Table S1. Carbon dioxide emissions in domestic water of various cities. （10,000 tons）

City	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
ZZ	406.43	408.23	260.13	266.90	281.91	303.45	344.21	387.86	415.26	428.23	502.43
KF	64.49	66.81	67.93	68.87	112.91	153.32	160.36	168.36	113.08	132.30	127.88
LY	117.90	114.02	120.12	146.85	153.77	143.79	155.60	161.89	168.85	193.85	207.51
PDS	73.21	71.12	70.80	57.99	56.56	62.35	54.13	57.97	87.87	123.32	142.70
AY	117.68	81.22	84.37	83.82	114.38	112.55	182.03	119.63	98.28	124.19	128.35
HB	21.57	23.84	25.14	28.29	37.13	32.02	35.64	43.50	34.94	43.40	44.63
XX	84.45	86.05	90.03	89.95	99.97	94.19	125.55	133.93	146.31	149.51	160.11
JZ	52.99	56.64	58.46	50.56	67.06	63.52	63.51	65.13	78.08	97.13	93.00
PY	109.93	104.81	93.81	73.19	75.42	63.41	72.13	80.84	85.70	70.00	69.19
XC	78.36	72.83	70.69	58.18	77.21	79.49	96.53	113.09	106.59	94.39	96.86
LH	33.75	33.98	39.23	30.83	28.10	40.63	56.69	42.63	55.77	50.98	52.76
SMX	29.24	32.91	45.22	32.13	28.07	47.22	54.27	51.53	70.74	60.49	69.48
NY	163.41	153.46	157.04	155.92	182.30	147.33	173.38	192.62	214.26	267.64	263.90
SQ	109.90	109.15	116.38	122.63	117.35	108.90	105.42	117.45	118.65	145.49	131.40
XY	122.94	138.19	133.19	112.76	117.68	179.64	185.29	230.48	213.29	212.05	176.95
ZK	143.46	128.91	120.86	110.84	129.36	105.53	122.61	134.38	195.82	153.77	154.69
ZMD	86.86	89.32	96.67	91.18	101.51	75.99	88.41	95.72	135.04	142.45	147.95
JY	10.86	13.41	23.34	14.83	19.89	19.45	23.53	29.00	30.39	26.25	30.39

Table S2. Carbon dioxide emissions in industrial water of various cities. （10,000 tons）

City	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
ZZ	235.59	234.12	236.05	224.43	213.70	212.31	207.98	198.35	184.52	167.88	98.81
KF	93.18	91.91	98.78	97.21	80.51	85.39	84.38	84.92	65.02	60.88	35.50
LY	301.94	302.53	282.76	224.99	206.45	206.73	206.03	202.34	200.47	177.74	139.16
PDS	208.72	331.64	322.60	252.23	276.82	228.97	229.93	215.48	115.72	100.74	91.92
AY	88.49	91.95	82.29	80.33	78.30	65.36	67.52	69.44	66.06	50.37	47.09
HB	30.22	32.24	29.04	26.96	28.53	24.53	26.30	23.84	23.83	21.13	19.65
XX	128.43	128.52	119.53	106.93	98.16	99.25	103.04	94.26	87.86	88.47	59.14
JZ	168.20	170.25	158.36	151.74	128.03	121.99	127.27	125.48	117.35	55.83	52.81
PY	129.77	129.88	130.29	114.02	114.59	108.68	110.87	106.20	94.67	45.44	36.59
XC	127.89	128.81	113.84	104.41	102.30	101.65	102.23	101.38	94.11	47.01	36.29
LH	85.73	85.60	70.30	29.88	51.46	54.30	56.16	56.30	45.26	49.49	46.86
SMX	94.02	95.04	83.54	84.05	76.45	57.17	41.75	51.82	46.56	28.81	31.32
NY	279.51	251.61	281.58	249.47	248.92	220.93	215.02	214.92	201.80	157.83	100.69
SQ	96.32	102.67	102.63	77.81	84.21	84.89	93.25	83.79	68.46	74.94	64.07
XY	106.87	111.00	101.46	97.57	102.22	97.58	93.48	91.92	89.78	72.80	68.47
ZK	115.91	113.97	116.93	108.13	102.22	107.63	105.71	106.31	101.73	92.56	59.17
ZMD	57.68	58.02	58.65	45.65	52.57	49.72	51.23	44.17	45.19	44.48	44.19
JY	29.64	32.57	25.79	28.44	24.04	25.46	26.42	26.29	24.17	23.69	24.09

