71	0.00	548.80	0.23	2622.05	0.85	966.61	0.33
52	OFI	Financial services nec	331.55	0.09	0.78	0.00	676.69	0.29	2215.03	0.72	1227.49	0.41
53	ISR	Insurance	53.77	0.01	0.52	0.00	113.22	0.05	1100.55	0.36	562.16	0.19
54	OBS	Business services nec	1690.77	0.44	19.91	0.01	22649.22	9.69	16571.56	5.40	7950.36	2.68
55	ROS	Recreational and other services	262.64	0.07	2.86	0.00	6313.54	2.70	4970.73	1.62	3612.26	1.22
56	OSG	Public Administration, Defense, Education, Health	1721.26	0.44	5.28	0.00	11210.37	4.80	19757.53	6.44	15614.33	5.26
57	DWE	Dwellings	1.78	0.00	0.56	0.00	1.75	0.00	3.22	0.00	0.40	0.00
58		Households	31579.23	8.14	50.64	0.02	134087.50	57.37	534166.90	174.04	197103.40	66.39
		Total	1043722.79	324.74	1235.02	655.86	680073.18	311.35	1800335.23	856.08	441711.74	148.79

Table 4. CO₂ emissions and fossil fuel consumption of Russian Federation, 2004

No.	Code	Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
1	PDR	Paddy rice	0.52	0.00	0.00	0.00	0.83	0.00	25.95	0.01	0.27	0.00
2	WHT	Wheat	11.81	0.00	0.00	0.00	19.79	0.01	623.84	0.20	13.04	0.00
3	GRO	Cereal grains nec	22.77	0.01	0.00	0.00	37.88	0.02	1191.84	0.39	17.47	0.01
4	V_F	Vegetables, fruit, nuts	62.81	0.02	0.01	0.00	102.45	0.04	3212.07	1.05	83.40	0.03
5	OSD	Oil seeds	2.40	0.00	0.00	0.00	4.00	0.00	125.64	0.04	1.78	0.00
6	C_B	Sugar cane, sugar beet	0.71	0.00	0.00	0.00	1.15	0.00	36.10	0.01	0.52	0.00
7	PFB	Plant-based fibers	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00
8	OCR	Crops nec	0.05	0.00	0.00	0.00	0.09	0.00	2.70	0.00	0.10	0.00
9	CTL	Bovine cattle, sheep and goats, horses	67.17	0.02	0.00	0.00	0.01	0.00	1290.58	0.42	47.47	0.02
10	OAP	Animal products nec	27.10	0.01	0.00	0.00	0.01	0.00	539.41	0.18	12.41	0.00
11	RMK	Raw milk	144.55	0.04	0.00	0.00	0.03	0.00	2810.38	0.92	40.27	0.01
12	WOL	Wool, silk-worm cocoons	3.98	0.00	0.00	0.00	0.00	0.00	63.31	0.02	1.33	0.00
13	FRS	Forestry	109.18	0.03	31.94	0.01	636.08	0.27	4558.99	1.49	68.32	0.02
14	FSH	Fishing	13.69	0.00	3.77	0.00	174.16	0.07	89.33	0.03	12.95	0.00
15	COA	Coal	1644.91	0.42	0.56	0.00	0.39	0.00	0.25	0.00	1.06	0.00
16	OIL	Oil	1.41	0.00	4339.21	1.43	9731.59	4.16	752.64	0.25	2451.17	0.83
17	GAS	Gas	0.05	0.00	2209.90	0.73	22445.52	9.60	573.34	0.19	42.73	0.01
18	OMN	Minerals nec	1.63	0.00	4.30	0.00	31.24	0.01	53.74	0.02	13.27	0.00
19	CMT	Bovine meat products	71.11	0.02	2.39	0.00	0.08	0.00	462.46	0.15	133.58	0.04
20	OMT	Meat products nec	27.95	0.01	0.87	0.00	27.92	0.01	132.63	0.04	84.81	0.03
21	VOL	Vegetable oils and fats	14.19	0.00	0.76	0.00	133.26	0.06	485.29	0.16	115.64	0.04
22	MIL	Dairy products	135.77	0.03	1.98	0.00	743.47	0.32	466.42	0.15	288.84	0.10
23	PCR	Processed rice	0.08	0.00	0.00	0.00	0.08	0.00	0.40	0.00	0.38	0.00
24	SGR	Sugar	117.71	0.03	1.90	0.00	0.05	0.00	400.79	0.13	97.65	0.03
25	OFD	Food products nec	98.15	0.03	2.94	0.00	94.67	0.04	447.81	0.15	448.65	0.15
26	B_T	Beverages and tobacco products	61.02	0.02	2.52	0.00	0.02	0.00	472.40	0.15	252.42	0.09
27	TEX	Textiles	18.41	0.00	2.73	0.00	43.07	0.02	10.94	0.00	67.02	0.02
28	WAP	Wearing apparel	7.33	0.00	0.55	0.00	0.00	0.00	10.92	0.00	49.22	0.02
29	LEA	Leather products	9.24	0.00	0.66	0.00	0.00	0.00	14.51	0.00	32.48	0.01

...continued

Table 4 (continued)

No.	Code	Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
30	LUM	Wood products	24.56	0.01	2.10	0.00	0.00	0.00	1692.94	0.55	16.63	0.01
31	PPP	Paper products, publishing	6.57	0.00	1.06	0.00	246.34	0.11	27.88	0.01	652.42	0.22
32	P_C	Petroleum, coal products	0.00	25.67	0.00	182.83	20760.29	8.88	0.00	23.97	2670.93	0.90
33	CRP	Chemical, rubber, plastic products	27.34	0.01	14.95	0.00	3902.84	15.64	22281.20	10.28	8049.83	2.71
34	NMM	Mineral products nec	1726.91	0.44	8.43	0.00	12933.92	5.53	2140.21	0.70	4261.65	1.44
35	I_S	Ferrous metals	1089.27	0.28	114.40	0.04	23701.25	10.14	13873.12	4.52	7697.43	2.59
36	NFM	Metals nec	3771.66	0.97	142.39	0.05	11.70	0.01	5769.53	1.88	5635.59	1.90
37	FMP	Metal products	25.89	0.01	1.53	0.00	318.27	0.14	1027.86	0.33	447.37	0.15
38	MVH	Motor vehicles and parts	4.79	0.00	1.92	0.00	14.46	0.01	1.97	0.00	17.68	0.01
39	OTN	Transport equipment nec	0.72	0.00	0.80	0.00	7.30	0.00	3.85	0.00	15.50	0.01
40	ELE	Electronic equipment	5.53	0.00	0.51	0.00	0.03	0.00	480.10	0.16	138.52	0.05
41	OME	Machinery and equipment nec	188.02	0.05	5.54	0.00	1988.69	0.85	374.98	0.12	2045.09	0.69
42	OMF	Manufactures nec	2.61	0.00	0.27	0.00	0.13	0.00	166.35	0.05	207.78	0.07
43	ELY	Electricity	276193.60	71.16	2866.41	0.94	360533.50	154.27	66854.98	21.78	148786.00	50.12
44	GDT	Gas manufacture, distribution	11.22	0.00	102.81	0.03	0.00	0.79	252.39	0.08	890.56	0.30
45	WTR	Water	303.45	0.08	0.02	0.00	5.15	0.00	965.83	0.31	40.31	0.01
46	CNS	Construction	113.05	0.03	75.92	0.02	129.71	0.06	3072.74	1.00	711.14	0.24
47	TRD	Trade	987.57	0.25	0.05	0.00	598.87	0.26	6806.86	2.22	756.26	0.25
48	OTP	Transport nec	58.27	0.02	102.94	0.03	53460.16	22.88	87151.78	28.40	24259.03	8.17
49	WTP	Water transport	4.44	0.00	6.19	0.00	1208.37	0.52	8972.83	2.92	1605.58	0.54
50	ATP	Air transport	2.16	0.00	9.91	0.00	733.25	0.31	21597.11	7.04	4739.49	1.60
51	CMN	Communication	147.08	0.04	0.00	0.00	0.00	0.00	288.66	0.09	433.84	0.15
52	OFI	Financial services nec	18.67	0.00	0.00	0.00	110.65	0.05	2965.68	0.97	961.69	0.32
53	ISR	Insurance	15.31	0.00	0.00	0.00	15.31	0.01	3149.67	1.03	102.21	0.03
54	OBS	Business services nec	79.37	0.02	140.36	0.05	777.56	0.33	13628.61	4.44	422.69	0.14
55	ROS	Recreational and other services	358.46	0.09	0.00	0.00	329.15	0.14	545.93	0.18	392.40	0.13
56	OSG	Public Administration, Defense, Education, Health	3111.67	0.80	0.01	0.00	948.89	0.41	6171.83	2.01	5371.15	1.81
57	DWE	Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58		Households	19388.66	5.00	0.00	0.00	7868.61	3.37	68191.58	22.22	124071.30	41.79
Total			310342.55	105.63	10205.54	186.18	524832.24	239.33	357311.20	143.42	349778.30	117.82

