Supplementary Materials

Supplementary S1: Minerals, Leases, and Revenue Generated From the Mines (Other Materials) of the Aravalli Range

Table S1. Minerals, leases, and revenue generated from the mines (other materials) of the Aravalli range (data source: https://mines.rajsthan.gov.in/dmgcms/page?menuName=/q/rwh/KECEmwCWsWqD;455611;FP8Cvo5QMvby Department of Mines and Geology, Rajasthan (Data accessed on 4-01-2026)).

Mineral	Leases	Area	Production	Sale Value	Revenue	Employment	Year
Beryl	3	14.335	0	0	2.33963	12	2015
Emerald Crude	1	46.32	0	0	1.8528	4	2015
Epidote	0	0	0	0	0	0	2015
Bauxite	1	123.5	0.032215	0	3.23	6	2015
Fluorite	8	1093.95	0	0	4.41	0	2015
Garnet (Abr. and Crude)	17	79.3166	0.00809	0.07922	2.57066	15	2015
Kyanite	5	163.01	0	0	1.20973	0	2015
Lignite	7	14,634.23	94.90917	1260.979	6529.663	324	2015
Limestone	40	19,376.3	674.6309	1270.681	54,604.83	5142	2015
Magnesite	2	9.75	0	0	0.1372	0	2015
Rock Phosphate	3	1673.38	15.84479	316.8958	5420.19	615	2015
Selenite	5	1015.95	0.018	0.144	17.01076	19	2015
Siliceous Earth	24	221.534	0.278	1.52104	15.21966	113	2015
Vermiculite	2	30.32	0.0103	0	2.79466	5	2015
Wollastonite	16	245.92	1.72484	16.72291	227.0633	255	2015
Ball Clay	116	5362.75	34.02161	238.1513	2060.793	700	2015
Barytes	1	31	0.035	0.25025	3	11	2015
Bentonite	29	54.445	1.67017	4.492555	305.1099	135	2015
Brick Earth	11	201.53	180.184	1206.539	5648.96	10,816	2015
Calcite	39	888.763	0.67655	3.987415	111.6608	634	2015
China Clay	265	4073.898	20.60437	78.53091	1063.756	3667	2015
Chert	2	1.71	0.00034	0.000459	1.04	9	2015
Chips Powder/Limestone	30	30.55	1.101167	3.854083	67.79832	1053	2015
Dolomite	15	1356.687	5.571332	27.70068	437.3075	651	2015
Felspar	1420	7290.412	25.17783	87.61821	2067.874	5547	2015
Fire Clay	4	64.77	0	0	0.11	0	2015
Fuller's Earth/Kharia Mitti	20	206.21	0.13292	0.540097	25.26875	72	2015
Jasper	1	24.55	0	0	0.3	0	2015
Granite	961	2311.028	25.86617	705.0765	6775.444	7810	2015
Gypsum	63	12,752	21.38714	113.9848	2777.819	2470	2015
Kaolin	2	8.0025	0.01325	0.035775	0.7	30	2015
Kankar-Bajri	99	92,913.64	484.6796	947.6886	23,166.39	19,086	2015
Limestone (Burning)	445	9401.831	109.74	285.5324	8511.217	7552	2015
Limestone (Dimnl.)	485	2124.11	44.62128	489.651	6379.879	5348	2015
Marble	1848	3246.028	156.769	1960.384	27,916.29	32,944	2015
Masonry Stone	5678	6228.883	1292.882	2412.546	32,219.89	56,788	2015
Mica	15	208.11	0.05513	0.9381	8.45555	22	2015
Mill Stone	7	1054.498	0.0134	0.0804	14.71	20	2015
Mitti	7	7	43.82521	19.74919	287.7689	1185	2015
Murram/Gravel/Gitti	0	0	22.72738	27.66283	445.1745	1636	2015
Ochres	101	1702.656	23.62093	52.48184	812.8416	1719	2015
Phylite-shist/Patti Katla	79	132.33	58.36271	78.72968	794.9277	3701	2015

