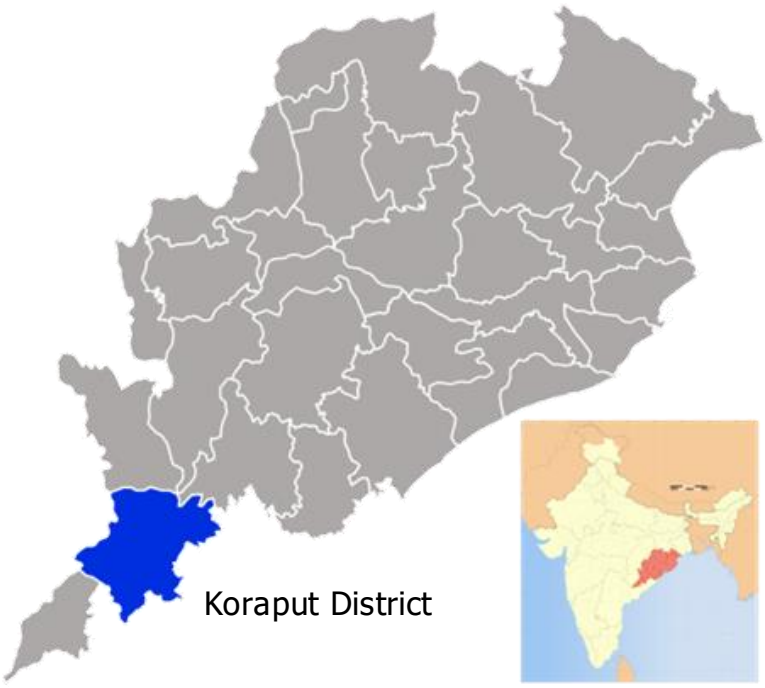
DRAFT DISTRICT SURVEY REPORT (DSR)
OF
KORAPUT DISTRICT, ODISHA
FOR MORRUM AND ORDINARY EARTH (SOIL)

(For planning & exploitation of Minor Mineral Resources)

COLLECTORATE, KORAPUT



As per Notification No.S.O.3611(E)

New Delhi dated 25th July2018 of

Ministry of Environment, Forest & Climate Change (MoEF & CC)

December-2024

CONTENT

PREAMBLE

Odisha is renowned for its rich mineral resources, with a diverse array of both major and minor minerals found throughout the state. Among its distinctive regions, the Koraput district stands out, located in the southernmost part of Odisha. This district boasts a unique geological profile and is abundant in various mineral resources, contributing significantly to the state's overall mineral wealth.

In pursuance of the order of Hon'ble Supreme Court Petition (C) No. 19628-19629 of 2009, dated 27th Feb. 2012 in the matter of Deepak Kumar Vs State of Haryana and others etc., prior Environmental Clearance has now become mandatory for mining of Minor Mineral irrespective of the area of Mining Lease. And also, in view of the Hon'ble National Green Tribunal, order dated the 13th Jan. 2015 the matter regarding Sand, Brick Earth, & Burrowed Earth cutting for Road Construction has to take prior E.C. for Mining Lease area more or less than 5 hectares also suggested making a policy on E.C. for Minor Mineral lease in cluster.

Further, as per notification issued by the Ministry of Environment & Forest and Climate Change (MoEF & CC); Notification no. S.O.3611 (E) New Delhi dated 25-07-2018, the District Survey Report (DSR) for Minor minerals of Koraput District on Morrum /ordinary earth sources has been prepared in accordance with Clause II of Appendix- X of the notification and the procedure and annexure as per MoEF&CC Enforcement and monitoring guidelines of January, 2020.

District Survey Reports (DSR) pertains to the district's demographic profile, mineral wealth, geology, forest, climate, rainfall data, health, agriculture and irrigation pattern in the Koraput. This Report act as a compendium of available adequate mineral resources, geological set up, environmental protection, ecological set up, community engagement and regulatory compliance of the district. Various data available from the state government departments like Revenue, Agriculture and Horticulture, Forest, Geology and Mining, Water Resource, Health, R & B, RWSS and NHAI in the district, as well as statistical data has been incorporated within the DSR. The main purpose for the preparation of DSR (as per the Sustainable Mining Guidelines) is to identify the mineral resources and develop the mining activities in the district as to form the basis for the ***Environmental Clearance (EC)*** *along with other relevant data. District Survey Reports are to be reviewed once in every five years as per statue. The Main objective of the preparation of District Survey Report is to ensure the Mineral Resources in the district having the potentiality where mining can be allowed and find out the areas where mining should be prohibited.*

Endeavour has made to cover potential area for Morrum and ordinary earth sources in the district to include in the DSR, overview the Morrum mining activities in the district measures has been taken to ease the gap between the demand and supply of the raw material, including the planning, monitoring of mined material and its transport and to curb illegal mining & sales of material. Keeping in view of the orders of Hon'ble Supreme Court, Hon'ble NGT and directions of SEIAA, Bhubaneswar a fresh DSR has been prepared, adhering to all necessary formalities. This updated DSR is set to be finalized in December 2024.

CHAPTER-I

INTRODUCTION

1.1 GENERAL INFORMATION:

Koraput district located in the backdrop of green valley's contemplating immaculate freshness which lies along the southern flank of the Odisha State in a section of the Eastern Ghats. The district is often referred to as the Emerald Highlands of Odisha, the Switzerland of Odisha, or the Heaven of Odisha.

District draws its attraction for tourists from all over the world for its nature and indigenous tribes. Decorated forest, waterfall, terraced valley, spring and lush vegetation attract many nature-loving people to the area. Present-day Koraput has Odisha's highest peak at Deomali (1672 m). It is also the site of the Duduma Waterfalls (540 ft) as well as the major hydroelectric and irrigation projects of Kolab, Muran, Telengiri and Jolaput. The HAL establishment at Sunabeda manufactures Sukhoi engines, while the NALCO mines at Panchapatmali is Asia's largest bauxite mines. Koraput is also known for the GI-tagged Kotpad fabrics, the famous Shiva temple at Gupteshwar, the well-known Koraput tribal coffee, and the yearlong production of various fruits and vegetables. Its mild climate, frequent rainfall, vibrant tribal culture and natural beauty have made it a hub for tourism. Koraput is one of the mineral rich districts, stands for its bauxite, limestone, manganese etc. in the area also it is an agricultural district mainly dependent on its product, with 301,000 hectares of cultivable land. The "Rice Bowl of Odisha" refers to the districts of Odisha, India, known for their high rice production. These districts are i.e. Sambalpur, Bolangir, Bargarh, Subarnapur, Nuapada, Kalahandi, Nabarangpur and Koraput. which are fertile and irrigated by various rivers, making them suitable for rice cultivation in the state. The district is also known for its village and cottage industries.

Koraput is a part of the tribal belt in southern Odisha, manifests the heartland of the tribal community in state, more than half of the population are tribal communities such as the Paraja, Gadaba, and Kandha, etc.

Geographically, It's the third largest district in Odisha by area, covering 8,807 sq.km. As of 2023, the district had a population of 16.13 lakhs making it the 15th most

populated district in the state represents sex ratio is 1032. District with its Headquarter at Koraput town, 2 sub-divisions, 14 blocks/Tahasil, 26 Police Stations, 240 Panchayats and 2042 villages

1.2 HISTORY OF THE DISTRICT

The history of the district dates back to the 3rd century BC when it was part of the valiant and formidable Atavika Rajyas, referring to the tribal people who inhabited the forests. Legendary Dandakaranya/Dandaka Forest has been lavishly described in the famous Indian Epic "Ramayan". The area was a part of the kingdoms of various dynasties like Satavahans, Ikshvakus, Nalas, Ganga and Suryavanshi kings. Owing to its geographic isolation and thick forests, there was no permanent presence of ruling dynasties beyond small outposts. Vinayak Deo, the founder of the present Jeypore Raj family, inherited the kingdom from the Silavamsis by the middle of the 15th century A.D. It is said that this Kingdom then extended up to Budalinga of Kalahandi district in the North, up to Kambamottu in the present Malkangiri district in the South, up to Bhaskar River in the present Nabarangpur district in the West and up to the coastal plains in the East. The capital of the Kingdom was at Nandapur which had been founded by the Silavamsis. This kingdom, however, lost its independence in 1571A.D. and became a feudatory of the Qutub Shahis of Golkonda. The Nandapur kings started paying annual tribute to the Sultans. During the time of Viravikrama Deo, who ruled in the middle of the 17th Century A.D., the amount of such annual tribute was Rs. 24,000. During the rule of Sri Biswambhara Deo, I (1672-1676) and his successor Sri Mallaki Mardana Krishna (1676 -1681) a number of feudal estates were created which in course of time assumed independence. During the time of Balaram Deo III (1711 -1713) large number of zamindars and feudatories seceded from the Jeypore Kingdom with the help of the Marathas. Viziaram Raju of Vizianagaram took away a large slice of coastal territory with the help of Jafar Ali Khan, the Fouzdar of Chicacole, during the reign of Biswambhara Deo II (1713-1752). In 1768 the descendants of Viziaram Raju claimed Kashipuram, Nandapur, Madgol etc., under an alleged patta of Salabat Jang and they were supported by the East India Company. Vikram Deo I, the then ruler, held back those territories in lieu of an annual rent of Rs. 40, 000 of which no more than three-fourths were ever paid. It was during the rule of Vikram Deo II that the capital of the kingdom was finally transferred to Jeypore. Lying on the trade route linking Central India with the coast.

Koraput was a center of Jain culture till around the thirteenth century. The entire area then came under the rule of the Suryavanshi dynasty based first at Nandapur, thenNarayanapatna and finally at Jeypore. Known as the Jeypore Rajas, this dynasty received allegiance from a number of autonomous feudal estates before being subjugated by the British in the late 18th century. Direct British rule was established in the mid-19th century and the Raja of Jeypore became one of the largest Zamindars of the Madras Presidency. The entire estate became a part of the Visakhapatnam District.

Though Lord Clive obtained in 1765 from the Mughal Emperor a Fireman granting the Northern Sircars to the Company and four years later Vizagpatnam was made the headquarters of the district a century elapsed before the British Government assumed the direct administration of Jeypore territory. At that time the whole of modern Koraput district was not directly under the control of the Rajas of Jeypore. There were a number of semi-independent chiefs like the zamindar of Pachipenta and Raja of Bissam-Cuttack who were administering their own territories without having any concern with the Jeypore kings. The Kotpad Pargana and the Salimi Mutta were parts of Bastar till 1777 and 1828 A.D. respectively. This state of affairs continued till 1862 A.D and on Ist January, 1863 A.D. British Government appointed an Assistant Agent at Jeypore with jurisdiction over the present Malkangiri, Nabarangpur and Koraput (except Narayanapatna P.S.) sub-divisions. Another Assistant Agent at Parvatipuram with jurisdiction over Narayapatna police station and Rayagada and Gunupur subdivisions was also appointed under the Collector of Vizagapatam for the administration of civil and criminal justice. From the time of assumption of administration by the British Government no perceptible change occurred in the territorial limits of the Jeypore estate till the time of Vikram Deo III (1889-1920). This ruler purchased the Pachipenta estate for six lakhs of rupees and thus the boundary of Jeypore extended down to the Ghat near Itikavalasa. In 1920 he also acquired a portion of the Madgol estate by purchase and the other portion was later on acquired by his son Rama Chandra Deo by relinquishment in the year 1928 A.D. The district of Vizagpatam, like those of Ganjam and East Godavari districts, was divided into two sharply distinct portions, namely, the Plains and the Agency. Due to some administrative difficulties, T. Harris, Agent to the Governor in Vizagpatam district strongly urged the Government of Madras to form a single administrative division of the Agencies in the three districts. His plan was approved

and in 1920, all the Agency tracts were removed from the control of Collectors and were placed under the charge of a commissioner who had his headquarters at Waltair. The administrative subdivisions were distributed as far as possible on linguistic lines overriding the former district boundaries. The present Koraput district was parceled out among four subdivisions called Kondh, Savara, Odia and Ghats each in charge of an Officer, designated as Assistant Commissioner. Due to some practical difficulties, lack of accommodation and financial stringency, the experiment had to be abandoned in 1923. The office of the Commissioner was abolished and the old arrangements were restored. No further changes of importance were made until the formation of Odisha Province in 1936 when Koraput district was created and a number of changes were found necessary. The Parlakimedi taluk was included in the district for seven months after which it was again restored to Ganjam. Koraput District was carved out as Odia speaking parts of the old Visakhapatnam District on 1st April, 1936 and became a part of the new state of Odisha on the same day. Regionally, the area is well known for part of Koraput-Balangir-Kalahandi districts (KBK districts). In the beginning when Koraput district (undivided) was constituted after formation of Odisha province in 1936, where Kashipur was not a part of Koraput. The whole of the district of erstwhile larger Koraput comprises the estates of Jeypore and Kashipur zamindari of erstwhile Kalahandi princely state. After independence when Kalahandi district was formed, Kashipur continued to be its part till 1962 and in the same year it was taken out of Kalahandi district and made a part of Koraput district as a Tahasil. The district is now in charge of a District Magistrate and Collector with headquarters at Koraput. There were, at the beginning, two subdivisions Rayagada and Koraput. Koraput subdivision comprised five taluks namely, Koraput, Pottangi, Jeypore, Nabarangpur and Malkangiri. On 1st March, 1941 a new subdivision called Nabarangpur subdivision consisting of the taluks of Malkangiri, Jeypore and Nabarangpur was created. The taluks of Koraput and Pottangi were abolished and the Narayanapatna Agency which was separated from Rayagada Taluk constituted the new Koraput subdivision. The arrangement of three subdivisions continued till 1962 although meanwhile some new taluks or tahasils were created. Subseqently Malkangiri and Jeypore sub-divisions were created. In 1992, Koraput was divided into four districts. Present Koraput district has now two subdivisions with the Tahsils under the Koraput Sub-Division: Koraput, Nandapur, Machhkund, Pottangi, Semiliguda Bandhugaon, Narayanpatna, Laxmipur and Dasamantpur, while under Jeypore Sub-Division: Borigumma,

Jeypore, Kotpad, Kundra and Boipariguda. The fourteen Tahasils are co-terminus with fourteen Blocks vide Notification No. 17662, Dated 19.04.2008 and No. 33533 / R &DM, Dated 06.08.2008 of the Government in Revenue and Disaster Management Department Government of Odisha. There are 26 Police Stations in the district.

1.3 ORIGIN OF THE NAME

According to Mr. R.C.S. Bell, the name of the town is "Kora-Putti" or the hamlet of the Nux-vomica‖ and it is derived presumably from Kora that must at one time have been prominent near the site. Some opine that the word is derived from KHORA a sect of people who still inhabit nearby villages.

According to the second theory, Koraput is a corrupted form of Karaka- Pentho'. Karaka literally means hail-stone'. Another opinion is often found that the term Kora that means the Sun God who was worshipped by the local tribals in ancient times. Hence the town was so named.

1.4 LOCATION AND GENERAL BOUNDARIES

Koraput, one of the southern districts of the state bounded by Rayagada District and Parvatipuram-Manyam District (A.P) towards the north-east, on the extreme North bounded by Nabarangpur District, on north-west by Bastar District (C.G) and by Malkangiri District, Vizianagaram & Srikakulam Districts (A.P) towards the south. It lies between the meridians of18.13°to19.10° degree North latitude and parallels of82.5°to83.23°degree east longitude. Koraput is about 500km from Bhubaneswar and 200km from Visakhapatnam by road. It can also be reached by direct trains from Howrah, Bhubaneswar, Sambalpur and Visakhapatnam. Apart from these parts of Kirundal- Kotavaslsa and Koraput- Rayagada rail links of Indian railway provides railway communication facility within the district. The airport at Jeypore is connected by daily flights to Bhubaneswar and Visakhapatnam.

1.5 ADMINISTRATIVE SET UPS

To ensure better administrative control, Koraput district has been divided into two sub-divisions: Koraput and Jeypore, encompassing a total of 14 Tahasil/ blocks. This initiative reflects a commitment to decentralization and empowers local leaders to address the unique challenges faced by their areas.

Table-1

Suv-Division	SL no	Tahasil/ Blocks
Koraput sub-division	1	Koraput
	2	Semiliguda
	3	Nandapur
	4	Pottangi
	5	Dasmanthpur
	6	Lamtaput
	7	Laxmipur
	8	Narayanapatna
	9	Bandugaon
Jeypore sub-division	1	Borigumma
	2	Jeypore
	3	Kotpad
	4	Boipariguda
	5	Kundura

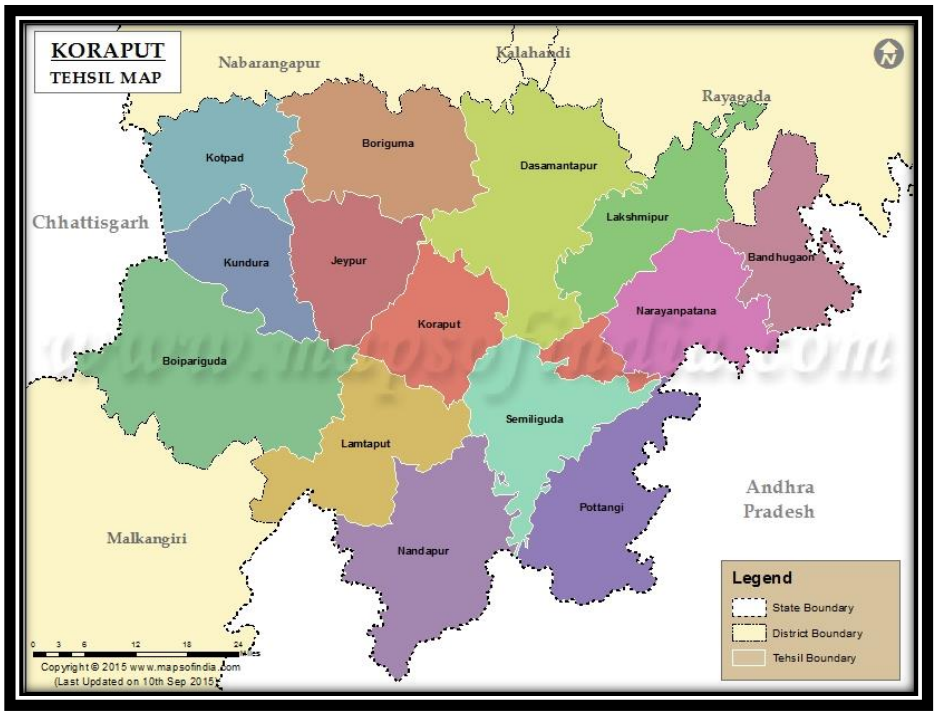


Table-2

Sl. No.	Item	Unit	Magnitude
1	Elevation	Meter	870m aMSL
2	Longitude	Degree	82^0 5' to 83^0 23' E
	Latitude	Degree	18^0 13' to 19^0 10' N
3	Geographical area	Sq. Km.	8,807 sq.km.
4	Sub-division	Numbers	2
5	Tahasil	Numbers	14
6	Community development block (CD blocks)	Numbers	14
7	Municipalities	Numbers	3
8	Notified Area Councils (NACs)	Numbers	1
9	Police Stations	Numbers	26
10	Gram Panchayats	Numbers	240
11	Villages	Numbers	2042
	Inhabited	Numbers	1941
	Uninhabited	Numbers	101
12	Assembly constituencies	Numbers	5

1.6 TRANSPORT & COMMUNICATION

The district is well connected with road and railway infrastructure including National Highways (NH-26, NH-326 and NH-201), State Highways (SH-4, SH-10, SH-25 & SH-48), major district roads and classified village road etc. It also has railway connectivity to Vishakapatanam, Rayagada, and Jagadalpur cities. The Jeypore airport has facilitated airway communication. The proposed gala structure of Bharatmala route connecting Raipur-Vishakapatnam and Jeypore-Malkangiri Railway project are potential future communication options to the district.

