

附件一、

IPCC 第五次評估報告溫暖化潛勢值

IPCC 第五次評估報告溫暖化潛勢值

化學名稱 (縮寫或通稱)	化學式	生命週期 (年)	GWP(20 年平均)	GWP(100 年平均)
Carbon dioxide	CO ₂	>500 (Ber model, 與大氣中 CO ₂ 濃度相關)	1	1
Methane	CH ₄	12.4	84	28
Nitrous Oxide	N ₂ O	121.0	264	265
Hydrofluorocarbons				
HFC-23	CHF ₃	222.0	10,800	12,400
HFC-32	CH ₂ F ₂	5.2	2,430	677
HFC-125	CHF ₂ CF ₃	28.2	6,090	3,170
HFC-134a	CH ₂ FCF ₃	13.4	3,710	1,300
HFC-143a	CH ₃ CF ₃	47.1	6,940	4,800
HFC-152a	CH ₃ CHF ₂	1.5	506	138
HFC-227ea	CF ₃ CHFCF ₃	38.9	5,360	3,350
HFC-236fa	CF ₃ CH ₂ CF ₃	242.0	6,940	8,060
HFC-245fa	CHF ₂ CH ₂ CF ₃	7.7	2,920	858
HFC-365mfc	CH ₃ CF ₂ CH ₂ CF ₃	8.7	2,660	804
HFC-43-10mee	CF ₃ CHFCHFCF ₂ CF ₃	16.1	4,310	1,650
Fully Fluorinated Species				
Nitrogen trifluoride	NF ₃	500.0	12,800	16,100
Sulphur hexafluoride	SF ₆	3,200.0	17,500	23,500
Sulphur pentafluoride	SF ₅ CF ₃	800.0	13,500	17,400
PFC-14	CF ₄	50,000.0	4,880	6,630
PFC-116	C ₂ F ₆	10,000.0	8,210	11,100
PFC-218	C ₃ F ₈	2,600.0	6,640	8,900
PFC-318	c-C ₄ F ₈	3,200.0	7,110	9,540
PFC-31-10	C ₄ F ₁₀	2,600.0	6,870	9,200
PFC-41-12	n-C ₅ F ₁₂	4,100.0	6,350	8,550
PFC-51-14	n-C ₆ F ₁₄	3,100.0	5,890	7,910
PFC-91-18	C ₁₀ F ₁₈	2,000.0	5,390	7,190

說明：

1. 現行 UNFCCC 規範，使用 IPCC AR5 中 GWP 百年平均值，作為計算溫室氣體當量之基礎。
2. 詳細資料請參考 IPCC AR5，如下網址：
https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf
3. UNFCCC 規範，請參閱第決議文 decision 18/CMA.1 附件，如下網址：
https://unfccc.int/sites/default/files/resource/cma2018_3_add2_new_advance.pdf#page=25

附件二、

2023 年能源平衡表 —
OECD 能源統計格式（熱值單位）

2023年能源平衡表（公噸油當量單位）_Yearly Energy Balance (Calorific Unit)
112年(2023)

單位：公噸油當量,10⁷千卡(tonne of oil equivalent;10⁷kilocalorie)

