

Appendix 5

End User GHG Emission Estimates for England, Scotland, Wales and Northern Ireland: 1990, 2004 to 2009

Table A5.1: England End User GHG Emission Estimates, 1990 and 2004 to 2009

(continued overleaf)

<u>Total GHGs - by end user</u>		Units: Mt CO ₂ e									
NC Category	More Detail	Base Year	1990	2004	2005	2006	2007	2008	2009 % change	BY to 2009	
Business Total			194.1	192.9	168.6	166.3	168.2	165.2	161.3	138.5	-28.6%
Business fuel use	Iron and steel - combustion and electricity	17.3	17.3	12.6	12.3	13.2	13.1	12.7	10.3		
Business fuel use	Other industrial combustion and electricity	124.1	124.1	100.0	99.3	100.4	99.5	96.1	81.1		
Business fuel use	Commercial and institutional	50.7	50.7	49.8	48.1	47.7	45.3	45.1	39.6		
Business process sources	Energy recovery from waste fuels	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		
Business process sources	Refrigeration and air conditioning	0.8	0.0	4.8	5.2	5.6	5.8	6.1	6.3		
Business process sources	Foams	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2		
Business process sources	Firefighting	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2		
Business process sources	Solvents	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1		
Business process sources	One Component Foams	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0		
Business process sources	Electronics, electrical insulation and sporting goods	0.8	0.6	0.7	0.7	0.6	0.6	0.5	0.5		
Transport Total		115.8	115.8	122.9	123.7	122.4	123.0	118.0	113.2	-2.3%	
Domestic Aviation	Civil aviation (Domestic, Landing and take off)	0.3	0.3	0.5	0.6	0.5	0.5	0.4	0.4		
Domestic Aviation	Civil aviation (Domestic, Cruise)	0.6	0.6	1.0	1.1	1.1	1.0	0.9	0.8		
Road Transport	Passenger cars	68.9	68.9	72.5	71.9	70.4	69.7	67.2	65.4		
Road Transport	Light duty vehicles	9.0	9.0	14.0	14.3	14.6	15.1	14.6	14.2		
Road Transport	Buses	3.5	3.5	4.9	5.1	5.0	5.0	4.9	4.8		
Road Transport	HGVs	22.8	22.8	21.0	21.8	21.9	22.8	21.2	19.3		
Road Transport	Mopeds & motorcycles	0.6	0.6	0.6	0.7	0.6	0.7	0.6	0.6		
Road Transport	LPG emissions (all vehicles)	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3		
Road Transport	Other (road vehicle engines)	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1		
Railways	Railways	2.7	2.7	3.1	3.1	3.2	3.2	3.2	3.1		
Railways	Railways - stationary combustion	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0		
Domestic Shipping	National navigation	1.2	1.2	1.3	1.4	1.3	1.3	1.2	1.2		
Domestic Shipping	Fishing vessels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Military Transport	Military Aircraft and shipping	5.1	5.1	3.0	2.7	2.7	2.8	2.7	2.3		
Other Transportation	Aircraft - support vehicles	0.2	0.2	0.4	0.5	0.5	0.5	0.5	0.5		
Public	Public	25.8	25.8	19.0	18.2	16.9	16.2	15.9	14.1	-45.3%	
Residential Total		136.5	136.2	134.1	133.6	132.9	127.6	128.8	118.8	-13.0%	
Residential	Residential combustion and electricity	135.2	135.2	130.7	129.8	129.1	123.9	125.1	115.1		
Residential	Use of non aerosol consumer products	1.0	1.0	1.2	1.3	1.3	1.3	1.3	1.3		
Residential	Accidental vehicle fires	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Residential	Aerosols and metered dose inhalers	0.3	0.0	2.2	2.5	2.5	2.4	2.4	2.3		
Agriculture Total		42.5	42.5	35.0	34.7	33.5	33.1	33.2	32.5	-23.5%	
Agricultural fuel use	Stationary and mobile combustion and electricity	6.1	6.1	5.0	4.8	4.7	4.6	4.5	4.3		
Other agricultural sources	Breakdown of pesticides	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Enteric Fermentation	Cattle	8.2	8.2	6.7	6.9	6.6	6.8	6.6	6.6		
Enteric Fermentation	Sheep	2.0	2.0	1.6	1.5	1.5	1.5	1.5	1.4		
Enteric Fermentation	Goats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Enteric Fermentation	Horses	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Enteric Fermentation	Pigs	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1		
Enteric Fermentation	Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Agricultural waste management	Cattle	1.4	1.4	1.1	1.1	1.1	1.1	1.1	1.0		
Agricultural waste management	Sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Agricultural waste management	Goats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Agricultural waste management	Horses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Agricultural waste management	Pigs	0.9	0.9	0.6	0.6	0.6	0.6	0.6	0.6		
Agricultural waste management	Poultry	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
Agricultural waste management	Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Agricultural waste management	Manure liquid systems	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0		
Agricultural waste management	Manure solid storage and dry lot	1.2	1.2	0.9	0.8	0.9	0.9	0.8	0.8		
Agricultural waste management	Other manure management (N ₂ O)	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4		
Agricultural Soils	Direct Soil Emission	21.3	21.3	18.1	17.9	17.0	16.8	17.1	16.9		
Other agricultural sources	Field burning	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0		