Table 5. CO₂ emissions and fossil fuel consumption of Japan, 2004

No.	Code	Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
1	PDR	Paddy rice	0.00	0.00	0.00	0.00	0.00	0.00	2194.17	0.71	0.00	0.00
2	WHT	Wheat	0.00	0.00	0.00	0.00	0.00	0.00	388.09	0.13	0.00	0.00
3	GRO	Cereal grains nec	0.00	0.00	0.00	0.00	0.00	0.00	52.14	0.02	0.00	0.00
4	V_F	Vegetables, fruit, nuts	0.00	0.00	0.00	0.00	0.00	0.00	6885.30	2.24	0.00	0.00
5	OSD	Oil seeds	0.00	0.00	0.00	0.00	0.00	0.00	53.36	0.02	0.00	0.00
6	C_B	Sugar cane, sugar beet	0.00	0.00	0.00	0.00	0.00	0.00	86.40	0.03	0.00	0.00
7	PFB	Plant-based fibers	0.00	0.00	0.00	0.00	0.00	0.00	109.62	0.04	0.00	0.00
8	OCR	Crops nec	0.00	0.00	0.00	0.00	0.00	0.00	4388.23	1.43	0.00	0.00
9	CTL	Bovine cattle, sheep and goats, horses	0.00	0.00	0.00	0.00	0.00	0.00	48.84	0.02	0.00	0.00
10	OAP	Animal products nec	0.00	0.00	0.00	0.00	0.00	0.00	158.67	0.05	0.00	0.00
11	RMK	Raw milk	0.00	0.00	0.00	0.00	0.00	0.00	101.10	0.03	0.00	0.00
12	WOL	Wool, silk-worm cocoons	0.00	0.00	0.00	0.00	0.00	0.00	3.86	0.00	0.00	0.00
13	FRS	Forestry	0.03	0.00	0.00	0.00	0.00	0.00	1030.53	0.34	0.00	0.00
14	FSH	Fishing	0.01	0.00	0.00	0.00	0.01	0.00	14473.49	4.72	0.00	0.00
15	COA	Coal	0.03	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00
16	OIL	Oil	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
17	GAS	Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	OMN	Minerals nec	0.01	0.00	0.00	0.00	325.78	0.14	2095.30	0.68	0.84	0.00
19	CMT	Bovine meat products	0.01	0.00	0.00	0.00	7.65	0.00	101.20	0.03	0.03	0.00
20	OMT	Meat products nec	0.00	0.00	0.00	0.00	2.57	0.00	179.15	0.06	0.10	0.00
21	VOL	Vegetable oils and fats	0.02	0.00	0.01	0.00	15.14	0.01	177.69	0.06	0.28	0.00
22	MIL	Dairy products	0.05	0.00	0.02	0.00	46.74	0.02	1092.94	0.36	0.11	0.00
23	PCR	Processed rice	0.02	0.00	0.02	0.00	27.26	0.01	113.99	0.04	0.02	0.00
24	SGR	Sugar	0.04	0.00	0.00	0.00	0.44	0.00	551.15	0.18	0.46	0.00
25	OFD	Food products nec	0.47	0.00	0.50	0.00	888.60	0.38	5997.97	1.95	2.13	0.00
26	B_T	Beverages and tobacco products	0.03	0.00	0.00	0.00	2.96	0.00	1519.09	0.49	1.27	0.00
27	TEX	Textiles	0.04	0.00	0.00	0.00	130.10	0.06	392.22	0.13	55.44	0.02
28	WAP	Wearing apparel	0.00	0.00	0.00	0.00	22.35	0.01	56.68	0.02	10.59	0.00
29	LEA	Leather products	0.01	0.00	0.00	0.00	5.70	0.00	22.09	0.01	0.62	0.00

...continued

Table 5 (continued)

No.	Code	Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
30	LUM	Wood products	0.04	0.00	0.00	0.00	49.70	0.02	60.33	0.02	24.88	0.01
31	PPP	Paper products, publishing	5944.95	1.53	0.00	0.00	1025.25	0.44	6554.72	2.14	248.37	0.08
32	P_C	Petroleum, coal products	0.00	45.53	0.00	194.90	11712.13	5.01	0.00	51.28	0.08	0.00
33	CRP	Chemical, rubber, plastic products	17622.47	4.54	91.13	0.03	9255.00	5.63	39347.81	48.25	112.98	0.04
34	NMM	Mineral products nec	10896.99	2.81	0.23	0.00	1676.51	0.72	9991.49	3.26	8.61	0.00
35	I_S	Ferrous metals	6170.72	1.59	0.00	0.00	4101.21	1.75	33074.48	10.78	511.87	0.17
36	NFM	Metals nec	163.14	0.04	0.01	0.00	392.27	0.17	2161.03	0.70	60.81	0.02
37	FMP	Metal products	90.72	0.02	0.00	0.00	109.31	0.05	1301.74	0.42	67.79	0.02
38	MVH	Motor vehicles and parts	0.06	0.00	0.04	0.00	50.31	0.02	68.29	0.02	29.77	0.01
39	OTN	Transport equipment nec	0.02	0.00	0.06	0.00	186.39	0.08	15.84	0.01	6.08	0.00
40	ELE	Electronic equipment	73.38	0.02	0.06	0.00	3116.05	1.33	1807.98	0.59	93.37	0.03
41	OME	Machinery and equipment nec	377.54	0.10	0.01	0.00	604.93	0.26	1978.23	0.64	81.37	0.03
42	OMF	Manufactures nec	0.02	0.00	0.01	0.00	700.50	0.30	1759.97	0.57	279.39	0.09
43	ELY	Electricity	209043.60	53.86	16258.47	5.35	109822.80	46.99	61827.66	20.14	0.03	0.00
44	GDT	Gas manufacture, distribution	0.49	0.00	3.72	0.00	0.00	0.03	8.82	0.00	0.00	0.00
45	WTR	Water	0.07	0.00	0.00	0.00	20.27	0.01	128.63	0.04	1.83	0.00
46	CNS	Construction	0.03	0.00	0.00	0.00	49.62	0.02	11724.92	3.82	54.38	0.02
47	TRD	Trade	0.71	0.00	0.01	0.00	404.75	0.17	14976.14	4.88	168.73	0.06
48	OTP	Transport nec	0.30	0.00	0.06	0.00	646.49	0.28	169828.80	55.33	13.27	0.00
49	WTP	Water transport	0.01	0.00	0.00	0.00	11.37	0.00	18774.34	6.12	2.17	0.00
50	ATP	Air transport	0.00	0.00	0.00	0.00	0.50	0.00	12402.89	4.04	1.03	0.00
51	CMN	Communication	0.01	0.00	0.00	0.00	0.81	0.00	1508.29	0.49	5.62	0.00
52	OFI	Financial services nec	0.58	0.00	0.00	0.00	0.98	0.00	1117.18	0.36	5.10	0.00
53	ISR	Insurance	0.17	0.00	0.00	0.00	1.47	0.00	626.78	0.20	5.16	0.00
54	OBS	Business services nec	2.61	0.00	1.25	0.00	13411.49	5.74	12078.30	3.94	229.22	0.08
55	ROS	Recreational and other services	0.16	0.00	0.00	0.00	325.56	0.14	8424.27	2.74	37.00	0.01
56	OSG	Public Administration, Defense, Education, Health	2.09	0.00	0.00	0.00	171.42	0.07	40464.23	13.18	2505.73	0.84
57	DWE	Dwellings	0.00	0.00	0.00	0.00	0.07	0.00	1.92	0.00	0.00	0.00
58		Households	9.87	0.00	0.06	0.00	11955.82	5.12	148739.50	48.46	9950.39	3.35
Total			250401.51	110.04	16355.67	200.29	171278.31	74.98	643027.90	296.22	14576.91	4.91

