

Geoinformatics based Mapping of Environmental Sensitive Areas for Desertification over Satara and Sangli districts of Maharashtra, India

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Supplement Figures & Tables

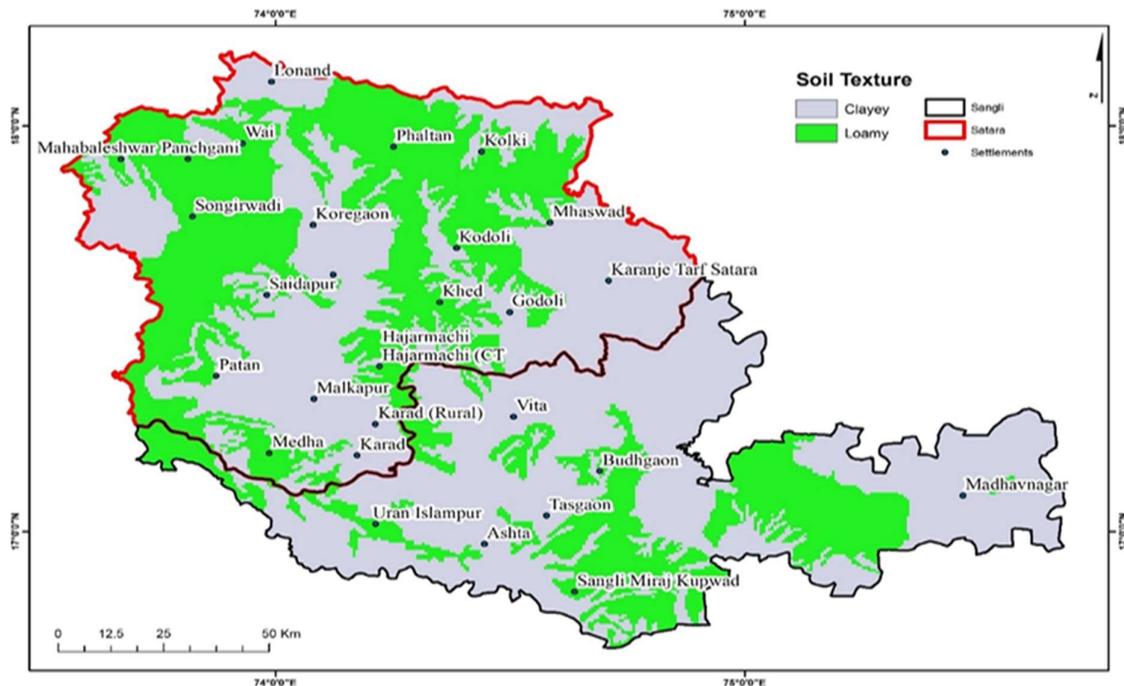


Figure S1. Soil texture map the study area.