Table A5.1: (continued) England End User GHG Emission Estimates, 1990 and 2004 to 2009

(electricity only emissions are presented underneath the main table)

Grand Total, excluding exports

620.2 **617.0** **515.0** **509.9** **505.2** **496.8** **486.9** **442.0** **-28.7%**

Electricity ONLY Emissions

Units: MtCO₂

NC Category	More Detail	Base Yea	1990	2004	2005	2006	2007	2008	2009
Business Total		97.8	97.8	83.8	80.3	85.5	84.9	82.1	68.8
Business	Iron and steel - electricity	4.2	4.2	1.4	1.2	1.6	1.3	1.3	0.7
	Other industrial - electricity	54.4	54.4	43.9	42.5	46.5	48.0	45.6	37.1
	Commercial and institutional	39.2	39.2	38.5	36.6	37.5	35.6	35.3	31.0
Transport	Railways	1.3	1.3	1.3	1.3	1.4	1.4	1.3	1.2
Public	Public	12.9	12.9	8.9	8.2	7.9	7.8	7.6	6.8
Residential	Residential electricity	64.5	64.5	54.6	57.4	59.8	57.5	57.5	51.7
Agriculture	Stationary and mobile - electricity	2.2	2.2	1.6	1.5	1.6	1.6	1.5	1.3
Industrial Process	Iron and steel production - electricity (Blast Furnaces)	0.0							
Exports	Exports - electricity	0.0	0.0	0.4	0.4	0.6	1.2	0.6	1.7
Grand Total		178.8	178.8	150.7	149.0	156.8	154.3	150.7	131.6

Table A5.2: Scotland End User GHG Emission Estimates, 1990 and 2004 to 2009

(continued overleaf)

