The Supporting Information for
Global atmospheric emission inventory of polycyclic aromatic hydrocarbon from 1960 to 2008

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S1. Summary of 69 PKU-PAH sources.

For the total 69 sources adopted in PKU-PAH emission inventory, detailed descriptions were listed in Table S1. Sources were divided into 6 socioeconomic sectors (energy production, industry, transportation, commercial/residential sources, agriculture, and natural sources, see "**Sector**" column) or 6 categories (as 5 combustion sectors of coal, petroleum, natural gas, solid wastes, and biomass, and an industrial process sector, see "**Category**" column). The "**No.**" column included in Table S1, Table S3, and Table S5 were uniform source index in order to make source information easier to retrieve.

Table S1. Detailed information on 69 PKU-PAH sources

Sector	No.	Category	Activity	Activity density index	2007 high-resolution emission inventory	historical emission inventory
					Activity Data Source	activity data source
Energy production	1	coal	anthracite consumed	fuel consumption	*1*	*4*
	2	coal	bituminous coal consumed	fuel consumption	*1*	*4*
	3	coal	lignite consumed	fuel consumption	*1*	*4*
	4	coal	coking coal consumed	fuel consumption	*1*	*4*
	5	coal	peat consumed	fuel consumption	*1*	*4*
	6	oil	gas/diesel consumed	fuel consumption	*1*	*4*
	7	oil	residue fuel oil consumed	fuel consumption	*1*	*4*
	8	biomass	solid biomass consumed	fuel consumption	*1*	*4*
	9	biomass	biogas consumed	fuel consumption	*1*	*4*
	10	waste	municipal waste consumed	fuel consumption	*1*	*4*
	11	waste	industrial waste consumed	fuel consumption	*1*	*4*
	12	gas	dry natural gas consumed	fuel consumption	*1*	*4*
	13	oil	natural gas liquid consumed	fuel consumption	*1*	*4*
Industry	14	process	petroleum catalytic cracking	catalytic cracking capacity	*2*[a]	*2*
	15	process	coke production	coke production	*1*	*4*
	16	process	brick production	brick production	*1*	*5*
	17	process	primary Al production	primary Al production	*1*	*6*
	18	gas	gas flaring	gas flaring mass	*1*	*7*
	19	process	iron sintering	pig iron production	*3*[b]	*3*
	20	process	electric arc furnace	crude steel production	*3*[b]	*3*
	21	process	open hearth furnace	crude steel production	*3*[b]	*3*
	22	process	oxygen blown converter	crude steel production	*3*[b]	*3*
	23	process	hot rolling	hot rolled steel production	*3*[b]	*3*
	24	oil	gas/diesel consumed	fuel consumption	*1*	*4*
	25	coal	anthracite consumed	fuel consumption	*1*	*4*
	26	coal	coking coal consumed	fuel consumption	*1*	*4*
	27	coal	bituminous coal consumed	fuel consumption	*1*	*4*
	28	coal	lignite consumed	fuel consumption	*1*	*4*
	29	coal	peat consumed	fuel consumption	*1*	*4*
	30	oil	residue fuel oil consumed	fuel consumption	*1*	*4*
	31	biomass	solid biomass consumed	fuel consumption	*1*	*4*

	32	biomass	biogas consumed	fuel consumption	*1*	*4*
	33	waste	municipal waste consumed	fuel consumption	*1*	*4*
	34	waste	industrial waste consumed	fuel consumption	*1*	*4*
	35	gas	dry natural gas consumed	fuel consumption	*1*	*4*
	36	oil	natural gas liquid consumed	fuel consumption	*1*	*4*
Residential & commercial	37	waste	non-organized waste burning	waste burned	*1*	*8*
	38	coal	anthracite consumed	fuel consumption	*1*	*4*
	39	coal	coking coal consumed	fuel consumption	*1*	*4*
	40	coal	bituminous coal consumed	fuel consumption	*1*	*4*
	41	coal	lignite consumed	fuel consumption	*1*	*4*
	42	coal	peat consumed	fuel consumption	*1*	*4*
	43	gas	liquid petroleum gas consumed	fuel consumption	*1*	*4*
	44	gas	dry natural gas consumed	fuel consumption	*1*	*4*
	45	oil	natural gas liquid consumed	fuel consumption	*1*	*4*
	46	oil	kerosene consumed	fuel consumption	*1*	*4*
	47	gas	biogas consumed	fuel consumption	*1*	*4*
	48	biomass	indoor firewood burning	fuel consumption	*1*	*4,9*
	49	biomass	indoor crop residue burning	fuel consumption	*1*	*4,9*
	50	biomass	indoor dung cake burning	fuel consumption	*1*	*10*
Transportation	51	oil	vehicle gasoline	fuel consumption	*1*	*4*
	52	oil	vehicle diesel	fuel consumption	*1*	*4*
	53	biomass	vehicle liquid biofuels	fuel consumption	*1*	*4*
	54	oil	aviation gasoline	fuel consumption	*1*	*4*
	55	oil	jet kerosene	fuel consumption	*1*	*4*
	56	oil	ocean tanker	fuel consumption	*1*	*11*
	57	oil	ocean container	fuel consumption	*1*	*11*
	58	oil	ocean bulk & combined carries	fuel consumption	*1*	*11*
	59	oil	general-cargo vessels	fuel consumption	*1*	*11*
	60	oil	non-cargo vessels	fuel consumption	*1*	*11*
	61	oil	auxiliary engines	fuel consumption	*1*	*11*
	62	oil	military vessels	fuel consumption	*1*	*11*
Agriculture	63	waste	agriculture waste burning	crop residue burned	*1*	*9*
	64	oil	gas/diesel	fuel consumption	*1*	*4*
Natural	65	biomass	forest fire	dry matter burned	*1*	*12*
	66	biomass	deforestation fire	dry matter burned	*1*	*12*
	67	biomass	peat fire	dry matter burned	*1*	*12*
	68	biomass	woodland fire	dry matter burned	*1*	*12*
	69	biomass	savanna fire	dry matter burned	*1*	*12*

Note:

a. Country-level activity data for petroleum catalytic cracking was derived from U.S. EIA[2]. The spatial allocation for each country was based on gas flaring source from PKU-FUEL, due to a lack of facility location information.

b. Country-level activity data for iron and steel sources was derived from WSA[3]. The spatial allocation for each country was based on industrial coal combustion from PKU-FUEL, due to a lack of facility location information.

S2. Regression models for transportation sector

The monovariate regression models[13] to predict EF_{PAH} (mg/t) for individual PAHs based on GDP_c (1000 USD) are expressed with the equation below:

$$log(EF_{icy}) = k_i \times GDPc_{cy} + C_i,$$

where EF_{icy} (mg/t) is the EF_{PAHs} of compound i for y model year vehicles produced in country c; k_i and C_i are the model slope and interception for compound i, representing the rate of emission reduction against socioeconomic development and EF_{PAHs} for the vehicles without any control, respectively; $GDPc_{cy}$ represents the $GDPc$ of a given country c in year y in 1000 USD. The calculated results of these coefficients, together with p values and R^2 are listed in Table S2. To evaluate the robustness of the regression model, jackknife tests were performed 500 times for each compound, with deletion of 20% data points randomly selected from the dataset each time. Distributions of the resulting jackknifed coefficients of the determination are shown in Figure S1 and Figure S2. Generally, the robustness of the regression model could be confirmed. For ships and aircrafts, due to limited numbers of PAH *EF*s, we simply used the origin k_i and revised C_i derived from the regression models of motor vehicles.

Table S2. Regression coefficients, p, and R^2 of the monovariate regression models for predicting *EF* of individual PAHs based on GDP_c.

PAH	NAP	ACY	ACE	FLO	PHE	ANT	FLA	PYR	BaA	CHR	BbF	BkF	BaP	IcdP	DahA	BghiP
On-road motor vehicles (Source No. 51, 52, 53)																
k_i	-0.0501	-0.0594	-0.0391	-0.0543	-0.0636	-0.0642	-0.0658	-0.0584	-0.0575	-0.0584	-0.0501	-0.0635	-0.0581	-0.0572	-0.0722	-0.0605
$C_{i51\text{-}53}$	5.16	3.93	2.92	3.67	4.00	3.25	3.41	3.46	2.48	2.56	2.31	2.42	2.42	2.26	1.76	2.54
p	1.6×10^{-8}	4.3×10^{-9}	1.6×10^{-5}	$<10^{-10}$	$<10^{-10}$	$<10^{-10}$	$<10^{-10}$	$<10^{-10}$	$<10^{-10}$	$<10^{-10}$	$<10^{-10}$	$<10^{-10}$	$<10^{-10}$	$<10^{-10}$	$<10^{-10}$	$<10^{-10}$
R^2	0.210	0.237	0.142	0.266	0.344	0.307	0.402	0.305	0.241	0.313	0.252	0.323	0.317	0.265	0.416	0.320
Ships (Source No. 56-62) [a]																
$C_{i56\text{-}59,62}$	2.13	0.39	0.49	0.33	1.13	0.29	-0.11	0.54	-0.40	-0.15	-0.68	-0.50	-0.37	0.07	0.21	-0.31
C_{i60}	1.30	-0.06	-0.06	0.27	0.79	-0.41	-0.04	-0.06	-1.00	-0.59	-1.03	-0.94	-1.43	-1.48	-0.40	-1.37
C_{i61}	1.16	-1.37	-1.25	-0.23	0.39	-1.13	-0.82	-1.00	-1.56	-1.37	-2.03	-1.71	-1.68	-1.27	-1.02	-1.13
Aircrafts (Source No. 54, 55) [a]																
$C_{i54,55}$	5.16	3.93	2.92	3.67	4.00	3.25	3.41	3.46	2.48	2.56	2.31	2.42	2.42	2.26	1.76	2.54

Note:
a. For ships and aircrafts, the coefficients k_i from motor vehicles were used directly.

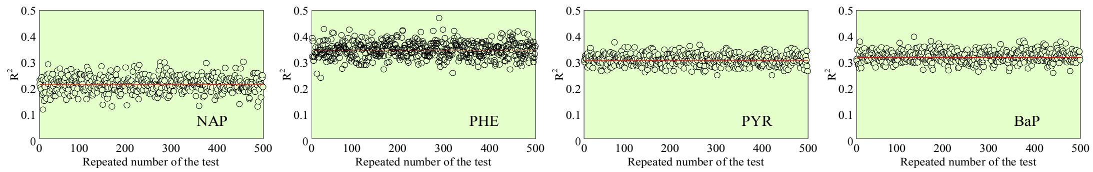

Figure S1. Jackknifed R2 by removing 20% randomly selected data points each time for 500 times. The results for NAP, PHE, PYR, and BaP are presented as four representative compounds. The red horizontal line represents the R2 derived from the final model without deletion.

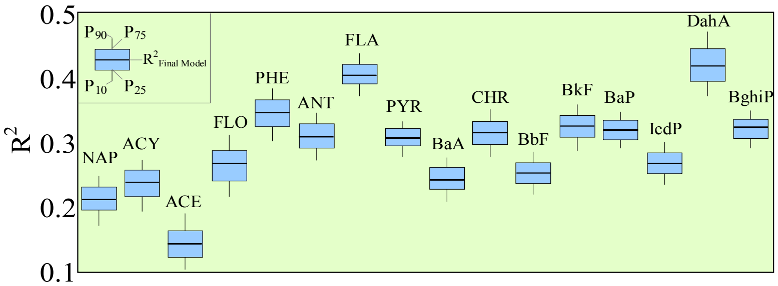

Figure S2. Means, 10th, 25th, 75th, and 90th percentiles of the resulting jackknifed coefficients of the determination for each PAH compound.

S3. Parameterization for technology splits

With technology split method, each source was divided into 2 or more technology divisions, assuming that *EF*s for each technology division remain stable, and fractions of various technology divisions changed over time.[14] The time-depending fractions of these technology divisions were either derived from literatures or calculated using a series of S-shape curves. The form often used is:

$$X(t) = (X_0 - X_f)e^{(-(t-t_0)^2/2s^2)} + X_f\,,$$

where X_0 and X_f are initial and final fractions of a certain technology division, respectively; t_0 is the start time of the technology transition, and s is a rate.[14] Within PKU-PAH inventory, this method was applied to 28 sources including industrial activities and anthropogenic biomass burning. Each of the 28 sources was divided into 2 or 3 technology divisions without or with different emission mitigation measures. To apply this method, the total of 222 countries/territories were classified into 5 categories : 1) the United States and Canada, 2) other developed countries (39 countries), 3) former USSR federals (14 countries), 4) China, 5) all other developing countries (166 countries). All Parameters for S-shape curves in this study were listed in Table S3 and Table S4. Although, each technology division associates with a constant *EF* for each individual compound, the average *EF* for a certain source may change over time due to changes of fractions of its technology divisions. Figure S3 illustrated these kinds of changes of average *EF*s over time for some typical sources. The parameterization for global emission estimation could also be used for compounds with wash-out mechanism similar to PAHs. It should be noticed that parameters listed in Table S3 only provide a region-level technology transition framework, so if detail information could be got for certain countries and sources in the future, it is suggested to replace the simulation results, referring to the case of beehive coking in China[15] and global primary Al producing (see Table S4).

Table S3. List of 28 emission sources with technology splits.

No.	Sector	Category	Fuel and Process	All sub-sources	Ratio description	The United States and Canada				Former USSR				Other developed countries				China				Other developing countries			
						X0	Xf	t0	s	X0	Xf	t0	s	X0	Xf	t0	s	X0	Xf	t0	s	X0	Xf	t0	s
1	Energy	coal	anthracite																						
2	Energy	coal	bituminous coal																						
3	Energy	coal	lignite																						
4	Energy	coal	coking coal	a. uncontrol	a/(a+b)	1	0	1907	35	1	0	1955	26	1	0	1915	40	1	0	1979	18	1	0	1945	31
5	Energy	coal	peat	b. efficient control																					
8	Energy	biomass	solid biomass																						
10	Energy	waste	municipal waste																						
11	Energy	waste	industrial waste																						
25	Industry	coal	anthracite																						
26	Industry	coal	coking coal																						
27	Industry	coal	bituminous coal																						
28	Industry	coal	lignite																						
29	Industry	coal	peat																						
31	Industry	biomass	solid biomass																						
33	Industry	waste	municipal waste																						
34	Industry	waste	industrial waste	a. uncontrol	a/(a+b)	1	0	1907	41	1	0	1955	35	1	0	1915	55	1	0	1979	25	1	0	1945	52
14	Industry	process	petroleum catalytic cracking	b. efficient control																					
19	Industry	process	iron sintering																						
20	Industry	process	electric arc furnace																						
21	Industry	process	open hearth furnace																						
22	Industry	process	oxygen blown converter																						
23	Industry	process	hot rolling																						
17	Industry	process	primary Al production[a]	a. prebaked-uncontrol	(a+b)/(a+b+c+d)																				
				b. prebaked-control																					
				c. soderberg-uncontrol	a/(a+b) & c/(c+d)	1	0	1907	41	1	0	1955	35	1	0	1915	55	1	0	1979	25	1	0	1945	52
				d. soderberg-control																					
15	Industry	process	coke production[b]	a. beehive	a/(a+b+c)	1	0.002	1904	12	1	0.002	1887	20	1	0.002	1894	17					1	0.002	1930	23
				b. mechanical-uncontrol	b/(b+c)	1	0	1907	41	1	0	1955	35	1	0	1915	55	1	0	1979	25	1	0	1945	52
				c. mechanical-control																					
48	Residential	biomass	indoor firewood burning[c]	a. fireplace	c/(b+c)	1	0	1988	21	1	0	1985	20	1	0	1985	20	1	0	1985	23	1	0	1985	23
				b. improved woodstove	a/(a+b+c)																				
				c. traditional woodstove																					
49	Residential	biomass	indoor crop residue burning	a. improved stove	b/(a+b)	1	0	1988	21	1	0	1988	21	1	0	1988	21	1	0	1988	21	1	0	1988	21
				b. traditional stove																					
49	Residential	biomass	indoor crop residue burning[d]	a. barley	a/(a+b+c+d)																				
				b. maize	b/(a+b+c+d)																				
63	Agriculture	biomass	open crop residue burning[d]	c. rice	c/(a+b+c+d)																				
				d. wheat	d/(a+b+c+d)																				

Note:

a. The ratio of prebaked/(prebaked+soderberg) in primary aluminum production was simulated separately for each country based on reported data from two time points, 1998 and 2007.[16,17] (See Table S4)

b. Beehive coke production beyond 2010 was assumed to be 0. The fractions of beehive in China have been reported annually since 1949.[15]

c. The ratio of fireplace/(fireplace+woodstove) was assumed to be 1/3 constantly for North America and European countries during the study period, and 0 for other countries.

d. Country crop production was used to calculate the proportions of various kinds of crop residue burned.[9]

Table S4. List of coefficients to simulate the ratio of prebaked/(prebaked+soderberg) within primary aluminum production for each country.[a]

Country	X0	Xf	t0	s
Austria	0	1	2000	1.0
Azerbaijan	0	1	2000	1.0
Brazil	0	1	1982	16.7
Cameroon	0	1	1998	2.4
Canada	0	1	1918	51.9
China	0	1	1952	31.9
Croatia	0	1	2000	1.0
Czech Republic	0	1	2000	1.0
Egypt	0	1	1996	3.0
France	0	1	1991	4.2
Germany	0	1	1992	4.2
Hungary	0	1	2000	1.0
India	0	1	1950	31.9
Indonesia	0	1	1998	2.4
Japan	0	1	2000	1.0
North Korea	0	1	2000	1.0
South Korea	0	1	2000	1.0
Kuwait	0	1	2000	1.0
Macedonia	0	1	2000	1.0
Mexico	0	1	2000	1.0
Norway	0	1	1980	17.7
Poland	0	1	1998	6.4
Russia	0	1	1970	53.2
South Africa	0	1	1987	5.3
Spain	0	1	1965	33.2
Suriname	0	1	2000	1.0
Sweden	0	1	1982	21.5
Ukraine	0	1	2000	1.0
United Kingdom	0	1	1965	12.2
United States	0	1	1965	21.5

Note:

a. The simulation coefficients was based on reported data from two time points, 1998 and 2007.[16,17] For other countries, the ratios, prebaked/(prebaked+soderberg), were set to be 1 constantly according to these reports.

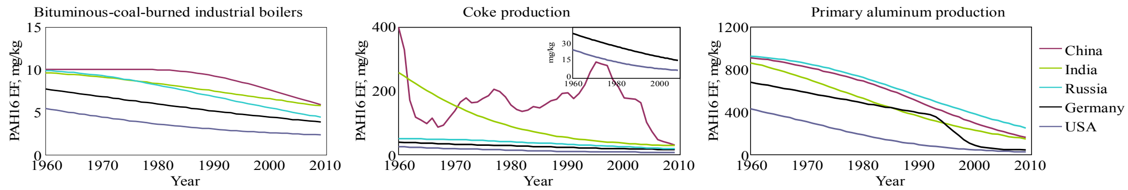

Figure S3. Time trends of PAH16 EFs of three typical sources for several representative countries including the United States, Germany, Russia, India, and China. The emission sources are Bituminous-coal-burned industrial boilers, coke production, and primary aluminum production from left to right, respectively.

S4. Emission factors adopted in PKU-PAH inventory.

PAH *EF* values and geometric standard variations of all sources (sources without technology splits) or sub-sources (sources with technology splits) are presented in Table S5a and S5b.

The "**No.**" column showed uniform source indexes, in accord with "**No.**" column in Table S1 and S3.

Table S5a. Emission factors of 16 PAHs for various sources.

