

	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ		
1																																									
2	ve methane										Entity emissions from combustion, venting, flaring, and fugitive methane																														
3																																									
4																																									
5																																									
6																																									
7	ConocoPhillips, USA										ConocoPhillips, USA																														
8																																									
9																																									
10						1930s					1930s					1940s					1950s					1960s															
11	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964		
12																																									
13																																									
14																																									
15	0.7	9	10	11	11	11	11	11	11	12	12	12	11	11	12	16	15	16	19	22	43	45	49	45	53	61	63	65	68	73	80	85	84	97	102	104	112	120	128		
16	5	6	6	7	7	8	9	10	11	12	13	14	12	13	14	14	15	16	17	18	24	25	27	28	43	51	52	52	54	56	62	66	67	74	75	76	78	79	82		
17																																									
18	6	14	16	18	19	19	20	21	22	23	24	26	23	24	26	30	30	32	36	39	67	71	76	73	96	112	115	117	122	129	142	151	151	171	177	180	190	199	210		
19																																									
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	3	3	3	3	3	4	4	4	4	4	4	4	4	4	5	5
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	5	6	6	6	6	6	7	7	8	8	9	9	9	9	10	
26																																									
27																																									
28																																									
29	6	15	17	19	20	20	21	22	23	25	26	27	24	26	27	31	31	34	38	41	70	74	80	76	101	117	121	123	128	135	149	158	159	179	186	189	199	208	220		
30																																									
31																																									
32																																									
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
36	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2		
37																																									
38																																									
39	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	3	2	3	3	3	4	4	4	4	5	5	5	5	6	6	6	7	
40	1	2	2	2	2	2	2	3	3	3	4	4	3	4	4	4	4	4	4	4	5	5	7	7	7	8	12	14	14	14	15	15	17	18	19	20	21	21	21	22	23
41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	1	2	2	2	3	3	3	3	4	4	4	4	5	4	4	4	5	5	5	6	6	9	9	10	10	15	17	18	18	19	19	21	23	23	26	26	27	28	28	30	
43																																									
44																																									
45	8	17	19	21	22	23	24	26	27	28	30	32	28	30	32	36	36	39	44	47	79	83	90	86	115	135	139	141	146	155	170	181	182	205	212	216	226	237	250		
46																																									
47																																									
48	3,606	3,891	3,906	4,195	3,855	3,441	3,104	3,276	3,565	3,759	4,141	4,430	4,188	4,364	4,760	4,884	4,914	5,097	5,068	4,254	4,536	5,104	5,383	5,199	5,976	6,475	6,577	6,742	6,834	7,490	7,977	8,318	8,538	8,857	9,345	9,366	9,699	10,248	10,781		
49	984	1,062	1,066	1,145	1,052	939	847	894	973	1,026	1,130	1,209	1,143	1,191	1,299	1,333	1,341	1,391	1,383	1,161	1,238	1,393	1,469	1,419	1,631	1,767	1,795	1,840	1,865	2,044	2,177	2,270	2,330	2,417	2,550	2,556	2,647	2,797	2,942		
50																																									
51	0.17%	0.38%	0.42%	0.45%	0.51%	0.59%	0.69%	0.68%	0.65%	0.65%	0.62%	0.61%	0.58%	0.58%	0.58%	0.64%	0.64%	0.66%	0.75%	0.97%	1.54%	1.44%	1.48%	1.47%	1.68%	1.81%	1.84%	1.83%	1.87%	1.81%	1.87%	1.90%	1.86%	2.02%	1.99%	2.02%	2.05%	2.03%	2.04%		
52																																									
53	21.2	23.0	22.8	24.4	22.3	19.9	17.9	18.8	20.4	21.0	23.3	24.8	23.4	24.8	26.2	27.0	27.0	27.4	26.9	23.5	24.7	27.6	29.2	28.1	30.4	32.2	32.7	33.1	33.1	35.9	38.4	39.7	40.9	42.7	44.6	44.3	45.1	47.1	49.4		
54																																									
55	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	
56																																									
57																																									
58																																									
59																																									
60																																									
61																																									

