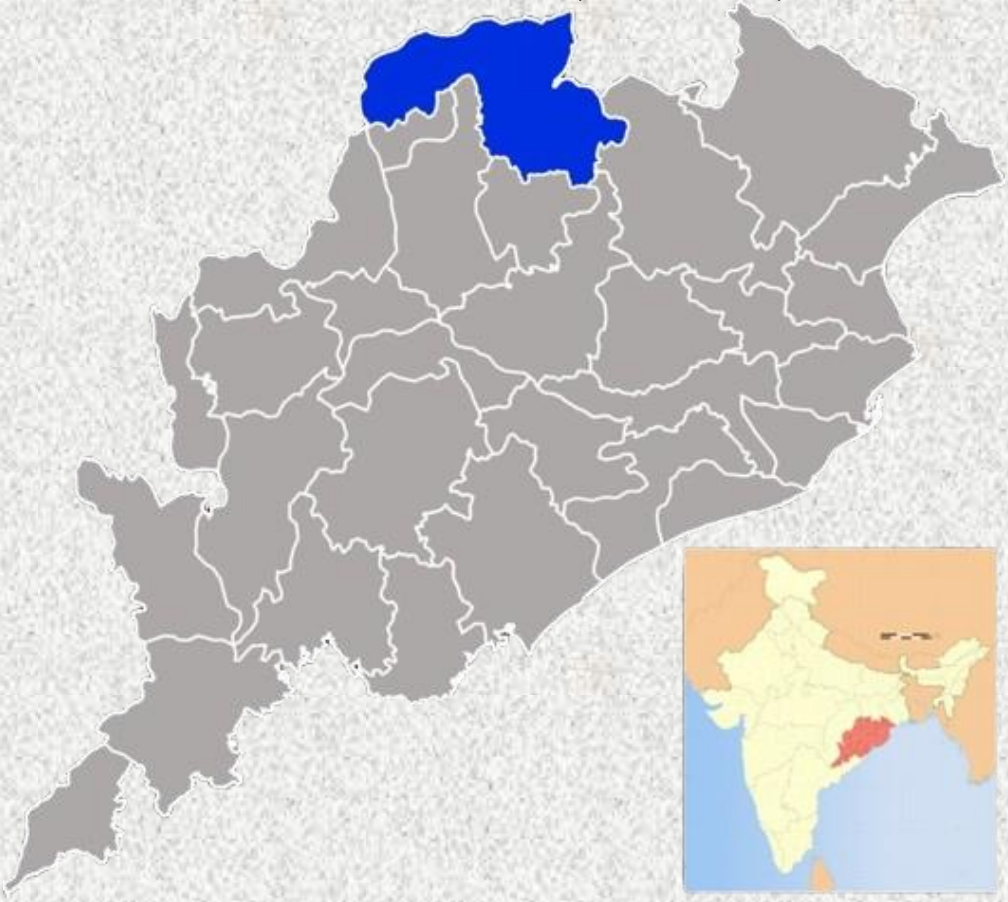
DISTRICT SURVEY REPORT (DSR) OF SUNDARGARH DISTRICT, ODISHA ON BRICK EARTH MINING

As per Notification No. S.O. 141(E),15th January,2016 & S.O. 3611(E), 25th July, 2018, New Delhi, MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE (MoEF & CC)



COLLECTORATE, SUNDARGARH
JANUARY-2025

CONTENTS		
Point No.	**DESCRIPTION**	**Page No.**

LIST OF TABLES

LIST OF PLATES

PREFACE

The Erstwhile Ministry of Environment and Forests(MoEF), (the Government of India, made Environmental Clearance (EC) for mining of minerals mandatory through its Notification of 27th January, 1994 under the provisions of Environment Protection Act, 1986. Keeping in view the experience gained in environmental clearance process over a period of one decade, the Ministry came out with Environmental Impact Notification, SO 1533 (E), dated 14th September 2006. The Ministry of Environment, Forests & Climate Change (MoEF&CC), Government of India had amended the said vide notification S.O. 141(E) Dated 15th January, 2016. Now again Ministry of Environment, Forests & Climate Change (MoEF & CC), Government of India amended the notification S.O. 141(E) Dated 15th January, 2016 vide S.O. 3611(E) Dated 25thJuly,2018. It has been made mandatory to obtain environmental clearance for different kinds of development projects as listed in Appendix-X of the Notification.

In compliance to the notification issued by the Ministry of Environment and Forest and Climate Change Notification no. S.O.3611 (E) NEW DELHI dated 25-07-2018 the preparation of district survey report of brick earth mining has been prepared in accordance with Clause II of Appendix X of the notification. Every effort has been made to cover Brick earth mining locations, future potential areas and overview of ordinary earth mining activities in the district with all its relevant features pertaining to geology and mineral wealth. This report will act as a compendium of available mineral resources, geological set up, environmental and ecological set up of the district and based on data of various departments like Revenue, Water Resources, Forest, Geology and Mining in the district as well as statistical data uploaded by various state Government departments for preparation for district survey report. The main purpose of preparation of District Survey Report is to identify the mineral resources and developing the mining activities along with other relevant data of the District.

OBJECTIVES

The main objective of the preparation of District Survey Report is to ensure the following

- Identification of mineral wealth in the district.
- Identification of areas of Minor Mineral having the potential mineral where mining can be allowed.
- Identification of areas of proximity to infrastructural structures and installations where mining should be prohibited.

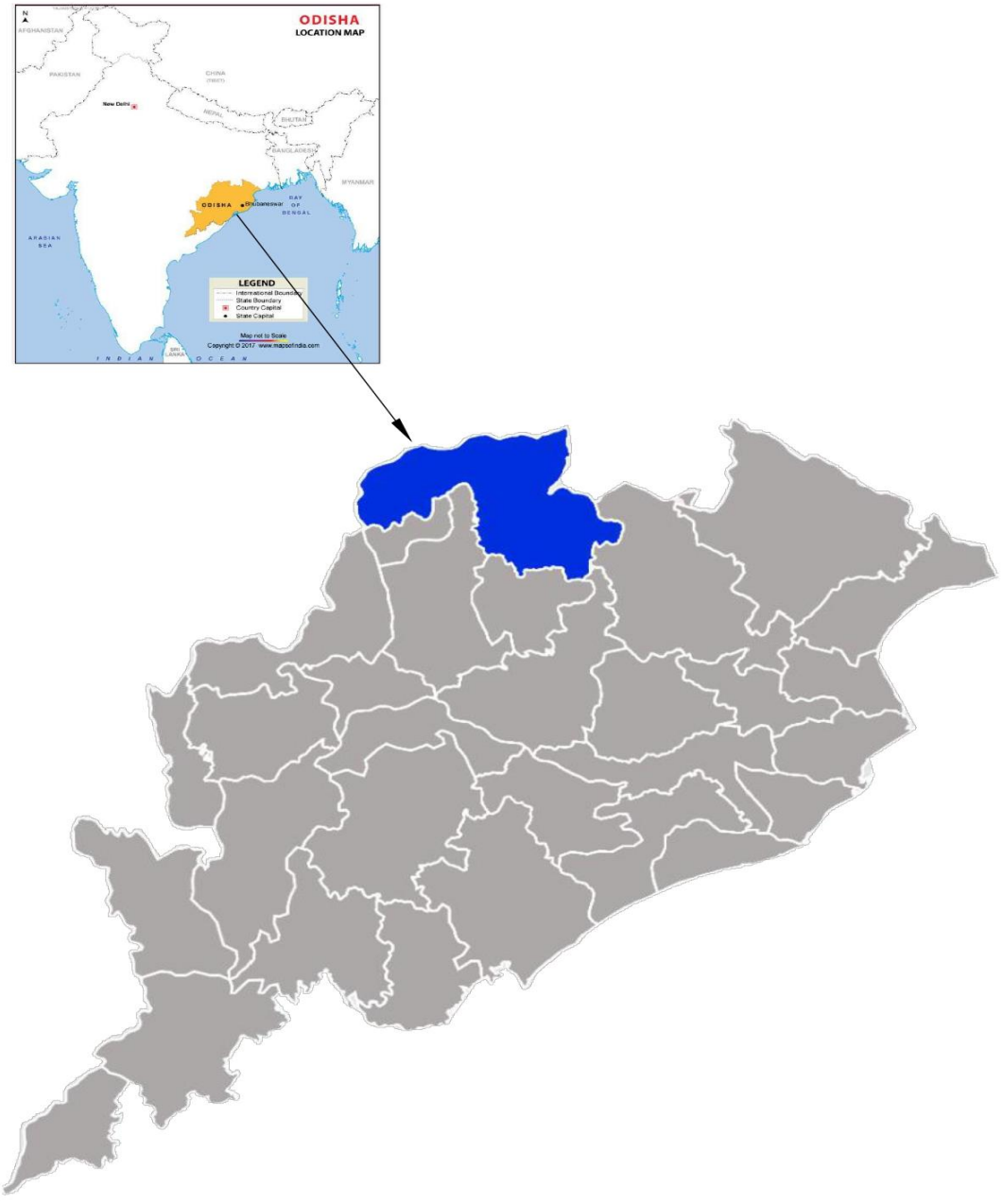
01. INTRODUCTION.

Sundargarh district forms the North western part of Odisha state. Sundargarh town is the district headquarter. Geographically, the district is not a compact unit and consists of widely dissimilar tracts of expansive and fairly open, dotted with tree, clad isolated peaks, vast inaccessible forests, extensive river valleys and mountainous terrain. Broadly speaking, it is an undulating tableland of different elevations broken up by rugged hill ranges and cut up by torrential hill streams and the rivers IB and Brahmani. The general slope of the district is from north to south. Because of this undulating, hilly and sloping nature of landscape, the area is subjected to rapid runoff leading not only to soil erosion but also to scarcity of water for both agriculture and drinking purposes. Brahmani, Sankh, Koel and IB are the major rivers flowing though this District. Covering a geographical area of 9712 sq.kms, Sundargarh District is the second largest District of the state, accounting for 6.23 percent of its total area. Out of this total area, forests cover 4232.57 sq km, this being the second largest in the state, accounting for 8.53 percent of the state total. Sundargarh is the southernmost district of Orissa.

Sundargarh is recognized as an industrial district in the map of Odisha. Steel Plant, Fertilizer Plant, Cement factory, Ferro Vanadium Plant, Machine building factory, Glass and china clay factory and Spinning mills are some of the major industries of this District. Sundargarh occupies a prominent position in the mineral map of Odisha and is rich in iron ore, limestone, manganese, dolomite, and fire clay. Major industries are the Odisha Cements ltd, Hart Fertilizers Ltd, and Odisha Industries Ltd. The industrial town of Rourkela in this District has the first government sector plant built with foreign collaboration and was the first in India to use LD oxygen technology.

Still, more than 50 percent of the people earn their livelihoods from agriculture and allied sectors. Sundargarh District is coming under the North Western Plateau Zone as per the agro climatic zone of Odisha. Soil group of the Sundargarh district is mixture of red and yellow soil. Out of the 3,13,000 hectares of cultivated land, 52 percent is upland, 30 percent is medium land

and 18 percent is low land. As paddy is the main crop, 75 percent of the land is covered with paddy during Kharif. Due to limited irrigation facilities, 24 percent land is irrigated during Kharif and 8 percent of land is irrigated during Rabi.



02. OVERVIEW OF MINING ACTIVITY IN THE DISTRICT.

Other than ordinary earth, stone & Sand a great variety of major mineral potential like Coal, Iron Ore, Manganese, Bauxite, Limestone and Specified Minor Minerals like Dolomite, Quartz, Pyroxenite & Decorative Stone (Granite) are available in the district.

As there are a major number of mines present within the district so there are two Deputy Director Mines Circles within the district i.e. DDM Koira & DDM Rourkela

The over view mining data provided by *DDM Rourkela* is as follows;

Sl No.	List of Mines	Different of Minerals with area		Name of the lessee	Period of validity	Remarks
1	Basundhara	Coal	214.300	M/s M.C.Ltd	--	Working
2	Kulda	Coal	854.320	M/s M.C.Ltd	--	Working
3	Garjanbahal	Coal	653.828	M/s M.C.Ltd	--	Working
4	Dulinga	Coal	762.420	NTPC	--	Working
5	Manoharpur	Coal	652.8853	OCPL	08.05.2047	Working
6	Khatkurbahal & Falsakani	Limestone & Dolomite	156.430	M/s Shiva Cement Ltd.	14.11.2072	Working
7	Dharuara-Kukuda	Limestone & Dolomite	39.42	Sri R.A.Jalan	20.02.2024	Working
8	Biramitrapur	Limestone & Dolomite	793.043	BSL Co. Ltd	31.03.2040	Working
9	Lanjiberna	Limestone & Dolomite	873.057	M/s DCBL Ltd. (OCL)	29.02.2040	Working
10	Khatkurbahal & Falsakani	Limestone & Dolomite	72.439	M/s Shiva Cement Ltd.	14.01.2042	Working
13	Timna	Decorative Stone	11.93	M/s ARC Resources	08.01.2048	Working
16	Banarai	Dolomite	9.324	G.C.Rout	02.09.2052	Working

The over view mining data provided by *DDM Koira* is as follows;

Information on Mining Leases with Lease Validity under Koira Mining Circle					
Sl No	**List of Mines**	**Mineral with Area (in ha.)**		**Name of the Lessee**	**Lease Validity**
		Minerals	**Area (ha)**		
1	**2**	**3**	**4**	**5**	**6**
ML Case					
1	Bandhal Mn Mines	Mn	28.0207	Kanakdhara Mining & Minerals (P) Ltd.	13.03.2022
2	Nuagaon Iron & Mn Mines	Iron & Mn	29.257	Prabodh Mohanty	10.05.2019
3	Jamirdihi	Pyroxenite, Quartz, Quartzite, Dunite etc.	50.646	Indian Marble Company	03.07.2023
4	Bhanjapali Iron Mines	Iron Ore	18.00	J N Patnaik	31.03.2027
5	Patabeda Iron Mines	Iron Ore	14.00	M/s M G Mohanty	07.03.2026
6	Patabeda Iron Mines	Iron Ore	28.397	MGM Minerals Ltd.	07.03.2026
7	Bhanjapali Mn Mines	Mn Ore	65.710	R S Sindhu	10.01.2067
8	Oraghat	Mn Ore	11.485	S A Halim	23.09.2027
9	Adaghat	Iron Ore	15.074	National Enterprises	11.01.2067
10	Kadalia, Sanrusibenua, Basada in Sundargarh District; & Pirapokhari & Handibhanga in Keonjhar District	Iron Ore	874.290	Nilachal Ispat Nigam Limited	10.01.2067
11	Gonua & Mandajoda	Iron & Mn	12.080	B C Dagara	02.05.2025
12	Dalita	Iron & Mn	22.165	B C Dagara	07.09.2023
1st RML Case					
13	Koira	Iron	90.143	Essel Mining & Industries Ltd.	26.08.2021
14	Sanindpur	Iron/Buxt.	147.1	Rungta Sons (P) Ltd.	05.09.2035
15	Raikela	Iron	207.113	Jindal Steel & Power Ltd.	24.05.2035

