

S2 Annexure: Urban and GHG emission dataset of megacities

Table A. Year 2012-15

S. No.	NAME OF MEGACITY	CONTINENT	POPULATION 2015	AREA 2015 (km ²)	DENSITY 2015 (persons /km ²)	BUILT-UP AREA 2015 (km ²)	GDP 2015 (USD on purchasing power parity)	GREENNESS 2014 (ratio)	TOTAL CARBON EMISSIONS 2012 (tonnes/year)
1	Xiamen	Asia	4088517	501	8161	180	53623578624	0.30	8367559
2	Tokyo	Asia	33028731	5318	6211	3665	1.00776E+12	0.33	240707614
3	Tianjin	Asia	6642179	698	9516	466	1.30999E+11	0.30	35772273
4	Tehran	Asia	12515045	1382	9056	683	2.07439E+11	0.19	105739525
5	Shantou	Asia	10445183	2450	4263	1027	72973615104	0.34	32486516
6	Shanghai	Asia	24472119	3318	7376	2106	5.5821E+11	0.35	451735355
7	Seoul	Asia	21600841	2449	8820	1079	4.83881E+11	0.35	86740756
8	Sao Paulo	South America	19114337	2005	9533	1397	3.71525E+11	0.28	68496335
9	Rio de Janeiro	South America	9798105	1367	7168	795	1.62203E+11	0.36	28157875
10	Paris	Europe	9711652	1638	5929	1158	3.32856E+11	0.43	41596050
11	Osaka	Asia	15692797	3158	4969	2113	3.76025E+11	0.32	90003675
12	New York-Newark	North America	15950674	5384	2963	3678	6.75538E+11	0.49	141145705
13	Nagoya	Asia	7667227	2651	2892	1799	2.09104E+11	0.34	58516535
14	Mumbai	Asia	21755882	1077	20200	364	1.44172E+11	0.34	32624247
15	Moscow	Europe	14077364	1882	7480	1218	2.88908E+11	0.47	135450659
16	Mexico City	North America	19559564	2114	9252	1298	3.61621E+11	0.26	42766285
17	Manila	Asia	21691141	2030	10685	644	1.97788E+11	0.35	25545933
18	London	Europe	9609627	1864	5155	1294	2.58778E+11	0.45	35637467
19	Lima	South America	9265580	876	10577	391	1.28879E+11	0.15	10253971
20	Lahore	Asia	10114718	955	10591	333	32438370304	0.27	10491151
21	Lagos	Africa	11575043	1196	9678	814	74539024384	0.28	37050143
22	Kolkata	Asia	21620289	2817	7675	1218	88069259264	0.49	44952241
23	Kinshasa	Africa	5622520	383	14680	140	3227700992	0.27	11574365
24	Karachi	Asia	13150694	753	17464	337	56157728768	0.16	20325888
25	Johannesburg	Africa	6516134	1638	3978	900	71123968000	0.39	29901082
26	Jakarta	Asia	36312539	5009	7249	1889	4.27282E+11	0.38	72450737
27	Istanbul	Asia	14111242	1340	10531	718	2.67148E+11	0.27	19974779
28	Hyderabad	Asia	8135155	874	9308	364	42340036608	0.30	10653149
29	Ho Chi Minh City	Asia	11488340	1467	7831	617	90272301056	0.37	24551888
30	Guangzhou	Asia	40589878	6622	6130	2771	2.91849E+11	5.00	192848618
31	Dhaka	Asia	23942350	3248	7371	867	98739888128	0.49	15537797
32	Delhi	Asia	26658714	2474	10776	1213	2.63065E+11	0.32	54054349
33	Chongqing	Asia	4649254	487	9547	253	59032256512	0.39	21202966
34	Chennai	Asia	9992602	940	10630	340	60240334848	0.36	28196965
35	Chengdu	Asia	9318649	1326	7028	644	1.24923E+11	0.33	16794335
36	Cairo	Africa	19734086	1585	12451	638	1.39322E+11	0.22	34284853
37	Buenos Aires	South America	13906506	1967	7070	1359	2.6093E+11	0.34	42202147
38	Bogota	South America	8608815	538	16002	218	1.36709E+11	0.22	3509716
39	Beijing	Asia	17982668	2115	8502	1382	3.51488E+11	0.33	57750801
40	Bangkok	Asia	14730839	2568	5736	1046	4.90481E+11	0.39	142041039
41	Bangalore	Asia	10631615	628	16929	276	59321528320	0.32	3932021

