Environmental Science & Technology

ADDITION/CORRECTION

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Greenhouse Gas Emissions from Global Cities [*Environmental Science & Technology* **2009**, *43*, 7297–7302 DOI: 10.1021/es900213p]. Christopher Kennedy,* Julia Steinberger, Barrie Gasson, Yvonne Hansen, Timothy Hillman, Miroslav Havránek, Diane Pataki, Aumnad Phdungsilp, Anu Ramaswami, and Gara Villalba Mendez

The authors of a study of Greenhouse Gas Emissions for Global Cities (Kennedy et al. 2009, 2010)[1,2] have received corrected data for fuel consumption and waste composition in the city of Cape Town for the study year of 2005. Some of the previously used fuel data was erroneous, pertaining to national sales from a Cape Town refinery, rather than fuel consumption in the city as required.

Based on the revised data shown in Tables 1 and 2, emissions for Cape Town are determined to be 26 600 kt CO_2 e, or 7.6 t CO_2 e/cap. for a population of 3 497 097 (Table 3). The per capita emisisons were previously reported as 11.6 t CO_2 e/cap. (Table 3 of Kennedy et al., 2009). The main sectors affected by the revised data are aviation, marine, heating and industrial combustion and waste. Changes in ground transportation emissions are small (less than 2%).

Revised regression analyses for heating and industrial combustion are shown in Table 4. The R^2 values in the first two regressions fall by 4%, with no change in the third regression. While the correction to Cape Town's heating and industrial energy use was substantial, there was no change in the statistical significance of any of the regression parameters (at 95%

Table 1. Revised and Original Fuels Data Used in Calculation of Cape town's GHG Inventory

fuel type	original calculation		revised calculation	
	quantity	GHG (kt CO_2 e)	quantity	GHG (kt CO_2 e)
Heating, Industrial and Other Fuels used in Stationary Combustion[a]				
gasoil	20 511 TJ	1516	252 TJ	19
heavy furnace fuel	12 341 TJ	960	4238 TJ	330
illumin. paraffin	8012 TJ	575	2693 TJ	193
LPG	9734 TJ	613	3449 TJ	217
power paraffin	23 TJ	2	Neg.	0
coal	3788 TJ	358	2816 TJ	266
wood	561 TJ	0	unknown	0
Ground Transportation[b]				
gasoline	1249 ML	3138	1160 ML	2913
diesel	724 ML	1895	778 ML	2035
Aviation[c]				
aviation gasoline	5 ML	10	1 ML	3
avtur	276 ML	708	110 ML	283
international avtur	935 ML	2396	334 ML	856
Marine Fuels[c]				
int. bunker AGO	312 ML	1037	103 ML	338
int bunker F/OIL	2674 ML	8890	896 ML	2950
int bunker MDF	80 ML	266	16 ML	52

[a] Orginal Data from Caltex and City of Cape Town; Revised Data from Caltex and City of Cape Town. [b] Original Data from City of Cape Town; Revised Data from Caltex. [c] Original and Revised Data from Caltex.

Table 2. Original and Revised Components of Landfill Waste, Used in Calculation of Degradable Organic Content (Original Data from Cities for Climate Protection, 2003; Revised Data from City of Cape Town and Wright-Pierce 1999)

	waste fraction, f_i, of landfill waste						
	food	garden	paper	wood	textiles	industrial	other
Cape Town (original)	0.10	0.05	0.60	0.025	0.025	–	0.20
Cape Town (revised)	0.13	0.09	0.23	0.02	0.04	–	0.49

Table 3. Revised Summary of Cape Town's GHG Emisisons for 2005

	GHG Emissions (kt CO_2 e)	Per capita GHG Emissions (t CO_2 e)
electricity	11 834	3.38
heating, industrial, other	1025	0.29
ground transportation	4948	1.41
aviation	1141	0.32
marine	3341	0.96
waste	3040	0.87
industrial proceeses	not determined	–
afolu	not determined	–
total	26 574	7.6

Table 4. Revised Regression Analyses for Heating and Industrial Fuel Energy Use (changes to Table 2 in Kennedy et al., 2009[2])

variable	coefficient	t stat	95% CI
Heating and Industrial Fuel Energy Use (R^2 = 0.70)			
constant	7.411	0.807	−14.317 to 29.14
heating degree days	0.0109	2.749	0.0015 to 0.0203
average personal income	0.00037	1.038	−0.00046 to 0.0012
Heating and Industrial Fuel Energy Use (R^2 = 0.66)			
constant	11.466	1.372	−7.807 to 30.74
heating degree days	0.0131	3.916	0.0054 to 0.0209
Heating and Industrial Fuel Energy Use; Excluding Bangkok (R^2 = 0.90)			
constant	−11.524	−1.470	−30.71 to 7.664
heating degree days	0.0146	5.460	0.00804 to 0.0211
average personal income	0.00067	2.825	8.945×10^{-5} to 0.00124

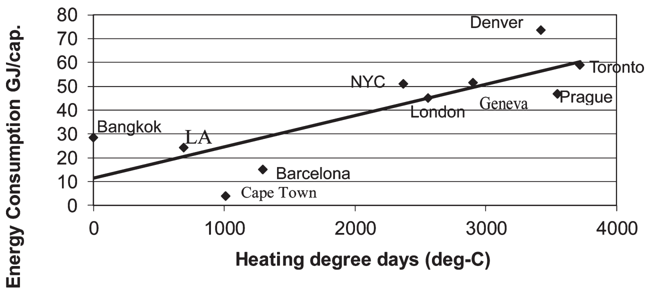

Figure 1. Revised Figure 2 from Kennedy et al. (2009)[2] Energy consumption from heating and industrial fuels increases with heating degree days (based on an 18 °C base temperature).

confidence). A revised plot of heating and industrial energy use versus heating degree days is shown in Figure 1.

Note that the revised GHG inventory for Cape Town does not include industrial process emissions, such as may occur from the city's brick and clay plants. It is uncertain as to whether combustion emisisons during flaring at the Chevron refinery (previously Caltex refinery) have been included.

REFERENCES

(1) Kennedy, C., Steinberger, J.; Gasson, B.; Hillman, T.; M. Havránek, Hansen, Y.; Pataki, D.; Phdungsilp, A.; Ramaswami, A.; G. Villalba Mendez. Methodology for inventorying greenhouse gas emissions from global cities, *Energy Policy*, *37* (9), **2010**.

(2) Kennedy, C.; Steinberger, J.; Gasson, B.; Hillman, T.; Havránek, M.; Hansen, Y.; Pataki, D.; Phdungsilp, A.; Ramaswami, A.; Villalba Mendez, G. Greenhouse gas emissions from global cities. *Environ. Sci. Technol.* **2009**, *43*, 7297–7302.

(3) Wright-Pierce *Feasibility Study Towards an Integrated Solid Waste Management Plan for the Cape Metropolitan Area*; Cape Metropolitan Council: Cape Town, 1999

DOI: 10.1021/es200849z
Published on Web 03/25/2011