Table S3. Carbon dioxide emissions in agricultural water of various cities. （10,000 tons）

City	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
ZZ	19.17	19.18	19.62	19.66	19.81	19.83	19.78	19.79	20.18	20.16	19.73
KF	31.57	31.65	34.10	33.72	34.48	34.42	34.49	34.65	34.83	35.56	36.16
LY	13.78	13.87	13.61	13.96	14.97	15.01	15.10	15.15	15.12	16.75	15.25
PDS	19.85	20.12	18.02	19.27	19.72	20.06	20.75	20.87	21.28	21.65	22.73
AY	29.12	29.20	28.94	29.43	30.40	29.38	29.72	29.91	29.94	30.09	31.03
HB	8.14	8.13	8.86	9.02	9.04	9.06	9.06	9.08	9.08	9.10	9.10
XX	32.11	32.15	35.19	35.27	35.37	35.42	35.52	35.60	35.70	35.81	35.67
JZ	15.81	15.84	17.59	17.52	17.72	18.15	17.81	17.88	17.83	17.83	17.98
PY	21.53	21.60	22.85	22.86	22.99	23.08	23.16	23.09	23.23	23.30	23.25
XC	23.40	23.52	23.90	24.07	24.10	24.19	24.39	24.29	24.09	24.18	24.18
LH	14.78	14.86	12.86	13.01	13.91	14.04	14.25	14.42	14.43	14.43	14.52
SMX	5.25	5.21	4.64	4.88	5.10	5.31	5.56	5.84	6.01	6.18	6.18
NY	45.81	45.85	46.96	47.48	47.80	47.95	48.10	48.26	48.57	49.76	50.42
SQ	58.60	58.63	57.04	57.67	58.68	59.28	60.07	60.10	60.52	63.10	62.86
XY	45.39	45.90	48.64	49.93	49.92	50.26	50.74	51.45	52.32	54.09	55.87
ZK	59.15	59.78	52.65	54.94	56.28	56.32	56.35	56.18	56.25	58.51	63.02
ZMD	54.44	55.78	49.24	55.06	58.43	59.39	59.33	59.43	60.95	62.92	64.79
JY	1.96	1.97	2.47	2.45	2.45	2.44	2.44	2.46	2.46	2.46	2.46

Table S4. Carbon dioxide absorption in agricultural water of various cities. （10,000 tons）

City	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
ZZ	97.10	97.17	99.38	99.57	100.34	100.44	100.22	100.26	102.25	102.13	99.96
KF	159.96	160.33	172.76	170.82	174.70	174.38	174.71	175.52	176.43	180.13	183.16
LY	69.80	70.26	68.95	70.74	75.85	76.04	76.52	76.75	76.61	84.86	77.23
PDS	100.54	101.95	91.30	97.61	99.89	101.65	105.12	105.73	107.79	109.70	115.17
AY	147.50	147.92	146.59	149.11	154.00	148.86	150.56	151.54	151.67	152.45	157.20
HB	41.25	41.17	44.91	45.69	45.77	45.92	45.92	46.01	46.02	46.09	46.09
XX	162.68	162.88	178.29	178.70	179.20	179.46	179.94	180.33	180.86	181.44	180.70
JZ	80.10	80.23	89.12	88.77	89.76	91.94	90.22	90.60	90.33	90.33	91.07
PY	109.06	109.43	115.77	115.80	116.48	116.92	117.32	116.99	117.70	118.03	117.78
XC	118.54	119.17	121.10	121.96	122.10	122.56	123.58	123.03	122.06	122.50	122.50
LH	74.88	75.30	65.17	65.92	70.49	71.12	72.18	73.04	73.10	73.10	73.54
SMX	26.59	26.42	23.52	24.74	25.85	26.89	28.19	29.58	30.47	31.31	31.31
NY	232.10	232.28	237.90	240.55	242.14	242.90	243.66	244.51	246.08	252.08	255.45
SQ	296.86	297.02	288.98	292.14	297.27	300.29	304.33	304.45	306.58	319.67	318.43
XY	229.93	232.54	246.42	252.94	252.89	254.63	257.04	260.64	265.08	274.04	283.02
ZK	299.67	302.85	266.73	278.30	285.11	285.32	285.47	284.61	284.98	296.44	319.26
ZMD	275.80	282.61	249.44	278.91	296.01	300.87	300.59	301.06	308.76	318.78	328.20
JY	9.91	9.92	12.50	12.43	12.41	12.38	12.38	12.45	12.45	12.45	12.45