Sources: Name of megacity, Continent and Population from UN DESA 2018, Area, Built-up area and GDP from Florczyk et al. 2019, Greenness from Corbane et al., 2018, Emissions from Crippa et al. 2018, Density computed from population and area data by authors

Table B. Year 2000

S. No.	NAME OF MEGACITY	CONTINENT	POPULATION 2000	AREA 2000 (km ²)	DENSITY 2000 (persons /km ²)	BUILT-UP AREA 2015 (km ²)	GDP 2000 (USD on purchasing power parity)	GREEN-NESS 2000 (ratio)	TOTAL CARBON EMISSIONS 2000 (tonnes/year)
1	Xiamen	Asia	1927658	305	6320	171	7951471616	0.34	3236044
2	Tokyo	Asia	29965513	5210	5752	3568	8.19242E+11	0.32	220861548
3	Tianjin	Asia	4545486	566	8031	421	23410581504	0.32	16954306
4	Tehran	Asia	9875803	1198	8244	652	1.07065E+11	0.21	59437840
5	Shantou	Asia	8901248	2198	4050	998	18932805632	0.40	18297324
6	Shanghai	Asia	15181466	2414	6289	1576	1.46545E+11	0.35	143114525
7	Seoul	Asia	19256801	2011	9576	985	2.83635E+11	0.31	109001184
8	Sao Paulo	South America	16916502	1957	8644	1363	2.4171E+11	0.27	48443545
9	Rio de Janeiro	South America	8891629	1328	6696	775	1.08816E+11	0.37	19889571
10	Paris	Europe	8991836	1620	5551	1138	2.6916E+11	0.41	55838486
11	Osaka	Asia	15696264	3107	5052	2083	3.46911E+11	0.30	95607283
12	New York-Newark	North America	15597301	4796	3252	3509	5.56301E+11	0.49	162882943
13	Nagoya	Asia	7376257	2574	2866	1774	1.81917E+11	0.34	53341391
14	Mumbai	Asia	18376186	964	19062	357	49940930560	0.33	29662833
15	Moscow	Europe	11665385	1706	6838	1153	1.62204E+11	0.46	127910940
16	Mexico City	North America	18473287	1863	9916	1067	3.74869E+11	0.24	31398326
17	Manila	Asia	16638131	1776	9368	611	93752819712	0.34	25127798
18	London	Europe	8077756	1771	4561	1261	1.7713E+11	0.44	50788792
19	Lima	South America	7103701	741	9587	382	55480389632	0.14	6610147
20	Lahore	Asia	7508958	713	10531	287	17015861248	0.28	7699654
21	Lagos	Africa	7825962	968	8085	781	22699976704	0.33	23390800
22	Kolkata	Asia	19381540	2476	7828	1172	39710650368	0.45	39119000
23	Kinshasa	Africa	4921631	350	14062	136	2049581568	0.29	9187390
24	Karachi	Asia	9817347	707	13886	330	32455759872	0.16	15383741
25	Johannesburg	Africa	4345203	1529	2842	867	38372433920	0.39	23665559
26	Jakarta	Asia	26260542	4127	6363	1794	1.78505E+11	0.41	57835718
27	Istanbul	Asia	10148542	1226	8278	667	1.35118E+11	0.29	15843635
28	Hyderabad	Asia	6444336	677	9519	317	13513413632	0.33	8020392
29	Ho Chi Minh City	Asia	6757434	1054	6411	574	37069172736	0.42	17225090
30	Guangzhou	Asia	28542179	5354	5331	2470	63016669184	5.00	95394231
31	Dhaka	Asia	14856006	2344	6338	799	33622099968	0.50	8840965
32	Delhi	Asia	19386776	2026	9569	1073	80784293888	0.33	51552470
33	Chongqing	Asia	5203569	475	10955	237	17804541952	0.37	10291682
34	Chennai	Asia	7913038	804	9842	306	21747658752	0.37	16231292
35	Chengdu	Asia	6737590	1144	5890	622	23979118592	0.39	9316839
36	Cairo	Africa	15110881	1255	12041	595	1.20979E+11	0.27	19818239
37	Buenos Aires	South America	11710710	1837	6375	1319	1.34125E+11	0.36	38504645
38	Bogota	South America	6718665	473	14204	213	60001533952	0.27	3115656
39	Beijing	Asia	10640695	1702	6252	1321	71005634560	0.36	28929438
40	Bangkok	Asia	9066146	1822	4976	917	2.05328E+11	0.39	102317835
41	Bangalore	Asia	6246014	434	14392	228	15316640768	0.37	3009659

