

Appendix 4

Traded and Non-Traded DA GHG Emission Inventory Estimates

Table A4.1 **England GHGI Traded and Non-Traded Emissions, 2009** *Emissions in kt CO₂ equivalent by amended IPCC sector*
(Page 1 of 2)

NC Sector	IPCC	IPCC Sector / Source Name	GHGI	GHGI	Traded Emissions	Non-Traded GHGI	Non-Traded GHGI	Non-Traded / CO2	Non-Traded / GHGI
			<i>All GHGs</i>	<i>CO2 only</i>	<i>CO2 only</i>	<i>All GHGs</i>	<i>CO2 only</i>		
Agriculture	1A4c	Agricultural combustion	2,734	2,418	152	2,582	2,266	94%	94%
Agriculture	2B5_agric	Agrochemical use	33	33	0	33	33	100%	100%
Agriculture	4A	Agriculture - livestock enteric fermentation	8,235	0	0	8,235	0		100%
Agriculture	4B	Agriculture - livestock waste	3,128	0	0	3,128	0		100%
Agriculture	4D	Agricultural soils	16,876	0	0	16,876	0		100%
Agriculture	4F	Field Burning	0	0	0	0	0		
Business	1A2a	Iron & Steel, includes 1A1c (coke), 2A3 (BOS, sinter) and 2C1	11,841	11,675	10,618	1,223	1,057	9%	10%
Business	1A2f	Other Industry Combustion	42,523	41,616	16,363	26,160	25,253	61%	62%
Business	1A2f_Cement	Cement industry, including combustion and process (2A1)	4,504	4,478	4,447	27	0	0%	1%
Business	1A2f_Lime	Lime industry, including combustion and process (2A2)	1,212	1,202	1,140	72	62	5%	6%
Business	1A4a	Commercial sector combustion	8,069	8,036	169	7,900	7,867	98%	98%
Business	2B5_business	Business sector process emissions	276	276	0	276	276	100%	100%
Business	2F	Business F-gas uses	7,281	0	0	7,281	0		100%
Energy Supply	1A1a	Power stations	122,563	121,766	121,381	1,182	385	0%	1%
Energy Supply	1A1b	Refineries - combustion	9,549	9,465	10,589	85	0	0%	1%
Energy Supply	1A1c	Other Energy Industries: collieries, nuclear, SSF and town gas	133	133	26	108	107	81%	81%
Energy Supply	1A1c_Gas	Gas production	323	323	524	-201	-201	-62%	-62%
Energy Supply	1A1c_Oil & Gas	Oil & Gas sector, including 1B2c flaring & venting	1,607	1,472	1,150	456	322	22%	28%
Energy Supply	1B1a	Coal mining	1,796	0	0	1,796	0		100%
Energy Supply	1B1b	Coke and SSF production	150	145	0	150	145	100%	100%
Energy Supply	1B2a	Oil & Gas sector: loading, storage, process, well testing	26	0	0	26	0	100%	100%
Energy Supply	1B2b	Gas leakage	3,785	73	0	3,785	73	100%	100%
Energy Supply	2A3_FGD	Power station FGD	354	354	347	0	0	0%	0%
Industrial Process	2A3	Glass sector	333	333	283	50	50	15%	15%
Industrial Process	2A7	Brick manufacture	79	74	252	6	0	0%	7%
Industrial Process	2B1	Ammonia production	801	801	0	801	801	100%	100%
Industrial Process	2B2	Nitric acid production	1,107	0	0	1,107	0		100%
Industrial Process	2B3	Adipic acid production	71	0	0	71	0		100%
Industrial Process	2B5	Chemical industry processes	65	0	0	65	0		100%
Industrial Process	2C3	Primary aluminium production	246	213	0	246	213	100%	100%
Industrial Process	2C4	Magnesium cover gas	85	0	0	85	0		100%
Industrial Process	2E	Halocarbon production	116	0	0	116	0		100%
Industrial Process	3	Solvent	0	0	0	0	0		
Land Use Change	5	Land use change and forestry	1,691	1,423	0	1,691	1,423	100%	100%
Public	1A4a_public	Public sector combustion	6,845	6,821	1,107	5,738	5,715	84%	84%
Residential	1A4b	Residential combustion	59,426	59,046	0	59,426	59,046	100%	100%

Table A4.1 **England GHGI Traded and Non-Traded Emissions, 2009** *Emissions in kt CO₂ equivalent by amended IPCC sector*
(Page 2 of 2)