Table 6. CO₂ emissions and fossil fuel consumption of India, 2004

No.	Code	Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
1	PDR	Paddy rice	0.00	0.00	0.00	0.00	0.52	0.00	0.14	0.00	1.16	0.00
2	WHT	Wheat	0.01	0.00	0.00	0.00	1.96	0.00	2.17	0.00	7.80	0.00
3	GRO	Cereal grains nec	0.01	0.00	0.00	0.00	0.21	0.00	1.16	0.00	2.74	0.00
4	V_F	Vegetables, fruit, nuts	0.09	0.00	0.00	0.00	18.59	0.01	2.30	0.00	32.04	0.01
5	OSD	Oil seeds	0.04	0.00	0.00	0.00	19.23	0.01	1.88	0.00	15.22	0.01
6	C_B	Sugar cane, sugar beet	0.02	0.00	0.00	0.00	0.95	0.00	0.30	0.00	2.68	0.00
7	PFB	Plant-based fibers	0.00	0.00	0.00	0.00	0.74	0.00	0.51	0.00	6.71	0.00
8	OCR	Crops nec	0.05	0.00	0.00	0.00	13.26	0.01	1.49	0.00	29.25	0.01
9	CTL	Bovine cattle, sheep and goats, horses	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	4.09	0.00
10	OAP	Animal products nec	0.00	0.00	0.00	0.00	1.26	0.00	0.00	0.00	4.16	0.00
11	RMK	Raw milk	0.29	0.00	0.01	0.00	106.72	0.05	0.03	0.00	1.09	0.00
12	WOL	Wool, silk-worm cocoons	0.00	0.00	0.00	0.00	0.81	0.00	0.00	0.00	1.21	0.00
13	FRS	Forestry	0.06	0.00	0.00	0.00	0.89	0.00	0.92	0.00	2.52	0.00
14	FSH	Fishing	0.02	0.00	0.00	0.00	2.18	0.00	1.86	0.00	1.71	0.00
15	COA	Coal	1538.71	0.40	0.00	0.00	0.00	0.00	1.90	0.00	0.00	0.00
16	OIL	Oil	0.00	0.00	0.08	0.00	2699.46	1.16	0.49	0.00	20.01	0.01
17	GAS	Gas	52.85	0.01	0.05	0.00	4721.32	2.02	0.35	0.00	24.49	0.01
18	OMN	Minerals nec	223.28	0.06	0.00	0.00	0.96	0.00	3600.69	1.17	2.37	0.00
19	CMT	Bovine meat products	3.66	0.00	0.02	0.00	0.61	0.00	335.16	0.11	0.00	0.00
20	OMT	Meat products nec	0.05	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.01	0.00
21	VOL	Vegetable oils and fats	24.41	0.01	0.01	0.00	0.23	0.00	893.02	0.29	0.02	0.00
22	MIL	Dairy products	32.01	0.01	0.20	0.00	5.15	0.00	2888.16	0.94	0.02	0.00
23	PCR	Processed rice	0.06	0.00	0.00	0.00	0.01	0.00	16518.31	5.38	0.01	0.00
24	SGR	Sugar	11.75	0.00	0.10	0.00	2.61	0.00	2031.78	0.66	0.03	0.00
25	OFD	Food products nec	26.91	0.01	0.18	0.00	4.54	0.00	2570.54	0.84	0.07	0.00
26	B_T	Beverages and tobacco products	22.61	0.01	0.03	0.00	0.80	0.00	1417.89	0.46	0.01	0.00
27	TEX	Textiles	2061.59	0.53	0.13	0.00	3.04	0.00	2698.00	0.88	0.09	0.00
28	WAP	Wearing apparel	31.27	0.01	0.01	0.00	0.31	0.00	301.41	0.10	0.01	0.00
29	LEA	Leather products	47.27	0.01	0.00	0.00	0.01	0.00	299.06	0.10	0.00	0.00

...continued

Table 6 (continued)

No.	Code	Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
30	LUM	Wood products	11.59	0.00	0.00	0.00	0.89	0.00	161.71	0.05	0.14	0.00
31	PPP	Paper products, publishing	9617.72	2.48	0.01	0.00	8.92	0.00	424.11	0.14	0.70	0.00
32	P_C	Petroleum, coal products	0.00	15.12	0.00	127.29	9552.11	4.09	0.00	16.98	36.16	0.01
33	CRP	Chemical, rubber, plastic products	8999.23	2.32	12.87	0.00	15570.44	7.67	15799.08	18.07	13.76	0.00
34	NMM	Mineral products nec	36096.13	9.30	0.00	0.00	3.16	0.00	3043.11	0.99	15.63	0.01
35	I_S	Ferrous metals	28898.67	7.45	0.26	0.00	52.74	0.02	9953.83	3.24	0.73	0.00
36	NFM	Metals nec	2160.05	0.56	0.14	0.00	6.28	0.00	774.02	0.25	0.05	0.00
37	FMP	Metal products	548.22	0.14	0.28	0.00	7.47	0.00	1581.07	0.52	0.04	0.00
38	MVH	Motor vehicles and parts	11.45	0.00	0.00	0.00	1.24	0.00	76.25	0.02	1.06	0.00
39	OTN	Transport equipment nec	14.35	0.00	0.00	0.00	0.66	0.00	46.37	0.02	0.87	0.00
40	ELE	Electronic equipment	1.21	0.00	0.06	0.00	1.50	0.00	229.06	0.07	0.00	0.00
41	OME	Machinery and equipment nec	126.95	0.03	0.60	0.00	16.07	0.01	1571.61	0.51	0.03	0.00
42	OMF	Manufactures nec	465.99	0.12	0.89	0.00	16.51	0.01	875.49	0.29	0.01	0.00
43	ELY	Electricity	571820.30	147.32	18.76	0.01	29493.09	12.62	27824.99	9.07	33.25	0.01
44	GDT	Gas manufacture, distribution	59.42	0.02	0.00	0.00	0.00	0.01	0.00	0.00	10.68	0.00
45	WTR	Water	38.54	0.01	0.00	0.00	0.00	0.00	19.73	0.01	0.00	0.00
46	CNS	Construction	31.58	0.01	0.05	0.00	1.32	0.00	822.63	0.27	0.02	0.00
47	TRD	Trade	5736.37	1.48	0.18	0.00	1.64	0.00	347.90	0.11	10.94	0.00
48	OTP	Transport nec	539.20	0.14	0.00	0.00	0.00	0.00	64203.93	20.92	0.00	0.00
49	WTP	Water transport	0.11	0.00	0.00	0.00	0.00	0.00	17197.63	5.60	0.00	0.00
50	ATP	Air transport	0.02	0.00	0.00	0.00	0.00	0.00	4170.39	1.36	0.00	0.00
51	CMN	Communication	1.00	0.00	0.00	0.00	0.00	0.00	41.89	0.01	0.00	0.00
52	OFI	Financial services nec	2.26	0.00	0.00	0.00	0.00	0.00	37.31	0.01	0.00	0.00
53	ISR	Insurance	0.36	0.00	0.00	0.00	0.00	0.00	52.29	0.02	0.00	0.00
54	OBS	Business services nec	2349.17	0.61	1.41	0.00	4.82	0.00	196.52	0.06	0.01	0.00
55	ROS	Recreational and other services	2145.48	0.55	1.29	0.00	4.44	0.00	180.32	0.06	0.02	0.00
56	OSG	Public Administration, Defense, Education, Health	20.64	0.01	0.00	0.00	0.00	0.00	114.45	0.04	0.03	0.00
57	DWE	Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58		Households	21357.42	5.50	0.16	0.00	18.94	0.01	118579.30	38.64	1757.40	0.59
Total			695130.43	194.21	37.80	127.30	62368.84	27.70	301895.50	128.27	2041.05	0.69