Pyrophyllite	2	32.08	0.03734	0.132557	2.8	12	2015
Quartzite	46	57.8217	0.42135	0.878785	28.30052	17	2015
Quartz	1241	7527.813	13.65124	47.54638	1114.698	3198	2015
Rhyolite	219	227.85	14.66752	11.95895	478.37	880	2015
Salt Petre	0	0	0	0	0	0	2015
Sandstone	1232	8736.98	152.0107	788.7162	17,647.96	68,322	2015
Serpentine	293	351.1384	10.85967	162.8951	2606.321	2375	2015
Silica Sand	75	910.1635	7.232151	39.22352	532.3215	1281	2015
Slate Stone	15	33.74	0.00035	0.00245	4.13	4	2015
Soapstone	195	9119.822	9.52849	70.30361	2094.255	2772	2015
Beryl	3	14.3346	0	0	0.76194	0	2016
Emerald Crude	1	46.32	0	0	5.59773	8	2016
Epidote	1	5	0	0	0	0	2016
Bauxite	1	123.5	0	0	1.232	1	2016
Fluorite	7	992.95	0	0	0.12	2	2016
Garnet (Abr. and Crude)	17	79.3166	0.01852	0.18446	2.5721	29	2016
Kyanite	5	163.91	0	0	0.2	0	2016
Lignite	7	14,634.23	85.18175	1137.276	7049.574	330	2016
Limestone	41	22,219.7	663.0614	1374.736	56,984.98	5143	2016
Magnesite	4	19.75	0	0	0	0	2016
Rock Phosphate	3	1673.38	7.88451	157.6902	3783.821	621	2016
Selenite	4	1016.3	0.129029	1.290286	31.67897	28	2016
Siliceous Earth	44	313.95	0.296368	1.97659	43.08231	142	2016
Vermiculite	3	34.63	0	0	1.60974	0	2016
Wollastonite	16	302.41	1.65801	15.27649	217.8679	177	2016
Ball Clay	116	5362.75	34.37288	240.6102	2223.328	700	2016
Barytes	2	69.85	0.026241	0.323254	1.63	15	2016
Bentonite	28	53.31	1.40962	6.485425	179.8	162	2016
Brick Earth	10	936.05	155.8708	1069.777	4194.777	11,530	2016
Calcite	39	774.4255	0.93443	5.856284	111.0763	234	2016
China Clay	265	4060.105	28.55198	110.6766	1350.164	2932	2016
Chert	2	1.71	0.00494	0.01729	0.49	0	2016
Chips Powder/Limestone	33	33.55	0.856759	2.141898	57.4536	41	2016
Dolomite	15	1163.074	4.755653	19.52419	387.5144	1469	2016
Felspar	1332	6791.269	56.11217	181.0116	2153.235	5730	2016
Fire Clay	3	59.9873	0	0	0	0	2016
Fuller's Earth/Kharia Mitti	20	206.21	0.19365	0.824138	23.21968	63	2016
Jasper	1	24.5	0.0035	0.0035	0.245	5	2016
Granite	962	2327.026	38.42846	1061.794	8149.597	7447	2016
Gypsum	63	12,782.44	18.16834	97.93142	3126.621	2485	2016
Kaolin	2	8	0.01325	0.035775	0.7	30	2016
Kankar-Bajri	108	98,074.48	568.4062	974.7813	23,594.22	21,600	2016
Limestone (Burning)	438	8368.989	85.84862	170.6614	11046.05	7434	2016
Limestone (Dimnl.)	466	2056.5	39.25951	458.2363	6544.092	5311	2016
Marble	1772	3015.492	135.2376	1776.248	28,054.71	17,469	2016
Masonry Stone	5576	6181.053	929.8351	1501.505	28,533.16	52,308	2016
Mica	15	208.11	0.03124	0.41764	1.50051	22	2016
Mill Stone	6	989.5	0.0093	0.02715	0.915	27	2016
Mitti	7	7	66.96843	36.0596	825.5742	1255	2016
Murram/Gravel/Gitti	0	0	8.40861	11.52702	341.1156	1925	2016
Ochres	96	1257.645	17.06412	37.55432	827.3772	569	2016
Phylite-shist/Patti Katla	55	123.5875	57.61961	26.86869	1020.621	3831	2016