No.[a]	units	sub-source	NAP	ACY	ACE	FLO	PHE	ANT	FLA	PYR	BaA	CHR	BbF	BkF	BaP	IcdP	DahA	BghiP
1~5	mg/t fuel consumed	uncontrol	2.0×10^{1}	4.3×10^{-1}	1.2×10^{0}	2.0×10^{0}	1.3×10^{1}	1.2×10^{0}	4.0×10^{0}	2.6×10^{0}	4.7×10^{-1}	1.7×10^{0}	1.1×10^{0}	8.1×10^{-1}	1.2×10^{0}	1.1×10^{0}	3.7×10^{-1}	8.3×10^{-1}
		control	2.7×10^{0}	8.2×10^{-2}	2.0×10^{-1}	3.3×10^{-1}	1.2×10^{0}	1.1×10^{-1}	3.4×10^{-1}	1.7×10^{-1}	2.4×10^{-2}	5.0×10^{-2}	2.3×10^{-2}	2.3×10^{-2}	1.4×10^{-2}	1.5×10^{-2}	1.1×10^{-2}	1.4×10^{-2}
6,7,13	g/TJ fuel consumed		3.3×10^{2}	2.7×10^{0}	2.6×10^{0}	2.0×10^{0}	6.2×10^{0}	1.2×10^{0}	3.8×10^{0}	2.9×10^{0}	5.0×10^{0}	4.8×10^{-1}	9.0×10^{-1}	2.0×10^{0}	1.4×10^{0}	9.2×10^{-1}	2.2×10^{0}	1.1×10^{0}
8	mg/t fuel consumed	uncontrol	7.6×10^{0}	2.7×10^{-1}	1.6×10^{-2}	9.8×10^{-2}	8.9×10^{-2}	5.3×10^{-2}	3.5×10^{-2}	1.9×10^{-1}	3.2×10^{-2}	5.0×10^{-2}	4.0×10^{-1}	3.7×10^{-1}	2.2×10^{-3}	1.8×10^{-2}	0.0×10^{0}	4.0×10^{-2}
		control	1.0×10^{0}	5.2×10^{-2}	2.6×10^{-3}	1.6×10^{-2}	8.4×10^{-3}	4.8×10^{-3}	3.1×10^{-3}	1.2×10^{-2}	1.7×10^{-3}	1.5×10^{-3}	8.9×10^{-3}	1.1×10^{-2}	2.5×10^{-5}	2.5×10^{-4}	0.0×10^{0}	6.8×10^{-4}
9	g/TJ fuel consumed		1.9×10^{-3}	1.4×10^{-4}	1.6×10^{-3}	8.6×10^{-5}	1.6×10^{-4}	1.0×10^{-5}	4.1×10^{-5}	5.2×10^{-5}	8.8×10^{-5}	9.7×10^{-5}	9.7×10^{-5}	9.7×10^{-5}	6.7×10^{-5}	5.2×10^{-5}	3.6×10^{-5}	1.1×10^{-4}
10,11	g/TJ fuel consumed	uncontrol	7.2×10^{0}	2.7×10^{0}	2.1×10^{-1}	2.4×10^{0}	5.6×10^{-1}	5.2×10^{-1}	2.3×10^{-1}	1.5×10^{0}	1.3×10^{0}	1.1×10^{0}	5.8×10^{-1}	3.1×10^{0}	7.3×10^{-1}	1.1×10^{0}	6.4×10^{-1}	2.3×10^{0}
		control	9.9×10^{-1}	5.1×10^{-1}	3.5×10^{-2}	4.0×10^{-1}	5.3×10^{-2}	4.8×10^{-2}	2.0×10^{-2}	9.8×10^{-2}	6.7×10^{-2}	3.1×10^{-2}	1.3×10^{-2}	8.8×10^{-2}	8.3×10^{-3}	1.5×10^{-2}	1.9×10^{-2}	3.9×10^{-2}
12	g/TJ fuel consumed		1.9×10^{-2}	1.4×10^{-3}	1.6×10^{-2}	8.6×10^{-4}	1.6×10^{-3}	1.0×10^{-4}	4.1×10^{-4}	5.2×10^{-4}	8.8×10^{-4}	9.7×10^{-4}	9.7×10^{-4}	9.7×10^{-4}	6.7×10^{-4}	5.2×10^{-4}	3.6×10^{-4}	1.1×10^{-3}
14	kg/barrel capacity	uncontrol	6.0×10^{-7}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	1.3×10^{-4}	6.9×10^{-7}	3.4×10^{-6}	4.7×10^{-6}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	9.1×10^{-8}	0.0×10^{0}	0.0×10^{0}	8.4×10^{-8}
		control	8.2×10^{-8}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	1.2×10^{-5}	6.3×10^{-8}	2.9×10^{-7}	3.1×10^{-7}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}	1.0×10^{-9}	0.0×10^{0}	0.0×10^{0}	1.4×10^{-9}
15	g/t coke produced	beehive	2.0×10^{2}	4.3×10^{1}	1.0×10^{1}	2.8×10^{1}	1.0×10^{2}	1.7×10^{1}	4.6×10^{1}	3.7×10^{1}	1.4×10^{1}	9.0×10^{0}	1.1×10^{1}	5.5×10^{0}	1.1×10^{1}	4.9×10^{0}	1.1×10^{0}	5.9×10^{0}
		mechanical-uncontrol	2.0×10^{1}	5.5×10^{0}	5.4×10^{-1}	2.7×10^{0}	7.6×10^{0}	2.0×10^{0}	3.3×10^{0}	4.4×10^{0}	9.5×10^{-1}	9.0×10^{-1}	5.8×10^{-1}	4.9×10^{-1}	7.5×10^{-1}	3.0×10^{-1}	4.3×10^{-2}	3.4×10^{-1}
		mechanical-control	1.6×10^{0}	5.6×10^{-1}	2.7×10^{-2}	4.0×10^{-1}	4.9×10^{-1}	2.0×10^{-1}	2.3×10^{-1}	3.5×10^{-1}	3.8×10^{-2}	4.4×10^{-2}	2.7×10^{-2}	2.4×10^{-2}	3.8×10^{-2}	1.4×10^{-2}	2.3×10^{-3}	1.6×10^{-2}
16	mg/t brick produced	uncontrol	4.2×10^{2}	1.1×10^{2}	1.1×10^{1}	5.5×10^{1}	1.6×10^{2}	4.2×10^{1}	6.8×10^{1}	9.2×10^{1}	2.0×10^{1}	1.9×10^{1}	1.2×10^{1}	1.0×10^{1}	1.6×10^{1}	6.2×10^{0}	8.9×10^{-1}	7.0×10^{0}
		control	3.3×10^{1}	1.2×10^{1}	5.6×10^{-1}	8.3×10^{0}	1.0×10^{1}	4.0×10^{0}	4.8×10^{0}	7.2×10^{0}	7.9×10^{-1}	9.0×10^{-1}	5.7×10^{-1}	5.1×10^{-1}	7.9×10^{-1}	3.0×10^{-1}	4.7×10^{-2}	3.4×10^{-1}
17	g/t Al produced	prebaked-uncontrol	4.0×10^{-1}	1.5×10^{-2}	2.4×10^{-1}	3.9×10^{-1}	4.9×10^{1}	5.6×10^{0}	1.4×10^{2}	1.5×10^{2}	4.8×10^{1}	2.2×10^{2}	1.3×10^{2}	3.1×10^{1}	6.7×10^{1}	4.6×10^{1}	8.9×10^{0}	3.7×10^{1}
		prebaked-control	5.1×10^{-2}	2.9×10^{-2}	1.8×10^{-2}	1.6×10^{0}	7.9×10^{1}	1.6×10^{-1}	2.2×10^{1}	5.3×10^{0}	5.5×10^{-1}	9.7×10^{0}	1.2×10^{1}	2.0×10^{0}	2.6×10^{0}	7.8×10^{0}	9.0×10^{-1}	1.5×10^{1}
		soderberg-uncontrol	5.5×10^{-2}	2.9×10^{-3}	3.9×10^{-2}	6.4×10^{-2}	4.6×10^{0}	5.1×10^{-1}	1.2×10^{1}	9.5×10^{0}	2.5×10^{0}	6.4×10^{0}	2.9×10^{0}	8.9×10^{-1}	7.6×10^{-1}	6.3×10^{-1}	2.6×10^{-1}	6.3×10^{-1}
		soderberg-control	7.0×10^{-3}	5.5×10^{-3}	3.0×10^{-3}	2.7×10^{-1}	7.5×10^{0}	1.5×10^{-2}	1.9×10^{0}	3.4×10^{-1}	2.9×10^{-2}	2.8×10^{-1}	2.7×10^{-1}	5.6×10^{-2}	2.9×10^{-2}	1.1×10^{-1}	2.7×10^{-2}	2.6×10^{-1}
18	g/TJ gas burned		2.9×10^{-2}	2.3×10^{-3}	2.9×10^{-2}	1.1×10^{-3}	2.2×10^{-3}	1.6×10^{-4}	7.4×10^{-4}	7.8×10^{-4}	1.7×10^{-3}	1.8×10^{-3}	2.2×10^{-3}	2.0×10^{-3}	1.3×10^{-3}	1.1×10^{-3}	7.5×10^{-4}	2.4×10^{-3}
19	mg/t pig iron produced	uncontrol	2.4×10^{3}	9.5×10^{2}	6.8×10^{1}	1.4×10^{2}	1.7×10^{2}	2.1×10^{1}	2.6×10^{1}	2.3×10^{1}	1.3×10^{1}	1.5×10^{1}	2.2×10^{1}	1.3×10^{1}	1.6×10^{1}	4.2×10^{1}	2.0×10^{1}	4.2×10^{1}
		control	3.3×10^{2}	1.8×10^{2}	1.1×10^{1}	2.3×10^{1}	1.6×10^{1}	1.9×10^{0}	2.3×10^{0}	1.5×10^{0}	6.6×10^{-1}	4.4×10^{-1}	4.9×10^{-1}	3.8×10^{-1}	1.8×10^{-1}	5.7×10^{-1}	5.9×10^{-1}	7.1×10^{-1}
20	mg/t crude steel produced	uncontrol	6.9×10^{3}	1.2×10^{2}	6.1×10^{1}	5.9×10^{1}	3.4×10^{1}	4.3×10^{2}	2.5×10^{2}	2.7×10^{2}	2.4×10^{1}	3.0×10^{1}	1.5×10^{2}	1.2×10^{1}	3.2×10^{1}	7.5×10^{1}	8.4×10^{0}	9.4×10^{1}
		control	9.5×10^{2}	2.3×10^{1}	9.9×10^{0}	9.9×10^{0}	3.2×10^{0}	3.9×10^{1}	2.2×10^{1}	1.7×10^{1}	1.3×10^{0}	8.7×10^{-1}	3.3×10^{0}	3.5×10^{-1}	3.6×10^{-1}	1.0×10^{0}	2.5×10^{-1}	1.6×10^{0}
21	mg/t crude steel produced	uncontrol	5.4×10^{2}	1.3×10^{1}	6.2×10^{0}	6.1×10^{0}	1.2×10^{0}	2.2×10^{1}	3.5×10^{0}	2.8×10^{0}	4.3×10^{-1}	5.2×10^{-1}	5.1×10^{-1}	5.3×10^{-2}	2.4×10^{-1}	2.5×10^{-1}	1.0×10^{-1}	1.4×10^{-1}
		control	7.4×10^{1}	2.4×10^{0}	1.0×10^{0}	1.0×10^{0}	1.2×10^{-1}	2.0×10^{0}	3.1×10^{-1}	1.8×10^{-1}	2.3×10^{-2}	1.5×10^{-2}	1.1×10^{-2}	1.5×10^{-3}	2.7×10^{-3}	3.4×10^{-3}	3.0×10^{-3}	2.3×10^{-3}
22	mg/t crude steel produced	uncontrol	2.6×10^{3}	7.5×10^{1}	3.7×10^{1}	4.5×10^{1}	1.4×10^{1}	2.8×10^{2}	1.1×10^{2}	8.7×10^{1}	6.4×10^{1}	3.0×10^{1}	7.8×10^{1}	1.0×10^{1}	1.4×10^{1}	2.3×10^{1}	4.1×10^{0}	6.2×10^{1}
		control	3.6×10^{2}	1.4×10^{1}	6.1×10^{0}	7.5×10^{0}	1.3×10^{0}	2.5×10^{1}	9.9×10^{0}	5.6×10^{0}	3.3×10^{0}	8.6×10^{-1}	1.7×10^{0}	3.0×10^{-1}	1.6×10^{-1}	3.2×10^{-1}	1.2×10^{-1}	1.1×10^{0}
23	mg/t hot rolled steel produced	uncontrol	9.6×10^{1}	3.7×10^{1}	2.7×10^{0}	5.5×10^{0}	6.8×10^{0}	8.1×10^{-1}	1.0×10^{0}	9.0×10^{-1}	5.0×10^{-1}	6.0×10^{-1}	8.8×10^{-1}	5.2×10^{-1}	6.1×10^{-1}	1.6×10^{0}	7.8×10^{-1}	1.6×10^{0}
		control	1.3×10^{1}	7.1×10^{0}	4.4×10^{-1}	9.1×10^{-1}	6.4×10^{-1}	7.4×10^{-2}	9.1×10^{-2}	5.8×10^{-2}	2.6×10^{-2}	1.7×10^{-2}	1.9×10^{-2}	1.5×10^{-2}	7.0×10^{-3}	2.2×10^{-2}	2.3×10^{-2}	2.8×10^{-2}
24,30,36	mg/t fuel consumed		5.1×10^{2}	4.5×10^{0}	4.8×10^{0}	2.7×10^{0}	8.6×10^{0}	1.8×10^{0}	6.8×10^{0}	4.3×10^{0}	9.6×10^{0}	9.0×10^{-1}	2.0×10^{0}	4.1×10^{0}	2.8×10^{0}	1.9×10^{0}	4.6×10^{0}	2.4×10^{0}
25~29	mg/t fuel consumed	uncontrol	5.2×10^{3}	4.0×10^{1}	9.7×10^{1}	2.0×10^{1}	3.2×10^{3}	2.4×10^{1}	8.1×10^{2}	1.2×10^{2}	7.7×10^{0}	3.1×10^{1}	2.0×10^{1}	6.3×10^{0}	4.0×10^{1}	1.0×10^{1}	3.7×10^{0}	1.1×10^{1}
		control	7.2×10^{2}	7.6×10^{0}	1.6×10^{1}	3.3×10^{0}	3.0×10^{2}	2.2×10^{0}	7.1×10^{1}	7.6×10^{0}	4.0×10^{-1}	9.0×10^{-1}	4.3×10^{-1}	1.8×10^{-1}	4.6×10^{-1}	1.4×10^{-1}	1.1×10^{-1}	1.9×10^{-1}
31	mg/t fuel consumed	uncontrol	2.0×10^{3}	2.5×10^{1}	1.2×10^{0}	9.8×10^{-1}	2.3×10^{1}	1.1×10^{0}	7.2×10^{0}	8.5×10^{0}	5.3×10^{-1}	9.0×10^{-1}	7.5×10^{0}	2.9×10^{0}	7.3×10^{-2}	1.7×10^{-1}	0.0×10^{0}	5.2×10^{-1}
		control	2.8×10^{2}	4.8×10^{0}	2.0×10^{-1}	1.6×10^{-1}	2.1×10^{0}	9.6×10^{-2}	6.3×10^{-1}	5.5×10^{-1}	2.8×10^{-2}	2.6×10^{-2}	1.7×10^{-1}	8.3×10^{-2}	8.3×10^{-4}	2.3×10^{-3}	0.0×10^{0}	8.9×10^{-3}
32	g/TJ fuel consumed		2.9×10^{-3}	2.3×10^{-4}	2.9×10^{-3}	1.1×10^{-4}	2.2×10^{-4}	1.6×10^{-5}	7.4×10^{-5}	7.8×10^{-5}	1.7×10^{-4}	1.8×10^{-4}	2.2×10^{-4}	2.0×10^{-4}	1.3×10^{-4}	1.1×10^{-4}	7.5×10^{-5}	2.4×10^{-4}
33,34	g/TJ fuel consumed	uncontrol	1.9×10^{3}	2.4×10^{2}	1.7×10^{1}	2.4×10^{1}	1.4×10^{2}	1.0×10^{1}	4.8×10^{1}	6.8×10^{1}	2.1×10^{1}	1.9×10^{1}	1.1×10^{1}	2.4×10^{1}	2.5×10^{1}	1.0×10^{1}	6.3×10^{0}	3.0×10^{1}
		control	2.7×10^{2}	4.7×10^{1}	2.8×10^{0}	4.0×10^{0}	1.4×10^{1}	9.5×10^{-1}	4.2×10^{0}	4.4×10^{0}	1.1×10^{0}	5.5×10^{-1}	2.4×10^{-1}	6.9×10^{-1}	2.8×10^{-1}	1.4×10^{-1}	1.9×10^{-1}	5.1×10^{-1}
35	g/TJ fuel consumed		2.9×10^{-2}	2.3×10^{-3}	2.9×10^{-2}	1.1×10^{-3}	2.2×10^{-3}	1.6×10^{-4}	7.4×10^{-4}	7.8×10^{-4}	1.7×10^{-3}	1.8×10^{-3}	2.2×10^{-3}	2.0×10^{-3}	1.3×10^{-3}	1.1×10^{-3}	7.5×10^{-4}	2.4×10^{-3}
37	g/t waste burned		1.1×10^{1}	7.3×10^{0}	6.4×10^{-1}	3.0×10^{0}	5.3×10^{0}	1.3×10^{0}	2.8×10^{0}	3.2×10^{0}	1.5×10^{0}	1.8×10^{0}	1.9×10^{0}	6.7×10^{-1}	1.4×10^{0}	1.3×10^{0}	2.7×10^{-1}	1.3×10^{0}

