Appendix

Table A1. Descriptive statistics

	All	2004	2005	2006	2007	2008	2009	2010
Panel A: Counties without wind power development								
NDVI	0.60	0.60	0.59	0.60	0.60	0.60	0.60	0.61
	(0.23)	(0.24)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
Precipitation Apr.	513.19	546.03	517.02	459.10	544.34	514.47	485.50	525.88
to Sep. (mm)	(337.19)	(371.37)	(323.40)	(297.64)	(363.40)	(339.43)	(315.63)	(337.30)
Growing degree days	1,410	1,339	1,436	1,435	1,408	1,404	1,412	1,433
	(697.63)	(694.94)	(716.84)	(682.22)	(694.44)	(711.98)	(700.80)	(682.08)
Density of labor for livestock	31.02	32.07	31.74	31.12	30.35	30.89	30.63	30.33
production (people/sq.km)	(36.70)	(38.49)	(38.13)	(37.48)	(35.99)	(36.17)	(35.66)	(35.08)
Cattle density (heads/sq.km)	20.50			19.68	21.07	19.63	19.67	22.44
	(22.06)			(19.03)	(23.06)	(18.26)	(18.59)	(29.29)
Sheep density (heads/sq.km)	54.55			52.55	54.82	50.61	53.84	60.90
	(74.09)			(68.04)	(74.37)	(60.76)	(70.90)	(92.52)
Share of wind power	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
class >= 4	(0.43)	(0.43)	(0.43)	(0.43)	(0.43)	(0.43)	(0.43)	(0.43)
Longitude	99.99	99.99	99.99	99.99	99.99	99.99	99.99	99.99
	(9.89)	(9.90)	(9.90)	(9.90)	(9.90)	(9.90)	(9.90)	(9.90)
Latitude	33.79	33.79	33.79	33.79	33.79	33.79	33.79	33.79
	(7.26)	(7.27)	(7.27)	(7.27)	(7.27)	(7.27)	(7.27)	(7.27)
Share of meadow or steppe	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)
Share of shrub or desert	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)	(0.35)
Share of average annual	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
precipitation >= 800mm	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)
Share of minimum annual	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
precipitation >= 800mm	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)	(0.39)
Number of observations	2,639	377	377	377	377	377	377	377
Panel B: Counties with wind power development								
NDVI	0.40	0.43	0.41	0.41	0.40	0.42	0.39	0.39
	(0.20)	(0.20)	(0.20)	(0.20)	(0.19)	(0.20)	(0.20)	(0.19)
Wind power capacity	8.90	0.00	0.25	0.40	1.91	4.15	22.42	33.15
density (KW/sq.km)	(43.49)	(0.00)	(1.10)	(1.52)	(8.24)	(10.50)	(79.59)	(76.33)
Wind power capacity density	7.74	0.25	0.14	1.51	2.24	18.27	10.73	21.02
under construction (KW/sq.km)	(33.70)	(1.10)	(0.69)	(7.28)	(4.27)	(77.54)	(25.39)	(29.09)
Precipitation Apr.	273.26	301.57	270.78	251.05	260.14	296.89	254.03	278.37
to Sep. (mm)	(216.62)	(237.75)	(225.33)	(192.88)	(236.63)	(221.37)	(199.91)	(203.05)
Growing degree days	1,324	1,256	1,357	1,313	1,365	1,301	1,313	1,363
	(407.42)	(412.45)	(415.25)	(403.86)	(394.12)	(423.82)	(421.61)	(387.63)
Density of labor for livestock	12.73	13.31	13.03	12.89	12.03	12.78	12.40	12.70
production (people/sq.km)	(17.26)	(18.14)	(17.87)	(17.80)	(16.48)	(17.27)	(17.07)	(16.99)
Cattle density (heads/sq.km)	9.51			9.30	9.24	9.60	9.51	9.90
	(9.38)			(9.18)	(8.90)	(9.42)	(9.78)	(9.90)
Sheep density (heads/sq.km)	64.30			67.69	61.60	62.75	65.23	64.26
	(53.58)			(54.67)	(49.76)	(50.07)	(62.31)	(51.67)
Share of wind power	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
class >= 4	(0.45)	(0.45)	(0.45)	(0.45)	(0.45)	(0.45)	(0.45)	(0.45)
Longitude	108.40	108.40	108.40	108.40	108.40	108.40	108.40	108.40
	(10.42)	(10.42)	(10.42)	(10.42)	(10.42)	(10.42)	(10.42)	(10.42)
Latitude	40.39	40.39	40.39	40.39	40.39	40.39	40.39	40.39
	(6.05)	(6.05)	(6.05)	(6.05)	(6.05)	(6.05)	(6.05)	(6.05)
Share of meadow or steppe	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
	(0.33)	(0.33)	(0.33)	(0.33)	(0.33)	(0.33)	(0.33)	(0.33)
Share of shrub or desert	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
	(0.33)	(0.33)	(0.33)	(0.33)	(0.33)	(0.33)	(0.33)	(0.33)
Share of average annual	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
precipitation >=800 mm	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)	(0.32)
Share of minimum annual	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
precipitation >=800 mm	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)
Number of observations	427	61	61	61	61	61	61	61