Table-3

Communication	Distance
Railway route length in km	240 km
No. of Railway stations and PH	23 no.
Forest road	208.75 km
Bharatmala	116.33km
National Highway	404.50 km
State Highway	168.04 km
Major district road	132.12 km
Other district road	717.06 km
Rural road	5,479.89 km
Rural Surface Road	6,900 km
Rural Unsurfaced Road	1,974.85 km
Gram Panchayat roads	5967
Panchayat Samiti Roads	1183

Source: DE &S.govt. of Odisha, Dist at a glance,2023)

CHAPTER-II

OVERVIEW OF MINING ACTIVITIES IN THE DISTRICT

2.1 OVERVIEW OF MINING ACTIVITIES

Koraput district is endowed with rich source of bauxite, limestone, china-clay and decorative stones, etc, where natural resources contribute to state Exchequer and supports in industrial progress of the state. The major bauxite mines are located in the plateau of Panchpatmalli, pottangi and Mali Parbat where mining operators are NALCO (a central govt. PSU), OMC (a state govt. PSU) and Hindalco (a giant private mining company) respectively. For limestone mines lease are located in Ampavalley operated by OMC (a state govt. PSU). Apart from this, there are quite a few mines for specified minor minerals (decorative stone) in operation. Further, minor minerals like river morrum and road metal occurrences are also being used in different developmental work in the district.

The following table gives the list of working Mineral mines and name of mines given for which letter of Intent has been given for execution of mines in Koraput district.

Table-4

Sl. No.	Location of the Mining Lease	Name of the Lease	Name of the Mineral	Validity		F.Y. 2023-24			Remarks.
				From	To	Collection of Royalty (Rs.)	Collection of Other Revenue (DR/ SR) (Rs.)	Production (M.T)	
1	Panchapatmali (C & N) Block over 3403.183 Hects	M/s. NALCO Ltd.	Bauxite	17.11.1982	16.11.2032	1,61,59,80,610.00	19,89,113.00	6397571.000	Working
2	Panchapatmali (South Block) over 1244.041 Hects	M/s. NALCO Ltd.	Bauxite	20.07.1979	19.07.2029	25,97,25,049.00	7,57,409.00	1150150.000	Working
3	Umpavally over 285.429 Hects.	M/s. I.D.C. Ltd.	Limestone	16.08.1993	15.08.2043	85,32,000.00	4,24,619.00	120667.250	Working
4	Kodingamali over 428.075 hects.	M/s O.M.C.Ltd	Bauxite	10.01.2017	09.01.2067	69,61,04,804.00	6,47,391.00	2686800.000	Working
5	Hatsuku over 76.575 Hects.	Sri P L Swamy	Chinaclay	10.06.2007	09.06.2027	0.00	4,12,204.00	18.500	Working
6	Pottangi over 697.979 Hects.	M/s. NALCO Ltd.	Bauxite	13.06.2024	12.06.2074	0.00	0.00	0.000	Non-working due to want of statutory clearance.
7	Umpavally over 1300.790 Hects.	M/s. OMC Ltd.	Limestone	20.08.1975	19.08.1995	0.00	26,67,731.00	0.000	Non-working

8	Maliparbat over 268.110 hects.	M/s Hindalco. Industries Ltd.	Bauxite	08.11.2007	07.11.2027	0.00	0.00	0.000	Lapsed & applied for revival.
9	Balda over 144.945 hects.	-	Bauxite	-	-	0.00	0.00	0.000	LOI Issued in favour of M/s Kalinga Alumina Ltd for grant of Mining Lease.
10	Kutinga over 31.423 hects.	-	Manganese	-	-	0.00	0.00	0.000	Authenticated Land schedule has been forwarded to the DoMG for auction.
11	Tarapani	-	Bauxite	-	-	0.00	0.00	0.000	Under process for verification of land schedule for auction.
12	Karnaparhikonda	-	Bauxite	-	-	0.00	0.00	0.000	Under process for verification of land schedule for auction.

Further, Koraput District is self-sufficient in its minor mineral resources, including stone (road metal), sand, murrom, and ordinary earth. The district boasts a total of 267 minor mineral sources, with 125 currently in operation. This includes 85 stone sources, 31 sand sources, and 9 murrom sources. The abundant availability of these resources supports local infrastructure development and contributes to the district's economic sustainability.

CHAPTER-III

GENERAL PROFILE OF THE DISTRICT

3.1 GEOGRAPHY OF THE DISTRICT

Koraput district covers a total area of 8,807 sq.km. The district lies between 18.13° to 19.10° north latitude and 82.5° to 82.23° east longitude. The Confluence Point in Koraput District is near the village of Maligam under Dashmantpur Police station in Laxmipur Block. It is about 25km from Koraput. Confluence means meeting of longitude and latitude of earth. The exact point is in the middle of the Muran River (a tributary of the Indravati River), which flows its way among the small hills. The Point has been clearly marked on the Survey of India Topo-Sheet No 65J/13, by the banks of the river. It is 19.00.000 N 83.00.000 E. However, the Confluence Point lies center in the middle of the river. The old 1942 Survey of India map sheet could not give the exact location on the ground as the river had altered its course by at least 30m since the survey. The only way to reach the Point was to wade through the thigh deep water. Anil Dhir, a journalist and Kashinath Sahu located this point in 2014.

The whole district can be divided into two geographical divisions each of which can be separated by natural barriers as their respective limits with undulated Koraput sub-division and plain Jeypore sub-division. The portion of plateau which lies in the Koraput district consists of an undulating table land profusely scattered with hundreds of little hills of remarkable similarity in appearance. This plateau is really a rare gift of nature for its scenic beauty. The process of denudation has advanced too far and the hills are either covered with low scrub or disfigured with patches barred by shifting cultivation. In case of Jeypore Sub-division which is more or less plain with few hillocks, with their lower order tributary nalas arranged in a sub dendritic pattern control over all drainage pattern of the district.

3.2 DEMOGRAPHY

As per 2011 census, the total population of the district is 13,79,647 consisting of 2042 villages. Urban Population is 2,26,169 and rural population is 11,53,478. Total male

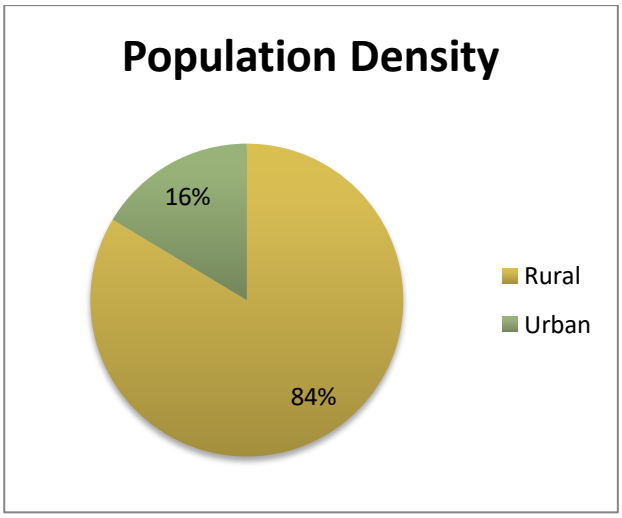
population of the district is 6,78,809 and female population is 7,00, 838.The average literacy rate of the district is 49.2% comprising 60.3%male and 38.6% female literacy rate.

Table-5

Name	**Area in** sq.km.	**Remarks**
Geographical Area	8807	21.34% of area of the district is covered under the forest
Area under Forest	1879.53	

Table-6

Population 2011 Census		
Name	**No**	**Percentage** in %
Total	1379647	
Male	678809	49.20
Female	700838	50.80
Rural	1153478	83.61
Urban	226169	16.39
Scheduled Caste	196540	14.25
Scheduled Caste male	96789	49.25
Scheduled Caste Female	99751	50.75
Scheduled Tribe	697583	50.56
Scheduled Tribe male	337373	48.36
Scheduled Tribe Female	360210	51.64



3.3 HILL SYSTEM

This district lies on a section of the Eastern Ghats and consists of two natural divisions having mean elevations of 915m and 610m respectively above the sea level. There are number of mountain ranges and isolated hills that rise out as table lands. Taking them in order from north to south the most notable heights are Panchapat Mali (1336.89m), Karnapadi Dongar (1487.5m) Meyamali Parbat (1500.30m) Turia Dongar (1598.78 m), Deomali (1672.56m), Polamakani Parbat (1585.67m) and Sirimanda Parbat or Damuku (1415.24m). The village Pottangi lies at the foot of the last named Damuku. Deomali, also known as Duhdari, whose twin peaks can be clearly seen from Koraput on any fine day, is the highest mountain peak in the district as also in the whole of Odisha.

In Jeypore sub-division there are low hills, some of which rise to 793m. Elsewhere, the plain is only broken by isolated hills, among which those near Podagada (930m), Borigumma (916m) and Boipariguda (927m) may be mentioned.

3.4 RIVER SYSTEM

The district has many rivers and perennial streams. River deposits refer to the sedimentary materials transported and deposited by rivers. These deposits are crucial for understanding geological history, river dynamics, and environmental processes in the district. Almost the entire Koraput district is drained by four rivers namely the Indravati, the Kolab, the Machhkund and the Champabati or Jhanjabati, with their tributaries. These rivers flow inland westward and the southward into the valley of the Godavari.

- **Indrāvati River:** The Indravati River in Odisha is a significant river in eastern India. The Indravati starts from the forest land of the Eastern Ghats' Thuamul Rampur hills in Kalahandi district and after receiving a number of perennial hill streams, rising in Kashipur Tahsil and Nabarangpur and Koraput sub-divisions, it enters Bastar after flowing through Nabarangpur district and Kotpad Tahasil of Koraput. The Bhaskel joins it just before it leaves Koraput District. On its Course forms the beautiful Chitrakota falls about 40km west of Jagadalpur in Bastar district of Chattishgarh. The total length is 526kms, of which 123kms run through Koraput district or along its boundary. River joins the Godavari River at Dumbriguda, Andhra Pradesh. Major tributaries of the rivers

are Nakti, Soin, and Tel rivers. River has provided a mega-structure form the Indravati Dam and reservoir in its course, supports irrigation and agriculture, Hydro-electric power generation, Rich biodiversity and ecosystem.

- **Kolab River:** The Kolab rises near Sinkaram hill range on the 915m plateau, flows northwest in a winding bed, passing 8 km to the south of Koraput and falls down to the 610m plateau not far south of Jeypore. At Bagara, to which a branch road leads from the top of the Jeypore Ghat there are three small falls whose potentialities as sources of hydro-electric power were investigated in the thirties of the last century. At present hydroelectricity is produced after the installation of a hydro power plant at the foot of the hill to the side of Jeypore town which is functioning since 10.03.1988. At the end of it's decent to the Jeypore plateau the river is spanned by a fine bridge near Kotta. It flows right across the Jeypore tahsil in a north-west direction for 32km to 48km and then suddenly run nearly south, forming the boundary between Koraput and Bastar. It then runs south back into this district forming, for a few km, the boundary between Nabarangpur and Malkangiri districts passing at this point through a gorge in the wild hills to the west of Ramagiri, which are called Tulisi Dongar range. As it issues from this it falls about 15m into a large pool, 4 or 5m deep, into which in days gone by, as tradition goes, witches used to be thrown with a stone round their neck. Turning west again, and passing Salimi, the river flows into Bastar past Sukuma, and at last again divides Bastar from Koraput, forming the western boundary of Malkangiri subdivision for many kilometers. In the last part of its course, it is called the Sabari or Saberi. At Motu the extreme south-western corner of Malkangiri district it meets the Sileru to pass out of Odisha into Andhra Pradesh and falls eventually into the river Godavari. The total length of the Kolab-Sabari is 448km, of which 88km flow through and along its boundary of the district.
- **Machhkund River:** The Machhkund rises in the Madgol hills of Visakhapatnam district on the 915meters plateau, and near Wondragedda, not many miles off its sources; it becomes the boundary between Andhra Pradesh and Odisha. For around 48km the river runs nearly northward along a very meandering course through the wide Padwa valley. Five km from the bend, about the same distance south of Badigada the descent is barred by a huge barrier of rock shut in on either side by walls of rock two or three hundred feet in height. Below this is a sheer abyss over which the river used to

fling itself into a boiling pool half hidden by dense clouds of spray, on which the sunlight used to throw the brightest of rainbows. In the dry season it was possible to scramble to the edge of the abyss and look straight down through the spray into the great pool beneath, while from beneath the scene was the most impressive, inspiring a mixed sense of awe and beauty in the minds of the visitors. But, with the diversion of the stream and installation of the Machhkund Hydro-electric Project that beautiful sight is no more to be seen. These falls, with a 165m drop, are known by the name Duduma falls presumably in the absence of an adjacent village to name them after, as the word Duduma' itself means Waterfall. Below the falls for 5 or 6 km the river flows towards the south-west in a deep and a gloomy gorge, hemmed in on both sides by rock walls seven or eight hundred feet high into which it is impossible to descend except by the winch or the flight of steps of the Machhkund Project. The river flows down this narrow valley shut in by high hills till it reaches Kondakamberu (Malkangiri district) 67km from Badigada. This valley of the Machhkund is the most inaccessible and the least populated region in the whole district. On the way one meets a small village of primitive tribes named Didayis, who are not found anywhere but, in this valley, while at one point the path runs through dense forests for twenty-four km without any sight of human habitation. The surrounding forests used to serve as admirable abode of wild life and even in the middle of summer there is a broad stream in the river some 0.70meter deep. It would be possible to make the whole journey from the falls to Kondakamberu in a dugout canoe at any time of the year. At Kondakamberu (427meters above sea-level) the river is some 7.31meters wide and unaffordable at all seasons. It is now joined by a large tributary, the Gurupriya, which rises in the high hills of Madgol and flows entirely through forest down a steep and rocky course. A few miles beyond Kondakamberu the river assumes the name Sileru (Rocky stream) and once again becomes the boundary of the State, separating it this time from the East Godavari district of Andhra Pradesh. It flows by a much steeper gradient than before; abounding in Mahaseer (a rare type of game fish) and crocodiles until at Motu it joints Sabari. Nothing can excel the supreme beauty of this lonely river, with its bamboo-covered banks, its deep long reaches of water, it falls, its grass-covered islets and its rushing clear water. Its length is 294kms, of which there is a 61km flow through this district and 192kms along its boundaries.

- **Champabati River /Jhanjabati River:** The river Champabati and Jhanjabati rises in Bijaghati hills of Pottangi area as two small strips. After flowing some kilometer at Goriagada of Narayanapatna they join together and become a river named Jhanjabati. The river flows through Narayanapatna and Rayagada areas until it joins the river Nagavali.

3.5 CLIMATE

The region experiences tropical to sub-tropical climatic condition, Koraput Located at an elevation of 870m aMSL above sea level, Koraput has a tropical wet, dry or savanna climate. The average Temperature of Koraput is around 24°C although it varies from around 7.5°C during Winter (January) to 34.1°C during the Summer (May). The hottest month of the year is May with temperature varies from 22.3°C to 34.1°C. The coolest month is of the year is January, with temperature varies from 7.5°C to 26.8°C.

3.6 HUMIDITY

Humidity is generally high, particularly during the monsoon and post-monsoon months. In contrast, afternoons are comparatively drier in other months. Daily temperature variations lead to morning dew, which farmers often find undesirable. Humidity fluctuates significantly between the monsoon months of June and July and the winter months of November and December. Additionally, the aridity of different regions varies widely. Koraput has sufficient water flowing through its streams to support both people and livestock, even during the hottest summer days.

3.7 RAINFALL

It is observed that about 80% of the total annual rainfall takes place due to South West monsoon between the middle of June &mid-October. The north east monsoon gives erratic & insufficient rainfall. The average annual rainfall varies between 1786.60mm. The district is drought prone because of the erratic and uneven pattern of rainfall.