<u>Total GHGs - by end user</u>		Base Year	BY to 2009							
NC Category	More Detail		1990	2004	2005	2006	2007	2008	2009	% change
Business Total		23.9	23.8	16.8	17.1	16.1	15.4	15.4	14.2	-40.8%
Business fuel use	Iron and steel - combustion and electricity	3.5	3.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Business fuel use	Other industrial combustion and electricity	15.5	15.5	11.5	11.6	10.1	9.2	9.2	8.7	
Business fuel use	Commercial and institutional	4.8	4.8	4.5	4.8	5.2	5.4	5.3	4.7	
Business process sources	Energy recovery from waste fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Business process sources	Refrigeration and air conditioning	0.1	0.0	0.5	0.5	0.5	0.6	0.6	0.6	0.6
Business process sources	Foams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Business process sources	Firefighting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Business process sources	Solvents	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Business process sources	One Component Foams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Business process sources	Electronics, electrical insulation and sporting goods	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Transport Total		12.1	12.1	12.8	13.0	13.0	13.1	12.6	12.1	0.4%
Domestic Aviation	Civil aviation (Domestic, Landing and take off)	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1
Domestic Aviation	Civil aviation (Domestic, Cruise)	0.2	0.2	0.5	0.5	0.5	0.5	0.5	0.4	
Road Transport	Passenger cars	6.6	6.6	6.8	6.7	6.7	6.6	6.4	6.2	
Road Transport	Light duty vehicles	0.9	0.9	1.4	1.4	1.5	1.6	1.5	1.5	
Road Transport	Buses	0.5	0.5	0.6	0.7	0.6	0.7	0.7	0.7	
Road Transport	HGVs	2.3	2.3	2.1	2.2	2.3	2.4	2.3	2.1	
Road Transport	Mopeds & motorcycles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Road Transport	LPG emissions (all vehicles)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Road Transport	Other (road vehicle engines)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Railways	Railways	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	
Railways	Railways - stationary combustion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Domestic Shipping	National navigation	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3	
Domestic Shipping	Fishing vessels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Military Transport	Military Aircraft and shipping	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.2	
Other Transportation	Aircraft - support vehicles	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	
Public		3.2	3.2	2.1	2.2	2.1	2.1	2.1	1.9	-41.4%
Residential Total		17.2	17.2	15.4	15.6	15.5	15.0	15.3	14.1	-18.0%
Residential	Residential combustion and electricity	17.1	17.1	15.0	15.2	15.2	14.6	14.9	13.7	
Residential	Use of non aerosol consumer products	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Residential	Accidental vehicle fires	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Residential	Aerosols and metered dose inhalers	0.0	0.0	0.2	0.3	0.3	0.2	0.2	0.2	
Agriculture Total		10.6	10.6	9.0	8.9	8.7	8.5	8.2	8.2	-22.5%
Agricultural fuel use	Stationary and mobile combustion and electricity	1.5	1.5	1.3	1.3	1.2	1.2	1.2	1.1	
Other agricultural sources	Breakdown of pesticides	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Enteric Fermentation	Cattle	2.1	2.1	2.0	2.1	2.0	2.0	2.0	1.9	
Enteric Fermentation	Sheep	1.0	1.0	0.8	0.8	0.8	0.7	0.7	0.7	
Enteric Fermentation	Goats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Enteric Fermentation	Horses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Enteric Fermentation	Pigs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Enteric Fermentation	Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Cattle	0.3	0.3	0.2	0.3	0.3	0.3	0.2	0.2	
Agricultural waste management	Sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Goats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Horses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Pigs	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Agricultural waste management	Poultry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Manure liquid systems	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Manure solid storage and dry lot	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	
Agricultural waste management	Other manure management (N ₂ O)	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	
Agricultural Soils	Direct Soil Emission	5.2	5.2	4.2	4.0	4.0	3.8	3.7	3.8	
Other agricultural sources	Field burning	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

**Table A5.2: Scotland End User GHG Emission Estimates, 1990 and 2004 to 2009
(continued)**

(electricity only emissions are presented underneath the main table)

NC Category	More Detail	Base Year	1990	2004	2005	2006	2007	2008	2009	BY to 2009 % change
Industrial Process Total			2.1	2.2	0.6	0.5	0.5	0.5	0.4	-81.3%
Industrial Processes	Sinter production		0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Cement production		0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3
Industrial Processes	Lime production		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Limestone and dolomite use		0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Soda ash production and use		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Fletton bricks		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Ammonia production		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Iron and steel production and electricity (Blast Furnaces)		0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Aluminium production		0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Industrial Processes	Nitric acid production		0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Adipic acid production		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Other - Chemical industry		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Halocarbon production		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Magnesium cover gas		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Land Use Change			-2.1	-2.1	-5.0	-5.2	-5.2	-5.4	-5.6	-5.7
Forest Land	Forest land remaining forest land		-3.1	-3.1	-7.4	-7.2	-7.0	-6.7	-6.8	-6.6
Forest Land	Forest land biomass burning		0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Forest Land	Land converted to forest land		-4.4	-4.4	-3.0	-2.9	-2.7	-2.6	-2.4	-2.2
Forest Land	Direct N ₂ O emission from N fertilisation of forest land		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cropland	Liming of cropland		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cropland	Cropland remaining cropland		-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Cropland	Cropland biomass burning		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cropland	Land converted to cropland		6.1	6.1	5.8	5.7	5.6	5.5	5.4	5.3
Cropland	Nitrous oxide from disturbance of cropland		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Grassland	Grassland biomass burning		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grassland	Liming of grassland		0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1
Grassland	Land converted to grassland		-2.3	-2.3	-2.8	-2.8	-2.9	-2.9	-3.0	-3.0
Wetlands	Wetlands remaining wetland		0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Wetlands	Methane and nitrous oxide emissions from drainage of wetlands		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Settlements	Settlements biomass burning		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Settlements	Land converted to settlements		1.8	1.8	1.6	1.6	1.6	1.6	1.6	1.5
Harvested wood products	Harvested wood products		-0.8	-0.8	0.2	-0.1	-0.4	-0.8	-0.9	-1.3
Waste Management			6.5	6.5	2.2	2.2	2.2	2.2	2.1	-68.0%
Waste Management	Landfill		6.3	6.3	2.1	2.0	2.1	2.0	2.1	1.9
Waste Management	Waste-water handling		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Waste Management	Waste Incineration		0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Exports	Exports (including electricity)		1.4	1.4	1.6	1.6	1.4	1.4	1.4	-1.2%
Grand total			74.9	74.8	55.5	55.9	54.5	52.9	52.3	48.7
										-35.0% -30.5%

