



Sacred Niyamgiri



The gorging intensity of Bansadhara
river



Quenching their thirst: Bansadhara
the source of drinking water



Green Pit Viper



A brief report on Ecological and Biodiversity Importance of Niyamgiri Hill and Implications of Bauxite Mining



Contents:	Page No.
Introduction	3
The Proposal to Mine the Top of Niyamgiri Hill	4
Floral Diversity of Niyamgiri	6
Fauna Diversity of Niyamgiri	9
Proposal for Creating a Wild Life Sanctuary	12
Niyamgiri and the Rivers and Streams	13
Niyamgiri and Dongaria Kondha	14
Impact of Mining Bauxite on Niyamgiri	16
Impact on Flora and Fauna	17
Impact on Geo-hydrology	18
Impact on Local Tribal	20

INTRODUCTION:

Niyamgiri is a hill range, about 250 sq. km. in area (Daspatnaik P.1984) lying between 19.33 degree N lat. and 83. 25 degree E longitude (Patnaik, N. and Daspatnaik, P.1982). It forms the northernmost hill in the massif of the cluster of hills called the Niyamgiris or the Dongaria Kondh country. Also known as the Niyam Dongar, it runs in a southwest alignment with a maximum elevation of 1306 meters.

From socio-cultural, anthropological as well as geographic point of view, this is a single hill-country; but from administrative point of view, the area comes three districts viz. Kalahandi, Rayagada and Koraput.

To the anthropologists, Niyamgiri Hills are better known as the country of 'Dongria Kondhs'. *Dongaria Kondha* is one of the primitive and scheduled tribes of the State and enjoys a critical and symbiotic relation with the Niyamgiri forests. The *Dongrias* believe that the hill country belongs to *Niyam Raja Pennu*, a male deity represented by a sword and worshipped during *Dussera* and *Jura parab*. They claim themselves to be descendants of the Niyam Raja. The *Dongrias* have derived their name from 'dongar' meaning agricultural land on hill slopes. *If one claims to be a Dongaria Kondha, he must reside in the Niyamgiri hills and possess land of his own, and pass on to his posterity* (P.S. Daspatnaik, 'Ownership Pattern, land Survey and Settlement and Its Impact on the Dongaria Kondhas of Orissa' published in 'Adibasi' Journal in January 1984, Vol. XXIII, No. 4, p.26). The *Dongrias* have a distinguished heritage, because of their dress style, mode of living, indigenous skills, cultural pattern and social system interlinked with nature and forests.

Both culturally and ecologically, the Niyamgiri hills are extremely rich and significant. Most importantly Niyamgiri Hills are the source of Vansadhara river as well as a major tributary of Nagavali river. It forms a distinct phytogeographical zone because of its height and its highly precipitous topography. It also has some of the most pristine forests in Orissa, and is home to a number of vulnerable wildlife species including tiger, leopards, sloth bear, pangolin, palm civet, giant squirrel, mouse deer, langur and sambhar, etc. It is also on the path of migration corridor of elephants, and comes within the territory of Royal Bengal Tiger. **In view of its ecological importance**, it was declared as

nature conservation / game sanctuary and also was proposed as a Wild Life Sanctuary in the working plan of Kalahandi Forest Division. The State Wildlife organization has a proposal to declare this area as South Orissa Elephant Reserve as mentioned in the vide memo no. 4643/3WL(Cons) 34/04 dated 20.08.2004.

THE PROPOSAL TO MINE THE TOP OF NIYAMGIRI HILL:

Niyamgiri hills belong to the Eastern Ghats, and in-situ reserves of metallurgical grade bauxite have been reported from this area. This assumed immense commercial importance during the recent years when the demand of aluminium in the international market jumped substantially, and aluminum-giants needed more reserves of bauxite (chief raw material for aluminum production) so as to increase their production to take advantage of boom market conditions. The main consideration of international finance capital was to maximize profit in areas, which are highly rewarding and require almost no pre-requisites for investment. Bauxite mining in fast developing countries like India provides the answer.