Table 1a Significance of CO₂ emissions from emitters: U.S.A., 2004

No.	Code	Unit: % Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
1	PDR	Paddy rice	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
2	WHT	Wheat	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.07	0.00	0.00
3	GRO	Cereal grains nec	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.11	0.00	0.00
4	V_F	Vegetables, fruit, nuts	0.01	0.00	0.00	0.00	0.00	0.00	0.17	0.11	0.00	0.00
5	OSD	Oil seeds	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
6	C_B	Sugar cane, sugar beet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	PFB	Plant-based fibers	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
8	OCR	Crops nec	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.05	0.00	0.00
9	CTL	Bovine cattle, sheep and goats, horses	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.00	0.00
10	OAP	Animal products nec	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.07	0.00	0.00
11	RMK	Raw milk	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
12	WOL	Wool, silk-worm cocoons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	FRS	Forestry	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
14	FSH	Fishing	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
15	COA	Coal	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	OIL	Oil	0.00	0.00	0.00	0.00	0.35	0.31	0.00	0.00	0.02	0.01
17	GAS	Gas	0.00	0.00	0.00	0.00	0.06	0.05	0.00	0.00	0.00	0.00
18	OMN	Minerals nec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	CMT	Bovine meat products	0.03	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.09	0.06
20	OMT	Meat products nec	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.03
21	VOL	Vegetable oils and fats	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02
22	MIL	Dairy products	0.04	0.02	0.00	0.00	0.00	0.00	0.02	0.02	0.07	0.05
23	PCR	Processed rice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	SGR	Sugar	0.04	0.02	0.00	0.00	0.00	0.00	0.01	0.01	0.10	0.07
25	OFD	Food products nec	0.09	0.05	0.00	0.00	0.00	0.00	0.10	0.06	0.33	0.22
26	B_T	Beverages and tobacco products	0.04	0.02	0.00	0.00	0.00	0.00	0.03	0.02	0.06	0.04
27	TEX	Textiles	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.09	0.06
28	WAP	Wearing apparel	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.05	0.03
29	LEA	Leather products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00

...continued

Table 1a (continued)

No.	Code	Unit: % Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
30	LUM	Wood products	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.07	0.10	0.07
31	PPP	Paper products, publishing	0.30	0.16	0.00	0.00	0.00	0.00	0.28	0.18	0.63	0.43
32	P_C	Petroleum, coal products	0.00	2.94	0.00	26.92	2.92	2.55	0.00	2.89	0.12	0.09
33	CRP	Chemical, rubber, plastic products	0.36	0.19	0.00	0.00	1.14	1.32	0.43	3.33	0.94	0.65
34	NMM	Mineral products nec	0.53	0.28	0.00	0.00	0.00	0.00	0.24	0.16	0.48	0.33
35	I_S	Ferrous metals	0.06	0.03	0.00	0.00	0.00	0.00	0.33	0.22	0.52	0.35
36	NFM	Metals nec	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.28	0.19
37	FMP	Metal products	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.16	0.11
38	MVH	Motor vehicles and parts	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.02	0.16	0.11
39	OTN	Transport equipment nec	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.07	0.05
40	ELE	Electronic equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.09	0.06
41	OME	Machinery and equipment nec	0.01	0.01	0.00	0.00	0.00	0.00	0.06	0.04	0.23	0.16
42	OMF	Manufactures nec	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
43	ELY	Electricity	31.60	16.57	0.00	0.00	1.08	0.94	2.22	1.47	5.75	3.94
44	GDT	Gas manufacture, distribution	0.11	0.06	0.00	0.00	0.00	0.48	0.00	0.00	0.47	0.32
45	WTR	Water	0.03	0.02	0.00	0.00	0.01	0.01	0.05	0.03	0.28	0.19
46	CNS	Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.16	0.00	0.00
47	TRD	Trade	0.03	0.01	0.00	0.00	0.02	0.01	0.29	0.19	0.84	0.57
48	OTP	Transport nec	0.00	0.00	0.00	0.00	0.46	0.40	12.27	8.14	0.15	0.10
49	WTP	Water transport	0.00	0.00	0.00	0.00	0.00	0.00	0.59	0.39	0.04	0.02
50	ATP	Air transport	0.00	0.00	0.00	0.00	0.00	0.00	7.32	4.86	0.03	0.02
51	CMN	Communication	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01
52	OFI	Financial services nec	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.14	0.10
53	ISR	Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
54	OBS	Business services nec	0.03	0.02	0.00	0.00	0.00	0.00	0.07	0.05	0.19	0.13
55	ROS	Recreational and other services	0.02	0.01	0.00	0.00	0.00	0.00	0.19	0.13	0.35	0.24
56	OSG	Public Administration, Defense, Education, Health	0.04	0.02	0.00	0.00	0.00	0.00	0.39	0.26	1.49	1.02
57	DWE	Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58		Households	0.00	0.00	0.00	0.00	0.00	0.00	14.01	9.29	5.60	3.84
Total			33.49	20.51	0.01	26.93	6.07	6.10	40.40	32.73	20.03	13.73

Table 2a Significance of CO₂ emissions from emitters: China, 2004

No.	Code	Unit: % Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
1	PDR	Paddy rice	0.06	0.04	0.00	0.00	0.00	0.00	0.08	0.07	0.00	0.00
2	WHT	Wheat	0.06	0.04	0.00	0.00	0.00	0.00	0.07	0.06	0.00	0.00
3	GRO	Cereal grains nec	0.04	0.03	0.00	0.00	0.00	0.00	0.05	0.04	0.00	0.00
4	V_F	Vegetables, fruit, nuts	0.44	0.28	0.00	0.00	0.00	0.00	0.51	0.42	0.00	0.00
5	OSD	Oil seeds	0.03	0.02	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
6	C_B	Sugar cane, sugar beet	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
7	PFB	Plant-based fibers	0.06	0.04	0.00	0.00	0.00	0.00	0.06	0.05	0.00	0.00
8	OCR	Crops nec	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
9	CTL	Bovine cattle, sheep and goats, horses	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
10	OAP	Animal products nec	0.25	0.16	0.00	0.00	0.00	0.00	0.11	0.09	0.00	0.00
11	RMK	Raw milk	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	WOL	Wool, silk-worm cocoons	0.02	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
13	FRS	Forestry	0.05	0.03	0.00	0.00	0.00	0.00	0.16	0.13	0.00	0.00
14	FSH	Fishing	0.04	0.03	0.00	0.00	0.00	0.00	0.43	0.35	0.00	0.00
15	COA	Coal	1.98	1.28	0.00	0.00	0.00	0.00	0.07	0.06	0.00	0.00
16	OIL	Oil	0.00	0.00	0.35	0.29	0.02	0.03	0.18	0.15	0.24	0.21
17	GAS	Gas	0.01	0.01	0.01	0.01	0.00	0.00	0.03	0.02	0.00	0.00
18	OMN	Minerals nec	0.24	0.15	0.00	0.00	0.00	0.00	0.14	0.12	0.01	0.01
19	CMT	Bovine meat products	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	OMT	Meat products nec	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	VOL	Vegetable oils and fats	0.07	0.05	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
22	MIL	Dairy products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	PCR	Processed rice	0.25	0.16	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
24	SGR	Sugar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	OFD	Food products nec	0.45	0.29	0.00	0.00	0.00	0.00	0.05	0.04	0.01	0.01
26	B_T	Beverages and tobacco products	0.25	0.16	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.00
27	TEX	Textiles	0.75	0.49	0.00	0.00	0.00	0.00	0.09	0.08	0.00	0.00
28	WAP	Wearing apparel	0.09	0.06	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
29	LEA	Leather products	0.04	0.03	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00