No.[a]	units	sub-source	NAP	ACY	ACE	FLO	PHE	ANT	FLA	PYR	BaA	CHR	BbF	BkF	BaP	IcdP	DahA	BghiP
38	g/t fuel consumed		1.3×10^{-1}	2.9×10^{-2}	1.1×10^{-2}	1.0×10^{-2}	1.0×10^{-1}	6.1×10^{-3}	3.0×10^{-2}	2.2×10^{-2}	5.4×10^{-3}	1.3×10^{-2}	2.5×10^{-3}	1.4×10^{-2}	9.8×10^{-4}	8.9×10^{-4}	6.3×10^{-4}	1.8×10^{-3}
39~42	g/t fuel consumed		1.6×10^{1}	6.1×10^{0}	1.1×10^{1}	4.3×10^{0}	1.1×10^{1}	1.9×10^{0}	4.2×10^{0}	2.5×10^{0}	1.9×10^{0}	3.7×10^{0}	1.6×10^{0}	1.6×10^{0}	1.1×10^{0}	9.5×10^{-1}	1.9×10^{0}	2.1×10^{0}
43	g/t fuel consumed		5.3×10^{-2}	1.3×10^{-2}	3.7×10^{-2}	7.7×10^{-3}	3.6×10^{-3}	1.6×10^{-3}	3.4×10^{-2}	1.5×10^{-2}	3.8×10^{-3}	3.6×10^{-3}	2.4×10^{-3}	2.1×10^{-2}	2.7×10^{-3}	5.5×10^{-3}	8.6×10^{-2}	7.1×10^{-3}
44	g/TJ fuel consumed		7.0×10^{-1}	6.0×10^{-2}	6.7×10^{-1}	5.0×10^{-2}	6.2×10^{-2}	4.3×10^{-3}	2.1×10^{-2}	3.0×10^{-2}	4.0×10^{-2}	1.7×10^{-2}	4.2×10^{-2}	4.2×10^{-2}	2.9×10^{-2}	2.2×10^{-2}	1.5×10^{-2}	4.6×10^{-2}
45,46	g/t fuel consumed		5.3×10^{-2}	1.3×10^{-2}	3.7×10^{-2}	7.7×10^{-3}	3.6×10^{-3}	1.6×10^{-3}	3.4×10^{-2}	1.5×10^{-2}	3.8×10^{-3}	3.6×10^{-3}	2.4×10^{-3}	2.1×10^{-2}	2.7×10^{-3}	5.5×10^{-3}	8.6×10^{-2}	7.1×10^{-3}
47	g/TJ fuel consumed		7.0×10^{-2}	6.0×10^{-3}	6.7×10^{-2}	5.0×10^{-3}	6.2×10^{-3}	4.3×10^{-4}	2.1×10^{-3}	3.0×10^{-3}	4.0×10^{-3}	1.7×10^{-3}	4.2×10^{-3}	4.2×10^{-3}	2.9×10^{-3}	2.2×10^{-3}	1.5×10^{-3}	4.6×10^{-3}
48	g/t fuel consumed	traditional woodstove	1.2×10^{2}	9.4×10^{1}	2.5×10^{1}	1.0×10^{1}	3.0×10^{1}	5.3×10^{0}	7.5×10^{0}	8.8×10^{0}	6.3×10^{0}	2.6×10^{0}	1.6×10^{0}	7.0×10^{-1}	1.5×10^{0}	8.7×10^{-1}	5.7×10^{-1}	1.1×10^{0}
		improved woodstove	1.5×10^{1}	1.0×10^{1}	5.6×10^{0}	7.6×10^{-1}	7.9×10^{0}	2.8×10^{0}	6.0×10^{0}	2.2×10^{0}	6.4×10^{-1}	7.4×10^{-1}	4.6×10^{-1}	5.9×10^{-1}	5.6×10^{-1}	2.5×10^{-1}	2.6×10^{-1}	1.8×10^{-1}
		fireplace	1.6×10^{1}	1.1×10^{1}	3.9×10^{0}	1.6×10^{0}	6.8×10^{0}	2.0×10^{0}	3.2×10^{0}	2.0×10^{0}	6.5×10^{-1}	8.6×10^{-1}	4.2×10^{-1}	5.0×10^{-1}	5.5×10^{-1}	1.0×10^{-1}	2.0×10^{-1}	3.6×10^{-1}
49	g/t fuel consumed	barley-traditional stove	1.1×10^{2}	2.4×10^{1}	2.1×10^{1}	3.3×10^{1}	6.1×10^{1}	8.9×10^{0}	2.5×10^{1}	2.1×10^{1}	4.4×10^{0}	4.8×10^{0}	4.2×10^{0}	3.3×10^{0}	4.0×10^{0}	3.0×10^{0}	7.5×10^{-1}	2.6×10^{0}
		maize-traditional stove	1.5×10^{1}	2.6×10^{0}	2.4×10^{0}	3.4×10^{0}	6.9×10^{0}	1.1×10^{0}	2.7×10^{0}	2.3×10^{0}	4.8×10^{-1}	5.4×10^{-1}	4.7×10^{-1}	3.7×10^{-1}	4.0×10^{-1}	3.0×10^{-1}	8.7×10^{-2}	2.7×10^{-1}
		rice-traditional stove	4.1×10^{1}	5.5×10^{0}	5.9×10^{0}	6.3×10^{0}	1.0×10^{1}	1.7×10^{0}	7.6×10^{0}	7.3×10^{0}	1.3×10^{0}	1.2×10^{0}	1.1×10^{0}	1.0×10^{0}	1.5×10^{0}	9.5×10^{-1}	1.6×10^{-1}	7.1×10^{-1}
		wheat-traditional stove	3.7×10^{1}	8.3×10^{0}	7.1×10^{0}	1.1×10^{1}	2.1×10^{1}	3.1×10^{0}	8.6×10^{0}	7.3×10^{0}	1.5×10^{0}	1.7×10^{0}	1.4×10^{0}	1.2×10^{0}	1.4×10^{0}	1.0×10^{0}	2.6×10^{-1}	8.9×10^{-1}
		barley-improved stove	1.3×10^{1}	2.6×10^{0}	4.7×10^{0}	2.4×10^{0}	1.6×10^{1}	4.6×10^{0}	2.0×10^{1}	5.2×10^{0}	4.5×10^{-1}	1.4×10^{0}	1.2×10^{0}	2.8×10^{0}	1.5×10^{0}	8.5×10^{-1}	3.4×10^{-1}	4.3×10^{-1}
		maize-improved stove	1.9×10^{0}	2.9×10^{-1}	5.4×10^{-1}	2.5×10^{-1}	1.8×10^{0}	5.8×10^{-1}	2.1×10^{0}	5.5×10^{-1}	4.8×10^{-2}	1.5×10^{-1}	1.3×10^{-1}	3.1×10^{-1}	1.5×10^{-1}	8.7×10^{-2}	4.0×10^{-2}	4.5×10^{-2}
		rice-improved stove	5.0×10^{0}	6.0×10^{-1}	1.3×10^{0}	4.7×10^{-1}	2.7×10^{0}	9.1×10^{-1}	6.0×10^{0}	1.8×10^{0}	1.3×10^{-1}	3.5×10^{-1}	3.1×10^{-1}	8.4×10^{-1}	5.8×10^{-1}	2.7×10^{-1}	7.2×10^{-2}	1.2×10^{-1}
		wheat-improved stove	4.6×10^{0}	9.1×10^{-1}	1.6×10^{0}	8.3×10^{-1}	5.6×10^{0}	1.6×10^{0}	6.9×10^{0}	1.8×10^{0}	1.5×10^{-1}	4.7×10^{-1}	4.1×10^{-1}	9.7×10^{-1}	5.3×10^{-1}	2.9×10^{-1}	1.2×10^{-1}	1.5×10^{-1}
50	g/t fuel consumed	traditional woodstove	7.9×10^{1}	4.1×10^{1}	1.5×10^{1}	6.3×10^{0}	2.5×10^{1}	6.1×10^{0}	1.2×10^{1}	9.4×10^{0}	3.1×10^{0}	1.9×10^{0}	7.7×10^{-1}	7.0×10^{-1}	1.1×10^{0}	1.9×10^{-1}	4.9×10^{-1}	3.9×10^{-1}
		improved woodstove	1.9×10^{2}	5.0×10^{0}	9.6×10^{0}	5.3×10^{0}	5.7×10^{1}	2.8×10^{0}	5.2×10^{1}	1.3×10^{1}	2.1×10^{-1}	5.7×10^{-1}	4.4×10^{-1}	9.8×10^{-1}	8.1×10^{-1}	2.8×10^{-1}	1.9×10^{-2}	1.1×10^{-1}
63	g/t dry matter burned	barley	1.5×10^{2}	1.8×10^{1}	2.2×10^{1}	2.1×10^{0}	1.7×10^{1}	2.4×10^{0}	2.4×10^{0}	2.4×10^{0}	1.1×10^{0}	1.5×10^{0}	2.5×10^{0}	6.1×10^{-1}	8.0×10^{-1}	1.0×10^{-2}	5.9×10^{-1}	5.2×10^{-1}
		maize	1.5×10^{0}	6.3×10^{-1}	5.0×10^{-1}	6.4×10^{-2}	1.8×10^{0}	2.7×10^{-1}	7.6×10^{-1}	7.9×10^{-1}	7.7×10^{-2}	1.5×10^{-1}	2.9×10^{-2}	1.8×10^{-1}	2.4×10^{-2}	0.0×10^{0}	0.0×10^{0}	0.0×10^{0}
		rice	7.7×10^{0}	5.2×10^{-2}	6.1×10^{-1}	2.9×10^{-1}	1.4×10^{0}	2.4×10^{-1}	4.4×10^{-1}	3.4×10^{-1}	8.2×10^{-2}	9.8×10^{-2}	1.3×10^{-1}	3.0×10^{-2}	4.1×10^{-2}	0.0×10^{0}	3.2×10^{-2}	4.3×10^{-2}
		wheat	4.4×10^{1}	3.3×10^{-1}	7.0×10^{-1}	2.5×10^{-1}	4.8×10^{0}	1.2×10^{0}	6.7×10^{0}	3.3×10^{0}	2.3×10^{0}	2.3×10^{0}	9.9×10^{-1}	5.3×10^{-1}	2.8×10^{-1}	0.0×10^{0}	6.7×10^{-1}	1.0×10^{0}
65~68	g/t dry matter burned		1.1×10^{1}	2.2×10^{0}	1.8×10^{0}	7.5×10^{-1}	2.3×10^{0}	3.7×10^{-1}	1.6×10^{0}	1.1×10^{0}	1.6×10^{-1}	1.6×10^{-1}	5.3×10^{-2}	1.4×10^{-1}	1.0×10^{-1}	3.2×10^{-1}	1.9×10^{-1}	6.9×10^{-2}
69	g/t dry matter burned		1.1×10^{0}	2.1×10^{-1}	1.8×10^{-1}	7.2×10^{-2}	2.2×10^{-1}	3.5×10^{-2}	1.5×10^{-1}	1.0×10^{-1}	1.6×10^{-2}	1.6×10^{-2}	5.1×10^{-3}	1.4×10^{-2}	1.0×10^{-2}	3.0×10^{-2}	1.8×10^{-2}	6.6×10^{-3}

Note:

a. In accord with "**No.**" column in Table S1.

Table S5b. Geometric standard deviations of EF_{PAHs} for various sources, log_{10}(EF_{PAHs} units).

No.[a]	NAP	ACY	ACE	FLO	PHE	ANT	FLA	PYR	BaA	CHR	BbF	BkF	BaP	IcdP	DahA	BghiP
1~5,8	0.51	0.48	0.51	0.75	0.48	0.44	0.46	0.64	0.57	0.56	0.56	0.56	0.84	0.56	0.77	0.75
6,7,13,24,30,36	0.89	1.07	0.90	1.00	1.11	1.35	1.46	1.57	1.13	0.61	1.04	1.03	0.90	0.59	1.48	0.65
9,12,18	0.43	0.49	0.30	0.30	0.28	0.30	0.21	0.69	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
10,11	1.26	1.35	0.87	0.98	0.92	1.24	1.17	1.33	0.69	0.64	0.91	0.70	0.85	1.06	0.84	0.85
14~17, 9~23	0.69	0.69	0.72	0.66	0.71	0.68	0.70	0.70	0.75	0.73	0.73	0.72	0.72	0.73	0.72	0.73
25~29,31	0.51	0.48	0.51	0.75	0.48	0.44	0.46	0.64	0.57	0.56	0.56	0.56	0.84	0.56	0.77	0.75
32,35	0.43	0.49	0.30	0.30	0.28	0.30	0.21	0.69	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
33,34	1.26	1.35	0.87	0.98	0.92	1.24	1.17	1.33	0.69	0.64	0.91	0.70	0.85	1.06	0.84	0.85
37	0.16	0.17	0.11	0.22	0.21	0.26	0.22	0.31	0.22	0.23	0.47	0.27	0.31	0.00	0.35	0.15
38	0.24	0.52	0.18	0.23	0.21	0.43	0.67	0.59	1.07	0.63	0.03	0.33	0.61	0.03	0.03	0.23
39~42	0.33	0.38	0.40	0.48	0.67	0.86	0.45	0.21	0.72	0.67	0.97	0.15	0.42	0.32	0.22	0.48
43~47	0.43	0.49	0.30	0.30	0.28	0.30	0.21	0.69	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
48,50	0.40	0.21	0.28	0.35	0.20	0.59	0.23	0.23	0.25	0.23	0.23	0.21	0.19	0.35	0.28	0.39
49	0.08	0.44	0.14	0.35	0.21	0.30	0.18	0.19	0.18	0.19	0.12	0.18	0.18	0.19	0.10	0.15
63	0.16	0.17	0.11	0.22	0.21	0.26	0.22	0.31	0.22	0.23	0.47	0.27	0.31	0.00	0.35	0.15
65~69	0.27	0.46	0.46	0.61	0.22	0.36	0.36	0.31	0.50	0.50	0.57	0.62	0.77	0.34	0.89	1.03

Note:

a. In accord with "**No.**" column in Table S1.

S5. Comparison with Zhang's inventory

Figure S4 compares the PAH emissions from major sources in China, India, Brazil, the United States, and all other countries in 2004 derived from this study (similar to that of 2007) and Zhang's study.[18]. It was found that although the total PAH emission calculated in this study was similar to that of Zhang's inventory for 2004, the differences for individual countries and sources are much larger between the two inventories. Comparing with those in Zhang's inventory, the global emissions from indoor firewood burning, on-road motor vehicles, and mechanical coking derived in this study were 56 Gg (31%), 52 Gg (206%), and 8 Gg (238%) higher, and emissions from biomass open burning, indoor dung cake burning, and indoor crop residue burning were 19 Gg (26%), 17 Gg (58%), and 15 Gg (18%) lower, respectively. The improvement in emission estimation by using country/region-specific EF_{PAHs} was better demonstrated for individual sources as well as individual countries. In this study, EF_{PAHs} for petroleum consumption by on-road motor vehicles were quantified for individual countries in given years. For example, EF_{PAH16} for on-road gasoline vehicles were 4.3, 81.0, and 141 mg/kg for the United States, Brazil, and China in 2004, respectively. As a result, the estimated PAH emissions from motor vehicles in these three countries was 1.6, 1.1, and 5.9 Gg, respectively in this study, compared with 6.9, 0.4, and 2.0 Gg in Zhang's inventory, in which a single EF_{PAH} of 17.1 mg/kg was adopted, indicating extraordinary difference between them. Similarly, by using the technology division method, the EF_{PAH} of BaP for primary aluminum production using Soderberg process in 2004 were estimated to be 41.2 and 4.8 mg/kg in China and the United States in this study, in contrast to a constant value of 15.1 mg/kg in the previous inventory. Together with prebaked process, the estimated total PAH emissions from aluminum production were updated from 0.7 and 0.6 Gg to 1.5 and 0.1 Gg for China and the United States, respectively. Another example is the emission from residential firewood. By dividing the indoor firewood burning source into three categories of traditional woodstoves, improved woodstoves, and fireplaces with different EF_{PAH}, the global total PAH emission from this source was renewed from 178 Gg in Zhang's inventory to 234 Gg in our inventory. In addition, by dividing the sources to more specific categories, overall uncertainty of the inventory was reduced (error bars in Figure S4), because variations of EF_{PAH} for more specific sources were always smaller than those of more general ones.

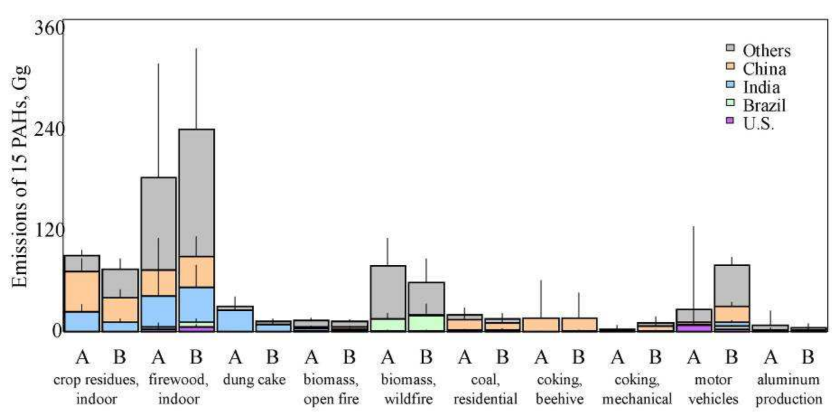

Figure S4. Comparison in total PAH emissions from major sources between 2 global inventories for 2004: A. an inventory reported by Zhang et al.[18] versus B. the inventory developed in this study. The error bars show upper quartiles for each country derived from Monte Carlo simulations.

Figure S5 compares three PAH emission composition profiles, the one from Zhang's study for 2004[18] and those from this study for the years 2004 and 2007. It appears that the PAH emission composition profiles were quite similar between 2004 and 2007, with a slight decrease in the emissions of most compounds from 2004 to 2007. The composition profile derived in this study for the year 2004 was also similar to that of Zhang's one for the same year with exceptions of CHR and BkF. The relative contributions of CHR and BkF in Zhang's study (1.7 and 0.8%) were higher than ours (1.1 and 0.5% respectively). The differences were mainly caused by including more newly reported EF_{PAHs} for indoor crop residue burning in our study.

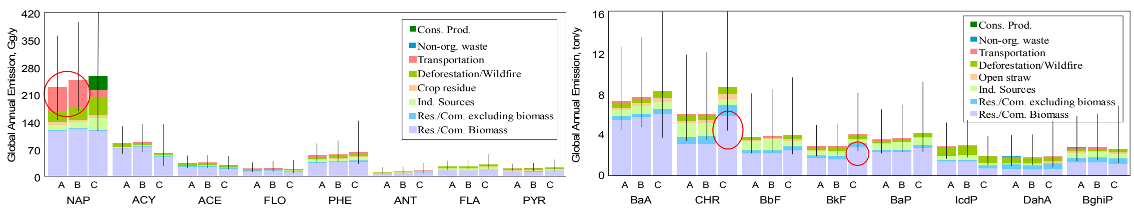

Figure S5. Comparison in composition profiles among the 3 inventories: A) from this study for the year 2007, B) from this study for the year 2004, and C) from Zhang's study for the year 2004. Relative contributions of 8 important source categories are shown as stacked bars. The error bars present upper quartiles for each compound derived from Monte Carlo simulations. The major differences between our and Zhang's inventories are marked with red circles.

S6. Source profiles of BaPeq emissions in 2007.

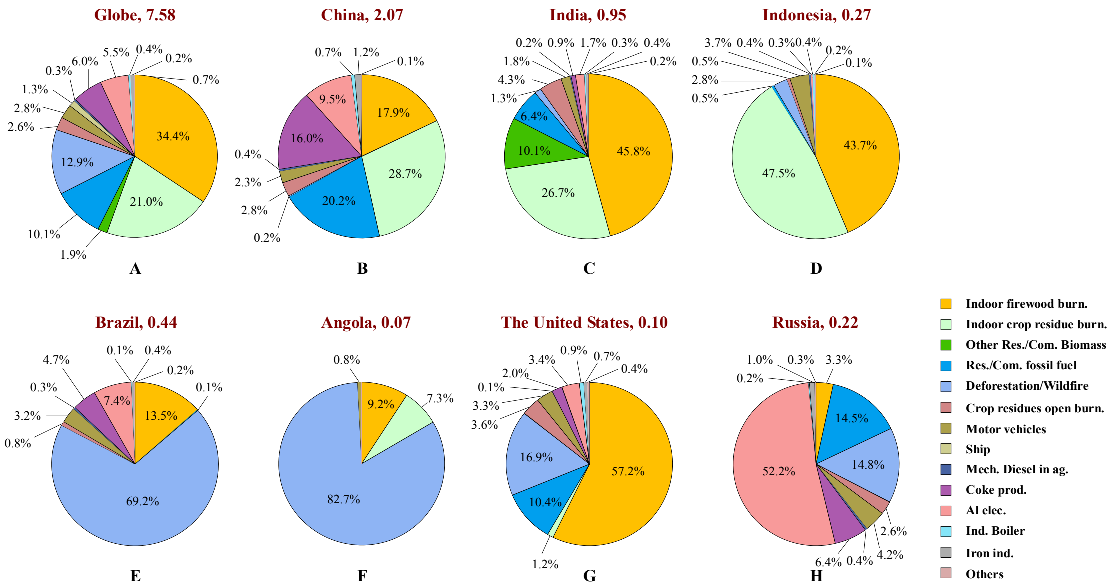

Figure S6. Source profiles of BaPeq emissions in 2007, Gg/year.

S7. Comparison of global PAH emissions between urban and rural area.

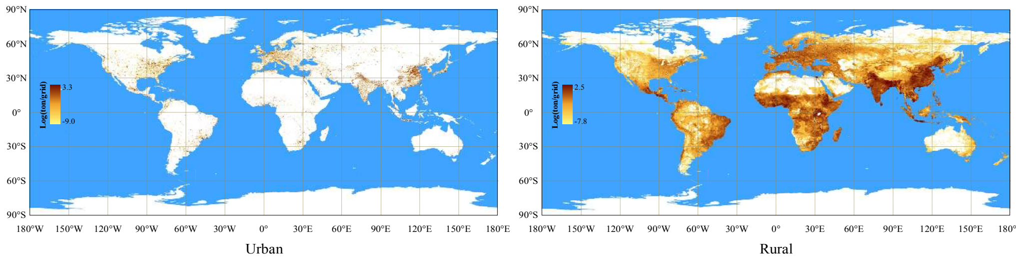

Figure S7. Geographical distributions of anthropogenic PAH16 emissions from urban and rural areas in 2007.

S8. Relative contributions of individual main source after distance corrected and population weighted.

It is believed that the effect of a certain emission source on exposed population group is strengthened by increasing emission intensity and weakened by distance. Here, we assume that health effect of PAHs as Bapeq emitted from a given grid (0.1°×0.1°) was quantified as the effects on the emissions grid and the 24 surrounding grids. The effect on each receiving grid within this area was proportional to the total emissions of the source grid and total population of the receiving grid and inversely proportional to the distance (1 for the source grid itself, 1/4 for the 8 grids immediately adjacent to the source grid, and 1/9 for the other 16 grids) between the emissions and receiving grids. Relative Potential Health Effect (RPHE) of each source category of a source grid was calculated by totalizing the effects of all 25 grids. Figure S8 showed the geographic distribution of the calculated RPHE, and Figure S9 showed the comparison of profiles on PAH16, BaPeq, and RPHE basis respectively, together with the ratios of RPHE/BaPeq.

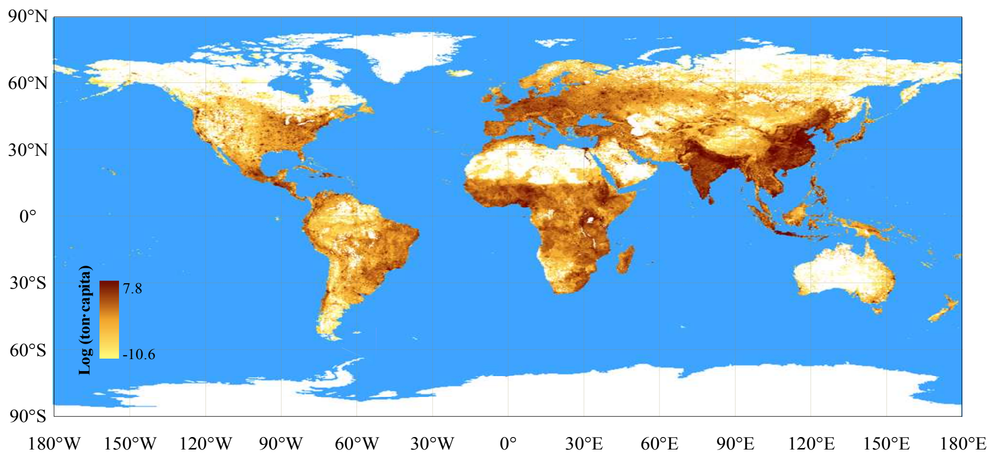

Figure S8. Map of Relative Potential Health Effect (RPHE) from all sources.