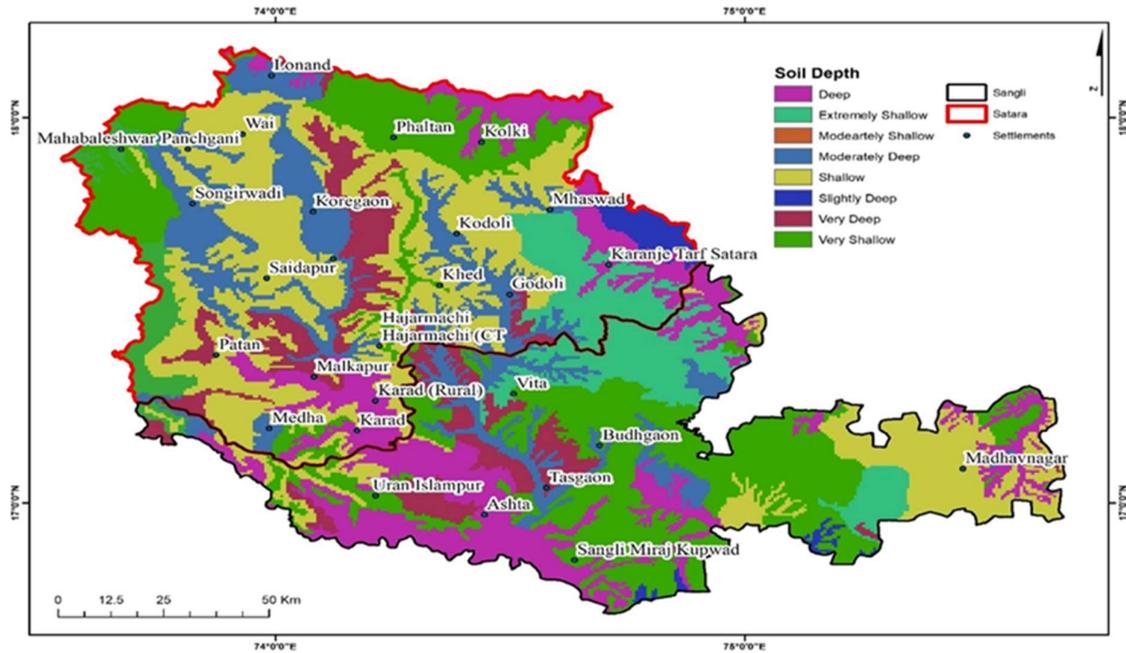


Figure S2. Soil depth map.

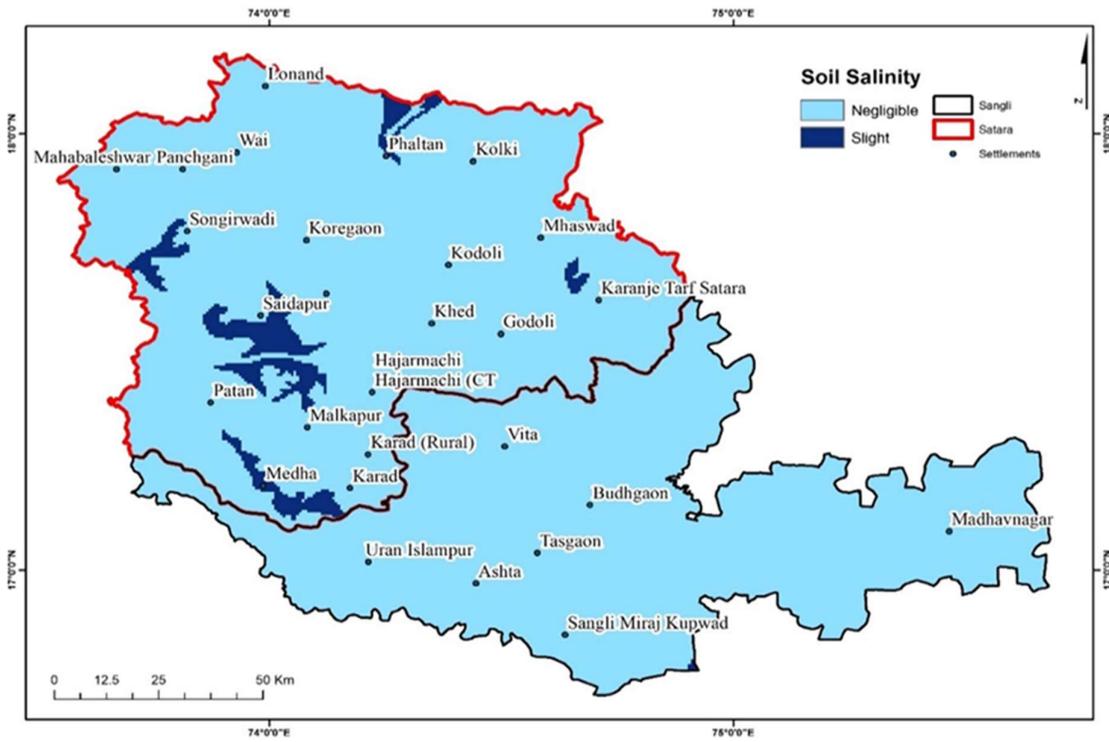


Figure S3. Soil salinity map of the study area.