...continued

Table 2a (continued)

No.	Code	Unit: % Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
30	LUM	Wood products	0.18	0.12	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
31	PPP	Paper products, publishing	0.82	0.53	0.00	0.00	0.00	0.00	0.06	0.05	0.00	0.00
32	P_C	Petroleum, coal products	0.00	9.16	0.00	15.43	0.08	0.09	0.00	4.95	0.01	0.01
33	CRP	Chemical, rubber, plastic products	2.19	1.42	0.21	0.18	0.05	0.12	1.33	2.48	0.73	0.61
34	NMM	Mineral products nec	7.58	4.90	0.00	0.00	0.00	0.00	0.73	0.59	0.15	0.13
35	I_S	Ferrous metals	2.27	1.47	0.00	0.00	0.00	0.00	2.69	2.20	0.05	0.05
36	NFM	Metals nec	0.50	0.33	0.00	0.00	0.00	0.00	0.28	0.23	0.05	0.04
37	FMP	Metal products	0.09	0.06	0.00	0.00	0.00	0.00	0.13	0.10	0.01	0.00
38	MVH	Motor vehicles and parts	0.22	0.14	0.00	0.00	0.00	0.00	0.07	0.06	0.01	0.01
39	OTN	Transport equipment nec	0.04	0.03	0.00	0.00	0.00	0.00	0.04	0.04	0.01	0.01
40	ELE	Electronic equipment	0.04	0.03	0.00	0.00	0.00	0.00	0.09	0.08	0.03	0.02
41	OME	Machinery and equipment nec	0.48	0.31	0.01	0.01	0.00	0.00	0.31	0.26	0.06	0.05
42	OMF	Manufactures nec	0.03	0.02	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00
43	ELY	Electricity	50.07	32.38	0.01	0.01	0.03	0.03	1.79	1.47	0.25	0.21
44	GDT	Gas manufacture, distribution	0.71	0.46	0.06	0.05	0.00	0.00	0.24	0.20	0.40	0.34
45	WTR	Water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
46	CNS	Construction	0.30	0.19	0.00	0.00	0.00	0.00	0.32	0.26	0.01	0.01
47	TRD	Trade	0.17	0.11	0.01	0.01	0.00	0.00	0.71	0.58	0.09	0.08
48	OTP	Transport nec	0.39	0.25	0.00	0.00	0.00	0.00	2.18	1.78	0.01	0.01
49	WTP	Water transport	0.02	0.01	0.00	0.00	0.00	0.00	2.68	2.19	0.00	0.00
50	ATP	Air transport	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.29	0.00	0.00
51	CMN	Communication	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.01
52	OFI	Financial services nec	0.01	0.01	0.00	0.00	0.00	0.00	0.05	0.04	0.00	0.00
53	ISR	Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
54	OBS	Business services nec	0.10	0.07	0.00	0.00	0.00	0.00	0.14	0.11	0.02	0.02
55	ROS	Recreational and other services	0.15	0.10	0.00	0.00	0.00	0.00	0.12	0.10	0.03	0.02
56	OSG	Public Administration, Defense, Education, Health	0.38	0.25	0.01	0.01	0.00	0.00	0.45	0.37	0.04	0.03
57	DWE	Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58		Households	3.75	2.43	0.00	0.00	0.12	0.13	3.41	2.79	0.49	0.42
		Total	75.75	58.16	0.69	16.00	0.30	0.40	20.48	23.10	2.77	2.34

Table 3a Significance of CO₂ emissions from emitters: EU27, 2004

No.	Code	Unit: % Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
1	PDR	Paddy rice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	WHT	Wheat	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.04	0.01	0.00
3	GRO	Cereal grains nec	0.01	0.00	0.00	0.00	0.01	0.00	0.09	0.05	0.00	0.00
4	V_F	Vegetables, fruit, nuts	0.02	0.01	0.00	0.00	0.01	0.00	0.30	0.17	0.06	0.03
5	OSD	Oil seeds	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.03	0.00	0.00
6	C_B	Sugar cane, sugar beet	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
7	PFB	Plant-based fibers	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.00	0.00
8	OCR	Crops nec	0.01	0.01	0.00	0.00	0.01	0.01	0.29	0.16	0.15	0.08
9	CTL	Bovine cattle, sheep and goats, horses	0.01	0.00	0.00	0.00	0.00	0.00	0.08	0.04	0.01	0.01
10	OAP	Animal products nec	0.02	0.01	0.00	0.00	0.01	0.01	0.17	0.10	0.01	0.01
11	RMK	Raw milk	0.01	0.00	0.00	0.00	0.00	0.00	0.12	0.07	0.00	0.00
12	WOL	Wool, silk-worm cocoons	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00
13	FRS	Forestry	0.00	0.00	0.00	0.00	0.01	0.00	0.09	0.05	0.00	0.00
14	FSH	Fishing	0.00	0.00	0.00	0.00	0.02	0.01	0.18	0.10	0.00	0.00
15	COA	Coal	0.04	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
16	OIL	Oil	0.00	0.00	0.01	0.01	0.20	0.15	0.01	0.01	0.04	0.03
17	GAS	Gas	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
18	OMN	Minerals nec	0.02	0.01	0.00	0.00	0.03	0.02	0.13	0.07	0.02	0.01
19	CMT	Bovine meat products	0.00	0.00	0.00	0.00	0.04	0.03	0.02	0.01	0.01	0.01
20	OMT	Meat products nec	0.01	0.00	0.00	0.00	0.04	0.03	0.03	0.02	0.02	0.01
21	VOL	Vegetable oils and fats	0.00	0.00	0.00	0.00	0.04	0.03	0.02	0.01	0.01	0.00
22	MIL	Dairy products	0.04	0.02	0.00	0.00	0.11	0.08	0.08	0.04	0.05	0.03
23	PCR	Processed rice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	SGR	Sugar	0.01	0.00	0.00	0.00	0.02	0.02	0.01	0.01	0.01	0.01
25	OFD	Food products nec	0.10	0.05	0.00	0.00	0.38	0.28	0.30	0.17	0.24	0.14
26	B_T	Beverages and tobacco products	0.01	0.00	0.00	0.00	0.04	0.03	0.04	0.02	0.03	0.02
27	TEX	Textiles	0.02	0.01	0.00	0.00	0.14	0.10	0.06	0.03	0.04	0.03
28	WAP	Wearing apparel	0.00	0.00	0.00	0.00	0.04	0.03	0.04	0.02	0.02	0.01
29	LEA	Leather products	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01	0.01	0.01

...continued

Table 3a (continued)