Table A2. Descriptive statistics on data from the subsample for testing the time trend

	2004	2005	2006	2007	2008	2009	2010
Panel A: Counties without wind power development							
NDVI	0.60	0.59	0.60	0.60	0.60	0.60	0.61
	(0.24)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)
Precipitation Apr.	546.03	517.02	459.10	544.34	514.47	485.50	525.88
to Sep. (mm)	(371.37)	(323.40)	(297.64)	(363.40)	(339.43)	(315.63)	(337.30)
Growing degree days	1,339	1,436	1,435	1,408	1,404	1,412	1,433
	(694.94)	(716.84)	(682.22)	(694.44)	(711.98)	(700.80)	(682.08)
Density of labor for livestock	32.07	31.74	31.12	30.35	30.89	30.63	30.33
production (people/sq.km)	(38.49)	(38.13)	(37.48)	(35.99)	(36.17)	(35.66)	(35.08)
Cattle density			19.68	21.07	19.63	19.67	22.44
(heads/sq.km)			(19.03)	(23.06)	(18.26)	(18.59)	(29.29)
Sheep density			52.55	54.82	50.61	53.84	60.90
(heads/sq.km)			(68.04)	(74.37)	(60.76)	(70.90)	(92.52)
Number of counties	382	382	382	382	382	382	382
Panel B: Counties with wind power development in pre-operation period							
NDVI	0.43	0.41	0.42	0.42	0.46	0.45	0.44
	(0.20)	(0.21)	(0.20)	(0.20)	(0.20)	(0.23)	(0.26)
Precipitation Apr.	301.57	277.53	260.04	283.31	326.50	320.83	320.27
to Sep. (mm)	(237.75)	(229.73)	(196.94)	(254.75)	(236.91)	(246.08)	(270.37)
Growing degree days	1,256	1,347	1,305	1,342	1,256	1,257	1,351
	(412.45)	(396.62)	(388.53)	(381.21)	(438.95)	(447.95)	(516.35)
Density of labor for livestock	13.31	13.31	13.36	13.35	15.24	18.26	15.27
production (people/sq.km)	(18.14)	(18.35)	(18.39)	(17.59)	(20.27)	(23.55)	(17.69)
Cattle density			9.71	10.39	11.82	13.13	11.31
(heads/sq.km)			(9.43)	(9.31)	(10.01)	(11.09)	(9.11)
Sheep density			68.80	65.71	69.49	68.31	47.76
(heads/sq.km)			(56.30)	(52.42)	(55.73)	(55.75)	(28.94)
Number of counties	61	57	56	50	40	26	14

Table A3. Zone-specific effect of wind power capacity density on NDVI

	(1) Zone I	(2) Zone II	(3) Zone III	(4) Zone IV	(5) All
Capacity density (MW/sq.km)	-0.275**	-0.121***	-0.112	-0.383***	-0.352***
	(0.109)	(0.024)	(0.455)	(0.116)	(0.095)
Capacity density*Zone I					0.039
					(0.130)
Capacity density*Zone II					0.246**
					(0.102)
Capacity density*Zone III					0.254
					(0.457)
County fixed effects	Yes	Yes	Yes	Yes	Yes
Zone-year fixed effects	Yes	Yes	Yes	Yes	Yes
Province-year fixed effects	Yes	Yes	Yes	Yes	Yes
Quadratic weather	Yes	Yes	Yes	Yes	Yes
Observations	371	266	847	1,582	3,066
R-squared	0.982	0.987	0.992	0.980	0.993

Notes: The omitted category in Column 5 is Zone IV. Weather variables are precipitation and growing degree days from April to September. Robust standard errors in parentheses are clustered at prefecture level. *** $p<0.01$; ** $p<0.05$; * $p<0.1$.