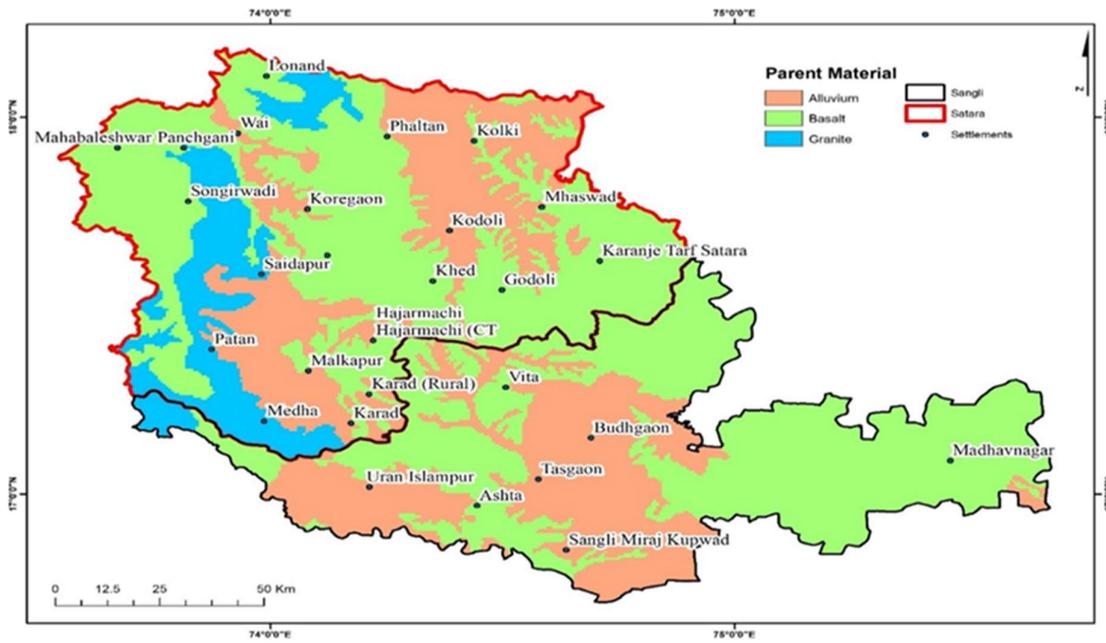


Figure S4. Parent material map of the study area (Source: NBSS&LUP).

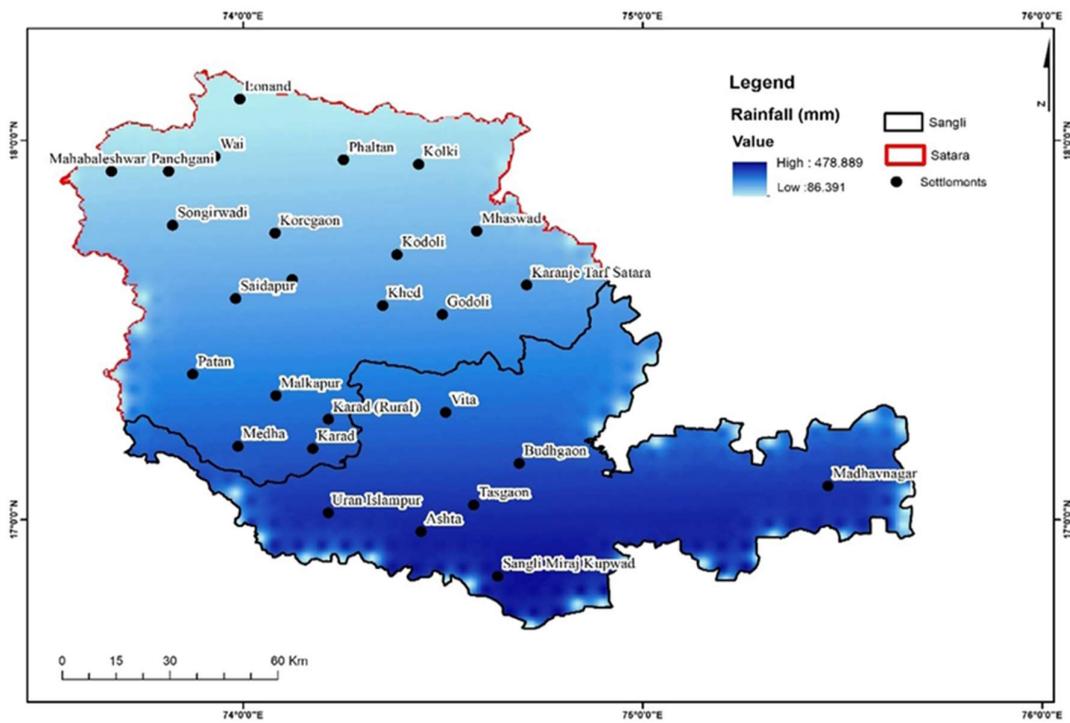


Figure S5. Average annual rainfall map of the study area.