Pyrophyllite	8	58.66	0.04413	0.156662	3.21	18	2016
Quartzite	45	56.2217	0.13906	0.34415	13.8755	20	2016
Quartz	1234	6969.678	14.99593	46.38148	1096.283	6782	2016
Rhyolite	217	830.41	14.98511	12.00431	778.76	837	2016
Salt Petre	0	0	0	0	0	0	2016
Sandstone	1176	6354.108	120.1063	625.9488	17,148.2	48,397	2016
Serpentine	274	337.5784	9.663792	144.9241	2319.409	1665	2016
Silica Sand	156	1950.887	8.562146	38.79202	697.2316	909	2016
Slate Stone	15	33.74	0	0	8.79	3	2016
Soapstone	188	8400.958	12.01414	99.88667	1973.297	2754	2016
Beryl	3	14.33	0	0	0.24	0	2017
Emerald Crude	1	46.32	0	0	2.03287	0	2017
Epidote	1	5	0	0	0	0	2017
Bauxite	1	123.5	0	0	0	1	2017
Fluorite	8	1093.7	0	0	0.12	0	2017
Garnet (Abr. and Crude)	19	88.2287	0.03663	1.153845	7.45743	57	2017
Kyanite	4	158.95	0	0	0	0	2017
Lignite	7	14,634.23	93.02016	1552.741	7007.939	336	2017
Limestone	41	19,793.14	500.0626	997.0427	42,303.21	10,976	2017
Magnesite	3	13.75	0	0	2.022	0	2017
Rock Phosphate	4	1893.38	12.3095	246.19	3585.29	968	2017
Selenite	4	1011.35	0.004692	0.093838	11.96693	28	2017
Siliceous Earth	44	313.95	0.523437	4.545697	92.92111	165	2017
Vermiculite	4	39.63	0	0	0.0638	0	2017
Wollastonite	14	258.7	1.46169	13.53783	199.8299	261	2017
Ball Clay	131	5384.55	36.77169	257.4018	2176.021	1200	2017
Barytes	1	31	0.076	0.988	4.56273	11	2017
Bentonite	37	79.56	1.749058	9.703021	237.3941	168	2017
Brick Earth	0	878	133.2532	757.051	3184.197	9702	2017
Calcite	39	791.6108	0.65578	4.874344	88.46463	582	2017
China Clay	335	4767.211	22.8708	96.29841	1474.536	3272	2017
Chert	2	1.72	0.022	0.051	1.75	5	2017
Chips Powder/Limestone	35	35.55	0.921837	2.304593	66.03488	41	2017
Dolomite	15	1163.074	3.073709	14.41997	256.7927	966	2017
Felspar	1473	7616.81	32.50595	141.4676	2839.435	6341	2017
Fire Clay	3	59.9873	0	0	0	0	2017
Fuller's Earth/Kharia Mitti	20	206.21	0.153873	1.30137	21.56025	63	2017
Jasper	1	24.5	0	0	2.138	0	2017
Granite	1093	2921.283	30.90758	788.5735	8251.046	10,817	2017
Gypsum	72	9866.786	20.48081	110.2007	4191.525	2619	2017
Kaolin	4	12.03	0.3231	1.41525	8.78	41	2017
Kankar-Bajri	119	83,249.42	1138.584	2848.274	16,993.26	22,837	2017
Limestone (Burning)	479	9072.231	88.20121	327.3026	10,219.1	7637	2017
Limestone (Dimnl.)	467	2091.53	36.53001	504.319	6350.032	5265	2017
Marble	1754	3109.839	131.9927	1655.328	28,519.48	31,570	2017
Masonry Stone	5760	7091.206	841.5802	1469.475	33,629.77	55,322	2017
Mica	8	174.518	0.06459	0.96885	2.0219	20	2017
Mill Stone	6	985.6	0.0086	0.0215	0.86	35	2017
Mitti	5	5	92.73076	30.93455	485.7431	1727	2017
Murram/Gravel/Gitti	1	1	5.70634	8.646455	168.9048	2090	2017
Ochres	82	883.1956	22.19988	47.5129	929.1496	192	2017
Phylite-shist/Patti Katla	57	150.75	34.95864	18.17085	968.551	3910	2017

Pyrophyllite	8	58.56	0.0512	0.2048	3.84287	18	2017
Quartzite	46	574.2217	0.206368	0.517296	33.477	13	2017
Quartz	1229	6308.479	18.98327	58.17236	1465.704	7324	2017
Rhyolite	208	818.34	15.86049	11.90856	805.205	945	2017
Salt Petre	0	0	0	0	0	0	2017
Sandstone	1167	6838.31	141.0975	809.2792	18,660.27	49,762	2017
Serpentine	269	339.5784	8.985725	132.8738	2373.248	1675	2017
Silica Sand	116	2083.998	8.438453	41.21464	1051.871	769	2017
Slate Stone	16	35.99	0.019	0.0342	5.33	8	2017
Soapstone	187	8168.893	15.31441	124.0502	1846.194	2575	2017
Beryl	3	14.3346	0	0	0	0	2018
Emerald Crude	1	46.32	0	0	0	0	2018
Epidote	1	5	0	0	0.25325	0	2018
Bauxite	1	123.2	0	0	0	1	2018
Fluorite	6	749.99	0	0	0	0	2018
Garnet (Abr. and Crude)	20	92.3005	0.05148	1.6731	42.13696	33	2018
Kyanite	3	154	0	0	0	0	2018
Lignite	7	14,634.23	87.69331	1562.742	9325.648	465	2018
Limestone	42	20,080.51	755.7759	2112.717	79,535.49	4860	2018
Magnesite	3	14.75	0	0	0.32998	0	2018
Rock Phosphate	4	1893.38	3.088259	63.92696	9018.621	970	2018
Selenite	4	1011.35	0.039016	0.727338	13.69243	33	2018
Siliceous Earth	44	313.95	0.724561	6.850498	59.59731	165	2018
Vermiculite	4	39.63	0	0	0.5172	0	2018
Wollastonite	13	258.7	1.26986	11.83674	175.3132	192	2018
Ball Clay	131	5384.55	47.43331	332.0302	2733.753	1200	2018
Barytes	1	31	0.051899	0.67469	3.14	10	2018
Bentonite	38	81.67	2.757818	16.61903	252.158	305	2018
Brick Earth	0	891.12	133.831	752.7403	3655.294	10,677	2018
Calcite	39	838.1855	0.538205	4.355003	63.56223	193	2018
China Clay	341	3935.559	37.74654	166.7404	1563.522	3347	2018
Chert	2	1.71	0.020157	0.132891	1.8141	5	2018
Chips Powder/Limestone	34	34.96	1.414392	7.779154	150.5309	79	2018
Dolomite	14	1064.618	2.848161	12.21377	389.6421	412	2018
Felspar	1454	7541.615	74.14502	354.0363	4382.803	6187	2018
Fire Clay	3	59.9873	0	0	0	0	2018
Fuller's Earth/Kharia Mitti	19	204.97	0.637476	2.436834	27.89413	58	2018
Jasper	1	24.5	0.0075	0.03375	0.786	0	2018
Granite	1147	2684.439	56.7174	1264.246	10,860.88	10,079	2018
Gypsum	88	10,016.99	46.64318	250.878	7271.972	2294	2018
Kaolin	4	13.8378	0.13993	0.539433	7.11	97	2018
Kankar-Bajri	94	19,548.36	28.9809	33.89601	4063.304	3899	2018
Limestone (Burning)	451	9770.751	125.8559	337.0173	13,369.83	7903	2018
Limestone (Dimnl.)	469	2079.14	43.88878	654.5375	6355.681	5900	2018
Marble	1756	3025.289	82.52467	1417.078	28,413.76	28,761	2018
Masonry Stone	5675	6330.171	1203.464	2624.346	38,076.17	52,584	2018
Mica	7	139.64	0.17348	2.775605	11.20951	0	2018
Mill Stone	6	1053.488	0.01319	0.032975	1.1772	35	2018
Mitti	0	0	107.8603	31.50425	1027.471	1942	2018
Murram/Gravel/Gitti	1	1	1.725618	1.900537	84.40181	1137	2018
Ochres	74	855.636	31.91439	78.4298	521.6691	226	2018
Phylite-shist/Patti Katla	53	116.02	17.14743	130.2775	1039.997	4317	2018

