

Greenhouse Gas Emission from Fuel Combustion

1. Sectoral Approach CO₂ Emissions

Unit: thousand tonnes CO₂

Year	Energy	Industrial	Transport	Agriculture	Service	Residential	Total
1990	49,123	30,124	19,646	2,946	3,621	4,005	109,465
1991	55,126	31,963	20,888	2,700	3,529	4,238	118,443
1992	58,529	33,389	24,033	2,672	2,989	4,446	126,058
1993	65,962	33,618	26,103	2,675	2,490	4,359	135,206
1994	70,771	34,592	27,540	2,721	3,018	4,461	143,103
1995	76,400	35,769	28,822	2,777	2,445	4,597	150,810
1996	81,254	36,791	29,801	2,805	3,175	4,754	158,579
1997	91,407	39,084	30,536	2,475	2,482	4,851	170,835
1998	100,414	39,321	31,844	2,041	2,946	4,952	181,518
1999	105,782	41,314	32,772	2,040	3,128	5,410	190,446
2000	121,143	43,850	33,207	2,362	3,205	5,354	209,122
2001	126,142	42,395	33,246	2,455	3,538	5,181	212,957
2002	130,463	44,489	34,542	2,459	3,487	5,107	220,546
2003	141,730	42,563	34,509	2,811	3,952	5,042	230,607
2004	148,677	43,163	35,859	2,977	4,120	5,133	239,929
2005	156,351	42,671	36,846	2,627	4,227	5,235	247,956
2006	163,615	43,994	36,771	1,647	4,272	5,033	255,331
2007	170,131	43,293	35,419	1,091	4,232	5,047	259,214
2008	164,432	39,104	33,216	1,543	4,226	5,017	247,536
2009	155,166	36,698	33,541	1,169	4,264	5,030	235,868
2010	165,522	41,360	34,652	1,113	4,204	4,857	251,708
2011	169,884	42,298	35,107	1,123	3,898	4,786	257,096
2012	168,333	40,983	34,284	1,259	3,635	4,672	253,166
2013	168,271	42,019	34,209	1,274	3,812	4,484	254,070
2014	175,180	38,953	34,666	1,343	3,928	4,411	258,481
2015	175,198	38,074	35,506	1,287	3,941	4,469	258,476
2016	178,569	38,296	36,584	1,276	3,720	4,537	262,982
2017	187,135	36,741	36,202	1,203	3,779	4,402	269,462
2018	189,212	33,480	35,207	1,512	3,317	4,480	267,208
2019	181,334	32,726	35,443	1,514	3,337	4,467	258,821
2020	180,502	31,722	35,727	1,326	3,499	4,605	257,381
2021	189,455	34,334	33,917	1,315	3,469	4,501	266,991