項 目	1 煤及煤產品 Coal and Coal Products C2 ~ C12	2 煙煤-煉焦煤 Bituminous Coal- Coking Coal	3 煙煤-燃料煤 Bituminous Coal- Steam Coal	4 無煙煤 Anthracite	5 亞煙煤 Sub-bituminous Coal	6 褐煤 Lignite	7 泥煤 Peat	8 焦炭 Coke Oven Coke	9 煤球 Patent Fuel	10 焦爐氣 Coke Oven Gas	11 高爐氣 Blast Furnace Gas	12 轉爐氣 Oxygen Steel Furnace Gas
1 自產												
2 + 進口	34,131,300	4,133,472	24,807,769	31,462	5,055,187			103,410				
3 - 出口	34,603			828				33,775				
4 - 國際海運												
5 - 國際航空												
6 - 行業運輸	-742,961	-31,976	-593,112	-3,252	-97,302			-17,319				
7 - 初級能源總供給	34,839,658	4,165,448	25,400,880	33,886	5,152,489			86,954				
8 產品間轉換(轉出)												
9 - 統計差異	150,361	276,353	-263,413	-40	119,191			18,270			-0	-0
10 - 轉變投入	35,760,297	3,889,095	23,137,529		5,033,298			2,965,942		293,548	352,835	88,051
11 煉焦工場/煤製品業	5,044,187	3,889,095	1,155,092									
12 高爐工場	4,083,872		1,117,929					2,965,942				
13 煉油廠												
14 石化工廠												
15 公用發電廠	18,818,663		13,785,365		5,033,298							
16 自用發電廠	332,653		332,653									
17 公用汽電共生廠	329,432		329,432									
18 自用汽電共生廠	7,151,490		6,417,057							293,548	352,835	88,051
19 + 轉變產出合計	6,373,207							3,648,673		1,107,247	1,396,320	220,967
20 轉變產出	6,373,207							3,648,673		1,107,247	1,396,320	220,967
21 產品間轉換(轉入)												
22 - 能源部門自用	994,365									163,992	765,498	64,876
23 煤礦業												
24 煉焦工場/煤製品業	462,790											
25 高爐工場	531,575									137,088	260,826	64,876
26 石油及天然氣礦業										26,903	504,672	
27 煉油廠												
28 發電廠												
29 抽水用電												
30 汽電共生廠												
31 氣體燃料供應業												
32 - 運輸	76,049							66,477		6	7,656	1,910
33 = 最終消費	4,231,792		2,526,765	33,926				684,937		649,702	270,331	66,130
34 能源消費	4,091,389		2,526,765	3,292				575,168		649,702	270,331	66,130
35 工業部門	4,091,389		2,526,765	3,292				575,168		649,702	270,331	66,130
36 砂、石採取及其他礦業(不含煤、油、氣)												
37 食品飲料及菸草製造業	7,373		7,373									
38 紡織成衣及服飾品製造業	173,185		173,185									
39 皮革、毛皮及其製品製造業												
40 木竹製品及家具製造業												
41 紙漿、紙及紙製品製造業	411,365		411,365									
42 印刷及資料儲存媒體複製業												
43 化學材料及肥料製造業	1,146,612		1,146,491							122		
44 化學原材料製造業	1,003,264		1,003,264									
45 (基本化學工業)	(40,956)		(40,956)									
46 (石油化工原料製造業)	(962,308)		(962,308)									
47 肥料及氮化合物製造業												
48 人造纖維製造業	131,014		131,014									
49 塑膠及合成橡膠原料製造業	12,214		12,214									
50 其他化學材料及肥料製造業	122									122		
51 化學製品及醫藥用品製造業	11,889		11,889									
52 橡膠製品製造業												
53 塑膠製品製造業	836		836									
54 非金屬礦物製品製造業	763,202		763,202									
55 水泥及其製品製造業	743,204		743,204									
56 其他	19,999		19,999									
57 (耐火、黏土建材及其他陶瓷製品製造業)												
58 (玻璃及其製品製造業)												
59 基本金屬製造業	1,564,503			3,292				575,168		649,580	270,331	66,130
60 鋼鐵製造業	1,564,503			3,292				575,168		649,580	270,331	66,130
61 非鐵金屬製造業												
62 (鋁製造業)												
63 金屬製品製造業												
64 機械設備製造及維修業												
65 電子產品及電力設備製造業	12,424		12,424									
66 (電子等組件製造業)												
67 運輸工具及其零件製造業												
68 精密光學醫學設備及鐘錶製造業												
69 其他製造業												
70 用水供應及污染整治業												
71 營建工程業												
72 其他												
73 運輸部門												
74 國內航空												
75 公路												
76 鐵路												
77 管線運輸												
78 國內水運												
79 其他												
80 農業部門												
81 農牧及林業												
82 漁業												
83 服務業部門												
84 批發及零售業												
85 運輸及倉儲業												
86 運輸服務業												
87 倉儲業												
88 郵政及遞送服務業												
89 住宿及餐飲業												
90 出版影音及資訊訊業												
91 (電信業)												
92 金融及保險業												
93 不動產業												
94 專業、科學及技術服務業												
95 支援服務業												
96 公共行政及國防												
97 教育業												
98 醫療保健及社會工作服務業												
99 藝術、娛樂及休閒服務業												
100 其他												
101 住宅部門												
102 非能源消費	140,403			30,634				109,769				
103 工業、轉變及能源部門	140,403			30,634				109,769				
104 (石化原料用)												
105 運輸部門												
106 其他												
電能與熱能產出												
1 發電量(千度)	119,157,090		91,673,548		23,857,531					1,438,437	1,750,806	436,767
2 公用發電廠	89,124,884		65,267,353		23,857,531							
3 自用發電廠	1,928,869		1,928,869									
4 公用汽電共生廠	1,156,571		1,156,571									
5 自用汽電共生廠	26,946,765		23,320,755							1,438,437	1,750,806	436,767
6 熱能(公噸)	21,967,918		20,837,020							410,596	577,144	143,158
7 汽電共生廠	21,967,918		20,837,020							410,596	577,144	143,158