NC Sector	IPCC	IPCC Sector / Source Name	GHGI	GHGI	Traded Emissions	Non-Traded GHGI	Non-Traded GHGI	Non-Traded / CO ₂	Non-Traded / GHGI
			<i>All GHGs</i>	<i>CO₂ only</i>	<i>CO₂ only</i>	<i>All GHGs</i>	<i>CO₂ only</i>		
Residential	2B5_residential	Household products	1,302	1,302	0	1,302	1,302	100%	100%
Residential	2F4	Residential F-gas uses	2,334	0	0	2,334	0		100%
Transport	1A3a	Aircraft (domestic TOL and cruise)	1,085	1,073	0	1,085	1,073	100%	100%
Transport	1A3b	Road transport	94,018	93,132	0	94,018	93,132	100%	100%
Transport	1A3c	Railways	1,730	1,548	0	1,730	1,548	100%	100%
Transport	1A3d	Shipping	1,040	1,032	0	1,040	1,032	100%	100%
Transport	1A3e	Aircraft support vehicles	417	369	0	417	369	100%	100%
Transport	1A5b	Military aviation and shipping	2,102	2,082	0	2,102	2,082	100%	100%
Waste Management	6A1	Landfill waste	12,373	0	0	12,373	0		100%
Waste Management	6B2	Waste water treatment	1,433	0	0	1,433	0		100%
Waste Management	6C	Waste incineration	298	260	0	298	260	100%	100%
TOTAL			435,996	372,975	168,549	268,712	205,691	55%	62%

Table A4.2 Scotland GHGI Traded and Non-Traded Emissions, 2009 *Emissions in kt CO₂ equivalent by amended IPCC sector*
(Page 1 of 2)

NC Sector	IPCC	IPCC Sector / Source Name	GHGI	GHGI	Traded Emissions	Non-Traded GHGI	Non-Traded GHGI	Non-Traded / CO ₂	Non-Traded / GHGI
			<i>All GHGs</i>	<i>CO₂ only</i>	<i>CO₂ only</i>	<i>All GHGs</i>	<i>CO₂ only</i>		
Agriculture	1A4c	Agricultural combustion	796	709	0	796	709	100%	100%
Agriculture	2B5_agric	Agrochemical use	3	3	0	3	3	100%	100%
Agriculture	4A	Agriculture - livestock enteric fermentation	2,637	0	0	2,637	0		100%
Agriculture	4B	Agriculture - livestock waste	629	0	0	629	0		100%
Agriculture	4D	Agricultural soils	3,798	0	0	3,798	0		100%
Agriculture	4F	Field Burning	0	0	0	0	0		
Business	1A2a	Iron & Steel, includes 1A1c (coke), 2A3 (BOS, sinter) and 2C1	38	38	0	38	38	100%	100%
Business	1A2f	Other Industry Combustion	4,691	4,603	3,757	933	846	18%	20%
Business	1A2f_Cement	Cement industry, including combustion and process (2A1)	439	436	433	3	0	0%	1%
Business	1A2f_Lime	Lime industry, including combustion and process (2A2)	0	0	0	0	0		
Business	1A4a	Commercial sector combustion	690	688	0	690	688	100%	100%
Business	2B5_business	Business sector process emissions	27	27	0	27	27	100%	100%
Business	2F	Business F-gas uses	763	0	0	763	0		100%
Energy Supply	1A1a	Power stations	13,384	13,288	13,290	96	0	0%	1%
Energy Supply	1A1b	Refineries - combustion	2,059	2,041	2,259	18	0	0%	1%
Energy Supply	1A1c	Other Energy Industries: collieries, nuclear, SSF and town gas	0	0	0	0	0		
Energy Supply	1A1c_Gas	Gas production	227	227	372	-145	-145	-64%	-64%
Energy Supply	1A1c_Oil & Gas	Oil & Gas sector, including 1B2c flaring & venting	1,764	1,717	1,675	89	42	2%	5%
Energy Supply	1B1a	Coal mining	308	0	0	308	0		100%
Energy Supply	1B1b	Coke and SSF production	0	0	0	0	0		
Energy Supply	1B2a	Oil & Gas sector: loading, storage, process, well testing	11	0	0	11	0	100%	100%
Energy Supply	1B2b	Gas leakage	458	158	0	458	158	100%	100%
Energy Supply	2A3_FGD	Power station FGD	0	0	0	0	0		
Industrial Process	2A3	Glass sector	48	48	48	0	0	0%	0%
Industrial Process	2A7	Brick manufacture	0	0	3	0	0		
Industrial Process	2B1	Ammonia production	0	0	0	0	0		
Industrial Process	2B2	Nitric acid production	0	0	0	0	0		
Industrial Process	2B3	Adipic acid production	0	0	0	0	0		
Industrial Process	2B5	Chemical industry processes	11	0	0	11	0		100%
Industrial Process	2C3	Primary aluminium production	53	52	0	53	52	100%	100%
Industrial Process	2C4	Magnesium cover gas	0	0	0	0	0		
Industrial Process	2E	Halocarbon production	0	0	0	0	0		
Industrial Process	3	Solvent	0	0	0	0	0		
Land Use Change	5	Land use change and forestry	-5,658	-5,969	0	-5,658	-5,969	100%	100%
Public	1A4a_public	Public sector combustion	790	787	158	632	630	80%	80%
Residential	1A4b	Residential combustion	6,977	6,897	0	6,977	6,897	100%	100%