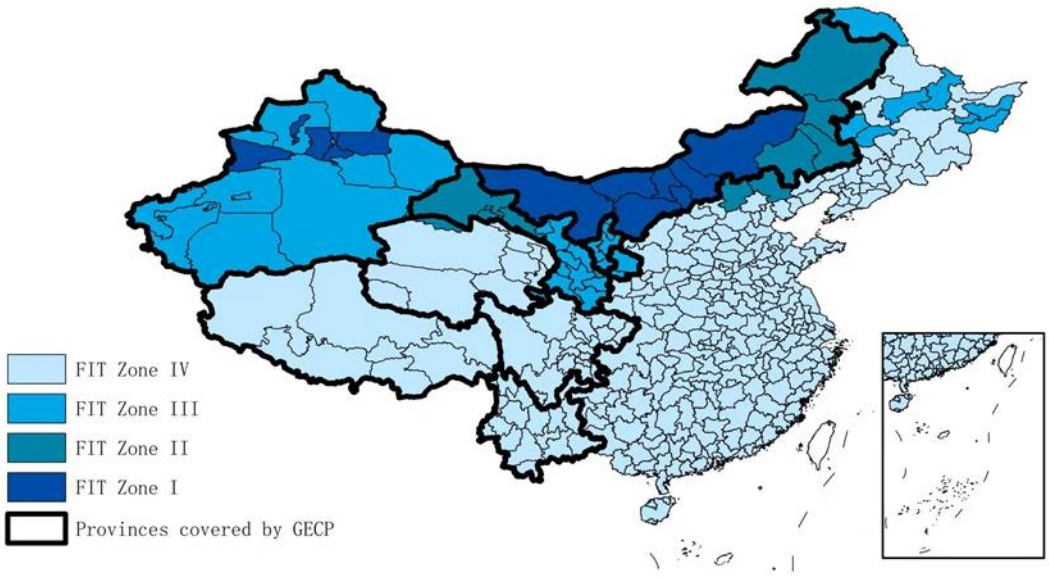
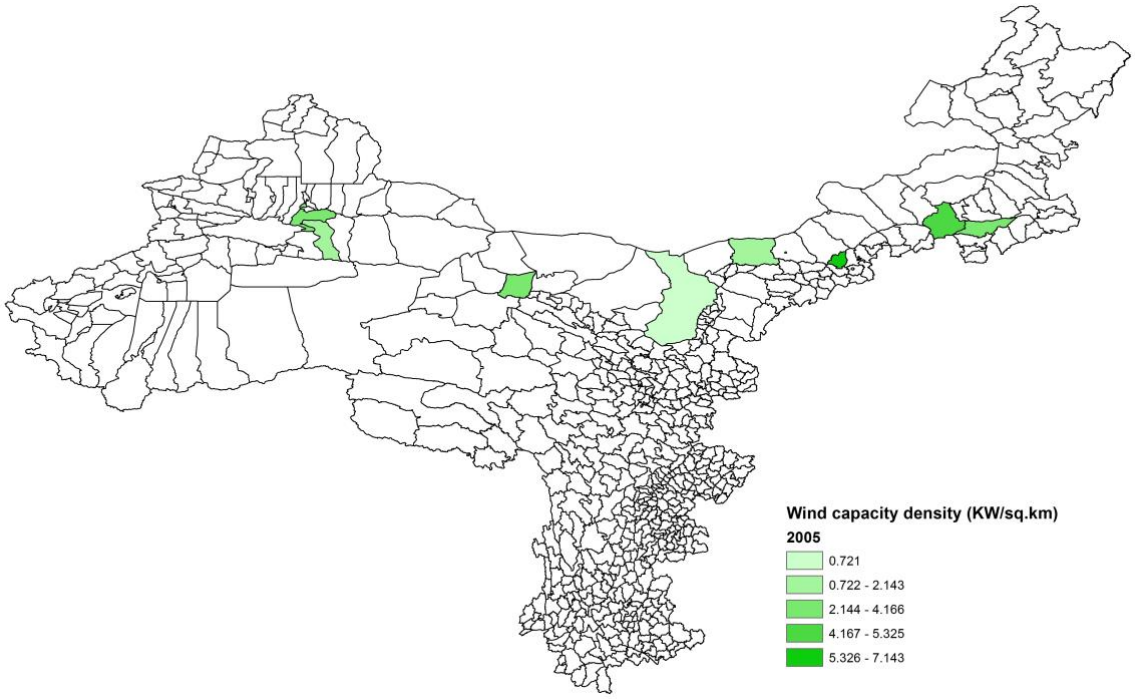


