

Table S1. Key laws and regulations related to karst conservation and management in China.

First Enacted Time	Title	Amended and Revised Time	Level
1979	Environmental Protection Law (for Trial Implementation)	Revised in 1989 and 2014	National
1979	Forestry Law (for Trial Implementation)	Revised in 1984 and 1998, 2009, and 2019	National
1982	Law on Protection Cultural Relics	Revised in 1991, 2002, 2007, 2013, 2015, and 2017	National
1982	Marine Environment Protection Law	Revised in 2013, 2016	National
1984	Law on Prevention and Control of Water Pollution	Amended in 1996, 2008, and 2018	National
1985	Grassland Law	Revised in 2002, 2009, 2013, and 2021	National
1986	Fisheries Law	Revised in 2000, 2004, 2009, 2013	National
1986	Mineral Resources Law	Revised in 1996 and 2009	National
1986	Land Administration Law	Revised in 1988, 1998, 2004, and 2019	National
1987	Customs Law	Revised in 2000, 2013, 2016, 2017, and 2021	National
1988	Water Law	Revised in 2002, 2009, and 2016	National
1988	Law on Prevention and Control of Atmospheric Pollution	Amended in 1995, 2000, 2016, and 2018	National
1988	Law on the Protection of Wildlife	Revised in 2004, 2009, 2016, 2018, and 2022	National
1991	Law on Water and Soil Conservation	Amended in 2010	National
1992	Surveying and Mapping Law	Revised in 2002 and 2017	National
1992	Law on the Territorial Sea and the Contiguous Zone		National
1993	Agriculture Law	Revised in 2002, 2009, and 2012	National
1995	Law on the Prevention and Control of Environmental Pollution by Solid Waste	Amended in 2004, 2013, 2015 and 2020	National
1996	Law on the Coal Industry	Revised in 2009, 2011, 2013, and 2016	National
1996	Law on Prevention and Control of Pollution from Environmental Noise	Revised in 2004, 2018, and 2021	National
1997	Flood Control Law	Revised in 2009, 2015, and 2016	National
1998	Law on the Exclusive Economic Zone and the Continental Shelf		National
1999	Meteorology Law	Revised in 2009, 2014, and 2016	National
2001	Law on Desert Prevention and Transformation	Revised in 2018	National
2003	Environmental Impact Assessment Law	Revised in 2016 and 2018	National
2005	Animal Husbandry Law	Revised in 2015 and 2022	National
2007	Law on Urban and Rural Planning	Revised in 2019	National
2008	Circular Economy Promotion Law	Revised in 2018	National

2011	Law on Intangible Cultural Heritage		National
2013	Tourism Law	Revised in 2016 and 2018	National
2018	Prevention and Control of Soil Pollution Law		National
2018	Law on Environmental Protection Tax		National
2018	Nuclear Safety Law		National
2019	Resource Tax Law		National
2020	Law on Yangtze River Conservation		National
2021	Wetlands Conservation Law		National
2022	Law on Black Soil Conservation		National
2022	Law on Yellow River Conservation		National
1994	Regulations on Nature Reserves	Revised in 2011 and 2017	National
2010	Regulations on the Protection of Paleontological Fossils	Revised in 2019	National
1995	Regulations on Geological Sites Protection		Departmental
2006	Management Measures of World Cultural Heritage Protection		Departmental
2018	Management Measures of National-level Cultural Ecological Reserve		Departmental
2015	Management Measures of World Natural Heritage, Natural and Cultural Heritage Nomination and Protection (trial implementation)		Departmental
1999	Regulation of Guangxi on Scenic Spots Management	Revised in 2004, 2010, and 2016	Guangxi
2002	Regulation of Guangxi on Stalactite Resources Protection	Revised in 2004, 2009, 2016, and 2020	Guangxi
2011	Regulation of Guangxi Zhuang Autonomous Region on Lijiang River Basin Ecological Protection		Guangxi
2014	Administrative Measures of Guangxi for the Protection of Lingqu		Guangxi
2017	Regulation of Guilin on Stone Carving Protection		Guilin
2020	Regulation of Guilin on Lijiang River Scenic Spots Management		Guilin
2022	Regulation of Guilin on the Sustainable Use of Karst Landscape Resources		Guilin
2022	Regulation of Guilin on Lingqu Protection		Guilin

Table S2. Abbreviations of full list institutions.