2. Sectoral Approach CH₄ Emissions

Unit: thousand tonnes CH₄

Year	Energy	Industrial	Transport	Agriculture	Service	Residential	Total
1990	1.02	1.83	6.07	0.39	0.48	0.33	10.12
1991	1.15	1.93	6.54	0.36	0.47	0.35	10.79
1992	1.12	2.06	7.46	0.36	0.39	0.36	11.76
1993	1.28	2.06	8.08	0.36	0.32	0.36	12.45
1994	1.40	2.10	8.62	0.37	0.39	0.37	13.24
1995	1.62	2.15	9.13	0.37	0.31	0.38	13.96
1996	1.64	2.24	9.58	0.38	0.41	0.39	14.63
1997	1.82	2.34	9.81	0.33	0.32	0.40	15.02
1998	2.02	2.37	10.28	0.27	0.38	0.41	15.74
1999	2.33	2.53	10.65	0.27	0.40	0.44	16.63
2000	2.63	2.77	10.81	0.32	0.41	0.44	17.38
2001	2.79	2.82	10.89	0.33	0.44	0.43	17.70
2002	2.77	2.97	11.12	0.33	0.44	0.42	18.06
2003	3.13	2.91	11.46	0.38	0.50	0.42	18.79
2004	3.23	3.02	11.80	0.40	0.51	0.42	19.38
2005	3.34	3.00	12.12	0.35	0.52	0.43	19.77
2006	3.50	3.11	11.91	0.22	0.52	0.42	19.69
2007	3.59	3.08	11.58	0.15	0.52	0.42	19.33
2008	3.51	2.82	11.01	0.21	0.52	0.41	18.48
2009	3.26	2.69	11.23	0.16	0.52	0.42	18.26
2010	3.43	2.94	11.38	0.15	0.50	0.40	18.80
2011	3.46	3.15	11.50	0.15	0.47	0.40	19.12
2012	3.44	3.02	11.33	0.17	0.44	0.39	18.79
2013	3.41	3.10	11.34	0.17	0.46	0.37	18.86
2014	3.50	2.97	11.42	0.18	0.47	0.36	18.91
2015	3.65	2.95	11.68	0.17	0.47	0.37	19.29
2016	3.67	2.95	12.03	0.17	0.44	0.37	19.65
2017	3.76	2.78	11.81	0.16	0.45	0.36	19.32
2018	3.74	2.34	11.45	0.20	0.39	0.37	18.50
2019	3.61	2.32	11.47	0.20	0.39	0.37	18.37
2020	3.57	2.27	11.60	0.18	0.41	0.38	18.41
2021	3.69	2.36	10.74	0.18	0.41	0.37	17.76

3. Sectoral Approach N₂O Emissions

Unit: thousand tonnes N₂O

Year	Energy	Industrial	Transport	Agriculture	Service	Residential	Total
1990	0.46	0.30	0.98	0.02	0.03	0.01	1.80
1991	0.53	0.32	1.04	0.02	0.03	0.01	1.94
1992	0.61	0.34	1.19	0.02	0.02	0.01	2.19
1993	0.69	0.34	1.28	0.02	0.02	0.01	2.36
1994	0.75	0.34	1.35	0.02	0.02	0.01	2.49
1995	0.81	0.35	1.40	0.02	0.02	0.01	2.61
1996	0.91	0.37	1.44	0.02	0.02	0.01	2.77
1997	1.01	0.38	1.47	0.02	0.02	0.01	2.90
1998	1.11	0.39	1.53	0.02	0.02	0.01	3.08
1999	1.21	0.41	1.57	0.02	0.02	0.01	3.25
2000	1.44	0.45	1.59	0.02	0.02	0.01	3.53
2001	1.54	0.45	1.59	0.02	0.02	0.01	3.63
2002	1.61	0.47	1.66	0.02	0.02	0.01	3.80
2003	1.80	0.46	1.66	0.02	0.03	0.01	3.98
2004	1.86	0.47	1.72	0.02	0.03	0.01	4.12
2005	1.96	0.47	1.77	0.02	0.03	0.01	4.26
2006	2.05	0.49	1.77	0.01	0.03	0.01	4.36
2007	2.14	0.48	1.71	0.01	0.03	0.01	4.37
2008	2.07	0.44	1.60	0.01	0.03	0.01	4.16
2009	1.99	0.42	1.61	0.01	0.03	0.01	4.06
2010	2.02	0.45	1.67	0.01	0.03	0.01	4.19
2011	2.04	0.48	1.69	0.01	0.02	0.01	4.25
2012	2.02	0.46	1.66	0.01	0.02	0.01	4.18
2013	2.00	0.47	1.66	0.01	0.02	0.01	4.17
2014	2.01	0.45	1.68	0.01	0.02	0.01	4.18
2015	1.96	0.44	1.72	0.01	0.02	0.01	4.17
2016	2.00	0.44	1.77	0.01	0.02	0.01	4.24
2017	2.08	0.41	1.75	0.01	0.02	0.01	4.28
2018	2.12	0.35	1.71	0.01	0.02	0.01	4.22
2019	2.03	0.34	1.71	0.01	0.02	0.01	4.11
2020	2.00	0.33	1.72	0.01	0.02	0.01	4.09
2021	2.06	0.34	1.64	0.01	0.02	0.01	4.07