Vedanta Alumina Limited, a subsidiary of M/S Sterlite Industries (India) Limited (SIIL is going to mine bauxite deposit from the Niyamgiri hills jointly with Orissa Mining Corporation Limited (OMC) as per the lease agreement signed in between VAL (Vedanta Alumina Ltd.) and Orissa Mining Corporation (OMC) in October 2004. According to the MoU signed by SIIL and Govt. of Orissa on 7th June 2003, SIIL would set up an Alumina Complex, which includes 1.0 MTPA Alumina Refinery Plant, 3.0 MTPA of bauxite mining and 75 MW Captive Power Plant at Lanjigarh in the district of Kalahandi at an aggregate investment of approximately Rs.4000/- crore. The REIA (Rapid Environmental Impact Assessment) report prepared by Tata AIG Risk Management Services Ltd., Mumbai (TARMS) for SIIL mentions that the estimated bauxite reserve in the lease area is about 73 million tons and the estimated life span of the mining is 23 years. The proposed mining site is located on the top of Niyamgiri hills. The map of mining site is annexed in the report.



According to the letter of DFO, Rayagada (bearing letter no 6623/EFC (4F) 401/2004 dated 10th November 2004) the total forest area required for mining is 672.018 hectares, out of which 660.749 hectares (98.32% of total mining area) will be diverted for mining and other ancillary activities of the project. The proposed mining area is situated on Niyamgiri Reserve Forest of Kalahandi (South) Forest Division and Khambesi and Nimagiri PRF (Proposed Reserve Forest) and Jungle Block (Protected Forest) of Rayagada Forest Division.




In addition, IDCOL, Orissa (Orissa Industrial Infrastructure Development Corporation Limited) has already acquired 775.5 acres of land from 6 villages namely Kinari, Borbhatta, Bandhaguda, Kothadwar, Bundle and Sindhabhal to lease out to Vedanta Alumina Limited required for setting up a 'Alumina Refinery Plant' at Lanjigarh, which includes 64.55 acres of Village Forest (vide letter of the Conservator of Forests, Bhawanipatna, Memo No. 3795, dated 30.10.2004, under heading number 3, titled as 'Alumina Refinery').

The salient features of the proposed bauxite-mining project near Lanjigarh in Rayagada and Kalahandi District of Orissa are provided below as mentioned in REIA report:

Sl. No.	DESCRIPTION	FEATURES
1.	Location of Deposit	65km from Bhawanipatna, District Kalahandi, Orissa.
2.	Proposed Area of Mining Lease	1073.4 hectares
3.	Bauxite reserves in the proposed mining area	72.89MT
4.	Overburden thickness in metres	1.5
	Ore zone thickness in	11.5

	metres	
	Ratio of Ore/Overburden	1.0:13
	Average Grade	46.42% Al ₂ O ₃
		2.51% SiO ₂
5.	Suggested method of mining	Mechanized open cast mining
6.	Expected mine life	23 years
7.	Installed Capacity of Cursher plant	1100 Tons of Bauxite handled per hour
8.	Operating days/year	250
9.	Source of Water	From Vamshadhara River
10.	Source of Power	Proposed 75 MW captive power plant
11.	Fuel Source	Diesel from nearest IOC depot
12.	Manpower Requirement	250 (approximately)

FLORAL DIVERSITY OF NIYAMGIRI:

 Niyamgiri area is covered with wide range of hills and peaks. Niyamgiri forms a topographical high land in the area with an elevation of 1636 m above MSL. More than 75% of the Niyamgiri hills' landmass is covered with dense forests where the average forest density of Niyamgiri R.F. is around 0.6. The survey report of FSI, Deheradun admits to dense forest contiguity from around Devagiri in Rayagad district to the Niyamgiri forest (on the border of Rayagada and Kalahandi districts) and further into the forests of Karlapat and Thuamal Rampur in Kalahandi district. It then turns south connecting the Tikiri-Lilligumma and Gumma forests, and then on to the Narayanpatna forests in Koraput district. Thus this forest links the forests of Kandhmal district with the forests of Rayagada, Kalahandi and Koraput districts.



The REIA report prepared by Tata AIG Risk Management Services Ltd., Mumbai (TARMS) for SIIL mentions that *the mining lease area is situated on a plateau on top of Niyamadangar hill. The steep escarpments, which ring the plateau, are covered with dense forests with variable tree density ranging from 1300 to 1400 trees per acre.* Further it also mentions that *a few barren rocky patches are observed in the central part of the area. Based on interpretation of landuse/landcover based on satellite imagery the major landuse/landcover of the study area (the area within 10km from the project site) is dense forest (evergreen and semi-evergreen in nature) with multiple species.*

A team of taxonomists, which visited 'Niyamgiri Hills' report in their preliminary assessment, *"The flora of the hill range exhibits a very rich and varied assemblage of plant species owing to its diversified topography with high mountain peaks and innumerable deep valleys and gorges, abundant springs and diverse vegetation resources."* Eight distinct types of vegetation are seen in Niyamgiri, depending on the local microclimate, plant density, species association and

composition and effect of biotic and edaphic factors, among which deciduous forests predominate. *Terminalia tomentosa* and *Shorea robusta* are among the most dominant species.