13 原油及石油產品 Crude Oil and Petroleum Products C14 ~ C36	14 原油 Crude Oil	15 煉油廠原料 Refinery Feedstocks	16 添加劑/含氧化合物 Additives/ Oxygenates	17 煉油氣 Refinery Gas	18 液化石油氣 LPG	19 (丙烷混合氣) (Propane Air)	20 天然汽油 Natural Gasoline	21 石油腦 Naphthas	22 車用汽油 Motor Gasoline	23 (無鉛汽油) (Unleaded Gasoline)	24 航空汽油 Aviation Gasoline	25 航空燃油-汽油型 Jet Fuel- Gasoline Type	26 航空燃油-煤油型 Jet Fuel- Kerosene Type	27 煤油 Kerosene	28 柴油 Diesel Oil
310,860 51,753,628 14,722,206 1,236,696 2,587,217 61,159 33,457,210 2,693,209 -302,048 43,511,479	1,474 42,160,361	309,387	280,962 649,916		1,249,964			6,826,061 197,869	150,354 (3,092,619)	150,354 (3,092,619)			71,787 647,654		19,103 7,670,747 118,316
2,587,217 61,159 33,457,210 2,693,209 -302,048 43,511,479	45,520 42,116,314	378 309,009	-144,022 -224,932		-24,895 1,274,859 113,307			-188,976 6,817,168 1,852,542 66,742	-100,001 (103,940)	-100,001 (103,940)			2,587,217 39,862 -3,202,946 93,011 244,194	281 -281 82	166,842 -7,936,802 49,369 -168,635 55,410
42,517,349 787,026 1,000 1,225 204,879	42,139,161	97,225	280,962												
46,705,199 44,282,838 2,422,361 2,583,597			531,312 531,312	1,953,378 1,953,378	1,109,382 992,770 116,612			9,386,652 9,386,652	10,422,455 (8,273,863)	10,422,455 (8,273,863)		3,807,322 3,807,322	3,898 3,898		12,907,343 12,836,119 71,224 28,608
2,581,693 1,227 653 24		19,678		1,862,994	164,329				2,903 (2,903)				0	33	28,499 101 8
2,581,693 1,227 653 24		19,678		1,862,994	164,329				1,660 (1,227)	1,660 (1,227)			0	33	28,499 101 8
31,676,173 14,950,764		139,712 139,712	25,418		2,100,615 1,397,236			14,284,537	7,572,444 (7,572,444)	7,572,444 (7,572,444)			267,170 267,170	3,501 3,501	5,005,788 5,005,788
930,973 5,520 47,397 25,922 2,480 1,705 25,794 2,286 439,226 280,447 (28,420) (252,027) 28 17,423 25,748 115,579 46,278 3,290 17,352 125,049 26,623 98,426 (16,591) (59,857) 99,908 70,762 29,146 (23,621) 23,049 7,713 7,509 (4,864) 22,719 33 769 12,862 14,114		139,712 139,593 (139,593) 119			270,057 2,044 19,849 5,770 1,942 238 1,906 2,092 154,143 37,515 (23,633) (13,883)				4,616 (4,616)			3,261		101,668 1,958 12,470 242 9 444 83 48,333 47,012 (47,012) 66 1,256	
46,278 3,290 17,352 125,049 26,623 98,426 (16,591) (59,857) 99,908 70,762 29,146 (23,621) 23,049 7,713 7,509 (4,864) 22,719 33 769 12,862 14,114					8,987 2,262 7,609 7,442 109 7,333 (5,650) (1,683) 21,375 14,093 7,282 (7,280) 18,299 3,564 2,889 (1,539) 9,301 33 0 311				4 (4) 6 (6) 16 (16) 21 (21) 15 (15) 5 (5) (5) (5) 237 (237) 237 (237) 1 (1) 209 (209) 145 (145) (31) (31) 3,374 (3,374) 21 (21) 329 (329) 142 (142)			20 1 24 2,504 700 4		1,598 23 430 11,054 9,980 1,074 (302) (706) 4,392 4,392 1 (1) 731 230 3,064 (3,045) 4,317 13 2,359 9,915	
11,647,002 70,411 11,483,096 8,057 85,438					8,460 8,460				7,525,955 (7,525,955)	7,525,955 (7,525,955)			70,411 70,411		3,999,561 3,948,681 8,057 42,823
490,462 64,838 425,624									8,100 (8,100)	8,100 (8,100)			202		463,081 55,616 407,466
992,025 172,726 26,922 23,511 128 3,283 228,287 3,944 3,887 4,030 34 8,192 8,684 437,887 2,642 2,640 381 95,656					228,417 627 627 225,022				33,773 (33,773)			193,295	3,501	441,478 122,514 17,737 16,732 128 878 575 774 768 3,274 27 7,648 867 226,120 2,380 1,805 168 57,587	
890,303 16,725,409 16,725,409 (14,987,915)			25,418 25,418		703,378 703,378 (703,378)			14,284,537 14,284,537 (14,284,537)							
3,775,616 3,146,363 2,453 3,865 622,935 2,252,280 2,252,280					500,939 500,939 1,303,199 1,303,199										218,872 212,697 549 884 4,741 2,446 2,446