Grand Total, excluding exports		73.5	73.4	53.9	54.3	53.1	51.5	50.8	47.2	-35.7%
Electricity ONLY Emissions		Units: MtCO ₂								
NC Category	More Detail	Base Year	1990	2004	2005	2006	2007	2008	2009	
Business Total			12.1	12.1	8.8	8.3	8.2	7.7	7.9	7.5
Business	Iron and steel - electricity		0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0
	Other industrial - electricity		8.1	8.1	5.2	4.5	3.8	3.2	3.4	3.6
	Commercial and institutional		3.7	3.7	3.6	3.8	4.3	4.5	4.5	3.9
Transport	Railways		0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1
Public	Public		1.7	1.7	1.0	1.0	1.1	1.2	1.2	1.0
Residential	Residential electricity		7.8	7.8	6.6	7.0	7.2	6.9	7.0	6.3
Agriculture	Stationary and mobile - electricity		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2
Industrial Process	Iron and steel production - electricity (Blast Furnaces)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports	Exports - electricity		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grand Total			22.2	22.2	16.8	16.8	17.0	16.3	16.4	15.2

Table A5.3: Wales End User GHG Emission Estimates, 1990 and 2004 to 2009

(continued overleaf)

Total GHGs - by end userUnits: Mt CO₂e

NC Category	More Detail	Base Year							BY to 2009		
			1990	2004	2005	2006	2007	2008			
Business Total			23.1	23.1	18.4	17.4	18.1	17.6	16.4	13.5	-41.6%
Business fuel use	Iron and steel - combustion and electricity		9.7	9.7	7.4	7.0	7.8	7.4	7.0	5.1	
Business fuel use	Other industrial combustion and electricity		11.2	11.2	8.4	7.7	7.4	7.2	6.4	5.7	
Business fuel use	Commercial and institutional		2.2	2.2	2.2	2.4	2.6	2.7	2.7	2.3	
Business process sources	Energy recovery from waste fuels		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Business process sources	Refrigeration and air conditioning		0.0	0.0	0.2	0.2	0.3	0.3	0.3	0.3	
Business process sources	Foams		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Business process sources	Firefighting		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Business process sources	Solvents		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Business process sources	One Component Foams		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Business process sources	Electronics, electrical insulation and sporting goods		0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	
Transport Total			7.0	7.0	7.4	7.5	7.4	7.5	7.2	6.9	-0.9%
Domestic Aviation	Civil aviation (Domestic, Landing and take off)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Domestic Aviation	Civil aviation (Domestic, Cruise)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Road Transport	Passenger cars		4.2	4.2	4.5	4.4	4.4	4.4	4.2	4.1	
Road Transport	Light duty vehicles		0.6	0.6	0.9	1.0	1.0	1.0	1.0	1.0	
Road Transport	Buses		0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	
Road Transport	HGVs		1.3	1.3	1.0	1.1	1.1	1.1	1.1	1.0	
Road Transport	Mopeds & motorcycles		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Road Transport	LPG emissions (all vehicles)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Road Transport	Other (road vehicle engines)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Railways	Railways		0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	
Railways	Railways - stationary combustion		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Domestic Shipping	National navigation		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Domestic Shipping	Fishing vessels		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Military Transport	Military Aircraft and shipping		0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	
Other Transportation	Aircraft - support vehicles		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Public	Public		1.7	1.7	1.1	1.1	1.1	1.1	1.1	1.0	-42.4%
Residential Total			9.1	9.1	8.6	8.4	8.5	8.0	8.2	7.6	-16.5%
Residential	Residential combustion and electricity		9.0	9.0	8.4	8.2	8.3	7.7	8.0	7.4	
Residential	Use of non aerosol consumer products		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Residential	Accidental vehicle fires		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Residential	Aerosols and metered dose inhalers		0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	
Agriculture Total			7.4	7.4	6.5	6.6	6.3	6.0	5.7	5.6	-24.2%
Agricultural fuel use	Stationary and mobile combustion and electricity		1.1	1.1	0.9	0.9	0.9	0.9	0.9	0.8	
Other agricultural sources	Breakdown of pesticides		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Enteric Fermentation	Cattle		1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.3	
Enteric Fermentation	Sheep		1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.8	
Enteric Fermentation	Goats		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Enteric Fermentation	Horses		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Enteric Fermentation	Pigs		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Enteric Fermentation	Deer		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Cattle		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Agricultural waste management	Sheep		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Goats		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Horses		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Pigs		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Poultry		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Deer		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Manure liquid systems		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Manure solid storage and dry lot		0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	
Agricultural waste management	Other manure management (N ₂ O)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural Soils	Direct Soil Emission		3.1	3.1	2.6	2.7	2.5	2.4	2.2	2.2	
Other agricultural sources	Field burning		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Table A5.3: Wales End User GHG Emission Estimates, 1990 and 2004 to 2009(continued)