The other species found in the Niyamgiri hill ranges are Dhaura (*Anogeissus*), Jamun (*Eugenia jambolana*), Tangan (*Xylia xylocarpa*), Kasi (*Bridelia*), Bandhana (*Ougeinia dalbergioides*), Sisu (*Dalbergia latifolia*), Bija (*Pterocarpus marsupium*), Kuruma (*Adina cordifolia*), Gambhari (*Gmelina arborea*), Kusum (*Schleichbra trijuga*), Mohua (*Bassia latifolia*), Kendu (*Diospyros melanxylon*), Amla (*Phyllonthus emblica*), Harida (*Terminalia chebula*), Karda (*Claistanthus colinus*), Bel (*Aegle marmelos*), Champa (*Michelia champaca*), Dhaura (*Anogeissus latifolia*), Amba (*Mangifera indica*), Arjun (*Terminalia arjun*), Karanj (*Pongamia pinnata*) and etc.

The taxonomist group in their preliminary report mentions that 'the one week field survey, which is quite insufficient for floristic research (conducted during a very unusual period), reveals the occurrence of about 300 plant species xxxx. **The study has been able to yield 7 plant species appearing to be rare/endangered/conservation dependent xxxxx.** According to the team, Niyamgiri flora is of 'great phyto-geographical importance' as the hilltops harbor high altitude plants with Himalayan/North Indian and Nilgiri/South Indian elements. Their taxonomical observations have been able to identify about **5 such high altitude plants**, and the preliminary study indicates the presence of ***Bupleurum fulcatum*, hitherto unreported from Orissa, among them.** These high altitude plants are mostly herbaceous, and are very site sensitive; they can't survive if shifted from their habitat artificially. The hilltops harboring these plants apparently act as a bridge for evolutionary migration of species (plant) from Himalayas to southwards or in some cases *vice versa*.

Other salient features of the observations of the team include identification of about 50 species of important medicinal plants, about 20 species of wild ornamental plants, and more than 10 species of wild relatives of crop plants. Wild relatives of cultivated sugar cane plant, like *Saccharum arundinaceum* and *S. munja* are not only used for

medicinal purposes, but can also serve as a vital source of pure genetic material for generating new and improved hybrids of sugarcane.

Latest orchidological studies indicate that the number of orchidaceous species found in the Niyamgiri region is much higher than earlier reported/suggested. In the first phase of the latest study that was conducted when the ground orchids were absent due to unfavorable season and forest fire, at least 15 epiphytic species of orchids have been recorded, among which *Dendrobium*



transparentes is an uncommon species with large and showy flowers. The dominant species is *Cymbidium aloifolium*, which is an indicator of the presence of mature forest trees as it thrives on mature trees. The other species are *Acampe carinata*, *Acampe praemorsa*, *Aerides multiflora*, *Aerides odorata*, *Dendrobium aphyllum*, *Dendrobium herbaceum*, *Dendrobium macrostachyum*, *Luisia trichorbiza*, *Oberonia falconeri*, *Pelatantheria insectifera*, *Rhynchosstylis retusa*, *Vanda tessellata* and *Vanda testacea*. In fact, field observations support this indication as the good forests of Niyamgiri have been found to have mature forest crops, and species like *Michelia champaca* have been found to be growing with huge girth sizes along the streams.

Among the plant species threatened elsewhere but found commonly in Niyamgiri are *Persea macrantha*, *Rauwolfia serpentina*, and *Gloriosa superba*, etc. While the latter two are important in the herbal sector, the former has its great commercial importance in the agarbatti industry. Rare plants like Krushna Jubaraj (*Melasma Thomsonii*) have been found in this region (Saxena, Brahamam, 1995, page No.1259). Recently, the Proctological Society of India during a survey found that Niyamgiri was among the four major spots of Orissa where medicinal plants were found in abundance and in rich diversity (The Samaj, 11.02.02).