16	Tantra	Iron	72.56	Korp Resources (P) Ltd.	21.11.2035
17	Patabeda	Iron/Mn	19.425	M/s M.G. Mohanty	02.04.2036
18	Raikela & Tantra	Iron	49.372	PTA Ltd.	02.12.2036
19	Oraghat	Iron	82.961	Rungta Sons (P) Ltd.	09.12.2032
20	Raikela	Iron	18.315	S.N. Mohanty	02.04.2032
21	Gonua	Iron/Mn	13.796	S.N. Mohanty	05.06.2020
22	KJST (Jaldihi)	Iron/Mn/Buxt.	188.268	S.N. Mohanty	19.01.2037
23	Toda RF	Iron	77.94	SAIL	28.04.2030
24	Kusumdihi	Mn/Bux.	52.176	B.I.Co. Ltd.	31.03.2020
25	Kamanda	Bauxite	43.067	Rungta Sons (P) Ltd.	25.02.2035
26	Sarkunda	Iron/Mn	393.556	Feegrade & Co. (P) Ltd.	31.03.2020
27	Raikela	Iron	67.586	Geetarani Mohanty	01.07.2041
28	Rantha	Iron	408.8731	OMC Ltd.	30.12.1998
29	Kashira	Iron	418.355	OMC Ltd.	12.10.2026
30	Kanther Koira	Iron/Mn.	13.270	B.S.Mishra	19.09.2002
31	Raikela	Iron Ore	69.606	C.P. Sharma	16.04.2006
32	Kulijhar	Quartzite	24.167	JK & KP Jhunjhunwala	07.07.2001
33	Gonua	Iron/Mn	12.56	K.C. Pradhan	14.03.2011
34	Nuagaon	Mn	39.89	K.C. Pradhan	18.10.2004
35	Jaldihi & Tantigram	Iron/Mn/Bux.	29.575	K.J.S. Ahluwalia	23.07.2011
36	Gonua	Iron/Mn	23.30	K.J.S. Ahluwalia	15.07.2008
37	Kusumdihi	Mn	47.486	Kavita Agarwal	27.03.2004
38	Raikela	Iron	45.932	National Enterprises	20.12.2033
39	Bhanjapali & Koira	Iron	141.235	OMC Ltd.	06.05.2012
40	Kusumdihi	Bauxite	102.79	ORIND	31.07.1997
41	Tantra, Bandhal & Rengua	Buxt./Iron/Mn	106.128	P.D. Agarawal	07.07.2011
42	Raikela	Iron	14.933	S.D. Sharma	20.01.2012
43	Nuagaon	Iron/Mn	12.942	S.D. Sharma	06.05.2005
44	Toda RF	Iron	3.34	SAIL	17.01.2004
45	Tantra	Bauxite	117.44	SAIL	17.08.1989
46	Patmunda	Mn	81.197	Sun Alloys & Minerals (P) Ltd.	11.02.2006
47	Teherai-Sonua	Iron/Mn	29.076	Tarini Meinerals	25.12.2000
48	Nuagaon	Mn	7.85	Tarini Menerals	25.02.2000
49	Kamanda	Mn	60.7	U.C. Mishra	07.08.2008
50	Gonua	Iron/Mn	129.179	Zenith Mining (P) Ltd.	22.10.2001
51	Bhaludunguri	Soap Stone	155.43	Shiv Dutt Sharma	02.12.2004
52	Sanindpur	Iron/ Mn	70.917	National Enterprises	09.09.2020
53	Oraghat	Iron /Mn	25.847	S A Halim	08.04.2018

2nd RML Case					
54	Kurmitar Pahar	Iron	651	OMC Ltd.	28.04.2035
55	Barsuan	Iron	2486.382	SAIL	05.01.2030
56	Kalta	Iron		SAIL	
57	Taldihi	Iron		SAIL	
58	Bhaludunguri	Soap Stone	110.479	J.C. Budharaj	21.03.1993
59	Gonua	Iron/Mn	83.151	M.G. Mohanty	29.11.1991
60	Gonua	Iron/Mn	86.886	P.K. Ahluwalia	31.03.2020
61	Toda RF	Iron	25.981	SAIL	16.01.2025
3rd & 4th RML Case					
62	Narayanposhi	Iron/Mn	399.838	A.M.T.C. Ltd.	31.03.2020
63	Mahulsukha	Mn	349.839	A.M.T.C. Ltd.	31.03.2020
64	Nadidihi	Iron/Mn	73.855	B.I.Co. Ltd.	31.03.2020
65	Teherai	Iron/Mn	137.46	B.I.Co. Ltd.	31.03.2020
66	Nadidihi	Iron/Mn	121.405	Feegrade & Co. (P) Ltd.	31.03.2020
67	Kolmong	Mn	218.53	Rungta Mines Ltd.	31.03.2020
68	Kanther-Koira	Mn	73.653	Rungta Mines Ltd.	31.03.2020
69	Khajurdihi (C-Block) Mandajoda (A-Block) & Dalita (B-Block)	Iron/Mn	Block-A: 55.605 Block-B: 32.375 Block-C: 31.566	Matadin Sharda	30.08.1987
70	Kusumdihi	Mn	31.549	O.M. & M Ltd.	31.03.2020
71	Sanpatholi	Mn	23.29	O.M. & M Ltd.	31.12.1999
72	Orahuri	Mn	51.476	O.M. & M Ltd.	31.03.2020
73	Patmunda	Mn	807.316	O.M. & M Ltd.	31.03.2020
74	Tentulidihi & Dengula	Mn	35.61	O.M. & M Ltd.	31.12.1999
75	Bhanjikusum	Mn	8.498	O.M. & M Ltd.	31.03.2020
76	Malda	Mn	822.00	Tata Steel Ltd.	(RML applied up to 12.08.2030)
77	Sarkunda	Mn	160.90	EMI Ltd.	03.12.2002

03. GENERAL PROFILE OF THE DISTRICT.

Sundargarh District was constituted on the 1st January, 1948, out of the two ex–States of Gangpur and Bonai, which merged with Odisha on that day. True to its name, this beautiful District of Sundargarh with about 43 percent of its total area under forest cover and numerous colourful tribes dotting its landscape and with abundant mining potential is bounded by Ranchi District of Jharkhand on the North, Raigarh District of Chhatisgarh on the west and North West, Jharsuguda, Sambalpur and Angul Districts of Odisha on the South and South East and Singhbhum District of Jharkhand and Keonjhar District of Odisha on the east.

Sundargarh is recognized as an industrial district in the map of Odisha. Steel Plant, Fertilizer Plant, Cement factory, Ferro Vanadium Plant, Machine building factory, Glass and china clay factory and Spinning mills are some of the major industries of this District. Sundargarh occupies a prominent position in the mineral map of Odisha and is rich in iron ore, limestone, manganese, dolomite, and fire clay. Major industries are the Odisha Cements ltd, Hart Fertilizers Ltd, and Odisha Industries Ltd.

Sundargarh District has 3 sub divisions, 16 Tehsils, 17 Blocks and 262 Gram panchayats. Topographically, this district is located between latitude 21 degree 36' N to 22 degree 32' N and longitude 83 degree 32' E to 85 degree 22' E. The population of this District is 2,080,664, this being the fifth most populous District of the state. Its rural population exceeds twelve lakhs and the urban population is more than six lakhs. The male literacy rate is 82.13 and female literacy rate in the district is 65.93.

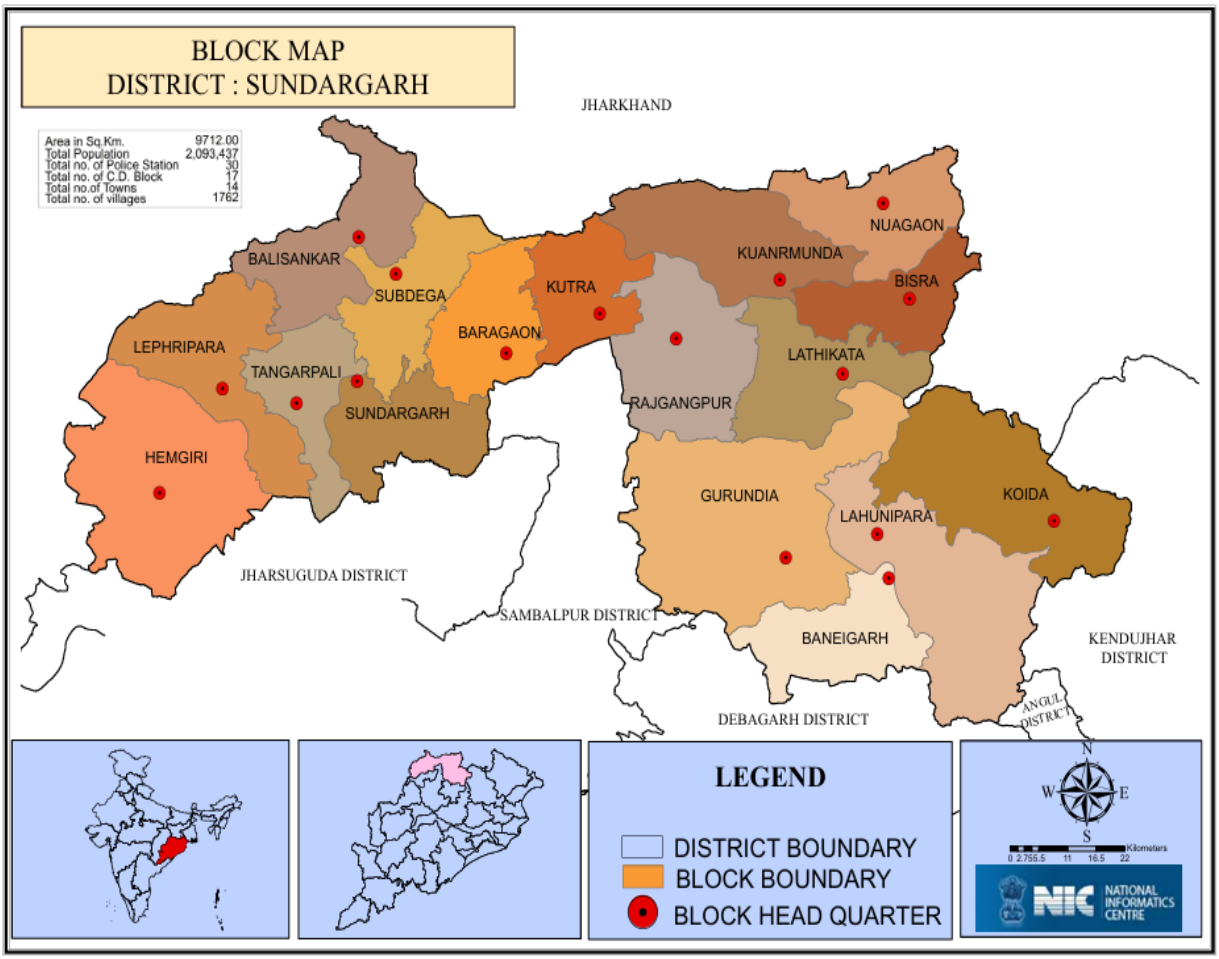
The climate of this District is characterized by extremely hot summers and cool winters. Climate is hot & moist sub humid. Normal rainfall of the District is approximately 1230 mm, but there is a deviation in receipt of rainfall pattern which is influencing crop production.

The education circle of Sundargarh revenue District was bifurcated from Sundargarh to Sambalpur education circle and came to existence since

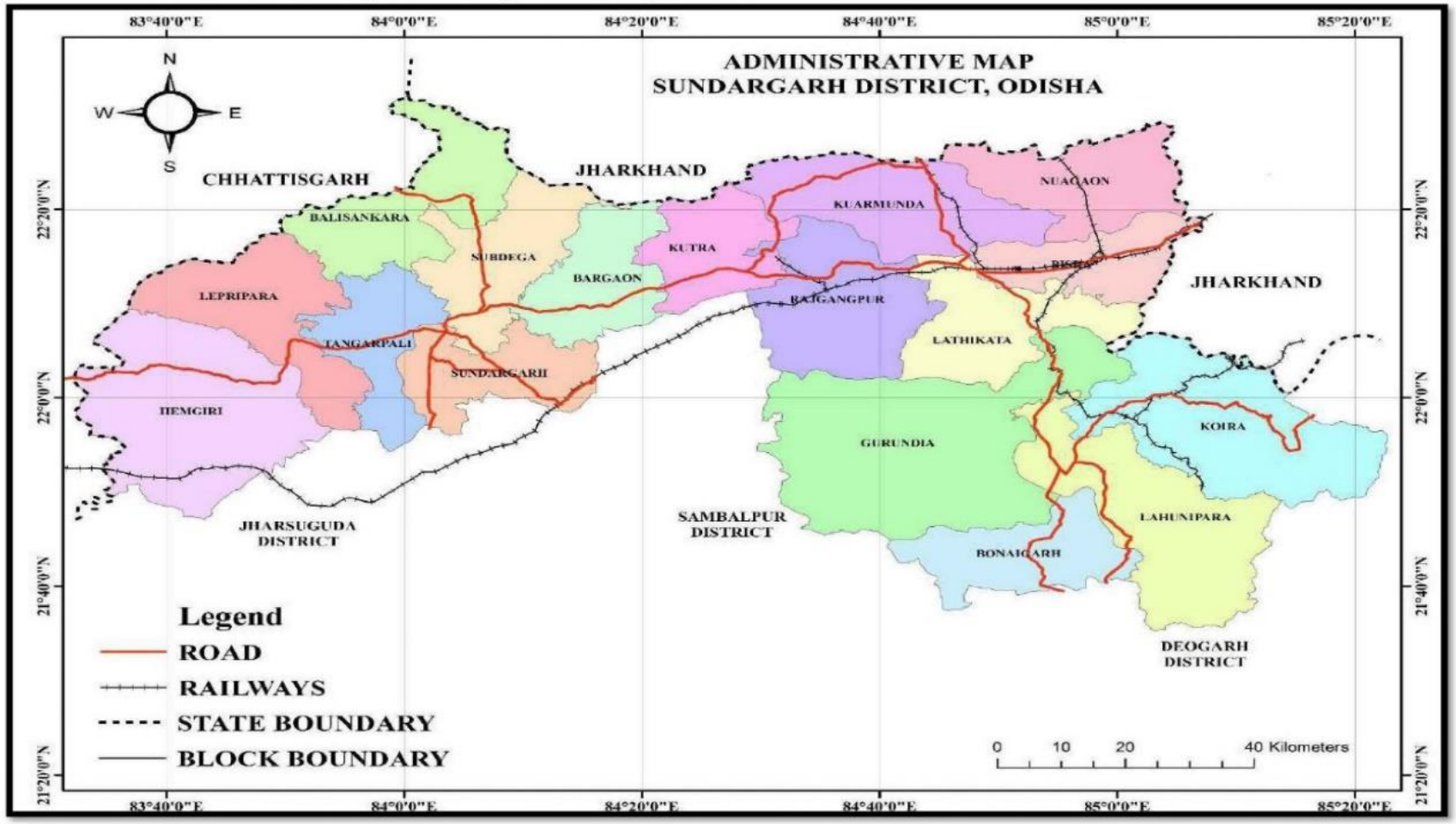
1968 with area of operation within the geographical territory of Sundargarh revenue District. There are several educational institutions in Sundargarh District. National Institute of Technology NIT at Rourkela, Government college Rourkela, S.G. Women's College Rourkela etc are prominent among them.

Sundargarh District celebrates many festivals around the year. Important festivals of the District are Nuakhai, Rath Yatra, Ramanavami and Nama Sankirtana. Nama Sankirtana is a form of worshipping Lord Krishna and Lord Rama in a gathering.

Sundargarh District is one of the tourist attraction spots of Odisha. The District is visited by a large number of tourists round the year. Places like Rourkela, Vedavyasa, Manikmonda, Mandindra dam, Ghogar, Khandadhar and Darjeeng are the important tourist spots of the district.



Administrative Map of Sundargarh District, Odisha.



Physiography

Sundargarh district covers an area of 9712 sq. kms., bounded by the latitude 21° 37' 30" N to 26° 12' 00" N and longitude 83° 32' 52" E to 85° 24' 39" E. Being the part of the Chhota- Nagpur Plateau, major parts of the district have rough and hilly terrain and rich in mineral resources as well. Hills of Sundargarh district may be classified in to three broad categories, Bonai hills, Sundargarh hills, Biramitrapur hills. The Bonai hills which further elongate into the Keonjhar district are known for their iron ore resources, whereas Sundargarh hills famous for coal deposits, which further elongate into Jharsuguda district and Chhatisgarh state as well.

The hills are mainly extensions of the Deccan and Chhota-Nagpur Plateau. In Sundargarh and Panposh Sub-Divisions there are mainly three hill ranges apart from a few isolated outcrops. The one, in the reserved forest blocks of Mahabir Chhatam, Topkurlu, Bhaismunda and Chirobeda on the South-East forming the boundary between Sambalpur and this district, runs East-West direction. The second, in the centres starts from Gurabasa reserved forest in South-West to North-East direction and runs through Kumbahal, Runga, Peruabhadi, Panchara and Brahmani reserved forest ending near the Sankha River. The third, on the western border of the district running South-East to the North-West direction is an extension of the wide range of hills forming the watershed between the river Mahanadi and her affluent IB. Thus, these mountain ranges seem to have started from a point in the middle of the southern boundary of the district and outflanking in three different directions divide the country into separate plains.