Pyrophyllite	8	35.53	0.398116	2.060489	7.592123	28	2018
Quartzite	46	605.324	0.256156	0.67135	27.15608	28	2018
Quartz	1108	5805.616	26.83227	121.0227	1927.949	2842	2018
Rhyolite	184	190.97	22.36522	19.45204	786.6843	625	2018
Salt Petre	0	0	0	0	0	0	2018
Sandstone	1096	4939.334	158.1439	932.3044	18,947.04	46,048	2018
Serpentine	259	328.34	8.271892	123.6192	2207.012	1575	2018
Silica Sand	115	1571.527	19.19769	91.70295	968.1829	822	2018
Slate Stone	13	33.19	0.01777	0.227456	27.67	5	2018
Soapstone	194	8830.179	14.59482	205.0703	2796.851	2394	2018
Beryl	3	14.3346	0	0	0.435	0	2019
Emerald Crude	1	46.32	0	0	3.7056	0	2019
Epidote	1	5	0	0	0	0	2019
Bauxite	1	123.2	0	0	1.2451	1	2019
Fluorite	6	988.75	0	0	0.9294	0	2019
Garnet (Abr. and Crude)	20	87.3053	0.00536	0.17956	6.0718	32	2019
Kyanite	3	154	0	0	0.76	0	2019
Lignite	7	14,633.49	81.67636	1745.898	8523.627	455	2019
Limestone	45	21,218.58	682.7579	1817.537	62,024.36	5098	2019
Magnesite	3	14.75	0	0	0	0	2019
Rock Phosphate	2	1530.25	9.06738	187.6948	2594.391	965	2019
Selenite	4	998.35	0.022137	0.388444	19.80921	25	2019
Siliceous Earth	44	313.95	0.254103	2.333941	29.49409	115	2019
Vermiculite	4	39.63	0	0	2.0844	0	2019
Wollastonite	13	258.7	1.03986	9.634232	154.6282	211	2019
Ball Clay	146	4749.8	30.14106	210.9874	3350.268	780	2019
Barytes	1	31	0.027556	0.358222	2.48	11	2019
Bentonite	40	84.17	3.048888	17.32382	262.625	310	2019
Brick Earth	0	0	353.1268	1150.398	3641.055	8775	2019
Calcite	37	783.63	0.232708	1.997091	61.4006	203	2019
China Clay	361	4188.648	134.4975	545.8421	1889.955	3260	2019
Chert	2	1.71	0.00293	0.00586	0.38	5	2019
Chips Powder/Limestone	34	34.96	1.610473	12.58614	145.9725	114	2019
Dolomite	10	748.7778	1.773662	4.410898	80.16686	118	2019
Felspar	1287	6837.378	51.7071	251.9658	3296.335	6181	2019
Fire Clay	3	59.987	0	0	0.94	0	2019
Fuller's Earth/Kharia Mitti	16	57.58	0.216486	1.41394	31.11118	38	2019
Jasper	1	24	0.00045	0.002025	0.05625	0	2019
Granite	1231	2814.94	56.64573	1170.753	13,465.79	10,940	2019
Gypsum	55	9216.026	30.06158	172.8718	7543.089	2136	2019
Kaolin	4	13.8378	0.125546	0.492688	5.0387	101	2019
Kankar-Bajri	255	3556.288	56.29891	88.80258	6247.1	2748	2019
Limestone (Burning)	455	11,337.35	114.237	414.6383	12,805.01	8548	2019
Limestone (Dimnl.)	395	1906.73	95.86414	1023.577	6705.652	5681	2019
Marble	1626	2872.715	106.2052	1925.296	24,172.36	21,097	2019
Masonry Stone	5611	6207.67	1034.052	2136.78	38,541.4	73,293	2019
Mica	4	19.48	0.15845	2.8521	8.84854	0	2019
Mill Stone	5	1053.488	0.00605	0.015124	0.60495	35	2019
Mitti	0	0	168.3194	38.96085	839.1119	1119	2019
Murram/Gravel/Gitti	2	2	21.54965	35.13655	582.6229	253	2019
Ochres	78	872.097	28.86444	77.59168	430.8151	235	2019
Phylite-shist/Patti Katla	54	114.63	17.3017	129.8276	929.8223	4319	2019