Table A4.2 **Scotland GHGI Traded and Non-Traded Emissions, 2009** *Emissions in kt CO₂ equivalent by amended IPCC sector*
(Page 2 of 2)

NC Sector	IPCC	IPCC Sector / Source Name	GHGI	GHGI	Traded Emissions	Non-Traded GHGI	Non-Traded GHGI	Non-Traded / CO ₂	Non-Traded / GHGI
			<i>All GHGs</i>	<i>CO₂ only</i>	<i>CO₂ only</i>	<i>All GHGs</i>	<i>CO₂ only</i>		
Residential	2B5_residential	Household products	131	131	0	131	131	100%	100%
Residential	2F4	Residential F-gas uses	234	0	0	234	0		100%
Transport	1A3a	Aircraft (domestic TOL and cruise)	486	481	0	486	481	100%	100%
Transport	1A3b	Road transport	9,515	9,431	0	9,515	9,431	100%	100%
Transport	1A3c	Railways	206	185	0	206	185	100%	100%
Transport	1A3d	Shipping	261	259	0	261	259	100%	100%
Transport	1A3e	Aircraft support vehicles	64	57	0	64	57	100%	100%
Transport	1A5b	Military aviation and shipping	204	202	0	204	202	100%	100%
Waste Management	6A1	Landfill waste	1,917	0	0	1,917	0		100%
Waste Management	6B2	Waste water treatment	144	0	0	144	0		100%
Waste Management	6C	Waste incineration	13	9	0	13	9	100%	100%
TOTAL			48,116	36,505	21,995	26,341	14,730	40%	55%

Note: This table presents estimates for non-traded emissions of CO₂, and an estimate for total greenhouse gases. For power stations (1A1a), the non-traded emission of 96 kt CO₂ equivalent arises from non-CO₂ emissions, any small power stations that are not included under EUETS, and as a result of any remaining discrepancies between the EUETS fuel use total for the sector, and DUKES.

Table A4.3 **Wales GHGI Traded and Non-Traded Emissions, 2009: *Emissions in kt CO₂ equivalent by amended IPCC sector***
(Page 1 of 2)