29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
燃料油	白精油	潤滑油	柏油	溶劑油	石蠟	石油焦	其他石油產品	天然氣	(自產)天然氣	(進口)液化天然氣	生質能及廢棄物	生質能	固態生質能	液態生質能	氬態生質能
Fuel Oil	White Spirits	Lubricants	Asphalts	Solvents	Paraffin Waxes	Petroleum Coke	Other Petroleum Products	Natural Gas	(Indigenous) Natural Gas	(Imported) LNG	Biomass and Waste	Biomass	Solid Biomass	Liquid Biomass	Biogas
								C38 ~ C39			C41 + C45				
521,386		238,402	78,547	57,504	22,970	13,628	62,599	72,745	72,745	23,957,297	1,557,724	174,327	146,680	8	27,638
1,132,141		514,366	215,005	43,505	766	486,964	70,654	23,957,297			51	51		51	
1,118,376		5													
167,526	-25	11,262	4,227	-2,333	0	-2,356	87,868	306,318	124,518	181,800	3	3		3	
-1,896,657	25	-287,231	-140,685	16,332	22,205	-470,981	-95,923	23,723,724	-51,773	23,775,497	1,557,772	174,374	146,680	56	27,638
480,509	7	274		348			2	25,494,152	25,494,152	25,494,152	44	44		44	
-322,770								10,600	551	10,049	0	0		0	
782,503							7,632	18,596,591	740	18,595,851	1,248,735	140,346	114,572		25,774
								30,270		30,270					
733,637								18,345,874		18,345,874					
858								34,401		34,401	155,972	130,790	106,383		24,407
924								186,046	740	185,306	53,525	340	340		
47,084							7,632				1,039,238	9,216	7,848		1,367
3,487,155		706,793	491,833	48,609		878,558	970,511	25,715,675	1,720,707	23,994,969					
3,487,155		706,793	491,833	48,609		878,558	884,579	25,715,675	1,720,707	23,994,969					
							85,932								
95,304						389,534	20,215	562,366	17,689	544,677					
94,752						389,534	20,215	561,528	17,603	543,924					
								56	56						
552								753		753					
								30	30	0					
554,954	18	419,287	351,148	64,593	22,205	18,044	846,739	4,775,691	1,649,953	3,125,737	308,992	33,984	32,108	12	1,864
554,954							9,958	4,775,691	1,649,953	3,125,737	308,992	33,984	32,108	12	1,864
401,701							9,958	3,612,322	660,705	2,951,617	308,981	33,972	32,108		1,864
1,518								289,250	62,058	227,192	17,897	17,897	17,897		
15,025								186,259	62,356	123,903					
19,905								7,343	1,137	6,206					
538								4,410	1,875	2,536					
1,454								54,876	14,186	40,691	50,812	15,586	14,199		1,387
23,406								6,176	2,254	3,922					
106								923,420	106,778	816,642	543	489	12		477
97,030								577,472	11,166	566,306	477	477			477
56,327								(179,432)	(6,874)	(172,557)					
(4,788)								(398,040)	(4,292)	(393,748)	(477)	(477)		(477)	
(51,539)								5,371	3,502	1,869					
28								62,963	29,223	33,740	12	12	12		
17,238								262,041	58,185	203,856	54				
23,437								15,573	4,701	10,871					
								84,974	29,755	55,219					
35,669								58,773	11,390	47,383					
999								234,359	30,204	204,155					
9,295								307,342	144,604	162,738					
106,532								14,474	4,431	10,043					
16,519								292,868	140,173	152,695					
90,013								(126,687)	(103,871)	(22,816)					
(10,639)								(129,941)	(31,205)	(98,736)					
(57,462)								567,045	28,970	538,079					
63,937							9,958	490,088	17,401	472,687					
42,074							9,958	76,961	11,569	65,392					
21,863								(52,237)	(4,167)	(48,070)					
(16,340)								288,341	18,684	269,657					
3,994								10,973	6,339	4,635					
1,270								364,361	119,391	244,969					
1,347								(283,818)	(116,950)	(166,868)					
(249)								34,345	14,761	19,584					
5,027								69	33	36					
								177,148	4,604	172,543					
734								9,711	118	9,594	239,728				
10,174								155	60	95					
3,742								2,987	1,148	1,839					
42,614											12	12		12	
											12	12		12	
42,614															
19,078								3,822		3,822					
1,123								3,822		3,822					
17,955															
91,560								413,620	307,986	105,633					
50,212								25,341	22,988	2,353					
3,468								2,165	2,072	94					
3,468								2,094	2,001	94					
								70	70						
1,311								1	1						
-0								251,064	183,480	67,584					
-0								167	147	20					
								120	120						
7								989	977	13					
73								576	573	4					
135								6,812	6,672	140					
345								945	515	430					
56								14,993	9,575	5,418					
451								15,159	10,600	4,559					
175								33,584	24,268	9,316					
35,328								12,278	9,259	3,019					
								49,546	36,862	12,684					
								745,927	681,261	64,666					
	18	419,287	351,148	64,593	22,205	18,044	836,781								
	18	419,287	351,148	64,593	22,205	18,044	836,781								
3,026,869							28,937	111,629,599	20,938	111,608,661	3,738,063	238,612	171,191		67,420
2,933,666								110,465,219		110,465,219					
1,904								110,061		110,061	318,878	186,228	126,764		59,465
2,980											158,263	1,062	1,062		
88,318							28,937	1,054,319	20,938	1,033,381	3,260,922	51,321	43,366		7,955
495,101								440,102		440,102	831,440	20,725	20,725		
495,101							25,888	440,102		440,102	831,440	20,725	20,725		

