DATA SCIENCE PROJECT Agrofood CO_2 Emission Data Analysis Report

Dataset Summary: The dataset contains emissions data from agrofood systems, categorized into:

- Emission sources (e.g., forest fires, food processing, transportation)
- Demographics (rural/urban population, gender)
- Average temperature
- Total CO_2 emissions per year and area

Actual Data Set

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Area	Year	Savanna fires	Forest fires	Crop Resid	Rice Cultivation	Drained or	Pesticides	Food Transp	Forestland	Net Fore	Food Hous	Food
2	Afghanistan	1990	14.7237	0.0557	205.6077	686	0	11.80748	63.1152	-2388.803	0	79.0851	109.6
3	Afghanistan	1991	14.7237	0.0557	209.4971	678.16	0	11.71207	61.2125	-2388.803	0	80.4885	116.6
4	Afghanistan	1992	14.7237	0.0557	196.5341	686	0	11.71207	53.317	-2388.803	0	80.7692	126.1
5	Afghanistan	1993	14.7237	0.0557	230.8175	686	0	11.71207	54.3617	-2388.803	0	85.0678	81.4
6	Afghanistan	1994	14.7237	0.0557	242.0494	705.6	0	11.71207	53.9874	-2388.803	0	88.8058	90.4
7	Afghanistan	1995	14.7237	0.0557	243.8152	666.4	0	11.71207	54.6445	-2388.803	0	90.1626	98
8	Afghanistan	1996	38.9302	0.2014	249.0364	686	0	11.71207	53.1637	-2388.803	0	93.7905	21.6
9	Afghanistan	1997	30.9378	0.1193	276.294	705.6	0	11.71207	52.039	-2388.803	0	93.9696	28.1
10	Afghanistan	1998	64.1411	0.3263	287.4346	705.6	0	11.71207	52.705	-2388.803	0	95.2597	30
11	Afghanistan	1999	46.1683	0.0895	247.498	548.8	0	11.71207	35.763	-2388.803	0	98.9876	39.4
12	Afghanistan	2000	22.781	0.7111	168.807	509.6	0	11.71207	38.556	-2388.803	0	103.4192	73.1
13	Afghanistan	2001	0.2219	0	170.9884	474.32	0	11.71207	39.1935	121.9016	0	105.3407	102.6
14	Afghanistan	2002	9.0562	0	266.1975	529.2	0	11.71207	37.5246	121.9016	0	108.7956	128
15	Afghanistan	2003	55.8052	0	324.2195	568.4	0	11.71207	60.7014	121.9016	0	110.807	157.5
16	Afghanistan	2004	11.9759	0	266.9995	764.4	0	11.71207	48.7587	121.9016	0	105.601	190.2
17	Afghanistan	2005	5.3259	0	383.7498	627.2	0	11.98305	73.1813	121.9016	0	115.7245	230.9
18	Afghanistan	2006	4.4081	0	333.6093	627.2	0	12.93139	103.2846	121.9016	0	107.8508	241
19	Afghanistan	2007	2.8238	0	403.3749	666.4	0	13.42949	114.7556	121.9016	0	113.6165	246.2
20	Afghanistan	2008	27.7623	0	287.9099	744.8	0	29.91974	230.5945	121.9016	0	130.3898	254.6
21	Afghanistan	2009	2.6183	0	451.8647	784	0	75.01626	385.5834	121.9016	0	188.6719	261.1
22	Afghanistan	2010	24.8111	0	413.6467	815.36	0	81.61085	468.253	121.9016	0	286.0954	255.1
23	Afghanistan	2011	1.8412	0	335.0379	823.2	0	81.61085	478.8137	-246.2191	0	522.6275	270.6
24	Afghanistan	2012	2.8955	0	445.5958	803.6	0	107.3864	530.8213	-246.2191	0	534.4065	271.2
25	Afghanistan	2013	3.1595	0	455.0727	803.6	0	76.06187	391.0777	-246.2191	0	833.2319	276.2
26	Afghanistan	2014	2.6796	0	473.4174	862.4	0	49.78287	304.1804	-246.2191	0	1094.134	333.4
27	Afghanistan	2015	0.8454	0	403.3181	642.88	0	81.85256	440.0315	-246.2191	0	1570.339	370.6
28	Afghanistan	2016	1.6558	0	387.613	466.48	0	54.90968	340.8931	154.6574	0	1649.838	425.9
29	Afghanistan	2017	0.4015	0	344.6447	429.0518	0	55.14843	345.7609	154.6574	0	1431.53	477.3

Conclusion from the Histogram:

- The histogram of average temperature showed a **right-skewed distribution**, meaning most regions lie in the moderate temperature range, with fewer hotter regions.
- Emission levels were notably higher in areas with slightly above-average temperatures.

Conclusion from the Bar Graph:

- The bar graph comparing emission sources showed that **forest fires**, **net forest conversion**, and **food processing** are the highest contributors to CO_2 emissions.
- This indicates that **land-use change** and **industrial food activities** are significant environmental impact zones.

Conclusion:

- Temperature correlates moderately with total emissions.
- Emission contributors vary significantly by area and year.
- Forest fires and net forest conversion were top contributors.
- Clustering revealed distinct regions based on emission behaviour.