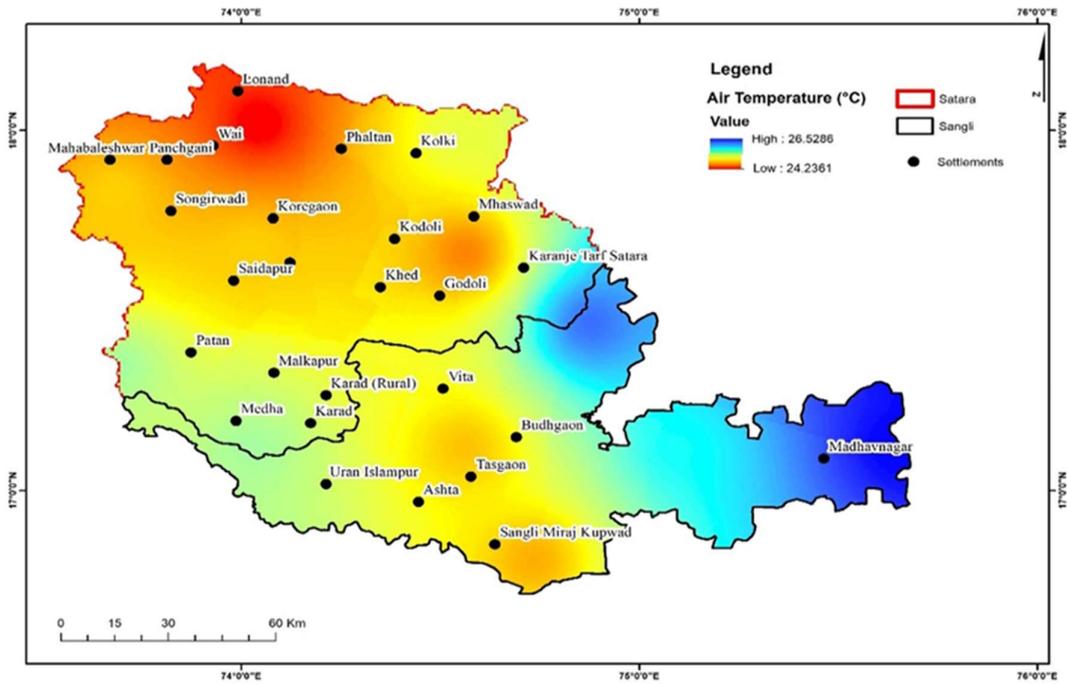


Figure S6. Average annual air temperature map of the study area.

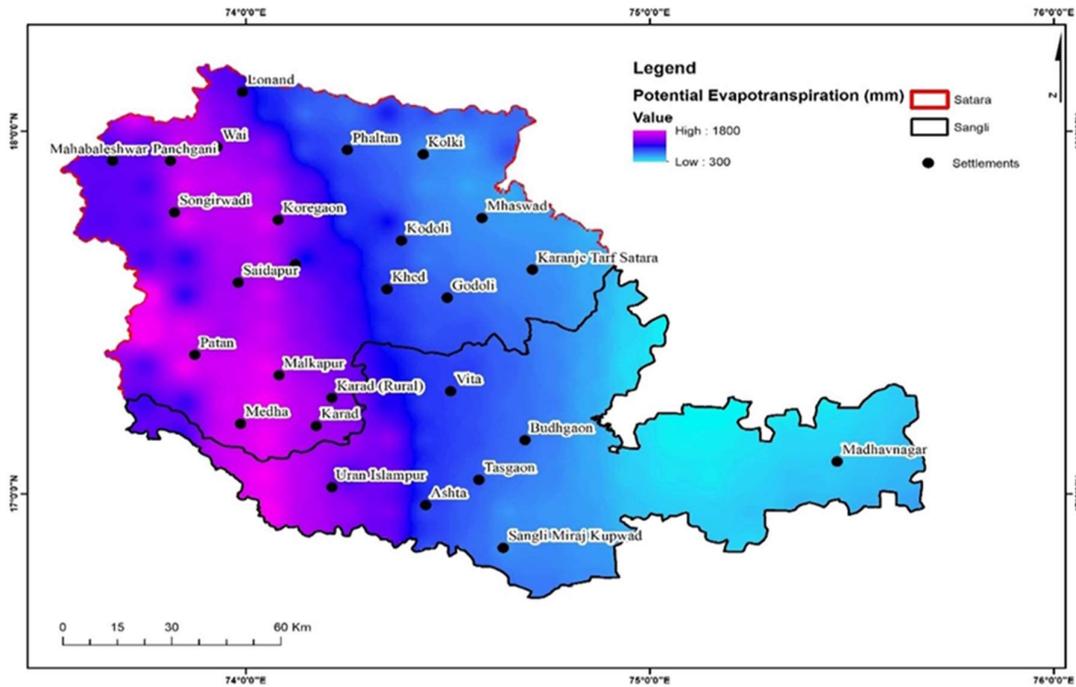


Figure S7. Average annual potential evapotranspiration (PET) map of the study area.