4. Sectoral Approach CO₂ Emissions (including electricity / heat allocation)

Unit: thousand tonnes CO₂

Year	Energy	Industrial	Transport	Agriculture	Service	Residential	Total
1990	15,569	50,485	19,729	3,601	9,414	10,667	109,465
1991	16,025	55,082	20,975	3,465	10,733	12,163	118,443
1992	15,742	58,902	24,138	3,405	10,966	12,906	126,058
1993	17,213	61,829	26,212	3,533	12,062	14,357	135,206
1994	19,122	64,214	27,645	3,586	13,509	15,028	143,103
1995	20,194	67,413	28,929	3,730	14,127	16,417	150,810
1996	21,152	70,273	29,920	3,843	15,749	17,641	158,579
1997	23,959	77,213	30,703	3,589	16,824	18,548	170,835
1998	25,615	80,660	32,035	3,078	18,622	21,508	181,518
1999	26,055	86,612	32,982	3,138	19,604	22,055	190,446
2000	28,541	97,724	33,452	3,576	21,935	23,893	209,122
2001	29,659	98,638	33,489	3,661	23,031	24,478	212,957
2002	29,296	103,389	34,799	3,718	24,112	25,234	220,546
2003	30,969	107,534	34,768	4,169	26,275	26,891	230,607
2004	32,735	112,782	36,144	4,355	27,054	26,859	239,929
2005	35,233	114,369	37,157	4,003	28,577	28,618	247,956
2006	36,815	119,781	37,103	3,102	29,750	28,781	255,331
2007	37,617	124,554	35,904	2,546	29,600	28,994	259,214
2008	34,128	118,534	33,847	2,980	29,429	28,619	247,536
2009	32,871	109,860	34,161	2,563	28,116	28,295	235,868
2010	34,734	122,639	35,287	2,503	28,603	27,943	251,708
2011	35,081	127,001	35,768	2,574	28,252	28,420	257,096
2012	34,627	125,671	34,953	2,687	27,757	27,471	253,166
2013	34,372	127,591	34,888	2,696	27,517	27,006	254,070
2014	37,286	127,371	35,369	2,805	27,915	27,735	258,481
2015	37,149	125,756	36,234	2,812	28,588	27,936	258,476
2016	37,282	127,009	37,324	2,817	29,032	29,519	262,982
2017	37,866	130,626	37,009	2,876	30,425	30,659	269,462
2018	38,041	132,433	36,012	3,082	28,295	29,346	267,208
2019	37,597	126,556	36,244	3,057	26,992	28,376	258,821
2020	36,162	125,437	36,519	2,963	26,590	29,710	257,381
2021	37,095	134,442	34,704	2,991	26,536	31,223	266,991