Pyrophyllite	8	35.53	1.425101	33.61885	118.2845	30	2019
Quartzite	46	605.324	0.16699	0.483203	31.76159	40	2019
Quartz	1204	6298.096	57.43909	412.236	3871.138	16,190	2019
Rhyolite	170	177.47	19.55489	20.81355	799.3232	645	2019
Salt Petre	0	0	0	0	0	0	2019
Sandstone	1027	5320.833	274.4966	2024.8	18,905.76	33,371	2019
Serpentine	248	318.5391	6.812666	98.393	2179.625	1495	2019
Silica Sand	114	1444.35	13.28727	67.73178	1689.528	1257	2019
Slate Stone	14	35.45	0.0125	0.125	17.84035	23	2019
Soapstone	191	8861.584	14.84211	129.7029	2595.829	2293	2019
Beryl	4	49.32	0	0	0	0	2020
Emerald Crude	1	26.12	0	0	1.8528	0	2020
Epidote	1	4.05	0	0	0.1	0	2020
Bauxite	1	123.2	0	0	1	1	2020
Fluorite	6	838.75	0	0	18.67639	0	2020
Garnet (Abr. and Crude)	18	82.8107	0.003047	0.836442	10.47104	37	2020
Kyanite	3	154	0	0	0	0	2020
Lignite	7	14,633.49	91.42563	1750.438	9252.112	345	2020
Limestone	45	21,189.65	742.8947	1653.673	68,010.45	5034	2020
Magnesite	2	10	0	0	0	0	2020
Rock Phosphate	2	1530.14	8.090241	0	7326.902	965	2020
Selenite	4	998.35	0.004642	0.104441	15.0424	35	2020
Siliceous Earth	39	359.25	0.238883	1.803971	25.28908	110	2020
Vermiculite	3	13.51	0	0	0.54908	0	2020
Wollastonite	13	258.7	0.886837	8.399496	112.4924	211	2020
Ball Clay	155	5578.8	40.94522	286.6165	2959.731	795	2020
Barytes	2	35	0.03288	0.433801	14.38	22	2020
Bentonite	40	91.92	4.460752	29.15324	304.0216	280	2020
Brick Earth	113	427.27	472.3595	4588.942	4371.09	12,281	2020
Calcite	34	879.7225	0.196937	1.689926	84.75761	223	2020
China Clay	348	3791.039	36.04724	157.9947	2807.233	3270	2020
Chert	2	1.71	0	0	1.1391	5	2020
Chips Powder/Limestone	31	32.16	0.890316	7.182977	178.3245	180	2020
Dolomite	10	752.8407	1.17876	4.232217	299.1825	67	2020
Felspar	1217	6064.498	38.18826	184.4776	4143.017	6519	2020
Fire Clay	3	60.4873	0	0	0.9	0	2020
Fuller's Earth/Kharia Mitti	15	54.89	0.282976	1.877168	35.51977	38	2020
Jasper	0	0	0	0	0	0	2020
Granite	1247	2747.04	65.6114	1412.016	17,279.42	9799	2020
Gypsum	66	10,086.2	67.88194	523.6605	7766.75	2267	2020
Kaolin	4	13.8354	0.523074	1.815718	62.93383	101	2020
Kankar-Bajri	285	3619.241	87.09581	226.1364	4771.53	2689	2020
Limestone (Burning)	444	10,180.29	120.9052	429.6326	11,885.66	8808	2020
Limestone (Dimnl.)	363	1829.81	51.53068	604.5483	5471.229	5693	2020
Marble	2165	5273.784	161.5935	2414.881	21,267.65	21,143	2020
Masonry Stone	5682	6244.638	1020.47	1838.683	33,764.81	55,896	2020
Mica	15	81.45	0.177191	3.470054	18.16939	65	2020
Mill Stone	5	1053.488	0.00863	0.021575	0.642	35	2020
Mitti	12	3	266.6511	29.681	1683.374	2538	2020
Murram/Gravel/Gitti	27	26.77	15.77539	6.259815	291.6004	879	2020
Ochres	92	385.679	28.07157	42.43425	572.085	309	2020
Phylite-shist/Patti Katla	50	127.04	24.18742	75.73817	551.7443	497	2020