The rainfall statistics of the district for last five years is given below:

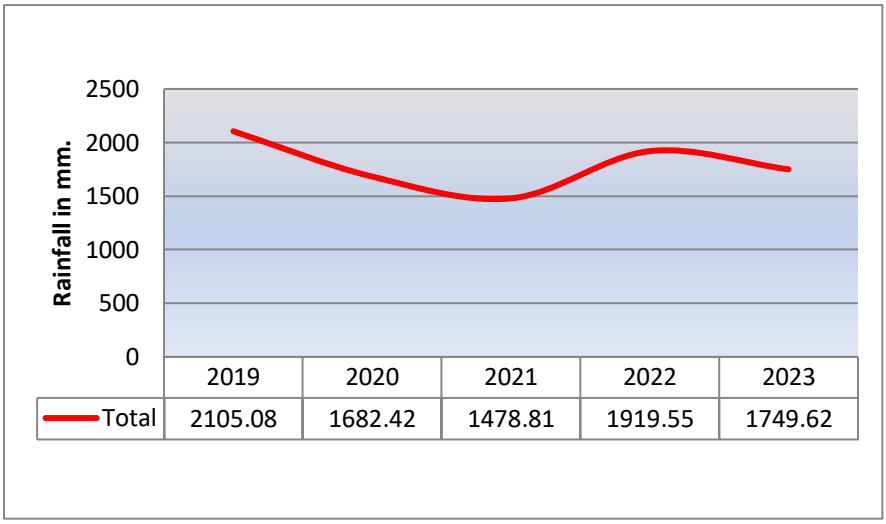
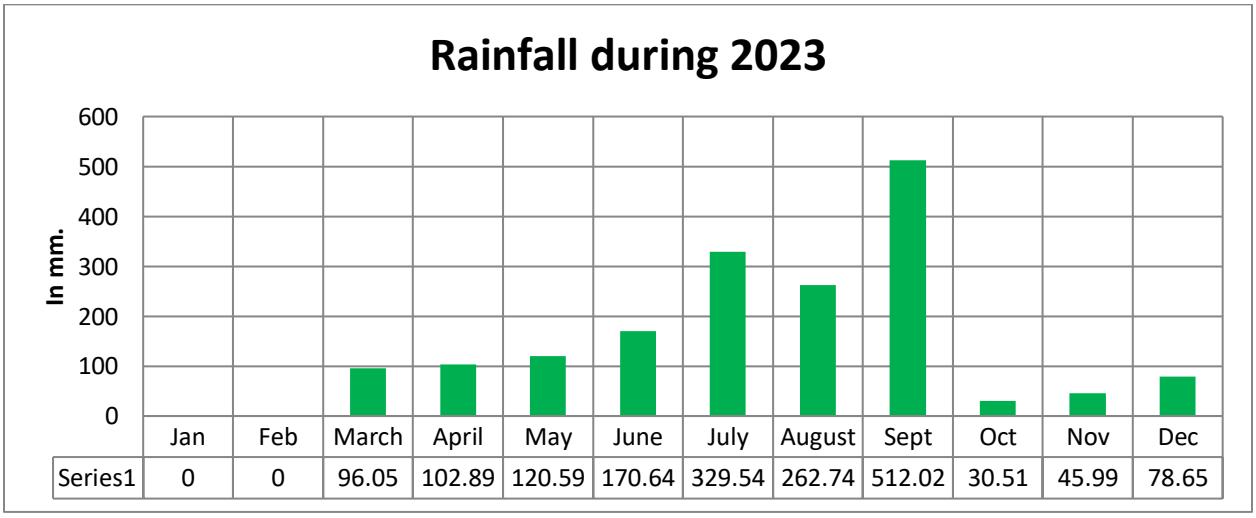


Table-7

YEAR MONTH – WISE RAINFALL (mm) DATA OF KORAPUT DISTRICT (LAST 5 YEARS)													
Year/month	**Jan**	**Feb**	**March**	**April**	**May**	**June**	**July**	**August**	**Sept**	**Oct**	**Nov**	**Dec**	**Total**
2019	0.91	0	1.6	50.46	63,81	198,3	543.89	590,71	381.49	247.63	25.39	0.89	**2105.08**
2020	8.6	17.71	46.63	119.29	74.81	244.41	272.24	473.37	208.94	205.48	10.94	0	**1682.42**
2021	0.96	8.5	4.97	55.32	90.29	263.94	238.44	318.04	352.6	70.85	68.06	6.84	**1478.81**
2022	34.2	.21	0.71	35.21	108.16	31.93	451.88	600.46	377.85	165.46	11.99	1.49	**1919.55**
2023	**0**	**0**	**96.05**	**102.89**	**120.59**	**170.64**	**329.54**	**262.74**	**512.02**	**30.51**	**45.99**	**78.65**	**1749.62**



3.8 SURFACE AND GROUNDWATER SCENARIO

The drainage systems i.e. rivers of the district get filled with water during the monsoon and gradually decrease from the month of January to June of each year. In the summer season, all the rivers become almost dry excepting flow of water in a few narrow channels within the basin. The variation of ground water table in the district is as follows:

Table-8

Depth of water level (mbgl)/ Period	April	August	November	January
Minimum	1.15	0.08	0.37	0.30
Maximum	14.17	13.74	13.60	14.20

3.9 ECONOMY

The primarily Economy of Koraput District is based upon forest and agriculture (including shifting cultivation), the bulk of commodities used domestically for everyday use are agricultural and forests products. The district with semi-evergreen to deciduous vegetation endowed with various wild plants as a natural resource.

There are many industrial sectors that contributes to the growth of the economy of the Koraput District. HAL factory (Hindustan Aeronautics Limited, a defense enterprise of the Government of India) is 15km from Koraput town. It has employed more than 6000 employees. The National Aluminium Company Ltd. (NALCO), Damanjodi also has its significance to boost up the economy of Koraput district around 2500 employees are engaged in the process of extraction of Alumina from Bauxite. Other than the employees there are many more local workers engaged by hundreds of contractors in the Govt/ Private works.

3.10 EDUCATION

Educational facilities in Koraput include schools, colleges and university, from primarily to higher studies in the region. Koraput has Woman's Colleges at different parts of district, D.A.V. College at Koraput, Government College of Engineering, Koraput Law College, Government Polytechnic, Government ITI, Central University of Orissa situated at Sunabeda Town and newly formed Vikram Dev University at Jeypore are the institution for higher studies as concerned. A government medical college on the named after Saheed

Laxman Nayak, a great freedom fighter of the region, Medical College and Hospital (SLN MCH) at Koraput. Various private and government day schools-Residential schools are home to several educational institutions.

Table-9

Educational Institution	Details	Number
Primary School	No. of Schools	1,418
	Enrolment (No)	1,38,213
	Pupil Teacher Ratio	36:1
Upper Primary School	No. of Schools	754
	Enrolment (No)	81,164
	Pupil Teacher Ratio	31:1
Secondary School	No. of Schools	288
	Enrolment (No)	40,107
	Pupil Teacher Ratio	38.1
Higher Secondary	No. of Schools	73
	Enrolment (No)	19,152
	Pupil Teacher Ratio	42:1

(Source: Education profile from Koraput district website)

3.11 HEALTH

The medical facilities are provided by different agencies like Govt., Private individuals and voluntary organizations in the district.

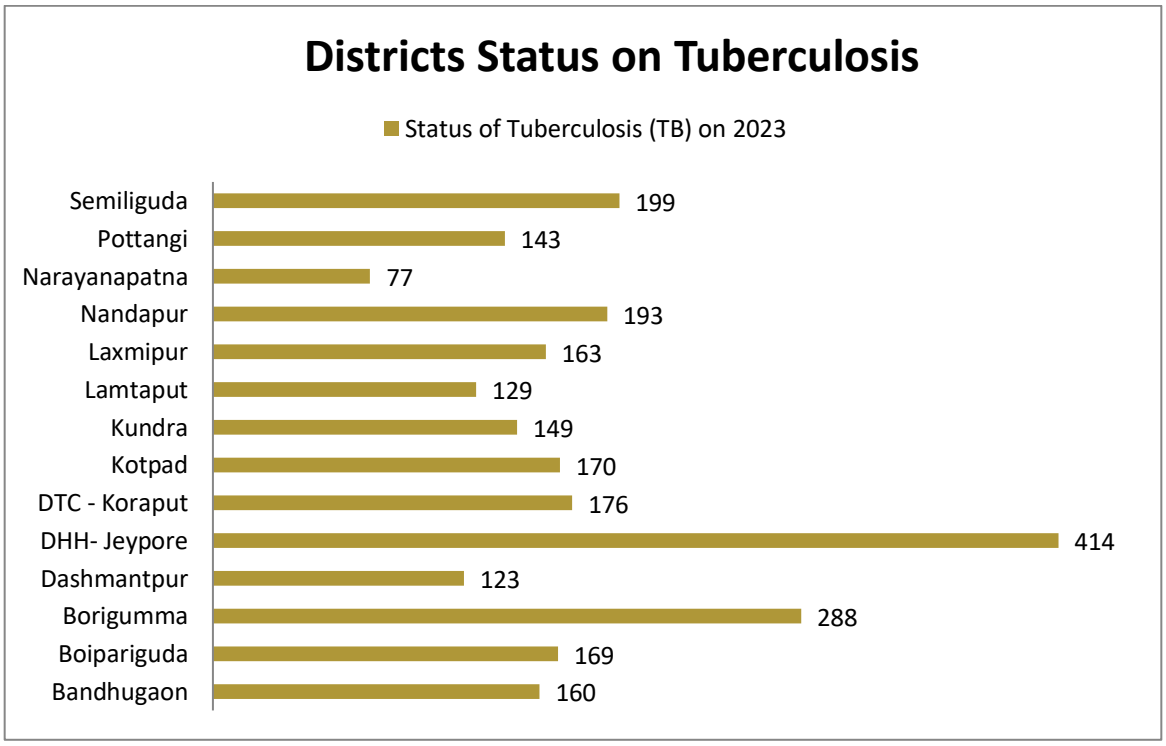
Table-10

Allopathic Govt medical institutions	DHH	1
	Sub-division	1
	PHCs	50
	CHCs	16
Beds facilities	DHH	175
	SDH	72
	CHCs	238
	OH	67
Homoeopathic dispensaries	18 Nos.	
Ayurvedic dispensaries	18 Nos.	
Private hospitals	05 Nos	
Health Sub-center	307 Nos.	
Mobile Health unit	15 Nos.	

Table-11

Status of Tuberculosis (TB) diagnosed in the last five years in Koraput district:

SL no	Name of the Block/ Tahasil	Years				
		2019	**2020**	**2021**	**2022**	**2023**
01	Bandhugaon	115	162	169	174	160
02	Boipariguda	178	161	188	182	169
03	Borigumma	285	298	245	258	288
04	Dashmantpur	144	152	127	153	123
05	DHH- Jeypore	355	384	335	375	414
06	DTC - Koraput	181	178	168	185	176
07	Kotpad	128	131	154	155	170
08	Kundra	137	127	124	123	149
09	Lamtaput	152	177	147	127	129
10	Laxmipur	148	115	117	152	163
11	Nandapur	196	192	186	192	193
12	Narayanapatna	105	100	103	128	77
13	Pottangi	138	125	97	117	143
14	Semiliguda	186	192	185	196	199
Total		**2448**	**2494**	**2345**	**2517**	**2553**



3.12 CULTURE AND HERITAGE

The traditions of any society are strongly allied and incorporated with its olden times since time immemorial. On the other side the subsistence of civilization is the pedestal of history. If one desires to be familiar with the cultural narration of primordial tribes one must go round towards Southern part of the state of Odisha, the core of tribals. Their tradition and ethnicity are widespread and sparse and hence the cultural history of tribals of Koraput has extraordinary significance all over the country. The district has a tribal population of more than 50 percent.

Religions in Koraput: The city stands as a standing example of diversity. Although the city is dominated by the Hindu population, the Christians and the muslims also form a significant population. The city popularly referred as the city of tribes has a rich cultural and ethnic heritage which makes the city even more appealing to the tourists. The city houses various holy shrines like Gupteshwar also known as hidden god, Sabara Srikhetra which denotes the Jagannath Temple attracts lakhs of tourists to the city especially during festivals like Maha Shivratri and Jagannath rath yatra.

Languages in Koraput: Oriya is the most commonly spoken language by the people of Koraput. The district's linguistic diversity reflects its cultural richness and tribal heritage. As of the location of the district in close proximity to Andhra Pradesh the people of Koraput also have influence of Telugu speaking. All administrative communications, announcements, media interactions are done in English, Odia and Hindi. Desia, Kui, Kondh, Gadaba, Bondo, Didayi, Bonda etc. are the local and tribal languages spoken in the district. The city being an adobe to the tribal populace Tribal Dialects are also significant in the city.

3.13 FESTIVALS, ART, WEAVING AND PAINTINGS IN KORAPUT

The city takes pride in celebrating all the major festivals like Diwali, Eid, Holi, Karwa Chauth, Maha Shiva Ratri or Dusshera with fervor and enthusiasm. The traditional Parab festival showcases the cultural ethnicity of the city.

Parab Festival: The carnival of cultural Heritage of indigenous tribes, Parab festival is being planned by District Council of Culture, Koraput from 1996. This fair of the State is distinctive of this sort intending to mark out buried talent in the field of fine art, traditions,

customs and games at grass-root level and to uphold the wealthy edifying legacy of this district. Every year in the month of November festival is been celebrated all over the district. The whole month of Parab witnesses' events on sports culture, seminar mountain trekking, boat race and artist's camp. On a third day from all over the country are staged on one platform, with crafts mela and exhibitions in the Koraput Parab ground.

In a month-long fiesta intended to conserve the affluent traditional inheritance and local distinctiveness of the tribal which was never given suitable publicity and acknowledgment, was effectively featured. The celebration crafts immense sensation and competitive strength among the countryside society that facilitates in carrying out cultural activities in their atmosphere and also conserving their fine art and expertise so as to lend a hand in the preservation and improvement of prosperous artistic and enriching customs and legacy against the peril of destruction because of swift industrialization, urbanization and globalization.

Competitive programmers in conventional events of music, tribal dances, folk dances, songs, etc. facilitated in the conservation of ethnic cultural legacy of this region. It is a mission to uphold and shelter the wealthy customary skill, dexterity and traditions of this cosmic district. Other than these events there are other events like quiz, essay competitions among the school students and competitions for the physically disabled children to inculcate the competitive spirit and create awareness on the cultural legacy of the region. Besides these there are Craft mela, Artist Camp, Boat race, Cycle race and colloquium are organized to exhibit their cultural heritage. mountain Trekking on Deomali Hill Rance, the highest mountain peak of Orissa makes the carnival an immense event.

Positioned amidst the pristine magnificence of the Eastern Ghats, Koraput is an abode to numerous tribal communities for whom festivals are an integral part of the civilization. They rejoice diverse junctures of their lives with analogous to 'PARABs' like Pusa parab, Chait Parab, Dialiparab, Pond Parab, etc. To respect their ethnicity, the District Council of Culture, Koraput determined to christen its yearly festival as "PARAB". Koraput region, being the medley of tribal life and traditions of the nation, precise prominence is being set to emphasize this enriching inheritance through PARAB and to institute it as a National Festival of indigenous people and celebration of tribals.

PARAB carnival was set in motion in such a gifted moment that the festival not only became the most well-liked merriment of the region but also one of the leading celebrations

of the State. In reality the carnival brought an artistic celebration in the State. Subsequent to this festival in Koraput many neighboring regions began rejoicing events in a spirited style. In addition, several districts began rejoicing festivals like Sambalpur Folk Dance Festival, Puri Sahi Jatra, Ganjam-Surabhi, Malkangiri-Malyabanta mahotsav.

Art, Weaving and Paintings in Koraput: Koraput is famous for its fine art and paintings. Saura painting is a technique of wall mural paintings related with the Saura tribals of Koraput. These paintings are of worldwide significance and contribute greatly to the economy of the city. **Mirigan** is a traditional tribal weaving art form practiced by the **Mirigan** community in Koraput district, Odisha, India. This ancient craft is known for its simplicity, sustainability, and cultural significance. The weaving proficiency in the region is greatly evolved and its fabrics bear testimony to the unique and artistic ability and tradition of the weavers of this state. The ethnic weave of Kotpad village in the district is conventionally woven in gorgeous thick cotton and tussar silk. The utilization of natural pigments extracted from the roots of the madder tree also referred as aal tree makes it distinct from remaining weaves. Koraput Weaving employs a three-shuttle intertwine prototype, which permits countless combinations in level and quantity.

The "**Mirigan**" society of Kotpad region in Koraput district is acknowledged for their beautiful natural colored fabric. They typically knit this fabric for "Bhotada", "Dharua" and other adjoining tribal society depicting their particular culture and ethnicity. The most significant and eye-catching fabric fashioned by this society are Sarees and Shawl etc. The fabric woven by the **Mirigan** community is incredibly contented to be dressed in all through summer and wintry weather. These fabrics are in huge demand both in India and overseas. It is believed that the use of these fabrics prevents one from skin diseases because of the presence of natural dyes.

Costume of Koraput: The ethnic wear of people of Koraput is Dhoti and Kurta, mainly the women wear Sarees and Salwar Kameej.

Cuisines of Koraput: The city offers a platter of dishes with good mix of vegetables in their local cuisine. An authentic meal composes rice, lentils, curry, chutney pickle and a salad. Roti is mostly preferred for dinner. The city is also renowned for the non-vegetarian delicacies fish and meat. Most of the sweet preparations include milk as the foremost

ingredient like Rasagolla, Rasmalai, Rabidi, Rasabali, Chhena. Some of the other famous sweet preparations include Jhili, Jilebi, Kalakand.

3.14 TOURIST PLACES

Tourism of Koraput District occupies a profound place in the State of Odisha. The likes of Duduma waterfall & Hydel project, scenic beauty of Deomali (highest peak of Odisha), Kechela, Jain sites, Balda caves are among a few worth-mentioning. A list of tourist spots in Koraput district is given below:

The Tribal Museum, founded in 1992, holds great importance because of its authentic display of the tribal culture of Odisha, providing a glimpse into their largely unexplored lives. The museum has collections of mines, costumes hand-woven clothes, musical instruments, caters to and educates the tourists about the culture and heritage of the tribals.

Raja Cave & Balmiki Ashram: Raja Caves & Balmiki Ashram in other named known as Kapat Parbat. It is believed the ancestor of Balmiki resides in this site situated on the bank of river Machakund and the river dividing border of Odisha & Andra Pradesh. It is a scenic spot & best place for trekking in Nandapur block for Eco & Cave tourism. Akhayaturtiya is the main festival of this site.

Onukadelli: Onukadelli in Koraput drawn the attraction of foreign tourists to its weekly market day on Thursday where the Neolithic tribe Bonda come from the inaccessible forest for better purposes. It is 90kms away from Koraput.

Nandapur: The ancient capital of Jeypore Kingdom Nandapur is famous for the presence of Batrisa Sinhasana. It is a 32-step well-preserved relic linked with the fabled throne of Vikramaditya. The arresting red image as a six-feet Ganesha and the shrine of Bhairavnath and other monuments of great antiquity.

Subai: It is a roadside village 16kms from Sunabeda and 34kms away from Koraput has the relics of a Jain monastery, containing rare images of the Tirthankaras.

Jeypore: It is the city of victory is the largest town in the district and home to the royal family is steeped in history. The old fort is encircled by a high masonry wall with an

imposing gateway. Towards the eastern part of the town is a big tank called Jagannath Sagar attracts water sports.

Kanta Baunsuni Damanjodi: It is the town that became famous with the discovery of bauxite mines in the Panchapatmali hills and setting up NALCO, Asia's biggest Alumina complex. Nearby stands the highest peak of Odisha. And World's Second tallest Hanuman Statue that stands at 108.9 feet (33.1meters) located at NALCO township, Damanjodi, Koraput.

Dumuriput: A village stands between Koraput and Sunabeda. The famous Sri Ram Temple situated in the locality is widely known for the highest kneeling Hanuman Statue in Odisha. Ram Navami festival is popularly celebrated every year which attracts a large number of devotees.