Entity emissions from combustion, venting, flaring, and fugitive methane

Richard Heede
Climate Accountability Institute
18-Oct-20

ConocoPhillips, USA

	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD		
1																																									
2																																									
3																																									
4																																									
5																																									
6																																									
7																																									
8																																									
9																																									
	1960s					1970s									1980s									1990s																	
	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003		
11	Conoco owned Consolidated Coal 1966-1998; see CONSOL																																								
12																																									
13																																									
14																																									
15	140	149	153	161	169	186	184	190	187	162	161	160	166	178	176	176	165	163	168	150	147	148	146	155	150	151	149	150	148	146	146	152	157	153	153	154	180	155	149		
16	81	81	79	80	82	85	86	88	88	87	81	82	79	80	79	75	71	66	66	66	68	68	67	72	80	81	84	87	89	94	97	106	112	117	130	104	90	108	102		
17																																									
18	221	230	231	241	251	270	271	278	275	249	242	242	245	257	255	251	235	229	233	216	215	216	213	227	231	232	233	237	236	240	244	258	269	270	283	258	270	263	251		
19																																									
20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
21	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
22	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	5	5	5	5	5	5	6	6	6	7	7	7	6	5	6	6		
23	2	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	4	3	3	3	3	3		
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25	10	10	10	10	11	11	11	11	11	11	10	10	10	10	10	10	9	9	9	9	9	9	9	9	10	10	10	11	11	11	11	11	12	13	13	14	12	11	13	12	
26																																									
27																																									
28																																									
29	231	240	241	252	261	281	282	290	286	260	253	252	255	268	265	261	245	238	242	225	223	224	222	237	241	242	244	248	247	251	255	270	281	283	298	270	282	276	263		
30																																									
31																																									
32																																									
33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
34	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
36	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9	1.0	1.0	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.4	1.4	1.6	1.3	1.2	1.4	1.3		
37																																									
38																																									
39	8	8	8	9	9	10	10	10	10	9	9	9	9	10	9	9	9	9	9	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	10	8	8
40	23	22	22	22	23	23	24	24	24	22	23	22	22	22	22	21	20	18	18	18	19	19	19	20	22	22	23	24	25	26	27	29	31	32	36	29	25	30	28		
41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
42	30	30	30	31	32	33	34	35	34	33	31	31	31	32	31	30	28	27	27	26	27	27	26	28	30	30	31	32	32	34	35	37	39	41	44	37	35	38	36		
43																																									
44																																									
45	261	270	271	283	293	315	316	324	321	293	284	283	286	299	296	291	273	265	270	252	250	251	248	265	271	272	275	280	279	285	290	307	321	324	342	307	316	314	299		
46																																									
47																																									
48	11,282	11,807	12,184	12,849	13,705	14,840	15,440	16,158	17,016	16,943	16,921	17,819	18,308	18,979	19,485	19,392	18,865	18,725	18,903	19,453	20,146	20,433	21,095	21,902	22,232	22,547	23,032	22,313	22,580	22,742	23,232	23,963	24,103	24,018	24,326	25,025	25,235	25,788	27,034		
49	3,079	3,222	3,325	3,507	3,740	4,050	4,214	4,410	4,644	4,624	4,618	4,863	4,996	5,180	5,318	5,292	5,149	5,110	5,159	5,309	5,498	5,576	5,757	5,977	6,067	6,153	6,286	6,089	6,162	6,207	6,340	6,540	6,578	6,555	6,639	6,830	6,887	7,038	7,378		
50																																									
51	2.05%	2.03%	1.98%	1.96%	1.91%	1.89%	1.83%	1.79%	1.68%	1.53%	1.49%	1.41%	1.39%	1.41%	1.36%	1.35%	1.30%	1.27%	1.28%	1.16%	1.11%	1.10%	1.05%	1.08%	1.08%	1.07%	1.06%	1.11%	1.09%	1.10%	1.10%	1.13%	1.17%	1.18%	1.22%	1.08%	1.12%	1.07%	0.97%		
52																																									
53																																									
54	51.3	53.4	54.7	57.2	60.6	66.8	92.3	99.4	112.6	112.5	105.2	117.3	114.8	122.9	119.4	110.5	93.4	92.8	89.4	86.3	87.0	86.8	84.9	92.0	93.2	90.0	89.1	89.9	89.7	90.1	89.9	91.9	89.3	84.0	82.0	82.6	83.0	82.8	88.0		
55																																									
56	2.09%	2.04%	1.96%	1.93%	1.87%	1.37%	1.31%	1.24%	1.09%	1.04%	1.06%	0.95%	0.96%	0.92%	0.94%	0.98%	1.09%	1.04%	1.09%	1.09%	1.10%	1.10%	1.11%	1.10%	1.16%	1.21%	1.26%	1.28%	1.29%	1.34%	1.38%	1.46%	1.57%	1.72%	1.93%	1.60%	1.49%	1.65%	1.47%		
57																																									
58																																									
59																																									
60																																									
61																																									