The Hemgir plateau is flanked by a system of mountain which starts from Garjanjore (1966' or 599m.) and runs due South-East up to Bendrichuan (1343' or 409m.). There is an abrupt swing near the latter due West up to the water parting between the Garjhor and the Jhulenbar after which there is again a gentle bend due North-West up to the border of Raigarh district.

Among the ridges mention may be made of the great ridge, an extension of the Karampada range of Singhbhum, which apparently seems to be the

spine of the Toda area in East Bonai. It extends from North-East to South-West and is capped with an immense deposit of high-grade hematite. The Rontha plateau (2500'-3000' or 762-914m) from which descends Khandadhar water fall is also covered with iron ore. The Bichakhani hill yields millions of tones of iron ore which feed the Rourkela steel plant. A new railway line has been laid to the foot of the hill at Dumaro for transportation of the iron ore.

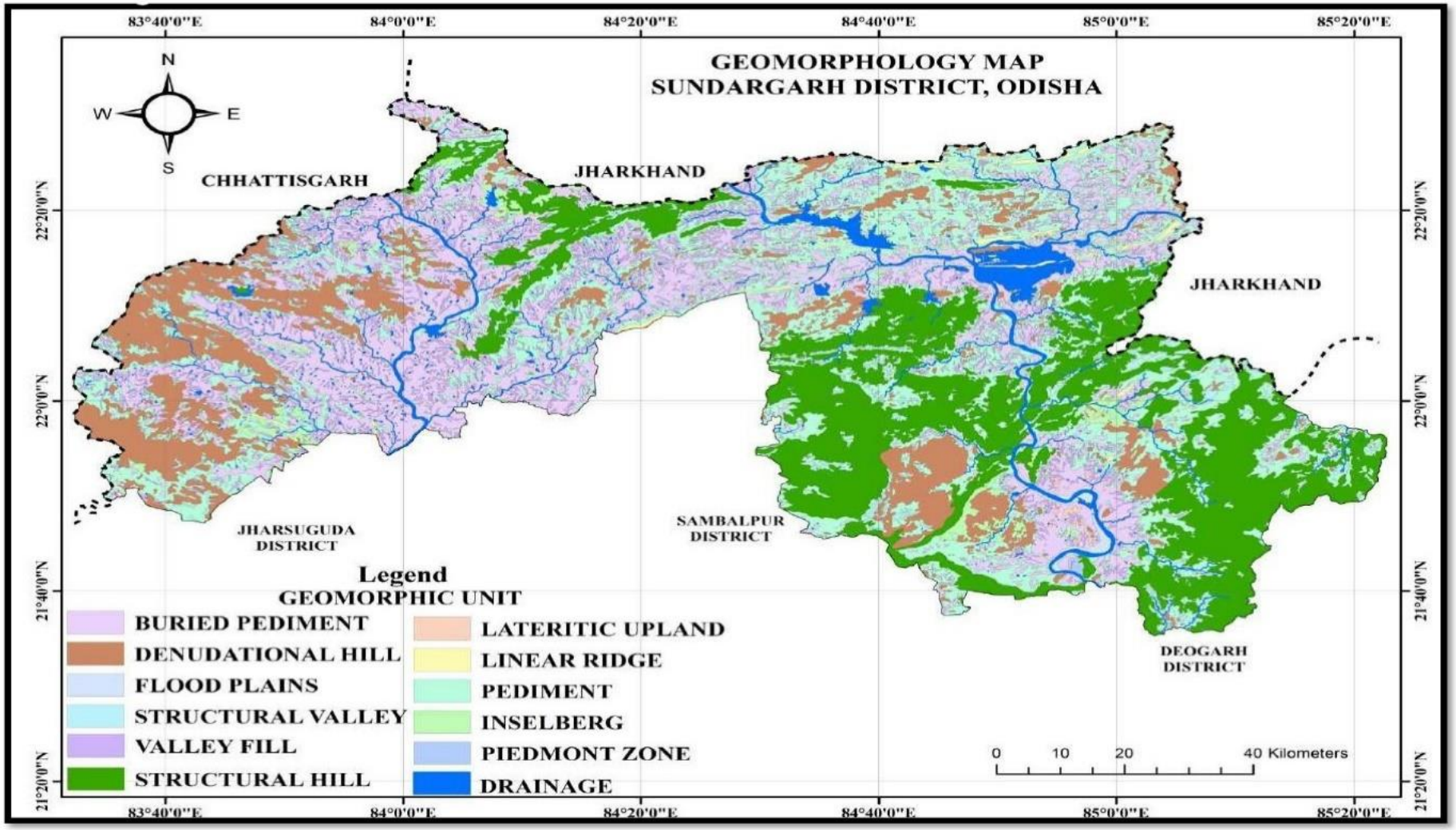
The territory covered by Sundargarh and Panposh Sub-Divisions (comprising the ex-State of Gangpur) consists of a long undulating table-land about 700ft. (213) above the sea level dotted with hill ranges and isolated peaks of considerable height. On the West of Sundargarh Sub-Division lies the Hemgir Plateau, nearly 1150 ft (351m) high, in the centre of which is located the village Hemgir. To the North of Hemgir the land is considerably hilly while to the South it is relatively plain with a minimum elevation of 709 ft (516m) near the Chuanbahal village. The eastern tract of the Sub-Division intervening between Chota Nagpur plateau and Mahavir range, for the most part, is open and well cultivated, the general elevation of which varies from 700' to 1000' (213m TO 305m) but that of the reserved forests except, of course, a few patches, comes under 1000' to 1500' (305m to 457m). Besides, numerous isolated hills and sharp ranges running generally East to West are also evenly distributed throughout the country. On the North the Chota Nagpur plateau with its foot-hills gradually falls away to the plain while the Mahavir range in the South, springs abruptly in an irregularly wall of tilted and disrupted rock and forms for some length the boundary between Sambalpur and this district. On the southern border, dense forests linking up with the forest-clad ranges of Bonai Sub-Division are also seen. Didhrapahar, the highest peak 2509' (765m) of Sundargarh Sub-Divisiion is located near the tri-junction of Sundargarh Sub-Division, Bonai Sub-Division and Sambalpur district.

The block to the North formed by the broad valleys of the Sankh, the South Koel and the Deo, although interspersed with isolated hills and series of small ridges striking East and West, is generally plain, but the tract to the South is

comparatively hillier and more wooded expecting the valley of the Brahmani which extends to an appreciable distance South of Panposh. The region extending from South of Bisra to South of Chirobeda is much broken and hilly, it raises along the Singhbhum and Bonai boundaries to an elevation of 1800' to 2000' (549m) to (610M) the highest peak being Bhaisamunda Pahar 2234' (681m). In the plains the elevation is about 600' to 700' (183m to 213m) the lowest point on the Brahmani vally on the Bonai border near Banki village being 575' (175m). The land is completely denuded of its fertility and is unsuitable for cultivation.

The principal peaks are Mankarnacha (3664ft or 1117m) and Badamgarh (3525ft or 1074m), both on Keonjhar boundary, Kumritar (3495ft or 1065m), the Bichakani (2964ft or 903m), and Khandadhar (3000ft or 914m), all in Bonai Police Station, Rengalbera (2179ft or 664m) in Banki Police Station, Baghbindha (2650ft or 808m), Raipiri (2620ft or 799m) and the Kantamunda (2524ft or 769m), all in Gurundia Police Station, Chelliakota (3331ft to 1015m), in Mahulpada Police Station, Balia (3313ft or 1010m) and the Karaspani (2483ft or 757m), both in Koira Police Station. All the above peaks are in Bonai Sub-Division, Besides, some unnamed peaks of considerable heights are also found. No hills of any significant height are found in Panposh Sub-Division. Among the peaks in Sundargarh Sub-Division mention may be made of Man (1935ft or 590m) on the Madya Pradesh border, Satparlia (1327ft or 404m) and Jogijogan (1471ft or 448m), both in Sundargarh Police Station, Mahabir (1861ft or 567m) in Bargaon Police Station, Didra (2509ft to 765m) in Rajgangpur Police Station on the trijunction of Bonai and Sundargarh Sub-Divisions and Sambalpur district. Other peaks on the Didra range are Bhaisamunda (2234ft or 681m) and Kichimir (2050ft or 625m). The last-named peak is also in the Rajgangpur Police Station. Andiabira (1455ft or 443m) and Bilpahari (1333ft or 406m) are among the less prominent peaks.

Geomorphological Map, Sundargarh District, Odisha.



04. GEOLOGY OF THE DISTRICT.

GEOLOGY-

The geology of Sundargarh district consists of several lithologic groups ranging in age from oldest Archean to younger Proterozoic.

Archean rocks: All major rocks related to BIF-Greenstone-Granite association are brought under Iron Ore Super Group including mafic lava, tuffaceous shale, acid volcanics, banded hematite jasper, banded hematite quartzite with iron ore, chert, sericitic quartzite, conglomerate etc. This rock types are majorly found around South-East part of Sundargarh near Jamda-Koira.

Proterozoic rocks: The important Proterozoic groups include Darjing, Gangpur & Kolhan group.

Darjing group: This group consists of a sequence of arenaceous, carbonaceous and argillaceous formation immediately lying to the south of Gangpur group and as far south up to Bonai.

Gangpur group: This group consists of limestone and dolomite with argillaceous rock located around the central part of Sundargarh district.

Kolhan group: This group comprises purple sandstone and conglomerate overlain by limestone and slate. The Kolhans are rarely seen in Odisha though they are well exposed between Noamundi & Chaibasa.

Intrusives: A number of dolerite dykes are marked traversing granite. They are usually arranged parallel to the joint planes and occasionally occupy irregular cracks in the invaded rocks and run in any directions.

Gondwana rocks: Interbedded sequence of sandstone and shale with coal, fireclay and other rock types of pebble bed, ironstone nodules and siltstone found in Ib river valley.

Mineral resources of Sundargarh District

Basemetals: Located in the area between Lokdega & Bharatpur with Jhamankela, Nawagaon, Kodapani, Jokela, Barilipeta, Sargipali etc.

Bauxite: Located in Tantra, Kodalia, Jaldih, Kusumdihi.

Coal & Fireclay: Ib river valley.

Iron ore: Located in Barasuan, Taldihi, Kalta, Khajurdihi, Palbeda, Gonua, Koida, Kurmitapahar, Rantha, Mankadanacha, Baliapahar, Badamgarhpahar, Mithihurda, basada etc.

Kyanite & Sillimanite: Reported from Kodamunada & Salijir.

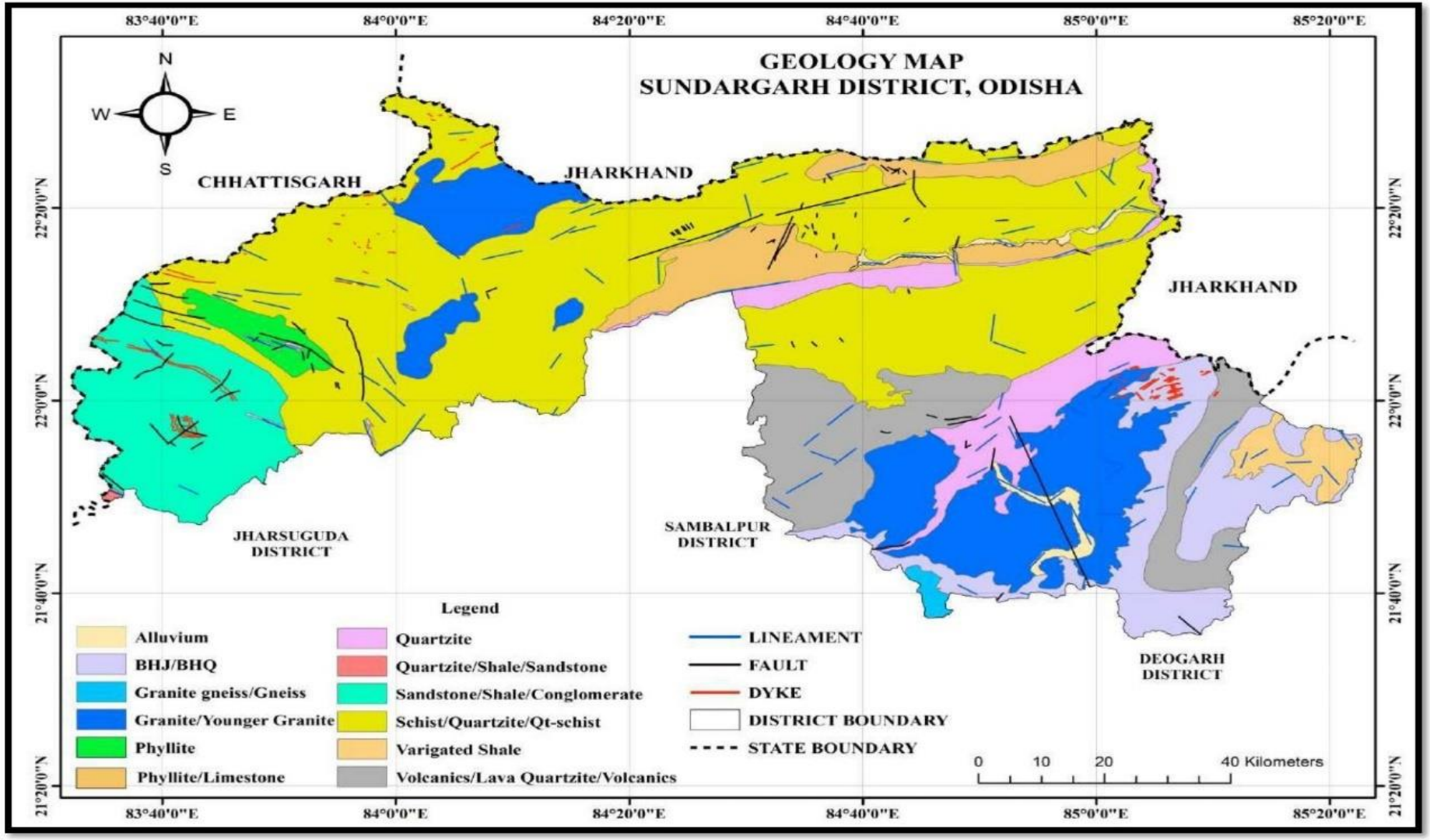
Limestone and Dolomite: Located in Biramitrapur, Raibaga, Hatibari, Purunapani, Gatitangar, Lanjiberna, Khatkurbahal, Kiringsera, Bimta, Khairtola, Tumda, Lefripara, Dublabera, Litibera, Sapai river section.

Manganese ore: Located in Oratari, Patamunda, Malda, Mahulsukha, Nuagaon, Tehral, Sarkundo, Kusumdihi, Gonua, Dengula, Kanthor-Koida, Oraghat, Kolmong.

Soapstone & Talc: Located in Jharbera, Bhaludunguri, Bijadihi, Barapara, Beldihi, Ghusura, Sendpor, Katurdua, Katasahi, Basudihi, Deodihi & Bandhabhuin.

Regional Structural Set-up- There is a general increase in the grade of metamorphism when the rocks are followed from the Singhbhum boarder on the east to the centre of the anti-clinorium on the west. It should, how ever, be noted that some of the rocks, which have phyllitic appearance and characters, are really products of retrogressive metamorphism, containing relics of garnet, stourolite, biotite etc. The Satpura strike (ENE-WSW) is found to be superimposed on an earlier, presumably Eastern Ghats, strike which is prominent.

Geology Map, Sundargarh District, Odisha.



05. DRAINAGE AND IRRIGATION PATTERN.

Sundargarh district is a physically hilly terrain having majorly dendritic drainage pattern to sub-parallel, there are two main rivers named IB River & *Brahmani River. Brahmani river* along with its tributaries, the Sankha & koel Rivers flows within the district. There are few other small rivers flows within the district. The Brahmani River originates from the vedavyas at Rourkela within Sundargarh district. The distance of the sources from the river origin is geologically very short, hence this can be concluded that the rate of deposition of sand in the above River is moderate, while in rest small rivers within the district the rate of deposit is slow.