No.	Code	Unit: % Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
30	LUM	Wood products	0.02	0.01	0.00	0.00	0.03	0.02	0.06	0.03	0.02	0.01
31	PPP	Paper products, publishing	0.14	0.06	0.00	0.00	0.44	0.33	0.20	0.11	0.19	0.11
32	P_C	Petroleum, coal products	0.00	2.43	0.00	28.54	1.17	0.86	0.00	8.64	0.04	0.02
33	CRP	Chemical, rubber, plastic products	0.32	0.14	0.00	0.00	1.21	1.45	0.75	3.51	0.64	0.37
34	NMM	Mineral products nec	0.52	0.23	0.00	0.00	0.92	0.68	1.10	0.62	0.23	0.14
35	I_S	Ferrous metals	0.28	0.12	0.00	0.00	0.50	0.37	1.03	0.58	0.24	0.14
36	NFM	Metals nec	0.04	0.02	0.00	0.00	0.16	0.12	0.14	0.08	0.04	0.02
37	FMP	Metal products	0.01	0.00	0.00	0.00	0.22	0.16	0.12	0.07	0.07	0.04
38	MVH	Motor vehicles and parts	0.01	0.01	0.00	0.00	0.12	0.09	0.06	0.03	0.06	0.04
39	OTN	Transport equipment nec	0.01	0.00	0.00	0.00	0.05	0.03	0.03	0.02	0.02	0.01
40	ELE	Electronic equipment	0.00	0.00	0.00	0.00	0.02	0.02	0.04	0.02	0.02	0.01
41	OME	Machinery and equipment nec	0.01	0.01	0.00	0.00	0.15	0.11	0.19	0.11	0.12	0.07
42	OMF	Manufactures nec	0.00	0.00	0.00	0.00	0.02	0.01	0.05	0.03	0.01	0.00
43	ELY	Electricity	23.58	10.49	0.00	0.00	5.78	4.27	2.92	1.64	2.36	1.37
44	GDT	Gas manufacture, distribution	0.06	0.03	0.01	0.01	0.00	0.33	0.03	0.02	0.16	0.09
45	WTR	Water	0.02	0.01	0.00	0.00	0.14	0.10	0.02	0.01	0.01	0.01
46	CNS	Construction	0.00	0.00	0.00	0.00	0.04	0.03	0.45	0.25	0.03	0.02
47	TRD	Trade	0.05	0.02	0.00	0.00	0.46	0.34	0.76	0.43	0.26	0.15
48	OTP	Transport nec	0.01	0.00	0.00	0.00	0.10	0.08	14.31	8.05	0.08	0.05
49	WTP	Water transport	0.00	0.00	0.00	0.00	0.00	0.00	2.59	1.46	0.01	0.00
50	ATP	Air transport	0.00	0.00	0.00	0.00	0.00	0.00	3.63	2.04	0.01	0.01
51	CMN	Communication	0.00	0.00	0.00	0.00	0.01	0.01	0.07	0.04	0.02	0.01
52	OFI	Financial services nec	0.01	0.00	0.00	0.00	0.02	0.01	0.06	0.03	0.03	0.02
53	ISR	Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.01
54	OBS	Business services nec	0.04	0.02	0.00	0.00	0.57	0.42	0.42	0.24	0.20	0.12
55	ROS	Recreational and other services	0.01	0.00	0.00	0.00	0.16	0.12	0.13	0.07	0.09	0.05
56	OSG	Public Administration, Defense, Education, Health	0.04	0.02	0.00	0.00	0.28	0.21	0.50	0.28	0.39	0.23
57	DWE	Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58		Households	0.80	0.35	0.00	0.00	3.38	2.50	13.46	7.58	4.97	2.89
		Total	26.31	14.14	0.03	28.56	17.14	13.56	45.38	37.27	11.13	6.48

Table 4a Significance of CO₂ emissions from emitters: Russian Federation, 2004

No.	Code	Unit: % Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
1	PDR	Paddy rice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	WHT	Wheat	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
3	GRO	Cereal grains nec	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.05	0.00	0.00
4	V_F	Vegetables, fruit, nuts	0.00	0.00	0.00	0.00	0.01	0.01	0.21	0.13	0.01	0.00
5	OSD	Oil seeds	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
6	C_B	Sugar cane, sugar beet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	PFB	Plant-based fibers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	OCR	Crops nec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	CTL	Bovine cattle, sheep and goats, horses	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.05	0.00	0.00
10	OAP	Animal products nec	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
11	RMK	Raw milk	0.01	0.00	0.00	0.00	0.00	0.00	0.18	0.12	0.00	0.00
12	WOL	Wool, silk-worm cocoons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	FRS	Forestry	0.01	0.00	0.00	0.00	0.04	0.03	0.29	0.19	0.00	0.00
14	FSH	Fishing	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00
15	COA	Coal	0.11	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	OIL	Oil	0.00	0.00	0.28	0.18	0.63	0.53	0.05	0.03	0.16	0.10
17	GAS	Gas	0.00	0.00	0.14	0.09	1.45	1.21	0.04	0.02	0.00	0.00
18	OMN	Minerals nec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	CMT	Bovine meat products	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.01
20	OMT	Meat products nec	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
21	VOL	Vegetable oils and fats	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.01	0.00
22	MIL	Dairy products	0.01	0.00	0.00	0.00	0.05	0.04	0.03	0.02	0.02	0.01
23	PCR	Processed rice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	SGR	Sugar	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.00
25	OFD	Food products nec	0.01	0.00	0.00	0.00	0.01	0.01	0.03	0.02	0.03	0.02
26	B_T	Beverages and tobacco products	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.02	0.01
27	TEX	Textiles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	WAP	Wearing apparel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	LEA	Leather products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

...continued

Table 4a (continued)

No.	Code	Unit: % Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
30	LUM	Wood products	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.07	0.00	0.00
31	PPP	Paper products, publishing	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.04	0.03
32	P_C	Petroleum, coal products	0.00	3.24	0.00	23.07	1.34	1.12	0.00	3.03	0.17	0.11
33	CRP	Chemical, rubber, plastic products	0.00	0.00	0.00	0.00	0.25	1.97	1.44	1.30	0.52	0.34
34	NMM	Mineral products nec	0.11	0.06	0.00	0.00	0.83	0.70	0.14	0.09	0.27	0.18
35	I_S	Ferrous metals	0.07	0.04	0.01	0.00	1.53	1.28	0.89	0.57	0.50	0.33
36	NFM	Metals nec	0.24	0.12	0.01	0.01	0.00	0.00	0.37	0.24	0.36	0.24
37	FMP	Metal products	0.00	0.00	0.00	0.00	0.02	0.02	0.07	0.04	0.03	0.02
38	MVH	Motor vehicles and parts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39	OTN	Transport equipment nec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	ELE	Electronic equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.01
41	OME	Machinery and equipment nec	0.01	0.01	0.00	0.00	0.13	0.11	0.02	0.02	0.13	0.09
42	OMF	Manufactures nec	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
43	ELY	Electricity	17.79	8.98	0.18	0.12	23.22	19.47	4.31	2.75	9.58	6.32
44	GDT	Gas manufacture, distribution	0.00	0.00	0.01	0.00	0.00	0.10	0.02	0.01	0.06	0.04
45	WTR	Water	0.02	0.01	0.00	0.00	0.00	0.00	0.06	0.04	0.00	0.00
46	CNS	Construction	0.01	0.00	0.00	0.00	0.01	0.01	0.20	0.13	0.05	0.03
47	TRD	Trade	0.06	0.03	0.00	0.00	0.04	0.03	0.44	0.28	0.05	0.03
48	OTP	Transport nec	0.00	0.00	0.01	0.00	3.44	2.89	5.61	3.58	1.56	1.03
49	WTP	Water transport	0.00	0.00	0.00	0.00	0.08	0.07	0.58	0.37	0.10	0.07
50	ATP	Air transport	0.00	0.00	0.00	0.00	0.05	0.04	1.39	0.89	0.31	0.20
51	CMN	Communication	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.02
52	OFI	Financial services nec	0.00	0.00	0.00	0.00	0.01	0.01	0.19	0.12	0.06	0.04
53	ISR	Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.13	0.01	0.00
54	OBS	Business services nec	0.01	0.00	0.01	0.01	0.05	0.04	0.88	0.56	0.03	0.02
55	ROS	Recreational and other services	0.02	0.01	0.00	0.00	0.02	0.02	0.04	0.02	0.03	0.02
56	OSG	Public Administration, Defense, Education, Health	0.20	0.10	0.00	0.00	0.06	0.05	0.40	0.25	0.35	0.23
57	DWE	Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58		Households	1.25	0.63	0.00	0.00	0.51	0.42	4.39	2.80	7.99	5.27
Total			19.99	13.33	0.66	23.50	33.81	30.20	23.02	18.10	22.53	14.87