NC Sector	IPCC	IPCC Sector / Source Name	GHGI	GHGI	Traded Emissions	Non-Traded GHGI	Non-Traded GHGI	Non-Traded / CO2	Non-Traded / GHGI
			<i>All GHGs</i>	<i>CO2 only</i>	<i>CO2 only</i>	<i>All GHGs</i>	<i>CO2 only</i>		
Agriculture	1A4c	Agricultural combustion	546	489	0	546	489	100%	100%
Agriculture	2B5_agric	Agrochemical use	1	1	0	1	1	100%	100%
Agriculture	4A	Agriculture - livestock enteric fermentation	2,175	0	0	2,175	0		100%
Agriculture	4B	Agriculture - livestock waste	400	0	0	400	0		100%
Agriculture	4D	Agricultural soils	2,201	0	0	2,201	0		100%
Agriculture	4F	Field Burning	0	0	0	0	0		
Business	1A2a	Iron & Steel, includes 1A1c (coke), 2A3 (BOS, sinter) and 2C1	5,381	5,311	5,420	70	0	0%	1%
Business	1A2f	Other Industry Combustion	2,986	2,924	725	2,261	2,198	75%	76%
Business	1A2f_Cement	Cement industry, including combustion and process (2A1)	535	532	528	3	0	0%	1%
Business	1A2f_Lime	Lime industry, including combustion and process (2A2)	0	0	0	0	0		
Business	1A4a	Commercial sector combustion	355	354	0	355	354	100%	100%
Business	2B5_business	Business sector process emissions	12	12	0	12	12	100%	100%
Business	2F	Business F-gas uses	350	0	0	350	0		100%
Energy Supply	1A1a	Power stations	11,266	11,208	11,323	58	0	0%	1%
Energy Supply	1A1b	Refineries - combustion	3,337	3,307	3,621	30	0	0%	1%
Energy Supply	1A1c	Other Energy Industries: collieries, nuclear, SSF and town gas	2	2	0	2	2	100%	100%
Energy Supply	1A1c_Gas	Gas production	96	96	154	-58	-58	-61%	-60%
Energy Supply	1A1c_Oil & Gas	Oil & Gas sector, including 1B2c flaring & venting	50	49	43	7	5	11%	14%
Energy Supply	1B1a	Coal mining	756	0	0	756	0		100%
Energy Supply	1B1b	Coke and SSF production	7	5	0	7	5	100%	100%
Energy Supply	1B2a	Oil & Gas sector: loading, storage, process, well testing	0	0	0	0	0		
Energy Supply	1B2b	Gas leakage	262	19	0	262	19	100%	100%
Energy Supply	2A3_FGD	Power station FGD	0	0	0	0	0		
Industrial Process	2A3	Glass sector	11	11	11	0	0	0%	0%
Industrial Process	2A7	Brick manufacture	0	0	0	0	0		
Industrial Process	2B1	Ammonia production	0	0	0	0	0		
Industrial Process	2B2	Nitric acid production	0	0	0	0	0		
Industrial Process	2B3	Adipic acid production	0	0	0	0	0		
Industrial Process	2B5	Chemical industry processes	1	0	0	1	0		100%
Industrial Process	2C3	Primary aluminium production	152	125	0	152	125	100%	100%
Industrial Process	2C4	Magnesium cover gas	6	0	0	6	0		100%
Industrial Process	2E	Halocarbon production	0	0	0	0	0		
Industrial Process	3	Solvent	0	0	0	0	0		
Land Use Change	5	Land use change and forestry	-258	-316	0	-258	-316	100%	100%
Public	1A4a_public	Public sector combustion	371	370	20	351	350	95%	95%
Residential	1A4b	Residential combustion	4,216	4,152	0	4,216	4,152	100%	100%

Table A4.3 **Wales GHGI Traded and Non-Traded Emissions, 2009: *Emissions in kt CO₂ equivalent by amended IPCC sector***
(Page 2 of 2)

NC Sector	IPCC	IPCC Sector / Source Name	GHGI	GHGI	Traded Emissions	Non-Traded GHGI	Non-Traded GHGI	Non-Traded / CO2	Non-Traded / GHGI
			<i>All GHGs</i>	<i>CO2 only</i>	<i>CO2 only</i>	<i>All GHGs</i>	<i>CO2 only</i>		
Residential	2B5_residential	Household products	75	75	0	75	75	100%	100%
Residential	2F4	Residential F-gas uses	135	0	0	135	0		100%
Transport	1A3a	Aircraft (domestic TOL and cruise)	19	19	0	19	19	100%	100%
Transport	1A3b	Road transport	5,722	5,670	0	5,722	5,670	100%	100%
Transport	1A3c	Railways	162	145	0	162	145	100%	100%
Transport	1A3d	Shipping	164	163	0	164	163	100%	100%
Transport	1A3e	Aircraft support vehicles	5	4	0	5	4	100%	100%
Transport	1A5b	Military aviation and shipping	88	88	0	88	88	100%	100%
Waste Management	6A1	Landfill waste	922	0	0	922	0		100%
Waste Management	6B2	Waste water treatment	83	0	0	83	0		100%
Waste Management	6C	Waste incineration	9	7	0	9	7	100%	100%
TOTAL			42,602	34,821	21,846	21,290	13,509	39%	50%

Table A4.4 Northern Ireland GHGI Traded and Non-Traded Emissions, 2009: *Emissions in kt CO₂ equivalent by amended IPCC sector*
(Page 1 of 2)