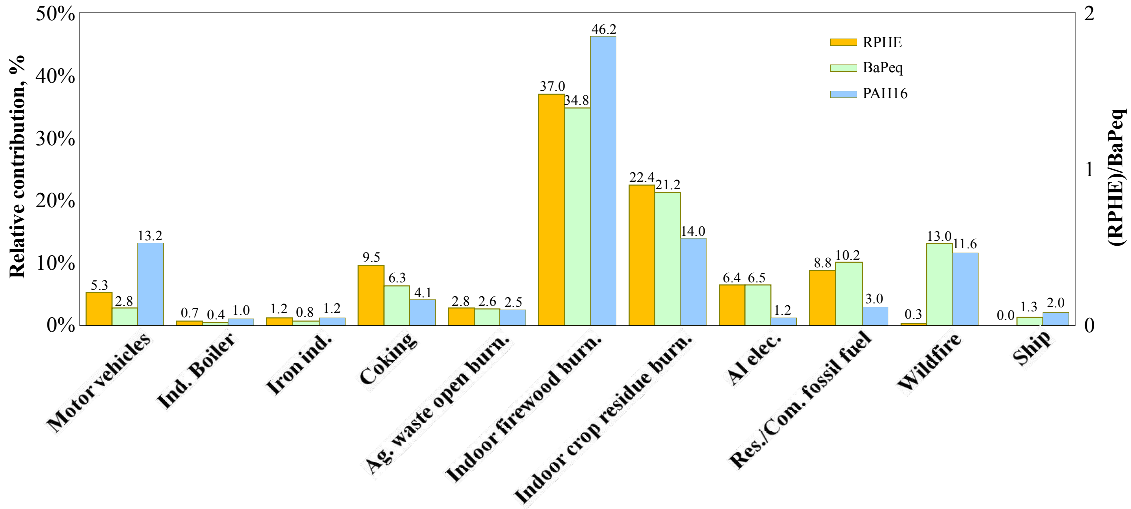

Figure S9. Comparison of relative contributions based on three evaluation methods. PAH16: emission quantity of 16 PAH compounds were simply aggregated. BaPeq: BaP toxic equivalent quality of each PAH compound were aggregated. RPHE: distance-corrected and population-weighted BaPeq was calculated.

S9. Comparison of PKU-PAH with other studies.

Results of the PKU-PAH emission inventory were compared with other studies, including USEPA[19], NAEI[20], and EMEP[21]. Figure S10 showed the comparison in the aspect of emissions from all sources for individual compounds, and Figure S11 showed that in the aspect of emissions from individual sources for group compounds. In general, the majority of the data points shown in Figures below fell around the 1:1 line, indicating no systematic difference between PKU-PAH inventory and those previously developed. Figure S12 showed the comparisons of time trends of country emissions with those reported by EMEP (read the text for detailed discussion).

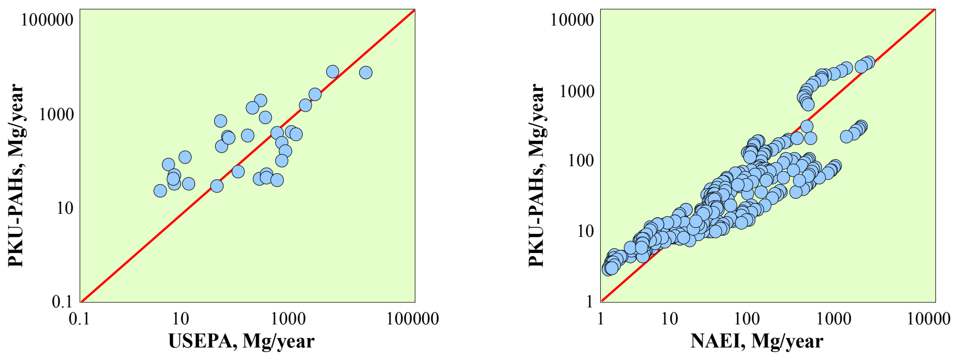

Figure S10. Comparison between the PKU-PAH and the inventories previously published for (A) the United States (16 individual PAHs from all sources from 2002 to 2005), (B) UK (16 individual PAHs from all sources from 1990 to 2009).

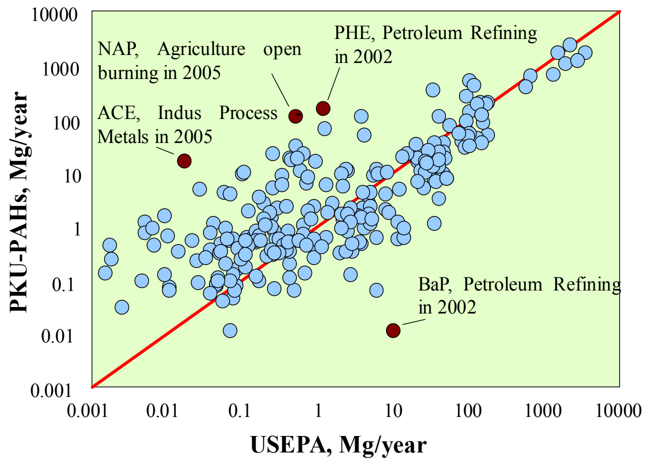

Figure S11. Comparison of annual PAH emissions between PKU-PAH and USEPA reported values. Emissions for each of PAH16 compounds from individual sources in the United States in 2002 and 2005 are plotted in the figure.

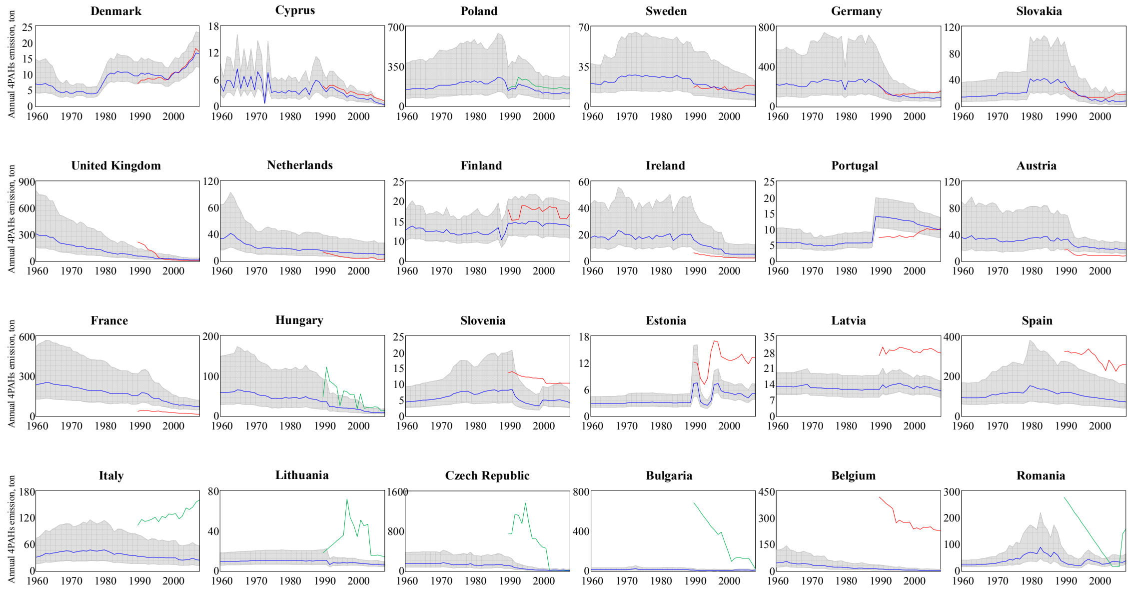

Figure S12. Comparison of emission time trends for the total of 4 high molecular weight PAHs (BaP, BbF, BkF, and IcdP) with those reported by EMEP (European Monitoring and Evaluation Programme) for each of 27 European countries from 1990 to 2008. The grey areas are interquartile ranges of PKU-PAH estimation. Red lines and green lines are the emission time trends reported by EMEP. Gap-filled time trends are marked with green.

S10. World PAH emissions in 2007.

Base on the PKU-PAH emission inventory, emissions of individual PAH compounds in 2007 are listed in Table S6 for each country, and sector specified PAH16 emissions are listed in Table S7 for 9 regions. The results here were source-aggregated and for the base year of 2007 only. For more information, please contact the corresponding author by email.

Table S6. World emissions of 16 PAHs in 2007 (Mg/year).

Country	NAP	ACY	ACE	FLO	PHE	ANT	FLA	PYR	BaA	CHR	BbF	BkF	BaP	IcdP	DahA	BghiP
World	**2.3×10^{5}**	**8.4×10^{4}**	**3.2×10^{4}**	**1.8×10^{4}**	**5.3×10^{4}**	**1.0×10^{4}**	**2.4×10^{4}**	**1.9×10^{4}**	**7.2×10^{3}**	**5.9×10^{3}**	**3.7×10^{3}**	**2.9×10^{3}**	**3.5×10^{3}**	**2.9×10^{3}**	**1.8×10^{3}**	**2.7×10^{3}**
Afghanistan	1.3×10^{2}	6.6×10^{1}	2.0×10^{1}	7.5×10^{0}	2.8×10^{1}	5.7×10^{0}	1.3×10^{1}	9.6×10^{0}	6.3×10^{0}	4.1×10^{0}	2.3×10^{0}	1.2×10^{0}	1.5×10^{0}	6.8×10^{-1}	1.1×10^{0}	1.7×10^{0}
Albania	8.7×10^{1}	1.4×10^{1}	6.0×10^{0}	5.5×10^{0}	1.3×10^{1}	2.4×10^{0}	5.9×10^{0}	4.6×10^{0}	1.1×10^{0}	1.0×10^{0}	6.8×10^{-1}	7.0×10^{-1}	6.9×10^{-1}	6.9×10^{-1}	3.9×10^{-1}	5.5×10^{-1}
Algeria	5.0×10^{2}	4.7×10^{1}	1.5×10^{1}	1.8×10^{1}	4.6×10^{1}	8.5×10^{0}	1.7×10^{1}	1.6×10^{1}	4.4×10^{0}	3.7×10^{0}	2.8×10^{0}	1.9×10^{0}	2.4×10^{0}	1.5×10^{0}	1.1×10^{0}	2.2×10^{0}
American Samoa	5.7×10^{-1}	4.0×10^{-1}	1.2×10^{-1}	5.6×10^{-2}	1.6×10^{-1}	3.3×10^{-2}	6.0×10^{-2}	5.2×10^{-2}	2.9×10^{-2}	1.5×10^{-2}	9.7×10^{-3}	6.4×10^{-3}	9.6×10^{-3}	5.6×10^{-3}	3.2×10^{-3}	5.9×10^{-3}
Andorra	5.0×10^{-1}	2.0×10^{-1}	1.0×10^{-1}	1.1×10^{-1}	2.4×10^{-1}	4.3×10^{-2}	1.2×10^{-1}	8.1×10^{-2}	2.2×10^{-2}	2.0×10^{-2}	1.6×10^{-2}	1.6×10^{-2}	1.6×10^{-2}	1.1×10^{-2}	3.7×10^{-3}	9.6×10^{-3}
Angola	2.2×10^{3}	5.5×10^{2}	3.6×10^{2}	1.6×10^{2}	4.8×10^{2}	8.2×10^{1}	2.9×10^{2}	2.1×10^{2}	4.1×10^{1}	3.5×10^{1}	1.5×10^{1}	2.8×10^{1}	2.3×10^{1}	5.4×10^{1}	3.2×10^{1}	1.5×10^{1}
Anguilla	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Antigua and Barbuda	2.6×10^{-1}	1.7×10^{-1}	5.5×10^{-2}	2.8×10^{-2}	8.1×10^{-2}	1.7×10^{-2}	3.3×10^{-2}	2.5×10^{-2}	1.2×10^{-2}	7.0×10^{-3}	4.8×10^{-3}	3.7×10^{-3}	4.6×10^{-3}	2.8×10^{-3}	1.6×10^{-3}	2.8×10^{-3}
Argentina	1.4×10^{3}	1.3×10^{2}	8.3×10^{1}	4.8×10^{1}	1.6×10^{2}	3.0×10^{1}	9.9×10^{1}	7.0×10^{1}	2.0×10^{1}	2.1×10^{1}	1.0×10^{1}	9.8×10^{0}	6.9×10^{0}	1.1×10^{1}	9.5×10^{0}	1.0×10^{1}
Armenia	2.9×10^{1}	3.2×10^{0}	1.4×10^{0}	8.8×10^{-1}	2.7×10^{0}	4.9×10^{-1}	1.0×10^{0}	8.2×10^{-1}	3.2×10^{-1}	2.9×10^{-1}	2.1×10^{-1}	1.1×10^{-1}	1.2×10^{-1}	5.4×10^{-2}	8.9×10^{-2}	1.5×10^{-1}
Aruba	5.3×10^{-1}	3.3×10^{-1}	1.1×10^{-1}	5.8×10^{-2}	1.6×10^{-1}	3.2×10^{-2}	6.5×10^{-2}	5.5×10^{-2}	2.5×10^{-2}	1.4×10^{-2}	1.0×10^{-2}	7.6×10^{-3}	1.0×10^{-2}	6.1×10^{-3}	2.9×10^{-3}	6.0×10^{-3}
Australia	1.1×10^{3}	3.1×10^{2}	1.6×10^{2}	7.7×10^{1}	2.8×10^{2}	4.1×10^{1}	1.3×10^{2}	9.1×10^{1}	2.5×10^{1}	2.4×10^{1}	1.7×10^{1}	1.3×10^{1}	1.3×10^{1}	2.2×10^{1}	1.2×10^{1}	1.6×10^{1}
Austria	2.9×10^{2}	1.4×10^{2}	4.8×10^{1}	2.9×10^{1}	8.1×10^{1}	1.7×10^{1}	3.5×10^{1}	2.6×10^{1}	1.1×10^{1}	7.5×10^{0}	5.3×10^{0}	4.3×10^{0}	5.1×10^{0}	2.9×10^{0}	1.7×10^{0}	3.4×10^{0}
Azerbaijan	1.8×10^{2}	1.1×10^{1}	5.0×10^{0}	5.1×10^{0}	1.5×10^{1}	2.7×10^{0}	5.1×10^{0}	4.3×10^{0}	1.1×10^{0}	1.4×10^{0}	9.3×10^{-1}	5.6×10^{-1}	5.0×10^{-1}	3.7×10^{-1}	4.0×10^{-1}	9.4×10^{-1}
Bahamas, The	2.5×10^{0}	1.5×10^{0}	5.0×10^{-1}	2.8×10^{-1}	7.7×10^{-1}	1.5×10^{-1}	3.1×10^{-1}	2.5×10^{-1}	1.1×10^{-1}	6.7×10^{-2}	4.6×10^{-2}	3.5×10^{-2}	4.4×10^{-2}	3.2×10^{-2}	1.7×10^{-2}	2.7×10^{-2}
Bahrain	1.1×10^{1}	6.9×10^{-1}	2.2×10^{-1}	1.1×10^{0}	3.9×10^{1}	1.7×10^{-1}	1.0×10^{1}	2.6×10^{0}	2.8×10^{-1}	4.3×10^{0}	5.4×10^{0}	8.8×10^{-1}	1.1×10^{0}	3.4×10^{0}	4.1×10^{-1}	6.5×10^{0}
Bangladesh	1.9×10^{3}	1.0×10^{3}	3.4×10^{2}	1.5×10^{2}	4.8×10^{2}	1.0×10^{2}	2.2×10^{2}	1.7×10^{2}	7.6×10^{1}	4.1×10^{1}	2.6×10^{1}	2.0×10^{1}	2.8×10^{1}	1.5×10^{1}	1.0×10^{1}	1.6×10^{1}
Barbados	5.2×10^{-1}	2.6×10^{-1}	9.7×10^{-2}	7.3×10^{-2}	1.9×10^{-1}	3.7×10^{-2}	7.9×10^{-2}	6.1×10^{-2}	2.2×10^{-2}	1.6×10^{-2}	1.2×10^{-2}	1.0×10^{-2}	1.1×10^{-2}	7.3×10^{-3}	3.1×10^{-3}	6.9×10^{-3}
Belarus	2.9×10^{2}	5.7×10^{1}	2.4×10^{1}	2.0×10^{1}	5.0×10^{1}	9.6×10^{0}	2.1×10^{1}	1.6×10^{1}	4.9×10^{0}	4.3×10^{0}	3.4×10^{0}	2.8×10^{0}	2.9×10^{0}	1.8×10^{0}	1.0×10^{0}	2.2×10^{0}
Belgium	1.3×10^{2}	2.8×10^{1}	8.3×10^{0}	7.7×10^{0}	2.1×10^{1}	5.4×10^{0}	8.8×10^{0}	8.4×10^{0}	2.7×10^{0}	2.1×10^{0}	1.7×10^{0}	1.1×10^{0}	1.4×10^{0}	8.2×10^{-1}	4.2×10^{-1}	1.2×10^{0}
Belize	4.3×10^{1}	2.9×10^{1}	9.0×10^{0}	3.5×10^{0}	1.1×10^{1}	2.2×10^{0}	4.1×10^{0}	3.5×10^{0}	2.0×10^{0}	9.6×10^{-1}	5.7×10^{-1}	3.9×10^{-1}	5.7×10^{-1}	4.8×10^{-1}	3.1×10^{-1}	3.7×10^{-1}
Benin	3.6×10^{2}	2.1×10^{2}	6.1×10^{1}	2.6×10^{1}	8.0×10^{1}	1.6×10^{1}	2.7×10^{1}	2.5×10^{1}	1.4×10^{1}	6.7×10^{0}	4.0×10^{0}	2.6×10^{0}	4.0×10^{0}	2.9×10^{0}	2.0×10^{0}	2.7×10^{0}
Bermuda	3.3×10^{-2}	9.3×10^{-3}	8.7×10^{-4}	4.7×10^{-3}	1.2×10^{-2}	3.4×10^{-3}	5.4×10^{-3}	7.3×10^{-3}	1.5×10^{-3}	1.4×10^{-3}	9.2×10^{-4}	7.8×10^{-4}	1.2×10^{-3}	4.8×10^{-4}	6.9×10^{-5}	5.4×10^{-4}
Bhutan	2.7×10^{2}	2.0×10^{2}	5.7×10^{1}	2.2×10^{1}	7.1×10^{1}	1.4×10^{1}	2.4×10^{1}	2.1×10^{1}	1.3×10^{1}	6.3×10^{0}	3.9×10^{0}	2.3×10^{0}	3.7×10^{0}	2.2×10^{0}	1.5×10^{0}	2.4×10^{0}
Bolivia	1.3×10^{3}	2.8×10^{2}	2.0×10^{2}	8.4×10^{1}	2.5×10^{2}	4.3×10^{1}	1.6×10^{2}	1.2×10^{2}	2.0×10^{1}	1.8×10^{1}	6.5×10^{0}	1.5×10^{1}	1.2×10^{1}	3.2×10^{1}	1.9×10^{1}	7.8×10^{0}
Bosnia and Herzegovina	1.3×10^{2}	3.6×10^{1}	1.8×10^{1}	9.6×10^{0}	3.3×10^{1}	5.1×10^{0}	1.1×10^{1}	8.3×10^{0}	3.7×10^{0}	5.0×10^{0}	3.0×10^{0}	2.0×10^{0}	1.9×10^{0}	1.9×10^{0}	1.9×10^{0}	3.4×10^{0}
Botswana	8.8×10^{1}	3.5×10^{1}	1.3×10^{1}	7.3×10^{0}	2.0×10^{1}	3.7×10^{0}	8.1×10^{0}	6.4×10^{0}	2.6×10^{0}	1.7×10^{0}	1.1×10^{0}	9.3×10^{-1}	1.1×10^{0}	9.4×10^{-1}	5.9×10^{-1}	7.7×10^{-1}
Brazil	1.5×10^{4}	3.5×10^{3}	1.9×10^{3}	9.1×10^{2}	2.8×10^{3}	4.8×10^{2}	1.6×10^{3}	1.2×10^{3}	2.7×10^{2}	2.7×10^{2}	1.4×10^{2}	1.6×10^{2}	1.5×10^{2}	2.9×10^{2}	1.7×10^{2}	1.1×10^{2}
British Indian Ocean Territory	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
British Virgin Islands	3.6×10^{-2}	1.0×10^{-2}	1.0×10^{-3}	5.1×10^{-3}	1.3×10^{-2}	3.7×10^{-3}	5.8×10^{-3}	7.9×10^{-3}	1.6×10^{-3}	1.5×10^{-3}	9.9×10^{-4}	8.4×10^{-4}	1.3×10^{-3}	5.2×10^{-4}	7.6×10^{-5}	5.8×10^{-4}
Brunei	2.8×10^{0}	1.2×10^{0}	4.7×10^{-1}	1.9×10^{-1}	6.9×10^{-1}	1.6×10^{-1}	3.9×10^{-1}	2.6×10^{-1}	8.7×10^{-2}	5.5×10^{-2}	2.6×10^{-2}	2.9×10^{-2}	3.4×10^{-2}	2.9×10^{-2}	2.5×10^{-2}	1.7×10^{-2}
Bulgaria	2.8×10^{2}	8.5×10^{1}	2.9×10^{1}	1.8×10^{1}	4.9×10^{1}	1.0×10^{1}	1.8×10^{1}	1.5×10^{1}	6.7×10^{0}	5.2×10^{0}	3.1×10^{0}	2.4×10^{0}	2.8×10^{0}	1.8×10^{0}	1.6×10^{0}	2.6×10^{0}
Burkina Faso	6.9×10^{2}	5.2×10^{2}	1.5×10^{2}	5.7×10^{1}	1.8×10^{2}	3.7×10^{1}	6.0×10^{1}	5.4×10^{1}	3.5×10^{1}	1.6×10^{1}	9.9×10^{0}	5.7×10^{0}	9.4×10^{0}	5.9×10^{0}	4.1×10^{0}	6.1×10^{0}
Burundi	4.8×10^{2}	3.7×10^{2}	1.0×10^{2}	4.0×10^{1}	1.3×10^{2}	2.6×10^{1}	4.1×10^{1}	3.7×10^{1}	2.5×10^{1}	1.1×10^{1}	7.0×10^{0}	3.9×10^{0}	6.6×10^{0}	3.8×10^{0}	2.7×10^{0}	4.3×10^{0}
Cambodia	1.2×10^{3}	4.9×10^{2}	2.1×10^{2}	9.7×10^{1}	2.8×10^{2}	5.3×10^{1}	1.6×10^{2}	1.2×10^{2}	3.6×10^{1}	2.3×10^{1}	1.3×10^{1}	1.5×10^{1}	1.7×10^{1}	2.3×10^{1}	1.3×10^{1}	9.8×10^{0}
Cameroon	8.3×10^{2}	4.5×10^{2}	1.5×10^{2}	7.0×10^{1}	2.1×10^{2}	4.0×10^{1}	8.6×10^{1}	6.9×10^{1}	3.1×10^{1}	1.8×10^{1}	1.1×10^{1}	8.7×10^{0}	1.1×10^{1}	1.1×10^{1}	6.2×10^{0}	7.6×10^{0}
Canada	1.4×10^{3}	3.1×10^{2}	2.1×10^{2}	1.1×10^{2}	3.4×10^{2}	5.3×10^{1}	2.0×10^{2}	1.4×10^{2}	3.0×10^{1}	3.8×10^{1}	2.2×10^{1}	2.1×10^{1}	1.9×10^{1}	3.3×10^{1}	1.8×10^{1}	1.5×10^{1}

