

Supplementary Material

Table S1 Ecosystem service equivalent value per unit area in the Alxa League (yuan/ha)

Ecosystem type		Provisioning services			Regulating services				Supporting services			Cultural services
Ecosystem	Subsystem	Grain production	Material production	Water resource provision	Gas regulation	Climate comfort	Environmental purification	Hydrological regulation	Soil conservation	Nutrient cycling supporting	Biodiversity	Aesthetic value
Cultivated land	Dryland	1303.24	613.29	30.66	1027.26	551.96	153.32	413.97	1579.22	183.99	199.32	91.99
Forest land	Forest	475.30	1088.59	567.29	3603.08	10778.58	3051.12	5381.62	4385.03	337.31	3986.39	1747.88
	Shrub land	291.31	659.29	337.31	2161.85	6485.55	1962.53	5136.31	2637.15	199.32	2407.16	1057.93
Grassland	Grassland	153.32	214.65	122.66	781.95	2054.52	674.62	1502.56	950.60	76.66	858.61	383.31
Water	Water	1226.58	352.64	12710.44	1180.58	3511.09	8509.40	156757.02	1425.90	107.33	3909.73	2897.80
Unused land	Desert	15.33	46.00	30.66	168.65	153.32	475.30	321.98	199.32	15.33	183.99	76.66
	Barren	0.00	0.00	0.00	30.66	0.00	153.32	46.00	30.66	0.00	30.66	15.33

Table S2 P_i score of each land-use type

Land-use type	Dryland	Forest	Shrub land	Grassland	Water	Construction land	Desert	Barren
Score	50	85	80	60	95	20	30	0

Table S3 The area of each ecosystem index from 1990 to 2020 in the Alxa League (km²)

Index & Levels		1990	2000	2010	2020
Ecosystem Structure Index (ESI)	Poor	1150	500	700	875
	Fair	1825	1850	1850	2200
	Moderate	4000	3300	3250	3900
	Good	69475	64800	63325	64400
	Excellent	171450	177450	178775	176525
Ecosystem Function Index (EFI)	Poor	211075	213025	212900	211800
	Fair	34775	32825	32650	33550
	Moderate	1350	1325	1600	1775
	Good	300	325	375	375
	Excellent	400	400	375	400
Ecosystem Resilience Index (ERI)	Poor	149725	153450	134225	125025
	Fair	64175	60225	76700	86675
	Moderate	27075	25925	28175	27975
	Good	5500	6625	6650	6300
	Excellent	1450	1675	2150	1925
Ecosystem Integrity Index (EII)	Poor	118100	158900	157850	156625
	Fair	86625	52525	55575	56950
	Moderate	36300	31075	29300	29150
	Good	5450	4025	3800	3900
	Excellent	1450	1375	1375	1275