Pyrophyllite	7	197.53	0.190505	0.95338	46.15476	21	2020
Quartzite	48	587.724	1.200794	2.929367	78.18166	57	2020
Quartz	949	5607.275	30.37988	183.892	2741.594	14,761	2020
Rhyolite	172	183.6	14.2719	17.74587	611.783	659	2020
Salt Petre	0	0	0	0	0	0	2020
Sandstone	1054	5364.669	224.2941	1678.236	17,949.98	47,233	2020
Serpentine	236	304.71	7.100981	103.1857	1875.533	1963	2020
Silica Sand	117	1489.119	13.06802	22.42673	1156.536	1038	2020
Slate Stone	13	33.64	0.00998	0.1996	16.89169	10	2020
Soapstone	188	8163.872	15.90395	213.9419	4530.677	2121	2020
Beryl	2	9.8	0	0	0	0	2021
Emerald Crude	0	0	0	0	0	0	2021
Epidote	1	4.05	0.00975	0.011213	0.1	15	2021
Bauxite	1	123.2	0	0	3.696	0	2021
Fluorite	7	1251.62	0.000004	0	9.19562	0	2021
Garnet (Abr. and Crude)	18	82.8107	0.084066	4.166233	15.40773	45	2021
Kyanite	3	154	0	0	0	0	2021
Lignite	7	14,633.74	102.5321	2004.054	10,365.98	910	2021
Limestone	45	21,385.36	866.3709	6880.526	71,660.95	10,297	2021
Magnesite	3	36.12	0	0	0	0	2021
Rock Phosphate	2	1530.14	6.38816	134.1513	1863.731	960	2021
Selenite	4	625.35	0.010249	0.240861	12.2378	90	2021
Siliceous Earth	37	350.605	0.343699	2.679184	35.33772	580	2021
Vermiculite	2	8.51	0	0	0.54908	0	2021
Wollastonite	13	258.7	0.896121	9.392421	135.537	215	2021
Ball Clay	168	5314.26	52.39855	353.6579	4702.66	945	2021
Barytes	1	31	0.068	0.884	5.1	11	2021
Bentonite	41	92.82	2.866703	20.02825	401.4293	305	2021
Brick Earth	114	110.5	442.2727	925.1187	5488.514	16,495	2021
Calcite	33	875.0375	0.305798	3.88083	105.8108	243	2021
China Clay	330	3431.711	39.78474	174.3544	2489.016	2413	2021
Chert	2	1.71	0.004286	0.038571	0.6	25	2021
Chips Powder/Limestone	28	29.9292	1.419617	12.77536	192.8116	217	2021
Dolomite	16	752.8378	1.696734	31.64912	349.8649	62	2021
Felspar	1736	8648.172	54.27702	262.6785	4702.648	10,192	2021
Fire Clay	3	59.9873	0.0166	0.14774	0	10	2021
Fuller's Earth/Kharia Mitti	16	192.43	2.228711	12.80701	39.50205	56	2021
Jasper	1	24.5	0.0061	0	0	0	2021
Granite	1679	3610.407	87.96	1712.955	30,659.47	17,107	2021
Gypsum	151	9208.17	35.4722	248.4267	6829.631	1755	2021
Kaolin	4	13.8378	0.627906	2.140952	4.51828	105	2021
Kankar-Bajri	198	17,101.69	153.6741	403.8655	8822.209	7973	2021
Limestone (Burning)	440	10,172.45	130.1377	460.6614	15,800.09	4192	2021
Limestone (Dimnl.)	341	1812.81	37.81274	406.3114	6208.008	6682	2021
Marble	1596	2823.593	106.3806	1849.112	24,594.9	23,056	2021
Masonry Stone	5848	6553.088	1168.756	2263.408	51,514.58	63,270	2021
Mica	76	466.51	0.426007	5.115319	139.2301	142	2021
Mill Stone	2	6.23	0.0083	0.02075	1.22044	15	2021
Mitti	26	25.77	519.6068	163.7119	3986.808	6307	2021
Murram/Gravel/Gitti	28	28.03	16.59971	31.05523	470.4709	998	2021
Ochres	111	995.3965	32.00178	82.38305	1468.068	679	2021
Phylite-shist/Patti Katla	45	127.95	90.31886	578.7086	710.8604	20,549	2021

Pyrophyllite	8	35.53	1.135461	18.36664	113.0356	48	2021
Quartzite	45	151.364	5.373704	13.94318	642.7275	306	2021
Quartz	839	4458.745	27.99048	249.6478	2757.216	18,082	2021
Rhyolite	173	184.6	18.58874	23.29619	999.1746	640	2021
Salt Petre	0	0	0	0	0	0	2021
Sandstone	1024	4953.243	126.0024	1099.346	20,870.01	48,550	2021
Serpentine	222	293.4991	4.676345	75.0283	1517.614	2010	2021
Silica Sand	152	1937.308	19.4869	102.713	1239.179	1243	2021
Slate Stone	13	33.15	0.024053	0.48106	8.241902	28	2021
Soapstone	189	9044.505	13.5043	188.1637	2646.806	3367	2021

Supplementary S2. Sensitivity Analysis

A total of 13,000 well-distributed points at an interval of 2 km each were created. For the sensitivity analysis, a multiple linear regression model was followed for both 2017 and 2024 data:

$$A_i = \beta_0 + \beta_1 R_i + \beta_2 K_i + \beta_3 L_i + \beta_4 S_i + \beta_5 C_i + \beta_6 P_i + \varepsilon_i$$

where

A_i = dependent variable (e.g., RUSLE factors);

β_0 = intercept (constant term);

$\beta_1, \beta_2, \beta_3 \ldots\ldots\ldots$ = regression coefficients;

$R_i, K_i, L_i, S_i, C_i, P_i$ = independent variables;

ε_i = random error.

