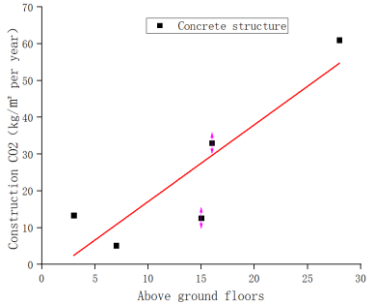
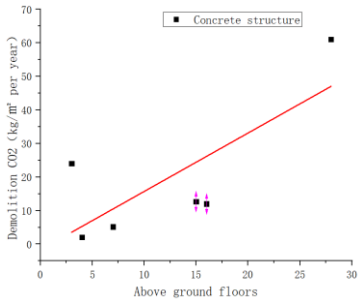
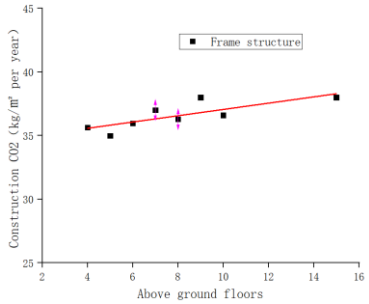
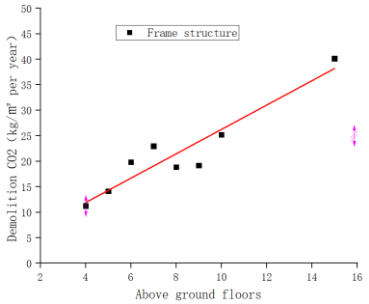
Table S.1. The main contents of the database

No	Climate	Type	Structure System	Area (m^2)	Floor	Life	Year of study	Carbon emission (t)				Data Sources
								Stage 1	Stage 2	Stage 3	LCA	
XL-1	I	Residential	Concrete	344.65	3	50	2021	78	13	222	313	[1]
XL-2	II	Residential	Concrete	2200	4	70	2016	489	5	6396	6890	[2]
XL-3	I	Residential	Concrete	6104	16	50	2015	3974	275	20662	24910	
XL-4	I	Public	Concrete	15514	28	50	2015	8796	1117	54656	64569	[3]
XL-5	III	Public	Concrete	16873	15	50	2016	10840	1056	88237	100134	
XL-6	II	Residential	Frame	4443.3	15	50	2011	1528	188	4606	6322	[4]
XL-7	III	Residential	Frame	3153	7	50	2014	1857	142	5038	7037	[5]
XL-8	IV	Public	Frame	24533.2	9	50	2014	10905	1400	47380	59684	[6]
XL-9	III	Public	Frame	20933	5	50	2011	11082	3148	48673	62966	[7]
XL-10	IV	Public	Frame	25023.9	5	50	2016	28734	1274	67960	97968	[8]
XL-11	I	Public	Frame	97000	5	50	2020	36811	9896	422277	468983	[9]
XL-12	II	Public	Frame	11351	6	50	2019	9731	362	52499	62592	[10]
XL-13	IV	Public	Frame	130000	4	50	2018	63562	14125	630983	706240	[11]
XL-14	II	Public	Frame	57000	9	50	2017	93445	132	225822	319399	[12]
XL-15	II	Public	Frame	57000	9	50	2017	93122	145	257171	350438	
XL-16	I	Residential	Shear wall	327.42	1	50	2020	101	14	182	297	[13]
XL-17	I	Residential	Shear wall	327.42	1	50	2020	117	16	182	315	[14]
XL-18	IV	Residential	Shear wall	133887	33	50	2015	19505	1843	231802	263921	[15]
XL-19	II	Residential	Shear wall	39173	32	50	2019	15757	517	80030	96305	[16]
XL-20	I	Residential	Shear wall	17559	16	50	2018	7535	1439	51899	60691	[17]
XL-21	II	Residential	Shear wall	16432	18	50	2016	7197	1342	40618	49158	[18]