Kolab Dam: Kolab- At an altitude of about 3000 ft. above sea level on river Kolab, stands the majestic Kolab Reservoir generating Hydro Electric Power. The place is highly admired for its scenic beauty, attracting people for weekend picnic and boating.

Jalaput: It is a dam reservoir over the Kolab river. It is 68.2 sq.km in the area and an idyllic place of picnic and pleasure trip. It is 77kms away from Koraput.

Sunabeda: It is a modern township & famous for MIG fighter planes, Sukhoi factory & museum containing aircraft engines displayed worthy to be seen.

Gulmi: Kolab river forming a whirlpool at Gulmi and attracting large crowed from the district as well as from Chattisgarh state.

Kechela: It is a village is known for the copper plate. There is a Jain temple about 30 ft. high contains 05 images of Tirthankaras namely Resavanath, Mahavir Jain, Ambika Devi, Jakhya & Jakhyani. The images are chiseled with great care and achieve a high standard of art which indicates the Kechela was a seat of Jainism in the medieval period.

Machhakund (Duduma): It is the waterfall, popularly known asmatsya Tirtha of epic fame falls from a height of 175meters. Set in the heart of a picturesque hill, Duduma 70kms to the South of Jeypore, and 88kms away from Koraput is a rocky outlet for the River Machhkund, which flows through this rough terrain. Rock-climbing enthusiasts can try reaching the base of the fall from the opposite side of the hill, a route tribals claim can be Terribly Strenuous.

Deomali: The highest mountain Peak of Odisha Deomali 1762mt. high nestling in the lap of the Eastern Ghats is an ideal for Aero Gliding and trekking expeditions.

Gupteswar: Gupteswar is a cave temple located on the banks of Kolab River, about 80km from Koraput. Important cave shrine of Lord Shiva situated on a lime stone hill amidst scenic bliss. The temple houses a sacred Swayambhu Shivling called Gupteswar, which literally means the Hidden God.

Sabar Shreekshetra: Sabar Shreekshetra means the Sreekshetra of Sabar Peoples in Odisha where a beautiful Jagannath Temple has been built at a height of 940mts above the sea level located in Koraput town of Odisha, which permits entry to people irrespective of their religion, caste and creed.

Raisil: This place in Koraput is ideal for trekking surrounded by natural scenery. "Anla Navami" is celebrated every year with huge colorful gatherings.

Maliguda: About 43km northwest from Koraput and 21kms eastwards of Jeypore is a small village where on a hilltop stands India's highest broad gauge railway tunnel. The place is ideal for a weekend picnic.

Deomali

Deomali

Machhakund (Duduma)

Dumuriput

Gulmi

Gupteswar

Sabar Shreekshetra

Jeypore

Kanta Baunsuni Damanjodi

Sunabeda

Nandapur

Onukadelli

Raisil

Raja Cave & Balmiki Ashram

The Tribal Museum

Subai

Maliguda

Kolab Dam

CHAPTER-IV

GEOLOGY OF THE DISTRICT

4.1 PHYSIOGRAPHY AND GEOMORPHOLOGY

The entire Koraput district has a unique physiographic set up. Excepting the north western and west central part, the rest of the district is occupied by densely forest with highly rugged mountains, interspersed with intermontane valleys. The elevation of the hilly terrain ranges from 900 to 1400m above mean sea level with the highest peak of 1620mamsl. The major geomorphic units of the district are classified as - Flood plain, mesa/butte, Denudational hills, Pediment, deeply weathered Pedi plain, Inselberg, Structural hills, severely dissected plateau, Intermontane valley, Structural valley, Residual hill and Bazada. The average rainfall of the plateau is 1560 mm of greater part falls during the months of July and August.

The drainage pattern in the district is controlled by Indravati, Sabari (Kolab), Sileru, Vegavati, Subarnamukhi, Machhkund, Jhanjabati/Champabati rivers and their tributaries drains westward towards the Godavari valley. The river Kolab and Indravati drains the major parts of Koraput district; most of the tributaries of river Kolab and Indravati are perennial in nature. East-west flowing Indravati and North-South flowing Sabari River pass through the northern and western border of Koraput district. Northeast-Southwest flowing Kolab river traverses through the central part of the district. The rivers in general exhibit dendritic drainage pattern and are effluent in nature.

4.2 GEOLOGY

A major part of the Koraput district is underlain by hard rocks of Pre-Cambrian age. The consolidated rocks of upper to middle Proterozoic age occupy a small portion of north-western part of the district. The Recent to sub-recent alluvium occurs as thin and discontinuous patches in limited scale along the prominent drainage channel. The Laterite occurs as their capping over the country rocks in isolated pockets.

The generalized stratigraphic sequence in the district is given below Recent to Sub-recent Alluvium, Laterite Upper to middle Proterozoic Chhattisgarh Group Purple shale, limestone, Basal quartzite. Proterozoic to Archaean Bengal group Quartzite, Quartz

and biotite gneiss Eastern Ghat group Biotite bearing garnetiferous granite. Gneiss with mega-crystal of white Feldspar. Acid, intermediate, basic Charnockite. Archaean Garnet-sillimanite Schist, khondalite, Quartzite & calc-granulite. Rock assembles in the area are as follows;

Granite Gneisses -These rock types of Eastern Ghats Group generally occur in the undulating plains and sometimes forms hills and hillocks. These rocks are mostly represented by biotite gneiss, porphyritic granitic gneiss etc. They are porphyritic and non-porphyritic in nature and are usually grey to light grey in colour.

Khondalites -This suite of rocks comprises mainly of quartz - garnet sillimanite gneiss and schist, garnetiferous sillimanite gneiss and schist, garnetiferous sillimanite quartzite and calc-granulite, which occurs in an interbedded sequence. Khondalite are found associated with charnockite and porphyroblastic granitoid gneiss. The rocks are grayish brown to reddish brown in colour and are well foliated. The occurrence of quartzite and calc granulites are very limited and sporadic.

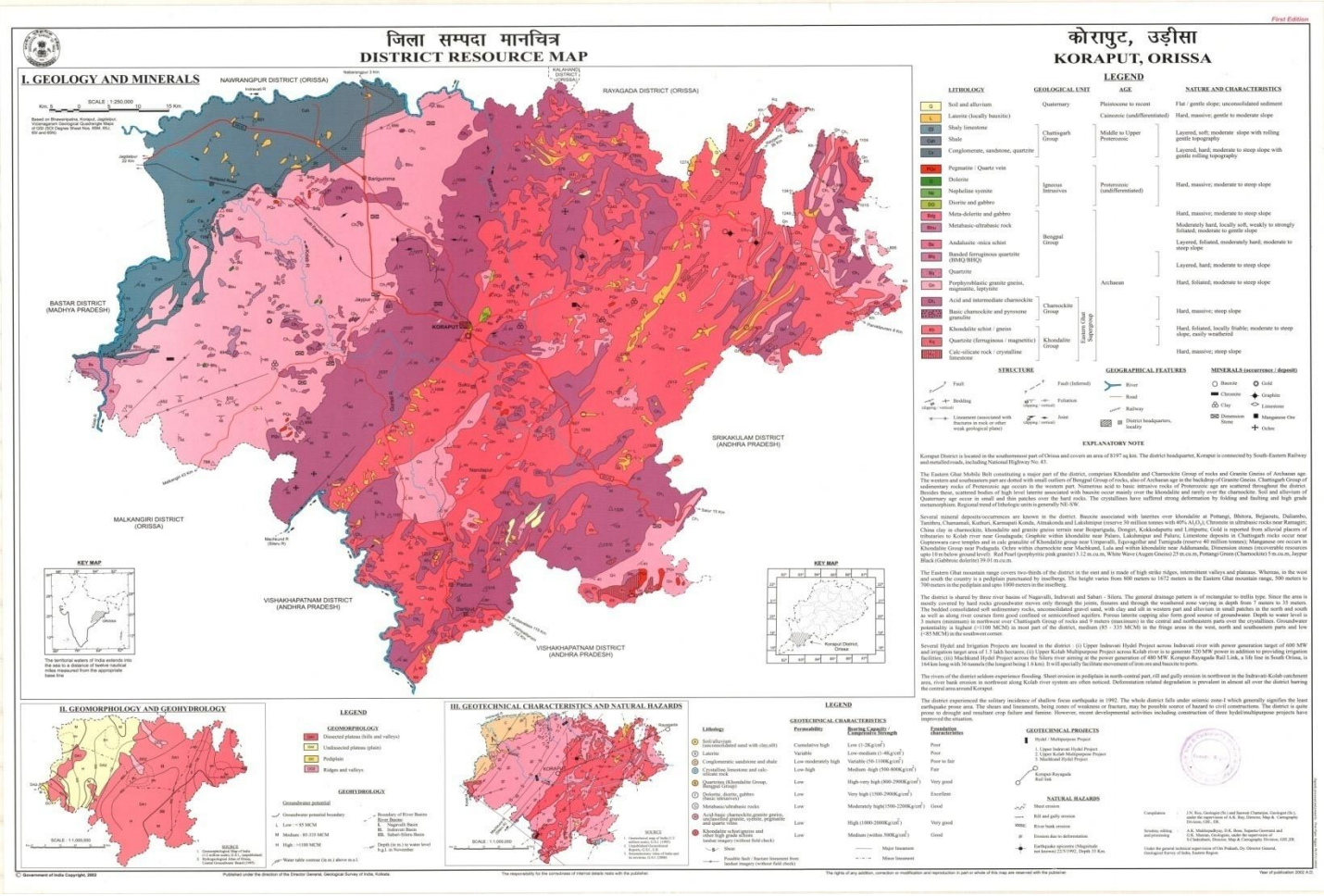
Charnockite -This suite of rocks comprises of pyroxene granulite (basic), hypersthene granite and granodiorite (acid and intermediate). These are generally found to occur in south and central part of the district. The acid and intermediate variety of charnockite is more prominent and form longer bodies than the basic variety. The charnockite are fine to coarse grained, greenish grey colour having greasy lustre.

Quartzite -These includes quartzite, garnet andalusite gneiss of Bengal Group. These are metasediments occupying limited area in western part of the district. Shale, limestone and Quartzite - These belong to Chattisgarh Group of middle to upper Proterozoic age. These rocks occur uncomformably over granite gneisses. These are slightly metamorphosed and consist of white nonfeldspathic quartzites, impure limestone and purple shales. These rocks are generally exposed in the north-eastern part of the district. These rocks are best exposed around Gupteswar-Ramgiri area in Boipariguda blocks.

Laterite and Alluvium -These are reddish, porous, concretionary material occurs as capping over the country rocks. Considerable thickness of Laterite mainly of detrital origin has also been formed or shaly formation around Kotpad area. Laterite generally occurs due to intensive weathering under extreme oxidizing conditions in tropical to sub-tropical climate characterized

by strongly contrasted wet and dry seasons. The alluvium of recent origin comprising of morrum, silt and clay of limited extension and thickness occurs in pockets along major drainage channels. They are generally fire to coarse grain in nature.

The major part of Koraput district is underlain by the rocks of the Eastern Ghats group which has undergone multiple deformations as reveled by the presence of structural features like fold, faults, joints, foliation etc: There are at least five major tectonic events represented by NE-SW, ENE-WSW, N-S, NW-SE and NNE-SSW tectonic patterns in chronological order. Granite gneisses exhibit gneissosity in NNE-SSW direction. Khondalite are highly fractured and sheared. Charnockite are usually massive and compact in nature. The rocks of Chhattisgarh group are gently folded with low dips of both the limbs (4°-11°). The fold axis trends N35°E to S35°W.



4.3 STRATIGRAPHY

The geological succession in the district is as follows;

Table-12

Age	Super Group	Group	Litho-unit
Cenozoic			Laterite and Lateritic bauxite
Meso to Neo-Proterozoic	Chhatisgarh	Sabari	Shale Limestone Sandstone
Palaeo to meso-Proterozoic		Tulasi dongar	Gabbro and related basic rocks Sandstone
Proterozoic		Intrusive	Quartz vein Granite Dolerite
Archaean to Proterozoic	Eastern ghat	Migmatite	Granite gneiss, Leptynite (Acid to Intermediate)
		Charnocite	Charnockite, pyroxene granulie, Garnetiferrous sillimanite
		Khondalite	Schist/gneiss, Porphyry granite, meta basics, Amphibolite
Archaean		Bengpal	Andalusite Schist, Hornblende schist, magnetite quartzite, quartz-magnetite-grunerite schist

4.4 MINERAL RESOURCES

Koraput, a district in the state of Odisha, India, is rich in mineral resources. Some of the key minerals found in Koraput include:

- **Bauxite:** The district has acquired a distinct place in the global mineral map for its vast reserve of bauxite, the ore for aluminium. Bauxite occurs as duricrust on a number of khondalite, charnockite plateaus/tableland namely Panchpatmalli, maliparbat, Pottangi, Karnapadikonda, Kodingamali and Ballada, medium and small plateaux like Hatimali, Gusuramali, Ramagarh, Chemamali, Sargighatimali, Karki, Khurji, Barhapadar, Kaurikhala, Geruput, etc. bauxite, mainly aluminous mineral is Gibbsite. Panchpatmalli plateau is the longest stretches over 21km and average width of 2.5km which is the longest in the Asia, where large scale bauxite mining is being carried out by giant- aluminium Central Govt PSU, NALCO. Besides there are other working bauxite mines i.e. Kodingamali, Maliparbat in the district.

- **Limestone:** Limestone is the second most important mineral after bauxite, Occurrences of large cement and flux grade limestone deposits have been reported from Ampavalley (igneous variety) of excellent quality (cement grade) average CaO content are 45-50%, Binsuli (sedimentary variety) are 45-50% and Gupteswar, Dumajodi-Kondajodi, Siribeda (stromatolitic Limestone- Organo-sedimentary type) are 45-50% respectively. Apart from these minor occurrences of limestone and lime kankar are found in the district.
- **Manganese:** Important manganese occurs found as pockets near Devajholla, Podaguda, Khalkona, Konapai, Pukkiti, Dumuriput and Kutinga villages.
- **Ochre**: Minor deposits of red Ochre in the host rock of charnockites near Machhkund, Lula and Addumanda reported similarly yellow ochre near Boipariguda.
- **Quartzite**: Quartzite containing SiO2 between 95% to 98.5% have been reported from Dalapur, Kamahandi, Baghachuan, Pandrichintalu and Bangariguda village areas.
- **China clay**: Large and small sized deposits of China clay of inferior quality have been reported in the district. Highly siliceous China clay occurs near Demasaguda, Bondosal, Sorispadar, Pandrimati and Jorahiguda villages. Kaolin verities has been reported in the Boipariguda, Oduguda, Musoriguda. Fireclay has been noticed in Deodar. The clay is used by the locals for manufacture of roofing, paving tile, flower pots, vases, etc.
- **Mica:** Mica deposits have been reported from Limca, Dabugura, Kudamandi and Kanapadar village areas.
- **Graphite**: Occurrences of amorphous and disseminated graphite have been reported from Raishila village.
- **Gold**: Field evidences gathered so far arouse hope for future prospects of gold near villages Bathiguda, Pandiguda and Malayguda in Kolab river catchment area.
- **Semi-precious stone**: stray Occurrence of cat's eye, moonstone has been reported near Turia and Lula villages indicate possibility of gem tract in the district.
- **Dimension and decorative Stones**: The district has a substantial reserve and has potential for exploitation of dimension and decorative stones.
    - **Dolerites**- Girigaon, Santoshpur, Bichalkuta
    - **Augen gneiss** -Marichmal, Charanguli, Telar, Burja, Laxmipur, Kusumguda
    - **Pink granite** –Binesuar

CHAPTER-V

5.1 DRAINAGE AND IRRIGATION PATTERN OF THE DISTRICT:

The drainage of the district is mainly controlled by rivers like Indravati, Kolab & Machhkund having majorly dendritic pattern to sub-parallel. Valleys, Waterfalls, Floodplains, Terraces, Meanders and Oxbow lakes are the landforms developed on the courses of the river in the area. Indravati, Kolab and Machhkund river forming the source for drainage and irrigation system has shaped by its geography and climate of the district.

Drainage Pattern: The district is drained by several rivers, including Kolab River, Machhakund River, Indravati River and their numerous tributaries smaller streams and rivulets feed into these main rivers. River shows a large area of watersheds in the district, several watersheds, including the Indravati, Kolab, and Machhakund watersheds.