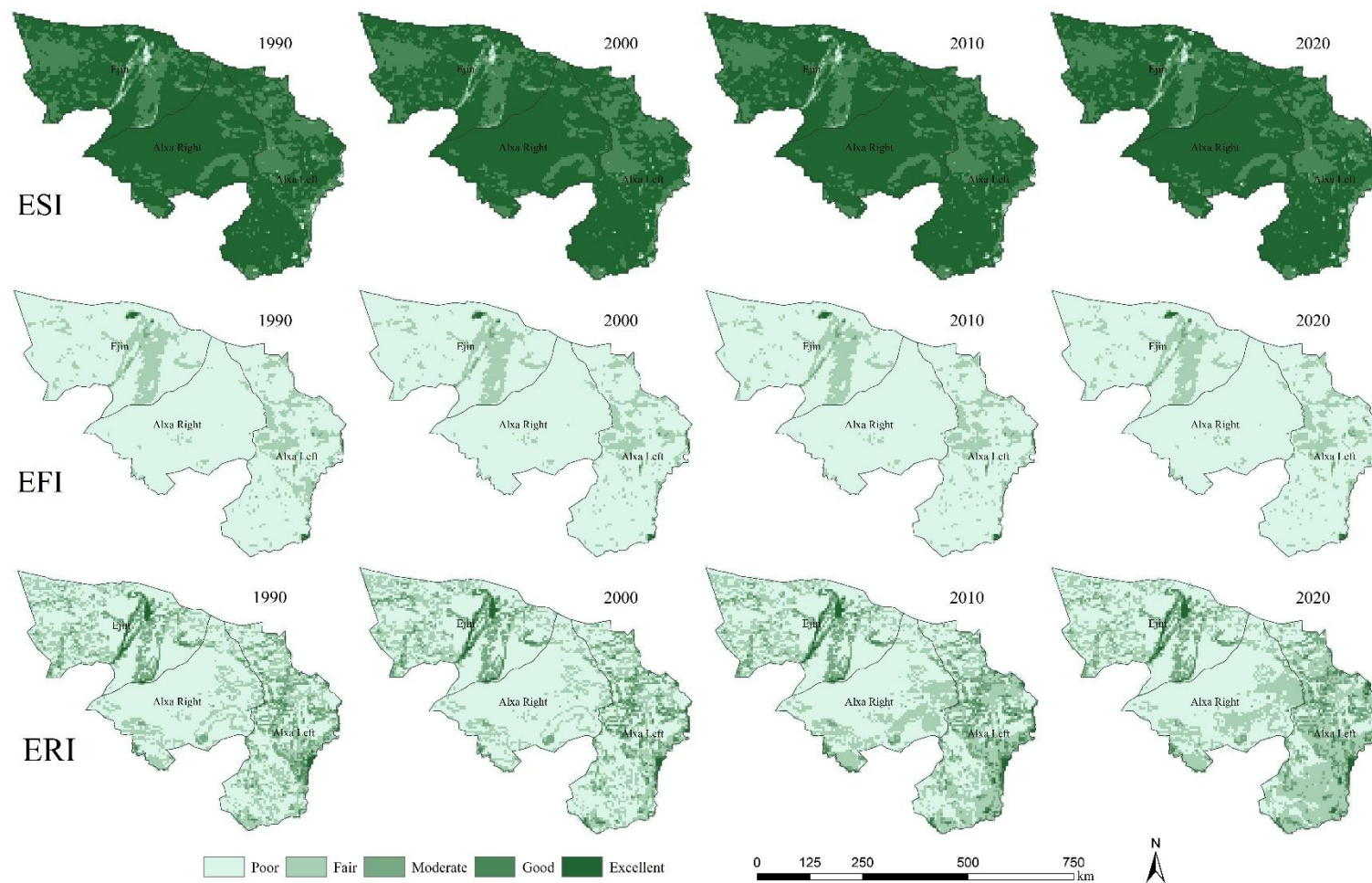


Fig. S1 Ecosystem structure function and resilience index of the Alxa League from 1990 to 2020

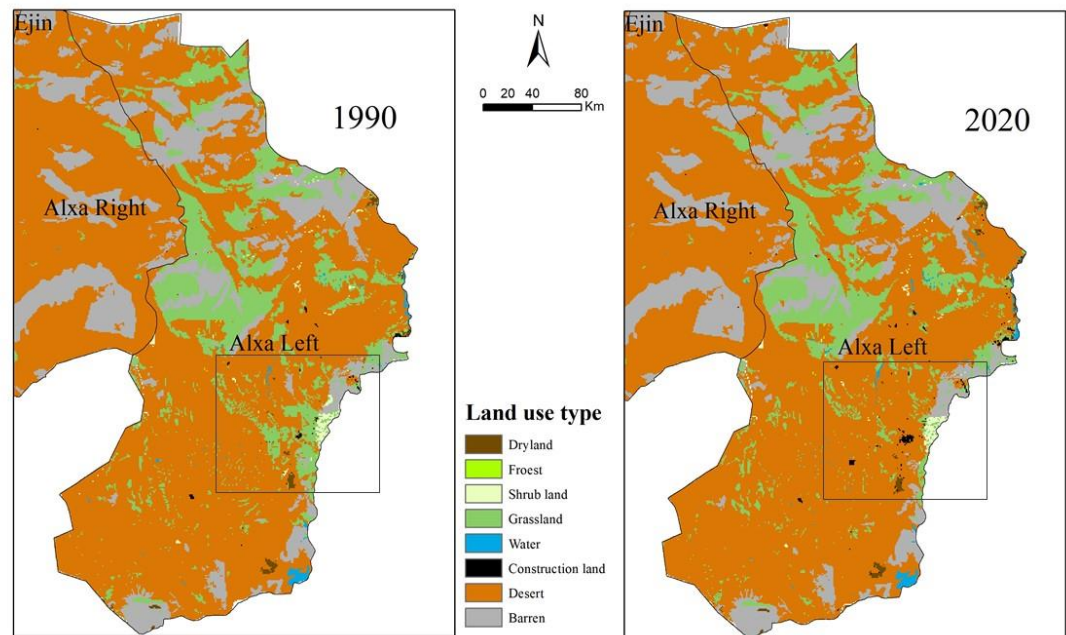


Fig. S2 Land use data of 1990 and 2020