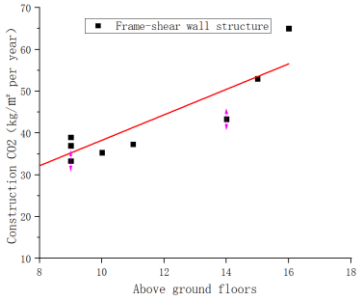
XL-22	IV	Residential	Frame-shear wall	10052.2	18	50	2015	3730	92	16878	20699	[15]
XL-23	III	Residential	Frame-shear wall	16127.2	14	50	2017	9505	1701	31531	42737	[19]
XL-24	IV	Residential	Frame-shear wall	4235.21	16	70	2018	2003	326	10237	12567	[20]
XL-25	III	Public	Frame-shear wall	44615.6	9	50	2019	18111	1956	116722	136786	[21]
XL-26	III	Public	Frame-shear wall	20036.8	9	50	2019	8354	824	57814	66994	[22]
XL-27	III	Residential	Frame-shear wall	55339	15	50	2013	32263	5645	133962	171870	[23]
XL-28	III	Residential	Brick-concrete	1838.7	4	50	2016	577	35	1103	1750	[24]
XL-29	III	Residential	Brick-concrete	1459.45	4	70	2013	522	91	1193	1807	[25]
XL-30	I	Residential	Brick-concrete	1335.58	5	50	2012	389	203	2051	2644	[26]
XL-31	III	Residential	Brick-concrete	3381.54	6	50	2017	2072	339	6618	9029	[19]
XL-32	I	Residential	Brick-concrete	3248	6	50	2015	1985	143	9695	11823	[3]
XL-33	III	Residential	Steel-concrete	3276.54	12	50	2011	1012	55	3091	4158	[22]
XL-34	III	Residential	Steel-concrete	39846	6	50	2012	19085	603	68728	88416	[27]
XL-35	III	Residential	Steel-concrete	20239.4	17	50	2012	12373	621	42824	55819	
XL-36	III	Public	Steel-concrete	24261	7	50	2016	33196	3457	70581	107234	[28]
XL-37	II	Residential	Steel-concrete	723	2	50	2011	245	2	3198	3445	[2]
XL-38	I	Residential	Masonry	3248	6	50	2015	1592	133	9695	11420	
XL-39	I	Residential	Masonry	6104	16	50	2015	3589	256	20662	24508	[3]
XL-40	I	Public	Masonry	15514	28	50	2015	8269	1086	54656	64011	
XL-41	III	Residential	Steel	23450.8	29	50	2019	13367	3752	28375	45495	[29]
XL-42	II	Public	Steel	50461.1	2	50	2015	11045	1577	134492	147028	[30]
XL-43	II	Residential	Steel	723	2	50	2011	201	1	3191	3393	[2]
XL-44	I	Residential	Wood	344.65	3	50	2021	51	9	222	281	[1]
XL-45	V	Public	Wood	701	2	50	2019	106	42	715	863	[31]
XL-46	II	Public	Wood	2162	1	50	2019	263	130	2635	3029	[32]
XL-47	III	Public	Wood	857	1	50	2019	98	50	967	1115	

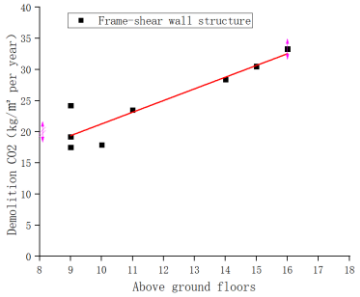
XL-48	III	Public	Wood	1172.5	2	50	2019	67	70	1578	1715	
XL-49	II	Residential	Wood	895	4	50	2021	101	54	1214	1368	[33]
XL-50	III	Public	Wood	4297	2	50	2019	675	258	5747	6680	[32]
XL-51	II	Residential	Wood	30000	3	50	2021	412	1800	46127	48340	[33]
XL-52	II	Residential	Wood	2200	4	70	2016	249	2	5834	6087	[8]
XL-53	II	Residential	Wood	723	2	50	2011	125	1	2917	3043	[2]
CS-1	Ⅳ	Public	Frame	27066.7	10	50	2017	23384	1317	52485	77186	[34]
CS-2	II	Residential	Shear wall	39173	32	50	2021	15049	1154	78114	94318	[35]
CS-3	II	Residential	Wood	185	2	20	2021	59	5	194	258	[36]
CS-4	II	Public	Steel	12878.5	5	50	2019	4151	141	38417	42708	[37]
CS-5	II	Public	Steel-concrete	61179	6	50	2019	76229	6791	42948	125968	[38]
CS-6	Ⅳ	Public	Steel-concrete	1601	7	50	2019	1138	656	3618	5427	
CS-7	Ⅳ	Public	Steel-concrete	192181	36	50	2019	104931	6726	134911	246568	[39]
CS-8	III	Residential	Steel-concrete	4981	5	50	2019	1997	827	430	3253	
CS-9	III	Public	Shear wall	2347.43	3	40	2019	2145	20	5043	7209	[36]
CS-10	III	Public	Concrete	16873	15	50	2016	10603	1885	73196	85667	[40]
CS-11	I	Residential	Shear wall	17559	16	50	2020	7736	1595	52998	62329	[41]
CS-12	I	Residential	Shear wall	12971	17	50	2020	5269	1275	39676	46219	[42]
CS-13	III	Public	Frame	6367	4	50	2019	3167	317	36600	40084	[39]
CS-14	I	Public	Steel-concrete	36500	13	50	2012	26112	82663	472712	581518	[43]
CS-15	III	Residential	Brick-concrete	423.4	2	50	2018	311	2	955	1267	[42]