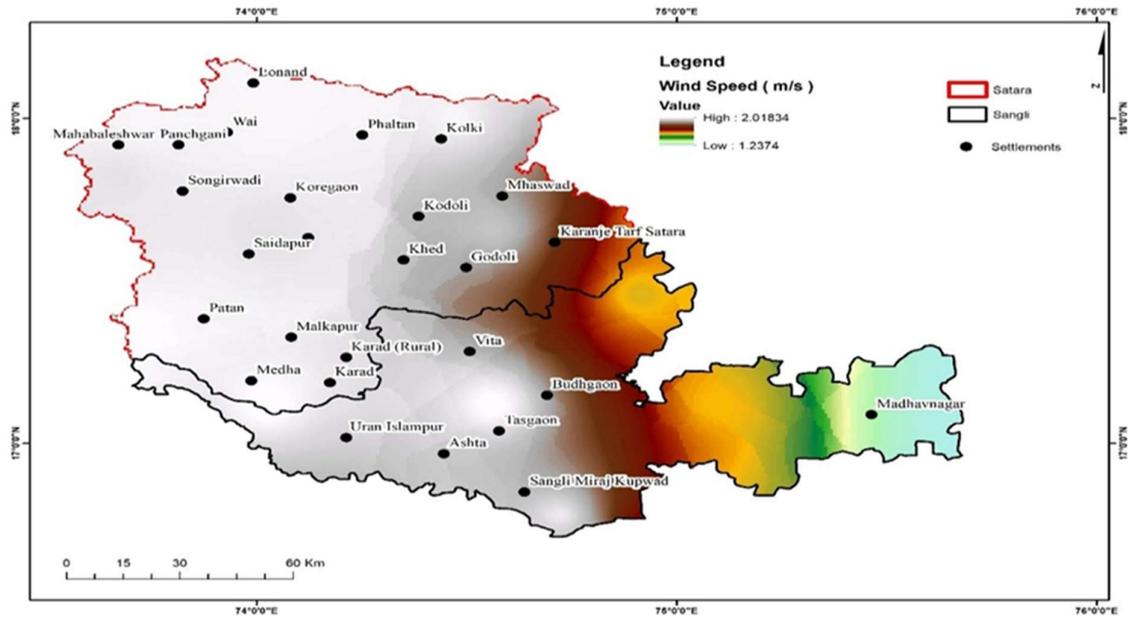


Figure S8. Average wind speed map of the study area.

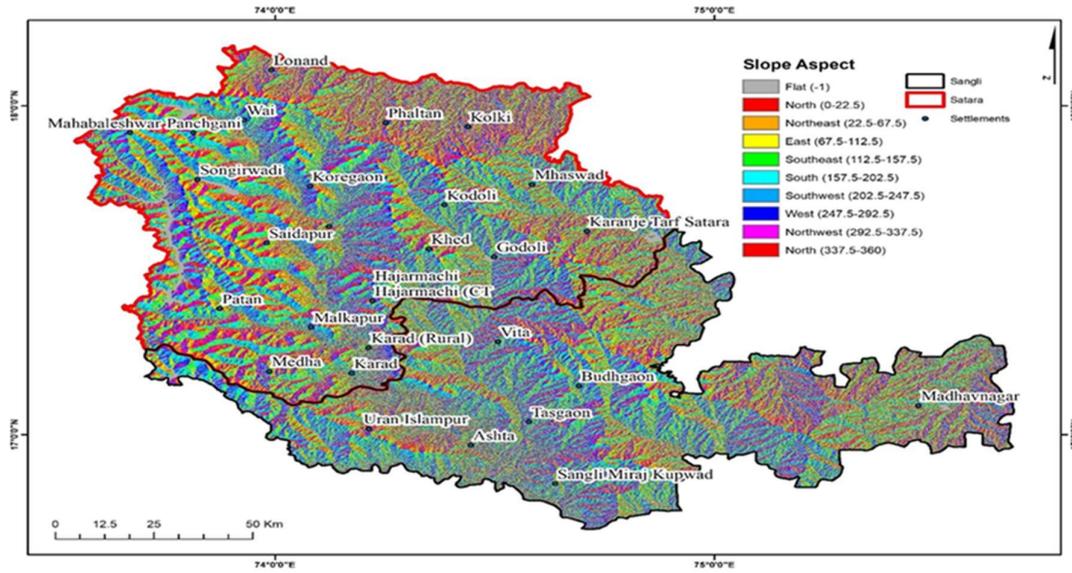


Figure S9. Slope aspect map.