Sources: Name of megacity, Continent and Population from UN DESA 2018, Area, Built-up area and GDP from Florczyk et al. 2019, Greenness from Corbane et al., 2018, Emissions from Crippa et al. 2018, Density computed from population and area data by authors

Table C. Year 1990

S. No.	NAME OF MEGACITY	CONTINENT	POPULATION 1990	AREA 1990 (km ²)	DENSITY 1990 (persons /km ²)	BUILT-UP AREA 1990 (km ²)	GDP 1990 (USD on purchasing power parity)	GREEN-NESS 1990 (ratio)	TOTAL CARBON EMISSIONS 1990 (tonnes/year)
1	Xiamen	Asia	1134209	158	7179	137	2467599616	0.39	1552854
2	Tokyo	Asia	27406702	4932	5557	3280	8.1434E+11	0.24	194760554
3	Tianjin	Asia	3327261	503	6615	402	9762920448	0.31	15783224
4	Tehran	Asia	7428342	952	7803	581	93915684864	0.15	30892847
5	Shantou	Asia	7547892	1917	3937	926	10084914176	0.37	14174526
6	Shanghai	Asia	10426902	1917	5439	1201	57377320960	0.39	85286426
7	Seoul	Asia	17365097	1689	10281	820	1.77973E+11	0.26	79349058
8	Sao Paulo	South America	14720333	1851	7953	1252	2.16675E+11	0.27	24826210
9	Rio de Janeiro	South America	7853171	1278	6145	714	90774036480	0.36	10410173
10	Paris	Europe	8576325	1539	5573	1074	2.35545E+11	0.28	54946579
11	Osaka	Asia	15359857	3006	5110	1990	3.24193E+11	0.27	89238241
12	New York-Newark	North America	14939951	3981	3753	3197	4.65835E+11	0.46	164251846
13	Nagoya	Asia	7028051	2499	2812	1696	1.73921E+11	0.27	53749079
14	Mumbai	Asia	15936624	858	18574	332	37365157888	0.21	21266444
15	Moscow	Europe	10191343	1559	6537	1055	1.52862E+11	0.43	159435569
16	Mexico City	North America	16861120	1709	9866	788	3.02098E+11	0.16	33791538
17	Manila	Asia	12220122	1373	8900	572	91103338496	0.36	15153157
18	London	Europe	7436741	1742	4269	1230	1.33417E+11	0.38	47137688
19	Lima	South America	5705942	650	8778	363	38522560512	0.11	5637396
20	Lahore	Asia	5708787	556	10268	140	14324455424	0.22	5018989
21	Lagos	Africa	6038808	869	6949	648	19156613120	NAN	16265732
22	Kolkata	Asia	17192250	2120	8110	1105	26963568640	0.40	30882686
23	Kinshasa	Africa	4241545	334	12699	118	4997245952	NAN	5081418
24	Karachi	Asia	7744708	653	11860	272	29623083008	0.13	10758913
25	Johannesburg	Africa	3025150	1302	2323	774	39743504384	0.38	13628480
26	Jakarta	Asia	20458288	3498	5849	1471	1.08118E+11	0.39	37602037
27	Istanbul	Asia	7931496	1077	7364	589	1.21858E+11	0.17	9028767
28	Hyderabad	Asia	5390103	546	9872	196	8478221312	0.20	7811725
29	Ho Chi Minh City	Asia	4404508	770	5720	389	41362391040	0.43	10214343
30	Guangzhou	Asia	21524393	4016	5360	1429	33730125824	5.00	39917011
31	Dhaka	Asia	10025822	1375	7292	672	5876643328	0.47	5274466
32	Delhi	Asia	15195012	1541	9860	769	53409484800	0.21	31065667
33	Chongqing	Asia	5295492	464	11413	227	5342707200	0.35	7348680
34	Chennai	Asia	6463884	612	10562	204	12306040832	0.28	11993782
35	Chengdu	Asia	5135065	948	5417	521	7195548160	0.42	7746381
36	Cairo	Africa	12691065	1056	12018	518	75414388736	0.18	16526744
37	Buenos Aires	South America	10330685	1661	6220	1137	73768697856	0.34	30706147
38	Bogota	South America	5281648	431	12254	202	58094403584	0.24	2819253
39	Beijing	Asia	7074953	1480	4780	1246	28247609344	0.37	23236591
40	Bangkok	Asia	6103105	1238	4930	787	1.77946E+11	0.36	35814080
41	Bangalore	Asia	4141893	264	15689	143	9664753664	0.22	2344897