Many plant species, which were observed in the area, are classified as threatened by the IUCN in its list for Orissa (the species and the category is given below):

- | | |
|----------------------------------|-------------------|
| 1. <i>Rauwolfia serpentina</i> – | Vulnerable |
| 2. <i>Gloriosa superba</i> – | Vulnerable |
| 3. <i>Persea macrantha</i> – | Rare |
| 4. <i>Melasma Thomsonii</i> – | Rare |

FAUNAL DIVERSITY OF NIYAMGIRI:

Niyamgiri hills is the natural habitat for many endangered, threatened and conservation dependant fauna species because of its diversified topography with high mountain peaks, plain plateaus at hill tops, innumerable deep valleys and gorges, abundant springs, diverse vegetation resources and it's distance from so called mainstream development process. The open spaces on the top of Niyamgiri have profuse grass growth and important feeding sites for herbivores such as barking deer, mouse deer etc.

On fauna front of view, the REIA report mentions that *being mainly a forest area, the study area (the area within 10 km from the project site) shows wide faunal diversity and abundance. The area exhibits a well-balanced ecosystem with a poised prey-predator relationship. The secondary data identifies a variety of faunal species under categories like endangered and vulnerable as per the Zoological Survey of India's Red Data Book.*



A number of wild animals like Leopard, Tiger, Elephant, Palm civet, Mouse Deer, Barking Deer, Sambar, Striped Hyena, Chital, Wild Dog, Sloth Bear, Bison, Nilgai, Giant Squirrels, Porcupine, Four horned antelope and etc. are found in Niyamgiri hills most of which are in the **IUCN red list** of

endangered species.

Some of the commonly found animals are given below:

Sl. No.	Name of the Animal	Scientific Name	Classification/ Categorization in WPA
1	Elephant	<i>Elephas maximus</i>	Schedule - 1
2	Tiger	<i>Panthera tigris</i>	Schedule - 1
3	Leopard	<i>Panthera pardus</i>	Schedule - 1
4	Pangolin	<i>Manis crassicaudata</i>	Schedule - 1
5	Palm civet	<i>Paradoxurus hermaphroditus</i>	Schedule - 1
6	Sloth Bear	<i>Melursus ursinus</i>	Schedule - 1
7	Mouse Deer	<i>Tragulus meminna</i>	Schedule - 1
8	Giant squirrel	<i>Ratufa macroura</i>	Schedule - 1
9	Bison	<i>Bos gaurus</i>	Schedule - 1
10	Four horned antelope	<i>Tetracenus quadricornis</i>	Schedule - 1
11	Leopard cat	<i>Felis bengalensis</i>	Schedule - 1
12	Indian Wolf	<i>Canis lupus pallipes</i>	Schedule - 1
13	Rhesus Monkey	<i>Macaca mulatta</i>	Schedule - 2
14	Wild Dog	<i>Cuon alpinus</i>	Schedule - 2
15	Fox	<i>Vulpes bengalensis</i>	Schedule - 2
16	Monkey	<i>Presbytis entellus</i>	Schedule - 2
17	Smooth Indian otter	<i>Lutra perspicillata</i>	Schedule - 2
18	Mongoose	<i>Hypstus edwardsi</i>	Schedule - 2
19	Sambar	<i>Cervus unicolor</i>	Schedule - 3
20	Spotted Deer	<i>Axis axis</i>	Schedule - 3
21	Hyena	<i>Hyaena hyaena</i>	Schedule - 3
22	Barking Deer	<i>Muntiacus muntjack</i>	Schedule - 3
23	Porcupine	<i>Hystrix indica</i>	Schedule - 4
24	5 Strip Palm squirrel	<i>Funambulus pennanti</i>	Schedule - 4
25	Rat	<i>Rattus rattus</i>	Schedule - 5

The existence of wild animals in Niyamgiri is also mentioned in the Revised working Plan of Kalahandi Forest Division.

*“A lot of the so-called damage is also caused to forests by wild animals like damage to bamboo clumps and clums, debarking of sal poles and trees by elephants, browsing of Sal saplings, Coppice shoots by Chittal, Sambar, Nilagai, Gaur. This mostly common in Karlapat, Nehla, Jerka, Sagada, Jugsaipatna, **Niyamgiri**, Urdalani, Taprang, Benaguda, Sunamukhi etc. blocks. But this is a part of interaction between ecological community and cannot be treated as damage rather represent dynamism of ecosystem”.*
(Revised Working Plan for The Reserved Forests and Proposed Reserved Forests of Kalahandi Forest Division, for the Period 1997-98 to 2006-07, Page No. 52)

Similarly, two petitioners namely Shri Biswajit Mohanty and Shri Prafulla Samantray in their petitions mentioned droppings of wild species at the Niyamgiri hills at different points, details of which has been given below with GPS location.