Additional river source details are given in the following table

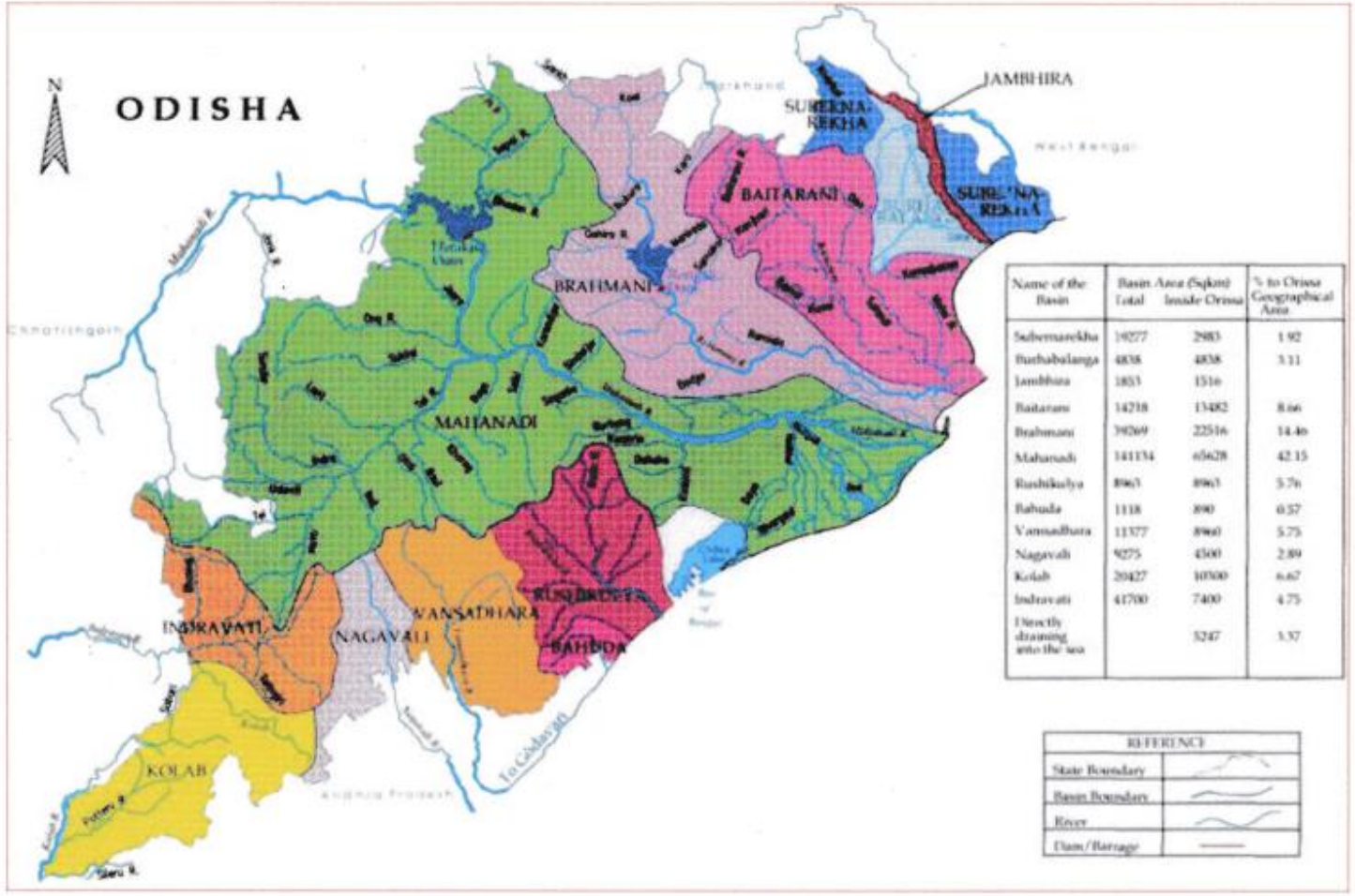
DRAINAGE SYSTEM WITH DESCRIPTION OF MAIN RIVERS

Sl No.	Name of the River	Area Drained (Sq.Km)	% Area Drained in the District
1	IB	7623.00	38.16
2	Madalghat Nallah Sukhajore	27.00	100.00
3	Safai	1102.25	100.00
4	Ustalli Nallah	50.00	100.00
5	Gahirajore Nallah	45.00	100.00
6	Sarswati Nallah	26.00	100.00
7	Ichha	400.00	100.00
8	Sankha	10835.00	12.69
9	Koel	12230.00	9.57
10	Badjore Nallah (Sankh)	35.00	100.00
11	Deo Nallah	132.00	31.50
12	Brahamani River	26190.00	11.93
13	Siudhi Nallah	18.50	100.00
14	Kuradi Nallah	32.00	100.00
15	Amruti Nallah	42.00	100.00
16	Saplata Nallah	22.00	100.00
17	Rukura Nallah (Down stream of Rukura Reserver)	32.00	100.00

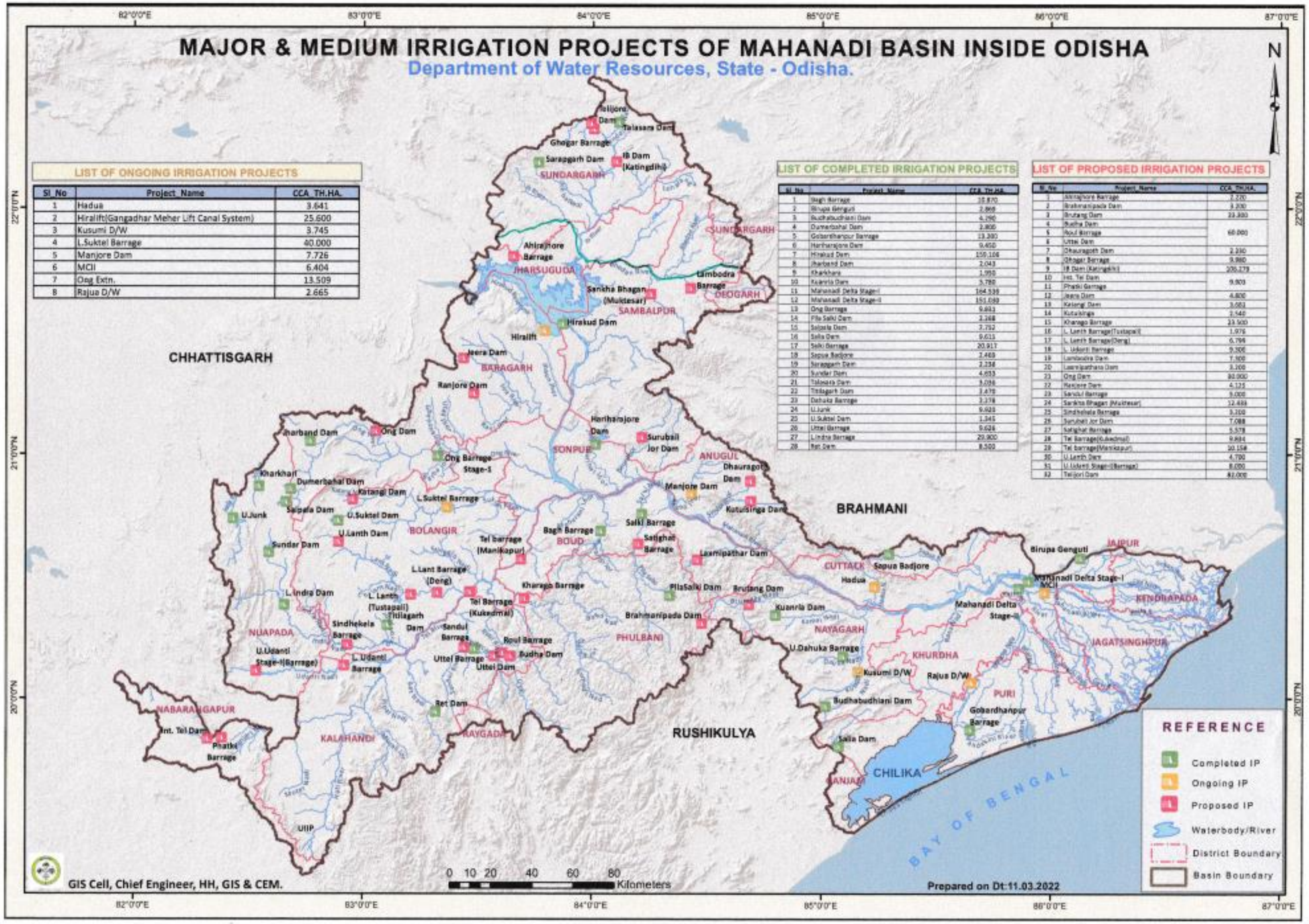
BASIN DETAILS OF ODISHA

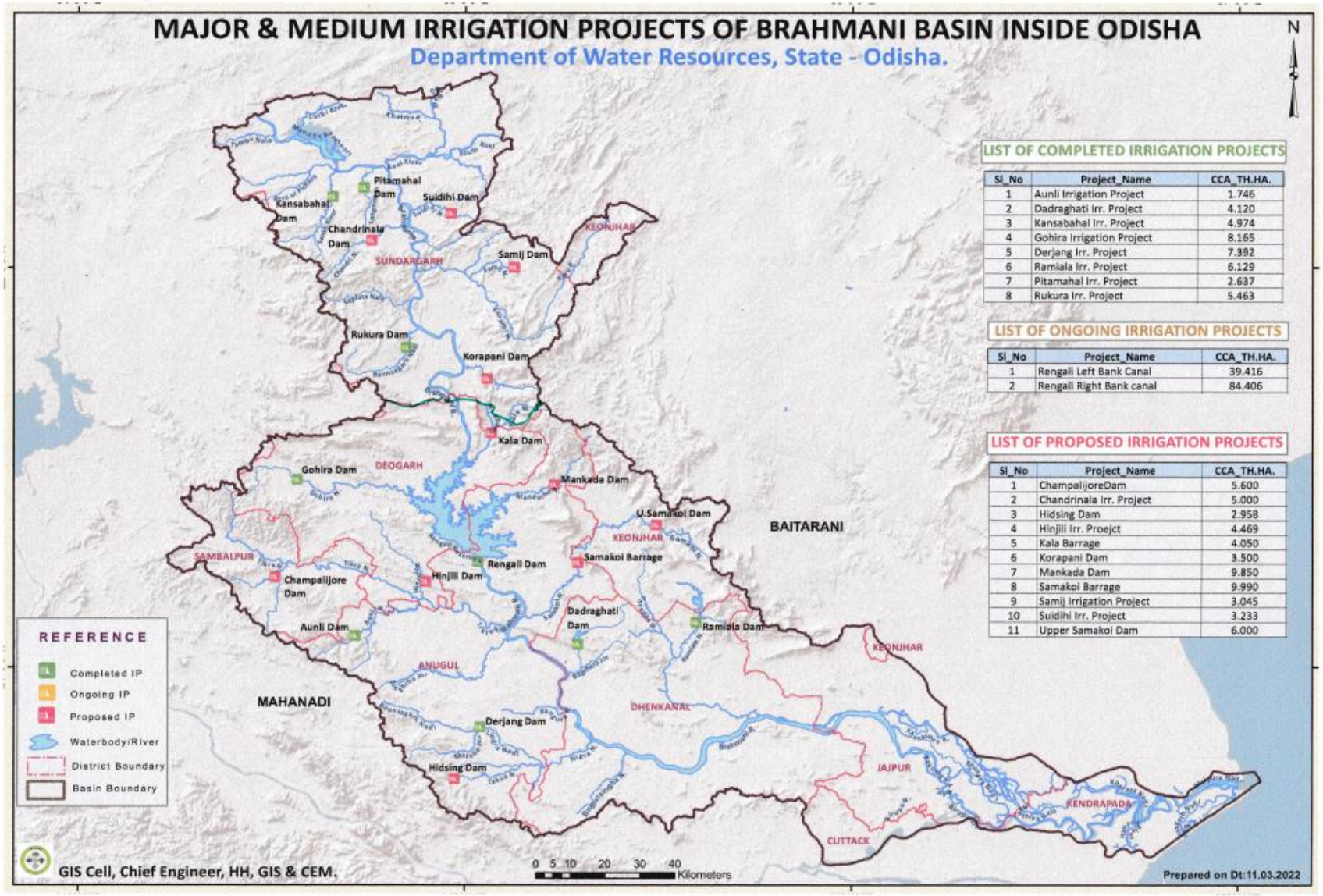
Table - 3.1
Basin Details of Odisha

Name of the Basin	Total Catchment Area (in Sq.Km)	Catchment Area within Odisha (in Sq.Km)	Catchment Area Outside Odisha (in Sq.Km)	% of Geographical Area of State	Major Tributaries
Bahuda	1118	890	228	0.57	Poichandia, Boginadi, Batruda Nalla
Baitarani	14218	13482	736	8.66	Deo, Kanjhari, Kusei, Salandi
Brahmani	39269	22516	16753	14.46	Sankh, Koel, Gohira, Tikira, Samakoi, Ramiala
Budhabalanga	4838	4838	0	4.08	Sunei, Kalo, Katra, Sana N.
Indravati	41700	7400	34300	4.75	Kapur, Muran, Telengiri, Joura, Turi, Bhaskel
Kolab	20427	10300	10127	6.61	Karandi N., Potteru R., Sileru R., Machhkund R.
Mahanadi	141134	65628	75506	42.15	Ib, Jeera, Ong, Tel, Brutang, Manjore Karandijore, Hariharjore, Surubalijore
Nagavali	9275	4500	4775	2.89	Jhanjabati, Sananadi, Barha Nadi, Situguda N.
Rushikulya	8963	8963	0	5.76	Badanadi, Dhanei, Ghodahado, Padma, Baghua
Subernarekha	19277	2983	16294	1.92	Kharkhai R.
Vansadhara	11377	8960	2417	5.75	Badanalla, Harbhangi Mahendratanaya, Sananadi.
Total	**313296**	**155707**	**157589**	**100**	



Name of the Basin	Basin Area (Sqkm) Total	Basin Area (Sqkm) Inside Orissa	% to Orissa Geographical Area
Subernarekha	19277	2983	1.92
Budhabalanga	4838	4838	3.11
Jambhira	1853	1516	
Baitarani	14218	13482	8.66
Brahmani	39269	22516	14.46
Mahanadi	141134	65628	42.15
Rushikulya	8963	8963	5.76
Bahuda	1118	890	0.57
Vamsadhara	11577	8960	5.75
Nagavali	9275	4500	2.89
Kolab	20427	10300	6.62
Indravati	41700	7400	4.75
Directly draining into the sea		5247	3.37


MAJOR & MEDIUM IRRIGATION PROJECTS OF MAHANADI BASIN INSIDE ODISHA
Department of Water Resources, State - Odisha.
LIST OF ONGOING IRRIGATION PROJECTS
Sl_No | Project_Name | CCA_TH.HA.
1 | Hadua | 3.641
2 | Hiralift(Gangadhar Meher Lift Canal System) | 25.600
3 | Kusumi D/W | 3.745
4 | L.Suktel Barrage | 40.000
5 | Manjore Dam | 7.726
6 | MCII | 6.404
7 | Ong Extn. | 13.509
8 | Rajua D/W | 2.665
LIST OF COMPLETED IRRIGATION PROJECTS
LIST OF PROPOSED IRRIGATION PROJECTS
CHHATTISGARH
BRAHMANI
RUSHIKULYA
CHILIKA
BAY OF BENGAL
SUNDARGARH
JHARSUGUDA
SAMBALPUR
DEOGARH
BARAGARH
SONPUR
ANUGUL
BOLANGIR
BOUD
CUTTACK
JAJPUR
KENDRAPADA
JAGATSINGHPUR
NAYAGARH
KHURDHA
PURI
PHULBANI
NUAPADA
KALAHANDI
RAYGADA
NABARANGAPUR
GANJAM
Hirakud Dam
Mahanadi Delta Stage-I
Mahanadi Delta Stage-II
REFERENCE
Completed IP
Ongoing IP
Proposed IP
Waterbody/River
District Boundary
Basin Boundary
0 10 20 40 60 80 Kilometers
GIS Cell, Chief Engineer, HH, GIS & CEM.
Prepared on Dt:11.03.2022
N