The results indicate that the rate of erosion in both years is dominated by topography. The S factor indicates the steepness of the slope; it was 69.8% in 2017 and 69.1% in 2024, indicating that the slope is most sensitive, meaning it accelerates surface runoff and causes higher erosion rates. The other topographic factor, L (slope length), accounts for 17% in 2017 and 21.8% in 2024 of the sensitivity to erosion. The R factor shows a 7.2% contribution in 2017 but only 0.3% in 2024, indicating that the R factor is highly sensitive to erosion.

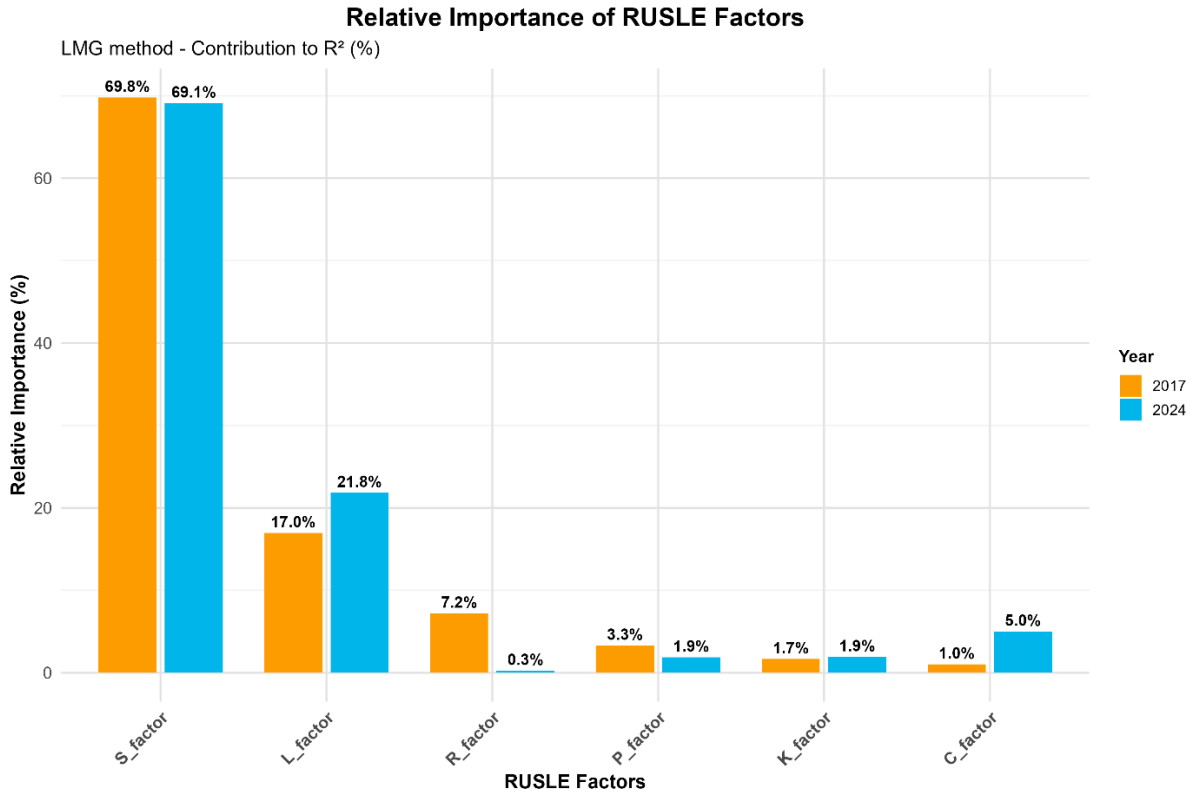


Figure S1. The sensitivity of different factors used in this study. Higher values means they have more contribution in erosion and vice-versa.

Supplementary S3. Predicted Soil Erosion Comparison

The spatial resolution of MODIS LULC is 500 m, compared to Sentinel-2, which has a spatial resolution of 10 m. This 500 m resolution means that one pixel represents 250,000 m², so features smaller than that will not be captured in this data. On the other hand, Sentinel 2 data can represent 100 m²; therefore, it can capture features very well. The erosion rate using MODIS LULC was 0.17 t/ha/yr in 2001, 0.165 t/ha/yr in 2010, and 0.179 t/ha/yr in 2020. The results indicate a very low erosion rate and very few changes at the decadal scale. In our study area, most natural and human-made features are below 500 m (250,000 m² area), so the RUSLE model has not calculated erosion rates in these regions. The MODIS LULC rate is only valid for landforms that cover more area and are captured by the sensor.