Figure A1. Overlapping of wind-rich regions and grassland areas



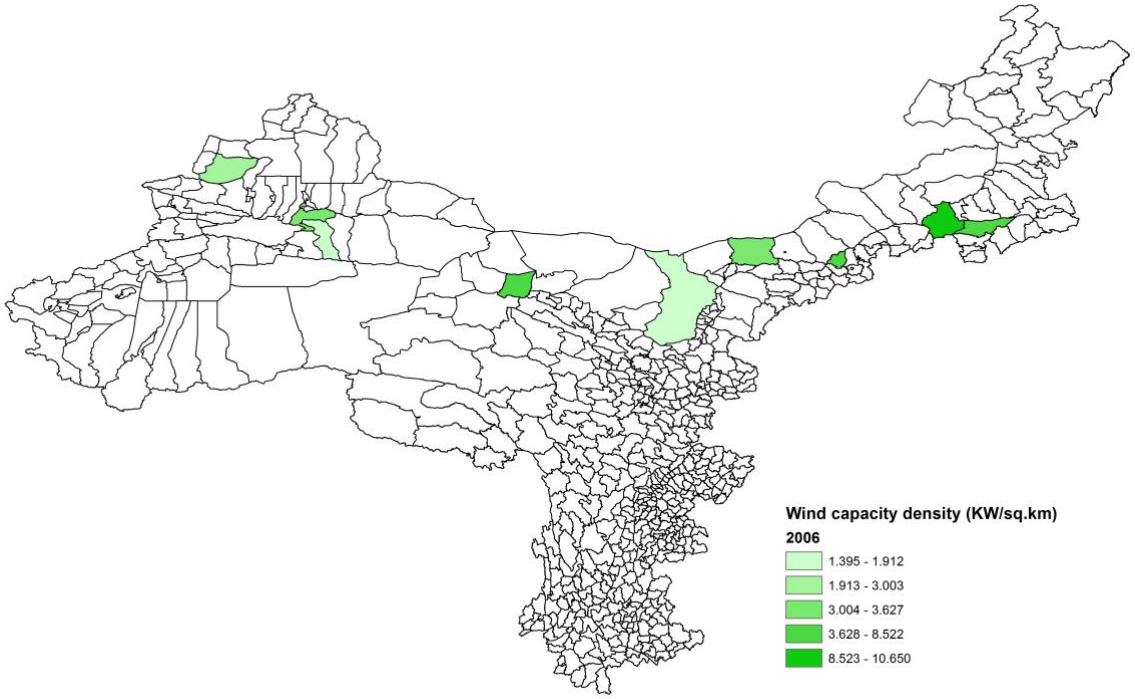
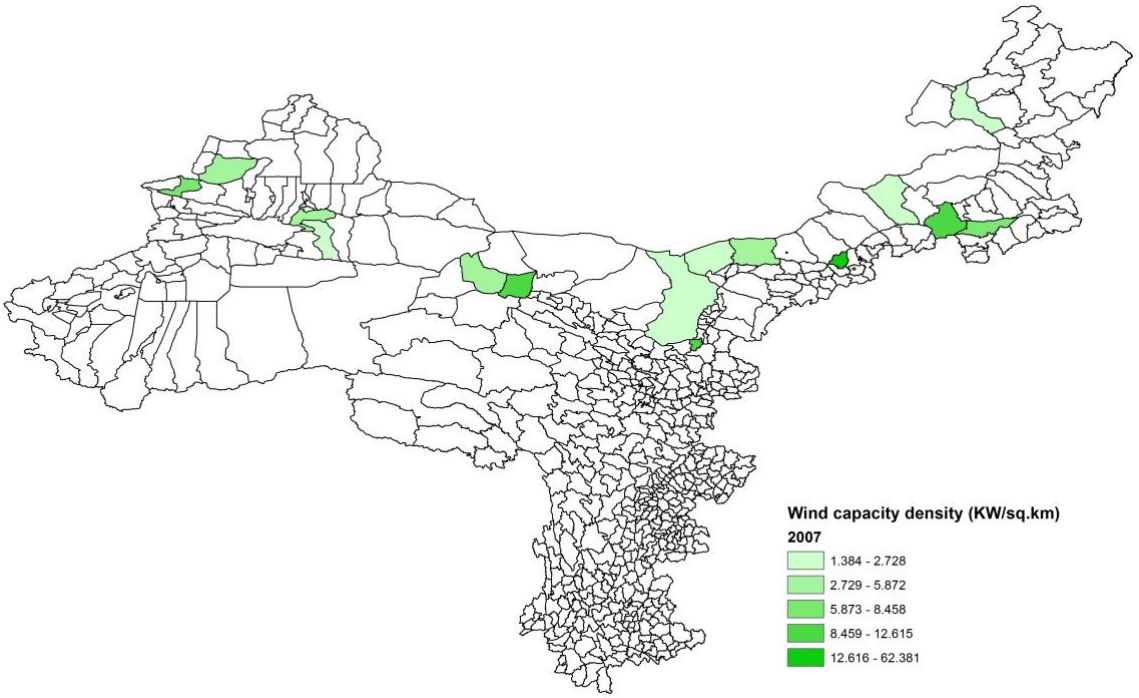