45 廢棄物 Waste	46 核能 Nuclear	47 水力 Hydro	48 地熱 Geothermal	49 太陽能電 Solar PV	50 風力 Wind	51 電力 Electricity	52 太陽能熱能 Solar Thermal	53 熱能 Heat	54 總計 Total C1+C13+C37+C40 +C46 ~ C53	Item
1,383,398	4,639,189	340,820	19,921	1,110,147	536,493				3,948,711 114,481,464 14,756,809 1,236,696 2,587,217 -375,481 100,224,934	1 Indigenous Production 2 + Import 3 - Exports 4 - International Marine Bunkers 5 - International Civil Aviation 6 - Stock Changes 7 = Total Primary Energy Supply
1,383,398	4,639,189	340,820	19,921	1,110,147	536,493				28,187,405 -325,057	8 - Transfers(Input) 9 - Statistical Differences
0						-183,970				
1,108,389	4,639,189	603,217	19,921	1,110,147	536,493				106,026,070 5,044,187 4,083,872 42,547,619	10 - Transformation Input 11 Coke Ovens/Manufacture of Coal Products 12 Blast Furnaces 13 Petroleum Refineries 14 Petrochemical Industry 15 Public Electricity Plants 16 Autoproducer Electricity Plants 17 Public Cogeneration Plants 18 Autoproducer Cogeneration Plants
25,182 53,185 1,030,022	4,639,189	602,776 441	15,352 4,569	332,887 777,260	536,458 35				44,078,224 1,271,931 418,584 8,581,653	
		262,397 262,397				24,276,648 24,276,648		1,922,540 1,922,540	105,255,667 77,117,631 28,138,036	19 + Transformation Output Total 20 Transformation Output 21 Transfers(Output)
						1,586,793		389,621	6,116,742	22 - Energy Sector Own Use 23 Coal Mining 24 Coke Ovens/Manufacture of Coal Products 25 Blast Furnaces 26 Oil and Gas Extraction 27 Petroleum Refineries 28 Electricity Plants 29 Electricity to Pump Up 30 Cogeneration Plants 31 Gas Companies 32 - Losses
						919			463,709 531,575 2,966	
						202,787 869,423 320,959 147,596 42,142		363,469	3,709,476 870,705 320,959 175,155 42,195	
						679,973			756,022	
275,009						22,193,852		1,532,918	64,719,419	33 = Total Final Consumption
275,009						22,193,852		1,532,918	47,853,607	34 Energy Consumption
275,009						13,158,104		1,532,918	23,634,688	35 Industrial Sector 36 Mining and Quarrying(excluding coal,oil and gas) 37 Food, Beverage and Tobacco 38 Textile,Wearing Apparel and Accessories 39 Leather and Fur 40 Wood, Bamboo and Furniture 41 Pulp, Paper and Paper Products 42 Printing and Reproduction of Recorded Media 43 Chemical Material and Fertilizers 44 Raw Chemical Materials 45 (Basic Industrial Chemicals) 46 (Petrochemical Materials) 47 Fertilizers and Nitrogen Compounds 48 Artificial Fibers 49 Plastic and Synthetic Rubber Materials 50 Other Chemical Materials 51 Medicinal and other Chemical Products 52 Rubber Products 53 Plastic Products 54 Non-metallic Mineral Products 55 Cement and Cement Products 56 Others 57 (Porcelain and Ceramic Products) 58 (Glass and Glass Products)
						23,152 436,147 341,486 10,861 30,352 298,289 43,487 2,414,468 1,809,822 (527,549) (1,282,274) 14,113 283,517 237,432 69,583 116,225 75,841 388,709 459,417 156,079 303,337 (34,994) (222,938) 1,567,419 1,333,135 234,284 (62,554) 507,036 227,277 5,438,849 (5,123,799) 219,006 100,117 95,163 262,965 101,840		28,672 816,260 769,601 0 36,467 7,869 1,357,304 1,264,824 (301,807) (963,017) 19,512 68,106 539 23,835 12,643 16 55,415 1,655,010 940,380 714,630 (178,271) (412,737) 8,231 4,627 3,604 (3,604) 1,016 29,311 (29,311) 276,070 100,218 168 525,267 116,109 2,987		
									3,807,110 3,463,115 343,995 142,016 819,442 245,963 5,852,453 (5,441,793) 276,070 100,218 273,247 525,267 116,109 2,987	59 Basic Metals 60 Iron and Steel 61 Others 62 (Aluminum) 63 Fabricated Metal Products 64 Machinery and Equipments 65 Electronic Products and Electrical Equipment 66 (Electronic Parts and Components) 67 Transport Equipments and Parts 68 Precision, Optical, Medical Equipment, Watches and Clocks 69 Not elsewhere specified Manufacturing 70 Water Supply and Remediation Activities 71 Construction 72 Non-Specified
						159,639			11,806,652 70,411 11,506,504 141,950 2,349 85,438	73 Transport Sector 74 Domestic Air 75 Road 76 Rail 77 Pipeline Transport 78 Internal Navigation 79 Non-Specified
						281,852 195,269 86,584			776,135 263,928 512,207	80 Agriculture Sector 81 Agriculture, Animal Husbandry and Forestry 82 Fishing and Aquaculture
						4,163,339 1,013,546 293,446 172,492 110,620 10,334 677,870 338,215 214,506 127,153 61,646 91,879 58,046 377,628 285,994 302,422 127,181 408,313 4,430,918		5,568,984 1,211,613 322,534 198,098 110,818 13,618 1,157,221 342,326 218,514 132,172 62,257 106,883 67,674 830,508 303,795 338,646 139,840 553,515 6,067,148	83 Service Sector 84 Wholesale and Retail 85 Transportation and Storage 86 Transport Services 87 Warehousing and Storage 88 Postal and Courier 89 Accommodation and Food Service 90 Information and Communication 91 (Telecommunications) 92 Finance and Insurance 93 Real Estate 94 Professional, Scientific and Technical 95 Support Service 96 Public Administration and Defence 97 Education 98 Human Health and Social Work 99 Arts, Entertainment and Recreation 100 Not elsewhere specified Service	
									16,865,812 16,865,812 (14,987,915)	101 Residential Sector 102 Non-Energy Use in Industry/Transf./Energy 103 (Feedstocks) 104 in Transport 105 in Other Sectors 106 Electricity and Heat Output
3,499,451	17,801,952	7,014,148	23,164	12,908,690	6,238,287				282,286,610	1 Electricity Generated (MWh)
132,650	17,801,952	7,009,019	17,851	3,870,778	6,237,878				237,673,946	2 Public Electricity Plants
157,201		5,129	5,313	9,037,912	409				11,298,963	3 Autoproducer Electricity Plants
3,209,601									1,428,760	4 Public Cogeneration Plants
810,715									31,884,941	5 Autoproducer Cogeneration Plants
810,715									25,491,739	6 Heat Generated (MT)
									25,491,739	7 Cogeneration Plants