Table 5a Significance of CO₂ emissions from emitters: Japan, 2004

No.	Code	Unit: % Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
1	PDR	Paddy rice	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.10	0.00	0.00
2	WHT	Wheat	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.00	0.00
3	GRO	Cereal grains nec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	V_F	Vegetables, fruit, nuts	0.00	0.00	0.00	0.00	0.00	0.00	0.63	0.33	0.00	0.00
5	OSD	Oil seeds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	C_B	Sugar cane, sugar beet	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
7	PFB	Plant-based fibers	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
8	OCR	Crops nec	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.21	0.00	0.00
9	CTL	Bovine cattle, sheep and goats, horses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	OAP	Animal products nec	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
11	RMK	Raw milk	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
12	WOL	Wool, silk-worm cocoons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	FRS	Forestry	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.05	0.00	0.00
14	FSH	Fishing	0.00	0.00	0.00	0.00	0.00	0.00	1.32	0.69	0.00	0.00
15	COA	Coal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	OIL	Oil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	GAS	Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	OMN	Minerals nec	0.00	0.00	0.00	0.00	0.03	0.02	0.19	0.10	0.00	0.00
19	CMT	Bovine meat products	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
20	OMT	Meat products nec	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
21	VOL	Vegetable oils and fats	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
22	MIL	Dairy products	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.05	0.00	0.00
23	PCR	Processed rice	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
24	SGR	Sugar	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00
25	OFD	Food products nec	0.00	0.00	0.00	0.00	0.08	0.06	0.55	0.28	0.00	0.00
26	B_T	Beverages and tobacco products	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.07	0.00	0.00
27	TEX	Textiles	0.00	0.00	0.00	0.00	0.01	0.01	0.04	0.02	0.01	0.00
28	WAP	Wearing apparel	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
29	LEA	Leather products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

...continued

Table 5a (continued)

No.	Code	Unit: % Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
30	LUM	Wood products	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
31	PPP	Paper products, publishing	0.54	0.22	0.00	0.00	0.09	0.06	0.60	0.31	0.02	0.01
32	P_C	Petroleum, coal products	0.00	6.63	0.00	28.39	1.07	0.73	0.00	7.47	0.00	0.00
33	CRP	Chemical, rubber, plastic products	1.61	0.66	0.01	0.00	0.84	0.82	3.59	7.03	0.01	0.01
34	NMM	Mineral products nec	0.99	0.41	0.00	0.00	0.15	0.10	0.91	0.47	0.00	0.00
35	I_S	Ferrous metals	0.56	0.23	0.00	0.00	0.37	0.26	3.02	1.57	0.05	0.03
36	NFM	Metals nec	0.01	0.01	0.00	0.00	0.04	0.02	0.20	0.10	0.01	0.00
37	FMP	Metal products	0.01	0.00	0.00	0.00	0.01	0.01	0.12	0.06	0.01	0.00
38	MVH	Motor vehicles and parts	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
39	OTN	Transport equipment nec	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00
40	ELE	Electronic equipment	0.01	0.00	0.00	0.00	0.28	0.19	0.17	0.09	0.01	0.00
41	OME	Machinery and equipment nec	0.03	0.01	0.00	0.00	0.06	0.04	0.18	0.09	0.01	0.00
42	OMF	Manufactures nec	0.00	0.00	0.00	0.00	0.06	0.04	0.16	0.08	0.03	0.01
43	ELY	Electricity	19.08	7.85	1.48	0.78	10.02	6.85	5.64	2.93	0.00	0.00
44	GDT	Gas manufacture, distribution	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	WTR	Water	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
46	CNS	Construction	0.00	0.00	0.00	0.00	0.00	0.00	1.07	0.56	0.00	0.00
47	TRD	Trade	0.00	0.00	0.00	0.00	0.04	0.03	1.37	0.71	0.02	0.01
48	OTP	Transport nec	0.00	0.00	0.00	0.00	0.06	0.04	15.50	8.06	0.00	0.00
49	WTP	Water transport	0.00	0.00	0.00	0.00	0.00	0.00	1.71	0.89	0.00	0.00
50	ATP	Air transport	0.00	0.00	0.00	0.00	0.00	0.00	1.13	0.59	0.00	0.00
51	CMN	Communication	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.07	0.00	0.00
52	OFI	Financial services nec	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.05	0.00	0.00
53	ISR	Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.03	0.00	0.00
54	OBS	Business services nec	0.00	0.00	0.00	0.00	1.22	0.84	1.10	0.57	0.02	0.01
55	ROS	Recreational and other services	0.00	0.00	0.00	0.00	0.03	0.02	0.77	0.40	0.00	0.00
56	OSG	Public Administration, Defense, Education, Health	0.00	0.00	0.00	0.00	0.02	0.01	3.69	1.92	0.23	0.12
57	DWE	Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58		Households	0.00	0.00	0.00	0.00	1.09	0.75	13.58	7.06	0.91	0.49
		Total	22.85	16.03	1.49	29.18	15.63	10.92	58.69	43.15	1.33	0.72

Table 6a Significance of CO₂ emissions from emitters: India, 2004

No.	Code	Unit: % Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
1	PDR	Paddy rice	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	WHT	Wheat	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	GRO	Cereal grains nec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	V_F	Vegetables, fruit, nuts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	OSD	Oil seeds	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	C_B	Sugar cane, sugar beet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	PFB	Plant-based fibers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	OCR	Crops nec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	CTL	Bovine cattle, sheep and goats, horses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	OAP	Animal products nec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	RMK	Raw milk	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
12	WOL	Wool, silk-worm cocoons	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	FRS	Forestry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	FSH	Fishing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	COA	Coal	0.14	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	OIL	Oil	0.00	0.00	0.00	0.00	0.25	0.24	0.00	0.00	0.00	0.00
17	GAS	Gas	0.00	0.00	0.00	0.00	0.44	0.42	0.00	0.00	0.00	0.00
18	OMN	Minerals nec	0.02	0.01	0.00	0.00	0.00	0.00	0.34	0.25	0.00	0.00
19	CMT	Bovine meat products	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
20	OMT	Meat products nec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	VOL	Vegetable oils and fats	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.06	0.00	0.00
22	MIL	Dairy products	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.20	0.00	0.00
23	PCR	Processed rice	0.00	0.00	0.00	0.00	0.00	0.00	1.56	1.13	0.00	0.00
24	SGR	Sugar	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.14	0.00	0.00
25	OFD	Food products nec	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.18	0.00	0.00
26	B_T	Beverages and tobacco products	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.10	0.00	0.00
27	TEX	Textiles	0.19	0.11	0.00	0.00	0.00	0.00	0.25	0.18	0.00	0.00
28	WAP	Wearing apparel	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
29	LEA	Leather products	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00

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Table 6a (continued)