Irrigation Pattern:

1. Major Irrigation Projects: Machhakund Hydro Electric Project, Kolab Dam Project, Narayanpatna Irrigation Project, Sagada Irrigation Project
2. Medium Irrigation Projects: Bagra Irrigation Project, Dandabadi Irrigation Project, Nandapur Irrigation Project
3. Minor Irrigation: Lift irrigation schemes, Tube wells, Check dams
4. Water Harvesting Structures: Water Tanks, Reservoirs

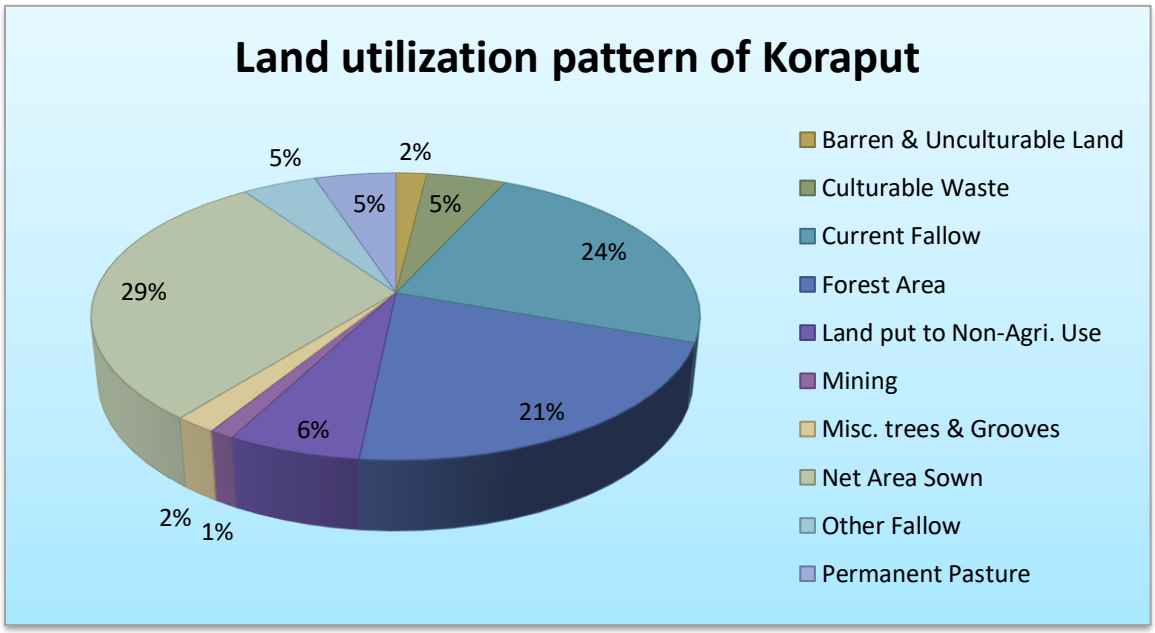
CHAPTER-VI

LAND UTILISATION PATTERN

The Agro-Climatic Zone, Land utilization pattern of Koraput district is as follows:

Table-13

Sl No	Land use	Area in '000Ha
1	Forest Area	188
2	Misc. trees & Grooves	17
3	Permanent Pasture	45
4	Culturable Waste	44
5	Land put to Non-Agri. Use	54
6	Barren & Unculturable Land	17
7	Current Fallow	210
8	Other Fallow	41
9	Net Area Sown	263
10	Mining	10



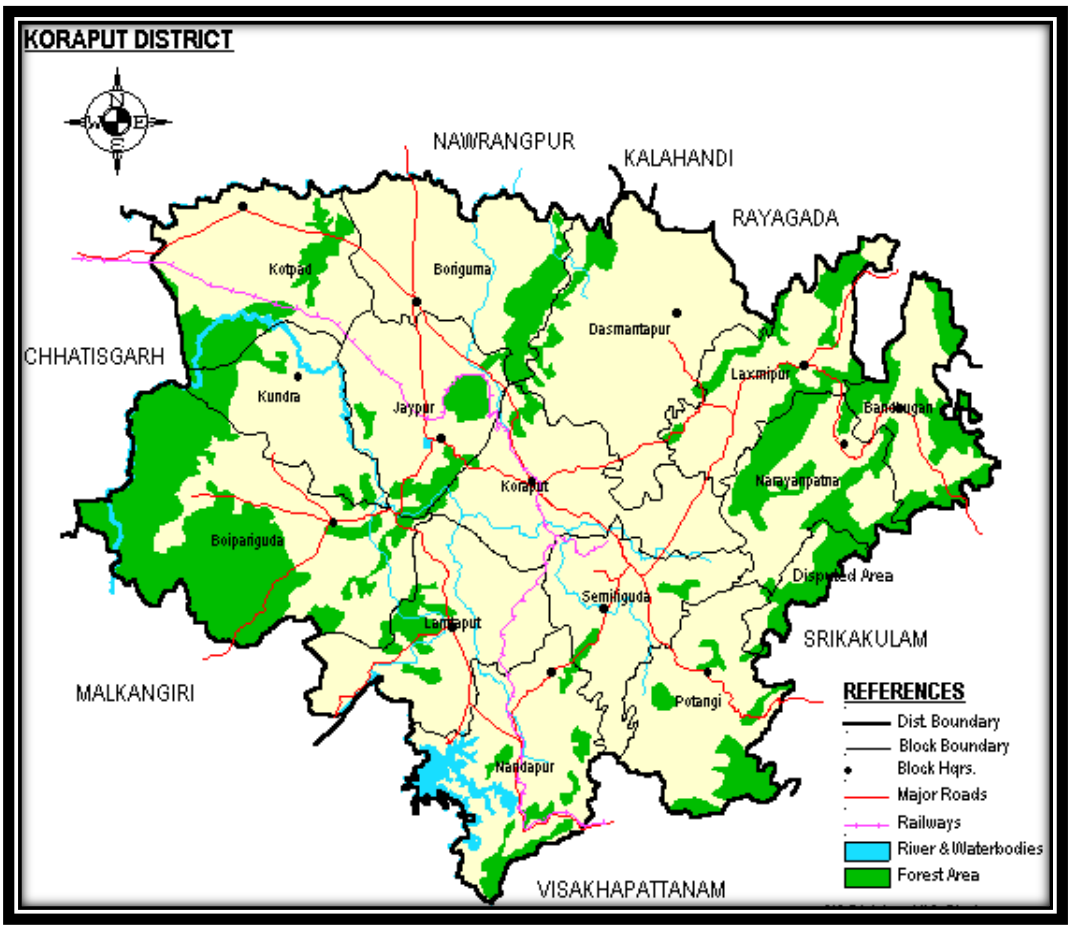
6.1 FOREST PROFILE OF THE DISTRICT:

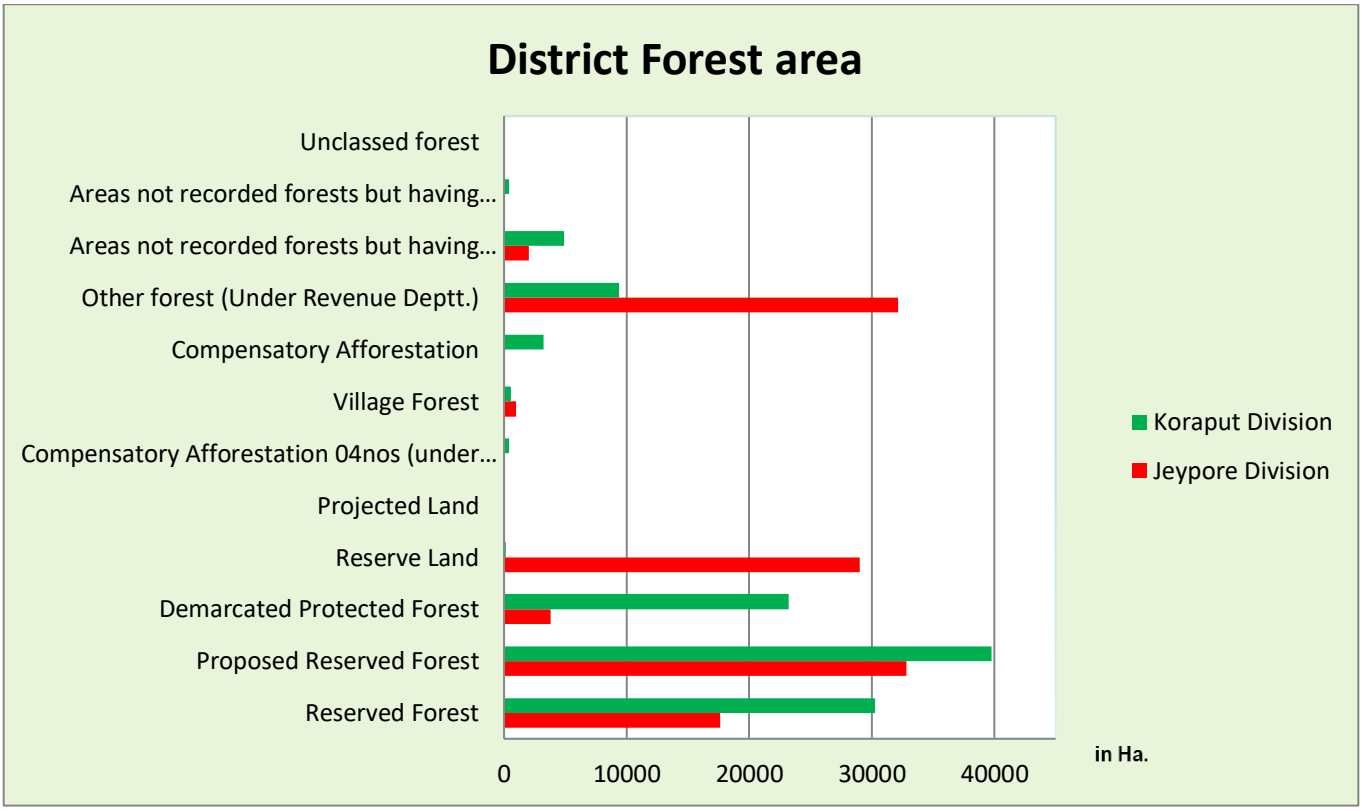
Koraput district in Odisha, is known for its lush forests, provides products of Timber (sal, teak, kendu), Non-Timber Forest Products (NTFPs): kendu leaves, mahua flowers, etc.and Medicinal plants. Forest covering area of approximately 1,88,000 ha, Types of Forest in the district are Tropical Deciduous Forests, Tropical Evergreen Forests, Moist Deciduous Forests, Sal (Shorea robusta) Forests.

The district with its two Forest divisions namely Koraput Forest Division, Jeypore Forest together, these divisions encompass a total of 12 ranges, each contributing to the rich biodiversity and ecological health of the area. The forests play a crucial role in supporting local wildlife, protecting watersheds, and providing resources for the community. Details as below:

Table-14

Status	Total Area in Ha (Jeypore division)	Total Area in Ha (Koraput division)
Reserved Forest	17608.4354	30251.2037
Proposed Reserved Forest	32853.2425	39779.1841
Demarcated Protected Forest	3786.7214	23232.7944
Reserve Land	29002.4208	151.8100
Projected Land	NIL	33.3700
Compensatory Afforestation 04nos (under Sec 32)	NIL	415.9905
Village Forest	1001.96	558.1600
Compensatory Afforestation	22.085	3203.8540
Other forest (Under Revenue Deptt.)	32137.24	9403.9700
Areas not recorded forests but having characteristics of forest (Govt)	2005.00	4901.2700
Areas not recorded forests but having characteristics of forest (Pvt.)	16.371	388.8400
Unclassed forest	-	40.11


KORAPUT DISTRICT
NAWRANGPUR
KALAHANDI
RAYAGADA
CHHATISGARH
MALKANGIRI
SRIKAKULAM
VISAKHAPATTANAM
Kotpad
Boriguma
Dasmantapur
Kundra
Jaypur
Laxmipur
Koraput
Narayanpatna
Boipariguda
Semiliguda
Lamtaput
Potangi
Nandapur
REFERENCES
Dist Boundary
Block Boundary
Block Hqrs.
Major Roads
Railways
River & Waterbodies
Forest Area


District Forest area
Unclassed forest
Areas not recorded forests but having...
Areas not recorded forests but having...
Other forest (Under Revenue Deptt.)
Compensatory Afforestation
Village Forest
Compensatory Afforestation 04nos (under...
Projected Land
Reserve Land
Demarcated Protected Forest
Proposed Reserved Forest
Reserved Forest
0
10000
20000
30000
40000
in Ha.
Koraput Division
Jeypore Division

6.2 AGRICULTURE PROFILE OF THE DISTRICT:

Agriculture is yearlong practice for living till day, with due time human developed new ideas and technique on it for yielding. Koraput is one of the agricultural districts in the state, with various farming practices were adopted for better production as extensive farming, mixed farming, shifting agriculture, plantation farming, crop rotation, terrace agriculture, dairy farming, commercial farming apart Koraput is well known for its organic farming. Details as below:

Table-15

Sl. No.	Items	Koraput Agriculture District (Eastern ghat high land)	Jeypore Agriculture District (South Eastern ghat)	Koraput Revenue District
01	Climate	Warm & Humid	Warm & Humid	Warm & Humid
02	Mean Annual Rain Fall (mm)	1521	1710	1567
03	Mean Max. Summer Temp.	34.1°C	34.1°C	34.1°C
04	Mean Min Winter Temp.	7.5°C	13.2°C	10.4°C
05	Soil Type	Lateritic Soil, mostly red with sufficient organic matter content	Red, Red & Yellow mixed soil with adequate organic matter content	Red, Red & Yellow mixed soil with adequate organic matter content

Table-16

	District Agricultural area		Land Use (Fig in '000' ha)
1.	**Geographical Area**		8,81,000
2.	**Cultivable area**		301500
3.	**Cultivated Area**		
		High	1,85,540
		Medium	78,530
		Low	33,480
		Total	**297550**
4	**Paddy Area (Kharif): -**		
		High	17627
		Medium	34893
		Low	33480
		Total	86000

5	**Cropping Intensity**		
		Year	**Cropping Intensity (%)**
		2019-20	126.54
		2020-21	127.17
		2021-22	127.24
		2022-23	127.24
		2023-24	127.50
6	**Irrigation Potential**		
		Kharif	136919
		Rabi	77006
7	**Total nos. of GPs**		
		Total number of GP	240
		Village	2028
		NAC	1 (Kotpad)
		Municipality	3 (Koraput, Jeypore & Sunabeda)
8	**Major Crops**		
		Kharif	Paddy, Ragi, Maize, Niger, Vegetables
		Rabi	Paddy, Vegetables, Sugarcane

Farmer Category in the district

1. Large Farmers (>10ha) : 494 nos (0.29%)
2. Medium Farmers (4- 10ha) : 4596 nos (2.75%)
3. Semi Medium Farmers (2-4ha) : 22830 nos (13.7%)
4. Marginal Farmers (<1ha) : 85071 nos (32.2%)
5. Small Farmers (1-2ha) : 53743 nos (32.2%)
6. Landless : 290626 nos
7. Average size of holding : 1.77ha
8. Fertiliser consumption : During 2021-22, the total fertilizers used in the district was about 5,350m.T.

Quantity of consumption of various fertilizers are as below;

Table-17

Type of fertilizer	Nitrogenous	Phosphatic	Potassic	Total	Consumption Kg/per Ha
Quantity in mT	14,220	7,710	3,560	25,490	75.35

6.3 HORTICULTURE PROFILE OF THE DISTRICT:

The primary objective of the Horticulture Department is to enhance the production and productivity of major fruits, such as mangoes, guavas, and citrus, which are widely cultivated in the district. Additionally, the department aims to support the overall development of the local farming community. The Deputy Director of Horticulture serves as the head of the office. The horticulture statistics for the district is shown in subsequent tables below:

Table-18

Sl No	Year	Fruit plantation (Area in ha /Nos)																
		Mango Normal	Cashew	Mango High Density	Banana TC	Papaya	Litchi	Pine Apple	Pomegranate	Amla	Mixed Fruit	Guava	K. Lime	Black pepper	Apple	Orange	Tamarind	Name of scheme
1	2019 - 20	200		5	5.12	2.5	11	10.6	11.5									
		767.9																MGNREGA
			640.6															Cashew Raftaar
										30								Ayush Mission
											39.6							Adarsh Bagitcha
														12.9				RKVY
		2000																State plan insubsidy
2	2020-21										200							Agro Forestry
		429.2	501.9															MGNREGA
											64.8							Adarsh Bagitcha
																		Mission shakti
																		APC
		200			1													MIDH (NHM)

3	2021-22	234.5	281															MGNREGA
		100			3.2	6												MIDH (NHM)
											26600							State plan
4	2022-23	590.8					29.2				76.2	27	11					MGNREGA
		150			10												10	MIDH (NHM)
											69800							State plan
5	2023-24	462.4					69.6					21	41		12	10		MGNREGA
		150			10				2								10	MIDH (NHM)
																		State plan
											57620							

Table-19

Sl No	Year	Perennial crop cultivation (Lemon Grass)	Vegetables (Area in ha)		(Area in ha)		Name of scheme
			Hybrid vegetable	Mushroom	Cut flowers	Loose Flower	
1	2019 - 20	-	100	0.1	1	10	MIDH (NHM)
2	2020-21	93					MGNREGA
			240	120			Mission shakti
			600				APC
			150	25	1	10	MIDH (NHM)
3	2021-22	97					MGNREGA
4	2022-23	83					MGNREGA
			400				State plan
5	2023-24						MGNREGA
		9	300	1	6.45	6.5	MIDH (NHM)
			250				State plan

7. DETAILS OF MINING LEASE/ QUARRY LEASES/ QUARRY PERMIT):

List of Operational sources : Annexure -I (A)

List of Non-operational sources : Annexure -I (B)

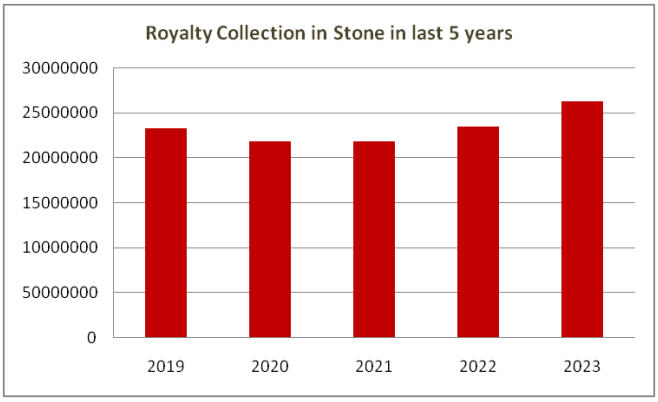
List of New sources : Annexure -I (C)

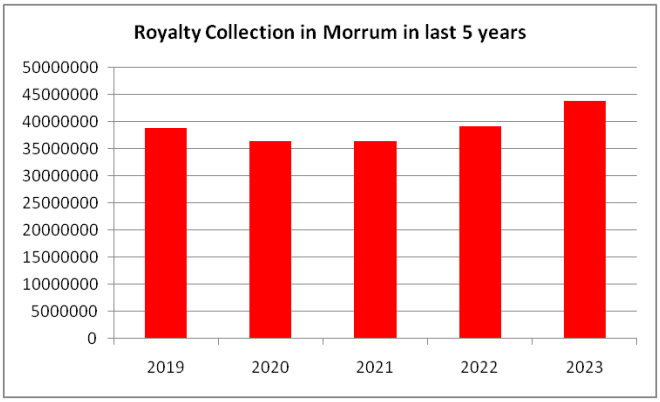
8. DETAILS OF ROYALTY COLLECTED IN LAST 5 YEARS (IN RS):

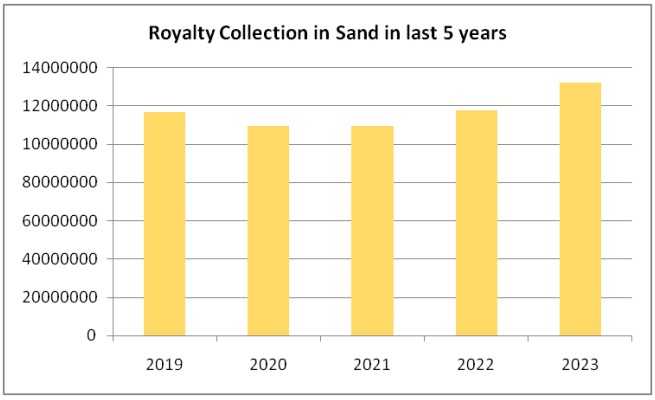
Details of Royalty Collected from Minor Minerals (in Rs) in last Five year as below:

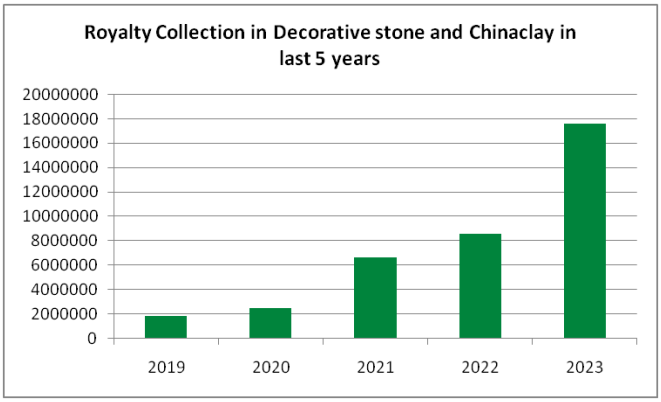
Table-20

Minor Minerals	2019-20	2020-21	2021-22	2022-23	2023-24
Stone	23,30,20,337.00	21,88,80,071.00	21,90,25,675.00	23,49,33,843.00	26,34,41,650.00
Sand	11,65,10,169.00	10,94,40035.00	10,95,12,837.00	11,74,66,921.00	13,17,08,250.00
Morrum	3,88,36,723.00	3,64,80,012.00	3,65,04,279.00	3,91,55,640.00	4,39,02,750.00









Details of Royalty Collected from Specified Minor Minerals (in Rs): Year wise collection for Decorative Stone & China clay.