附件三、

能源部門燃料燃燒二氧化碳排放指標

我國能源部門燃料燃燒二氧化碳排放指標

項目 年度	CO ₂ 排放量		碳排放密集度		人均排放	
	萬公噸	成長率 (%)	公斤 CO ₂ / 元	成長率 (%)	公噸 CO ₂ / 人	成長率 (%)
1990	10,947	–	0.02121	–	5.41	–
1991	11,844	8.20	0.02118	–0.16	5.79	7.01
1992	12,606	6.43	0.02081	–1.74	6.10	5.41
1993	13,521	7.26	0.02090	0.41	6.49	6.26
1994	14,310	5.84	0.02057	–1.55	6.80	4.90
1995	15,081	5.39	0.02036	–1.04	7.11	4.49
1996	15,858	5.15	0.02016	–0.97	7.41	4.30
1997	17,084	7.73	0.02048	1.58	7.92	6.78
1998	18,152	6.25	0.02088	1.97	8.34	5.28
1999	19,045	4.92	0.02053	–1.70	8.68	4.08
2000	20,872	9.60	0.02116	3.09	9.43	8.74
2001	21,255	1.84	0.02186	3.28	9.54	1.14
2002	22,012	3.56	0.02146	–1.82	9.81	2.86
2003	22,984	4.41	0.02150	0.18	10.19	3.80
2004	23,993	4.39	0.02098	–2.40	10.59	4.00
2005	24,796	3.35	0.02058	–1.93	10.91	2.97
2006	25,533	2.97	0.02003	–2.64	11.19	2.55
2007	25,921	1.52	0.01903	–4.99	11.31	1.11
2008	24,754	–4.51	0.01803	–5.26	10.76	–4.84
2009	23,587	–4.71	0.01746	–3.15	10.22	–5.05
2010	25,171	6.72	0.01690	–3.20	10.88	6.43
2011	25,710	2.14	0.01665	–1.48	11.08	1.91
2012	25,320	–1.52	0.01605	–3.66	10.88	–1.84
2013	25,411	0.36	0.01571	–2.07	10.89	0.04
2014	25,848	1.72	0.01526	–2.86	11.04	1.46
2015	25,848	0.00	0.01504	–1.45	11.02	–0.25
2016	26,298	1.74	0.01498	–0.41	11.18	1.51
2017	26,946	2.46	0.01486	–0.82	11.44	2.29
2018	26,746	–0.74	0.01435	–3.43	11.34	–0.85
2019	25,908	–3.13	0.01348	–6.01	10.98	–3.20
2020	25,769	–0.54	0.01297	–3.79	10.93	–0.48
2021	26,728	3.72	0.01262	–2.72	11.39	4.22
2022	25,827	–3.37	0.01189	–5.81	11.08	–2.76
2023	25,065	–2.95	0.01139	–4.18	10.74	–3.04
年均成長率 (%)						
2023 相較 2005	1.09		–44.64		–1.57	
2023 相較 2017	–6.28		–20.61		–5.33	
2023 相較 2022	–2.95		–4.18		–3.04	