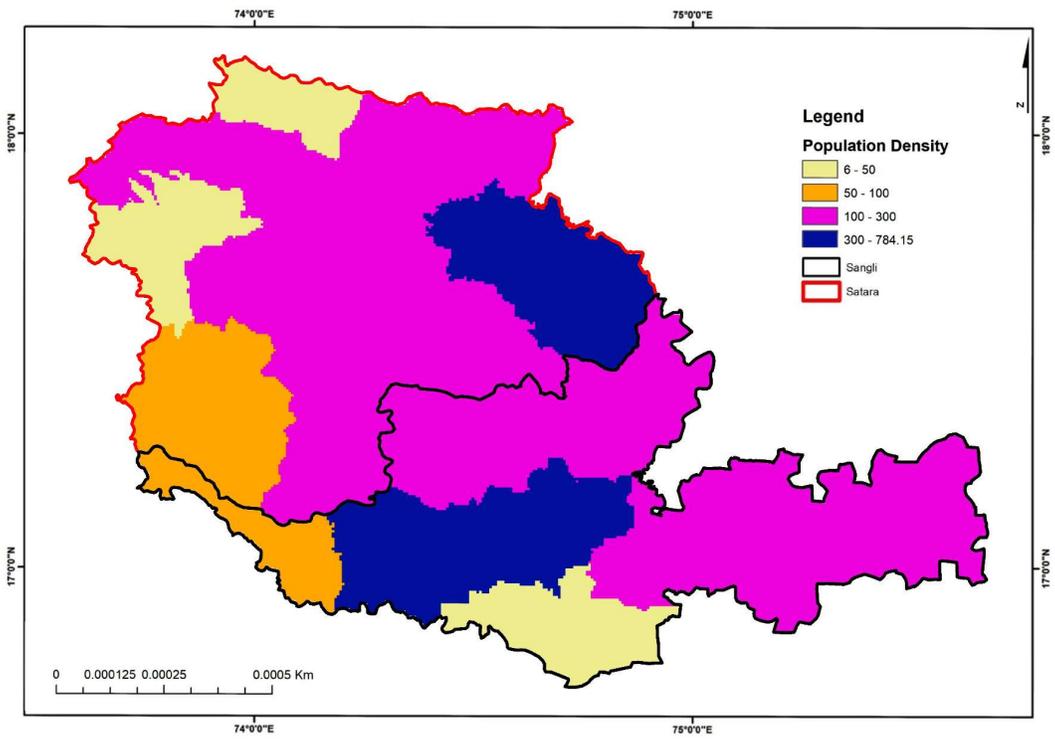


Figure S10. Population density block wise 2011.