Table S.2. Fitting analyses for the construction and demolition phases

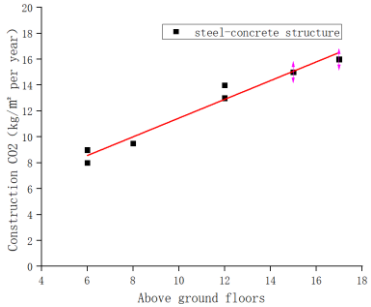
	Construction	Demolition
S-C		
S-F		

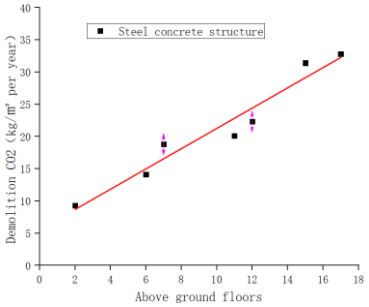
S-FS


Frame-shear wall structure
Construction CO2 (kg/m² per year)
Above ground floors

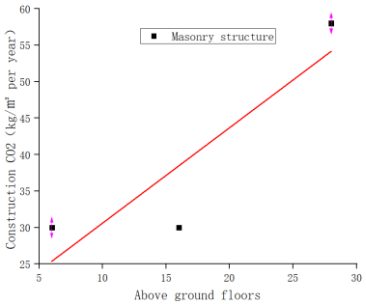

Frame-shear wall structure
Demolition CO2 (kg/m² per year)
Above ground floors

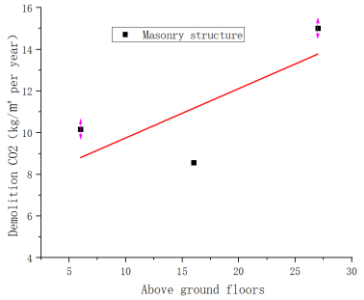
S-SC


steel-concrete structure
Construction CO2 (kg/m² per year)
Above ground floors

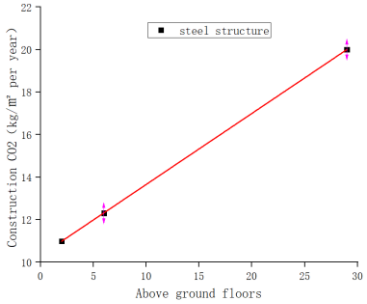

Steel concrete structure
Demolition CO2 (kg/m² per year)
Above ground floors

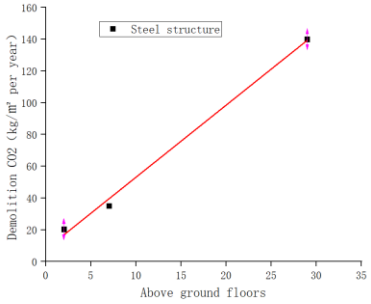
S-M


Masonry structure
Construction CO2 (kg/m² per year)
Above ground floors

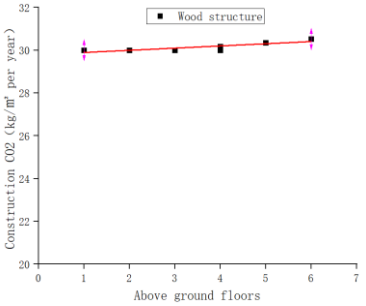

Masonry structure
Demolition CO2 (kg/m² per year)
Above ground floors

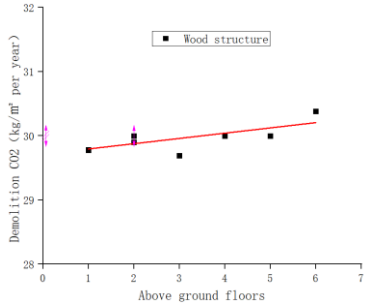
S-S


steel structure
Construction CO2 (kg/m² per year)
Above ground floors

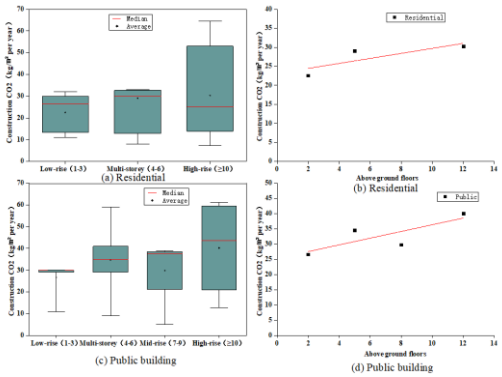

Steel structure
Demolition CO2 (kg/m² per year)
Above ground floors

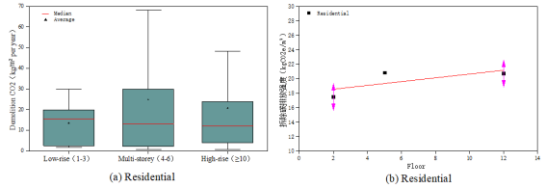
S-W


Wood structure
Construction CO2 (kg/m² per year)
Above ground floors


Wood structure
Demolition CO2 (kg/m² per year)
Above ground floors

F-R


Median
Average
Low-rise (1-3)
Multi-storey (4-6)
High-rise (≥10)
(a) Residential
Residential
Above-ground floors
(b) Residential