Evidence of wildlife	GPS location
Elephant Dung (dried)	19 39.403 N, 83 21.266 E
	19 39.342 N, 83 21.029 E
Sambar droppings	19 39.363 N, 83 21.279 E
Barking deer droppings	19 39.338 N, 83 21.294 E
	19 39.403 N, 83 21.217 E
Wild cat droppings	19 39.400 N, 83 21.214 E

Niyamgiri hills falls on the path of migration corridor of elephants, and comes within the territory of Royal Bengal Tiger. The latest tiger census figures indicate the presence of four tigers in the Kalahandi South Division and the Rayagada Forest Division, which use these forests.

Apart from the wild animals Niyamgiri hills are also home for rare birds like Hill Myna and pied hornbill. Besides these Jungle Fowls, Partridges, Peacock, Owls, green pigeon etc., are also found. No detailed ornithological study has ever been taken up, and it is expected that these mountain fastnesses may yield previously unrecorded species.

Recently, a team consisting of herpetologists visited Niyamgiri hills for three days only and discovered rarest lizards like Golden gecko (*Callodactylodes aureus*), Large Termite Hill Gecko (*Hemidactylus subtriadrus*), unrecorded variety of Pit viper, Travancore Wolf snake (*Lycodon travancoricus*), and a skink (*Scincella spp.*). The Golden gecko (*Callodactylodes aureus*) is of special interest to world herpetologists as it represents one of two known genus *Callodactylodes*, who are considered as Gondwana relics. This gecko is one of the rarest lizards of India, and is endemic to the Eastern Ghats of India and was previously located at only one location in AP. Due to its extremely rare status, this lizard is classified in the Schedule I of the Wildlife Protection Act, 1972. Large colonies of the Golden Gecko were found in Niyamgiri hills. Experts say that they are adapted to vertical rock surfaces near hill streams and their breeding places are localized on these rock surfaces. Any habitat disturbance (loss of rock faces or perennial streams) would lead to their rapid extinction. In addition there is a species of large termite hill gecko (*Hemidactylus subtriadrus*), which shares the same habitat. This again is the first record from Orissa from this place. No photo of this species is available so far in any published book in India so far.



A specimen of green Pit viper was noticed which could be a new species or sub species of pit viper from India, since this could not be matched with existing pit viper records of India. The Travancore wolf snake, which was last reported from Orissa by the British herpetologists in pre independence era, has also been rediscovered from here recently. A species of skink, which was hitherto unreported in any published literature, could be a new report.

These species were recorded in a brief three days visit and it is expected that a more detailed study would yield other rare and undiscovered species. Apart from the

above other reptiles like Monitor lizards, Chameleon, King cobra, Krait, Indian cobra, Banded Krait, Rat snake, keelback, sand boa, python and etc., are common in the hill ranges of Niyamgiri.

PROPOSAL FOR CREATING A WILD LIFE SANCTUARY

The Revised Working Plan for the Reserve Forests and Proposed Reserve Forests of Kalahandi Forest Division for the period 1997-1998 to 2006-2007, which has been duly approved by Eastern Regional Office on 16th December 1998, vide letter No. 13-FCWP-OS-KLD/5590, the then Working Plan Officer Shri K.R. Singh recommended for creation of the Niyamgiri Wild Life Sanctuary comprising an area of 9129.19 hectares (P.142). To quote him,

"xxxxcomposition of bio-diversity in Niyamgiri R. F. Rout Jhimri Extn. P.R.F., Jalkrida R.F., and adjoining areas also demand creation of Protected Area" (p.134).

Here it is important to mention that earlier there were four **'Game Sanctuaries'** in Kalahandi division as mentioned in the 'District Gazetteer of Kalahandi'. **Niyamgiri in Lanjigarh range** was one of them. The others were Taparanga, Urlandan in Madanpur-Rampur range, Karlapat in Bhawanipatna range. (District Gazetteer, Kalahandi, Page No. 26) Out of four, only one game sanctuary namely Karlapat was declared as Sanctuary on 15th October 1992, while other areas are still awaiting for such notification. The delay is causing further loss of biodiversity.