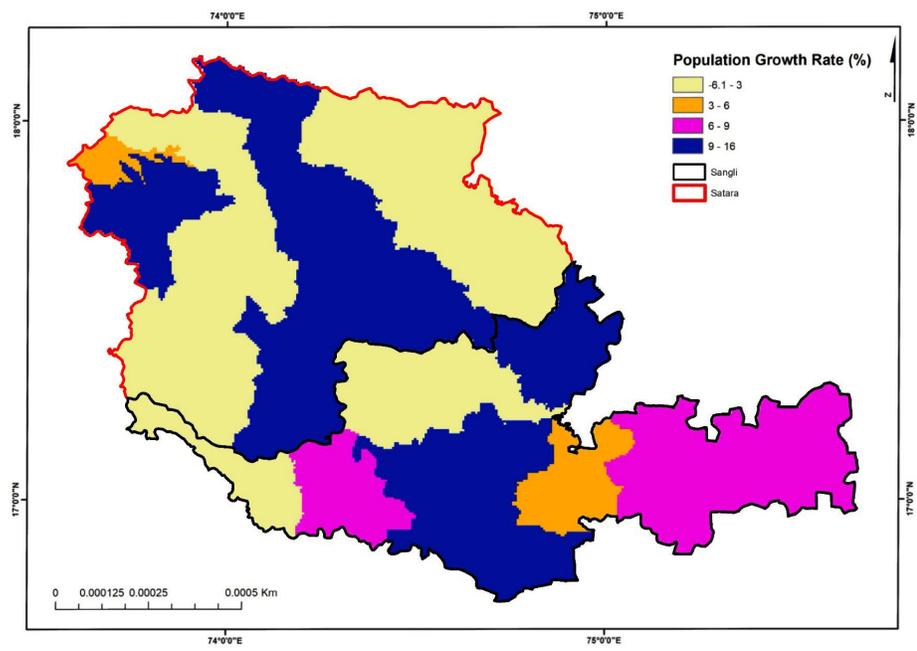


Figure S11. Population Growth Rate (%) 2011.

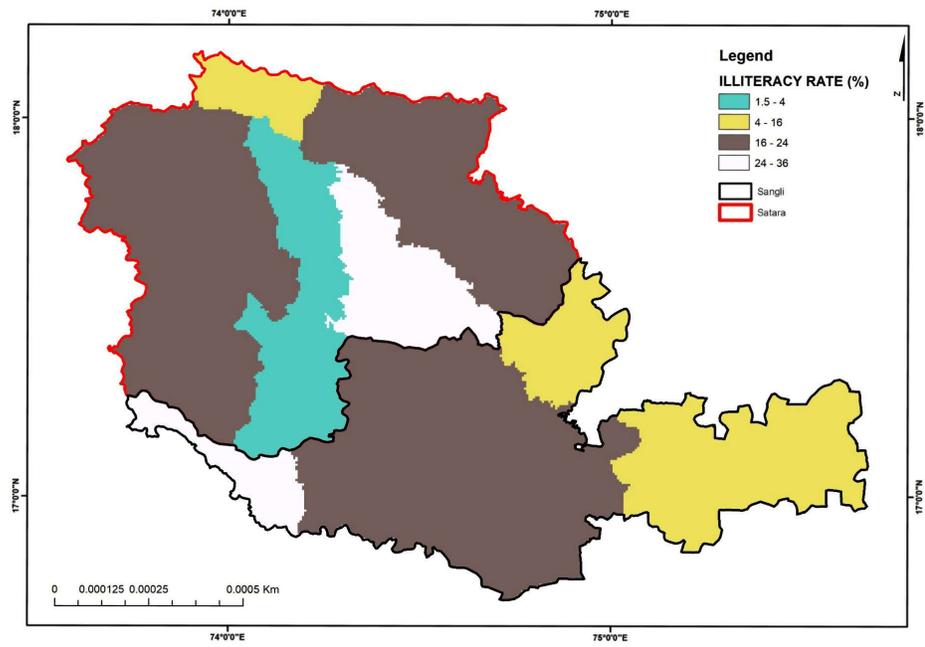


Figure S12. Illiteracy Rate (%) 2011 Block Wise.

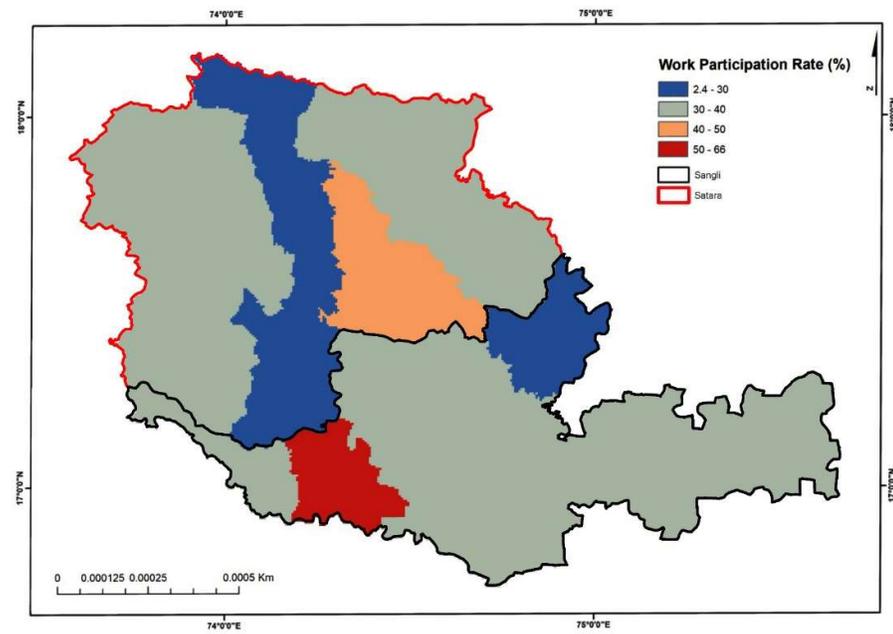


Figure S13. Work Participation Rate (%) 2011.