Median
Average
Low-rise (1-3)
Multi-storey (4-6)
High-rise (≥10)
(a) Residential
Residential
Floor
(b) Residential

F-P

Median
Average
Low-rise (1-3)
Multi-storey (4-6)
Mid-rise (7-9)
High-rise (≥10)
(c) Public building
Public
Above-ground floors
(d) Public building

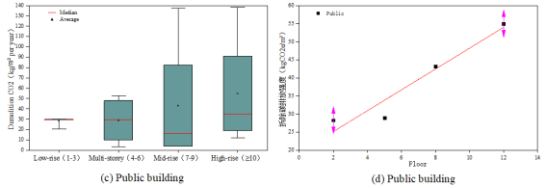

Median
Average
Low-rise (1-3)
Multi-storey (4-6)
Mid-rise (7-9)
High-rise (≥10)
(c) Public building
Public
Floor
(d) Public building

Table S.3. Energy consumption index of building heating in national standard.

Province	City	Coal district heating [kgce/(m²·a)]				Natural gas heating [Nm³/(m²·a)]					
		Constraint value		Target value		Constraint value			Target value		
		central heating for region	central heating for neighbourhood	central heating for region	central heating for neighbourhood	central heating for region	central heating for neighbourhood	Separate heating	central heating for region	central heating for neighbourhood	Separate heating
Beijing	Beijing	7.6	13.7	4.5	8.7	9.0	10.1	8.7	4.9	6.6	6.1
Tianjin	Tianjin	7.3	13.2	4.7	9.1	8.7	9.7	8.4	5.1	6.9	6.4
Hebei Province	Shijiazhuang	6.8	12.1	3.6	6.9	8.0	9.0	7.7	3.9	5.3	4.8
Shanxi Province	Taiyuan	8.6	15.3	5.0	9.7	10.0	11.2	9.7	5.3	7.3	6.7
Inner Mongolia Autonomous Region	Hohhot	10.6	19.0	6.4	12.4	12.4	13.9	12.1	6.8	9.3	8.6
Liaoning Province	Shenyang	9.7	17.3	6.4	12.3	11.4	12.7	11.1	6.8	9.3	8.6
Jilin Province	Changchun	10.7	19.3	7.9	15.4	12.7	14.2	12.4	8.5	11.7	10.9
Heilongjiang Province	Harbin	11.4	20.5	8.0	15.5	13.4	15.0	13.1	8.5	11.7	10.9
Shandong	Jinan	6.3	11.1	3.4	6.5	7.4	8.2	7.1	3.6	4.9	4.5

Province											
Henan Province	Zhengzhou	6.0	10.6	3.0	5.6	7.0	7.9	6.7	3.1	4.2	3.8
Tibet Autonomous Region	Lhasa	8.4	15.2	3.6	6.9	10.0	11.2	9.7	3.9	5.3	4.8
Shaanxi Province	Xi'an	6.3	11.1	3.0	5.6	7.4	8.2	7.1	3.1	4.2	3.8
Gansu Province	Lanzhou	8.3	14.8	4.8	9.2	9.7	10.9	9.4	5.1	6.9	6.4
Qinghai Province	Xining	10.2	18.3	5.7	11.0	12.0	13.5	11.8	6.1	8.3	7.7
Ningxia Hui Autonomous Region	Yinchuan	9.1	16.3	5.7	11.0	10.7	12.0	10.4	6.1	8.3	7.7
Xinjiang Uygur Autonomous Region	Urumqi	10.6	19.0	6.9	13.3	12.4	13.9	12.1	7.3	10.0	9.3

Note: The chart data comes from *Standard for Energy Consumption of Buildings GB/T 51161-2016* .

Table S.4. Building heating energy consumption index in local standards.

Building type	Building heating energy consumption index [kgce/(m²·a)]										
	Beijing		Tianjin			Shaanxi heating zone I			Shaanxi heating zone II		
	Current	Target	Constraint	Recommended	Target	Constraint	Reference	Target	Constraint	Reference	Target
Residential building											
1 ~ 3 floors	5.8	5.5									
4 ~ 8 floors	4.1	3.8									
9 ~ 13 floors	3.8	3.5									
14 floors and above	3.4	3.2									
Student dormitory	3.1	2.85									
Beadhouse	6.5	6.1									
Kindergarten	6.1	5.8	11.5	9.5	8.0	17.1	8.7	7.4	13.3	7.4	5.0
Office building	8.5	7.1	11.5	8.5	7.0						
Office buildings of Party and government organs			11.5	8.5	7.0						
Provincial and above authorities									18.2	10.8	6.8
Municipal and lower authorities						22.8	16.9	11.2	18.5	13.2	8.4
Other party and government organs						23.9	15.9	9.3	20.6	16.5	8.2
Shopping Mall	12.6	10.8									