Table-21

Specified Minor Minerals	2019-20	2020-21	2021-22	2022-23	2023-24
Decorative Stone & China clay	18,89,211.00	25,22,671.00	66,45,265.00	85,70,491.00	1,75,97,241.00

9. DETAILS OF PRODUCTION IN LAST 5 YEARS (IN RS):

Details of production for different Minor Minerals of last five years is given below:

Table-22

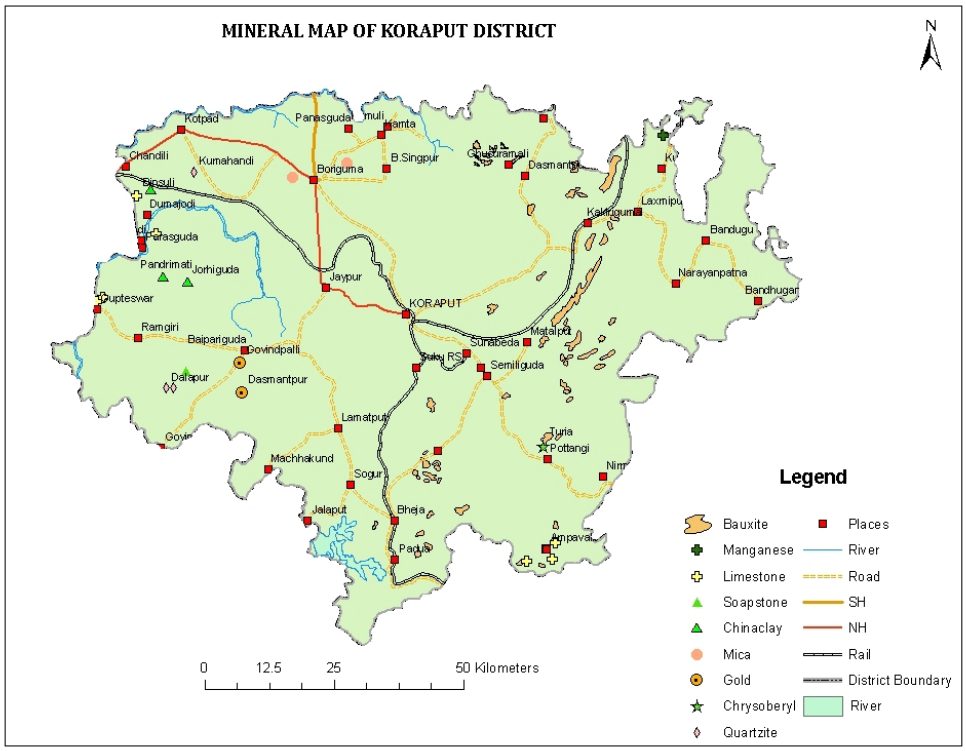
Minor Minerals	2019-20	2020-21	2021-22	2022-23	2023-24
Stone	1,20,526 Cum	1,18,017 Cum	1,18,213 Cum	1,20,890 Cum	1,45,617 Cum
Sand	16,463 Cum	15,711 Cum	15,619 Cum	16,669 Cum	18,331 Cum
Morrum	7,382 Cum	7,057 Cum	7,161 Cum	7,744 Cum	8,487 Cum

Details of Production of Specified Minor Minerals: Year wise Production in cum for Decorative Stone & China clay.

Table-23

Specified Minor Minerals	2019-20	2020-21	2021-22	2022-23	2023-24
Decorative Stone & China clay	147.628 Cum	640.068 Cum	2162.722 Cum	3290.423 Cum	4830.829 Cum

10. MINERAL MAP OF THE DISTRICT:



11. LIST OF LETTER OF INTENT (LOI) HOLDERS IN THE DISTRICT ALONG WITH ITS VALIDITY

Nil

12. TOTAL MINERAL RESERVE AVAILABLE IN THE DISTRICT

Total mineral reserve of Morrum was access after detail study or grant of potential area, which may investigate as per details below.

(i) Blocks were identified based on geological studies through field observation.

(ii) Mineable resource was calculated by considering detail prospecting.

(iii) Area calculated as per GPS co-ordinates and information obtained from local people. Land detail need to be verified from revenue record.

(iv) Since this is an interim report, as per the present requirement of minerals, more such blocks need to be identified and the data should be updated periodically, after certain intervals to update the data bank of DSR.

Summary of Identified Mineral Potential: Annexure- I

13. QUALITY/GRADE OF MINERAL AVAILABLE IN THE DISTRICT

Morrum and ordinary earth of the district is very much suitable for making of various construction purposes. Good quality of morrum derived from laterite.

14. USE OF MINERAL:

Morrum is mainly used in the district for road construction and the creation of pavements, where its unique properties provide essential support and durability. Additionally, morrum serves as an effective filling material in various construction activities, helping to enhance stability and drainage. Its versatility makes morrum a valuable resource in supporting the district's infrastructure development.

15. DEMAND AND SUPPLY OF THE MINERAL IN THE LAST THREEYEARS:

As such there are huge infrastructural activities such as road, building, railways are coming up by Govt. of India & PSUs under “Make in India” programme. It is proposed to start

the Morrum production for fulfill the Requirement of the District which will enhance the revenue of the district and also support the livelihood of the local people.

Details of Demand and Supply of Minor Minerals for last three years as received from R&B Division, Koraput is furnished below:

Table-24

Sl. No.	Mineral Type	2021-22		2022-23		2023-24	
		Demand	Supply	Demand	Supply	Demand	Supply
1	Sand	109073.28	109073.28	18760.45	18760.45	64769.11	64769.11
2	Morrum	-	-	227912.00	227912.00	475000.00	475000.00
3	Building Stone	50819.49	50819.49	345225.70	345225.70	731444.40	731444.40
4	Laterite	-	-	-	-	-	-
5	Ordinary Earth	-	-	683737.00	683737.00	1425000	1425000

16. MAP OF EXISTING MINING LEASES IN THE DISTRICT:

Plate-I

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

Annexure-II

18. DETAILS OF EXTENTED ECO-SENSITIVE ZONE, IF ANY, IN THEDISTRICT:

Eco sensitive zone of Gupteswar Bio-heritage Site- 350.00 Ha is located within the district.

19. CURRENT PER CAPITA POWER CONSUMPTION PER MONTH/ANNUM:

Per Capita Consumption (Units) in Koraput District for the FY 2023-24

- Annually Consumption : 329 Units
- Monthly Consumption : 27.42 units

20. IMPACT OF MINING ON ENVIRONMENT ATTRIBUTED TO MINING ACTIVITIES: -

Generally, the impact of mining activities on environment can be categorized as either primary or secondary. Primary Impacts are those, which are caused directly during operation of various existing projects. Secondary impacts are induced by expansion of project area,

enhancement in production or addition of ancillary units by the project proponents themselves or dependent secondary and tertiary units.

- **Impact on Ambient Air Quality:** Mining operation in the district is carried out mostly by opencast semi-mechanized /mechanized methods and rarely by manual methods generating huge volume of dust particles. Such generation is the result of various activities like blasting, excavation and loading by heavy machineries (power shovels, surface miners, haul packs etc.), processing off minerals in crushers, coal handling plants and transportation by large dumpers and trucks. The air quality in the mining areas depends upon the nature and concentration of emissions and meteorological conditions. The major air pollutants due to mining activities include: -

  i. Suspended Particulate matter (dust) of various sizes.
  ii. Gases, such as Sulphur dioxide, oxides of nitrogen, carbon monoxide etc. emitted from heavy mining machineries.
  iii. Waste and mineral transporting vehicles.

  Transpiration sources of air pollutants include heavy vehicles used in excavation operations, cars that transport personnel at the mining site, and trucks that transport mining materials. The level of polluting emissions from these sources depends on the fuel and conditions of the equipment. Even though individual emissions can be relatively small, collectively these emissions can be of real concern. In addition, mobile sources are a major source of particulate matter, carbon monoxide, and volatile organic compounds that contribute significantly to the formation of ground-level ozone. The main gaseous emissions are from combustion of fuels in power generation installations, and drying, roasting, and smelting operations. Many producers of precious metals smelt metal on-site, prior to shipping to off-site refineries. Typically, gold and silver are produced in melting/fluxing furnaces that may produce elevated levels of airborne mercury, arsenic, sulfur dioxide, and other metals. Common sources of fugitive emissions include: storage and handling of materials; mine processing; fugitive dust, blasting, construction activities, and roadways associated with mining activities; leach pads, and tailing piles and ponds; and waste rock piles. Sources and characteristics of fugitive emissions dust in mining operations vary in each case, as do their impacts. Impacts are difficult to predict and calculate but should be considered since they could be a significant source of hazardous air pollutants.

- **Impact on Water Quality:** Sometimes, mining particularly in underground operations lead to interception with the water table causing lowering of ground water table may leads to Groundwater Contamination: Mining activities (Mine tailings and waste rock, Processing plant effluent, Leaks from mines and pipelines, Abandoned mines) compromise aquifer quality. Due to the interference with surface water sources like river, nallah etc. and the entire drainage system downstream of the area is adversely affected. Leaching and Sedimentation leads to mining waste and runoff harms to aquatic habitats. Oil, grease and other lubricants are also carried by surface run off to natural water courses polluting water quality. Acid mine drainage is considered one of mining most serious threats to water resources. A mine with acid mine drainage has the potential for long-term devastating impacts on rivers, streams and aquatic life. If mine waste is acid generating, the impacts to fish, animals and plants can be severe. Many streams impacted by acid mine drainage have a pH value of 4 or lower – similar to battery acid. Plants, animals, and fish are unlikely to survive in streams.
- **Impact on Noise Level:** Noise pollution is mainly caused due to Blast vibrations, operation of heavy machineries (drilling, excavation, and haulage), Crushing-processing plant noise and plying of Transport and logistics noise. Noise may impact on quality of Life, human health and wildlife can disrupts their communication, migration, and habitats. Vibrations are associated with many types of equipment used in mining operations, but blasting is considered the major source. Vibration has affected the stability of infrastructures, buildings, and homes of people living near large-scale open-pit mining operations. According to a study commissioned by the European Union in 2000: "Shocks and vibrations as a result of blasting in connection with mining can lead to noise, dust and collapse of structures in surrounding inhabited areas. The animal life, on which the local population may depend, might also be disturbed."
- **Land degradation:** Since winning of minerals involves huge volume of excavation of earth's surface, land degradation cannot be dispensed with. Similarly, dumping of solid waste also creates problem. But lots of remedial measures are in the statute to prevent such degradation.
- **Impact on Flora & Fauna:** Impact on biodiversity is difficult to quantify because of its diverse and dynamic characteristics. Mining activities in forest area also cause deforestation,

land degradation, water, air and noise pollution which directly or indirectly affect the fauna and flora status of the project area and its ambience.

21. REMEDIAL MEASURES TO MITIGATE THE IMPACT OF MINING ON THE ENVIRONMENT-

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:

- Water spraying on haul roads, service roads and overburden dumps.
- Proper and regular maintenance of mining equipments.
- Transports of materials in trucks are to be covered with tarpaulin.
- The mine pit water, if any can be utilized for dust suppression in and around mines area.
- Information on wind direction and meteorological factors are to be considered during planning, so that pollutants, which cannot be fully suppressed by engineering techniques, can be prevented from reaching the nearby human habitat.
- Comprehensive greenbelt around overburden dumps and periphery of the mining projects/clusters has to be developed and monitored to reduce to fugitive dust transmission from the project.
- Compaction of terraces, coirmat, geotextiling along dump slopes followed by plantation.

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, if required.
- Retaining walls with weep hole are to be constructed around the mine boundaries to arrest silt wash off in case of big quarries.
- The mined-out pits can be converted in to the water reservoir after reaching ultimate pit limit. This will help in recharging ground water table by acting as a water harvesting structure with Mine design and planning.

- Water treatment and monitoring in Periodic basis of mine pit water and ground water quality in nearby villages are to be undertaken.
- Domestic sewage from site office & urinals/latrines, if any provided within ML/QL areas is to be discharged in septic tank followed by soak pits.
- Regular Environmental impact assessments.
- Rehabilitation and reclamation are both processes that can be used to restore mined land
- Proper Regulation and enforcement of mines.

Noise:

- Machinery maintenance and upgrade; Periodic maintenance of machineries, equipment shall be ensured to keep the noise generated within acceptable limit also maintaining Blast optimization and scheduling
- Noise monitoring and modeling; Development of thick green belt around mining/cluster area, avenue plantation along haul roads to reduce the noise.
- Conducting periodical medical checkup of all workers for any noise related health problems.
- Proper training to personnel to create awareness about adverse noise related effects.
- Sound barriers and enclosures; Periodic noise monitoring at locations within the mining area and nearby habitations are to be undertaken for big QL areas to assess efficacy of adopted control measures.
- Community engagement and noise management plans to been trained.

Biological Environment

- Development of greenbelt/gap filling saplings in the safety barrier left around the quarry area/ cluster area, if the safety zone areas are barren.
- Carrying out thick greenbelt with local flora species predominantly with long canopy laves on the inactive mined out upper benches.
- Development of dense polyculture 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.

22. RECLAMATION OF MINED OUT AREA: -

As per statute, all mines/quarries are to be properly reclaimed before final closure of the mine. Reclamation of exhausted mines are planned to be undertaken in three possible means depicted below;

1. If, substantial quantity of waste is there, the exhausted quarry can be fully or partly backfilled using the stored waste. The backfilled areas are to be brought under plantation of local species.
2. If the generation of waste is much less as in the case of minor mineral mining, the exhausted quarries can be reclaimed by
   a. Plantation on the broken-up surface if the depth of quarry is not much below the surrounding surface level.
   b. Conversion to water reservoir after stabilization of the slopes if the exhausted quarry continues much below the surrounding surface level. It is preferred to cordon the water reservoir either through wire fencing or retaining wall with plantation from the safety point of view.

Most of the quarry/mining lease areas are yet to be exhausted from ore point of view. Hence, reclamation would be taken up only after exhaustion of the ore/mineral content from these areas. The exhausted minor mineral quarries of the district have been converted to water reservoirs.

23. RISK ASSESSMENT & DISASTER MANAGEMENT PLAN:

The risk relating to mining of minor mineral except natural calamities is slope failure and probable accidents due to high and ill maintained bench walls. This can only be addressed through making of regular benches and undertaking mining in benching pattern. The disaster management plan (DMP) is supposed be a dynamic, changing, document focusing on continual improvement of emergency response planning and arrangements.

The disaster management plan is to be aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and savage operations in this same order of priorities. For effective implementation of the disaster management plan, it should

be widely circulated through rehearsal/induction conducted by the respective department from time to time.

24. GENERAL RESPONSIBILITIES OF EMPLOYEES' DURING AN EMERGENCY:

During an emergency, it becomes more enhanced and pronounced when an emergency warning is raised, the worker in-charge should adopt safe and emergency shut down and attend to any prescribed duty. If no such responsibility is assigned, the workers should adopt a safe course to assemble at a specified point and wait for instructions. He should not resort to spread panic. On the other hand, he must assist emergency personnel for the objectives of DMP.

The mine manager who is responsible for emergency will always keep a vehicle ready at site. In case of any eventuality, the victim will be taken to the nearby hospitals after carrying out the first aid at the site. The manager should collect and have adequate information of the nearby hospitals, fire station, police station, village panchayat heads, taxi stands, medical shops, district revenue authorities etc. and use them efficiently during the case of emergency.

25. DETAILS OF THE OCCUPATIONAL HEALTH ISSUES IN THE DISTRICT: -

As per the guidelines of the Mines Rules 1955, occupational health safety has been stipulated by the ILO/WHO. The proponents will take necessary precautions to fulfil the stipulations. Normal sanitary facilities have to be provided within the lease area. The management will carry out periodic health checkup of workers.

Occupational hazards involved in mines are related to dust pollution, noise pollution, blasting and injuries from moving machineries & equipment and fall from high places. Directorate General Mines Safety (DGMS) has given necessary guidelines for safety against these occupational hazards. The management has to strictly follow these guidelines. All necessary first aid and medical facilities are to be provided to the workers. The mines shall be well equipped with personal protective equipment (PPE). Further, all the necessary ported equipments such as helmet, safety goggles, earplugs, earmuffs etc. are to be provided to mine workers as per mines Rules. All operators' and mechanics are to be trained to handle firefighting equipments.

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

As most of the minor mineral mines/quarries of the district are yet to be exhausted of their mineral content, reclamation measures have to be undertaken gap plantation of local species in the peripheral safety zones of the quarries/ clusters and in some of the haul roads.

27. CONCLUSION

The District Survey Report for ***Morrum and ordinary earth (Minor Mineral)*** in respect of Koraput District prepared in accordance with Appendix-X, Para-7(iii)(a) of S.O. 3611(E) dt. 25.07.2018 of Ministry of Environment, Forest and Climate Change, New Delhi, Enforcement & Monitoring Guideline for Sand Mining-2020 and in compliance with the orders of Hon'ble Supreme Court dt. 10.11.2021 in connection with C.A Nos. 3661-3662 of 2020. This report provides information on the development and planning of the district gathered from various government departments, i.e., Irrigation department, Forest department, Public works department, Revenue department, Water Resource department, ORSAC, and Mining department.