Cape Verde	9.1×10^{-2}	6.8×10^{-2}	1.9×10^{-2}	8.2×10^{-3}	2.6×10^{-2}	5.4×10^{-3}	9.1×10^{-3}	8.8×10^{-3}	4.9×10^{-3}	2.7×10^{-3}	1.8×10^{-3}	1.1×10^{-3}	1.6×10^{-3}	1.0×10^{-3}	5.4×10^{-4}	1.1×10^{-3}
Cayman Islands	1.6×10^{-2}	4.6×10^{-3}	4.3×10^{-4}	2.3×10^{-3}	6.1×10^{-3}	1.7×10^{-3}	2.6×10^{-3}	3.6×10^{-3}	7.4×10^{-4}	7.1×10^{-4}	4.5×10^{-4}	3.9×10^{-4}	5.9×10^{-4}	2.4×10^{-4}	3.4×10^{-5}	2.7×10^{-4}
Central African Republic	1.6×10^{3}	3.9×10^{2}	2.7×10^{2}	1.1×10^{2}	3.4×10^{2}	5.6×10^{1}	2.3×10^{2}	1.6×10^{2}	2.8×10^{1}	2.5×10^{1}	8.9×10^{0}	2.1×10^{1}	1.6×10^{1}	4.4×10^{1}	2.6×10^{1}	1.0×10^{1}
Chad	4.8×10^{2}	3.0×10^{2}	9.9×10^{1}	3.9×10^{1}	1.2×10^{2}	2.4×10^{1}	4.8×10^{1}	4.0×10^{1}	2.1×10^{1}	1.0×10^{1}	6.0×10^{0}	4.5×10^{0}	6.2×10^{0}	6.2×10^{0}	4.0×10^{0}	4.0×10^{0}
Chile	9.2×10^{2}	4.7×10^{2}	1.5×10^{2}	6.0×10^{1}	1.9×10^{2}	4.0×10^{1}	6.6×10^{1}	5.7×10^{1}	3.3×10^{1}	1.7×10^{1}	1.0×10^{1}	6.5×10^{0}	9.6×10^{0}	5.8×10^{0}	4.3×10^{0}	6.5×10^{0}
China	4.6×10^{4}	1.4×10^{4}	6.1×10^{3}	4.7×10^{3}	1.3×10^{4}	2.5×10^{3}	6.1×10^{3}	4.9×10^{3}	1.7×10^{3}	1.8×10^{3}	1.2×10^{3}	8.7×10^{2}	1.1×10^{3}	6.9×10^{2}	4.2×10^{2}	8.7×10^{2}
Colombia	9.9×10^{2}	3.2×10^{2}	9.5×10^{1}	5.4×10^{1}	1.6×10^{2}	2.9×10^{1}	5.4×10^{1}	4.9×10^{1}	2.2×10^{1}	1.2×10^{1}	7.5×10^{0}	5.4×10^{0}	7.5×10^{0}	6.2×10^{0}	3.8×10^{0}	5.5×10^{0}
Comoros	1.3×10^{1}	1.0×10^{1}	2.8×10^{0}	1.1×10^{0}	3.4×10^{0}	7.0×10^{-1}	1.1×10^{0}	1.0×10^{0}	6.7×10^{-1}	3.1×10^{-1}	1.9×10^{-1}	1.0×10^{-1}	1.8×10^{-1}	1.0×10^{-1}	7.2×10^{-2}	1.2×10^{-1}
Congo DR	3.8×10^{3}	2.8×10^{3}	8.1×10^{2}	3.1×10^{2}	9.8×10^{2}	2.0×10^{2}	3.2×10^{2}	2.9×10^{2}	1.9×10^{2}	8.7×10^{1}	5.4×10^{1}	3.0×10^{1}	5.1×10^{1}	3.0×10^{1}	2.1×10^{1}	3.3×10^{1}
Congo	2.0×10^{3}	4.3×10^{2}	3.3×10^{2}	1.3×10^{2}	4.1×10^{2}	6.7×10^{1}	2.7×10^{2}	1.9×10^{2}	3.1×10^{1}	3.0×10^{1}	1.0×10^{1}	2.5×10^{1}	1.9×10^{1}	5.4×10^{1}	3.2×10^{1}	1.2×10^{1}
Cook Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Costa Rica	1.7×10^{2}	6.9×10^{1}	1.9×10^{1}	9.7×10^{0}	2.7×10^{1}	5.4×10^{0}	8.5×10^{0}	8.2×10^{0}	4.6×10^{0}	2.2×10^{0}	1.4×10^{0}	8.2×10^{-1}	1.3×10^{0}	7.9×10^{-1}	5.1×10^{-1}	9.4×10^{-1}
Cote d'Ivoire	6.5×10^{2}	3.8×10^{2}	1.2×10^{2}	5.6×10^{1}	1.6×10^{2}	3.2×10^{1}	6.7×10^{1}	5.6×10^{1}	2.7×10^{1}	1.4×10^{1}	9.1×10^{0}	7.0×10^{0}	9.7×10^{0}	7.4×10^{0}	4.2×10^{0}	5.9×10^{0}
Croatia	1.2×10^{2}	2.8×10^{1}	9.2×10^{0}	6.5×10^{0}	1.8×10^{1}	3.3×10^{0}	6.2×10^{0}	5.3×10^{0}	2.0×10^{0}	1.4×10^{0}	9.4×10^{-1}	7.3×10^{-1}	8.6×10^{-1}	5.1×10^{-1}	3.4×10^{-1}	6.8×10^{-1}
Cuba	3.9×10^{1}	3.7×10^{0}	1.8×10^{0}	1.5×10^{0}	4.1×10^{0}	7.0×10^{-1}	1.7×10^{0}	1.5×10^{0}	2.8×10^{-1}	2.7×10^{-1}	1.8×10^{-1}	2.0×10^{-1}	1.8×10^{-1}	2.9×10^{-1}	1.7×10^{-1}	1.6×10^{-1}
Cyprus	3.3×10^{1}	3.1×10^{0}	3.0×10^{0}	6.6×10^{-1}	3.0×10^{0}	4.5×10^{-1}	6.9×10^{-1}	6.3×10^{-1}	2.6×10^{-1}	2.9×10^{-1}	3.7×10^{-1}	1.2×10^{-1}	1.4×10^{-1}	2.4×10^{-2}	1.1×10^{-1}	1.3×10^{-1}
Czech Republic	3.6×10^{2}	9.0×10^{1}	4.9×10^{1}	3.9×10^{1}	9.9×10^{1}	1.9×10^{1}	4.5×10^{1}	3.2×10^{1}	1.1×10^{1}	1.2×10^{1}	7.7×10^{0}	7.1×10^{0}	6.8×10^{0}	4.6×10^{0}	4.0×10^{0}	6.3×10^{0}
Denmark	1.7×10^{2}	5.2×10^{1}	2.9×10^{1}	2.8×10^{1}	6.6×10^{1}	1.2×10^{1}	3.4×10^{1}	2.2×10^{1}	6.0×10^{0}	6.0×10^{0}	4.7×10^{0}	4.6×10^{0}	4.5×10^{0}	2.9×10^{0}	1.3×10^{0}	2.8×10^{0}
Djibouti	1.0×10^{2}	7.7×10^{1}	2.2×10^{1}	8.4×10^{0}	2.7×10^{1}	5.4×10^{0}	8.6×10^{0}	7.8×10^{0}	5.2×10^{0}	2.4×10^{0}	1.5×10^{0}	8.1×10^{-1}	1.4×10^{0}	7.9×10^{-1}	5.6×10^{-1}	9.0×10^{-1}
Dominica	1.4×10^{-1}	7.2×10^{-2}	2.7×10^{-2}	2.0×10^{-2}	5.1×10^{-2}	9.8×10^{-3}	2.2×10^{-2}	1.6×10^{-2}	6.1×10^{-3}	4.3×10^{-3}	3.3×10^{-3}	2.8×10^{-3}	3.0×10^{-3}	2.0×10^{-3}	8.6×10^{-4}	1.9×10^{-3}
Dominican Republic	2.1×10^{2}	5.1×10^{1}	1.7×10^{1}	1.3×10^{1}	3.0×10^{1}	5.8×10^{0}	1.4×10^{1}	1.2×10^{1}	4.0×10^{0}	2.6×10^{0}	1.9×10^{0}	1.7×10^{0}	2.3×10^{0}	1.4×10^{0}	5.5×10^{-1}	1.3×10^{0}
Ecuador	4.0×10^{2}	8.4×10^{1}	2.2×10^{1}	1.7×10^{1}	4.3×10^{1}	8.2×10^{0}	1.3×10^{1}	1.3×10^{1}	5.3×10^{0}	2.9×10^{0}	1.8×10^{0}	1.3×10^{0}	1.8×10^{0}	1.2×10^{0}	7.7×10^{-1}	1.5×10^{0}
Egypt	1.6×10^{3}	2.3×10^{2}	6.5×10^{1}	6.1×10^{1}	1.7×10^{2}	3.6×10^{1}	6.1×10^{1}	5.6×10^{1}	1.9×10^{1}	1.5×10^{1}	1.1×10^{1}	6.5×10^{0}	8.1×10^{0}	5.4×10^{0}	3.5×10^{0}	9.6×10^{0}
El Salvador	2.9×10^{2}	1.7×10^{2}	4.7×10^{1}	2.1×10^{1}	6.3×10^{1}	1.3×10^{1}	2.1×10^{1}	1.9×10^{1}	1.1×10^{1}	5.4×10^{0}	3.4×10^{0}	2.1×10^{0}	3.3×10^{0}	1.9×10^{0}	1.3×10^{0}	2.2×10^{0}
Equatorial Guinea	1.0×10^{1}	7.8×10^{0}	2.2×10^{0}	8.5×10^{-1}	2.7×10^{0}	5.5×10^{-1}	8.7×10^{-1}	8.0×10^{-1}	5.3×10^{-1}	2.4×10^{-1}	1.5×10^{-1}	8.2×10^{-2}	1.4×10^{-1}	8.0×10^{-2}	5.6×10^{-2}	9.1×10^{-2}
Eritrea	7.0×10^{1}	5.0×10^{1}	1.4×10^{1}	5.6×10^{0}	1.7×10^{1}	3.5×10^{0}	5.6×10^{0}	5.1×10^{0}	3.3×10^{0}	1.5×10^{0}	9.5×10^{-1}	5.3×10^{-1}	9.0×10^{-1}	5.2×10^{-1}	3.7×10^{-1}	5.9×10^{-1}
Estonia	9.6×10^{1}	3.7×10^{1}	1.3×10^{1}	9.2×10^{0}	2.5×10^{1}	4.8×10^{0}	1.1×10^{1}	7.7×10^{0}	2.9×10^{0}	2.1×10^{0}	1.5×10^{0}	1.3×10^{0}	1.5×10^{0}	8.8×10^{-1}	4.7×10^{-1}	9.5×10^{-1}
Ethiopia	6.7×10^{3}	4.9×10^{3}	1.4×10^{3}	5.5×10^{2}	1.7×10^{3}	3.5×10^{2}	5.7×10^{2}	5.1×10^{2}	3.3×10^{2}	1.5×10^{2}	9.5×10^{1}	5.3×10^{1}	8.9×10^{1}	5.4×10^{1}	3.8×10^{1}	5.9×10^{1}
Falkland Islands	2.5×10^{-1}	1.9×10^{-1}	5.5×10^{-2}	2.1×10^{-2}	6.7×10^{-2}	1.4×10^{-2}	2.2×10^{-2}	2.0×10^{-2}	1.3×10^{-2}	6.0×10^{-3}	3.7×10^{-3}	2.1×10^{-3}	3.5×10^{-3}	2.0×10^{-3}	1.4×10^{-3}	2.3×10^{-3}
Faroe Islands	2.6×10^{-1}	1.0×10^{-1}	5.3×10^{-2}	5.6×10^{-2}	1.2×10^{-1}	2.2×10^{-2}	6.0×10^{-2}	4.2×10^{-2}	1.1×10^{-2}	1.0×10^{-2}	8.4×10^{-3}	8.0×10^{-3}	8.4×10^{-3}	5.7×10^{-3}	1.9×10^{-3}	5.0×10^{-3}
Fiji	3.4×10^{0}	1.7×10^{0}	6.2×10^{-1}	3.2×10^{-1}	8.6×10^{-1}	1.7×10^{-1}	4.3×10^{-1}	3.5×10^{-1}	1.4×10^{-1}	8.3×10^{-2}	6.1×10^{-2}	4.8×10^{-2}	6.7×10^{-2}	4.3×10^{-2}	2.0×10^{-2}	3.7×10^{-2}
Finland	2.5×10^{2}	1.5×10^{2}	4.4×10^{1}	1.8×10^{1}	6.0×10^{1}	1.3×10^{1}	2.2×10^{1}	1.8×10^{1}	1.0×10^{1}	5.8×10^{0}	3.6×10^{0}	2.5×10^{0}	3.5×10^{0}	1.8×10^{0}	1.5×10^{0}	2.4×10^{0}
France	1.5×10^{3}	7.4×10^{2}	2.4×10^{2}	1.1×10^{2}	3.6×10^{2}	7.6×10^{1}	1.4×10^{2}	1.1×10^{2}	5.6×10^{1}	3.7×10^{1}	2.4×10^{1}	1.6×10^{1}	2.1×10^{1}	1.1×10^{1}	9.5×10^{0}	1.7×10^{1}
French Guiana	3.6×10^{0}	2.8×10^{0}	7.9×10^{-1}	3.1×10^{-1}	9.6×10^{-1}	1.9×10^{-1}	3.2×10^{-1}	2.9×10^{-1}	1.9×10^{-1}	8.5×10^{-2}	5.3×10^{-2}	3.0×10^{-2}	5.1×10^{-2}	2.9×10^{-2}	2.0×10^{-2}	3.3×10^{-2}
French Polynesia	4.6×10^{-1}	2.2×10^{-1}	8.9×10^{-2}	7.1×10^{-2}	1.7×10^{-1}	3.2×10^{-2}	8.2×10^{-2}	6.2×10^{-2}	2.1×10^{-2}	1.5×10^{-2}	1.2×10^{-2}	1.0×10^{-2}	1.2×10^{-2}	8.0×10^{-3}	2.8×10^{-3}	7.1×10^{-3}
Gabon	6.8×10^{1}	3.0×10^{1}	1.2×10^{1}	8.2×10^{0}	2.1×10^{1}	4.0×10^{0}	9.2×10^{0}	6.9×10^{0}	2.5×10^{0}	1.7×10^{0}	1.3×10^{0}	1.1×10^{0}	1.2×10^{0}	9.2×10^{-1}	4.2×10^{-1}	7.6×10^{-1}
Georgia	1.2×10^{2}	2.5×10^{1}	8.7×10^{0}	7.8×10^{0}	1.9×10^{1}	3.6×10^{0}	7.8×10^{0}	6.1×10^{0}	1.9×10^{0}	1.5×10^{0}	1.1×10^{0}	9.7×10^{-1}	1.0×10^{0}	6.8×10^{-1}	3.6×10^{-1}	7.6×10^{-1}
Germany	1.3×10^{3}	3.7×10^{2}	1.7×10^{2}	1.4×10^{2}	3.6×10^{2}	7.1×10^{1}	1.7×10^{2}	1.2×10^{2}	3.8×10^{1}	3.6×10^{1}	2.8×10^{1}	2.3×10^{1}	2.4×10^{1}	1.6×10^{1}	8.7×10^{0}	2.0×10^{1}
Ghana	1.0×10^{3}	5.9×10^{2}	1.8×10^{2}	7.4×10^{1}	2.3×10^{2}	4.5×10^{1}	8.3×10^{1}	7.2×10^{1}	4.0×10^{1}	1.9×10^{1}	1.2×10^{1}	7.8×10^{0}	1.2×10^{1}	9.6×10^{0}	6.3×10^{0}	7.7×10^{0}
Gibraltar	2.3×10^{0}	9.4×10^{-2}	1.9×10^{-2}	6.2×10^{-2}	9.5×10^{-2}	1.7×10^{-2}	2.3×10^{-2}	3.4×10^{-2}	3.9×10^{-3}	4.2×10^{-3}	3.2×10^{-3}	2.6×10^{-3}	3.2×10^{-3}	2.2×10^{-3}	5.0×10^{-4}	3.8×10^{-3}
Greece	2.3×10^{2}	4.3×10^{1}	2.3×10^{1}	1.7×10^{1}	4.7×10^{1}	7.9×10^{0}	2.3×10^{1}	1.6×10^{1}	3.9×10^{0}	3.9×10^{0}	2.9×10^{0}	2.6×10^{0}	2.5×10^{0}	2.8×10^{0}	1.4×10^{0}	2.3×10^{0}
Greenland	4.2×10^{-1}	3.1×10^{-1}	9.0×10^{-2}	3.7×10^{-2}	1.2×10^{-1}	2.5×10^{-2}	4.1×10^{-2}	3.6×10^{-2}	2.1×10^{-2}	1.1×10^{-2}	6.8×10^{-3}	4.5×10^{-3}	6.8×10^{-3}	3.4×10^{-3}	2.5×10^{-3}	4.4×10^{-3}
Grenada	1.5×10^{-1}	7.8×10^{-2}	3.0×10^{-2}	2.2×10^{-2}	5.6×10^{-2}	1.1×10^{-2}	2.4×10^{-2}	1.8×10^{-2}	6.7×10^{-3}	4.8×10^{-3}	3.6×10^{-3}	3.0×10^{-3}	3.3×10^{-3}	2.2×10^{-3}	9.4×10^{-4}	2.1×10^{-3}
Guadeloupe	7.3×10^{-3}	3.4×10^{-3}	1.4×10^{-3}	1.0×10^{-3}	2.5×10^{-3}	4.7×10^{-4}	1.2×10^{-3}	9.0×10^{-4}	3.0×10^{-4}	2.2×10^{-4}	1.7×10^{-4}	1.5×10^{-4}	1.8×10^{-4}	1.1×10^{-4}	4.2×10^{-5}	9.8×10^{-5}
Guam	1.7×10^{-1}	9.9×10^{-2}	3.3×10^{-2}	2.1×10^{-2}	5.5×10^{-2}	1.1×10^{-2}	2.2×10^{-2}	1.7×10^{-2}	7.7×10^{-3}	4.9×10^{-3}	3.6×10^{-3}	2.7×10^{-3}	3.3×10^{-3}	2.1×10^{-3}	1.0×10^{-3}	2.1×10^{-3}
Guatemala	1.0×10^{3}	6.4×10^{2}	1.9×10^{2}	7.8×10^{1}	2.4×10^{2}	4.7×10^{1}	8.1×10^{1}	7.3×10^{1}	4.3×10^{1}	2.0×10^{1}	1.2×10^{1}	7.7×10^{0}	1.2×10^{1}	8.2×10^{0}	5.5×10^{0}	8.0×10^{0}
Guinea	7.4×10^{2}	5.1×10^{2}	1.6×10^{2}	6.0×10^{1}	1.9×10^{2}	3.8×10^{1}	6.8×10^{1}	5.9×10^{1}	3.5×10^{1}	1.6×10^{1}	9.8×10^{0}	6.4×10^{0}	9.7×10^{0}	7.7×10^{0}	5.2×10^{0}	6.3×10^{0}