MAJOR & MEDIUM IRRIGATION PROJECTS OF BRAHMANI BASIN INSIDE ODISHA
Department of Water Resources, State - Odisha.
N
LIST OF COMPLETED IRRIGATION PROJECTS
Sl_No | Project_Name | CCA_TH.HA.
1 | Aunli Irrigation Project | 1.746
2 | Dadraghati Irr. Project | 4.120
3 | Kansabahal Irr. Project | 4.974
4 | Gohira Irrigation Project | 8.165
5 | Derjang Irr. Project | 7.392
6 | Ramiala Irr. Project | 6.129
7 | Pitamahal Irr. Project | 2.637
8 | Rukura Irr. Project | 5.463
LIST OF ONGOING IRRIGATION PROJECTS
Sl_No | Project_Name | CCA_TH.HA.
1 | Rengali Left Bank Canal | 39.416
2 | Rengali Right Bank canal | 84.406
LIST OF PROPOSED IRRIGATION PROJECTS
Sl_No | Project_Name | CCA_TH.HA.
1 | ChampalijoreDam | 5.600
2 | Chandrinala Irr. Project | 5.000
3 | Hidsing Dam | 2.958
4 | Hinjili Irr. Proejct | 4.469
5 | Kala Barrage | 4.050
6 | Korapani Dam | 3.500
7 | Mankada Dam | 9.850
8 | Samakoi Barrage | 9.990
9 | Samij Irrigation Project | 3.045
10 | Suidihi Irr. Project | 3.233
11 | Upper Samakoi Dam | 6.000
Pitamahal Dam
Suidihi Dam
Kansabahal Dam
Chandrinala Dam
Samij Dam
Rukura Dam
Korapani Dam
Kala Dam
Gohira Dam
Mankada Dam
U.Samakoi Dam
Samakoi Barrage
Rengali Dam
Hinjili Dam
Champalijore Dam
Aunli Dam
Dadraghati Dam
Ramiala Dam
Derjang Dam
Hidsing Dam
SUNDARGARH
DEOGARH
SAMBALPUR
ANUGUL
KEONJHAR
DHENKANAL
JAJPUR
CUTTACK
KENDRAPADA
BAITARANI
MAHANADI
REFERENCE
Completed IP
Ongoing IP
Proposed IP
Waterbody/River
District Boundary
Basin Boundary
0 5 10 20 30 40
Kilometers
GIS Cell, Chief Engineer, HH, GIS & CEM.
Prepared on Dt:11.03.2022

06. LAND UTILISATION PATTERN IN THE DISTRICT: FOREST, AGRICULTURAL, HORTICULTURAL, MINING ETC.

Sundargarh, a district located in the Indian state of Odisha, has a diverse land use pattern due to its varied topography, natural resources, and socio-economic factors. The geographical area of the district is 9,71,200 hect. Here's a general overview of the land utilization pattern of the district:

Forest Cover: Sundargarh is known for its rich forest resources. Around 50.06% of the total land is covered by forests, including tropical and deciduous forests. These forests are not only crucial for biodiversity conservation but also serve as a source of livelihood for many tribal communities residing in the district. The forest areas of Sundargarh district fall under the supervision of three forest divisions: Bonai Forest Division, Rourkela Forest Division, and Sundargarh Forest Division. The distribution of forest land within these divisions is as follows:

Category of Forest areas in Rourkela Forest Division			
Category of Forest	**Number of Blocks**	**Area (in Ha.)**	**Percentage**
Reserved Forest	86	65437.7481	59.7
Proposed Reserved Forest	17	2278.8290	2.1
Demarcated Protected Forest	36	3697.379	3.4
Village Forest	35	229.168	0.2
Protected Forest	29	1595.899	1.1
DLC Forest	435 Village	20875.092	19.0
Revenue Forest	269 Village	15929.713	14.5
Total Forest area		**110043.8281**	**100.0**

Category of Forest areas in Sundargarh Division			
Category of Forest	**Number of Blocks**	**Area (in Ha.)**	**Percentage**
Reserved Forest	94	101186.88	58.51
Proposed Reserved Forest	26	5580.80	3.23
Demarcated Protected Forest	92	14876.85	8.60
Village Forest	146	1048.098	0.61
Protected Forest	11	567.3056	0.33
DLC Forest	216	4335.86	2.51
Revenue Forest (Other than DLC)	0	45342.23	26.22
Total Forest area		**172938.024**	**100.00**

Category of Forest areas in Bonai Forest division.			
Category of Forest	**Number of Blocks**	**Area (in Ha.)**	**Percentage**
Reserved Forest	45	1,02,894.567	50.62
Proposed Reserved Forest	41	34,105.896	16.78
Demarcated Protected Forest	25	5849.793	2.88
Village Forest	32	166.790	0.08
Protected Forest	30	577.464	0.28
DLC Forest	406	37291.831	18.35
Revenue Forest (Other than DLC)	-	61.731	0.03
Reserved Forest	186	22,331.549	10.99
Total Forest area		**203279.621**	**100**

Agricultural Land: Agriculture is a predominant land use in Sundargarh. Out of the total area 10.7% of area used as Agriculture land. The fertile plains and valleys support the cultivation of a variety of crops such as rice, pulses, oilseeds, and vegetables. Traditional agricultural practices are prevalent, although efforts are being made to introduce modern farming techniques for improved productivity.

Block Wise Land Utilisation Pattern in Sundargarh District

Sl. No.	Blocks	Geographical Area (In Ha)	Cultivated Area (In Ha)				Paddy Area	Non-Paddy Area
			High	Medium	Low	Total		
1	Hemgir	93238	10887	5064	2833	19324	12916	6408
2	Lephripara	64022	8908	4263	3003	16174	10371	5803
3	Tangarpali	24966	8800	6027	2424	17251	11765	5486
4	Sundargarh	35988	8529	7906	2741	19176	13285	5891
5	Subdega	32428	6810	4526	5271	16607	10739	5868
6	Balisankara	108476	8548	4074	5796	18418	12135	6283
7	Bargaon	35661	7750	5234	3330	16314	10564	5750
8	Kutra	31885	10367	6281	2785	19433	10896	8537
9	Rajgangpur	34897	12342	3583	2940	18865	10608	8257
10	Lathikata	74904	11025	10690	2980	24695	18338	6357
11	Kuarmunda	57672	11966	6755	3798	22519	15668	6851
12	Nuagaon	38888	20176	3856	3448	27480	21265	6215
13	Bisra	22560	6526	1057	1781	9364	5488	3876
14	Bonai	27077	7476	6621	2991	17088	11271	5817
15	Lahunipara	77768	9970	6520	2754	19244	13098	6146
16	Koida	84940	6665	4594	3010	14269	9538	4731
17	Gurundia	125874	6255	7409	3115	16779	11055	5724
ADO Bonai		**315659**	**30366**	**25144**	**11870**	**67380**	**44962**	**22418**
G.Total		**971244**	**163000**	**95000**	**55000**	**313000**	**209000**	**104000**

Horticulture Land: Horticulture plays a significant role in the agricultural landscape of Sundargarh district, contributing to both the local economy and food security. Sundargarh district is conducive to the cultivation of a variety of fruits due to its favorable climate and soil conditions. Mango, banana, guava, citrus fruits, papaya, and pineapple are some of the commonly grown fruits in the region. A wide range of vegetables, including tomatoes, potatoes, onions, leafy greens, and root vegetables, are cultivated through both traditional and modern farming practices. Vegetable cultivation often takes place in small plots of land, both in rural and peri-urban areas. Turmeric, ginger, garlic, and chili peppers are some of the spices and condiments grown in the district.

Horticultural Land Utilisation Pattern in Sundargarh District

Vegetable		
Sl. No.	Name of crop	Area covered in ha.
1	Okra	4284.6
2	Onion	1886
3	Pea	669
4	Pointed Gourd	101.8
5	Potato	2037
6	Radish	623.5
7	Leafy Vegetables	762
8	Sweet Potato	3085.4
9	Tapioca	26.65
10	Tomato	3036.5
11	Other Grourds	2077.6
12	Cowpea &YLB	828.4
13	Other Root Crops	850
14	Other Vegetables	1189
15	Beans	460.68
16	Bitter Gourd	544.3
17	Bottle Gourd	1039.8
18	Brinjal	4176.5
19	Cabbage	1844
20	Capsicum	28.9
21	Carrot	2.5
22	C.Flower	15.52
23	Cucumber	100.6
24	PumPkin	794.9
25	Watermelon	410.9
26	Muskmelon	0.54
27	Garlic	482.8
Total Area		31359.39

Fruit crops		
Sl. No.	Name of crop	Area covered in ha.
1	Anola	60.8
2	Bael	602.4
3	Banana	644.3
4	Ber	604.1
5	Guava	930
6	Jack Fruit	900
7	Litchi	1032.7
8	Mango	9966.45
9	Papaya	255
10	Pineapple	60
11	Pomegranate	39.1
12	Sapota	23.8
13	Other Fruit Crops	2325.08
14	K.Lime	1603.9
15	Other Citrus	65
Total Area		19112.63

Plantation Crops		
Sl. No.	Name of crop	Area covered in ha.
1	Arecanut	0
2	Oil Palm	0
3	Cashew Nuts	2227.4
4	Coconut	547.2
Total Area		2774.6

Ornamental Crops		
Sl. No.	Name of crop	Area covered in ha.
1	Gerbera	0
2	Gladioli	0
3	Marigold	176.8
4	Rose	65
5	Tuberose	0
Total Area		241.8

Spice Crops		
Sl. No.	Name of crop	Area covered in ha.
1	Betelvine	0
2	Coriander	356.1
3	Ginger	800
4	Turmeric	211.5
5	Other spices	644
6	Chilli (green)	5255.05
Total Area		7266.65

Mining and Industrial Zones: Sundargarh is rich in mineral resources, particularly iron ore, manganese, and limestone. Consequently, mining activities play a significant role in the district's economy. Industrial zones, including steel plants and related industries, are established in areas with abundant mineral deposits. However, the environmental impact of mining and industrial activities is a concern.

Major mineral area details are given in the over view of mining activities chapter.

07. SURFACE WATER AND GROUND WATER SCENARIO OF THE DISTRICT.

Surface Drainage : The district is drained by a network of rivers and streams, the IB and Brahmani rivers being the most important. The drainage pattern is dendritic in nature. The easterly flowing sankh and westerly flowing koel rivers join at Vedavyas near Rourkela to form the Brahmani River. The Brahmani River along with its numerous tributaries control the drainage of the eastern part of the district. The river, Ib a tributary of Mahanadi controls the drainage of the western parts of the district. The smaller streams are in general epehemeral flowing 6-9 months in a year.

The hydrogeological conditions vary from place to place depending upon the aquifer characteristics of the litho units, sources of groundwater recharge and the structural setting of the area. The hydrogeological units of the area are broadly categorized into three groups namely:

A. Consolidated formations.

B. Semi Consolidated formations

C. Unconsolidated formations

Consolidated Formations:

Except for small strips along major drainage courses, almost the entire district is occupied by the consolidated formations comprising of Precambrian metasediments of Gangpur series and Iron ore series and also granite gneiss, metasediments like amphibolite, epidiorite etc. Ground water is stored mainly in the secondary porosity resulting from weathering and fracturing of the rocks. The aquifer materials are highly heterogeneous in character showing both vertical and lateral variations. The weathered residuum forms the main repository of ground water, in which ground water occurs under water table condition and circulates through deeper fractures and fissures. Ground water occurs under confined to semi-confined condition in the deeper fractured zones. The water yielding capacity of fractured rocks largely depends on the extent

(depth and degree) of fracturing, openness and size of fractures and extent of their interconnections to the near surface weathered zone. Usually, two to four water bearing fracture zones occur down to a depth of 100 m bgl.

Water Bearing Properties of Major Litho Units :

Mica Schist:-These rocks are highly weathered. The depth of the open wells varies from 5.55 to 16.38m and the depth to water level varies from 4.57 to 11.50m during premonsoon periods with an average of 7m. The seasonal average water level fluctuation is of the order of 3m. The recorded yield of the bore well is around 2.25 lps and of open wells 2 to 4.16 lps.

Carbonaceous phyllites:-These rocks are highly jointed and well foliated. The depth of the open wells in phyllites ranges from 11.82 and the depth to water level during premonsoon period varies from 1.4 to 13.07m below the land surface. The seasonal water level fluctuation is of the order of 4m. The yield of the bore wells is very low, the maximum being 2 lps.

Metasbasics:- Amphibolites are most common metabasic rocks in the district occurring usually as bands. Epidiorites also occur in the district. These rocks are highly jointed. Open wells located in the meta basics sometimes provide a good source of water. Depth of the open wells ranges from 4.42 to 9.00m and premonsoon depth to water levels ranges from 4.10 to 8.34m below ground level. Seasonal water level fluctuation is around 3lps and the yield from 1.36 to 7.4 lps.

Lime stone and Dolomite:- Lime stone and dolomite occur in Nuagaon, Kuarmunda and Rajgangpur blocks. These rocks show Krastification in varying degrees. Solution cavities are also present in the Birmitrapur limestones. Karst development has been facilitated by vertical as well as low dipping joints. The krastification and occurrence of solution cavities are confined to shallow depths. The depth to water level during premonsoon varies from 3.56 to 5.8m.

Granite and Granite gneiss:-These are the major rock types occurring in Bonaigarh and Sudargarh areas. The texture varies from coarse grained to fine grained types. These rocks are well foliated and joined and generally have a thick weathered zone. The depth of the open wells generally varies from 4.00 to 18.00m and the depth to water level during premonsoon period varies from 3.11 to 12.21 m. The seasonal average water level fluctuation is around 3m. The weathered and fractured granite gneiss form the most productive aquifer in the terrain. The maximum yield of the bore well is 7 lps.

Quartzites: Quartzites occur mainly as bands and are resistant to weathering. These rocks have very thin weathered mantle and are devoid of joints and other weak planes. These rocks have very poor potential for ground water development except when fractured and fissured. The depth of the open wells varies from 5.92 to 12.50m and the depth to water levels during premonsoon period varies from 3.07 to 9.50 m below ground level. The yield of the open well is generally less than 2 lps.

Semi-Consolidated formation: The semi consolidated formation is constituted of sand stone, shales, conglomerates, grits etc belonging to Talcher, Barakar and Kamth is of lower Godwin. The Barakar formation is very well developed and often constitute potential aquifer in the area. The coarse grained gritty sandstone on weathering give rise to porous sandy materials. Large diameter open wells and medium deep tube wells are feasible in this formation. The depth of the open wells ranges from 7.25m to 18.42m and the premonsoon depth to water level varies from 6.65m to 15.99m below ground level.

The shale, sandstones of Talcher formation do not form productive aquifer. However the needle shales having intersecting joints often form moderately good aquifers.