Figure A2. Distribution of wind power capacity density during 2005–2010 in the sample counties



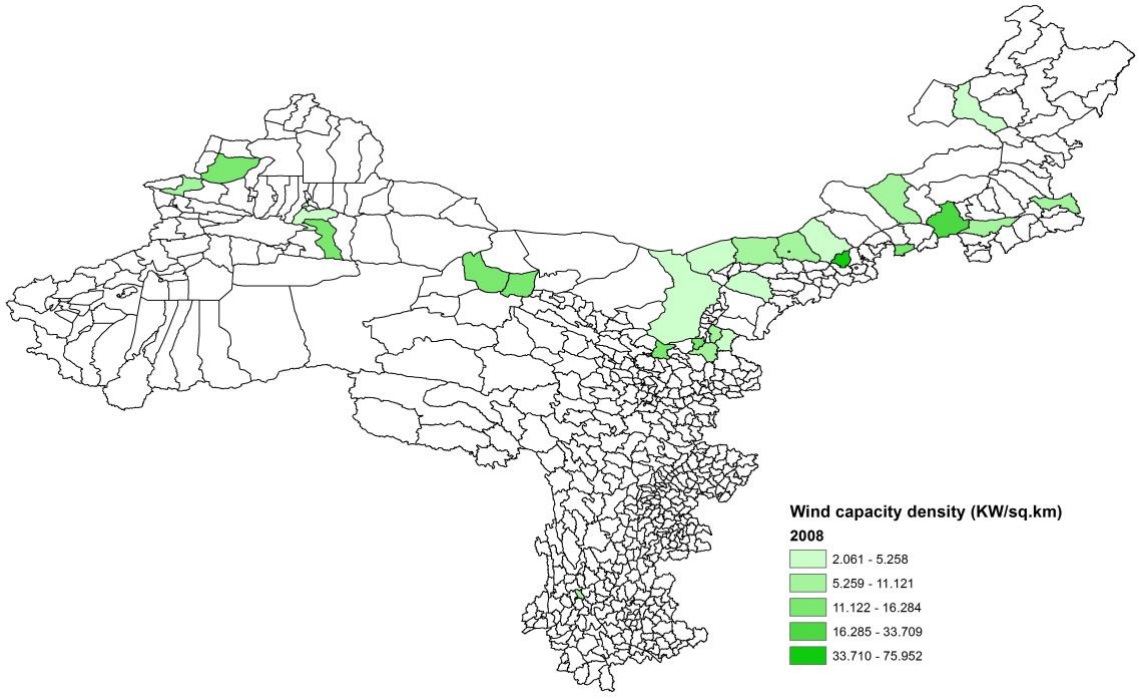
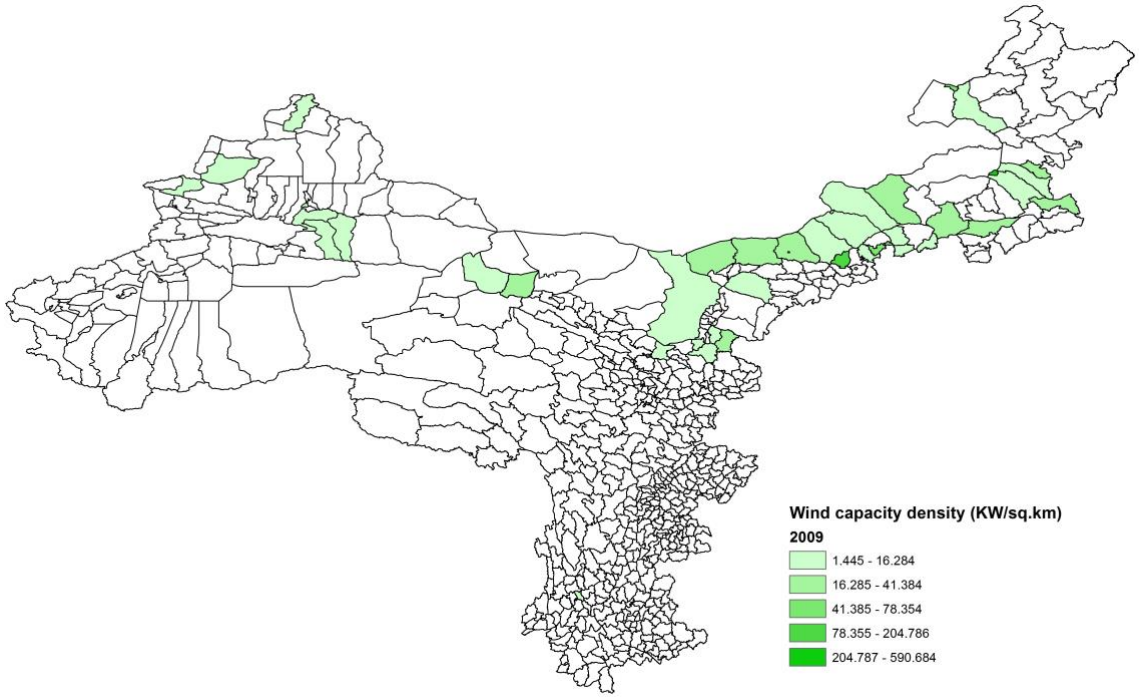