5. Sectoral Approach CH₄ Emissions (including electricity / heat allocation)

Unit: thousand tonnes CH₄

Year	Energy	Industrial	Transport	Agriculture	Service	Residential	Total
1990	0.29	2.24	6.07	0.41	0.62	0.49	10.12
1991	0.29	2.41	6.54	0.38	0.64	0.54	10.79
1992	0.27	2.55	7.47	0.37	0.56	0.54	11.76
1993	0.30	2.59	8.09	0.38	0.53	0.57	12.45
1994	0.34	2.69	8.62	0.38	0.61	0.59	13.24
1995	0.38	2.82	9.13	0.40	0.59	0.65	13.96
1996	0.39	2.92	9.58	0.40	0.68	0.67	14.63
1997	0.41	3.13	9.81	0.36	0.62	0.69	15.02
1998	0.44	3.25	10.29	0.30	0.71	0.75	15.74
1999	0.48	3.63	10.66	0.30	0.76	0.80	16.63
2000	0.53	4.04	10.82	0.34	0.81	0.83	17.38
2001	0.56	4.25	10.89	0.36	0.83	0.81	17.70
2002	0.55	4.28	11.13	0.36	0.88	0.85	18.06
2003	0.61	4.39	11.47	0.41	1.00	0.91	18.79
2004	0.64	4.61	11.81	0.43	1.00	0.89	19.38
2005	0.68	4.64	12.12	0.38	1.02	0.92	19.77
2006	0.69	4.84	11.91	0.25	1.07	0.92	19.69
2007	0.67	4.84	11.59	0.18	1.09	0.96	19.33
2008	0.59	4.59	11.02	0.24	1.09	0.95	18.48
2009	0.58	4.32	11.24	0.19	1.03	0.91	18.26
2010	0.57	4.73	11.39	0.18	1.03	0.90	18.80
2011	0.56	4.99	11.51	0.18	0.98	0.89	19.12
2012	0.55	4.86	11.35	0.20	0.96	0.87	18.79
2013	0.51	4.95	11.36	0.20	0.98	0.86	18.86
2014	0.57	4.85	11.43	0.21	0.99	0.86	18.91
2015	0.57	4.87	11.70	0.21	1.04	0.91	19.29
2016	0.56	4.86	12.05	0.21	1.02	0.94	19.65
2017	0.57	4.75	11.82	0.20	1.03	0.94	19.32
2018	0.55	4.39	11.47	0.24	0.94	0.92	18.50
2019	0.55	4.25	11.49	0.24	0.93	0.91	18.37
2020	0.53	4.21	11.62	0.21	0.92	0.93	18.41
2021	0.53	4.40	10.76	0.21	0.91	0.95	17.76

6. Sectoral Approach N₂O Emissions (including electricity / heat allocation)

Unit: thousand tonnes N₂O

Year	Energy	Industrial	Transport	Agriculture	Service	Residential	Total
1990	0.09	0.52	0.98	0.03	0.10	0.09	1.80
1991	0.09	0.57	1.04	0.03	0.11	0.10	1.94
1992	0.10	0.64	1.19	0.03	0.12	0.11	2.19
1993	0.11	0.66	1.28	0.03	0.14	0.13	2.36
1994	0.13	0.69	1.35	0.03	0.15	0.14	2.49
1995	0.14	0.72	1.40	0.03	0.16	0.15	2.61
1996	0.16	0.78	1.44	0.04	0.19	0.17	2.77
1997	0.17	0.84	1.47	0.03	0.20	0.18	2.90
1998	0.19	0.89	1.53	0.03	0.22	0.22	3.08
1999	0.21	0.98	1.58	0.03	0.23	0.22	3.25
2000	0.25	1.12	1.60	0.04	0.27	0.25	3.53
2001	0.27	1.18	1.60	0.04	0.28	0.26	3.63
2002	0.28	1.23	1.67	0.04	0.31	0.28	3.80
2003	0.31	1.32	1.67	0.04	0.34	0.31	3.98
2004	0.31	1.39	1.73	0.04	0.34	0.31	4.12
2005	0.30	1.46	1.77	0.04	0.36	0.33	4.26
2006	0.32	1.53	1.77	0.03	0.38	0.33	4.36
2007	0.33	1.59	1.71	0.03	0.38	0.34	4.37
2008	0.29	1.52	1.61	0.03	0.37	0.33	4.16
2009	0.29	1.44	1.62	0.03	0.35	0.33	4.06
2010	0.29	1.54	1.68	0.03	0.34	0.31	4.19
2011	0.29	1.59	1.70	0.03	0.34	0.31	4.25
2012	0.28	1.58	1.67	0.03	0.33	0.30	4.18
2013	0.26	1.60	1.67	0.03	0.33	0.29	4.17
2014	0.27	1.57	1.69	0.03	0.32	0.30	4.18
2015	0.27	1.53	1.73	0.03	0.32	0.29	4.17
2016	0.27	1.53	1.78	0.03	0.33	0.31	4.24
2017	0.28	1.56	1.76	0.03	0.34	0.32	4.28
2018	0.28	1.56	1.72	0.03	0.32	0.31	4.22
2019	0.27	1.50	1.72	0.03	0.31	0.30	4.11
2020	0.27	1.47	1.73	0.03	0.29	0.30	4.09
2021	0.26	1.53	1.65	0.03	0.29	0.32	4.07