Unconsolidated Formation: Laterites and alluvium of Sub-recent to Recent age constitute the unconsolidated formations. Laterites occurring as

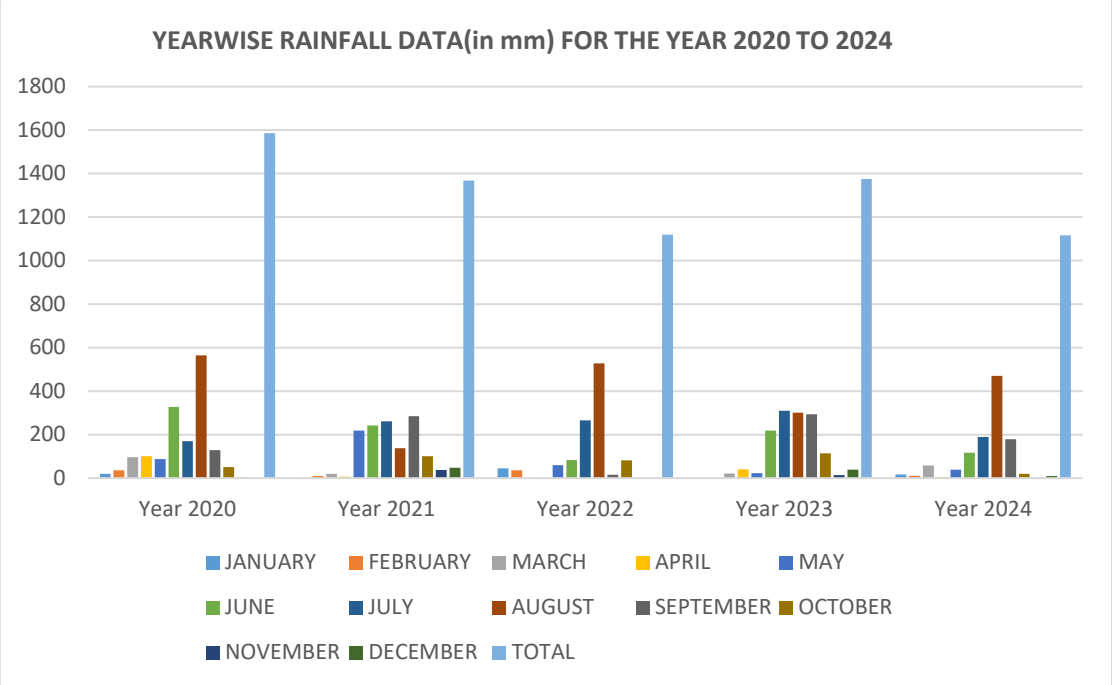
capping over older formations are highly porous in nature and form good aquifers to be tapped through dug wells. The alluvial deposits of recent origin occur as thin discontinuous patches along the prominent drainage channels. The alluvium strips constitute the most potential aquifers due to their high degree of porosity and permeability but are only limited in their occurrence. Ground water in these formations occurs under unconfined to semi-confined condition. These mainly consist of silt, sand with gravel & pebble, which form potential shallow aquifers tapped through dug wells. The yield of the open wells is generally 5-6 lps though higher yield of 10 lps is not uncommon. ***(Source CGWB).***

08. RAINFALL OF THE DISTRICT AND CLIMATIC CONDITION.

The district enjoys sub-tropical climate characterized by hot and dry summer, cold winter and erratic rainfall in monsoon. The winter season extends from November to end of February, which is followed by summer season from March to the middle of June, and rainy season from middle of June to middle of October. During summer months the maximum temperature rises up to 43° C and May is the hottest month. December is the coldest month of the year when the average daily temperature drops down to 8° C. Relative humidity is around 60-70% throughout the year. The highest and lowest monthly mean relative humidity so far recorded is 97% (Dec) and 26% (April).

The District Rainfall in milli-meters (R/F) shown below are the arithmetic averages of Rainfall of Stations under the District.

YEARWISE RAINFALL DATA(in mm) FOR THE YEAR 2020 TO 2024					
Month	**Year 2020**	**Year 2021**	**Year 2022**	**Year 2023**	**Year 2024**
JANUARY	19.96	2.01	45.27	0	16.49
FEBRUARY	35.44	10.02	36.08	0	11.42
MARCH	96.74	20.3	0	21.78	58.64
APRIL	101.48	6.23	3.48	40.52	4.88
MAY	87.74	218.74	59.58	22.41	39.47
JUNE	326.95	241.35	83.54	218.82	116.84
JULY	170	261.14	265.68	310.15	189.8
AUGUST	564.19	138.08	527.69	300.35	470.13
SEPTEMBER	128.53	284.65	15.87	293.33	178.73
OCTOBER	51.29	101.15	82.3	114.25	19.41
NOVEMBER	2.88	37.24	0	13.78	1.07
DECEMBER	0	47.38	0	39.51	9.3
TOTAL	**1585.2**	**1368.29**	**1119.49**	**1374.9**	**1116.18**


YEARWISE RAINFALL DATA(in mm) FOR THE YEAR 2020 TO 2024
1800
1600
1400
1200
1000
800
600
400
200
0
Year 2020
Year 2021
Year 2022
Year 2023
Year 2024
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
TOTAL

09. DETAILS OF THE MINING LEASES IN THE DISTRICT AS PER THE FOLLOWING FORMAT.

Sl.No.	Name of the Mineral	Name of the Lessee	Adress & Contact No. of lessee	Mining lease Grant Order No. & date	Area of Mining lease (in Ha/Ac)	Date of commencement of mining operaion	Status (Working Non Working/Temp. working for dispatch etc.)	Obtained Environvental clearence (Y/N) if Y letter No. with date of grant of E.C	Location of the mining lease Land Schedule and (Latitude & Longitute)
1	2	3	4	5	6	11	12	14	15
A. Name of the Tahasil:-Sundargarh									
A1	Jamtalia Brick Earth Quarry				1.94 Ha		Non-Working		Mouza- Jamtalia, Khata No.- 183/92 Plot No/ Kisam/ Area in acre- 1159/2565 Ba.Sa Ac.0.41, 1159/2325 Ba.Sa 0.68, 1152/2323 Ba.Sa 0.38 Total:-4.79 latitude of 21° 56'38.79"N to 21°56'42.10"N and longitude of 84°03' 38.78''E to 84°03' 43.67''E
A2	Kabang Brick Earth Quarry				0.58 Ha		Non-Working		Mouza- Kabang Khata No./ Plot No/ Kisam/Area in acre- 77/71 50 Ba.Sa Ac.0.70, 77.65 51 Goda-II Ac.0.73, Total:-1.43 latitude of 21° 57'59.11"N to 21° 58'01.52"N and longitude of 84°04' 24.47''E to 84°04' 27.97''E.
A3	Kainsara Brick Earth Quarry-1				2.14Ha		Non-Working		Mouza- Kainsara Khata No.77/102, Plot No/ Kisam/Area in acre- 935 Ma.Sa Ac.0.11, 936 Nala 0.26, 937 Ba.Sa 0.46, 962 Ma.Sa 0.34, Khata No.65 Plot No/ Kisam/Area in acre 941 Ba.Sa 1.05, 941/1271 Ba.Sa 0.98, 941/1273 Ba.Sa 0.86, 937/1270 Khet Adi 0.14 Total:-5.29 latitude of 21° 58'18.95"N to 21° 58'26.66"N and longitude of 84°03' 39.40''E to 84°03' 43.88''E.
A4	Kainsara Brick Earth Quarry-2				1.55Ha		Non-Working		Mouza- Kainsara Khata No.77/8, Plot No/ Kisam/Area in acre- 1132 Ba.Sa Ac.0.09, 1133 Ma.Sa. 1.19, 1134 Ba.Sa 0.36, 113 Ba.Sa 1.39, & 1126/1280 Ba.Sa 0.80, Total:-3.83 latitude of 21° 57'56.74"N to 21° 58'02.03"N and longitude of 84°03' 49.39''E to 84°03' 55.26''E
A5	Podbahal Brick Earth Quarry				1.28Ha		Non-Working		Mouza- Podbahal, Khata No.12, Plot No.43, Kisam Area in Acres Goda-II Acs.3.16 latitude of 22° 00'28.68"N to 22° 00'34.43"N and longitude of 84°01' 20.51''E to 84°01' 24.03''E.
A6	Kudabaga Brick Earth Quarry				0.33Ha		Non-Working		Mouza Kudabaga Khata No.143/70, Plot No.626, Kisam Gharbari, Acs.0.82
A7	Khapurikhaman Brick Earth Quarry				2.14Ha		Non-Working		Mouza Khapurikhaman Khata No.-38/33 Plot No-980/981,591/980, 591,616 latitude of 22° 00'7.15"N to 22° 00'15.66"N and longitude of 84°04' 34.29''E to 84°04' 37.83''E.
A8	Telengapali Brick Earth Quarry				0.267Ha		Non-Working		Mouza -Telengapali , Khata No.42 Plot No.1432,Kisam-Goda-I,latitude of 22°01'44.29"N to 22°01'45.87"N and longitude of 84°00'59.13''E to 84°01'02.23''E

B. Name of the Tahasil:-Lephripada									
B1	Dhelsara Brick Earth Quarry				2.339 Ha		Non-Working		Mouza Dhelsara Khata No.3 Plot No/ Kisam/ Area in Acres 144 Goda-II 0.75, 147 Ba.Sa 1.42, 1270 Ma.Sa 1.37, 1272 Ma.Sa 1.08 & 1273 Ma.Sa 1.16 Total:- 5.78,latitude of 22° 33'53.52"N to 22° 04'03"N and longitude of 83°54' 00.76''E to 83°54' 22.04''E
C. Name of the Tahasil:- Rajgangpur									
C1	Badnuagaon Brick Earth Quarry				2.906Ha		Non-Working		Mouza Badnuagaon Khata No.80 Plot No.126, 126/2867, Kisam- Goda, Area in Acs. 1.92, Acs 0.40 Khata No.180, Plot No. 107, Kisam- Goda, Acs.4.86 Total:- 7.18
C2	Laing Brick Earth Quarry				1.096Ha		Non-Working		Mouza Laing ,Khata No.360 ,Plot No.1802, Kisam- Pala, Area in Acs. 2.71,latitude of 22° 14'54.6"N to 22° 14'59.9"N and longitude of 84039' 39.2''E to 84°39' 43.6''E
C3	Mandiakudar Brick Earth Quarry				0.724Ha		Non-Working		Mouza Mandiakudar Khata No.124/513, Plot No.962/p,973, Kisam- Goda, Be.Sa Area in Acs. 0.74 & 0.23 Khata No.124/512, Plot No.962/2036, Kisam- Goda-II, Acs.0.82 Total:- Ac.1.79,latitude of 22° 14'12.3"N to 22° 14'17.5"N and longitude of 84°41' 44.5''E to 84°41' 49.3''E
C4	Badnuagaon Brick Earth Quarry				2.472 Ha		Non-Working		Mouza Badnuagaon Khata No.171 Plot No.98, Kisam- Goda Area in Acs. 6.11
C5	Ghogar Brick Earth Quarry				0.441Ha		Non-Working		Mouza Ghogar ,Khata No.161,Plot No.903, Kisam- Mala Anajalasochita Area in Acs. 1.09
C6	Laing Brick Earth Quarry				3.075Ha		Non-Working		Mouza Laing Khata No.113Plot No.3745, Kisam- Pala, Area in Acs. 1.75, Khata No.67 Plot No.3738, 3739, 370, 3753, Kisam- Goda, Ba.Aa, Ma, Aa, Ba.Aa, Area in Acs. 3.94, Ac.0.35, Ac.0.98 and Acs. 0.58,latitude of 22° 13'59.99"N to 22° 14'11.04"N and longitude of 84°38' 58.99''E to 84°39' 09.55''E
D. Name of the Tahasil:- Lathikata									
D1	Jalda Brick Earth Quarry				4.682Ha		Non-Working		Mauza-Jalda,Khata no-72,55,115/10,115/532,25,19,71,36,Plot no-19/p,1267, 19/35,75, 19/3574, 27,32,26,23,1269, latitude of 22° 10'30.3"N to 22°10'48.6"N and longitude of 84°49' 37.6''E to 84°49' 47.4''E
E. Name of the Tahasil:- Kuarmunda(Panposh)									
E1	Gobira Brick Earth Quarry				1.149Ha		Non-Working		Mauza-Gobira,Khata no-94/150,94,Plot no-684/1654, 1111/1674,686,1110,1110/1685,latitude of 22° 18'42.7"N to 22° 18'50.5"N and longitude of 84°44' 23.0''E to 84°44' 26.1''E
F. Name of the Tahasil:- Biramitrapur									
F1	Raibaga Brick Earth Quarry				2.116Ha		Non-Working		Mauza-Raibaga,Khata no-341/277,341/317,Plot no-1589,1542,1589/3266,1620/2612,1543,1587.latitude of 22° 22'58.28"N to 22° 23'05.55"N and longitude of 84°35' 53.55''E to 84°36' 4.33''E

F2	Raibaga Brick Earth Quarry				2.230Ha		Non-Working		Mauza-Raibaga,Khata no-341/247,341/222,Plot no-1529/3028,1528/3027,1527/3026,1548,1536,1531,1535/2641,1532.,latitude of 22° 22'58.9"N to 22° 23'06.7"N and longitude of 84°35' 44.1''E to 84°35'50.8''E
F3	Banki Brick Earth Quarry				1.728Ha		Non-Working		Mauza-Banki,Khata no-13,Plot no-13,253,257,481.,latitude of 22° 24'55.3"N to 22° 25'01.3"N and longitude of 84°40' 14.4''E to 84°40'18.0''E
F4	Ghantichhapal Brick Earth Quarry				1.650Ha		Non-Working		Mauza- Ghantichhapal,Khata no-63,Plot no-341,342,343, 363,367,365.,latitude of 22°24'12.3"N to 22°24'26.1"N and longitude of 84°39' 52.4''E to 84°40'12.4''E
F5	Raiboga Brick Earth Quarry				1.910Ha		Non-Working		Mauza- Raiboga,Khata no-257,Plot no-998,999.
G. Name of the Tahasil:- Bisra									
G1	Dudurta Brick Earth Quarry				1.704Ha		Non-Working		Mauza- Dudurta,Khata no-48/69,48/72,48/88,Plot no-101,102/612,102,99/484,102/560.,Kisam-Goda-II,latitude of 22° 14'7.74"N to 22°14'08.71"N and longitude of 84°38' 57.94''E to 84°39'04.70''E

***NB**: in the above table omitted Columns are,*
*Column- **07**& **8** Period of Mining lease (Initial)-**NA***
*Column- **09** & **10** Period of Mining lease (1st/2nd…renewal)-**NA***
*Column-**13 Use** (**Captive/ Non Captive**) **- All Non Captive***
*Column- **16** Method of Mining (Opencast/Underground) - **All Open cast***

10. DETAILS OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEARS

*Revenue collected for **Brick Earth.***

*No Revenue has been collected collected officially for **Brick Earth** in Last Three Years**.***

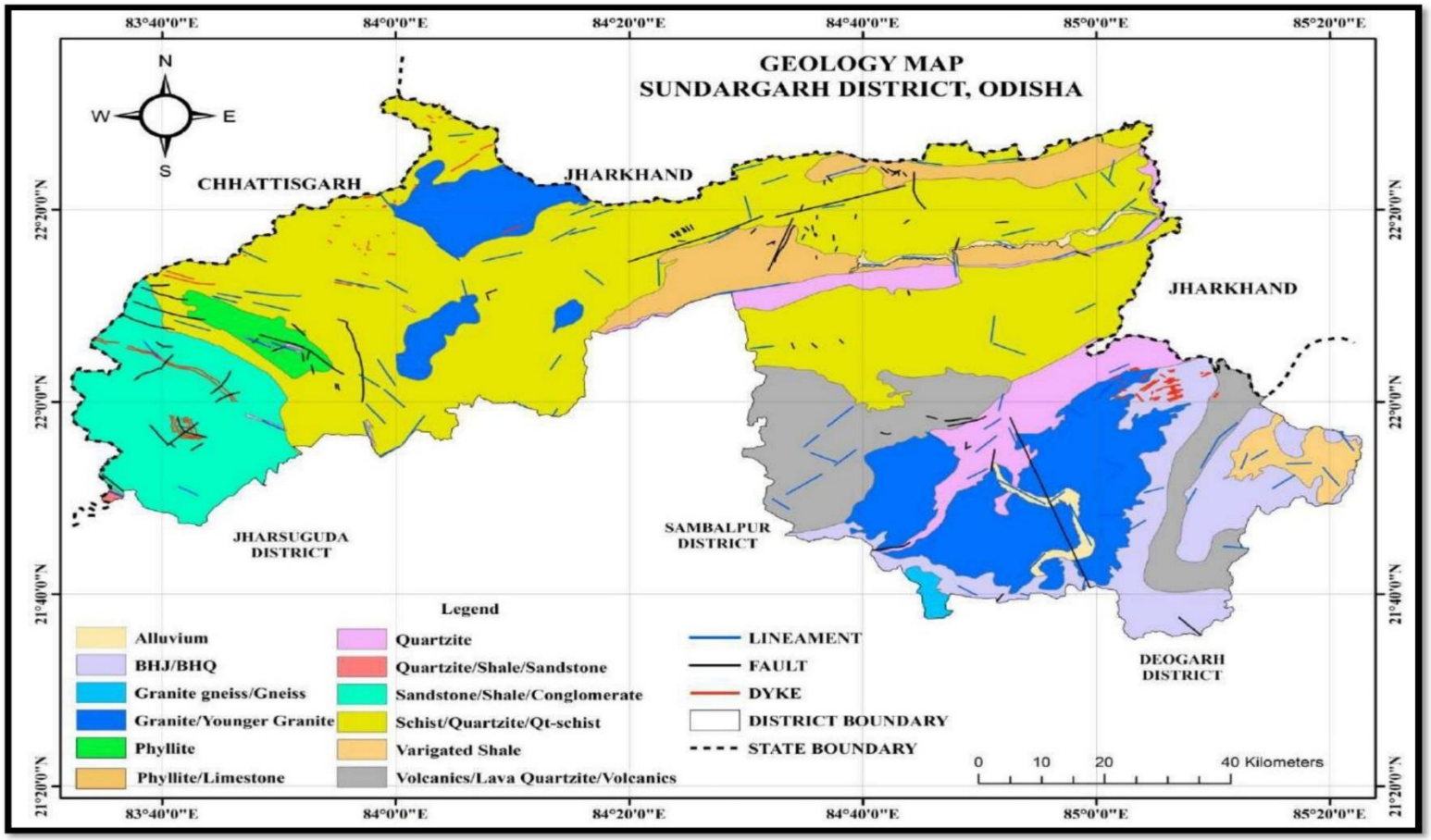
11. DETAILS OF PRODUCTION OF MINOR MINERAL IN LAST THREE YEARS.