	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL					
1	Entity emissions from combustion, venting, flaring, and fugitive methane																																						
2	Richard Heede Climate Accountability Institute 18-Oct-20																																						
3	ConocoPhillips, USA																																						
4																																							
5																																							
6																																							
7																																							
8																																							
9																																							
10	2000s						2010s													Cumulative	Entity emissions	to 2015	to 2016	to 2017	to 2018														
11	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	MtCO2e	Entity emissions	Cumulative	Cumulative	Cumulative	Cumulative																
12																			(except where noted)	(V = verified)	(except where noted)	(except where noted)	(except where noted)	(except where noted)	(except where noted)	(except where noted)													
13																																							
14																																							
15	160	189	199	194	185	194	172	117	118	118	121	124	126	113	111			10,193	Entity CO2 emissions	kg CO2/tCO2	to 2015	to 2016	to 2017	to 2018															
16	102	101	97	104	101	101	95	88	83	79	79	79	75	64	54			5,935	Oil & NGLs	MtCO2	linked	9,843	9,969	10,082	10,193														
17																																							
18	262	290	296	298	287	294	267	205	201	197	199	203	201	177	165			-	Natural Gas	MtCO2	linked	5,742	5,817	5,881	5,935														
19																																							
20	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0			16,128	Coal (see CONSOL Energy)	MtCO2	linked	-	-	-	-														
21	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2			39	Combustion total	MtCO2	sum	15,585	15,786	15,962	16,128														
22	6	6	6	6	6	6	5	5	5	5	5	5	4	4	3			163	Oil & NGLs: Venting	MtCO2	calculated	3.83	38	38	39	39													
23	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2			163	Oil & NGLs: Flaring	MtCO2	linked	15.94	157	159	161	163													
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			340	Own fuel use	MtCO2	calculated	57.26	329	333	337	340													
25	12	13	12	13	13	13	12	10	10	9	9	9	9	8	7			169	Natural Gas: Venting	MtCO2	calculated	28.53	164	166	168	169													
26																																							
27																																							
28																																							
29	274	302	308	311	299	307	278	216	210	206	208	212	210	184	172			10	Natural Gas: Flaring	MtCO2	calculated	1.74	10	10	10	10													
30																																							
31																																							