(electricity only emissions are presented underneath the main table)

NC Category	More Detail	Base Year	1990	2004	2005	2006	2007	2008	2009	BY to 2009 % change
Industrial Process Total			3.4	3.5	2.8	2.6	2.8	2.9	2.8	1.8
Industrial Processes	Sinter production		0.9	0.9	1.0	1.0	0.8	0.8	0.7	0.5
Industrial Processes	Cement production		0.6	0.6	0.5	0.4	0.6	0.6	0.5	0.3
Industrial Processes	Lime production		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Limestone and dolomite use		0.4	0.4	0.3	0.3	0.4	0.3	0.3	0.2
Industrial Processes	Soda ash production and use		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Fletton bricks		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Ammonia production		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Iron and steel production and electricity (Blast Furnaces)		1.1	1.1	0.7	0.7	0.7	0.9	1.0	0.6
Industrial Processes	Aluminium production		0.3	0.5	0.3	0.2	0.2	0.2	0.2	0.2
Industrial Processes	Nitric acid production		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Adipic acid production		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Other - Chemical industry		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Halocarbon production		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Magnesium cover gas		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Land Use Change			0.0	0.0	-0.2	-0.2	-0.2	-0.2	-0.3	-0.3
Forest Land	Forest land remaining forest land		-0.7	-0.7	-1.4	-1.4	-1.3	-1.3	-1.2	-1.1
Forest Land	Forest land biomass burning		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forest Land	Land converted to forest land		-0.5	-0.5	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1
Forest Land	Direct N ₂ O emission from N fertilisation of forest land		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cropland	Liming of cropland		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cropland	Cropland remaining cropland		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cropland	Cropland biomass burning		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cropland	Land converted to cropland		1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0
Cropland	Nitrous oxide from disturbance of cropland		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Grassland	Grassland biomass burning		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grassland	Liming of grassland		0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1
Grassland	Land converted to grassland		-0.5	-0.5	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7
Wetlands	Wetlands remaining wetland		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetlands	Methane and nitrous oxide emissions from drainage of wet		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Settlements	Settlements biomass burning		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Settlements	Land converted to settlements		0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7
Harvested wood products	Harvested wood products		-0.3	-0.3	0.2	0.1	0.1	0.0	0.0	-0.1
Waste Management			3.2	3.2	1.2	1.2	1.1	1.1	1.0	1.0
Waste Management	Landfill		3.1	3.1	1.1	1.1	1.0	1.0	1.0	0.9
Waste Management	Waste-water handling		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Waste Management	Waste Incineration		0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Exports	Exports (including electricity)		1.3	1.3	1.9	1.9	1.7	1.9	1.8	1.9
Grand total			56.2	56.3	47.8	46.5	46.8	45.8	44.0	39.0
										-30.6%
										-23.3%