Guinea-Bissau	3.4×10^{1}	2.0×10^{1}	6.8×10^{0}	2.7×10^{0}	8.3×10^{0}	1.6×10^{0}	3.5×10^{0}	2.9×10^{0}	1.3×10^{0}	7.0×10^{-1}	3.9×10^{-1}	3.2×10^{-1}	4.2×10^{-1}	4.9×10^{-1}	3.1×10^{-1}	2.7×10^{-1}
Guyana	4.7×10^{1}	3.6×10^{1}	1.0×10^{1}	3.9×10^{0}	1.2×10^{1}	2.5×10^{0}	4.0×10^{0}	3.7×10^{0}	2.4×10^{0}	1.1×10^{0}	6.9×10^{-1}	3.8×10^{-1}	6.5×10^{-1}	3.7×10^{-1}	2.6×10^{-1}	4.2×10^{-1}
Haiti	1.8×10^{2}	9.5×10^{1}	3.1×10^{1}	1.7×10^{1}	4.6×10^{1}	9.1×10^{0}	2.0×10^{1}	1.6×10^{1}	7.2×10^{0}	4.1×10^{0}	2.9×10^{0}	2.3×10^{0}	3.1×10^{0}	1.8×10^{0}	8.6×10^{-1}	1.8×10^{0}
Honduras	4.7×10^{2}	2.8×10^{2}	7.9×10^{1}	3.3×10^{1}	1.0×10^{2}	2.0×10^{1}	3.3×10^{1}	3.1×10^{1}	1.9×10^{1}	8.7×10^{0}	5.3×10^{0}	3.2×10^{0}	5.1×10^{0}	3.2×10^{0}	2.2×10^{0}	3.4×10^{0}
Hungary	2.6×10^{2}	7.8×10^{1}	2.6×10^{1}	1.4×10^{1}	4.1×10^{1}	8.7×10^{0}	1.5×10^{1}	1.3×10^{1}	6.3×10^{0}	4.9×10^{0}	2.8×10^{0}	2.0×10^{0}	2.4×10^{0}	1.3×10^{0}	1.5×10^{0}	2.3×10^{0}
Iceland	4.9×10^{0}	1.4×10^{0}	7.4×10^{-1}	1.0×10^{0}	1.3×10^{1}	3.3×10^{-1}	3.9×10^{0}	1.3×10^{0}	2.2×10^{-1}	1.3×10^{0}	1.6×10^{0}	3.5×10^{-1}	4.1×10^{-1}	9.7×10^{-1}	1.4×10^{-1}	1.8×10^{0}
India	2.8×10^{4}	1.4×10^{4}	4.6×10^{3}	2.5×10^{3}	7.2×10^{3}	1.5×10^{3}	3.4×10^{3}	2.6×10^{3}	1.1×10^{3}	7.3×10^{2}	4.6×10^{2}	3.6×10^{2}	4.6×10^{2}	2.7×10^{2}	1.8×10^{2}	3.1×10^{2}
Indonesia	8.9×10^{3}	3.4×10^{3}	1.2×10^{3}	7.5×10^{2}	1.9×10^{3}	3.7×10^{2}	9.5×10^{2}	7.7×10^{2}	2.8×10^{2}	1.7×10^{2}	1.3×10^{2}	1.1×10^{2}	1.5×10^{2}	9.3×10^{1}	3.8×10^{1}	8.2×10^{1}
Iran	2.6×10^{3}	1.5×10^{2}	3.5×10^{1}	7.8×10^{1}	1.8×10^{2}	3.3×10^{1}	6.4×10^{1}	6.0×10^{1}	1.4×10^{1}	1.5×10^{1}	1.1×10^{1}	6.9×10^{0}	7.4×10^{0}	5.1×10^{0}	4.1×10^{0}	1.1×10^{1}
Iraq	1.1×10^{3}	6.2×10^{1}	1.0×10^{1}	3.3×10^{1}	7.0×10^{1}	1.2×10^{1}	2.0×10^{1}	2.1×10^{1}	3.4×10^{0}	3.7×10^{0}	2.3×10^{0}	2.1×10^{0}	2.1×10^{0}	1.3×10^{0}	1.0×10^{0}	2.9×10^{0}
Ireland	4.5×10^{1}	8.1×10^{0}	1.2×10^{1}	5.1×10^{0}	1.3×10^{1}	2.2×10^{0}	5.1×10^{0}	3.3×10^{0}	1.9×10^{0}	3.5×10^{0}	1.6×10^{0}	1.6×10^{0}	1.1×10^{0}	9.3×10^{-1}	1.8×10^{0}	2.0×10^{0}
Israel	3.9×10^{1}	1.5×10^{0}	6.1×10^{-1}	1.0×10^{0}	2.5×10^{0}	3.8×10^{-1}	9.0×10^{-1}	8.3×10^{-1}	2.3×10^{-1}	2.3×10^{-1}	1.5×10^{-1}	1.1×10^{-1}	8.8×10^{-2}	5.4×10^{-2}	1.3×10^{-1}	1.4×10^{-1}
Italy	5.8×10^{2}	1.5×10^{2}	5.0×10^{1}	3.0×10^{1}	9.1×10^{1}	2.2×10^{1}	3.7×10^{1}	3.2×10^{1}	1.2×10^{1}	9.1×10^{0}	6.9×10^{0}	4.2×10^{0}	5.3×10^{0}	3.6×10^{0}	2.2×10^{0}	5.1×10^{0}
Jamaica	7.2×10^{1}	2.1×10^{1}	5.6×10^{0}	3.5×10^{0}	9.2×10^{0}	1.8×10^{0}	2.8×10^{0}	2.8×10^{0}	1.4×10^{0}	6.9×10^{-1}	4.3×10^{-1}	2.8×10^{-1}	4.2×10^{-1}	2.5×10^{-1}	1.6×10^{-1}	3.2×10^{-1}
Japan	1.1×10^{3}	1.5×10^{2}	3.8×10^{1}	7.0×10^{1}	1.8×10^{2}	4.9×10^{1}	7.1×10^{1}	8.2×10^{1}	1.9×10^{1}	1.9×10^{1}	1.5×10^{1}	1.0×10^{1}	1.4×10^{1}	8.0×10^{0}	5.3×10^{0}	1.1×10^{1}
Jordan	1.6×10^{2}	9.4×10^{0}	1.3×10^{0}	5.1×10^{0}	1.0×10^{1}	1.9×10^{0}	2.7×10^{0}	3.2×10^{0}	4.0×10^{-1}	4.4×10^{-1}	2.8×10^{-1}	3.0×10^{-1}	3.1×10^{-1}	2.2×10^{-1}	1.1×10^{-1}	3.9×10^{-1}
Kazakhstan	6.8×10^{2}	6.4×10^{1}	5.3×10^{1}	3.0×10^{1}	1.0×10^{2}	1.8×10^{1}	5.0×10^{1}	3.3×10^{1}	1.5×10^{1}	2.0×10^{1}	9.9×10^{0}	7.5×10^{0}	6.0×10^{0}	4.2×10^{0}	8.0×10^{0}	1.0×10^{1}
Kenya	1.5×10^{3}	1.0×10^{3}	2.9×10^{2}	1.3×10^{2}	3.8×10^{2}	7.7×10^{1}	1.3×10^{2}	1.1×10^{2}	7.0×10^{1}	3.3×10^{1}	2.1×10^{1}	1.3×10^{1}	2.0×10^{1}	1.2×10^{1}	7.8×10^{0}	1.3×10^{1}
Kiribati	1.2×10^{-1}	5.8×10^{-2}	2.4×10^{-2}	1.8×10^{-2}	4.3×10^{-2}	8.1×10^{-3}	2.1×10^{-2}	1.6×10^{-2}	5.3×10^{-3}	3.8×10^{-3}	3.0×10^{-3}	2.7×10^{-3}	3.1×10^{-3}	2.0×10^{-3}	7.3×10^{-4}	1.7×10^{-3}
North Korea	5.6×10^{2}	3.0×10^{2}	1.6×10^{2}	6.3×10^{1}	2.1×10^{2}	3.3×10^{1}	7.1×10^{1}	4.8×10^{1}	3.2×10^{1}	3.8×10^{1}	1.8×10^{1}	1.5×10^{1}	1.3×10^{1}	1.0×10^{1}	1.7×10^{1}	2.0×10^{1}
South Korea	6.8×10^{2}	6.4×10^{1}	1.5×10^{1}	2.6×10^{1}	6.2×10^{1}	1.7×10^{1}	2.3×10^{1}	2.6×10^{1}	5.6×10^{0}	4.9×10^{0}	4.8×10^{0}	3.0×10^{0}	4.2×10^{0}	2.7×10^{0}	1.2×10^{0}	3.9×10^{0}
Kuwait	5.4×10^{1}	1.0×10^{1}	7.6×10^{0}	1.0×10^{1}	2.2×10^{1}	3.6×10^{0}	1.1×10^{1}	7.4×10^{0}	1.6×10^{0}	1.7×10^{0}	1.5×10^{0}	1.5×10^{0}	1.5×10^{0}	1.0×10^{0}	3.2×10^{-1}	8.7×10^{-1}
Kyrgyzstan	7.8×10^{1}	5.3×10^{0}	2.3×10^{0}	2.1×10^{0}	7.5×10^{0}	1.2×10^{0}	3.0×10^{0}	2.2×10^{0}	7.0×10^{-1}	7.4×10^{-1}	4.5×10^{-1}	2.8×10^{-1}	2.5×10^{-1}	1.1×10^{-1}	2.1×10^{-1}	3.8×10^{-1}
Laos	7.4×10^{2}	3.3×10^{2}	1.4×10^{2}	6.1×10^{1}	1.8×10^{2}	3.4×10^{1}	9.5×10^{1}	7.2×10^{1}	2.4×10^{1}	1.5×10^{1}	8.5×10^{0}	9.3×10^{0}	1.1×10^{1}	1.4×10^{1}	7.8×10^{0}	6.2×10^{0}
Latvia	1.6×10^{2}	4.4×10^{1}	2.1×10^{1}	2.0×10^{1}	4.8×10^{1}	8.8×10^{0}	2.3×10^{1}	1.6×10^{1}	4.4×10^{0}	4.1×10^{0}	3.1×10^{0}	3.1×10^{0}	3.1×10^{0}	2.0×10^{0}	8.9×10^{-1}	2.0×10^{0}
Lebanon	6.7×10^{1}	6.5×10^{0}	1.7×10^{0}	2.1×10^{0}	5.2×10^{0}	8.7×10^{-1}	1.6×10^{0}	1.6×10^{0}	4.6×10^{-1}	3.6×10^{-1}	2.3×10^{-1}	1.6×10^{-1}	1.9×10^{-1}	1.1×10^{-1}	9.3×10^{-2}	2.1×10^{-1}
Lesotho	1.2×10^{2}	8.8×10^{1}	2.6×10^{1}	1.0×10^{1}	3.2×10^{1}	6.4×10^{0}	1.1×10^{1}	9.7×10^{0}	6.0×10^{0}	2.8×10^{0}	1.8×10^{0}	1.1×10^{0}	1.7×10^{0}	1.1×10^{0}	7.0×10^{-1}	1.1×10^{0}
Liberia	3.4×10^{2}	2.6×10^{2}	7.4×10^{1}	2.9×10^{1}	9.0×10^{1}	1.8×10^{1}	2.9×10^{1}	2.7×10^{1}	1.8×10^{1}	8.0×10^{0}	5.0×10^{0}	2.7×10^{0}	4.7×10^{0}	2.7×10^{0}	1.9×10^{0}	3.0×10^{0}
Libya	1.8×10^{2}	3.4×10^{1}	9.4×10^{0}	6.9×10^{0}	1.6×10^{1}	3.4×10^{0}	5.2×10^{0}	5.1×10^{0}	2.2×10^{0}	1.2×10^{0}	8.5×10^{-1}	5.5×10^{-1}	7.5×10^{-1}	4.9×10^{-1}	3.6×10^{-1}	6.6×10^{-1}
Liechtenstein	5.6×10^{-2}	2.2×10^{-2}	1.0×10^{-2}	1.2×10^{-2}	2.6×10^{-2}	4.9×10^{-3}	1.3×10^{-2}	9.5×10^{-3}	2.5×10^{-3}	2.3×10^{-3}	1.8×10^{-3}	1.7×10^{-3}	1.9×10^{-3}	1.2×10^{-3}	3.8×10^{-4}	1.1×10^{-3}
Lithuania	1.4×10^{2}	4.2×10^{1}	1.6×10^{1}	1.1×10^{1}	3.0×10^{1}	5.6×10^{0}	1.2×10^{1}	8.9×10^{0}	3.5×10^{0}	2.9×10^{0}	1.9×10^{0}	1.6×10^{0}	1.7×10^{0}	1.1×10^{0}	8.4×10^{-1}	1.4×10^{0}
Luxembourg	1.0×10^{1}	1.1×10^{0}	5.8×10^{-1}	5.2×10^{-1}	1.2×10^{0}	5.9×10^{-1}	8.0×10^{-1}	5.9×10^{-1}	1.2×10^{-1}	1.2×10^{-1}	1.9×10^{-1}	8.4×10^{-2}	9.8×10^{-2}	1.0×10^{-1}	2.9×10^{-2}	1.2×10^{-1}
Macedonia	5.4×10^{1}	1.9×10^{1}	6.2×10^{0}	3.3×10^{0}	9.9×10^{0}	1.9×10^{0}	3.7×10^{0}	3.0×10^{0}	1.3×10^{0}	9.0×10^{-1}	5.4×10^{-1}	4.3×10^{-1}	5.2×10^{-1}	4.0×10^{-1}	3.1×10^{-1}	4.4×10^{-1}
Madagascar	1.1×10^{3}	6.3×10^{2}	2.2×10^{2}	9.4×10^{1}	2.8×10^{2}	5.4×10^{1}	1.3×10^{2}	1.0×10^{2}	4.4×10^{1}	2.4×10^{1}	1.4×10^{1}	1.3×10^{1}	1.6×10^{1}	1.7×10^{1}	1.0×10^{1}	9.8×10^{0}
Malawi	3.3×10^{2}	2.3×10^{2}	7.0×10^{1}	2.8×10^{1}	8.9×10^{1}	1.8×10^{1}	3.2×10^{1}	2.8×10^{1}	1.6×10^{1}	7.8×10^{0}	4.7×10^{0}	3.3×10^{0}	4.6×10^{0}	3.4×10^{0}	2.2×10^{0}	2.9×10^{0}
Malaysia	9.9×10^{2}	1.8×10^{2}	5.9×10^{1}	4.6×10^{1}	1.1×10^{2}	2.1×10^{1}	4.7×10^{1}	4.1×10^{1}	1.2×10^{1}	8.1×10^{0}	5.8×10^{0}	5.0×10^{0}	6.3×10^{0}	5.6×10^{0}	2.6×10^{0}	4.5×10^{0}
Maldives	2.5×10^{1}	1.8×10^{1}	5.2×10^{0}	2.3×10^{0}	6.9×10^{0}	1.4×10^{0}	2.4×10^{0}	2.1×10^{0}	1.2×10^{0}	6.1×10^{-1}	3.9×10^{-1}	2.5×10^{-1}	3.7×10^{-1}	2.2×10^{-1}	1.4×10^{-1}	2.4×10^{-1}
Mali	3.3×10^{2}	2.2×10^{2}	6.9×10^{1}	2.7×10^{1}	8.5×10^{1}	1.7×10^{1}	3.1×10^{1}	2.7×10^{1}	1.5×10^{1}	7.4×10^{0}	4.4×10^{0}	3.0×10^{0}	4.4×10^{0}	3.6×10^{0}	2.3×10^{0}	2.9×10^{0}
Malta	1.0×10^{1}	5.1×10^{0}	1.5×10^{0}	7.2×10^{-1}	2.2×10^{0}	4.7×10^{-1}	8.1×10^{-1}	6.6×10^{-1}	3.5×10^{-1}	2.0×10^{-1}	1.2×10^{-1}	9.1×10^{-2}	1.2×10^{-1}	6.4×10^{-2}	4.9×10^{-2}	8.1×10^{-2}
Marshall Islands	1.3×10^{-1}	6.1×10^{-2}	2.5×10^{-2}	1.9×10^{-2}	4.6×10^{-2}	8.5×10^{-3}	2.2×10^{-2}	1.7×10^{-2}	5.5×10^{-3}	4.0×10^{-3}	3.1×10^{-3}	2.8×10^{-3}	3.3×10^{-3}	2.1×10^{-3}	7.6×10^{-4}	1.8×10^{-3}
Martinique	4.4×10^{-3}	2.0×10^{-3}	8.3×10^{-4}	6.1×10^{-4}	1.5×10^{-3}	2.8×10^{-4}	7.2×10^{-4}	5.4×10^{-4}	1.8×10^{-4}	1.3×10^{-4}	1.0×10^{-4}	9.2×10^{-5}	1.1×10^{-4}	6.8×10^{-5}	2.5×10^{-5}	5.9×10^{-5}
Mauritania	9.7×10^{1}	7.2×10^{1}	2.1×10^{1}	8.2×10^{0}	2.5×10^{1}	5.1×10^{0}	8.7×10^{0}	7.8×10^{0}	4.9×10^{0}	2.3×10^{0}	1.4×10^{0}	8.4×10^{-1}	1.4×10^{0}	8.3×10^{-1}	5.5×10^{-1}	8.8×10^{-1}
Mauritius	3.0×10^{0}	7.4×10^{-1}	5.2×10^{-1}	6.0×10^{-1}	1.4×10^{0}	2.6×10^{-1}	6.7×10^{-1}	4.5×10^{-1}	1.0×10^{-1}	1.1×10^{-1}	9.5×10^{-2}	9.2×10^{-2}	8.5×10^{-2}	6.1×10^{-2}	2.0×10^{-2}	5.2×10^{-2}
Mayotte	7.6×10^{-3}	2.1×10^{-3}	2.0×10^{-4}	1.1×10^{-3}	2.8×10^{-3}	7.9×10^{-4}	1.2×10^{-3}	1.7×10^{-3}	3.5×10^{-4}	3.3×10^{-4}	2.1×10^{-4}	1.8×10^{-4}	2.8×10^{-4}	1.1×10^{-4}	1.6×10^{-5}	1.2×10^{-4}
Mexico	3.7×10^{3}	1.0×10^{3}	2.9×10^{2}	1.8×10^{2}	4.8×10^{2}	9.8×10^{1}	1.6×10^{2}	1.5×10^{2}	6.5×10^{1}	3.8×10^{1}	2.3×10^{1}	1.7×10^{1}	2.3×10^{1}	1.6×10^{1}	1.1×10^{1}	1.8×10^{1}
Moldova	5.1×10^{1}	6.1×10^{0}	2.7×10^{0}	2.2×10^{0}	5.4×10^{0}	1.2×10^{0}	1.9×10^{0}	1.7×10^{0}	6.0×10^{-1}	7.5×10^{-1}	4.4×10^{-1}	3.4×10^{-1}	3.0×10^{-1}	2.4×10^{-1}	3.1×10^{-1}	4.7×10^{-1}
Monaco	1.4×10^{-4}	4.0×10^{-5}	3.8×10^{-6}	2.0×10^{-5}	5.4×10^{-5}	1.5×10^{-5}	2.3×10^{-5}	3.2×10^{-5}	6.5×10^{-6}	6.2×10^{-6}	4.0×10^{-6}	3.4×10^{-6}	5.2×10^{-6}	2.1×10^{-6}	3.0×10^{-7}	2.3×10^{-6}

