

	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	
1																																												
2	Entity emissions from combustion, venting, flaring, and fugitive methane															Entity emissions from combustion, venting, flaring, and fugitive methane																												
3	Richard Heede Climate Accountability Institute 25-Jan-20															Richard Heede Climate Accountability Institute 25-Jan-20																												
4																																												
5																																												
6																																												
7	National Iranian Oil Company															National Iranian Oil Company																												
8																																												
9																																												
10	1890s					1900s					1910s					1920s																												
11	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	
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47																																												
48	1,081	1,198	1,198	1,304	1,359	1,370	1,356	1,403	1,488	1,535	1,612	1,700	1,861	1,957	2,026	2,074	2,261	2,286	2,433	2,594	2,869	2,744	2,876	3,001	3,060	3,221	3,459	3,115	3,071	3,298	3,503	3,430	2,953	3,415	2,942	3,096	3,554	3,525	3,573	3,606	3,891	3,906	4,195	
49	295	327	327	356	371	374	370	383	406	419	440	464	508	534	553	566	617	624	664	708	783	749	785	819	835	879	944	850	838	900	956	936	806	932	803	845	970	962	975	984	1,062	1,066	1,145	
50	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.04%	0.04%
51																																												
52																																												
53																																												
54	6.8	7.4	7.5	8.0	8.3	8.4	8.2	8.5	9.0	9.3	9.7	10.2	11.2	11.8	12.1	12.4	13.6	13.7	14.4	15.5	17.1	16.3	17.0	17.8	18.1	19.1	20.4	18.4	18.1	19.5	20.6	20.3	17.9	20.6	17.7	19.0	21.3	21.1	21.2	21.2	23.0	22.8	24.4	
55																																												
56																																												
57																																												
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Entity emissions from combustion, venting, flaring, and fugitive methane

Richard Heede
Climate Accountability Institute
25-Jan-20

Company

National Iranian Oil Company

	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	DR	DS	DT	DU	DV	DW																			
1																																																												
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9																																																												
10	1930s										1930s										1940s										1950s										1960s										1960s									
11	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	1965	1966	1967	1968	1969	1970																			
12																																																												
13																																																												
14																																																												
15	2	2	2	2	2	2	2	3	3	3	2	2	3	3	4	5	5	6	7	7	9	31	2	4	10	44	72	96	110	124	145	163	180	202	232	259	289	352	385	458	519																			
16	2	2	2	2	2	2	2	3	3	3	2	2	3	3	4	5	5	6	7	7	9	31	2	4	10	44	72	96	110	124	145	163	180	202	232	259	289	352	385	458	519																			
17	2	2	2	2	2	2	2	3	3	3	2	2	3	3	4	5	5	6	7	7	9	31	2	4	10	44	72	98	111	125	147	168	186	208	234	261	291	355	388	463	540																			
18	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	1	1	1	1	1	1	1	1	1	1	2	2																		
19	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	0	0																	
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																	
21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																	
22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																	
23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																	
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	2	2	3	3	4	4	5	5	5	6	7	8	10	12																			
25																																																												
26																																																												
27																																																												
28																																																												
29	2	2	2	2	2	2	2	3	3	3	2	2	3	3	4	5	5	6	7	8	9	31	2	4	10	45	74	100	114	128	150	172	190	212	239	267	297	362	396	473	553																			
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	0	0																		
34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																	
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																	
36	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	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	1	1	1	1	1																			
37																																																												
38																																																												
39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	2	4	5	6	7	8	9	10	11	12	14	16	19	21	25	28																			
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																		
41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-																		
42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	2	4	6	6	7	8	10	11	12	13	15	16	20	22	26	34																			
43																																																												
44																																																												
45	2	2	2	2	2	2	2	3	3	3	3	2	3	3	4	5	6	6	7	8	9	33	2	4	10	47	78	105	120	135	158	182	201	225	252	281	314	382	417	499	586																			
46																																																												
47																																																												
48	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	11,282	11,807	12,184	12,849	13,705	14,840																			
49	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	3,079	3,222	3,325	3,507	3,740	4,050																			
50																																																												
51	0.04%	0.05%	0.06%	0.06%	0.06%	0.06%	0.06%	0.07%	0.06%	0.05%	0.04%	0.05%	0.05%	0.07%	0.11%	0.12%	0.11%	0.13%	0.15%	0.15%	0.49%	0.03%	0.06%	0.14%	0.60%	0.93%	1.20%	1.33%	1.44%	1.61%	1.84%	1.96%	2.07%	2.22%	2.36%	2.52%	2.97%	3.08%	3.45%	3.72%																				
52																																																												
53																																																												
54	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	51.3	53.4	54.7	57.2	60.6	86.8																			
55																																																												
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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																			
57																																																												
58																																																												
59																																																												
60																																																												
61																																																												