註：本表排放指標係依據燃料燃燒二氧化碳排放量計算，未包括其他溫室氣體。
資料來源：經濟部能源署，2023 年燃料燃燒之二氧化碳排放量統計與分析，2024 年 8 月。

附件四、

各部門燃料燃燒排放量（含間接排放）

歷年各部門燃料燃燒二氧化碳排放量（含間接排放）

（單位：千公噸二氧化碳當量）

年度	能源部門	工業部門	運輸部門	農業部門	服務業部門	住宅部門	總排放量
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	14,128	16,416	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	3,079	18,624	21,507	181,518
1999	26,055	86,612	32,982	3,138	19,604	22,055	190,446
2000	28,541	97,283	33,452	3,576	21,935	23,936	208,724
2001	29,659	98,215	33,509	3,661	23,031	24,478	212,554
2002	29,296	102,966	34,799	3,718	24,112	25,234	220,123
2003	30,969	106,769	34,768	4,169	26,275	26,891	229,841
2004	32,735	112,782	36,144	4,355	27,055	26,859	239,929
2005	35,233	114,369	37,157	4,003	28,577	28,618	247,956
2006	36,815	119,780	37,103	3,102	29,750	28,781	255,330
2007	37,617	124,555	35,904	2,546	29,600	28,994	259,215
2008	34,128	118,534	33,847	2,980	29,429	28,619	247,537
2009	32,871	109,860	34,162	2,563	28,115	28,295	235,868
2010	34,734	122,639	35,288	2,503	28,601	27,943	251,708
2011	35,081	127,001	35,770	2,574	28,251	28,420	257,097
2012	34,627	125,706	34,956	2,687	27,754	27,471	253,201
2013	34,372	127,630	34,893	2,696	27,513	27,005	254,109
2014	37,286	127,370	35,375	2,805	27,910	27,734	258,480
2015	37,149	125,756	36,241	2,812	28,581	27,936	258,475
2016	37,282	127,008	37,336	2,817	29,022	29,518	262,982
2017	37,866	130,626	37,026	2,876	30,410	30,657	269,461
2018	37,963	132,865	36,008	3,085	28,544	28,994	267,458
2019	37,525	127,041	36,239	3,061	27,214	28,004	259,083
2020	36,197	125,933	36,506	2,966	26,785	29,307	257,693
2021	37,045	135,192	34,682	2,993	26,612	30,755	267,281
2022	36,641	126,752	35,514	2,977	27,076	29,311	258,271
2023	33,845	120,779	35,535	3,154	27,726	29,610	250,651

註：本表僅為燃料燃燒二氧化碳排放統計結果，不包含燃料燃燒甲烷、氧化亞氮排放與生質能燃燒溫室氣體排放。
資料來源：經濟部能源署，2023 年燃料燃燒之二氧化碳排放量統計與分析，2024 年 8 月。

歷年各部門燃料燃燒甲烷排放量（含間接排放）

（單位：千公噸二氧化碳當量）

年度	能源部門	工業部門	運輸部門	農業部門	服務業部門	住宅部門	總排放量
1990	8	63	170	11	17	14	284
1991	8	68	183	11	18	15	303
1992	8	72	209	10	16	15	331
1993	9	74	226	11	15	16	350
1994	10	77	242	11	18	17	374
1995	11	82	256	11	17	19	396
1996	11	86	268	11	20	20	417
1997	12	93	275	10	19	21	430
1998	13	98	288	8	22	23	453
1999	15	113	298	9	24	25	485
2000	17	128	303	10	26	27	511
2001	18	140	305	10	28	28	529
2002	18	143	312	10	30	29	541
2003	20	149	321	12	34	32	568
2004	21	155	331	12	35	31	585
2005	22	156	340	11	35	32	596
2006	22	162	334	7	37	32	594
2007	22	164	325	5	37	33	587
2008	20	158	309	7	38	33	565
2009	19	149	315	6	36	32	556
2010	19	162	319	5	36	32	572
2011	18	170	323	6	34	32	582
2012	18	167	318	6	34	31	574
2013	17	169	318	6	34	31	576
2014	19	167	320	6	34	31	577
2015	19	168	328	6	36	32	589
2016	18	167	338	6	35	33	597
2017	19	163	331	6	35	33	587
2018	18	155	321	7	33	32	567
2019	18	151	322	7	33	31	563
2020	17	150	325	6	32	32	564
2021	17	155	302	6	32	32	544
2022	16	157	310	6	27	26	542
2023	14	153	311	7	28	26	539