Mongolia	1.4×10^{2}	2.8×10^{1}	2.2×10^{1}	1.0×10^{1}	2.9×10^{1}	4.9×10^{0}	1.6×10^{1}	1.1×10^{1}	3.0×10^{0}	4.0×10^{0}	1.6×10^{0}	2.2×10^{0}	1.7×10^{0}	3.0×10^{0}	2.7×10^{0}	2.1×10^{0}
Montserrat	3.6×10^{-5}	1.5×10^{-5}	1.2×10^{-5}	1.5×10^{-6}	4.2×10^{-5}	6.3×10^{-6}	1.8×10^{-5}	1.8×10^{-5}	1.8×10^{-6}	3.4×10^{-6}	6.8×10^{-7}	4.3×10^{-6}	5.6×10^{-7}	0	0	0
Morocco	5.2×10^{2}	5.4×10^{1}	1.9×10^{1}	2.6×10^{1}	5.9×10^{1}	1.0×10^{1}	2.3×10^{1}	1.9×10^{1}	4.5×10^{0}	4.3×10^{0}	3.2×10^{0}	2.8×10^{0}	2.8×10^{0}	1.8×10^{0}	1.1×10^{0}	2.5×10^{0}
Mozambique	2.2×10^{3}	9.2×10^{2}	4.0×10^{2}	1.7×10^{2}	5.4×10^{2}	9.2×10^{1}	2.7×10^{2}	2.0×10^{2}	6.5×10^{1}	4.3×10^{1}	2.4×10^{1}	2.5×10^{1}	2.6×10^{1}	4.6×10^{1}	2.7×10^{1}	2.1×10^{1}
Myanmar (Burma)	3.5×10^{3}	1.7×10^{3}	6.5×10^{2}	2.7×10^{2}	8.3×10^{2}	1.6×10^{2}	4.0×10^{2}	3.1×10^{2}	1.2×10^{2}	6.9×10^{1}	3.8×10^{1}	3.8×10^{1}	4.5×10^{1}	5.5×10^{1}	3.4×10^{1}	2.8×10^{1}
Namibia	1.1×10^{2}	2.5×10^{1}	9.5×10^{0}	5.9×10^{0}	1.5×10^{1}	3.1×10^{0}	6.3×10^{0}	5.3×10^{0}	1.7×10^{0}	1.1×10^{0}	6.5×10^{-1}	6.5×10^{-1}	7.1×10^{-1}	8.1×10^{-1}	4.6×10^{-1}	5.2×10^{-1}
Nauru	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nepal	1.2×10^{3}	6.1×10^{2}	2.2×10^{2}	1.3×10^{2}	3.4×10^{2}	6.8×10^{1}	1.7×10^{2}	1.3×10^{2}	5.0×10^{1}	3.1×10^{1}	2.2×10^{1}	1.9×10^{1}	2.4×10^{1}	1.4×10^{1}	6.6×10^{0}	1.3×10^{1}
Netherlands	1.1×10^{2}	2.1×10^{1}	8.2×10^{0}	9.1×10^{0}	2.9×10^{1}	4.9×10^{0}	1.2×10^{1}	8.9×10^{0}	2.5×10^{0}	3.0×10^{0}	2.7×10^{0}	1.5×10^{0}	1.7×10^{0}	1.5×10^{0}	5.5×10^{-1}	2.4×10^{0}
Netherlands Antilles	9.9×10^{0}	2.3×10^{0}	6.4×10^{-1}	4.2×10^{-1}	2.2×10^{0}	2.0×10^{-1}	3.3×10^{-1}	3.6×10^{-1}	1.5×10^{-1}	7.6×10^{-2}	5.0×10^{-2}	3.1×10^{-2}	4.8×10^{-2}	2.9×10^{-2}	2.2×10^{-2}	3.7×10^{-2}
New Caledonia	4.8×10^{-1}	2.8×10^{-1}	9.3×10^{-2}	5.9×10^{-2}	1.6×10^{-1}	3.1×10^{-2}	6.4×10^{-2}	5.1×10^{-2}	2.2×10^{-2}	1.4×10^{-2}	1.0×10^{-2}	7.8×10^{-3}	9.6×10^{-3}	6.2×10^{-3}	2.8×10^{-3}	6.0×10^{-3}
New Zealand	1.1×10^{2}	3.5×10^{1}	1.4×10^{1}	6.9×10^{0}	2.8×10^{1}	3.8×10^{0}	9.2×10^{0}	6.3×10^{0}	2.9×10^{0}	3.2×10^{0}	2.5×10^{0}	1.2×10^{0}	1.3×10^{0}	1.5×10^{0}	9.4×10^{-1}	2.5×10^{0}
Nicaragua	3.6×10^{2}	2.3×10^{2}	6.6×10^{1}	2.8×10^{1}	8.5×10^{1}	1.7×10^{1}	2.8×10^{1}	2.6×10^{1}	1.6×10^{1}	7.4×10^{0}	4.6×10^{0}	2.8×10^{0}	4.5×10^{0}	2.7×10^{0}	1.8×10^{0}	2.9×10^{0}
Niger	5.1×10^{2}	3.9×10^{2}	1.1×10^{2}	4.3×10^{1}	1.3×10^{2}	2.7×10^{1}	4.4×10^{1}	4.0×10^{1}	2.6×10^{1}	1.2×10^{1}	7.4×10^{0}	4.2×10^{0}	7.0×10^{0}	4.0×10^{0}	2.8×10^{0}	4.5×10^{0}
Nigeria	7.8×10^{3}	3.4×10^{3}	1.3×10^{3}	8.8×10^{2}	2.2×10^{3}	4.2×10^{2}	1.1×10^{3}	8.4×10^{2}	2.9×10^{2}	2.0×10^{2}	1.5×10^{2}	1.3×10^{2}	1.6×10^{2}	1.0×10^{2}	4.0×10^{1}	8.9×10^{1}
Niue	2.8×10^{-4}	1.4×10^{-4}	5.6×10^{-5}	4.3×10^{-5}	1.0×10^{-4}	1.9×10^{-5}	4.9×10^{-5}	3.7×10^{-5}	1.2×10^{-5}	8.9×10^{-6}	6.9×10^{-6}	6.3×10^{-6}	7.3×10^{-6}	4.7×10^{-6}	1.7×10^{-6}	4.1×10^{-6}
Northern Mariana Islands	1.4×10^{-1}	7.0×10^{-2}	2.9×10^{-2}	2.2×10^{-2}	5.2×10^{-2}	9.7×10^{-3}	2.6×10^{-2}	1.9×10^{-2}	6.4×10^{-3}	4.6×10^{-3}	3.6×10^{-3}	3.2×10^{-3}	3.8×10^{-3}	2.4×10^{-3}	8.8×10^{-4}	2.1×10^{-3}
Norway	1.1×10^{2}	6.0×10^{1}	2.1×10^{1}	1.2×10^{1}	6.4×10^{1}	7.6×10^{0}	3.9×10^{1}	3.1×10^{1}	1.1×10^{1}	3.1×10^{1}	2.0×10^{1}	5.8×10^{0}	1.0×10^{1}	8.2×10^{0}	1.9×10^{0}	9.0×10^{0}
Oman	7.4×10^{1}	1.1×10^{1}	8.3×10^{0}	1.2×10^{1}	2.4×10^{1}	4.1×10^{0}	1.2×10^{1}	8.4×10^{0}	1.7×10^{0}	1.9×10^{0}	1.6×10^{0}	1.7×10^{0}	1.7×10^{0}	1.2×10^{0}	3.4×10^{-1}	9.8×10^{-1}
Pakistan	4.4×10^{3}	1.6×10^{3}	6.2×10^{2}	4.8×10^{2}	1.2×10^{3}	2.4×10^{2}	6.3×10^{2}	4.5×10^{2}	1.5×10^{2}	1.1×10^{2}	7.8×10^{1}	7.0×10^{1}	7.9×10^{1}	4.7×10^{1}	2.4×10^{1}	5.1×10^{1}
Palau	4.1×10^{-2}	2.0×10^{-2}	8.2×10^{-3}	6.2×10^{-3}	1.5×10^{-2}	2.9×10^{-3}	7.9×10^{-3}	5.5×10^{-3}	1.8×10^{-3}	1.3×10^{-3}	1.0×10^{-3}	1.0×10^{-3}	1.1×10^{-3}	7.0×10^{-4}	2.6×10^{-4}	6.0×10^{-4}
Panama	9.1×10^{1}	4.6×10^{1}	1.3×10^{1}	6.2×10^{0}	1.8×10^{1}	3.6×10^{0}	6.3×10^{0}	5.7×10^{0}	3.2×10^{0}	1.5×10^{0}	9.9×10^{-1}	6.4×10^{-1}	9.8×10^{-1}	6.1×10^{-1}	3.9×10^{-1}	6.4×10^{-1}
Papua New Guinea	3.1×10^{2}	2.3×10^{2}	6.7×10^{1}	2.6×10^{1}	8.2×10^{1}	1.7×10^{1}	2.7×10^{1}	2.5×10^{1}	1.6×10^{1}	7.2×10^{0}	4.5×10^{0}	2.6×10^{0}	4.3×10^{0}	2.7×10^{0}	1.8×10^{0}	2.8×10^{0}
Paraguay	8.9×10^{2}	2.7×10^{2}	1.4×10^{2}	5.9×10^{1}	1.8×10^{2}	3.1×10^{1}	1.0×10^{2}	7.6×10^{1}	2.0×10^{1}	1.4×10^{1}	6.1×10^{0}	9.5×10^{0}	8.5×10^{0}	1.8×10^{1}	1.1×10^{1}	5.9×10^{0}
Peru	7.9×10^{2}	3.3×10^{2}	1.1×10^{2}	5.4×10^{1}	1.5×10^{2}	2.9×10^{1}	6.0×10^{1}	5.1×10^{1}	2.3×10^{1}	1.3×10^{1}	8.1×10^{0}	6.2×10^{0}	8.4×10^{0}	6.6×10^{0}	3.8×10^{0}	5.5×10^{0}
Philippines	1.6×10^{3}	5.5×10^{2}	1.6×10^{2}	9.1×10^{1}	2.5×10^{2}	4.9×10^{1}	8.8×10^{1}	8.1×10^{1}	3.7×10^{1}	2.0×10^{1}	1.3×10^{1}	9.1×10^{0}	1.3×10^{1}	7.9×10^{0}	4.6×10^{0}	9.0×10^{0}
Pitcairn Islands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Poland	1.3×10^{3}	3.0×10^{2}	2.1×10^{2}	1.5×10^{2}	3.7×10^{2}	6.9×10^{1}	1.5×10^{2}	1.2×10^{2}	4.6×10^{1}	6.6×10^{1}	3.6×10^{1}	3.2×10^{1}	2.9×10^{1}	2.1×10^{1}	2.6×10^{1}	3.5×10^{1}
Portugal	2.0×10^{2}	3.3×10^{1}	1.7×10^{1}	1.8×10^{1}	4.0×10^{1}	7.6×10^{0}	2.1×10^{1}	1.4×10^{1}	3.4×10^{0}	3.2×10^{0}	2.6×10^{0}	2.7×10^{0}	2.7×10^{0}	1.9×10^{0}	7.0×10^{-1}	1.6×10^{0}
Puerto Rico	1.2×10^{1}	5.9×10^{0}	2.3×10^{0}	1.7×10^{0}	4.3×10^{0}	8.3×10^{-1}	1.8×10^{0}	1.4×10^{0}	5.1×10^{-1}	3.7×10^{-1}	2.8×10^{-1}	2.3×10^{-1}	2.6×10^{-1}	1.7×10^{-1}	7.3×10^{-2}	1.6×10^{-1}
Qatar	8.6×10^{0}	1.6×10^{0}	1.9×10^{-1}	2.7×10^{-1}	1.8×10^{0}	3.2×10^{-1}	2.6×10^{-1}	2.8×10^{-1}	4.3×10^{-2}	4.7×10^{-2}	1.2×10^{-1}	3.0×10^{-2}	4.6×10^{-2}	1.0×10^{-1}	3.7×10^{-2}	1.1×10^{-1}
Reunion	1.7×10^{-2}	5.2×10^{-3}	3.9×10^{-3}	2.3×10^{-3}	1.2×10^{-2}	2.0×10^{-3}	5.5×10^{-3}	4.9×10^{-3}	6.8×10^{-4}	1.0×10^{-3}	4.5×10^{-4}	1.1×10^{-3}	4.0×10^{-4}	2.1×10^{-4}	6.9×10^{-5}	1.8×10^{-4}
Romania	6.2×10^{2}	1.7×10^{2}	6.3×10^{1}	5.7×10^{1}	1.5×10^{2}	2.7×10^{1}	6.3×10^{1}	4.7×10^{1}	1.5×10^{1}	1.3×10^{1}	1.1×10^{1}	7.8×10^{0}	8.8×10^{0}	6.5×10^{0}	2.6×10^{0}	8.0×10^{0}
Russia	4.5×10^{3}	6.5×10^{2}	4.0×10^{2}	2.4×10^{2}	7.1×10^{2}	1.4×10^{2}	4.7×10^{2}	4.3×10^{2}	1.2×10^{2}	3.2×10^{2}	1.9×10^{2}	7.5×10^{1}	1.1×10^{2}	9.7×10^{1}	4.9×10^{1}	8.5×10^{1}
Rwanda	5.2×10^{2}	4.0×10^{2}	1.1×10^{2}	4.3×10^{1}	1.4×10^{2}	2.8×10^{1}	4.4×10^{1}	4.0×10^{1}	2.7×10^{1}	1.2×10^{1}	7.6×10^{0}	4.2×10^{0}	7.1×10^{0}	4.0×10^{0}	2.9×10^{0}	4.6×10^{0}
Samoa	3.9×10^{0}	2.9×10^{0}	8.5×10^{-1}	3.5×10^{-1}	1.1×10^{0}	2.2×10^{-1}	3.6×10^{-1}	3.2×10^{-1}	2.0×10^{-1}	9.5×10^{-2}	6.1×10^{-2}	3.6×10^{-2}	5.8×10^{-2}	3.4×10^{-2}	2.2×10^{-2}	3.7×10^{-2}
San Marino	1.8×10^{-1}	7.4×10^{-2}	3.8×10^{-2}	3.9×10^{-2}	8.8×10^{-2}	1.6×10^{-2}	4.3×10^{-2}	3.0×10^{-2}	8.0×10^{-3}	7.3×10^{-3}	5.9×10^{-3}	5.7×10^{-3}	6.0×10^{-3}	4.1×10^{-3}	1.4×10^{-3}	3.5×10^{-3}
Sao Tome and Principe	6.5×10^{1}	5.0×10^{1}	1.4×10^{1}	5.5×10^{0}	1.7×10^{1}	3.5×10^{0}	5.5×10^{0}	5.1×10^{0}	3.4×10^{0}	1.5×10^{0}	9.5×10^{-1}	5.2×10^{-1}	9.0×10^{-1}	5.1×10^{-1}	3.6×10^{-1}	5.8×10^{-1}
Saudi Arabia	6.0×10^{2}	2.6×10^{1}	8.6×10^{0}	1.5×10^{1}	2.7×10^{1}	5.5×10^{0}	9.7×10^{0}	1.0×10^{1}	2.4×10^{0}	2.4×10^{0}	1.6×10^{0}	1.1×10^{0}	1.0×10^{0}	7.5×10^{-1}	7.4×10^{-1}	1.7×10^{0}
Senegal	2.2×10^{2}	9.5×10^{1}	3.0×10^{1}	1.3×10^{1}	4.0×10^{1}	8.2×10^{0}	1.5×10^{1}	1.3×10^{1}	6.3×10^{0}	3.2×10^{0}	1.9×10^{0}	1.4×10^{0}	1.9×10^{0}	1.8×10^{0}	1.2×10^{0}	1.3×10^{0}
Serbia and Montenegro	2.6×10^{2}	1.2×10^{2}	5.2×10^{1}	2.2×10^{1}	7.1×10^{1}	1.3×10^{1}	2.5×10^{1}	1.9×10^{1}	1.1×10^{1}	1.1×10^{1}	5.9×10^{0}	4.3×10^{0}	4.3×10^{0}	3.5×10^{0}	4.2×10^{0}	6.1×10^{0}
Seychelles	3.6×10^{-1}	8.0×10^{-2}	6.3×10^{-2}	7.0×10^{-2}	1.6×10^{-1}	3.0×10^{-2}	9.4×10^{-2}	6.0×10^{-2}	1.2×10^{-2}	1.4×10^{-2}	1.2×10^{-2}	1.3×10^{-2}	1.2×10^{-2}	8.2×10^{-3}	2.4×10^{-3}	6.5×10^{-3}
Sierra Leone	3.5×10^{2}	2.4×10^{2}	7.3×10^{1}	2.8×10^{1}	8.9×10^{1}	1.8×10^{1}	3.3×10^{1}	2.8×10^{1}	1.6×10^{1}	7.7×10^{0}	4.6×10^{0}	3.0×10^{0}	4.6×10^{0}	3.8×10^{0}	2.5×10^{0}	3.0×10^{0}
Singapore	1.0×10^{1}	3.3×10^{-1}	1.4×10^{-1}	2.3×10^{-1}	1.3×10^{0}	1.5×10^{-1}	1.6×10^{-1}	2.2×10^{-1}	3.5×10^{-2}	2.5×10^{-2}	4.4×10^{-2}	1.8×10^{-2}	2.4×10^{-2}	2.4×10^{-2}	1.1×10^{-2}	3.2×10^{-2}
Slovakia	1.3×10^{2}	2.0×10^{1}	9.1×10^{0}	8.1×10^{0}	2.8×10^{1}	4.9×10^{0}	1.0×10^{1}	8.4×10^{0}	2.7×10^{0}	4.0×10^{0}	2.9×10^{0}	1.6×10^{0}	1.8×10^{0}	1.7×10^{0}	1.2×10^{0}	3.1×10^{0}
Slovenia	7.1×10^{1}	2.4×10^{1}	8.6×10^{0}	5.8×10^{0}	1.8×10^{1}	3.1×10^{0}	7.1×10^{0}	4.9×10^{0}	1.9×10^{0}	1.6×10^{0}	1.3×10^{0}	8.5×10^{-1}	9.8×10^{-1}	7.6×10^{-1}	3.4×10^{-1}	1.0×10^{0}
Solomon Islands	7.0×10^{0}	5.2×10^{0}	1.5×10^{0}	6.0×10^{-1}	1.8×10^{0}	3.7×10^{-1}	6.2×10^{-1}	5.6×10^{-1}	3.6×10^{-1}	1.6×10^{-1}	1.0×10^{-1}	6.1×10^{-2}	1.0×10^{-1}	5.8×10^{-2}	3.8×10^{-2}	6.4×10^{-2}