Comprehensive shopping mall			9.0	8.0	7.0						
supermarket	13.0	11.1									
Retail shop	9.6	8.2									
College teaching building	7.8	6.0				20.1	11.9	8.8	15.6	10.1	6.7
Complete middle school			11.5	9.5	8.0	19.9	10.1	8.6	15.4	8.6	5.8
Primary and secondary school building	8.5	6.6	11.5	9.5	8.0						
Preschool education institution						21.0	9.2	7.8	16.3	13.7	7.0
Other educational institution						26.1	18.5	12.0	20.2	11.7	8.1
Tertiary hospital building	15.7	13.0	21.0	16.0	12.5	29.0	19.6	13.0	26.0	17.6	11.6
Secondary hospital building	14.7	12.2	21.0	16.0	12.5	25.7	17.4	11.5	23.1	15.6	8.9
Primary medical institutions						22.8	15.4	10.2	23.3	13.8	7.6
Other medical institutions						24.4	18.4	12.6	21.0	15.8	10.4
Rehabilitation center	9.2	7.6									
Five-star Hotel	13.0	10.6	12.0	9.0	7.0						
Four-star Hotel	12.6	10.3	12.0	9.0	7.0						

Three-star hotel and below	12.0	11.2	12.0	9.0	7.0						
Equipment room	5.5	4.4									
Venue institutions (Science and technology, culture, sports venues)						21.8	15.5	10.3	22.7	11.0	6.0
Data source											

Note: the heating zoning of Shaanxi Province is: Yulin City and Yan'an City belong to heating zone I, Xi'an City, Xianyang City, Baoji City, Shangluo City, Weinan City, Tongchuan City, Yangling Demonstration Area and Hancheng City belong to heating zone II, and Hanzhong City and Ankang City belong to non heating zones.

Table S.5. Statistical data of building heating energy consumption in Beijing in 2020.

Building type		Natural gas (Nm^3/m^2)	Concentrated heat (GJ/m^2)
Large public building	Office	3.05	0.29
	Market	3.15	0.28
	Hotel	7.01	0.3
	Healthcare	8.42	0.32
	Cultural education	7.46	0.32
	Office of state organs	2.15	0.29
	Building complex	1.91	0.24
	Other	1.43	0.33
Small and medium-sized public building	Office	5.31	0.37
	Market	4.58	0.36
	Hotel	6.52	0.4
	Healthcare	9.83	0.47
	Cultural education	3.62	0.49
Residential building		0.81	0.27

Note: The centralized heat can be converted into the consumption of raw coal according to China's *General Rules for Calculation of The Comprehensive Energy Consumption GB/T 2589-2020* , and then the carbon emission of building heating energy consumption can be obtained.

Table S.6. Energy consumption index of equipment in national standard [kWh/(m²·a)].

Building climate zoning	Severe cold		Cold		Hot summer and cold winter		Hot summer and warm winter		Temperate	
Constraint value of comprehensive power consumption index of residential buildings [kWh/(a·H)]	2200		2700		3100		2800		2200	
Public buildings	Constraint	Target	Constraint	Target	Constraint	Target	Constraint	Target	Constraint	Target
Class A party and government office	55	45	55	45	70	55	65	50	50	40
Class A commercial office	65	55	65	55	85	70	80	65	65	50
Class B party and government office	70	50	70	50	90	65	80	60	60	45
Class B commercial office	80	60	80	60	110	80	100	75	70	55
Class A three-star hotel and below	70	50	70	50	110	90	100	80	55	45
Class A four-star hotel	85	65	85	65	135	115	120	100	65	55
Class A five-star hotel	100	80	100	80	160	135	130	110	80	60
Class B three-star hotel and below	100	70	100	70	160	120	150	110	60	50
Class B four-star hotel	120	85	120	85	200	150	190	140	75	60
Class B five-star hotel	150	110	150	110	240	180	220	160	95	75
Class A general department stores	80	60	80	60	130	110	120	100	80	65
Class A general shopping center	80	60	80	60	130	110	120	100	80	65
Class A general supermarket	110	90	110	90	150	120	135	105	85	70
Class A restaurant	60	45	60	45	90	70	85	65	55	40
Class A general shops	55	40	55	40	90	70	85	65	55	40

Class B large department stores	140	100	140	100	200	170	245	190	90	70
Class B shopping mall	175	135	175	135	260	210	300	245	90	70
Class B supermarket	170	120	170	120	225	180	290	240	100	80
Office building parking garage	9	6								
Hotel building parking garage	15	11								
Shopping mall parking garage	12	8								

Note: 1) The chart data comes from *Standard for Energy Consumption of Buildings GB/T 51161-2016* ;

2) Among them, the public buildings that can use natural ventilation to meet the indoor temperature comfort requirements and reduce energy consumption by opening external windows are class A public buildings; Public buildings that rely on mechanical ventilation and air conditioning system to maintain indoor temperature comfort all year round are class B public buildings due to restrictions on building function and scale or the surrounding environment of the building.