	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	Entity emissions from combustion, venting, flaring, and fugitive methane																																
2	Richard Heede Climate Accountability Institute 25-Jan-20																																
3																																	
4																																	
5																																	
6																																	
7	National Iranian Oil Company																																
8																																	
9																																	
10	1970s								1980s								1990s								2000s								
11	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
12																																	
13																																	
14																																	
15	615	681	794	816	725	797	767	710	430	227	188	301	332	296	306	278	314	306	385	423	456	472	487	498	502	508	506	503	492	511	516	479	520
16	16	24	37	42	41	42	35	28	21	13	11	13	17	25	32	29	30	38	42	44	49	47	51	60	67	76	89	94	109	114	125	142	153
17																																	
18	631	705	832	858	767	840	802	738	450	240	200	315	348	322	338	307	344	344	427	467	504	519	538	558	569	584	595	597	601	625	640	620	673
19																																	
20	2	3	3	3	3	3	3	3	2	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	
21	10	11	13	13	12	13	12	11	7	4	3	5	5	5	4	5	5	6	7	7	8	8	8	8	8	8	8	8	8	8	8	8	
22	1	1	2	2	2	2	2	2	1	1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	4	4	5	6	7	7	8	9	
23	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	2	2	2	3	3	3	3	4	4	
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	
25	14	16	19	20	18	19	18	16	10	6	5	7	8	8	9	8	9	9	11	12	13	13	14	15	16	17	18	18	19	20	21	22	24
26																																	
27																																	
28																																	
29	645	720	851	878	784	859	821	755	461	246	204	322	356	330	347	315	353	353	438	479	518	532	553	573	584	600	613	615	621	645	661	642	697
30																																	
31																																	
32																																	
33	1	1	2	2	1	2	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	
35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
36	1	2	2	2	2	2	2	2	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3
37																																	
38																																	
39	33	37	43	44	39	43	41	38	23	12	10	16	18	16	17	15	17	17	21	23	25	25	26	27	27	27	27	27	27	28	28	26	28
40	4	7	10	12	11	12	10	8	6	4	3	4	5	7	9	8	8	10	12	12	13	13	14	17	18	21	25	26	30	31	34	39	42
41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	38	43	53	56	50	55	51	46	29	16	13	20	22	23	25	23	25	27	32	35	38	38	40	43	45	48	52	53	57	59	62	65	70
43																																	
44																																	
45	683	763	904	934	835	914	872	801	490	261	217	342	379	353	373	337	379	380	470	514	556	571	593	616	630	649	665	669	677	704	724	707	767
46																																	
47																																	
48	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	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	4.18%	4.46%	5.00%	5.18%	4.64%	4.82%	4.48%	3.98%	2.36%	1.27%	1.08%	1.72%	1.89%	1.69%	1.72%	1.54%	1.67%	1.61%	1.97%	2.13%	2.25%	2.39%	2.45%	2.52%	2.52%	2.51%	2.54%	2.56%	2.55%	2.58%	2.62%	2.49%	2.58%
52																																	
53																																	
54	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	1.45%	1.55%	1.69%	1.77%	1.71%	1.66%	1.59%	1.34%	0.86%	0.51%	0.51%	0.77%	0.90%	0.95%	1.04%	0.94%	1.06%	1.05%	1.24%	1.38%	1.52%	1.53%	1.61%	1.72%	1.81%	1.88%	2.07%	2.26%	2.47%	2.55%	2.68%	2.80%	2.85%
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 [23-Jan-20]																																	
3	National Iranian Oil Company																																	