Grand Total, excluding exports		54.8	54.9	45.9	44.6	45.0	43.9	42.2	37.1	-32.3%
Electricity ONLY Emissions		Units: MtCO ₂								
NC Category	More Detail	Base Year	1990	2004	2005	2006	2007	2008	2009	
Business Total		8.5	8.5	6.8	6.5	6.5	6.2	5.9	5.1	
Business	Iron and steel - electricity	1.9	1.9	1.1	1.0	1.2	0.9	0.8	0.7	
	Other industrial - electricity	5.0	5.0	3.9	3.6	3.1	3.1	2.8	2.5	
	Commercial and institutional	1.5	1.5	1.8	1.9	2.1	2.2	2.2	2.0	
Transport	Railways	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Public	Public	0.7	0.7	0.5	0.5	0.6	0.6	0.6	0.6	
Residential	Residential electricity	3.5	3.5	3.0	3.2	3.3	3.1	3.2	2.9	
Agriculture	Stationary and mobile - electricity	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.2	
Industrial Process	Iron and steel production - electricity (Blast Furnaces)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exports	Exports - electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Grand Total		13.1	13.1	10.6	10.5	10.7	10.3	10.0	8.9	

Table A5.4: Northern Ireland End User GHG Emission Estimates, 1990 and 2004 to 2009

(continued overleaf)

Total GHGs - by end userUnits: Mt CO₂e

NC Category	More Detail	Base Year	1990	2004	2005	2006	2007	2008	2009	BY to 2009 % change
Business Total		4.6	4.6	3.8	3.9	4.2	4.3	3.8	3.4	-26.2%
Business fuel use	Iron and steel - combustion and electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Business fuel use	Other industrial combustion and electricity	3.8	3.8	2.3	2.3	2.4	2.5	1.9	1.6	
Business fuel use	Commercial and institutional	0.8	0.8	1.3	1.4	1.6	1.7	1.7	1.5	
Business process sources	Energy recovery from waste fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Business process sources	Refrigeration and air conditioning	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	
Business process sources	Foams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Business process sources	Firefighting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Business process sources	Solvents	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Business process sources	One Component Foams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Business process sources	Electronics, electrical insulation and sporting goods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Transport Total		3.8	3.8	4.9	5.0	4.9	5.1	4.9	4.8	25.9%
Domestic Aviation	Civil aviation (Domestic, Landing and take off)	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	
Domestic Aviation	Civil aviation (Domestic, Cruise)	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	
Road Transport	Passenger cars	2.6	2.6	3.3	3.3	3.2	3.3	3.1	3.2	
Road Transport	Light duty vehicles	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3	
Road Transport	Buses	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.1	
Road Transport	HGVs	0.6	0.6	0.8	0.9	0.9	0.9	0.9	0.8	
Road Transport	Mopeds & motorcycles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Road Transport	LPG emissions (all vehicles)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Road Transport	Other (road vehicle engines)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Railways	Railways	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Railways	Railways - stationary combustion	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Domestic Shipping	National navigation	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Domestic Shipping	Fishing vessels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Military Transport	Military Aircraft and shipping	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Other Transportation	Aircraft - support vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Public	Public	1.2	1.2	0.7	0.7	0.7	0.7	0.8	0.7	-39.4%
Residential Total		6.8	6.8	5.9	5.7	5.9	5.5	5.8	5.5	-19.0%
Residential	Residential combustion and electricity	6.8	6.8	5.8	5.6	5.8	5.4	5.7	5.4	
Residential	Use of non aerosol consumer products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Residential	Accidental vehicle fires	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Residential	Aerosols and metered dose inhalers	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	
Agriculture Total		6.2	6.2	5.9	5.8	5.7	5.6	5.5	5.4	-12.3%
Agricultural fuel use	Stationary and mobile combustion and electricity	1.0	1.0	0.8	0.8	0.8	0.7	0.7	0.7	
Other agricultural sources	Breakdown of pesticides	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Enteric Fermentation	Cattle	1.7	1.7	1.8	1.9	1.9	1.9	1.9	1.8	
Enteric Fermentation	Sheep	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	
Enteric Fermentation	Goats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Enteric Fermentation	Horses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Enteric Fermentation	Pigs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Enteric Fermentation	Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Cattle	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	
Agricultural waste management	Sheep	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Goats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Horses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Pigs	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Agricultural waste management	Poultry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Deer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Manure liquid systems	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Agricultural waste management	Manure solid storage and dry lot	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Agricultural waste management	Other manure management (N ₂ O)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Agricultural Soils	Direct Soil Emission	2.5	2.5	2.3	2.2	2.2	2.1	2.0	2.0	
Other agricultural sources	Field burning	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