Koraput district in last few years has been a hotspot for overall developmental work to improve quality of living of southern Odisha people. Looking into the booming developmental works in Koraput and nearby districts, and to bridge the gap of demand and supply of minor minerals, for such developmental projects, utmost care has been taken up to prepared a compressive District Survey report for Morrum and Ordinary earth which will valid for next five years. The report endures an overview of the district's sufficient mineral resources, geological structure, environmental protection, ecological setup, community involvement, and regulatory compliance. Other measures include planning, monitoring of mined material and its transportation, and putting a stop to illegal mining and material sales. DSR will aid for revenue collection of the district as well as the state by means of carving out potential auctionable minor mineral sources in the district.

ANNEXURE-I (A)

LIST OF OPERATIONAL MORRUM SOURCES, KORAPUT DISTRICT

SL NO	TAHASIL	NAME OF SOURCE	VILLAGE	LAND SCHEDULE		TOTAL AREA IN Ha	LEASE AREA IN Ha	NAME OF LESSEE	ADDRESS & CONTACT NO	DATE OF REGISTRATION OF LEASE DEED	NO. & DATE OF ENVIRONMENT CLEARANCE	LONGITUDE			LATITUDE			GEOLOGI-CAL RESERVE IN cum	MINABLE RESERVE IN cum
				KHATA NO	PLOT NO							D	M	S	D	M	S		
KORAPUT SUB-DIVISION																			
1	MACHKUND	CHICKENPUT-1 MORRUM QUARRY	CHIKENPUT	14	6	15.742	0.808	SHARMILA MAHALLICK	AT/PO-BRAHAMIPUT, LAMTAPUT, KORAPUT	05.05.2021 TO 04.05.2026	917/ SEIAA	82	27	49.14	18	33	12.42	168608	84899
2	NANDAPUR	GOLLUR MORRUM QUARRY	GOLLUR	103	215	15.993	0.404	SANTOSH KUMAR SAHOO	AT- D.P CAMP, KULABIR, PS-NANDAPUR, DIST.- KORAPUT	30.03.2021 TO 29.03.2026	10059/ SEIAA	82	42	25.08	18	19	48.41	35834	15824
3	POTTANGI	OLAPARU MURROM QUARRY-A	OLAPARU	25	200	4.978	4.978	BEKEM INFRA LTD	KALAKATHIYA HILL, MADHAPUR, HYDERABAD, 500081	30.11.2022 TO 29.11.2027	2150/ SEIAA	83	1	3.82	18	23	35.02	676440	14658
4	POTTANGI	OLAPARU MURROM QUARRY-B	OLAPARU	25	241	4.978	1.700	BEKEM INFRA LTD	KALAKATHIYA HILL, MADHAPUR, HYDERABAD, 500082	30.11.2022 TO 29.11.2028	EC22B001OR153214	83	1	3.42	18	23	31.86	236875	170830
5	POTTANGI	PUKALI MURROM QUARRY-A	PUKALI	186	245	24.767	2.550	BEKEM INFRA LTD	KALAKATHIYA HILL, MADHAPUR, HYDERABAD, 500083		1575/SEIAA	82	54	13.59	18	29	7.6	522973	339502
JEYPORE SUB-DIVISION																			
6	BORIGUMMA	BAMUNIAGUDA MORRUM BED	BAMUNIAGUDA	41	4	3.217	1.991	TAPAN KUMAR BEHERA	SANTOSHI NAGAR, BORIGUMMA	07.09.2021 TO 06.09.2026	592/SEIAA	82	36	33.76	19	8	41.5	247020	158452
7	KOTPAD	HARDOLI MORRUM QUARRY	HORDOLI	334	599	6.677	0.809	M/S RAJALAXMI CONT.	PLOT NO.2273 1ST FLOOR, NEW INDUSTRIAL ESTATE, JAGATPUR, CUTTACK-754021	29.04.2024 TO 28.10.2024	EC24B001OR152175	82	21	44.04	19	6	0.48	189800	64940
8	KOTPAD	GIRLA MORRUM QUARRY	GIRLA	476	1650	2.830	0.299	TUSHAR BISOI	DULPUR STREET AT/PO-KOTPAD DIST-KORAPUT	16.05.2023 TO 15.05.2028	10390/SEIAA	82	2	42.06	19	9	26.56	38400	16320
9	KOTPAD	PHUPUGAM MORRUM QUARRY	PHUPUGAM	364	376	6.670	0.809	M/S RAJALAXMI CONT.	PLOT NO.2273 1ST FLOOR, NEW	19.03.2021 TO 18.03.2026	9945./SEIAA	82	22	17.57	19	3	24.69	42400	25350

									INDUSTRIAL ESTATE, JAGATPUR, CUTTACK-754021										

N.B: The Geological resource and Minable reserve is as per approved mining plan by Authorized officers.

ANNEXURE-I (B)

LIST OF NON- OPERATIONAL MORRUM SOURCES, KORAPUT DISTRICT

SL NO	TAHASIL	NAME OF SOURCE	VILLAGE	LAND SCHEDULE		AREA IN HA	PROPOSED AREA IN HA	LONGITUDE			LATITUDE			GEOLOGICAL RESERVE IN CUM	MINABLE RESERVE IN CUM
				KHATA NO	PLOT NO			D	M	S	D	M	S		
KORAPUT SUB-DIVISION															
1	KORAPUT	AMBAGAON MORRUM QUARRY	AMBAGAON	103	500	2.024	2.024	82	56	0.6	18	46	33.7	384832	248611
2	KORAPUT	BAGEIPADAR MORRUM QUARRY	BAGEIPADAR	63	382	0.976	0.976	82	38	18.2	18	50	11	102000	67599
3	KORAPUT	CHINDIRI MORRUM QUARRY-A	CHINDIRI	205	701/1	1.215	1.215	82	43	35	18	48	58.2	149787	96644
4	KORAPUT	CHINDIRI MORRUM QUARRY-B	CHINDIRI	205	233	3.19	3.19	82	45	14	18	49	29.1	297044	202776
5	KORAPUT	DEOGHATI MORRUM QUARRY	DEOGHATI	53	169	3.19	3.19	82	37	46.7	18	49	39.9	411616	307839
6	KORAPUT	DUMRUIPADAR MORRUM QUARRY	DUMURIPADAR	130	87/2	1.506	1.506	82	57	44.3	18	44	41.2	215622	166354
7	KORAPUT	KUMBHA-1(A) MORRUM QUARRY	KUMBHA	127	490	16.256	4.452	82	40	28.8	18	47	9.1	803982	6064
8	KORAPUT	KUMBHA-1(B) MORRUM QUARRY	KUMBHA	127	500(B)	122.95	3.036	82	41	4.1	18	47	19	196308	135552
9	KORAPUT	KURUMULI MORRUM QUARRY	KURUMULI	151	714	18.332	3.237	82	57	25.7	18	44	13.5	848700	611064
10	KORAPUT	PONDI MORRUM QUARRY	PONDI	166	74	2.024	2.024	82	39	6.4	18	46	48.5	425828	305427
11	KORAPUT	PONDI-A MORRUM QUARRY	PONDI	166	70/1	2.024	2.024	82	39	3.8	18	46	47.6	385425	281520
12	NANDAPUR	RUKUBA MORRUM QUARRY	RUKUBA	41	154	6.07028	0.404	82	46	48.49	18	29	49.62	46109	19142
13	NANDAPUR	TUDUKTHUBA MORRUM QUARRY	THUDUKUTHUBA	47	240	4.04686	0.404	82	40	43.26	18	30	41.35	33300	12180
14	NANDAPUR	KULABIR MORRUM QUARRY	KULABIR	44	104	15.8	0.404	82	40	1.89	18	24	4.6	36660	15864
15	MACHKUND	BADIGADO MORRUM QUARRY	BADIGADA	163	450	3.036	0.809	82	27	1	18	33	26.2	89250	50160
16	MACHKUND	DURLA MORRUM QUARRY	DURLA	38	35	20.88	0.546	82	37	25.66	18	39	18.8	33580	18386
17	MACHKUND	KANGRAPADA MORRUM QUARRY	KANGRAPADA	42	11	8.097	0.202	82	33	10.46	18	36	59.02	83790	47061
18	MACHKUND	KUJAMBO MORRUM QUARRY	KUJAMBO	33	172	1.619	0.808	82	28	30.4	18	33	46.3	138724	72704
19	MACHKUND	POTENDA MORRUM QUARRY	POTENDA	19	259	0.68	0.404	82	35	13.18	18	35	34.55	44462	18656
20	MACHKUND	CHICKENPUT-II MORRUM QUARRY	CHICKENPUT	14	6	15.742	0.809	82	27	52.11	18	33	7.89	127336	63291
21	MACHKUND	RANITOTA MORRUM QUARRY	RANITOTA	55	139/1	20.688	1.012	82	33	38.96	18	43	19.26	157376	70294
22	POTTANGI	PUKALI MURROM QUARRY-B	PUKALI	186	1065	14.5282	3.642	82	54	29.88	18	28	47.46	521304	339238
JEYPORE SUB-DIVISION															
23	BORIGUMMA	KANAGAM MORRUM BED	KONAGAON	382	375	6.267	4.046	82	30	50.23	19	4	53.87	463772	319841

N.B: The Geological resource and Minable reserve is as per approved mining plan by Authorized officers.

ANNEXURE-I (C)

LIST OF NEW MORRUM SOURCES, KORAPUT DISTRICT

SL NO	NAME OF THE TAHASIL	NAME OF THE SOURCE	MOUZA	LOCATION OF THE SOURCE			TOTAL AREA IN HA	PROPOSED AREA IN HA	TENTATIVE GEOLOGICAL RESOURCE IN CUM	TENTATIVE MINABLE RESERVE IN CUM	GEO CO-ORDINATES					
				KHATA NO	PLOT NO	KISSAM					LONGITUDE			LATITUDE		
											DEG	MIN	SEC	DEG	MIN	SEC
KORAPUT SUB-DIVISION																
1	DASMANTPUR	ADAPUR MORRUM QUARRY	ADAPUR	58	418	DHODA	12.937	0.809	24270	20629.5	82	43	14.762	18	56	47.28
2	NANDAPUR	TUDUBUTHUBA-A MORRUM QUARRY	TUDUBUTHUBA	47	240	KUPULI	3.642	0.809	24270	20629.5	82	40	45.806	18	30	44.47
3	MACHAKUND-LAMPTAPUT	LUGUM MORRUM QUARRY	LUGUM	93	228	PAHADA	6.434	0.404	12120	10302	82	34	51.92	18	33	51.95
4	MACHAKUND-LAMPTAPUT	SOILPODA MORRUM QUARRY	SOILPODA	76	724	PAHADA	9.194	0.404	12120	10302	82	31	53.31	18	33	45.099
5	POTTANGI	PUKALI MORRUM QUARRY	PUKALI	186	245	PAHADA	24.767	2.023	60690	51586.5	82	54	16.85	18	29	16.39
JEYPORE SUB-DIVISION																
6	BOIPARIGUDA	KANDULGUDA MORRUM QUARRY	KANDULGUDA	156	714	PATHARABANI	3.200	2.000	60000	51000	82	21	14.56	18	48	45.68
7	BOIPARIGUDA	RAMPUR MORRUM QUARRY	RAMPUR	571	1306	PATITA	1.280	1.280	38400	32640	82	22	55.15	18	43	16.35
8	BORIGUMA	BARAGAON MORRUM QUARRY	BARAGAON	136	280	PATITA	0.914	0.914	27420	23307	82	33	54.08	19	11	7.67
9	KOTPAD	PHUPHUGAM-A MORRUM QUARRY	PHUPHUGAM	364	376	PAHADA	6.677	1.214	36420	30957	82	22	15.46	19	3	26.32
10	KUNDRA	GHUMAR MORRUM QUARRY	GHUMAR	497	476	PAHADA	8.100	1.000	45000	38250	82	27	4.93	18	48	4.55
11	KUNDRA	GHUMAR (CHEREKAPUT) MORRUM QUARRY	GHUMAR	497	2873	PAHADA	1.486	1.000	30000	25500	82	29	26.06	18	47	12.62
12	KUNDRA	MAJHIGUDA MORRUM QUARRY	MAJHIGUDA	124	525	PATHARABANI	0.783	0.783	23490	19966.5	82	24	10.11	18	52	28.77
13	KUNDRA	SIUNIGUDA MORRUM QUARRY	SIUNIGUDA	161	1	PATITA	6.560	1.000	30000	25500	82	22	53.96	19	0	40.99

N.B: The Geological resource and Minable reserve is tentative. The final geological resource and mineable reserve will be determined after boundary fixation by DGPS survey and approval of Mining Plan.

ANNEXURE-I (D)

LIST OF NEW ORDINARY EARTH (SOIL) SOURCES, KORAPUT DISTRICT

SL NO	NAME OF THE TAHASIL	NAME OF THE SOURCE	MOUZA	LOCATION OF THE SOURCE			TOTAL AREA IN HA	PROPOSED AREA IN HA	TENTATIVE GEOLOGICAL RESOURCE IN CUM	TENTATIVE MINABLE RESERVE IN CUM	GEO CO-ORDINATES	
				KHATA NO	PLOT NO	KISSAM					LONGITUDE	LATITUDE
KORAPUT SUB-DIVISION												
1	KORAPUT	KERENGA SOIL QUARRY	KERENGA	186	665	PAHADA	73.733	0.404	8080	6868	82°36'42.87203"E	18°47'45.56336"N
2	KORAPUT	KUMBHA-II SOIL QUARRY	KUMBHA	112	321	PAHADA	7.749	0.404	8080	6868	82°43'52.69516"E	18°49'51.90044"N
JEYPORE SUB-DIVISION												
3	BORIGUMA	DULAGUDA SOIL QUARRY	DULAGUDA	94	244	PAHADA	3.561	2.023	40460	34391	82°33'25.72016"E	19°1'37.49058"N
4	BORIGUMA	SANAPINDAPADAR SOIL QUARRY	SANAPINDAPADAR	111	334	BASTI	4.585	1.012	20240	17204	82°33'44.49598"E	19°1'37.61936"N
5	KUNDRA	ATIGAM SOIL QUARRY	ATIGAM	165	399	PAPTITA	23.600	1.000	20000	17000	82°23'45.89496"E	18°59'16.09859"N
6	KUNDRA	BAGDERI SOIL QUARRY	BAGDERI	407	2329	PATHARABANI	7.500	1.000	20000	17000	82°21'17.91946"E	18°58'20.68767"N
7	KUNDRA	GUNDAL-I SOIL QUARRY	GUNDAL	452	251	UNNAT JOJANA JOGYA	3.630	1.000	20000	17000	82°21'2.46616"E	18°51'42.45944"N
8	KUNDRA	GUNDAL-II SOIL QUARRY	GUNDAL	455	2653	PAHADA	3.630	0.805	16100	13685	82°21'27.58478"E	18°50'29.43472"N
9	JEYPORE	BARINIPUT SOIL QUARRY	BARINIPUT	63/694	190/567, 189	DANGAR-II	1.541	1.541	44600	32000	82°36'0.58478"E	18°50'56.172"N

N.B: The Geological resource and Minable reserve is tentative. The final geological resource and mineable reserve will be determined after boundary fixation by DGPS survey and approval of Mining Plan.

SUMMERY OF MORRUM SOURCES OF KORAPUT DISTRICT					
SUB DIVISION	**NAME OF TAHASIL**	**NO OPERATIONAL SOUCRE**	**NO OF NON-OPERATIONAL SOURCES**	**NO OF NEW SOURCES**	**TAHASIL WISE TOTAL STONE SOURCES**
KORAPUT	BANDHUGAON				
	DASMANTPUR			1	1
	KORAPUT		11		11
	LAXMIPUR				
	MACHKUND	1	7	2	10
	NANDAPUR	1	3	1	5
	NARAYANPATNA				
	POTTANGI	3	1	1	5
	SEMILIGUDA				
JEYPORE	BOIPARIGUDA			2	2
	BORIGUMMA	1	1	1	3
	JEYPORE				
	KOTPAD			1	1
	KUNDRA	3		4	7
TOTAL		**9**	**23**	**13**	**45**

SUMMERY OF SOIL SOURCES OF KORAPUT DISTRICT			
SUB DIVISION	**NAME OF TAHASIL**	**NO OF NEW SOURCES**	**TAHASIL WISE TOTAL SOIL SOURCES**
KORAPUT	BANDHUGAON		
	DASMANTPUR		
	KORAPUT	2	2
	LAXMIPUR		
	MACHKUND		
	NANDAPUR		
	NARAYANPATNA		
	POTTANGI		
	SEMILIGUDA		
JEYPORE	BOIPARIGUDA		
	BORIGUMMA	2	2
	JEYPORE	1	1
	KOTPAD		
	KUNDRA	4	4
TOTAL		**9**	**9**

Annexure - II

Cluster & Contiguous Cluster of Morrum details:

CLUSTER NO.	LEASE NO.	VILLAGE	AREA (IN HA)	TOTAL EXCAVATION (TON)	TOTAL MINERAL EXCAVATION (TON)
1	NA	OLAPARU-A	4.98	NA	NA
	NA	OLAPARU-B	1.70	NA	NA
2	NA	PONDI	2.02	NA	NA
	NA	PONDI-A	2.02	NA	NA
3	NA	PHUPUGAM	0.81	NA	NA
	NA	PHUPUGAM-A	1.21	NA	NA

Contiguous Clusters of Morrum:

CONTIGUOUS CLUSTER NO.	CLUSTER NO.	NUMBER OF LEASES IN THE CLUSTER	DISTANCE BETWEEN CLUSTERS	VILLAGE	AREA OF CLUSTER (HA)	TOTAL MINERAL EXCAVATION (TON)
NIL						

Cluster & Contiguous Cluster of Soil details:

CLUSTER NO.	LEASE NO.	VILLAGE	AREA (IN HA)	TOTAL EXCAVATION (TON)	TOTAL MINERAL EXCAVATION (TON)
1	NA	DULAGUDA	2.023	NA	NA
	NA	SANAPINDAPADAR	1.012	NA	NA

Contiguous Clusters of Soil:

CONTIGUOUS CLUSTER NO.	CLUSTER NO.	NUMBER OF LEASES IN THE CLUSTER	DISTANCE BETWEEN CLUSTERS	VILLAGE	AREA OF CLUSTER (HA)	TOTAL MINERAL EXCAVATION (TON)
NIL						