Figure A2 (Continued). Distribution of wind power capacity density during 2005–2010 in the sample counties



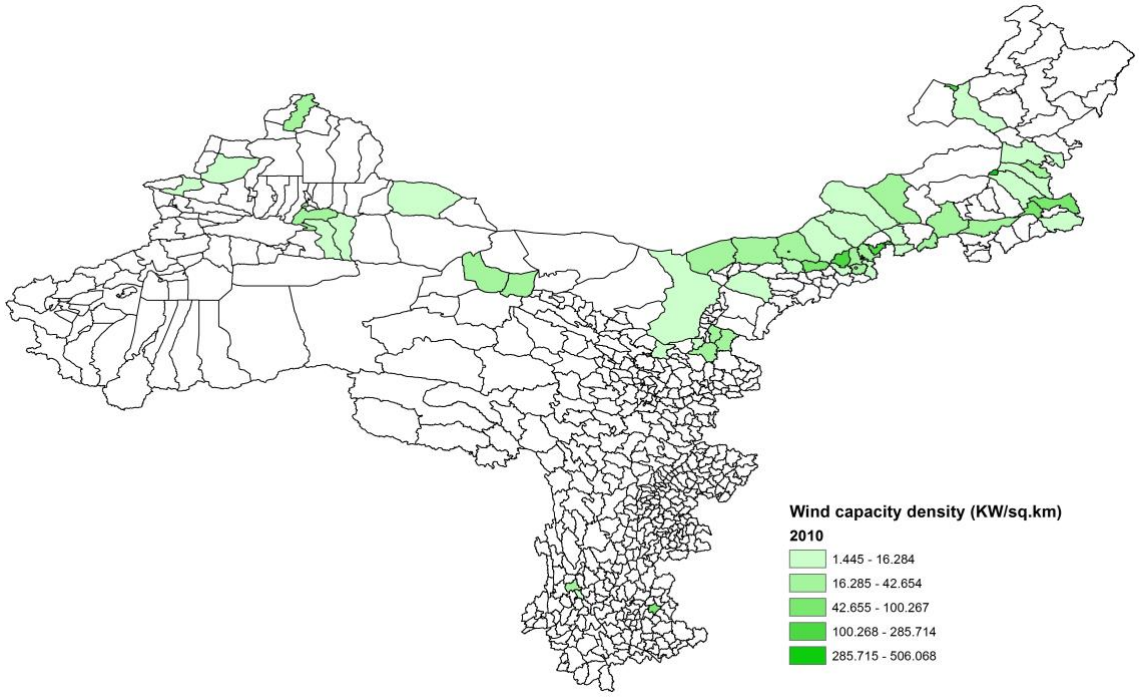