Table S.7. Energy consumption index of equipment in local standards [kWh/(m²·a)].

Type	Energy consumption index of equipment					
	Beijing	Tianjin	Shanghai	Shenzhen	Zhejiang Province	Hainan Province
Residence	35					
Student dormitory	31					
Beadhouse	69					
Kindergarten	30	44				
Office building	70	70		95	130	
Party and government office		60		75	80	
Shopping Mall	250	167		140	245	
Supermarket	178			165		
Retail shop	75	70		95		
Cultural building						
Sports building						
Educational building						
University teaching building	66					
Combined junior and senior high school		24				
Secondary school building	42	15				
Primary school building	42	15.5				
Medical and health building						
Class A tertiary hospital	163	114				
Secondary hospital	87	104				
Rehabilitation center	135					
Hotel				95		
Five-star Hotel	148	110	236.1	155	145	135

Four-star Hotel	101	110	211.8	145	105	114
Three-star hotel and below	83	95	163.2	120	95	110
Underground garage	41					
Data source						

Table S.8. Statistical data of building energy consumption in Shanghai and Shenzhen in 2020 (kWh/m²).

Type	Shanghai	Shenzhen
Party and government offices	82.2	78.8
Office building	81.5	82.1
Tourist hotel building	95.8	112
Shopping mall	140	168.9
Medical and health building	140.4	
Comprehensive building	88.5	80
Educational building	37.4	71.7
Cultural building	85	71.7
sports building	67.5	
other building	83.5	
City average		96.5

Table S.9. Carbon emission factors of major energy sources.

Type	Carbon content per unit calorific value (tC/TJ)	Carbon oxidation rate	CO_2 emission factor per calorific value (tCO_2/TJ)	Low calorific value (kJ/kg、m^3)	CO_2 emission factor ($kgCO_2/kg$、m^3)
Raw coal	26.4	0.98	94.44	20934	1.98
Crude	20.1	0.98	72.23	41868	3.02
Gasoline	18.9	0.98	67.91	43124	2.93
Diesel oil	20.2	0.98	72.59	42705	3.1
Fuel oil	21.1	0.98	71.87	41868	3.01
Natural gas	15.3	0.99	55.54	38979	2.16
Tap water					0.168 $kgCO_2/t$

Note: the emission data of CO_2 per unit calorific value and the carbon emission factor of tap water in this table are derived from *Standard for Building Carbon Emission Calculation GB/T 51366-2019*, according to the low calorific value of each fuel in *General Rules for Calculation of The Comprehensive Energy Consumption GB/T 2589-2020*, multiply the two to obtain the CO_2 emission per unit fuel.

Table S.10. Estimated energy consumption list.

No	B_e	EF_e	B_m	EF_m	D	EF_r
XL-1	22	1.0826	11.4	1.98	—	—
XL-2	27	0.9419	—	—	8.7	2.16
XL-3	22	1.0826	11.4	1.98	—	—
XL-4	65 (Constraint value of class A commercial office building)	1.0826	11.4	1.98	—	—
XL-5	90 (Constraint value of class B party and government building)	0.7921	—	—	—	—
XL-6	15 (180 households)	0.9419	—	—	8.7	2.16
XL-7	27.43 (28 households)	0.8587	—	—	—	—
XL-8	65 (Constraint value of class A party and government building)	0.8042	—	—	—	—
XL-9	70 (Constraint value of class A party and government building)	0.7921	—	—	—	—
XL-10	65 (Target value of class A commercial office building)	0.8042	—	—	—	—
XL-11	80 (Constraint value of class A shopping center)	1.0826	9.7	1.98	—	—
XL-12	65 (Constraint value of class A commercial office building)	0.8922	6.3	1.98	—	—
XL-13	120 (Constraint value of class A shopping center)	0.8042	—	—	—	—
XL-14	65 (Constraint value of class A commercial office building)	0.9419	—	—	8.7	2.16
XL-15	65 (Constraint value of class A commercial office building)	0.9419	—	—	8.7	2.16
XL-16	13.44 (2 households)	1.0826	9.7	1.98	—	—
XL-17	13.44 (2 households)	1.0826	9.7	1.98	—	—
XL-18	57.23 (Case study value)	0.8042	—	—	—	—
XL-19	16.54 (240 households)	0.8922	6.3	1.98	—	—
XL-20	22	1.0826	11.4	1.98	—	—