Annexure-III

Transportation Routes for individual leases and leases in cluster

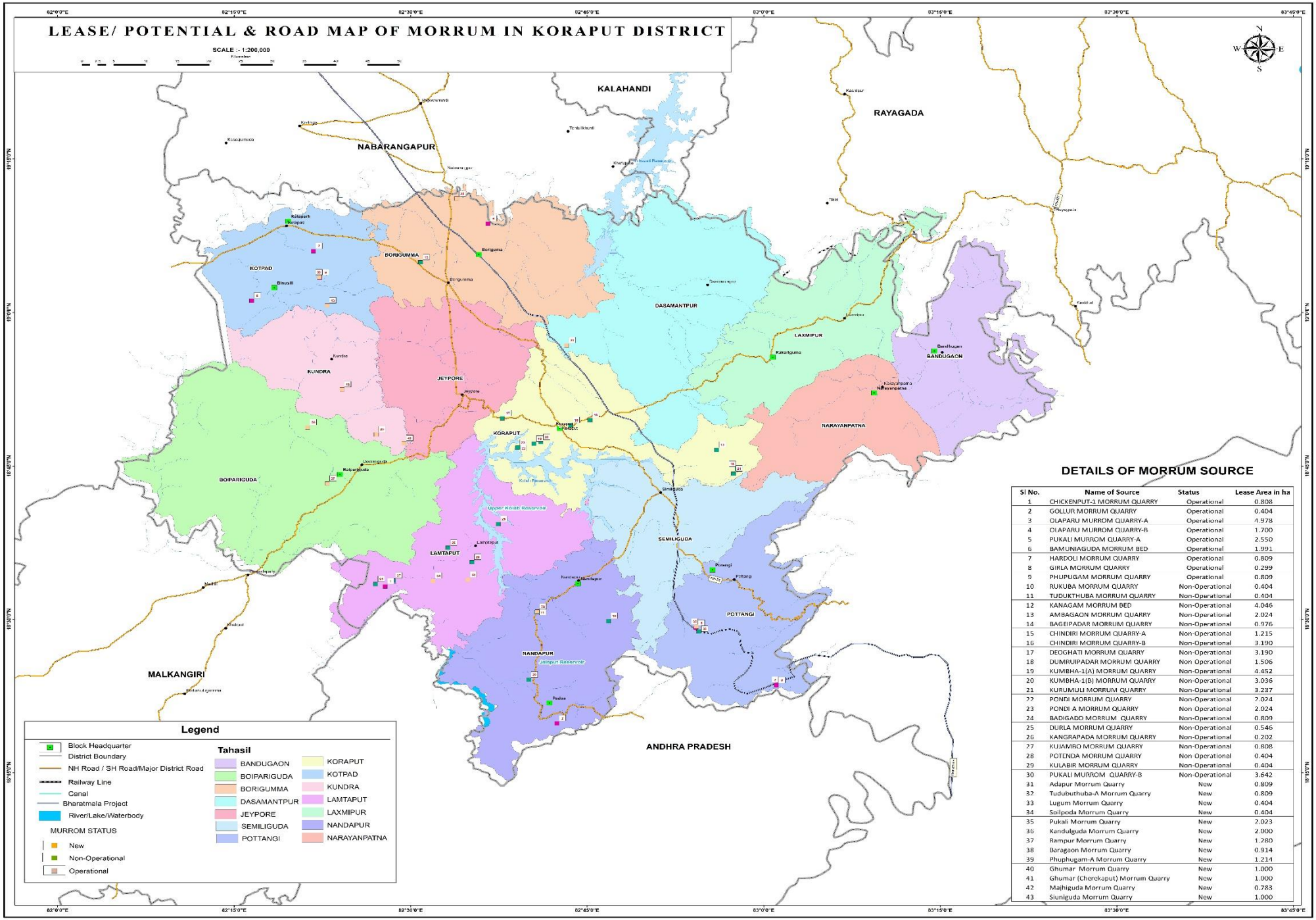
SL. NO	NAME OF SOURCE	LEASE NO	TRANSPORTATION ROUTE NO	NUMBER OF TIPPERS / DAYS OF LEASE	NUMBER OF TIPPERS / DAYS OF ALL LEASE ON ROUTE	LENGTH OF ROUTE IN KM	TYPE OF ROAD (BLACK TOPPED / UNPAVED)	RECOMMENDATION FOR ROAD (BLACK TOPPED / UNPAVED)	THE ROAD WILL BE CONSTRUCTED BY GOVT. / LEASE OWNER	ROUTE MAP & LOCATION
1	CHICKENPUT-1 MORRUM QUARRY	NA	VILLAGE ROAD	4	6	6	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
2	GOLLUR MORRUM QUARRY	NA	VILLAGE ROAD	3	5	4	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
3	RUKUBA MORRUM QUARRY	NA	VILLAGE ROAD	3	5	2	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
4	TUDUKTHUBA MORRUM QUARRY	NA	VILLAGE ROAD	2	4	3	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
5	OLAPARU MURROM QUARRY-A	NA	VILLAGE ROAD	2	4	3	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
6	OLAPARU MURROM QUARRY-B3	NA	VILLAGE ROAD	3	5	4	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
7	PUKA2LI MURROM QUARRY-A	NA	VILLAGE ROAD	4	6	2	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
8	BAMUNIAGUDA MORRUM BED	NA	VILLAGE ROAD	3	5	3	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
9	KANAGAM MORRUM BED	NA	VILLAGE ROAD	4	6	2	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
10	HARDOLI MORRUM QUARRY	NA	VILLAGE ROAD	3	5	3	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
11	GIRLA MORRUM QUARRY	NA	VILLAGE ROAD	3	5	2	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
12	PHUPUGAM MORRUM QUARRY	NA	VILLAGE ROAD	4	6	5	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
13	AMBAGAON MORRUM QUARRY	NA	VILLAGE ROAD	4	6	3	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
14	BAGEIPADAR MORRUM QUARRY	NA	VILLAGE ROAD	2	4	4	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED

15	CHINDIRI MORRUM QUARRY-A	NA	VILLAGE ROAD	3	5	6	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
16	CHINDIRI MORRUM QUARRY-B	NA	VILLAGE ROAD	4	6	6	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
17	DEOGHATI MORRUM QUARRY	NA	VILLAGE ROAD	5	7	4	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
18	DUMRUIPADAR MORRUM QUARRY	NA	VILLAGE ROAD	3	5	2	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
19	KUMBHA-1(A) MORRUM QUARRY	NA	VILLAGE ROAD	1	3	3	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
20	KUMBHA-1(B) MORRUM QUARRY	NA	VILLAGE ROAD	5	7	3	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
21	KURUMULI MORRUM QUARRY	NA	VILLAGE ROAD	7	9	5	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
22	PONDI MORRUM QUARRY	NA	VILLAGE ROAD	6	8	3	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
23	PONDI-A MORRUM QUARRY	NA	VILLAGE ROAD	6	8	4	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
24	BADIGADO MORRUM QUARRY	NA	VILLAGE ROAD	4	6	4	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
25	DURLA MORRUM QUARRY	NA	VILLAGE ROAD	3	5	2	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
26	KANGRAPADA MORRUM QUARRY	NA	VILLAGE ROAD	4	6	3	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
27	KUJAMBO MORRUM QUARRY	NA	VILLAGE ROAD	6	8	3	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
28	POTENDA MORRUM QUARRY	NA	VILLAGE ROAD	3	5	4	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
29	KULABIR MORRUM QUARRY	NA	VILLAGE ROAD	3	5	2	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
30	PUKALI MURROM QUARRY-B	NA	VILLAGE ROAD	8	10	3	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
31	ADAPUR MORRUM QUARRY	NA	VILLAGE ROAD	3	5	2	UNPAVED	UNPAVED	NEW	MAP ATTACHED
32	TUDUBUTHUBA-A MORRUM QUARRY	NA	VILLAGE ROAD	3	5	3	UNPAVED	UNPAVED	NEW	MAP ATTACHED
33	LUGUM MORRUM QUARRY	NA	VILLAGE ROAD	2	4	2	UNPAVED	UNPAVED	NEW	MAP ATTACHED
34	SOILPODA MORRUM	NA	VILLAGE	2	4	5	UNPAVED	UNPAVED	NEW	MAP ATTACHED

	QUARRY		ROAD							
35	PUKALI MORRUM QUARRY	NA	VILLAGE ROAD	4	6	3	UNPAVED	UNPAVED	NEW	MAP ATTACHED
36	KANDULGUDA MORRUM QUARRY	NA	VILLAGE ROAD	4	6	4	UNPAVED	UNPAVED	NEW	MAP ATTACHED
37	RAMPUR MORRUM QUARRY	NA	VILLAGE ROAD	5	7	6	UNPAVED	UNPAVED	NEW	MAP ATTACHED
38	BARAGAON MORRUM QUARRY	NA	VILLAGE ROAD	4	6	6	UNPAVED	UNPAVED	NEW	MAP ATTACHED
39	PHUPHUGAM-A MORRUM QUARRY	NA	VILLAGE ROAD	5	7	4	UNPAVED	UNPAVED	NEW	MAP ATTACHED
40	GHUMAR MORRUM QUARRY	NA	VILLAGE ROAD	4	6	2	UNPAVED	UNPAVED	NEW	MAP ATTACHED
41	GHUMAR (CHEREKAPUT) MORRUM QUARRY	NA	VILLAGE ROAD	4	6	3	UNPAVED	UNPAVED	NEW	MAP ATTACHED
42	MAJHIGUDA MORRUM QUARRY	NA	VILLAGE ROAD	3	5	3	UNPAVED	UNPAVED	NEW	MAP ATTACHED
43	SIUNIGUDA MORRUM QUARRY	NA	VILLAGE ROAD	4	6	4	UNPAVED	UNPAVED	NEW	MAP ATTACHED
44	CHICKENPUT-II MORRUM QUARRY	NA	VILLAGE ROAD	4	6	6	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED
45	RANITOTA MORRUM QUARRY	NA	VILLAGE ROAD	4	7	6	UNPAVED	UNPAVED	LEASE OWNER	MAP ATTACHED

LEASE/ POTENTIAL & ROAD MAP OF MORRUM IN KORAPUT DISTRICT

SCALE :- 1:200,000



Legend

- Block Headquarter
- District Boundary
- NH Road / SH Road/Major District Road
- Railway Line
- Canal
- Bharatmala Project
- River/Lake/Waterbody

MURROM STATUS

- New
- Non-Operational
- Operational

Tahasil

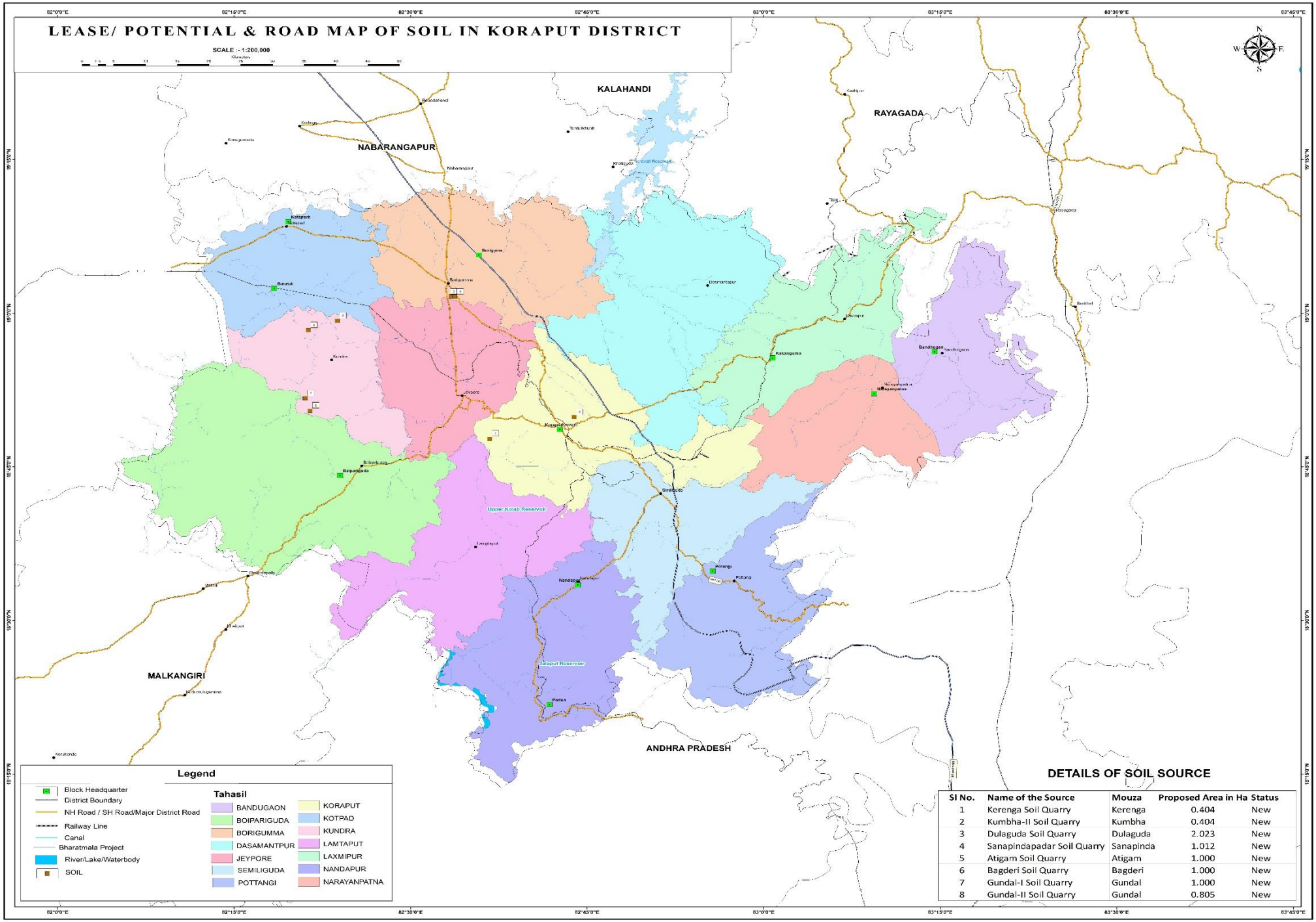
- BANDUGAON
- BOIPARIGUDA
- BORIGUMMA
- DASAMANTPUR
- JEYPORE
- SEMILIGUDA
- POTTANGI
- KORAPUT
- KOTPAD
- KUNDRA
- LAMTAPUT
- LAXMIPUR
- NANDAPUR
- NARAYANPATNA

DETAILS OF MORRUM SOURCE

Sl No.	Name of Source	Status	Lease Area in ha
1	CHICKENPUT-1 MORRUM QUARRY	Operational	0.808
2	GOLLUR MORRUM QUARRY	Operational	0.404
3	OLAPARU MURROM QUARRY-A	Operational	1.978
4	OLAPARU MURROM QUARRY-B	Operational	1.700
5	PUKALI MURROM QUARRY-A	Operational	2.550
6	BAMUNIAGUDA MORRUM BED	Operational	1.991
7	HARDOLI MORRUM QUARRY	Operational	0.809
8	GIRLA MORRUM QUARRY	Operational	0.299
9	PHUPUGAM MORRUM QUARRY	Operational	0.809
10	RUKUBA MORRUM QUARRY	Non-Operational	0.404
11	TUDUKTHUBA MORRUM QUARRY	Non-Operational	0.404
12	KANAGAM MORRUM BED	Non-Operational	4.046
13	AMBAGAON MORRUM QUARRY	Non-Operational	2.024
14	BAGEIPADAR MORRUM QUARRY	Non-Operational	0.976
15	CHINDIRI MORRUM QUARRY-A	Non-Operational	1.215
16	CHINDIRI MORRUM QUARRY-B	Non-Operational	3.190
17	DEOGHATI MORRUM QUARRY	Non-Operational	3.190
18	DUMRUIPADAR MORRUM QUARRY	Non Operational	1.506
19	KUMBHA-1(A) MORRUM QUARRY	Non-Operational	4.452
20	KUMBHA-1(B) MORRUM QUARRY	Non-Operational	3.036
21	KURUMULI MORRUM QUARRY	Non-Operational	3.237
22	PONDI MORRUM QUARRY	Non-Operational	2.024
23	PONDI A MORRUM QUARRY	Non Operational	2.024
24	BADIGADO MORRUM QUARRY	Non-Operational	0.809
25	DURLA MORRUM QUARRY	Non-Operational	0.546
26	KANGRAPADA MORRUM QUARRY	Non-Operational	0.202
27	KUJAMBO MORRUM QUARRY	Non-Operational	0.808
28	POTENDA MORRUM QUARRY	Non Operational	0.404
29	KULABIR MORRUM QUARRY	Non-Operational	0.404
30	PUKALI MURROM QUARRY-B	Non-Operational	3.642
31	Adapur Morrum Quarry	New	0.809
32	Tudubuthuba-A Morrum Quarry	New	0.809
33	Lugum Morrum Quarry	New	0.404
34	Soilpoda Morrum Quarry	New	0.404
35	Pukali Morrum Quarry	New	2.023
36	Kandulguda Morrum Quarry	New	2.000
37	Rampur Morrum Quarry	New	1.280
38	Baragaon Morrum Quarry	New	0.914
39	Phuphugam-A Morrum Quarry	New	1.214
40	Ghumar Morrum Quarry	New	1.000
41	Ghumar (Cherekaput) Morrum Quarry	New	1.000
42	Majhiguda Morrum Quarry	New	0.783
43	Siuniguda Morrum Quarry	New	1.000

LEASE/ POTENTIAL & ROAD MAP OF SOIL IN KORAPUT DISTRICT

SCALE :- 1:200,000



DETAILS OF SOIL SOURCE

Sl No.	Name of the Source	Mouza	Proposed Area in Ha	Status
1	Kerenga Soil Quarry	Kerenga	0.404	New
2	Kumbha-II Soil Quarry	Kumbha	0.404	New
3	Dulaguda Soil Quarry	Dulaguda	2.023	New
4	Sanapindapadar Soil Quarry	Sanapinda	1.012	New
5	Atigam Soil Quarry	Atigam	1.000	New
6	Bagderi Soil Quarry	Bagderi	1.000	New
7	Gundal-I Soil Quarry	Gundal	1.000	New
8	Gundal-II Soil Quarry	Gundal	0.805	New

Sub-Collector-Cum
Sub-Divisional Magistrate, Koraput

Sub-Collector-Cum
Sub-Divisional Magistrate, Jeypore

9.10.24
Superintending Engineer,
Minor Irrigation Division,
Koraput

Regional Officer,
SPCB, Koraput

09.10.2024
Asst. Conservator of Forest,
Koraput

09/X/2024
Asst. Conservator of Forest,
Jeypore

9/10/2024
Deputy Director Mines,
Koraput

9/10/24
Deputy Director Mines,
Jeypore Circle

09.10.24
Geologist, Koraput

9/X/24
Mining Officer, Koraput