Somalia	6.2×10^{2}	4.8×10^{2}	1.4×10^{2}	5.2×10^{1}	1.6×10^{2}	3.4×10^{1}	5.3×10^{1}	4.9×10^{1}	3.2×10^{1}	1.5×10^{1}	9.1×10^{0}	5.0×10^{0}	8.6×10^{0}	4.9×10^{0}	3.4×10^{0}	5.6×10^{0}
South Africa	2.4×10^{3}	7.3×10^{2}	3.5×10^{2}	2.1×10^{2}	6.0×10^{2}	1.0×10^{2}	2.3×10^{2}	1.7×10^{2}	7.3×10^{1}	7.9×10^{1}	4.8×10^{1}	3.7×10^{1}	3.6×10^{1}	3.1×10^{1}	3.0×10^{1}	4.6×10^{1}
South Georgia and the South Sandwich Is	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spain	8.1×10^{2}	1.3×10^{2}	7.9×10^{1}	7.9×10^{1}	1.9×10^{2}	3.5×10^{1}	9.7×10^{1}	7.1×10^{1}	1.7×10^{1}	2.7×10^{1}	2.0×10^{1}	1.3×10^{1}	1.5×10^{1}	1.1×10^{1}	3.6×10^{0}	1.0×10^{1}
Sri Lanka	6.8×10^{2}	2.7×10^{2}	9.6×10^{1}	5.3×10^{1}	1.4×10^{2}	3.1×10^{1}	7.2×10^{1}	5.8×10^{1}	2.1×10^{1}	1.3×10^{1}	8.7×10^{0}	7.8×10^{0}	1.1×10^{1}	5.9×10^{0}	2.7×10^{0}	5.5×10^{0}
St. Helena	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
St. Kitts and Nevis	6.5×10^{-2}	3.0×10^{-2}	1.2×10^{-2}	8.9×10^{-3}	2.2×10^{-2}	4.5×10^{-3}	1.2×10^{-2}	8.3×10^{-3}	2.7×10^{-3}	2.0×10^{-3}	1.6×10^{-3}	1.5×10^{-3}	1.7×10^{-3}	1.0×10^{-3}	3.9×10^{-4}	8.8×10^{-4}
St. Lucia	2.8×10^{-1}	1.3×10^{-1}	5.3×10^{-2}	3.9×10^{-2}	9.5×10^{-2}	1.8×10^{-2}	4.7×10^{-2}	3.5×10^{-2}	1.2×10^{-2}	8.6×10^{-3}	6.7×10^{-3}	6.0×10^{-3}	7.0×10^{-3}	4.5×10^{-3}	1.6×10^{-3}	3.9×10^{-3}
St. Pierre and Miquelon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
St. Vincent and the Grenadines	2.4×10^{-1}	1.2×10^{-1}	4.6×10^{-2}	3.4×10^{-2}	8.6×10^{-2}	1.6×10^{-2}	3.6×10^{-2}	2.7×10^{-2}	1.0×10^{-2}	7.2×10^{-3}	5.5×10^{-3}	4.6×10^{-3}	5.0×10^{-3}	3.3×10^{-3}	1.4×10^{-3}	3.1×10^{-3}
Sudan	1.7×10^{3}	7.5×10^{2}	2.8×10^{2}	1.2×10^{2}	3.6×10^{2}	6.7×10^{1}	1.6×10^{2}	1.3×10^{2}	5.1×10^{1}	2.9×10^{1}	1.5×10^{1}	1.5×10^{1}	1.7×10^{1}	2.5×10^{1}	1.5×10^{1}	1.2×10^{1}
Suriname	3.9×10^{0}	2.2×10^{0}	7.5×10^{-1}	3.1×10^{-1}	9.5×10^{-1}	1.8×10^{-1}	4.2×10^{-1}	3.4×10^{-1}	1.5×10^{-1}	8.3×10^{-2}	5.1×10^{-2}	4.1×10^{-2}	5.4×10^{-2}	5.5×10^{-2}	3.3×10^{-2}	3.4×10^{-2}
Swaziland	6.2×10^{1}	4.4×10^{1}	1.3×10^{1}	5.3×10^{0}	1.6×10^{1}	3.3×10^{0}	5.8×10^{0}	5.1×10^{0}	3.0×10^{0}	1.4×10^{0}	8.8×10^{-1}	5.6×10^{-1}	8.5×10^{-1}	6.1×10^{-1}	4.0×10^{-1}	5.5×10^{-1}
Sweden	1.9×10^{2}	8.1×10^{1}	2.5×10^{1}	1.1×10^{1}	3.7×10^{1}	8.4×10^{0}	1.6×10^{1}	1.4×10^{1}	6.4×10^{0}	6.6×10^{0}	4.2×10^{0}	1.9×10^{0}	3.0×10^{0}	1.8×10^{0}	9.4×10^{-1}	2.2×10^{0}
Switzerland	8.2×10^{1}	3.6×10^{1}	1.2×10^{1}	5.7×10^{0}	1.7×10^{1}	3.7×10^{0}	6.8×10^{0}	5.3×10^{0}	2.6×10^{0}	1.8×10^{0}	1.1×10^{0}	8.9×10^{-1}	1.1×10^{0}	6.0×10^{-1}	4.8×10^{-1}	8.5×10^{-1}
Syria	4.7×10^{2}	2.7×10^{1}	9.6×10^{0}	1.3×10^{1}	3.2×10^{1}	6.9×10^{0}	1.2×10^{1}	1.1×10^{1}	2.9×10^{0}	3.1×10^{0}	1.7×10^{0}	1.3×10^{0}	1.1×10^{0}	5.4×10^{-1}	9.0×10^{-1}	1.8×10^{0}
Tajikistan	3.3×10^{1}	7.0×10^{0}	6.4×10^{0}	3.0×10^{0}	2.1×10^{1}	1.5×10^{0}	7.1×10^{0}	3.1×10^{0}	1.5×10^{0}	3.6×10^{0}	2.8×10^{0}	1.1×10^{0}	9.7×10^{-1}	1.6×10^{0}	1.1×10^{0}	3.3×10^{0}
Tanzania, United Republic of	2.0×10^{3}	1.1×10^{3}	3.7×10^{2}	1.8×10^{2}	5.1×10^{2}	9.7×10^{1}	2.2×10^{2}	1.8×10^{2}	7.7×10^{1}	4.3×10^{1}	2.7×10^{1}	2.3×10^{1}	2.9×10^{1}	2.7×10^{1}	1.5×10^{1}	1.8×10^{1}
Thailand	2.9×10^{3}	6.9×10^{2}	2.3×10^{2}	1.4×10^{2}	3.9×10^{2}	7.0×10^{1}	1.5×10^{2}	1.2×10^{2}	4.5×10^{1}	2.7×10^{1}	1.6×10^{1}	1.4×10^{1}	1.6×10^{1}	1.8×10^{1}	1.1×10^{1}	1.3×10^{1}
Timor Leste	1.7×10^{2}	1.1×10^{2}	3.5×10^{1}	1.6×10^{1}	4.6×10^{1}	9.4×10^{0}	1.8×10^{1}	1.5×10^{1}	8.2×10^{0}	4.2×10^{0}	2.8×10^{0}	1.9×10^{0}	2.9×10^{0}	1.7×10^{0}	9.4×10^{-1}	1.7×10^{0}
Togo	2.0×10^{2}	1.2×10^{2}	3.6×10^{1}	1.5×10^{1}	4.6×10^{1}	9.1×10^{0}	1.6×10^{1}	1.4×10^{1}	8.3×10^{0}	3.9×10^{0}	2.4×10^{0}	1.5×10^{0}	2.3×10^{0}	1.7×10^{0}	1.1×10^{0}	1.5×10^{0}
Tokelau	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tonga	2.3×10^{0}	1.8×10^{0}	5.1×10^{-1}	2.0×10^{-1}	6.3×10^{-1}	1.3×10^{-1}	2.1×10^{-1}	1.9×10^{-1}	1.2×10^{-1}	5.6×10^{-2}	3.5×10^{-2}	2.0×10^{-2}	3.4×10^{-2}	1.9×10^{-2}	1.3×10^{-2}	2.2×10^{-2}
Trinidad and Tobago	3.4×10^{1}	4.3×10^{0}	1.1×10^{0}	1.2×10^{0}	3.0×10^{0}	5.5×10^{-1}	9.3×10^{-1}	9.4×10^{-1}	1.9×10^{-1}	1.7×10^{-1}	1.4×10^{-1}	1.2×10^{-1}	1.1×10^{-1}	1.3×10^{-1}	7.0×10^{-2}	1.4×10^{-1}
Tunisia	3.0×10^{2}	1.0×10^{2}	3.3×10^{1}	2.5×10^{1}	6.1×10^{1}	1.1×10^{1}	2.4×10^{1}	1.9×10^{1}	7.7×10^{0}	4.8×10^{0}	3.5×10^{0}	2.8×10^{0}	3.4×10^{0}	2.2×10^{0}	1.0×10^{0}	2.3×10^{0}
Turkey	2.2×10^{3}	4.3×10^{2}	2.8×10^{2}	2.1×10^{2}	5.5×10^{2}	9.8×10^{1}	2.4×10^{2}	1.7×10^{2}	5.9×10^{1}	7.0×10^{1}	4.5×10^{1}	3.8×10^{1}	3.5×10^{1}	2.5×10^{1}	2.4×10^{1}	3.8×10^{1}
Turkmenistan	1.2×10^{2}	6.6×10^{0}	2.9×10^{0}	3.7×10^{0}	1.1×10^{1}	2.0×10^{0}	5.9×10^{0}	4.0×10^{0}	1.7×10^{0}	2.0×10^{0}	9.2×10^{-1}	6.7×10^{-1}	4.7×10^{-1}	2.5×10^{-1}	6.6×10^{-1}	1.1×10^{0}
Turks and Caicos Islands	2.1×10^{-3}	7.4×10^{-4}	1.9×10^{-4}	2.9×10^{-4}	7.5×10^{-4}	1.8×10^{-4}	3.4×10^{-4}	3.8×10^{-4}	9.2×10^{-5}	8.0×10^{-5}	5.4×10^{-5}	4.7×10^{-5}	6.6×10^{-5}	3.1×10^{-5}	7.5×10^{-6}	3.2×10^{-5}
Tuvalu	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Uganda	2.1×10^{3}	1.6×10^{3}	4.6×10^{2}	1.8×10^{2}	5.7×10^{2}	1.1×10^{2}	1.9×10^{2}	1.7×10^{2}	1.1×10^{2}	5.0×10^{1}	3.1×10^{1}	1.8×10^{1}	3.0×10^{1}	1.8×10^{1}	1.3×10^{1}	1.9×10^{1}
Ukraine	1.3×10^{3}	1.8×10^{2}	6.3×10^{1}	7.1×10^{1}	1.8×10^{2}	4.1×10^{1}	7.0×10^{1}	7.1×10^{1}	2.0×10^{1}	2.3×10^{1}	1.4×10^{1}	1.1×10^{1}	1.2×10^{1}	7.7×10^{0}	6.8×10^{0}	1.3×10^{1}
United Arab Emirates	4.2×10^{1}	6.7×10^{0}	5.8×10^{0}	9.2×10^{0}	5.6×10^{1}	2.9×10^{0}	1.9×10^{1}	8.4×10^{0}	1.4×10^{0}	5.7×10^{0}	6.7×10^{0}	2.1×10^{0}	2.3×10^{0}	4.3×10^{0}	6.5×10^{-1}	7.4×10^{0}
United Kingdom	4.3×10^{2}	4.8×10^{1}	2.8×10^{1}	2.3×10^{1}	7.0×10^{1}	1.2×10^{1}	2.7×10^{1}	2.2×10^{1}	6.8×10^{0}	8.7×10^{0}	6.4×10^{0}	4.0×10^{0}	4.1×10^{0}	3.1×10^{0}	2.7×10^{0}	5.6×10^{0}
United States	4.2×10^{3}	1.6×10^{3}	5.9×10^{2}	2.5×10^{2}	8.1×10^{2}	1.5×10^{2}	3.2×10^{2}	2.6×10^{2}	1.2×10^{2}	8.4×10^{1}	4.8×10^{1}	3.7×10^{1}	4.3×10^{1}	3.6×10^{1}	2.8×10^{1}	3.6×10^{1}
Uruguay	1.4×10^{2}	5.4×10^{1}	1.7×10^{1}	7.3×10^{0}	2.3×10^{1}	4.7×10^{0}	8.0×10^{0}	6.9×10^{0}	3.8×10^{0}	2.1×10^{0}	1.3×10^{0}	7.9×10^{-1}	1.1×10^{0}	6.1×10^{-1}	5.4×10^{-1}	8.7×10^{-1}
Uzbekistan	3.7×10^{2}	2.5×10^{1}	1.9×10^{1}	1.2×10^{1}	3.5×10^{1}	9.2×10^{0}	1.8×10^{1}	1.3×10^{1}	5.5×10^{0}	7.1×10^{0}	3.2×10^{0}	2.6×10^{0}	1.8×10^{0}	1.1×10^{0}	2.7×10^{0}	3.8×10^{0}
Vanuatu	5.0×10^{0}	3.8×10^{0}	1.1×10^{0}	4.2×10^{-1}	1.3×10^{0}	2.7×10^{-1}	4.3×10^{-1}	3.9×10^{-1}	2.6×10^{-1}	1.2×10^{-1}	7.4×10^{-2}	4.1×10^{-2}	7.0×10^{-2}	4.0×10^{-2}	2.8×10^{-2}	4.5×10^{-2}
Venezuela	9.5×10^{2}	1.1×10^{2}	3.8×10^{1}	3.6×10^{1}	1.1×10^{2}	1.5×10^{1}	4.0×10^{1}	3.2×10^{1}	6.1×10^{0}	8.0×10^{0}	6.9×10^{0}	4.0×10^{0}	4.1×10^{0}	7.7×10^{0}	3.2×10^{0}	7.9×10^{0}
Vietnam	4.2×10^{3}	1.6×10^{3}	6.7×10^{2}	3.9×10^{2}	1.0×10^{3}	2.0×10^{2}	5.5×10^{2}	4.2×10^{2}	1.4×10^{2}	1.1×10^{2}	7.2×10^{1}	6.8×10^{1}	8.4×10^{1}	5.2×10^{1}	2.9×10^{1}	5.1×10^{1}
Wallis and Futuna	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Western Sahara	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yemen	3.2×10^{2}	3.3×10^{1}	6.7×10^{0}	1.1×10^{1}	2.5×10^{1}	4.6×10^{0}	7.2×10^{0}	7.6×10^{0}	1.9×10^{0}	1.4×10^{0}	8.2×10^{-1}	7.4×10^{-1}	8.5×10^{-1}	5.4×10^{-1}	3.4×10^{-1}	9.4×10^{-1}
Zambia	1.6×10^{3}	5.8×10^{2}	2.9×10^{2}	1.2×10^{2}	3.7×10^{2}	6.5×10^{1}	2.0×10^{2}	1.5×10^{2}	4.1×10^{1}	2.9×10^{1}	1.3×10^{1}	1.9×10^{1}	1.8×10^{1}	3.6×10^{1}	2.1×10^{1}	1.2×10^{1}
Zimbabwe	7.9×10^{2}	4.2×10^{2}	1.5×10^{2}	9.1×10^{1}	2.4×10^{2}	4.6×10^{1}	1.0×10^{2}	7.8×10^{1}	3.3×10^{1}	2.1×10^{1}	1.5×10^{1}	1.2×10^{1}	1.4×10^{1}	1.0×10^{1}	5.6×10^{0}	9.4×10^{0}

Table S7. Regional PAH16 emissions by sectors in 2007.

Region	Resid./Commer.	Deforestation/Wildfire	Road trans.	Agriculture	Energy/Industry	Total emission	Per capita total emission	Per capita anthropogenic emission	Per capita energy consumption
Units	ton	ton	ton	ton	ton	ton	g/cap	g/cap	toe/cap[a]
South and Southeast Asia	111099	6742	14566	4851	1998	139256	71	71	0.6
East Asia	67441	410	14590	6024	22621	111086	73	73	1.3
West and Central Asia	3746	70	7358	2511	929	14614	46	46	6.1
West and Central Africa	40746	8412	1732	61	70	51020	156	142	1.2
East and South Africa	26382	10313	1888	254	496	39332	174	121	1.9
Northern Africa	27644	1929	2943	755	292	33564	99	94	1.6
South America	10281	22110	7844	1525	1737	43496	123	106	1.9
North America	8958	3036	4394	545	907	17840	43	36	5.6
Central America	4970	159	636	15	13	5792	144	144	0.4
Europe	16112	2108	8075	2490	5134	33918	48	45	3.4
Caribbean	742	19	279	37	22	1099	37	37	1.9
Oceania	1772	1041	230	120	241	3404	114	69	13.7

Note

a. "toe" is ton oil equivalent.

References

(1) Wang, R.; Tao, S.; Ciais, P.; Shen, H. Z.; Huang, Y.; Chen, H.; Shen, G. F.; Wang, B.; Li, W.; Zhang, Y. Y.; Lu, Y.; Zhu, D.; Chen, Y. C.; Liu, X. P.; Wang, W. T.; Wang, X. L.; Liu, W. X.; Li, B. G.; Piao, S. L. High resolution mapping of combustion processes and implications for CO2 emissions. *Atmos. Chem. Phys. Discuss.* **2012**, *12*, 21211–21239.

(2) U.S. Energy Information Administration. *International Energy Statistics*; http://www.eia.gov/countries/data.cfm (accessed March 8, 2012).

(3) World Steel Association. http://www.worldsteel.org (accessed March 8, 2012).

(4) International Energy Agency. *IEA World Energy Statistics and Balances*; http://www.oecd-ilibrary.org/statistics (accessed July 17, 2011).

(5) United Nations Industrial Development Organization (UNIDO). *International Yearbook of Industrial Statistics 2008*. Edward Elgar Publishing: Cheltenham, U.K., 2008.

(6) U.S. Geological Survey. *Commodity Statistics and Information*; http://minerals.usgs.gov/minerals/pubs/commodity (accessed March 8, 2012).

(7) National Oceanic and Atmospheric Administration (NOAA). *Global Gas Flaring Estimates*; http://www.ngdc.noaa.gov/dmsp/interest/gas_flares.html (accessed February 27, 2012).

(8) United Nations Statistics Division (UNSD). *Environmental Indicators: Waste*; http://unstats.un.org/unsd/environment/qindicators.htm (accessed July 17, 2011).

(9) Food and Agriculture Organization of the United Nations (FAO). *FAOSTAT*; http://faostat.fao.org/site/291/default.aspx (accessed March 8, 2012).

(10) The Energy and Resources Institute. *TERI Energy Data Directory and Yearbook, 2007*. TERI Press: New Delhi, India, 2008.

(11) Endresen, Ø.E.; Sørgård, H.L.; Behrens, P.O.; Brett, P.O.; Isaksen, I.S.A. A historical reconstruction of ships' fuel consumption and emissions. *J. Geophys. Res.* **2007**, *112*, D12301; DOI 10.1029/2006JD007630.

(12) Van der Werf, G.R.; Randerson, J.T.; Giglio, L.; Collatz, G.J.; Mu, M.; Kasibhatla, P.S.; Morton, D.C.; DeFries, R.S.;Jin, Y.; Van Leeuwen, T.T. Global fire emissions and the contribution of deforestation, savanna, forest, agricultural, and peat fires (1997-2009). *Atmos. Chem. Phys. Discuss.* **2010**, *10*, 16153-16230.

(13) Shen, H.Z.; Tao, S.; Wang, R.; Wang, B.; Shen, G.F.; Li, W.; Su, S.S.; Huang, Y.; Wang, X.L.; Liu, W.X.; Li, B.G.; Sun, K. Global time trends in PAH emissions from motor vehicles. *Atmos. Environ.* **2011**, *45*, 2067-2073.

(14) Bond, T.C.; Bhardwaj, E.; Dong, R.; Jogani, R.; Jung, S.; Roden, C.; Streets, D.G.; Trautmann, N.M. Historical emissions of black and organic carbon aerosol from energy-related combustion, 1850-2000. *Global Biogeochem. Cycles* **2007**, *21*, GB2018; DOI 10.1029/2006GB002840.

(15) China Energy Group. *China Energy Databook Version 7.0*; Lawrence Berkeley Lab. and Energy Res. Inst.: Berkeley, California, 2008.

(16) U.S. Geological Survey. *Primary Aluminum Plants Worldwide-1998*; http://minerals.usgs.gov/minerals (accessed March 8, 2012).

(17) GENISIM. *Aluminum Smelters*; http://www.genisim.com/aluminum/smelters/smelters.htm (accessed March 8, 2012).

(18) Zhang, Y.X.; Tao, S. Global atmospheric emission inventory of polycyclic aromatic hydrocarbons (PAHs) for 2004. *Atmos. Environ.* **2009**, *43*, 812-819.

(19) U.S. Environmental Protection Agency. *Clearinghouse for Inventories & Emissions factors*; http://www.epa.gov/ttn/chief/index.html (accessed July 17, 2011).

(20) National Atmospheric Emissions Inventory (NAEI). http://naei.defra.gov.uk/data_warehouse.php

(accessed July 17, 2011).

(21) European Environmental Agency (EEA). *National emissions reported to the Convention on Long-range Transboundary Air Pollution (LRTAP Convention)*; http://www.eea.europa.eu/data-and-maps/data/national-emissions-reported-to-the-convention-on-long-range-transboundary-air-pollution-lrtap-convention-5 (accessed March 16, 2012).