Table S1. The soil Quality Index (SQI) indicator, their classes and assigned weights.

Indicators	Class	Weight
1. Soil texture	Clayey	1
	Loamy	2
2. Soil depth	Deep, Very deep	1
	Moderately deep	1.2
	Moderately shallow	1.4
	Shallow	1.6
	Very shallow	1.8
	Extremely shallow	2
3. Soil drainage	Well, Somewhat excessive, Excessive	1
	Moderately well	1.2
	Imperfect	1.4
	Poor	1.6
	Very poor	1.8
	Extremely poor	2
4. Parent material	Granite	1
	Basalt	1.5
	Alluvium	2
5. Soil salinity	Negligible	1
	Slight	2
6. Degree of soil erosion	None to very slight	1
	Slight	1.3
	Moderate	1.5
	Severe	1.8
	Very severe	2
7. Slope gradient (%)	0	1
	1–5	1.2
	6–10	1.4
	11–15	1.6
	16–20	1.7
	21–25	1.8
	26–30	1.9
	31–35	2

Table S2. Area under different slope gradient.

Class	Soil gradient (degree)	Area (%)
1.	0	45.31
2.	1–5	38.24
3.	6–10	8.56
4.	11–15	4.81
5.	16–20	2.81
6.	21–25	0.08
7.	26–30	0.004
8.	31–35	0.16

Table S3. Area under different soil drainage.

Class	Soil drainage	Area (%)
1.	Excessive	14.04
2.	Imperfect	9.31
3.	Moderately Well	16.09
4.	Well	60.21

Table S4. The Vegetation Quality Index (VQI) indicator, their classes and assigned weights.

Indicators	Class	Weight
1. Vegetation cover (%)	> 80	1
	60–80	1.25
	60–40	1.50
	40–20	1.75
	10–20	1.9
	<10	2
2. LULC	Water Bodies	1
	Built-up land	1.3
	Dense forest	1.4
	Crop land	1.6
	Land with Scrub	1.8
	Fallow Land	1.9
	Barren Land	2

Table S5. The Climate Quality Index (CQI) indicator, their classes and assigned weights.

Indicators	Class	Weight
1. Average Annual Rainfall	339.91–478.88	1
	227.23–339.91	1.3
	116.43–227.23	1.6
	< 116.43	2
2. Average annual air temperature (°C)	< 24	1
	24–25	1.3
	25–26	1.6
	>26	2
3. Average annual potential evapotranspiration (mm)	< 300	1
	300–600	1.2
	600–1200	1.5
	1200–1500	1.8
	> 1500	2
4. UNEP aridity index	>0.55 (Humid)	1
	0.50–0.55 (Dry sub- humid)	1.25
	0.30–0.50 (Semi-arid)	1.50
	0.10–0.30 (Arid)	1.75
5. Average wind speed at 10m height (m/s)	<0.03 (Hyper-arid)	2
	0–1.2 (Slight)	1
	1.2–1.6 (Moderate)	1.3
	1.6–1.8 (Severe)	1.6
6. Rain erosivity (mm/hr)	>1.8 (Very severe)	2
	<30 (Very low1)	1
	30–50 (Low)	1.3
	50–70 (Moderate)	1.6

	>70 (High)	2
7. Slope aspect	Flat, North, Northeast, East, Northwest	1
	South, Southeast, Southwest, West	2

Table S6. The Socio-Economic Quality Index (SEQI) indicator, their classes and assigned weights.

Indicators	Class	Weight
1. Population density (People/km ²)	<50 (Low)	1
	50–100 (Moderate)	1.3
	100–300 (High)	1.6
	>300 (Very High)	2
2. Population growth rate (%/year)	< 3 (Low)	1
	3–6 (Moderate)	1.3
	6–9 (High)	1.6
	>9 (Very High)	2
3. Illiteracy rate (%)	< 4 (Low)	1
	4–16 (Moderate)	1.3
	16–24 (High)	1.6
	>24 (Very High)	2
4. Work participation rate (%)	>50 (Very High)	1
	40–50 (High)	1.3
	30–40 (Moderate)	1.6
	<30 (Low)	2

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