32																																							
33	50	52	51	51	47	41	39	38	38	38	37	32	28	summed scope 1 CO2 & CH4													721	Venting & Flaring total	MtCO2	sum	697	706	714	721					
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			-	Cement	MtCO2	linked	-	-	-	-														
35	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1			16,849	Total CO2 emissions	MtCO2	sum	16,282	16,492	16,676	16,849														
36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			20	Entity methane emissions	kg CH4/tCO2	to 2015	to 2016	to 2017	to 2018															
37	1.3	1.4	1.3	1.4	1.4	1.4	1.3	1.1	1.0	1.0	1.0	1.0	1.0	0.8	0.7			59	Methane: Oil & NGLs	MtCH4	calculated	1.92	19	19	19	20													
38																																							
39	9	10	11	10	10	10	9	6	6	6	6	7	7	6	6			-	Methane: Natural Gas	MtCH4	calculated	9.88	57	57	58	59													
40	28	28	27	29	28	28	26	24	23	22	22	22	21	18	15			-	Methane: Coal	MtCH4	calculated	4.03	-	-	-	-													
41																																							
42	37	38	37	39	38	38	35	31	29	28	28	29	28	24	21			78	Total methane emissions	MtCH4	sum	76	77	77	78														
43																																							
44																																							
45	311	340	346	351	337	345	314	246	240	234	237	241	237	208	193			549	Entity methane emissions	GWP	to 2015	to 2016	to 2017	to 2018															
46																																							
47	28,308	29,264	30,231	31,135	31,854	31,414	33,018	34,136	34,660	34,825	35,089	35,106	35,251	35,681	36,443			1,641	Methane: Oil & NGLs	MtCO2e	calculated	28	530	537	543	549													
48	7,726	7,986	8,250	8,497	8,693	8,573	9,011	9,316	9,459	9,504	9,576	9,581	9,620	9,738	9,946			2,190	Methane: Natural Gas	MtCO2e	calculated	28	1,588	1,609	1,627	1,641													
49																																							
50																																							
51	0.97%	1.03%	1.02%	1.00%	0.94%	0.98%	0.84%	0.63%	0.61%	0.59%	0.59%	0.60%	0.60%	0.52%	0.47%			19,039	Methane: Coal	MtCO2e	calculated	28	-	-	-	-													
52																																							
53																																							
54	91.7	94.7	98.4	99.5	101.2	99.9	105.1	109.5	113.4	115.2	118.2	117.8	118.4	120.0	122.7			19,039	Total attributed emissions	MtCO2e	sum	18,400	18,638	18,846	19,039														
55																																							
56	1.44%	1.43%	1.36%	1.41%	1.34%	1.37%	1.21%	1.00%	0.92%	0.88%	0.85%	0.87%	0.83%	0.71%	0.61%			1,612,851	CDIAC CO2 emissions	MtCO2	to 2015	to 2016	to 2017	to 2018															
57																																							
58																																							
59																																							
60																																							
61																																							