No.	Level	Abbreviation	English Full Name
1	National	NPC	National People's Congress
2	National	SC	State Council
3	National	ERPC	Environment and Resource Protection Committee
4	National	LC	Legal Committee
5	National	MNR	Ministry of Natural Resources
6	National	MCT	Ministry of Culture and Tourism
7	National	MHURD	Ministry of Housing and Urban-rural Development
8	National	NDRC	National Development and Reform Commission
9	National	MEE	Ministry of Ecology and Environment
10	National	MWR	Ministry of Water Resources
11	National	MFA	Ministry of Foreign Affairs
12	National	MIIT	Ministry of Industry and Information Technology
13	National	MARA	Ministry of Agriculture and Rural Affairs
14	National	MoF	Ministry of Finance
15	National	MoST	Ministry of Science and Technology
16	National	MOE	Ministry of Education
17	National	MoT	Ministry of Transport
18	National	CAS	Chinese Academy of Sciences
19	National	MPS	Ministry of Public Security
20	National	MEM	Ministry of Emergency Management
21	National	MoJ	Ministry of Justice
22	National	MoC	Ministry of Commerce
23	National	MCA	Ministry of Civil Affairs
24	National	NHC	National Health Commission
25	National	NEAS	National Ethnic Affairs Commission
26	National	SASAC	State-owned Assets Supervision and Administration Commission of the State Council
27	National	CAC	Central Administration of Customs
28	National	SAMR	State Administration for Market Regulation
29	National	NRTA	National Radio and Television Administration
30	National	NBS	National Bureau of Statistics
31	National	NFGA	National Forestry and Grassland Administration
32	National	CNIPA	China National Intellectual Property Administration
33	National	XNA	Xinhua News Agency
34	National	CMA	China Meteorological Administration
35	National	NEA	National Energy Administration
36	National	NRA	National Railway Administration
37	National	CAA	Civil Aviation Administration
38	National	NCHA	National Cultural Heritage Administration
39	National	NATCM	National Administration of Traditional Chinese Medicine
40	National	CGS	China Geological Survey
41	National	SOA	State Oceanic Administration
42	National	PRWRC	Pearl River Water Resources Commission of the MWR
43	National	PD	People's Daily
44	National	CAST	China Association for Science and Technology
45	National	GSC	Geological Society of China
46	National	ASC	Archaeology Society of China
47	National	ICOMOS China	Chinese National Committee for the International Council on Monuments and Sites
48	National	GeSC	The Geographical Society of China
49	National	CSNR	China Society of Natural Resources
50	National	CFCHC	China Foundation For Cultural Heritage Conservation
51	National	CCT	China Chamber of Tourism
52	National	IAH-CNC	International Association of Hydrogeologists China National Chapter
53	National	IRCK	International Research Center on Karst under the Auspices of UNESCO
54	National	ESC	Ecological Society of China

55	National	CACTCH	China Association for Conservation Technology of Cultural Heritage
56	National	CSSWC	China Society of Soil and Water Conservation
57	National	CHSLA	Chinese Society of Landscape Architecture
58	National	CSSD	Chinese Society for Sustainable Development
59	National	CLSS	China Land Science Society
60	National	CBCGDF	China Biodiversity Conservation and Green Development Foundation
61	National	CASE	China Association for Scientific Expedition
62	National	CTA	China Tourism Association
63	National	CTAA	China Tourist Attractions Association
64	National	CSES	Chinese Society for Environmental Sciences
65	National	CUGB	China University of Geosciences, Beijing
66	National	CAGS	Chinese Academy of Geological Sciences
67	National	IKGCAGS	Institute of Karst Geology, Chinese Academy of Geological Sciences
68	National	GZU	Guizhou University
69	National	GZNU	Guizhou Normal University
70	National	YNU	Yunnan University
71	National	IGSNRRCAS	Institute of Geographic Sciences and Natural Resources Research, CAS
72	National	IGCAS	Institute of Geochemistry, Chinese Academy of Sciences
73	National	ISACAS	Institute of Subtropical Agriculture, The Chinese Academy of Sciences
74	National	IRSMCAS	Institute of Rock and Soil Mechanics, Chinese Academy of Sciences
75	National	TJU	Tianjin University
76	National	SWU	Southwest University
77	Provincial	GXPC	People's Congress
78	Provincial	GXPG	People's Government of Guangxi Zhuang Autonomous Region
79	Provincial	GXDRC	Development and Reform Commission of Guangxi
80	Provincial	GXED	Education Department of Guangxi
81	Provincial	GXSTD	Science and Technology Department
82	Provincial	GXDIIT	Department of Industry and Information Technology of Guangxi
83	Provincial	GXERAC	Ethnic and Religious Affairs Commission of Guangxi
84	Provincial	GXPSD	Guangxi Public Security Department
85	Provincial	GXCAD	Guangxi Civil Affairs Department
86	Provincial	GXJD	Justice Department
87	Provincial	GXFD	Finance Department
88	Provincial	GXHRSSD	Human Resources and Social Security Department
89	Provincial	GXDNR	Department of Natural Resources
90	Provincial	GXDEE	Department of Ecology and Environment
91	Provincial	GXDHUD	Department of Housing and Urban-rural Development
92	Provincial	GXDT	Guangxi Department of Transportation
93	Provincial	GXWRD	Water Resources Department
94	Provincial	GXDARA	Department of Agriculture and Rural Affairs
95	Provincial	GXDC	Department of Commerce
96	Provincial	GXDCT	Department of Culture and Tourism
97	Provincial	GXHC	Health Committee
98	Provincial	GXEMO	Emergency Management Office
99	Provincial	GXFAO	Foreign Affairs Office
100	Provincial	GXSASAC	State-owned Assets Supervision and Administration Commission of Guangxi
101	Provincial	GXAMR	Administration of Market Regulation
102	Provincial	GXART	Administration of Radio and Television
103	Provincial	GXBS	Bureau of Statistics Guangxi
104	Provincial	GXDF	Department of Forestry of Guangxi
105	Provincial	GXRRB	Rural Revitalization Bureau
106	Provincial	GXGMSAC	Guangxi Maritime Safety Administration of China
107	Provincial	GXBDDb	Big Data Development Bureau