7. Reference Approach CO₂ Emissions

Unit: thousand tonnes CO₂

Year	Coal and Coal Products Total	Crude Oil and Petroleum Products Total	Natural Gas	Waste	Total
1990	41,330	65,052	2,945	-	109,328
1991	44,990	68,611	5,259	12	118,873
1992	52,049	68,644	5,331	107	126,131
1993	58,476	74,523	5,182	120	138,301
1994	60,875	76,579	7,066	238	144,758
1995	63,159	81,156	7,489	357	152,161
1996	71,454	80,489	7,883	453	160,279
1997	81,853	82,049	9,130	611	173,644
1998	88,831	85,368	11,611	1,130	186,939
1999	91,819	89,147	11,560	1,654	194,180
2000	108,244	89,895	13,091	2,118	213,348
2001	113,628	84,799	14,563	2,730	215,720
2002	123,085	83,470	16,575	2,730	225,860
2003	130,463	82,112	17,187	3,461	233,224
2004	136,653	84,123	20,226	3,760	244,762
2005	139,366	83,897	20,895	4,171	248,329
2006	146,361	84,799	21,952	3,960	257,072
2007	152,815	80,133	23,775	4,992	261,715
2008	146,510	71,818	25,407	4,776	248,511
2009	140,096	67,442	24,837	4,874	237,250
2010	149,748	69,032	31,135	4,801	254,715
2011	155,703	66,546	34,297	5,248	261,794
2012	152,257	62,530	35,814	5,186	255,788
2013	154,968	61,030	35,664	5,192	256,854
2014	156,840	61,559	37,895	5,092	261,385
2015	151,978	60,849	40,630	5,036	258,493
2016	153,984	63,427	42,468	4,504	264,384
2017	156,153	62,863	46,695	4,522	270,233
2018	156,712	58,076	47,140	5,299	267,226
2019	153,812	54,431	46,435	5,506	260,185
2020	150,565	50,046	50,152	5,039	255,802
2021	159,833	45,195	54,563	6,113	265,704

8. Reference Approach CH₄ Emissions

Unit: thousand tonnes CH₄

Year	Coal and Coal Products Total	Crude Oil and Petroleum Products Total	Natural Gas	Waste	Total
1990	0.38	2.61	0.05	-	3.04
1991	0.39	2.75	0.09	0.01	3.25
1992	0.46	2.76	0.10	0.03	3.35
1993	0.51	3.00	0.09	0.03	3.63
1994	0.53	3.08	0.13	0.09	3.83
1995	0.59	3.28	0.13	0.15	4.15
1996	0.69	3.26	0.14	0.23	4.32
1997	0.80	3.33	0.16	0.31	4.59
1998	0.87	3.47	0.21	0.40	4.95
1999	0.89	3.62	0.21	0.65	5.37
2000	1.05	3.67	0.23	0.81	5.77
2001	1.11	3.46	0.26	1.09	5.92
2002	1.19	3.39	0.30	1.12	6.00
2003	1.19	3.36	0.31	1.45	6.31
2004	1.35	3.42	0.36	1.51	6.64
2005	1.40	3.42	0.37	1.51	6.69
2006	1.46	3.43	0.39	1.55	6.83
2007	1.48	3.24	0.42	1.63	6.77
2008	1.44	2.92	0.45	1.65	6.46
2009	1.42	2.75	0.44	1.59	6.20
2010	1.47	2.80	0.55	1.61	6.43
2011	1.55	2.70	0.61	1.65	6.52
2012	1.51	2.56	0.64	1.66	6.36
2013	1.51	2.49	0.64	1.66	6.31
2014	1.55	2.49	0.68	1.65	6.37
2015	1.49	2.46	0.72	1.71	6.38
2016	1.52	2.57	0.76	1.68	6.53
2017	1.53	2.54	0.83	1.63	6.54
2018	1.51	2.36	0.84	1.71	6.42
2019	1.50	2.22	0.83	1.72	6.27
2020	1.48	2.04	0.89	1.69	6.11
2021	1.58	1.86	0.97	1.69	6.10