Cell: E113

Comment: Rick Heede:
Consolidated coal production attributed to CONSOL Energy
not Conoco, to avoid double-counting

Cell: B17

Comment: Rick Heede:
coal produced by Consolidated Group or Conoco Mining/Dupont from 1966-1998 attributed to CONSOL

Cell: FY48

Comment: Rick Heede:
CAI compares entity emissions to the CDIAC / Global Carbon Project (www.globalcarbonproject.org) annual estimate of carbon dioxide emissions from fossil fuels and cement production. The CAI Carbon Majors methodology is based on the CDIAC methodology; see: Heede, Richard (2019) Carbon Majors: Accounting for carbon and methane emissions 1854-2010 Methods & Results Report, ISBN 978-3-659-57841-0, OmniScriptum, Riga, 148 pp.
Reference of the full global carbon budget 2019: Pierre Friedlingstein, Matthew W. Jones, Michael O'Sullivan, Robbie M. Andrew, Judith Hauck, Glen P. Peters, Wouter Peters, Julia Pongratz, Stephen Sitch, Corinne Le Quéré, Dorothee C. E. Bakker, Josep G. Canadell, Philippe Ciais, Rob Jackson, Peter Anthoni, Leticia Barbero, Ana Bastos, Vladislav Bastrikov, Meike Becker, Laurent Bopp, Erik Buitenhuis, Naveen Chandra, Frédéric Chevallier, Louise P. Chini, Kim I. Currie, Richard A. Feely, Marion Gehlen, Dennis Gilfillan, Thanos Gkritzalis, Daniel S. Goll, Nicolas Gruber, Sören Gutekunst, Ian Harris, Vanessa Haverd, Richard A. Houghton, George Hurtt, Tattiana Ilyina, Atul K. Jain, Emilie Joetzjer, Jed O. Kaplan, Etsushi Kato, Kees Klein Goldewijk, Jan Ivar Korsbakken, Peter Landschützer, Siv K. Lauvset, Nathalie Lefèvre, Andrew Lenton, Sebastian Lienert, Danica Lombardozzi, Gregg Marland, Patrick C. McGuire, Joe R. Melton, Nicolas Metz, David R. Munro, Julia E. M. S. Nabel, Shin-Ichiro Nakaoka, Craig Neill, Abdurrahman M. Omar, Tsunee Ono, Anna Peregon, Denis Pierrot, Benjamin Poulter, Gregor Rehder, Laure Resplandy, Eddy Robertson, Christian Rödenbeck, Roland Séférian, Jörg Schwinger, Naomi Smith, Pieter P. Tans, Hanqin Tian, Bronte Tilbrook, Francesco N Tubiello, Guido R. van der Werf, Andrew J. Wiltshire, Sonke Zaehle. Global Carbon Budget 2019, Earth Syst. Sci. Data, 2019.
<https://doi.org/10.5194/essd-11-1783-2019>
See also: Gilfillan, D., Marland, G., Boden, T. and Andres, R.: Global, Regional, and National Fossil-Fuel CO2 Emissions.

Cell: FY54

Comment: Rick Heede:
This study's total fugitive and vented methane from oil and natural gas systems and coal mining are summed here and compared to CDIAC's estimate for 1860 to 1969 (Stern & Kaufmann, 1998). CAI uses revised data from EDGAR for 1970-2015, with extrapolation by CAI for 2016-2018 (based on growth of emissions from oil, gas, and coal production). There is a non-linearity at 1969/1970 btw datasets.
Methane emissions may be revised if a more comprehensive and integrated dataset becomes available.
Furthermore, the Stern & Kaufman does not estimate methane emissions from oil (only gas-related CH4). The most recent EDGAR Nov19 datasets aggregate methane emissions from the Oil & Gas sector. CAI disaggregates methane from oil and methane from gas on the basis of an earlier EDGAR dataset 1970-2008 that reports CH4 from oil and gas separately. CAI uses this average allocation of ~695% from gas and ~30.5% from oil to estimate methane emissions from both sectors. This, given the fluctuations of methane emissions --the proportion from natural gas increases over time (from 50% in 1970 to 76% in 2008) -- this disaggregation is only approximate.

Stern, David I., & Robert K. Kaufmann (1998) "Annual Estimates of Global Anthropogenic Methane Emissions: 1860-1994," in Trends Online: A Compendium of Data on Global Change, Carbon Dioxide Information Analysis Center, Oak Ridge National Lab., U.S. DOE, Oak Ridge, Tenn., U.S.A. <http://cdiac.esd.ornl.gov/trends/meth/ch4.htm#flaring>

Crippa, M., G. Oreggioni, D. Guizzardi, M. Muntean, E. Schaaf, E. Lo Vullo, E. Solazzo, F. Monforti-Ferrario, J.G.J. Olivier, & E. Vignati (2019) Fossil CO2 and GHG emissions of all world countries - 2019 Report, Publications Office of the European Union, Luxembourg. ISBN 978-92-76-11100-9. https://edgar.jrc.ec.europa.eu/overview.php?vP_GHG