**Table A5.4: Northern Ireland End User GHG Emission Estimates, 1990 and 2004 to 2009
(continued)**

(electricity only emissions are presented underneath the main table)

NC Category	More Detail	Base Year	BY to 2009						
			1990	2004	2005	2006	2007	2008	2009
Industrial Process Total		0.8	0.8	0.2	0.4	0.4	0.5	0.4	0.2
Industrial Processes	Sinter production	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Cement production	0.4	0.4	0.2	0.4	0.4	0.5	0.4	0.2
Industrial Processes	Lime production	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Limestone and dolomite use	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Soda ash production and use	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Fletton bricks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Ammonia production	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Iron and steel production and electricity (Blast Furnaces)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Aluminium production	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Nitric acid production	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Adipic acid production	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Other - Chemical industry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Halocarbon production	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Processes	Magnesium cover gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Land Use Change		0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1
Forest Land	Forest land remaining forest land	-0.5	-0.5	-0.5	-0.5	-0.4	-0.4	-0.3	-0.3
Forest Land	Forest land biomass burning	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forest Land	Land converted to forest land	-0.3	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Forest Land	Direct N ₂ O emission from N fertilisation of forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cropland	Liming of cropland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cropland	Cropland remaining cropland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cropland	Cropland biomass burning	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cropland	Land converted to cropland	1.3	1.3	1.1	1.1	1.1	1.1	1.1	1.1
Cropland	Nitrous oxide from disturbance of cropland	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Grassland	Grassland biomass burning	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grassland	Liming of grassland	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Grassland	Land converted to grassland	-1.2	-1.2	-1.3	-1.3	-1.3	-1.3	-1.3	-1.3
Wetlands	Wetlands remaining wetland	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Wetlands	Methane and nitrous oxide emissions from drainage of wet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Settlements	Settlements biomass burning	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Settlements	Land converted to settlements	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8
Harvested wood products	Harvested wood products	0.0	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
Waste Management		1.9	1.9	0.7	0.7	0.7	0.7	0.7	0.7
Waste Management	Landfill	1.8	1.8	0.6	0.6	0.6	0.6	0.6	0.7
Waste Management	Waste-water handling	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0
Waste Management	Waste Incineration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports	Exports (including electricity)	0.0	0.0	1.0	1.2	1.1	0.8	0.2	0.3
Grand total		25.4	25.3	22.9	23.4	23.7	23.2	22.1	21.1
									-16.8% -20.3%
Grand Total, excluding exports		25.3	25.3	22.0	22.2	22.6	22.4	21.9	20.8
									-17.6%
Electricity ONLY Emissions		Units: MtCO ₂							
NC Category	More Detail	Base Ye	1990	2004	2005	2006	2007	2008	2009
Business Total		1.9	1.9	1.9	1.7	2.0	2.1	1.7	1.5
Business	Iron and steel - electricity	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Other industrial - electricity	1.3	1.3	0.7	0.4	0.5	0.6	0.2	0.2
	Commercial and institutional	0.6	0.6	1.2	1.2	1.4	1.5	1.5	1.3
Transport	Railways	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Public	Public	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5
Residential	Residential electricity	1.9	1.9	1.7	1.8	1.9	1.9	2.0	1.8
Agriculture	Stationary and mobile - electricity	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2
Industrial Process	Iron and steel production - electricity (Blast Furnaces)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports	Exports - electricity	0.7	0.7	1.1	1.0	0.8	0.1	0.2	0.0
Grand Total		5.4	5.4	5.4	5.3	5.4	4.9	4.7	4.0