

Table S1. Landscape Transfer Matrix of the Xiong'an New Area from 1980 to 2000 (unit: km²).

1980 \ 2000	Dry land	Other woodland	Low coverage grassland	High coverage grassland	River	Lake	Pond	Beach land	Land for urban residents	Land for rural residents	Infrastructure land	Sum
Dry land	1241.44	6.37				6.94	0.54	10.54	9.32	37.75	2.60	1315.50
Other woodland	0.07	4.43										4.50
Low coverage grassland			0.36									0.36
High coverage grassland				0.16								0.16
River					6.91							6.91
Lake						2.78		0.10				2.88
Pond							1.34					1.34
Beach land	1.83					40.33	7.17	235.13		0.44		284.90
Land for urban residents									7.81			7.81
Land for rural residents									1.72	137.36		139.08
Infrastructure land									0.42		5.70	6.12
Sum	1243.34	10.81	0.36	0.16	6.91	50.05	9.05	245.77	19.26	175.55	8.30	1769.57

Table S2. Landscape Transfer Matrix of the Xiong'an New Area from 2000 to 2017 (unit: km²).

2000 \ 2017	Paddy field	Dry land	Other woodland	River	Lake	Pond	Beach land	Land for urban residents	Land for rural residents	Infrastructure land	Sum
Dry land	58.23	1000.21	5.04	8.13	0.83	2.15	6.35	12.49	129.08	20.82	1243.34
Other woodland	0.36	4.94	3.65	0.00				0.13	1.57	0.15	10.81
Low coverage grassland	0.14								0.22		0.36
High coverage grassland		0.09								0.06	0.16
River		3.98	0.09	2.46				0.00	0.38		6.91
Lake		0.55		0.96	30.37	0.00	16.56		1.28	0.34	50.05
Pond		1.17		0.17	0.48	5.01	1.72		0.50	0.01	9.05
Beach land	13.97	85.35	0.03	4.01	29.18	3.33	97.08	0.36	11.76	0.71	245.77
Land for urban residents		1.95						17.31	0.00		19.26
Land for rural residents	1.54	44.51	0.51	0.75	0.39	0.44	1.73	1.63	119.67	4.37	175.55
Infrastructure land	0.03	4.92		0.12	0.03	0.47	0.06	0.11	0.16	2.41	8.30
Sum	74.27	1147.68	9.31	16.61	61.27	11.39	123.49	32.03	264.63	28.89	1769.57

Table S3. Landscape Transfer Matrix of the Xiong'an New Area from 1980 to 2017 (unit: km²).

1980 \ 2017	Paddy field	Dry land	Other woodland	River	Lake	Pond	Beach land	Land for urban residents	Land for rural residents	Infrastructure land	Sum
Dry land	59.37	1025.41	8.02	8.28	4.34	2.41	10.20	20.82	154.10	22.54	1315.50
Other woodland	0.36	2.38	0.81						0.80	0.15	4.50
Low coverage grassland	0.14								0.22		0.36
High coverage grassland		0.09								0.06	0.16
River		3.98	0.09	2.46				0.00	0.38		6.91
Lake		0.11			1.14		1.34		0.29		2.88
Pond		0.28		0.10	0.00	0.56	0.03		0.37		1.34
Beach land	12.87	78.93	0.03	5.03	55.41	7.80	110.45	0.36	13.00	1.03	284.90
Land for urban residents		0.14						7.67			7.81
Land for rural residents	1.53	33.02	0.37	0.73	0.35	0.44	1.44	2.66	95.31	3.22	139.08
Infrastructure land		3.33			0.03	0.19	0.02	0.51	0.16	1.88	6.12
Sum	74.27	1147.68	9.31	16.61	61.27	11.39	123.49	32.03	264.63	28.89	1769.57

Table S4. Correlation matrix of the driving factors of wetland change

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁	X ₁₂	X ₁₃	X ₁₄
X ₁	1	-0.355	0.064	0.178	0.237	-0.1	0.106	0.059	0.119	0.094	0.094	0.073	0.219	-0.27
X ₂	-0.355	1	0.114	-0.177	-0.113	0.271	-0.174	-0.109	-0.192	-0.152	-0.154	0.172	-0.192	0.449
X ₃	0.064	0.114	1	0.074	-0.424	0.388	0.863	0.859	0.854	0.868	0.874	0.942	0.797	-0.38
X ₄	0.178	-0.177	0.074	1	0.298	-0.344	0.353	0.36	0.36	0.322	0.344	0.244	0.377	-0.36
X ₅	0.237	-0.113	-0.424	0.298	1	-0.285	-0.329	-0.29	-0.334	-0.326	-0.335	-0.285	-0.285	0.181
X ₆	-0.1	0.271	0.388	-0.344	-0.285	1	0.078	0.088	0.065	0.109	0.096	0.27	0.059	0.151
X ₇	0.106	-0.174	0.863	0.353	-0.329	0.078	1	0.979	0.998	0.991	0.999	0.87	0.942	-0.668
X ₈	0.059	-0.109	0.859	0.36	-0.29	0.088	0.979	1	0.966	0.978	0.982	0.909	0.903	-0.573
X ₉	0.119	-0.192	0.854	0.36	-0.334	0.065	0.998	0.966	1	0.98	0.996	0.85	0.94	-0.681
X ₁₀	0.094	-0.152	0.868	0.322	-0.326	0.109	0.991	0.978	0.98	1	0.99	0.881	0.945	-0.661
X ₁₁	0.094	-0.154	0.874	0.344	-0.335	0.096	0.999	0.982	0.996	0.99	1	0.881	0.935	-0.647
X ₁₂	0.073	0.172	0.942	0.244	-0.285	0.27	0.87	0.909	0.85	0.881	0.881	1	0.784	-0.309
X ₁₃	0.219	-0.192	0.797	0.377	-0.285	0.059	0.942	0.903	0.94	0.945	0.935	0.784	1	-0.833
X ₁₄	-0.27	0.449	-0.38	-0.36	0.181	0.151	-0.668	-0.573	-0.681	-0.661	-0.647	-0.309	-0.833	1

Table S5. Eigenvalues and principal component contribution rates

The principal components	The eigenvalue	contribution /%	Cumulative contribution rate/%	The principal components	The eigenvalue	contribution /%	Cumulative contribution rate/%
1	8.149	58.21	58.21	8	0.068	0.484	99.555
2	2.26	16.145	74.354	9	0.042	0.303	99.858
3	1.11	10.929	85.284	10	0.012	0.085	99.943
4	0.965	3.894	89.178	11	0.008	0.057	99.999
5	0.536	3.826	93.003	12	9.85E-05	0.001	100
6	0.477	3.407	96.41	13	1.61E-09	1.15E-08	100
7	0.372	2.661	99.071	14	7.82E-17	5.58E-16	100

Table S6. Principal component load matrix after rotation

Variable	The first principal component	The second principal component	The third principal component	Variable	The first principal component	The second principal component	The third principal component
X ₁₁	0.983	-0.141	-0.032	X ₃	0.908	0.127	-0.28
X ₇	0.979	-0.168	-0.022	X ₂	-0.007	0.875	-0.074
X ₈	0.979	-0.062	0.017	X ₁₄	-0.586	0.655	-0.044
X ₁₀	0.978	-0.147	-0.044	X ₁	0.058	-0.561	0.173
X ₉	0.97	-0.193	-0.021	X ₄	0.377	-0.11	0.78
X ₁₂	0.935	0.223	-0.054	X ₅	-0.319	-0.001	0.735
X ₁₃	0.927	-0.297	-0.003	X ₆	0.15	0.33	-0.632