However, in the year 2004 Orissa Wildlife Division brought a proposal to declare certain patches as **'Elephant Reserve'**, which includes Niyamgiri in South Orissa (Phulbani-Gajapati-Kalahandi) Elephant Reserve.

The Fact Finding Team of the Central Empowered Committee, Supreme Court, consisting of Mr. Sanjeev Chadha and Mr.S.C.Sharma , who visited the site, mentioned above things in their report, which submitted to Central Empowered Committee. To quote their report,

“Niyamgiri is a very rich forest from biodiversity point of view. A proposal has already been approved in the working plan to declare this area as a Sanctuary. +++ It was further revealed that the State Government have made a proposal to include this area in the proposed new elephant reserve. (Report of Fact Finding Team, under heading Findings of Team-iv)

NIYAMGIRI AND THE RIVERS AND STREAMS

The Niyamgiri hill range abounds with streams. More than 100 streams flow from the Niyamgiri hills and most of the streams are perennial. Niyamgiri hills have been receiving high rainfall since centuries and drought is unheard of in this area. Some of the major streams originated from Niyamgiri hills include Vamsadhara, Nagavali, Sakta nallha, Barha nalla and etc.

Vamsadhara River, which is known as 'Life Line' of Kalahandi originates from Niyamgiri. A number of perennial streams and *nallhas* feed the water of Vamsadhara river at different points. It passes through a number of districts in Orissa and Andhra Pradesh and enters the Bay of Bengal at Kalingapatnam in Andhra Pradesh. It stretches over a length of 230 kms out of which 150 kms is in Orissa and the total catchment area is 11500 sq. kms. It provides drinking water as well as water to the agricultural fields of millions of people in both the states.



Similarly, another important river, known as 'Nagavali', also originates from the Niyamgiri hills as well as the Bijipur Hills of the Eastern Ghats near Lanjigarh. It is 210 kms long out of which 100 kms is in Orissa. It has a total catchment area of about 9410 sq. kms.

(<http://orissagov.nic.in/topography/>

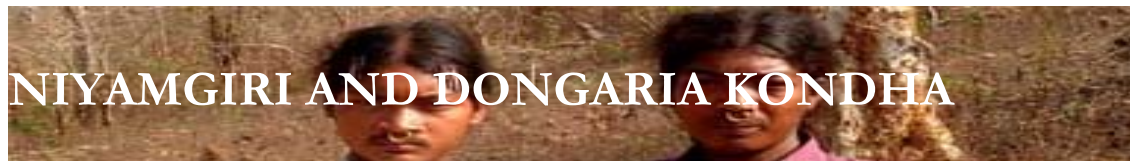
[topography.htm](http://orissagov.nic.in/topography/))

Some of the streams which originates from the Niyamgiri hill ranges as mentioned in the 'Forest Tribes of Orissa, Volume –1: The Dongaria Kondha' is given below:

Sl. No	Local Name of the Stream	Hill of Origin	Nearby Village Settlement	Sl. No	Name of the Stream	Hill of Origin	Nearby Village Settlement
1	Kadituni	Surgabata-Parapabata	Karjodi	14	Banjipanche	Kajapadi	Khajuri
2	Bamanadeu	Bata Karjodi	Karjodi	15	Latikanu	Mundepambu	Khajuri
3	Mutkeni narengasus	Priskudi Horu	Priskudi	16	Kdaninga pambu	Madangkala	Khajuri
4	Latikanu	Lakdatarga	Khambesi	17	Panchejadi	Bengdavali	Talaguma
5	Dumberihua	Adanaka	Khambesi	18	Biamnghua	Parang Kuda	Uparaguma
6	Ambagorada	Purgi Dongar	Munduavali	19	Kayukakadi	Tudangpadi	Uparaguma
7	Bijahua	Baplakata	Hundi Jhali	20	Kakadipau	Kdangar jala	Uparaguma
8	Kaman	Neba Horu	Arisakani	21	Takusua	Hergi Haru	Kadraguma
9	Baming jadi	Batigari	Thuaguda	22	Derukuta	Sapta Amba	Kadraguma
10	Dindenihua	Tudangapadi	Dindeni	23	Bamanadeu	Kumaravali	Kadraguma
11	Panche jadi	Sraledong	Ghartuli	24	Bijanghua	Madabasa	Khajuri
12	Satahua	Kupdingapatra	Ghartuli	25	Taddali	Paklakaska	Khajuri
13	Jambusua	Papibangeni	Ghartuli				