108	Provincial	GXOA	Guangxi Oceanic Administration
109	Provincial	GXAST	Guangxi Science and Technology Association
110	Provincial	GXLSC	Guangxi Land Science Society
111	Provincial	GSG	Geological Society of Guangxi
112	Provincial	GXMS	Guangxi Mining Society
113	Provincial	GXES	Guangxi Ecological Society
114	Provincial	GXSES	Guangxi Society for Environmental Sciences
115	Provincial	GXHES	Guangxi Hydraulic Engineering Society
116	Provincial	GXSGPC	Guangxi Society for Geodesy Photogrammetry and Cartography
117	Provincial	GXSF	Guangxi Society of Forestry
118	Provincial	GXSHS	Guangxi Society for Horticultural Science
119	Provincial	GXSRS	Guangxi Society for Remote Sensing
120	Provincial	GXU	Guangxi University
121	Provincial	GXUFE	Guangxi University of Finance and Economics
122	Provincial	GLUT	Guilin University of Technology
123	Provincial	GXNU	Guangxi Normal University
124	Provincial	GXUN	Guangxi University for Nationalities
125	Municipal	GLPC	Guilin People's Congress
126	Municipal	GLPG	Guilin People's Government
127	Municipal	GLDRC	Guilin Development and Reform Commission
128	Municipal	GLEB	Education Bureau of Guilin
129	Municipal	GLSTB	Science and Technology Bureau
130	Municipal	GLBIIT	Bureau of Industry and Information Technology of Guilin
131	Municipal	GLERAC	Ethnic and Religious Affairs Commission of Guilin
132	Municipal	GLPSD	Guilin Public Security Bureau
133	Municipal	GLCAD	Guilin Civil Affairs Bureau
134	Municipal	GLJD	Justice Bureau
135	Municipal	GLFD	Finance Bureau
136	Municipal	GLHRSSB	Human Resources and Social Security Bureau
137	Municipal	GLBNR	Bureau of Natural Resources
138	Municipal	GLBEE	Bureau of Ecology and Environment
139	Municipal	GLBHUD	Bureau of Housing and Urban-rural Development
140	Municipal	GLBT	Guangxi Bureau of Transportation
141	Municipal	GLWRB	Water Resources Bureau
142	Municipal	GLBARA	Bureau of Agriculture and Rural Affairs
143	Municipal	GLBC	Bureau of Commerce
144	Municipal	GLHC	Health Committee
145	Municipal	GLEMB	Emergency Management Bureau
146	Municipal	GLBS	Bureau of Statistics Guilin
147	Municipal	GLBCRTT	Bureau of Culture, Radio, Television and Tourism
148	Municipal	GLBMR	Bureau of Market Regulation
149	Municipal	GLBFL	Bureau of Forestry and Landscape
150	Municipal	GLUMC	Urban Management Commission
151	Municipal	GLSASAC	State-owned Assets Supervision and Administration Commission
152	Municipal	GLMSA	Maritime Safety Administration
153	Municipal	GLBC	Bureau of Customs
154	Municipal	LPSB	Lijiang Public Security Bureau
155	Municipal	GLRSMC	Guilin Lijiang River Scenic Management Committee
156	Municipal	YSCG	Yangshou County Government
157	Municipal	PLCG	Pingle County Government
158	Municipal	XACG	Xing'an County Government
159	Municipal	LCCG	Lingchuan County Government
160	Municipal	QZCG	Quanzhou County Government
161	Municipal	LGDG	Lingui District Government
162	Municipal	QXDG	Qixing District Government
163	Municipal	XFDG	Xiufeng District Government
164	Municipal	XSDG	Xiangshan District Government
165	Municipal	DCDG	Diecai District Government
166	Municipal	YSDG	Yanshan District Government
167	Municipal	GLAST	Guilin Science and Technology Association

168	Municipal	GLFSS	Guilin Federation of Social Sciences
169	Municipal	GLTAA	Guilin Travel Agency Association
170	Municipal	GLSES	Guilin Society for Environmental Sciences
171	Municipal	GLFIA	Guilin Forestry Industry Association
172	Municipal	GLREHCCRA	Guilin Lijiang River Ecological Human Culture Conservation Research Association
173	Municipal	GLEPIS	Guilin Environmental Protection Industry Association
174	Municipal	GLTAA	Guilin Tourist Attractions Association
175	Municipal	GSGL	Geological Society of Guilin
176	Municipal	GLHES	Guilin Hydraulic Engineering Society
177	Municipal	GLAST	Guilin Landscape Architecture Society
178	Municipal	GLSF	Guilin Society of Forestry
179	Municipal	GLTU	Guilin Tourism University