*Production of **Brick Earth***

*No production of **Brick Earth** has been done officially in last three year*

12. MINERAL MAP OF THE DISTRICT.

Geology Map, Sundargarh District, Odisha.



13. LIST OF LETTER OF INTENT (LOI) HOLDERS IN THE DISTRICT ALONG WITH ITS VALIDITY AS PER THE FOLLOWING FORMAT.

NOT APPLICABLE

***** *The selected bidder shall be required to execute quarry lease in Form-N within three weeks from the date of intimation of his selection, if the approval of the mining plan and environment clearance has been obtained before auction, and in other cases, three months from the date of intimation, failing which, the intimation shall stand cancelled and the security deposit shall stand forfeited:*

Provided that the Controlling Authority may, for genuine and sufficient reasons, extend the said period, if it is satisfied that the delay in execution of lease deed is not due to reasons attributable to the selected bidder ***(****See* ***Rule-27****(****13****)*** ***of OMMCR-2016)****.*

14. TOTAL MINERAL RESERVE AVAILABLE IN THE DISTRICT.

Sl No.	Name of Tahasil	Name of Source with Location	Geological reserve as per approved Mining Plan of existing quarries (in m3)	Mineable reserve as per approved Mining Plan of existing quarries (in m3)
A1	Sundargarh	Jamtalia Brick Earth Quarry, Mouza- Jamtalia, Khata No.- 183/92 Plot No/ Kisam/ Area in acre- 1159/2565 Ba.Sa Ac.0.41, 1159/2325 Ba.Sa 0.68, 1152/2323 Ba.Sa 0.38 Total:-4.79 latitude of 21° 56'38.79"N to 21°56'42.10"N and longitude of 84°03' 38.78''E to 84°03' 43.67''E	17847	8439
A2	Sundargarh	Kabang Brick Earth Quarry, Mouza- Kabang Khata No./ Plot No/ Kisam/Area in acre- 77/71 50 Ba.Sa Ac.0.70, 77.65 51 Goda-II Ac.0.73, Total:- 1.43 latitude of 21° 57'59.11"N to 21° 58'01.52"N and longitude of 84°04' 24.47''E to 84°04' 27.97''E.	17340	10986
A3	Sundargarh	Kainsara Brick Earth Quarry-1, Mouza- Kainsara Khata No.77/102, Plot No/ Kisam/Area in acre- 935 Ma.Sa Ac.0.11, 936 Nala 0.26, 937 Ba.Sa 0.46, 962 Ma.Sa 0.34, Khata No.65 Plot No/ Kisam/Area in acre 941 Ba.Sa 1.05, 941/1271 Ba.Sa 0.98, 941/1273 Ba.Sa 0.86, 937/1270 Khet Adi 0.14 Total:-5.29 latitude of 21° 58'18.95"N to 21° 58'26.66"N and longitude of 84°03' 39.40''E to 84°03' 43.88''E.	42800	26102
A4	Sundargarh	Kainsara Brick Earth Quarry-2, Mouza- Kainsara Khata No.77/8, Plot No/ Kisam/Area in acre- 1132 Ba.Sa Ac.0.09, 1133 Ma.Sa. 1.19, 1134 Ba.Sa 0.36, 113 Ba.Sa 1.39, & 1126/1280 Ba.Sa 0.80, Total:- 3.83 latitude of 21° 57'56.74"N to 21° 58'02.03"N and longitude of 84°03' 49.39''E to 84°03' 55.26''E	30980	23172
A5	Sundargarh	Podbahal Brick Earth Quarry, Mouza- Podbahal, Khata No.12, Plot No.43, Kisam Area in Acres Goda-II Acs.3.16 latitude of 22° 00'28.68"N to 22° 00'34.43"N and longitude of 84°01' 20.51''E to 84°01' 24.03''E.	19170	13914
A6	Sundargarh	Kudabaga Brick Earth Quarry, Mouza Kudabaga Khata No.143/70, Plot No.626, Kisam Gharbari, Acs.0.82	6600	

A7	Sundargarh	Khapurikhaman Brick Earth Quarry, Mouza Khapurikhaman Khata No.-38/33 Plot No-980/981,591/980, 591,616 latitude of 22° 00'7.15"N to 22° 00'15.66"N and longitude of 84°04' 34.29''E to 84°04' 37.83''E.	64200	13655
A8	Sundargarh	Telengapali Brick Earth Quarry, Mouza - Telengapali , Khata No.42 Plot No.1432,Kisam-Goda-I,	7629	3198
B1	Lephripada	Dhelsara Brick Earth Quarry, Mouza Dhelsara Khata No.3 Plot No/ Kisam/ Area in Acres 144 Goda-II 0.75, 147 Ba.Sa 1.42, 1270 Ma.Sa 1.37, 1272 Ma.Sa 1.08 & 1273 Ma.Sa 1.16 Total:-5.78,latitude of 22° 33'53.52"N to 22° 04'03"N and longitude of 83°54' 00.76''E to 83°54' 22.04''E	70176	10185
C1	Rajgangpur	Badnuagaon Brick Earth Quarry, Mouza Badnuagaon Khata No.80 Plot No.126, 126/2867, Kisam- Goda, Area in Acs. 1.92, Acs 0.40 Khata No.180, Plot No. 107, Kisam- Goda, Acs.4.86 Total:-7.18	58120	
C2	Rajgangpur	Laing Brick Earth Quarry, Mouza Laing ,Khata No.360 ,Plot No.1802, Kisam- Pala, Area in Acs. 2.71,latitude of 22° 14'54.6"N to 22° 14'59.9"N and longitude of 84039' 39.2''E to 84°39' 43.6''E	21920	
C3	Rajgangpur	Mandiakudar Brick Earth Quarry, Mouza Mandiakudar Khata No.124/513, Plot No.962/p,973, Kisam- Goda, Be.Sa Area in Acs. 0.74 & 0.23 Khata No.124/512, Plot No.962/2036, Kisam- Goda-II, Acs.0.82 Total:- Ac.1.79,latitude of 22° 14'12.3"N to 22° 14'17.5"N and longitude of 84°41' 44.5''E to 84°41' 49.3''E	14480	
C4	Rajgangpur	Badnuagaon Brick Earth Quarry, Mouza Badnuagaon Khata No.171 Plot No.98, Kisam-Goda Area in Acs. 6.11	49440	
C5	Rajgangpur	Ghogar Brick Earth Quarry, Mouza Ghogar ,Khata No.161,Plot No.903, Kisam- Mala Anajalasochita Area in Acs. 1.09	8820	
C6	Rajgangpur	Laing Brick Earth Quarry, Mouza Laing Khata No.113Plot No.3745, Kisam- Pala, Area in Acs. 1.75, Khata No.67 Plot No.3738, 3739, 370, 3753, Kisam- Goda, Ba.Aa, Ma, Aa, Ba.Aa, Area in Acs. 3.94, Ac.0.35, Ac.0.98 and Acs. 0.58,latitude of 22° 13'59.99"N to 22° 14'11.04"N and longitude of 84°38' 58.99''E to 84°39' 09.55''E	61500	
D1	Lathikata	Gobira Brick Earth Quarry, Mauza-Jalda,Khata no-72,55,115/10,115/532,25,19,71,36,Plot no-19/p,1267, 19/35,75, 19/3574, 27,32,26,23,1269, latitude of 22° 10'30.3"N to 22°10'48.6"N and longitude of 84°49' 37.6''E to 84°49' 47.4''E	134765	37215
E1	Kuarmunda(Panposh)	Jalda Brick Earth Quarry, Mauza-Gobira,Khata no-94/150,94,Plot no-684/1654, 1111/1674,686,1110,1110/1685,latitude of 22° 18'42.7"N to 22° 18'50.5"N and longitude of 84°44' 23.0''E to 84°44' 26.1''E	22980	
F1	Biramitrapur	Raibaga Brick Earth Quarry, Mauza-Raibaga,Khata no-341/277,341/317,Plot no-1589,1542,1589/3266,1620/2612,1543,1587.latitude of 22° 22'58.28"N to 22° 23'05.55"N and longitude of 84°35' 53.55''E to 84°36' 4.33''E	42320	

F2	Biramitrapur	Raibaga Brick Earth Quarry, Mauza-Raibaga,Khata no-341/247,341/222,Plot no-1529/3028,1528/3027,1527/3026,1548,1536,1531,1535/2641,1532.,latitude of 22° 22'58.9"N to 22° 23'06.7"N and longitude of 84°35' 44.1''E to 84°35'50.8''E	44600	
F3	Biramitrapur	Banki Brick Earth Quarry, Mauza-Banki,Khata no-13,Plot no-13,253,257,481.,latitude of 22° 24'55.3"N to 22° 25'01.3"N and longitude of 84°40' 14.4''E to 84°40'18.0''E	34560	
F4	Biramitrapur	Ghantichhapal Brick Earth Quarry, Mauza-Ghantichhapal,Khata no-63,Plot no-341,342,343, 363,367,365.,latitude of 22°24'12.3"N to 22°24'26.1"N and longitude of 84°39' 52.4''E to 84°40'12.4''E	33000	
F5	Biramitrapur	Raiboga Brick Earth Quarry, Mauza-Raiboga,Khata no-257,Plot no-998,999.	38200	
G1	Bisra	Dudurta Brick Earth Quarry, Mauza-Dudurta,Khata no-48/69,48/72,48/88,Plot no-101,102/612,102,99/484,102/560.,Kisam-Goda-II,latitude of 22° 14'7.74"N to 22°14'08.71"N and longitude of 84°38' 57.94''E to 84°39'04.70''E	34080	

15. QUALITY /GRADE OF MINERAL AVAILABLE IN THE DISTRICT.

We know generation of soil is a long-term geological process, and it is a slow process. The quality of the soil depends upon various factors like source rock types, geological settings, geographical condition, weather set up etc. Sundargarh district soil capping is mainly red soil capping as it is part of Singhbhum & Gangpur Group of rocks.

16. USE OF MINERAL.

Process of manufacturing of bricks involves preparation of clay, molding, drying and burning etc. Brick earth should be easily available for various kind of construction like building, construction, walls, and pavements etc.

17. DEMAND AND SUPPLY OF THE MINERAL IN THE LAST THREE YEARS.

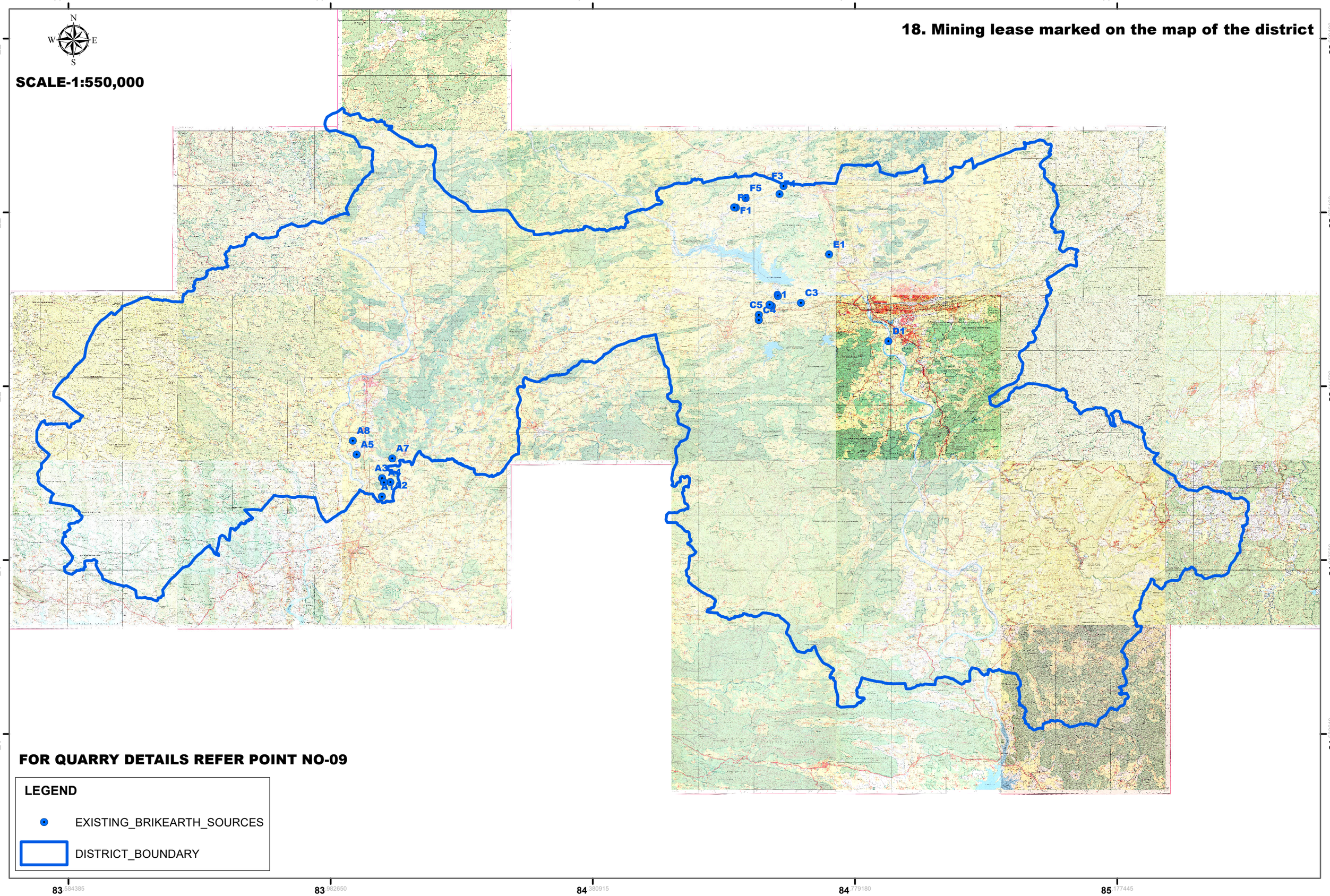
Certainly, there is an unavoidable gap between the demand and supply of Brick Earth in the district, hence to balance the demand–supply gap a few numbers of brick earth quarries have been proposed in certain areas.