NC Sector	IPCC	IPCC Sector / Source Name	GHGI	GHGI	Traded Emissions	Non-Traded GHGI	Non-Traded GHGI	Non-Traded / CO ₂	Non-Traded / GHGI
			<i>All GHGs</i>	<i>CO2 only</i>	<i>CO2 only</i>	<i>All GHGs</i>	<i>CO2 only</i>		
Agriculture	1A4c	Agricultural combustion	477	424	0	477	424	100%	100%
Agriculture	2B5_agric	Agrochemical use	1	1	0	1	1	100%	100%
Agriculture	4A	Agriculture - livestock enteric fermentation	2,047	0	0	2,047	0		100%
Agriculture	4B	Agriculture - livestock waste	639	0	0	639	0		100%
Agriculture	4D	Agricultural soils	2,031	0	0	2,031	0		100%
Agriculture	4F	Field Burning	0	0	0	0	0		
Business	1A2a	Iron & Steel, includes 1A1c (coke), 2A3 (BOS, sinter) and 2C1	0	0	0	0	0		
Business	1A2f	Other Industry Combustion	1,251	1,213	325	925	888	73%	74%
Business	1A2f_Cement	Cement industry, including combustion and process (2A1)	241	240	238	1	0	0%	1%
Business	1A2f_Lime	Lime industry, including combustion and process (2A2)	0	0	0	0	0		
Business	1A4a	Commercial sector combustion	233	232	0	233	232	100%	100%
Business	2B5_business	Business sector process emissions	7	7	0	7	7	100%	100%
Business	2F	Business F-gas uses	209	0	0	209	0		100%
Energy Supply	1A1a	Power stations	3,671	3,656	3,702	15	0	0%	0%
Energy Supply	1A1b	Refineries - combustion	0	0	0	0	0		
Energy Supply	1A1c	Other Energy Industries: collieries, nuclear, SSF and town gas	0	0	0	0	0		
Energy Supply	1A1c_Gas	Gas production	0	0	0	0	0		
Energy Supply	1A1c_Oil & Gas	Oil & Gas sector, including 1B2c flaring & venting	0	0	0	0	0		
Energy Supply	1B1a	Coal mining	0	0	0	0	0		
Energy Supply	1B1b	Coke and SSF production	0	0	0	0	0		
Energy Supply	1B2a	Oil & Gas sector: loading, storage, process, well testing	0	0	0	0	0		
Energy Supply	1B2b	Gas leakage	0	0	0	0	0	100%	100%
Energy Supply	2A3_FGD	Power station FGD	0	0	0	0	0		
Industrial Process	2A3	Glass sector	22	22	22	0	0	0%	0%
Industrial Process	2A7	Brick manufacture	0	0	1	0	0		
Industrial Process	2B1	Ammonia production	0	0	0	0	0		
Industrial Process	2B2	Nitric acid production	0	0	0	0	0		
Industrial Process	2B3	Adipic acid production	0	0	0	0	0		
Industrial Process	2B5	Chemical industry processes	0	0	0	0	0		
Industrial Process	2C3	Primary aluminium production	0	0	0	0	0		
Industrial Process	2C4	Magnesium cover gas	0	0	0	0	0		
Industrial Process	2E	Halocarbon production	0	0	0	0	0		
Industrial Process	3	Solvent	0	0	0	0	0		
Land Use Change	5	Land use change and forestry	102	73	0	102	73	100%	100%
Public	1A4a_public	Public sector combustion	198	198	45	154	153	77%	78%
Residential	1A4b	Residential combustion	3,285	3,237	0	3,285	3,237	100%	100%

Table A4.4 Northern Ireland GHGI Traded and Non-Traded Emissions, 2009: *Emissions in kt CO₂ equivalent by amended IPCC sector*
(Page 2 of 2)

NC Sector	IPCC	IPCC Sector / Source Name	GHGI	GHGI	Traded Emissions	Non-Traded GHGI	Non-Traded GHGI	Non-Traded / CO ₂	Non-Traded / GHGI
			<i>All GHGs</i>	<i>CO₂ only</i>	<i>CO₂ only</i>	<i>All GHGs</i>	<i>CO₂ only</i>		
Residential	2B5_residential	Household products	45	45	0	45	45	100%	100%
Residential	2F4	Residential F-gas uses	81	0	0	81	0		100%
Transport	1A3a	Aircraft (domestic TOL and cruise)	183	181	0	183	181	100%	100%
Transport	1A3b	Road transport	3,899	3,863	0	3,899	3,863	100%	100%
Transport	1A3c	Railways	44	39	0	44	39	100%	100%
Transport	1A3d	Shipping	63	63	0	63	63	100%	100%
Transport	1A3e	Aircraft support vehicles	10	9	0	10	9	100%	100%
Transport	1A5b	Military aviation and shipping	56	56	0	56	56	100%	100%
Waste Management	6A1	Landfill waste	657	0	0	657	0		100%
Waste Management	6B2	Waste water treatment	49	0	0	49	0		100%
Waste Management	6C	Waste incineration	4	3	0	4	3	100%	100%
TOTAL			19,508	13,561	4,332	15,221	9,274	68%	78%