The erosion rate using the ESRI LULC developed from Sentinel-2 is 1.59 t/ha/yr in 2017 and 1.81 t/ha/yr in 2024. This high rate indicates that the sensor captured small landforms that contribute to higher rates, such as gullies, small valleys, and hills. The built-up areas are very small, especially in our study area, where small villages are large in number while big cities are very few. The larger cities, e.g., Jaipur, Delhi, Udaipur, and Ajmer, can be classified or detected by the MODIS sensor, but small villages cannot be classified. So, if the small built-up areas are not captured by MODIS, then they are shown as another class, like agriculture, forest, etc. So, it is a mis-classification. This mis-classification will influence C and P factor calculation and ultimately negatively affect the rate of erosion. But, sentinel data can detect these regions more accurately and calculate the C and P factor values more precisely; hence, it will provide more reliable data.

Table S2. Rate of erosion using different data and different time interval.

Rate of Erosion Using LULC from MODIS-2001	Rate of Erosion Using LULC from MODIS-2010	Rate of Erosion Using LULC from MODIS-2020	Rate of Erosion Using ESRI LULC 2017	Rate of Erosion Using ESRI LULC 2024

0.17 t/ha/yr	0.165 t/ha/yr	0.179 t/ha/yr	1.59 t/ha/yr	1.81 t/ha/yr

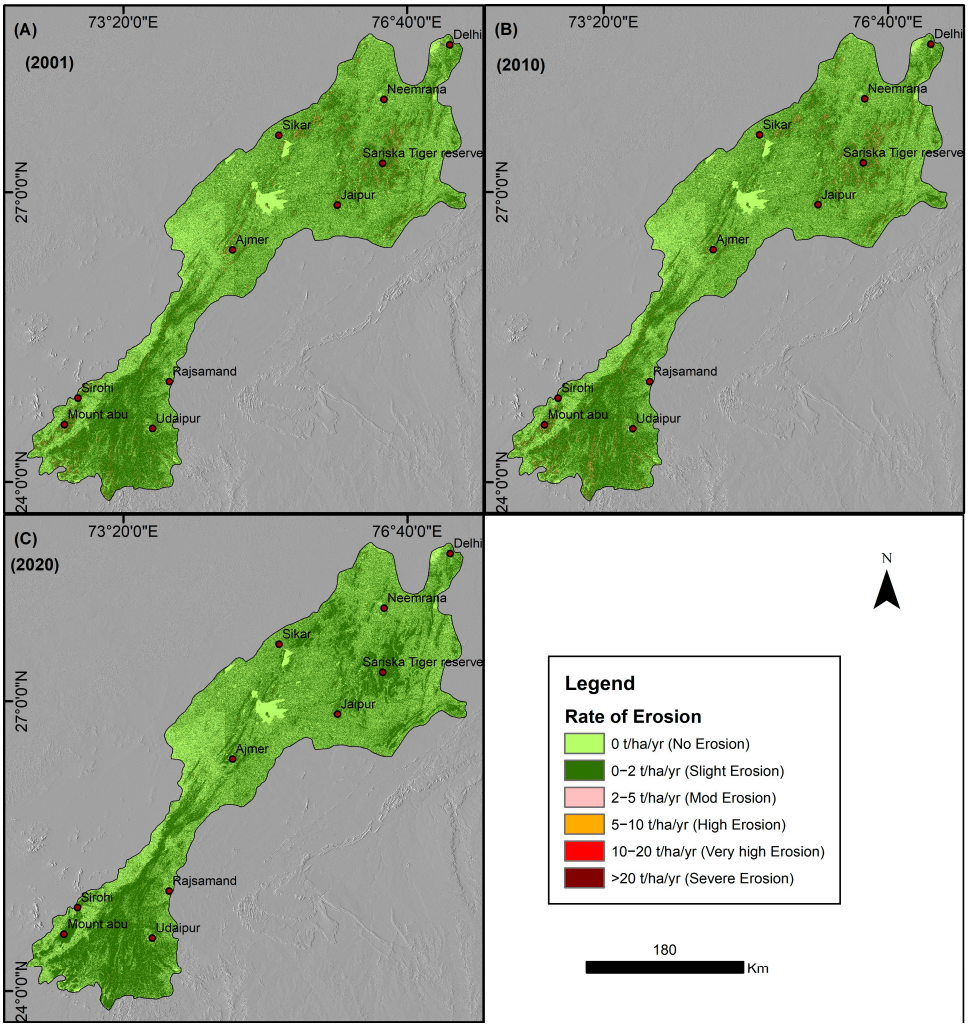


Figure S2. Rate of erosion using MODIS LULC data. (A) represents 2001, (B) represents 2010, (C) represents 2020.

Supplementary S4. Dataset Sources

Table S3. Data used in the study with their sources.

S. No	Data Name	Source
1.	MODIS LULC	MODIS/006/MCD12Q1
2.	ESRI LULC	Sentinel-2 10 m Land Use/Land Cover Download
3.	Digital Elevation Model	ALOS PALSAR
4.	Rainfall data	CHRS Data Portal
5.	NDVI	Sentinel 2
6.	Soil texture maps	National Bureau of Soil Survey and Land Use Planning (NBSS and LUP)