MINING LEASES (BRICKEARTH) MARKED ON THE DISTRICT TOPO-MAP OF SUNDARGARH

18. Mining lease marked on the map of the district

N
W E
S

SCALE-1:550,000



FOR QUARRY DETAILS REFER POINT NO-09

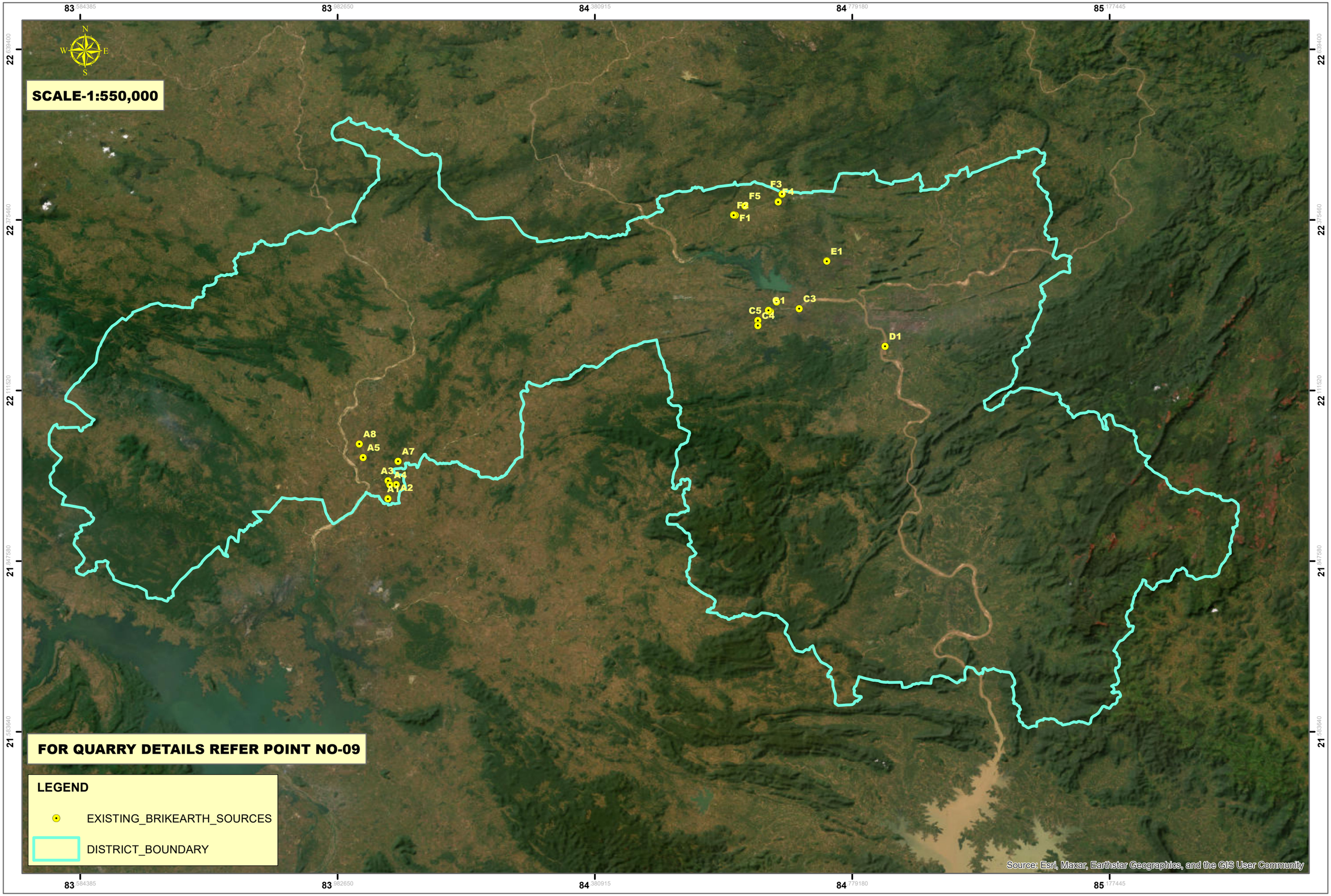
LEGEND

- EXISTING_BRIKEARTH_SOURCES
- DISTRICT_BOUNDARY

83 584385 | 83 982650 | 84 380915 | 84 779180 | 85 177445

22 539400 | 22 275460 | 22 111520 | 21 847580 | 21 583640

MINING LEASES (BRICKEARTH) MARKED ON THE DISTRICT SATELLITE-MAP OF SUNDARGARH



19. DETAILS OF THE AREA OF WHERE THERE IS A CLUSTER OF MINING LEASES VIZ. NUMBER OF MINING LEASES, LOCATION (LATITUDE AND LONGITUDE).

Quarries existing within 500m radius are considered as cluster of Mining Leases as per the MoEF guide lines.
NOT APPLICABLE

20. DETAILS OF ECO-SENSITIVE AREA, IF ANY, IN THE DISTRICT.

Eco-Sensitive Zones or ecologically fragile areas are notified by the Ministry of Environment, Forest and climate Change, Government of India around protected areas, National Parks and Wildlife sanctuaries. But there are no Eco-sensitive zones exists in Sundargarh District.

21. IMPACT ON THE ENVIRONMENT (AIR, WATER, NOISE, SOIL, FLORA & FAUNA, LAND USE, AGRICULTURE, FOREST ETC.) DUE TO MINING ACTIVITY.

Mining is the extraction of minerals and other geological materials of economic value from deposits on the Earth. Mining adversely affects the environment by inducing loss of biodiversity, soil erosion, and contamination of surface water, groundwater, and soil. Mining can also trigger the formation of sinkholes. The leakage of chemicals from mining sites can also have detrimental effects on the health of the population living at or around the mining site.

As mentioned above, mining activities can harm the environment in several ways.

Mining of major minerals in the Division is not a common feature, though forests areas are rich in Tin ore in Tulsi RL of Mathili Range and Quartzite in Challanguda and Mendikuli area of Mathili. This Division is receiving Prospecting License Application for Granite in Motu Area from Deputy Director, Mines, and Koraput. But till date no mining work has been started. Recently the Mining Department has approached this Division for DGPS Survey of Limestone area for mining purpose at Kotamateru, Uskalbag, Nandiguda and Daranpalli. Other minor mineral like murum and boulders are collected by the contractor and in some case private too on a regular basis, in some area by the local people also to earn

their livelihood. This collection is destructive to forests. Mainly stone quarry are going on in the District. Several serious environmental impacts related to quarrying activities on and near the river, such as vibration, land degradation, land subsidence and landslides, water pollution and air pollution, will lead to health related problems and loss of biodiversity.

Impacts on Air

Air quality is adversely affected by mining operations. Unrefined materials are released when mineral deposits are exposed on the surface through mining. Wind erosion and nearby vehicular traffic cause such materials to become airborne. Lead, arsenic, cadmium, and other toxic elements are often present in such particles. These pollutants can damage the health of people living near the mining site. Diseases of the respiratory system and allergies can be triggered by the inhalation of such airborne particles.

Impacts on Water

Mining also causes water pollution which includes metal contamination, increased sediment levels in streams, and acid mine drainage. Pollutants released from processing plants, tailing ponds, underground mines, waste-disposal areas, active or abandoned surface or haulage roads, etc., act as the top sources of water pollution. Sediments released through soil erosion cause siltation or the smothering of stream beds. It adversely impacts irrigation, swimming, fishing, domestic water supply, and other activities dependent on such water bodies.

High concentrations of toxic chemicals in water bodies pose a survival threat to aquatic flora and fauna and terrestrial species dependent on them for food. The acidic water released from metal mines or coal mines also drains into surface water or seeps below ground to acidify groundwater. The loss of normal pH of water can have disastrous effects on life sustained by such water.

Noise impacts

Noise pollution mainly due to operation of machineries , occasional plying of machineries and drilling & blasting. These actives will create noise pollution in the surrounding area that affects the life of the near by habitats.

Impact on Soil

Soil disruptions can contribute to the deterioration of the area's flora and fauna. There is also a huge possibility that many of the surface features that were present before mining activities cannot be replaced after the process has ended. The removal of soil layers and deep underground digging can destabilize the ground which threatens the future of roads and buildings in the area.

Impacts on Flora & Fauna

Often, the worst effects of mining activities are observed after the mining process has ceased. The destruction or drastic modification of the pre-mined landscape can have a catastrophic impact on the biodiversity of that area. Mining leads to a massive habitat loss for a diversity of flora and fauna ranging from soil microorganisms to large mammals. Endemic species are most severely affected since even the slightest disruptions in their habitat can result in extinction or put them at high risk of being wiped out. Toxins released through mining can wipe out entire populations of sensitive species.

22. REMEDIAL MEASURES TO MITIGATE THE IMPACT OF MINING ON THE ENVIRONMENT.

The major potential environmental impacts associated with mining and associated mineral processing operations are related to erosion-prone landscapes, soil and water quality, and air quality. These potential impacts are recognized and addressed in current mining operations as well as in some former mining operations by reclaiming areas of physical disturbance to prevent erosion, stabilizing soils containing metals or chemicals to prevent unwanted metal releases into the environment, preventing and/or treating water contamination, and controlling air emissions.

Mine closure and a number of activities to mitigate the impacts of mining are an integral part of all mine planning and mineral development from the discovery phase through to closure:

Reclamation
Soil treatment
Water treatment
Preventing acid rock drainage
Controlling gas emissions

Air

Mitigation measures suggested for air pollution controls are to be based on the baseline ambient air quality of the project/cluster area and would include measures such as:

- Dust generation shall be reduced by using sharp teeth of shovels.
- Wet drilling shall be carried out to contain the dust particles.
- Controlled blasting techniques shall be adopted.
- Water sprinkling on haul roads, service roads and overburden dumps will help in reducing considerable dust pollution.
- Proper and regular maintenance of mining equipment's have to be undertaken.

- Transport of materials in trucks are to be covered with tarpaulin.
- The mine pit water can be utilized for dust suppression in and around mine area.
- Information on wind diction and meteorology are to be considered during planning, so that pollutants, which cannot be fully suppressed by engineering techniques, will be prevented from reaching the nearby agricultural land, if any.
- Comprehensive greenbelt around overburden dumps and periphery of the mining projects/clusters has to be carried out to reduce to fugitive dust transmission from the project area in order to create clean & healthy environment.

Water

- Construction of garland drains and settling tanks to divert surface run –off of the mining area to the natural drainage.
- Construction of checks dams/ gully plugs at strategic places to arrest silt wash off from broken up area.
- Retaining walls with weep hole are to be constructed around the mine boundaries to arrest silt wash off.
- The mined out pits shall be converted in to the water reservoir at the end of mine life. This will help in recharging ground water table by acting as a water harvesting structure.
- Periodic analysis of mine pit water and ground water quality in nearby villages are to be undertaken.
- Domestic sewage from site office & urinals/latrines provided within ML/QL areas is to be discharged in septic tank followed by soak pits.

Noise

- Periodic maintenance of machineries, equipments shall be ensured to keep the noise generated within acceptable limit.

- Development of thick green belt around mining/cluster area, haul roads to reduce the noise.
- Provision of earplugs to workers exposed to high noise generating activities like blasting, excavation site etc. Worker and operators at work sites will be provided with earmuffs.
- Conducting periodical medical check-up of all workers for any noise related health problems.
- Proper training to personnel to create awareness about adverse noise related effects.
- Periodic noise monitoring at locations within the mining area and nearby habitations to assess efficacy of adopted control measures.
- During blasting optimum spacing, burden and charging of holes will be made under the supervision of competent qualified mines foreman, mate etc.

Biological Environment

- Development of green belt/gap filling saplings in the safety barrier left around the quarry area/ cluster area.
- Carrying out thick greenbelt with local flora species predominantly with long canopy laves on the inactive mined out upper benches.
- Development of dense poly culture plantation using local floral species in the mining areas at conceptual stage if the mine is not continued much below the general ground level.
- Adoption of suitable air pollution control measures as suggested above.
- Transport of materials in trucks covered with tarpaulin.

23. RECLAMATION OF MINED OUT AREA (BEST PRACTICE ALREADY IMPLEMENTED IN THE DISTRICT, REQUIREMENT AS PER RULES AND REGULATION, PROPOSED RECLAMATION PLAN).

Mine reclamation is the process of restoring land that has been mined to a natural or economically usable state. Although the process of mine reclamation occurs once mining is completed, the planning of mine reclamation activities occurs prior to a mine being permitted or started. Mine reclamation creates useful landscapes that meet a variety of goals ranging from the restoration of productive ecosystems to the creation of industrial and municipal resources. Modern mine reclamation minimizes and mitigates the environmental effects of mining.

In Sundargarh district no Brick Earth Quarry has been reported as exhausted of mineral, hence no reclamation approach has been implemented in present date. Mainly two types of reclamation proposal are normally proposed i.e. Firstly Back filling of the exhausted mine by mine generated waste and capping of top soil for forest plantation and growth. Secondly proper fencing of quarried area and can be developed as water reservoir, fishery development or tourist attraction points after the life of the mine.

24. RISK ASSESSMENT & DISASTER MANAGEMENT PLAN.

Risk assessment is the determination of quantitative or qualitative value of risk related to a concrete situation and a recognized threat. Activities requiring assessment of risk due to occurrence of most probable instances of hazard and accident are both onsite and off-site.

It must be realized that any incident may develop into a major emergency even with the best safety measures and programmes in any industry. Hence, an Emergency procedure will be planned properly and documented to help in reducing time loss, chaos and confusion at the hour of need by assigning person who will engage in meeting emergency smoothly and effectively. Any accident which has potential to develop into a major emergency can threaten large number of person or large area of the industries on the site may affect safety of the public, property and environment. Hence, it is absolutely essential that emergency procedures will be properly planned and documented.

Brick quarry mining is an opencast practice in the district, hardly cause disastrous situation except bench failure if the slope of the benches are not well maintained and height of the benches are exceptionally high not executed as per the approved Plan. Any disastrous situation raised in the mining area must be reported to the concern authorities as soon as possible.

25. DETAILS OF THE OCCUPATIONAL HEALTH ISSUES IN THE DISTRICT. (LAST FIVE-YEAR DATA OF NUMBER OF PATIENTS OF SILICOSIS & TUBERCULOSIS IS ALSO NEEDS TO BE SUBMITTED).

As per the data provided by CDMO, Sundargarh *Tuberculosis* & *Silicosis* patients cases of last 5 years is as follows;

(1) Details of the occupational health issues in the district (Last Five years)

HIGHLIGHTS OF TUBERCULOSIS & SILICOSIS REPORT FOR LAST FIVE YEARS OF SUNDARGARH						
S/N	TB ACTIVITIES	2018	2019	2020	2021	2022
1	Total number of Patient diagnosed	2891	3477	2945	3037	3850
2	Total number of Patients Notified	2800	3426	2968	3036	3805
3	MDR TB	9	31	26	10	10
4	Treatment Completed	2445	3129	2706	2770	3402
5	Died	143	187	140	164	166
6	LTF	102	89	74	50	47
7	Failure	26	17	17	6	9
8	Treatment.Changed	4	15	9	5	7
9	Not evaluted	9	57	56	14	10
10	On treatment	0	0	0	0	5
11	Not Started Treatment	1	30	66	58	53
12	Silicosis Activities	NA	NA	NA	NA	NA
13	OPD Patient	NA	NA	NA	NA	NA
14	IPD Patient	NA	NA	NA	NA	NA

N.B: There is no scope to record Silicosis TB.

16/2/24

Addl. District Public Health Officer (TB)
Sundargarh

26. PLANTATION AND GREEN BELT DEVELOPMENT IN RESPECT OF LEASES ALREADY GRANTED IN THE DISTRICT.

As the Brick Earth quarry lease within the district are non-forest lands rather revenue lands. As per the guidelines prescribed by OMMCR-2016 a safety zone of 7.5m has been considered for all quarry leases all along the inside of boundary line. Plantation proposal has been usually stated in the approved Mining Plans for all quarry leases. Saplings of local plants has been proposed to be planted in the safety zone area of quarries.

27. ANY OTHER INFORMATION.

Sundargarh district has a glorious rich cultural past, rich in agriculture. It is at the northern marginal area of Eastern Ghat Province having potential of several valuable minerals like Coal, Iron Ore, Manganese, bauxite, Dolomite, Limestone, Pyroxenite, dimension stones, ordinary stones, sand etc. Systematic & scientific application of technologies in all fields will definitely enhance the livelihood of the common man of the area and the district can contribute a major part in thriving of the state as well as the nation.