Figure A2 (Continued). Distribution of wind power capacity density during 2005–2010 in the sample counties

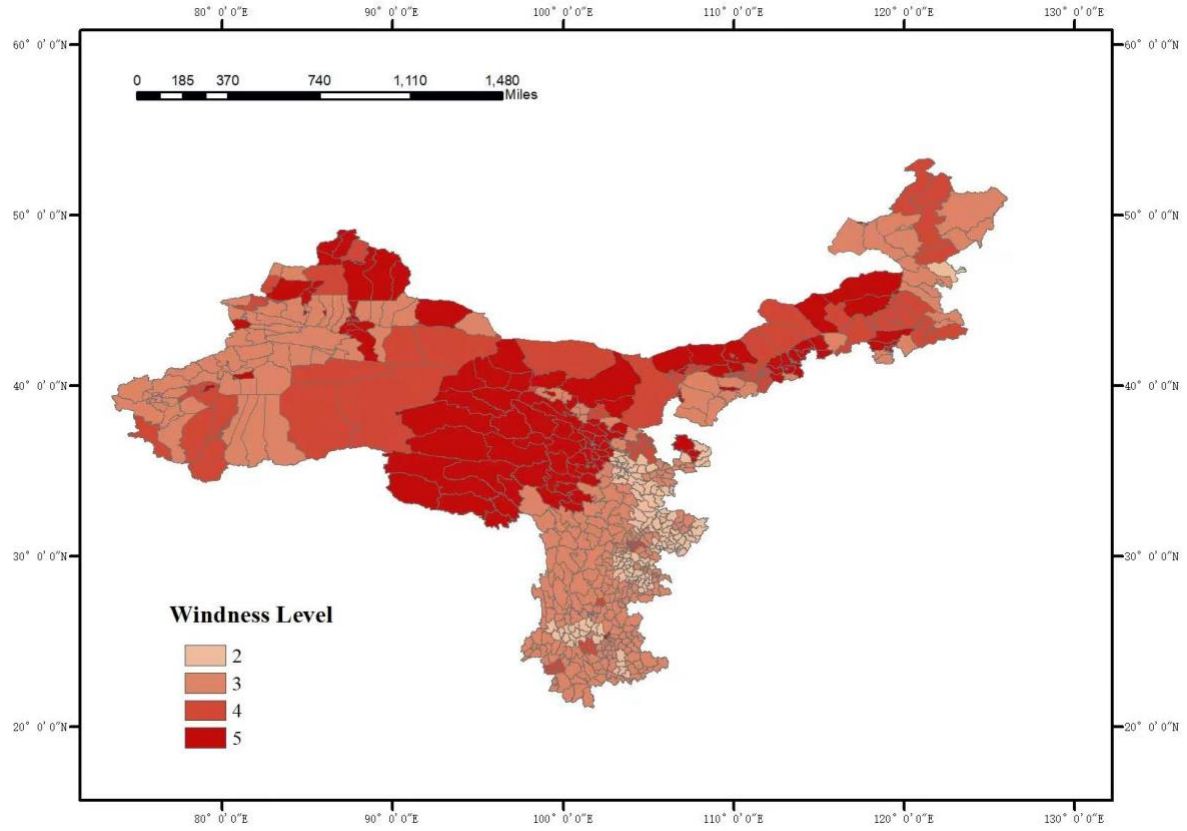


Figure A3. Geographic location and wind class