Table S5. Carbon dioxide absorption in ecological water of various cities. （10,000 tons）

City	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
ZZ	22.98	23.87	24.88	26.89	27.95	29.08	33.49	35.27	36.80	38.69	39.69
KF	7.60	7.60	7.71	8.25	8.24	8.20	8.29	8.51	9.30	10.15	10.85
LY	5.43	5.66	5.84	6.36	6.62	7.12	7.34	7.37	7.79	9.42	10.65
PDS	7.25	7.16	7.10	7.07	6.97	6.86	6.81	6.86	7.53	8.13	8.73
AY	7.70	7.76	7.84	7.93	8.02	8.11	8.22	8.37	8.40	8.45	8.56
HB	3.54	3.55	3.52	3.54	3.51	3.47	3.45	3.45	3.69	4.04	4.51
XX	3.29	3.35	3.35	3.37	3.42	3.52	3.59	3.74	3.78	3.84	3.91
JZ	2.54	2.61	2.67	2.82	2.90	3.11	3.22	3.26	3.36	3.33	3.52
PY	17.13	17.09	17.19	17.30	17.33	17.42	17.54	17.52	17.57	17.60	17.65
XC	1.98	1.99	2.03	2.07	2.11	2.41	2.56	2.72	2.89	3.04	3.13
LH	5.04	5.06	5.10	5.14	5.16	5.26	5.37	5.47	5.68	6.04	6.18
SMX	3.60	3.63	3.65	3.67	3.93	4.11	4.16	4.21	4.27	4.61	4.57
NY	9.95	11.83	11.89	12.82	12.87	11.73	11.92	12.32	13.27	13.56	13.99
SQ	1.95	2.06	2.11	2.17	2.28	2.34	2.56	2.79	3.28	3.29	3.53
XY	3.39	3.57	3.73	4.29	4.36	4.52	4.66	4.77	4.87	4.90	4.94
ZK	2.83	2.91	2.98	3.18	3.36	3.53	3.59	3.75	3.82	3.93	4.52
ZMD	8.65	8.82	8.91	8.98	9.08	9.18	9.54	9.68	9.80	9.95	10.19
JY	3.42	3.50	3.62	3.70	3.73	3.82	3.85	3.86	3.97	4.18	4.30

Table S6. Consolidated green water resource utilization efficiency of various cities.

City	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
ZZ	0.547	0.512	0.572	0.559	0.556	0.582	0.643	0.563	0.609	0.624	0.722
KF	0.506	0.583	0.509	0.514	0.457	0.432	0.462	0.519	0.507	0.488	0.541
LY	0.488	0.516	0.584	0.498	0.471	0.479	0.467	0.478	0.519	0.543	0.574
PDS	0.487	0.456	0.413	0.427	0.419	0.402	0.424	0.405	0.392	0.440	0.433
AY	0.456	0.444	0.427	0.394	0.390	0.393	0.358	0.363	0.445	0.458	0.467
HB	0.497	0.461	0.480	0.463	0.429	0.449	0.408	0.435	0.440	0.470	0.519
XX	0.371	0.373	0.393	0.396	0.379	0.378	0.373	0.406	0.422	0.474	0.557
JZ	0.416	0.424	0.432	0.446	0.426	0.422	0.416	0.517	0.506	0.604	0.587
PY	0.554	0.542	0.497	0.590	0.528	0.565	0.499	0.476	0.456	0.504	0.542
XC	0.561	0.512	0.495	0.496	0.435	0.443	0.468	0.538	0.574	0.654	0.702
LH	0.728	0.596	0.550	0.578	0.561	0.540	0.507	0.606	0.662	0.686	0.758
SMX	0.653	0.600	0.727	0.600	0.677	0.637	0.503	0.462	0.533	0.571	0.657
NY	0.426	0.410	0.380	0.379	0.366	0.365	0.345	0.340	0.373	0.432	0.558
SQ	0.454	0.428	0.382	0.519	0.427	0.462	0.464	0.451	0.480	0.547	0.536
XY	0.335	0.326	0.346	0.368	0.347	0.319	0.319	0.338	0.361	0.445	0.597
ZK	0.402	0.390	0.404	0.437	0.392	0.375	0.398	0.489	0.442	0.514	0.570
ZMD	0.642	0.512	0.523	0.620	0.506	0.512	0.530	0.520	0.583	0.582	0.581
JY	0.696	0.577	0.506	0.541	0.493	0.487	0.487	0.468	0.463	0.637	0.650