XL-21	23.66 (144 households)	0.8922	6.3	1.98	—	—
XL-22	28	0.8042	—	—	—	—
XL-23	31	0.8587	—	—	—	—
XL-24	28	0.8042	—	—	—	—
XL-25	55 (Target value of class A commercial office building)	0.8587	—	—	—	—
XL-26	55 (Target value of class A commercial office building)	0.8587	—	—	—	—
XL-27	50 (Case study value)	0.7921	—	—	—	—
XL-28	26.98 (16 households)	0.7921	—	—	—	—
XL-29	31.86 (15 households)	0.7921	—	—	—	—
XL-30	22	1.0826	11.4	1.98	—	—
XL-31	31	0.8587	—	—	—	—
XL-32	22	1.0826	11.4	1.98	—	—
XL-33	31 (33 households)	0.7921	—	—	—	—
XL-34	31	0.7921	—	—	—	—
XL-35	31	0.7921	—	—	—	—
XL-36	72.64 (Case study value)	0.7921	—	—	—	—
XL-37	27	0.9419	7.6	1.98	—	—
XL-38	22	1.0826	11.4	1.98	—	—
XL-39	22	1.0826	11.4	1.98	—	—
XL-40	65 (Constraint value of class A commercial office building)	1.0826	11.4	1.98	—	—
XL-41	25.4 (Case study value)	0.8042	—	—	—	—
XL-42	60.3 (Case study value)	0.9419	—	—	9	2.16
XL-43	27	0.9419	7.6	1.98	—	—
XL-44	22	1.0826	11.4	1.98	—	—
XL-45	40 (Target value of class A party and government building)	0.9042	—	—	—	—
XL-46	40 (Target value of class A party and government building)	0.9419	6.8	1.98	—	—

XL-47	95.8 (Energy consumption report)	0.7921	—	—	—	—
XL-48	40 (Target value of class A party and government building)	0.8587	—	—	—	—
XL-49	27	0.8922	6.3	1.98	—	—
XL-50	40 (Target value of class A party and government building)	0.8587	—	—	—	—
XL-51	27	0.9419	—	—	8.7	2.16
XL-52	27	0.9419	—	—	8.7	2.16
XL-53	27	0.9419	7.6	1.98	—	—
CS-1	44.48 (Case study value)	0.8042	—	—	—	—
CS-2	16.54 (240 households)	0.8922	6.3	1.98	—	—
CS-3	27	0.8922	6.3	1.98	—	—
CS-4	55 (Target value of class A commercial office building)	0.9419	7.3	1.98	8.7	2.16
CS-5	27	0.8922	6.3	1.98	—	—
CS-6	80 (Constraint value of class A commercial office building)	0.8042	—	—	—	—
CS-7	50 (Target value of class A party and government building)	0.8042	—	—	—	—
CS-8	31	0.7921	—	—	—	—
CS-9	55 (Target value of class A commercial office building)	0.8587	—	—	—	—
CS-10	90 (Constraint value of class B party and government building)	0.7921	—	—	—	—
CS-11	22	1.0826	11.4	1.98	—	—
CS-12	22	1.0826	11.4	1.98	—	—
CS-13	140 (Energy consumption report)	0.7921	—	—	—	—
CS-14	55 (Constraint value of class A party and government building)	1.0826	9.7	1.98	—	—
CS-15	31	0.8587	—	—	—	—

Table S.11. Original data and estimation results (t).

No	Stage 1	Stage 2	Stage 3	LCA	Stage 1		Stage 2		Stage 3	LCA		
	Original data				Model A	Model B	Model A	Model B		Model A	Model B	Model C
XL-1	78	13	222	313	214	133	2	15	1132	1348	1280	1241
XL-2	489	5	6396	6890	1368	850	21	97	8036.3	9426	8984	8811.84
XL-3	3974	275	20662	24910	3797	2358	332	354	20147	24276	22860	22096
XL-4	8796	1117	54656	64569	9650	7539	1540	2422	87559	98749	97520	97433
XL-5	10840	1056	88237	100134	10496	8200	854	1761	69060	80410	79021	76869
XL-6	1528	188	4606	6322	2765	1717	358	253	9695	12817	11664	10641
XL-7	1857	142	5038	7037	1962	1218	177	150	5400	7539	6769	5931
XL-8	10905	1400	47380	59684	15265	11923	1526	1975	77252	94044	91150	86012
XL-9	11082	3148	48673	62966	13025	10173	1046	1352	69229	83300	80754	77075
XL-10	28734	1274	67960	97968	15570	12161	1250	1616	78787	95608	92564	87721
XL-11	36811	9896	422277	468983	60355	47140	4847	6264	471927	537130	525332	525208
XL-12	9731	362	52499	62592	7063	5516	605	778	48897	56562	55192	54424
XL-13	63562	14125	630983	706240	80888	63177	6098	7878	696791	783777	767846	775402
XL-14	93445	132	225822	319267	35466	27701	3546	4589	258553	297565	290843	287761
XL-15	93122	145	257171	350369	35466	27701	3546	4589	258553	297565	290842	287761
XL-16	101	14	182	297	121	127	19	13	950	1090	1090	1042
XL-17	117	16	182	315	121	127	19	13	950	1090	1090	1042
XL-18	19505	1843	231802	263921	49415	51728	1569	10392	355075	406059	417195	389571
XL-19	15757	517	80030	96305	14458	15135	881	2996	76988	92327	95119	84526
XL-20	7535	1439	51899	60691	6481	6784	1985	1020	55392	63858	63196	60755
XL-21	7197	1342	40618	49158	6065	6349	1809	992	37982	45856	45322	41684