No.	Code	Unit: % Emitters/users	Energy commodities									
			Coal		Crude oil		Natural gas		Petroleum products		Gas	
			CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage	CO ₂	Usage
30	LUM	Wood products	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
31	PPP	Paper products, publishing	0.91	0.52	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.00
32	P_C	Petroleum, coal products	0.00	3.16	0.00	26.62	0.90	0.85	0.00	3.55	0.00	0.00
33	CRP	Chemical, rubber, plastic products	0.85	0.48	0.00	0.00	1.47	1.60	1.49	3.78	0.00	0.00
34	NMM	Mineral products nec	3.40	1.94	0.00	0.00	0.00	0.00	0.29	0.21	0.00	0.00
35	I_S	Ferrous metals	2.72	1.56	0.00	0.00	0.00	0.00	0.94	0.68	0.00	0.00
36	NFM	Metals nec	0.20	0.12	0.00	0.00	0.00	0.00	0.07	0.05	0.00	0.00
37	FMP	Metal products	0.05	0.03	0.00	0.00	0.00	0.00	0.15	0.11	0.00	0.00
38	MVH	Motor vehicles and parts	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
39	OTN	Transport equipment nec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	ELE	Electronic equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
41	OME	Machinery and equipment nec	0.01	0.01	0.00	0.00	0.00	0.00	0.15	0.11	0.00	0.00
42	OMF	Manufactures nec	0.04	0.03	0.00	0.00	0.00	0.00	0.08	0.06	0.00	0.00
43	ELY	Electricity	53.87	30.81	0.00	0.00	2.78	2.64	2.62	1.90	0.00	0.00
44	GDT	Gas manufacture, distribution	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
45	WTR	Water	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
46	CNS	Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.06	0.00	0.00
47	TRD	Trade	0.54	0.31	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.00
48	OTP	Transport nec	0.05	0.03	0.00	0.00	0.00	0.00	6.05	4.37	0.00	0.00
49	WTP	Water transport	0.00	0.00	0.00	0.00	0.00	0.00	1.62	1.17	0.00	0.00
50	ATP	Air transport	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.28	0.00	0.00
51	CMN	Communication	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	OFI	Financial services nec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
53	ISR	Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	OBS	Business services nec	0.22	0.13	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
55	ROS	Recreational and other services	0.20	0.12	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00
56	OSG	Public Administration, Defense, Education, Health	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00
57	DWE	Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58		Households	2.01	1.15	0.00	0.00	0.00	0.00	11.17	8.08	0.17	0.12
		Total	65.49	40.62	0.00	26.62	5.88	5.79	28.44	26.83	0.19	0.14

Appendix

Table A1. Values of coefficients in Equation 1

Energy commodities	Conversion Coefficient (CC)	Emission Factor (EF)	Fraction of Carbon Oxydized (FOC)
Unit:	(TJ/1000toe)	(ton Carbon/TJ)	
Coal	41.868	25.80	0.980
Crude oil	41.868	20.00	0.990
Natural gas	41.868	15.30	0.950
Petroleum products*	44.50	19.00	0.990
Gas**	47.31	17.20	0.995

* We use an approximate for all petroleum products.

** Mainly Liquefied Petroleum Gas (LPG).

Note: values of coefficients are obtained from the "Greenhouse Gas Inventory Reference Manual" of IEA (1997).

Table A2. Feedstock use ratios of fuels by the petrochemistry sector

			Ratios of fuels used by the petrochemistry sector as feedstocks:	
			Natural gas	Petroleum products
1	AUS	Australia	0.657	0.8435
2	NZL	New Zealand	1	0
3	XOC	Rest of Oceania	0	0
4	CHN	China	0.5818	0.5613
5	HKG	Hong Kong	0	0
6	JPN	Japan	0.2966	0.7343
7	KOR	Korea	0	0.9532
8	TWN	Taiwan	0.7343	0.7743
9	XEA	Rest of East Asia	0	0
10	KHM	Cambodia	0	0
11	IDN	Indonesia	1	0.9007
12	LAO	Lao People's Democratic Republic	0	0
13	MMR	Myanmar	1	0
14	MYS	Malaysia	1	1
15	PHL	Philippines	0	0
16	SGP	Singapore	0	1
17	THA	Thailand	1	0.935
18	VNM	Vietnam	0	0
19	XSE	Rest of Southeast Asia	0	1
20	BGD	Bangladesh	1	0
21	IND	India	0.1308	0.7152
22	PAK	Pakistan	0.7865	0
23	LKA	Sri Lanka	0	0
24	XSA	Rest of South Asia	0	0
25	CAN	Canada	0.5769	0.9912
26	USA	United States of America	0.2508	0.9148
27	MEX	Mexico	0.4459	0.9259
28	XNA	Rest of North America	0	1
29	ARG	Argentina	1	1
30	BOL	Bolivia	0	0
31	BRA	Brazil	0.2634	0.7282
32	CHL	Chile	0	0
33	COL	Colombia	0	0
34	ECU	Ecuador	0	0
35	PRY	Paraguay	0	0
36	PER	Peru	0	0
37	URY	Uruguay	0	0
38	VEN	Venezuela	0	0
39	XSM	Rest of South America	0	1
40	CRI	Costa Rica	0	0.9074

...continued

Table A2 (continued)

			Ratios of fuels used by the petrochemistry sector as feedstocks:	
			Natural gas	Petroleum products
41	GTM	Guatemala	0	0
42	NIC	Nicaragua	0	0
43	PAN	Panama	0	0
44	XCA	Rest of Central America	0	0
45	XCB	Caribbean	1	0
46	AUT	Austria	0.4067	0.9675
47	BEL	Belgium	0.3287	0.9589
48	CYP	Cyprus	0	0
49	CZE	Czech Republic	0	0.9018
50	DNK	Denmark	0	0
51	EST	Estonia	0.988	0
52	FIN	Finland	0.6517	0.7273
53	FRA	France	0.4037	0.7816
54	DEU	Germany	0.303	0.9953
55	GRC	Greece	0.8188	0.5905
56	HUN	Hungary	0.6459	0.9504
57	IRL	Ireland	0	0
58	ITA	Italy	0.2438	0.8643
59	LVA	Latvia	0	0
60	LTU	Lithuania	0.924	0
61	LUX	Luxembourg	0	0
62	MLT	Malta	0	0
63	NLD	Netherlands	0.4973	0.8532
64	POL	Poland	0.9143	0.5056
65	PRT	Portugal	0	0.8727
66	SVK	Slovakia	0.8283	0.7979
67	SVN	Slovenia	0.6	0
68	ESP	Spain	0.1572	0.8834
69	SWE	Sweden	0	0.7785
70	GBR	United Kingdom	0.2008	0.981
71	CHE	Switzerland	0	0.5628
72	NOR	Norway	0.8206	0.9008
73	XEF	Rest of EFTA	0	0
74	ALB	Albania	0	0
75	BGR	Bulgaria	0.8036	0.4937
76	BLR	Belarus	0.7322	0.9633
77	HRV	Croatia	0.729	0.4261
78	ROU	Romania	0.2914	0.5544
79	RUS	Russian Federation	0.8932	0.294
80	UKR	Ukraine	0.8979	0.3214

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Table A2 (continued)

			Ratios of fuels used by the petrochemistry sector as feedstocks:	
			Natural gas	Petroleum products
81	XEE	Rest of Eastern Europe	0	0
82	XER	Rest of Europe	0.9962	0
83	KAZ	Kazakhstan	0	0
84	KGZ	Kyrgyzstan	0	0
85	XSU	Rest of Former Soviet Union	0	0
86	ARM	Armenia	0	0
87	AZE	Azerbaijan	0	1
88	GEO	Georgia	1	1
89	IRN	Iran, Islamic Republic of	0.5237	0
90	TUR	Turkey	0.5506	0.4687
91	XWS	Rest of Western Asia	0.2271	0.9658
92	EGY	Egypt	1	0
93	MAR	Morocco	0	0
94	TUN	Tunisia	0	0
95	XNF	Rest of North Africa	0.9873	1
96	NGA	Nigeria	0	0
97	SEN	Senegal	0	0
98	XWF	Rest of Western Africa	0	1
99	XCF	Rest of Central Africa	0	0
100	XAC	Rest of South Central Africa	0	1
101	ETH	Ethiopia	0	0
102	MDG	Madagascar	0	1
103	MWI	Malawi	0	1
104	MUS	Mauritius	0	1
105	MOZ	Mozambique	0	0
106	TZA	Tanzania	0	0
107	UGA	Uganda	0	1
108	ZMB	Zambia	0	0
109	ZWE	Zimbabwe	0	0
110	XEC	Rest of Eastern Africa	0	1
111	BWA	Botswana	0	0
112	ZAF	South Africa	0	1
113	XSC	Rest of South African Customs Union	0	0