9. Reference Approach N₂O Emissions

Unit: thousand tonnes N₂O

Year	Coal and Coal Products Total	Crude Oil and Petroleum Products Total	Natural Gas	Waste	Total
1990	0.66	0.52	0.01	-	1.18
1991	0.71	0.55	0.01	0.00	1.27
1992	0.83	0.55	0.01	0.00	1.39
1993	0.93	0.60	0.01	0.00	1.54
1994	0.97	0.61	0.01	0.01	1.60
1995	1.00	0.65	0.01	0.02	1.69
1996	1.13	0.65	0.01	0.03	1.83
1997	1.30	0.66	0.02	0.04	2.02
1998	1.41	0.69	0.02	0.05	2.17
1999	1.45	0.72	0.02	0.09	2.28
2000	1.71	0.73	0.02	0.11	2.58
2001	1.80	0.69	0.03	0.15	2.66
2002	1.95	0.68	0.03	0.15	2.80
2003	2.07	0.67	0.03	0.19	2.96
2004	2.16	0.68	0.04	0.20	3.08
2005	2.21	0.68	0.04	0.20	3.13
2006	2.32	0.68	0.04	0.21	3.24
2007	2.42	0.65	0.04	0.22	3.32
2008	2.32	0.58	0.05	0.22	3.17
2009	2.22	0.55	0.04	0.21	3.02
2010	2.37	0.56	0.06	0.21	3.20
2011	2.46	0.54	0.06	0.22	3.28
2012	2.41	0.51	0.06	0.22	3.20
2013	2.45	0.50	0.06	0.22	3.24
2014	2.48	0.50	0.07	0.22	3.26
2015	2.40	0.49	0.07	0.23	3.19
2016	2.44	0.51	0.08	0.22	3.25
2017	2.47	0.51	0.08	0.22	3.28
2018	2.48	0.47	0.08	0.23	3.26
2019	2.43	0.44	0.08	0.23	3.19
2020	2.38	0.40	0.09	0.23	3.10
2021	2.53	0.37	0.10	0.23	3.22

10. Fuel Combustion CO₂ Emission Indicators

Year	CO ₂ Emissions (thousand tonnes CO ₂)	CO ₂ Emissions Intensity (kilogram CO ₂ /NTD)	Emissions Per capita (tonnes of CO ₂ per capita)
1990	109,465	0.02121	5.41
1991	118,443	0.02118	5.79
1992	126,058	0.02081	6.10
1993	135,206	0.02090	6.49
1994	143,103	0.02057	6.80
1995	150,810	0.02036	7.11
1996	158,579	0.02016	7.41
1997	170,835	0.02048	7.92
1998	181,518	0.02088	8.34
1999	190,446	0.02053	8.68
2000	209,122	0.02120	9.45
2001	212,957	0.02190	9.56
2002	220,546	0.02150	9.83
2003	230,607	0.02157	10.22
2004	239,929	0.02098	10.59
2005	247,956	0.02058	10.91
2006	255,331	0.02003	11.19
2007	259,214	0.01903	11.31
2008	247,536	0.01803	10.76
2009	235,868	0.01746	10.22
2010	251,708	0.01690	10.88
2011	257,096	0.01665	11.08
2012	253,166	0.01604	10.88
2013	254,070	0.01571	10.88
2014	258,481	0.01526	11.04
2015	258,476	0.01504	11.02
2016	262,982	0.01498	11.18
2017	269,462	0.01486	11.44
2018	267,208	0.01433	11.33
2019	258,821	0.01347	10.97
2020	257,381	0.01296	10.91
2021	266,991	0.01262	11.38