4	2000s																2010s										Cumulative	Entity emissions						
5	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020											MtCO2e						
6	(except where noted) (V = verified)																																	
7	557	575	563	547	566	576	572	478	434	459	473	592	637	605											28,095	Entity CO2 emissions								
8	158	195	205	211	219	266	276	286	301	304	329	349	378	405	452											6,155	Oil & NGLs							
9	715	770	768	758	786	832	852	858	779	738	788	822	971	1,042	1,057											-	Natural Gas							
10	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2											34,250	Coal							
11	9	9	9	9	9	9	9	9	8	7	7	8	9	10	10											108	Combustion total							
12	9	11	12	12	13	15	16	17	17	19	20	22	23	26											448	Oil & NGLs: Venting								
13	5	6	6	6	6	8	8	8	9	9	10	11	12	13											352	Oil & NGLs: Flaring								
14	0	0	0	0	0	0	0	0	0	1	1	1	1	1											176	Own fuel use								
15	25	28	29	29	30	35	36	36	36	35	38	40	45	48	52											11	Natural Gas: Venting							
16	740	799	797	788	816	867	887	895	815	773	826	862	1,015	1,090	1,108											1,094	Natural Gas: Flaring							
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1											-	Venting & Flaring total							
18	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2											35,345	Cement							
19	3	3	3	3	3	4	4	4	4	4	4	4	5	5	6											35,345	Total CO2 emissions							
20	30	31	30	29	30	30	31	31	26	23	25	25	32	34	33											54	Entity methane emissions							
21	44	54	57	58	61	74	76	79	83	84	91	96	105	112	125											61	Methane: Oil & NGLs							
22	74	85	87	88	91	104	107	110	109	108	116	122	137	146	158											-	Methane: Natural Gas							
23	814	884	884	875	907	971	995	1,005	924	881	942	983	1,152	1,236	1,266											115	Methane: Coal							
24	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											1,513	Total methane emissions							
25	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											1,703	Methane: Oil & NGLs							
26	2.61%	2.73%	2.64%	2.53%	2.56%	2.76%	2.69%	2.62%	2.35%	2.22%	2.35%	2.45%	2.88%	3.05%	3.04%											3,216	Methane: Natural Gas							
27	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											38,561	Methane: Coal							
28	2.87%	3.20%	3.16%	3.15%	3.22%	3.72%	3.65%	3.59%	3.44%	3.33%	3.50%	3.70%	4.12%	4.35%	4.59%											38,561	Total attributed emissions							
29	814	884	884	875	907	971	995	1,005	924	881	942	983	1,152	1,236	1,266											1,612,851	CDIAC CO2 emissions							
30	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											440,166	Oil, Natural Gas, Coal, Flaring, & Cement							
31	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											2,199%	Entity percent of total CO2 emissions							
32	2.61%	2.73%	2.64%	2.53%	2.56%	2.76%	2.69%	2.62%	2.35%	2.22%	2.35%	2.45%	2.88%	3.05%	3.04%											6,971	CDIAC/EDGAR methane							
33	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											1.65%	Entity percent of total CH4 emissions							
34	2.87%	3.20%	3.16%	3.15%	3.22%	3.72%	3.65%	3.59%	3.44%	3.33%	3.50%	3.70%	4.12%	4.35%	4.59%																			

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 Gillfillan, Thanos Gkritzalis, Daniel S. Goll, Nicolas Gruber, Sören Gutekunst, Ian Harris, Vanessa Haverd, Richard A. Houghton, George Hurtt, Tatiana 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, Abdurahman 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, Hancan Tian, Bronte Tilbrook, Francesco N Tubiello, Guido R. van der Werf, Andrew J. Wiltshire, Sönke Zaehle. Global Carbon Budget 2019, Earth Syst. Sci. Data, 2019. <https://doi.org/10.5194/essd-11-1783-2019>

See also: Gillfillan, 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