資料來源：經濟部能源署，2023 年燃料燃燒之二氧化碳排放量統計與分析，2024 年 8 月。

歷年各部門燃料燃燒氧化亞氮排放量（含間接排放）

（單位：千公噸二氧化碳當量）

年度	能源部門	工業部門	運輸部門	農業部門	服務業部門	住宅部門	總排放量
1990	25	138	259	8	26	23	478
1991	25	151	275	8	30	26	516
1992	27	170	315	8	33	30	583
1993	31	176	340	9	37	35	628
1994	35	185	357	9	41	37	664
1995	38	194	372	9	43	41	698
1996	43	211	381	10	51	48	743
1997	46	232	390	9	56	51	785
1998	51	247	406	8	61	61	834
1999	57	275	418	8	66	63	888
2000	69	316	424	10	76	72	966
2001	74	339	423	10	81	77	1,004
2002	76	354	442	10	88	82	1,051
2003	85	380	441	12	98	91	1,107
2004	87	402	457	12	99	89	1,147
2005	82	422	470	11	104	95	1,184
2006	88	441	470	9	108	96	1,213
2007	91	459	454	8	108	98	1,218
2008	82	443	428	9	107	95	1,164
2009	82	418	430	8	102	95	1,135
2010	80	448	446	8	99	90	1,170
2011	79	461	453	8	98	91	1,168
2012	77	457	445	8	97	88	1,170
2013	71	463	444	8	95	86	1,166
2014	76	456	449	8	94	87	1,169
2015	75	446	459	8	94	86	1,168
2016	74	445	471	8	96	91	1,185
2017	78	451	466	8	98	93	1,194
2018	78	456	456	9	93	89	1,181
2019	75	439	460	9	89	87	1,159
2020	74	432	463	9	85	89	1,152
2021	72	450	440	8	83	92	1,145
2022	69	434	449	8	78	80	1,117
2023	64	420	447	8	81	82	1,102

資料來源：經濟部能源署，2023 年燃料燃燒之二氧化碳排放量統計與分析，2024 年 8 月。

歷年各部門生質能燃燒二氧化碳排放量（含間接排放）

（單位：千公噸二氧化碳當量）

年度	能源部門	工業部門	運輸部門	農業部門	服務業部門	住宅部門	總排放量
1990	17	93	0	3	30	35	179
1991	21	120	0	4	40	44	229
1992	32	215	1	6	64	68	386
1993	32	205	1	6	64	67	375
1994	51	312	1	8	94	95	561
1995	78	486	1	12	148	150	876
1996	94	582	2	15	177	182	1,051
1997	122	1,279	3	19	243	233	1,899
1998	132	1,433	3	17	264	279	2,129
1999	194	1,934	5	27	400	405	2,965
2000	190	1,996	5	26	403	399	3,020
2001	258	2,410	6	32	514	509	3,729
2002	237	2,538	6	30	499	487	3,797
2003	326	3,109	8	41	677	663	4,824
2004	341	3,421	9	45	753	713	5,283
2005	346	3,525	10	44	780	749	5,454
2006	359	3,684	13	46	805	750	5,658
2007	361	3,729	19	46	789	745	5,689
2008	328	3,633	57	48	764	712	5,542
2009	305	3,237	83	48	714	690	5,078
2010	291	3,548	112	48	707	661	5,367
2011	282	3,411	140	51	685	654	5,222
2012	304	3,620	196	61	757	702	5,641
2013	305	3,744	223	65	769	714	5,820
2014	303	3,767	116	54	737	708	5,685
2015	314	3,871	88	54	784	741	5,852
2016	328	4,003	46	52	831	819	6,078
2017	318	3,781	34	49	775	763	5,721
2018	306	3,781	25	47	750	746	5,655
2019	322	3,836	26	50	767	775	5,776
2020	310	3,855	25	53	741	804	5,788
2021	277	3,804	23	49	669	774	5,597
2022	268	3,610	24	46	673	719	5,340
2023	294	3,461	30	52	770	820	5,427

資料來源：經濟部能源署，2023 年燃料燃燒之二氧化碳排放量統計與分析，2024 年 8 月。

MEMO