Sources: Name of megacity, Continent and Population from UN DESA 2018, Area, Built-up area and GDP from Florczyk et al. 2019, Greenness from Corbane et al., 2018, Emissions from Crippa et al. 2018, Density computed from population and area data by authors

Table D. Year 1975

S. No.	NAME OF MEGACITY	CONTINENT	POPULATION 1975	AREA 1975 (km ²)	DENSITY 1975 (persons /km ²)	BUILT-UP AREA 1975 (km ²)	TOTAL CARBON EMISSIONS 1975 (tonnes/year)
1	Xiamen	Asia	471480	49	9622	253	696520
2	Tokyo	Asia	22541605	4444	5072	127	142423004
3	Tianjin	Asia	1846809	286	6457	119	14557205
4	Tehran	Asia	2691051	337	7985	132	10829899
5	Shantou	Asia	5208807	1341	3884	166	10819847
6	Shanghai	Asia	5263801	829	6350	124	49192376
7	Seoul	Asia	13100210	1349	9711	58	27283417
8	Sao Paulo	South America	10677362	1724	6193	99	32802034
9	Rio de Janeiro	South America	5815735	1113	5225	112	13252147
10	Paris	Europe	7822582	1494	5236	126	67196174
11	Osaka	Asia	13928632	2808	4960	137	62381147
12	New York-Newark	North America	13029776	3442	3786	222	191160677
13	Nagoya	Asia	6136634	2283	2688	265	41336832
14	Mumbai	Asia	12479103	726	17189	25	13021157
15	Moscow	Europe	7370926	1332	5534	131	93110066
16	Mexico City	North America	13575761	1553	8742	51	22702614
17	Manila	Asia	5310036	738	7195	99	21215610
18	London	Europe	6767325	1733	3905	174	48265801
19	Lima	South America	3718226	542	6860	98	7582369
20	Lahore	Asia	3370467	384	8777	19	2759888
21	Lagos	Africa	3976312	741	5366	107	12202884
22	Kolkata	Asia	13574920	1539	8821	77	17470430
23	Kinshasa	Africa	3325277	304	10938	31	4400893
24	Karachi	Asia	4858667	580	8377	54	6042571
25	Johannesburg	Africa	1600849	945	1694	419	12155119
26	Jakarta	Asia	12824943	2482	5167	113	18039589
27	Istanbul	Asia	4704983	764	6158	114	4759054
28	Hyderabad	Asia	4074741	419	9725	27	4923229
29	Ho Chi Minh City	Asia	1929665	449	4298	164	7352447
30	Guangzhou	Asia	12719281	2258	5633	76	22141218
31	Dhaka	Asia	5154022	596	8648	102	2800166
32	Delhi	Asia	9962212	973	10239	44	14339469
33	Chongqing	Asia	4793406	420	11413	37	5476742
34	Chennai	Asia	4613071	447	10320	43	6429213
35	Chengdu	Asia	3016132	585	5156	140	5909964
36	Cairo	Africa	8948356	741	12076	49	5484149
37	Buenos Aires	South America	8239803	1462	5636	120	25373354
38	Bogota	South America	3186123	408	7809	63	2030761
39	Beijing	Asia	3387579	861	3934	247	18654448
40	Bangkok	Asia	2850083	793	3594	184	42637791
41	Bangalore	Asia	2079587	171	12161	42	1255609

Sources: Name of megacity, Continent and Population from UN DESA 2018, Area and Built-up area from Florczyk et al. 2019. Emissions from Crippa et al. 2018, Density computed from population and area data by authors. Data for the indicators GDP and GREENNESS is unavailable for 1975