XL-22	3730	92	16878	20699	4757	3884	863	607	15822	21441	20312	17382
XL-23	9505	1701	31531	42737	7631	6231	1146	899	28607	37384	35737	31417
XL-24	2003	326	10237	12567	2004	1636	332	246	8744	11080	10626	9599
XL-25	18111	1956	116722	136786	21111	21682	2344	3592	124825	148280	150099	139001
XL-26	8354	824	57814	66994	9481	9737	1053	1613	56059	66593	67409	62425
XL-27	32263	5645	133962	171870	26186	21380	4136	3150	134165	164486	158695	147226
XL-28	577	35	1103	1750	808	710	79	81	2712	3599	3504	2980
XL-29	522	91	1193	1807	641	564	63	65	3234	3938	3863	3550
XL-30	389	203	2051	2644	587	516	191	61	4290	5068	4867	4705
XL-31	2072	339	6618	9029	1485	1306	240	157	5869	7594	7333	6446
XL-32	1985	143	9695	11823	1426	1255	230	151	10314	11971	11720	11312
XL-33	1012	55	3091	4158	1464	1266	68	175	5353	6885	6794	5880
XL-34	19085	603	68728	88416	17802	15395	500	1856	64982	83284	82232	71383
XL-35	12373	621	42824	55819	9043	7820	563	1199	33114	42720	42132	36375
XL-36	33196	3457	70581	107234	10839	11790	338	1760	79578	90755	93128	88597
XL-37	245	2	3198	3445	323	279	5	30	1971	2299	2281	2162
XL-38	1592	133	9695	11420	1745	1255	119	151	10535	12399	11942	11555
XL-39	3589	256	20662	24508	3279	2358	306	354	19851	23436	22564	21772
XL-40	8269	1086	54656	64011	8333	7539	1028	2422	86723	96084	97520	97433
XL-41	13367	3752	28375	45495	8367	9060	3750	1712	32205	44322	42978	35399
XL-42	11045	1577	134492	147028	18004	24523	1120	2656	190002	209127	217182	211483
XL-43	201	1	3191	3393	258	279	16	30	1931	2205	2241	2119
XL-44	51	9	222	281	38	133	21	15	425	537	573	468
XL-45	106	42	715	863	76	341	42	37	1406	1524	1784	1544
XL-46	263	130	2635	3029	235	1051	129	105	6537	6901	7693	7170
XL-47	98	50	967	1115	93	416	51	42	3421	3565	3879	3807

XL-48	67	70	1578	1715	128	570	70	62	2245	2443	2877	2465
XL-49	101	54	1214	1368	97	346	54	40	2036	2188	2422	2235
XL-50	675	258	5747	6680	468	2088	257	226	8227	8952	10542	9168
XL-51	412	1800	46127	48340	3266	11591	1801	1294	72257	77324	85141	79293
XL-52	249	2	5834	6087	240	850	133	97	7339	7711	8287	8049
XL-53	125	1	2917	3043	79	279	43	30	1824	1945	2133	2001
CS-1	23384	1317	52485	77186	16841	13154	1767	2287	62900	81508	78341	70064
CS-2	15049	1154	78114	94318	14458	15135	881	2996	76988	92327	95119	84526
CS-3	59	5	194	258	20	71	11	8	178	210	258	196
CS-4	4151	141	38417	42708	4595	4976	483	585	49925	55003	55486	54742
CS-5	76229	6791	42948	125968	27334	23637	768	2849	151767	179868	178253	166534
CS-6	1138	656	3618	5427	715	778	22	116	5796	6534	6690	6452
CS-7	104931	6726	134911	246568	85863	93396	10426	36122	466615	562904	596133	519719
CS-8	1997	827	430	3253	2225	2421	56	322	8121	10402	10863	9052
CS-9	2145	20	5043	7209	866	1141	173	133	5255	6294	9529	5854
CS-10	10603	1885	73196	85667	10496	8200	854	1761	69060	80410	79021	76869
CS-11	7736	1595	52998	62329	6481	6784	1985	1020	55392	63858	63196	60755
CS-12	5269	1275	39676	46219	4787	5011	1451	768	40914	47152	46693	44875
CS-13	3167	317	36600	40084	3962	2460	299	282	38708	42968	41449	43071
CS-14	26112	82663	472712	581518	16308	17738	813	3519	172571	189692	193829	192059
CS-15	311	2	955	1267	190	167	-291	18	745	645	930	802

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