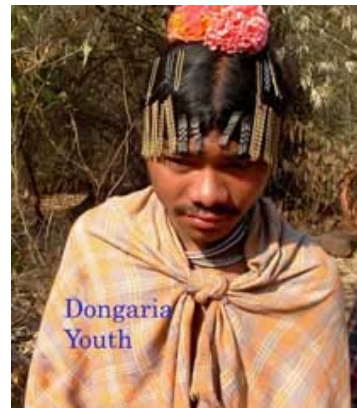
(Source- Forest Tribes of Orissa, Volume –1: The Dongaria Kondha, Page No. 164)

36 streams originate from the portion of Niyamgiri hills, which has been planned to give to be given to Vedanta Alumina Limited,



Niyamgiri is better known as the 'Dongria Kondh country'. The Kandha(Kondh) tribals are in majority among the scheduled tribes of Orissa .While Kutia Kandha & Dongria Kandha are the hill dwellers the Deshia Kandhas live in plain areas. The Dongrias have derived their name from 'Dongar' meaning agricultural land on hill slopes. The *Dongars* are created through shifting cultivation.

Dongrias have a distinguished heritage. While the *Kutias* are more primitive and the *Desbias* more civilized than them (Dongrias) in their practices, the Dongrias are distinguished particularly for their expertise in horticulture



though they give equal importance to shifting cultivation chiefly due to scarcity of leveled land.



Socio-cultural importance of Niyamgiri:

It equally important to examine the socio-cultural aspects of the life of the rare indigenous tribes in Niyamhri since they have developed, practiced and nurtured their life and livelihood patterns around forest and wildlife forming a formidable system of mutual dependence. If for any reason, one of them is disturbed the other two get automatically disturbed.

The Dongrias believe that the hill-country belongs to Niyam Raja penu, a male deity represented by a sword and worshipped during *dussahera* and *jura parab*. The top most hill of Niyamgiri hill ranges, Niyamgiri is regarded as his seat and hence is sacred to them.

They believe themselves as the descendants of Niyam Raja and hence consider (being 'royal' descendants) wage labour as derogatory to their culture. Therefore they do not prefer to work as wage labourer for outsiders. However, they do work for other members of the community either in exchange of some nominal wage, or labour; but in that case also the employee-employer relationship does not exist and they treat others as their equals.

The *Dongrias* consider that the right to cultivate hill slopes has been conferred to them by Niyam Raja and unless the hills are tilled, one can hardly call himself a Dongria. The right over swidden can never be confiscated or changed since each dongar plot is haunted by an ancestor spirit who helps in bumper growth of crops (Daspatnaik, *op.cit.*).¹ They distinguish movable and immovable properties. Hill plots (*haru*), roof of the house (*temberi*) and fruit orchards are considered immovable property and one must possess them anywhere in the Niyamgiri hills to claim himself to be a Dongria (Patnaik and Das Patnaik, *op.cit.*,p.39).



The Dongaria Kondhas economy and its major sources of livelihood are directly related with Niyamgiri Forests. They collect various types forest products and sell it nearby weekly haats. Around 40 to 50% of their annual income derived from by selling of forest products like Siali leaves, Myrobalans, Amla and etc. They grow fruit crops like pineapple under the thick forests. Dongaria Kondhs are not at all known for hunting. No literature developed in vernacular or in English suggests that the Dongrias were hunters at any point of time in history.

The census for 2001 reveals that the total population of this tribe is limited to only 7952 which includes 3458 males and 4529 females.

¹ Thus, when the govt hands over such lands for mining; a whole socio-economic and anthropo-religious tradition will be smashed.

IMPACT OF MINING BAUXITE ON NIYAMGIRI

Bauxite mining probably destroys more surface area than mines of other materials ([www.rhinosirf.org/education/projectgetinvolved/recycleforrhinos/teacherresourceinfo. btm](http://www.rhinosirf.org/education/projectgetinvolved/recycleforrhinos/teacherresourceinfo.htm)). It is not only land extensive, but also noisy and dusty (<http://www.american.edu/TED/bauxite.htm>). Among the major environmental impacts of bauxite mining are the implications of the disposal of alkaline mud otherwise known as 'red mud'. Escape of caustic soda, used to extract alumina from raw bauxite, into the ground water is quite likely which will increase sodium concentration in the well water, etc., and high sodium is undesirable in potable water since it is associated with hypertension.

Prior to assessment of probable impact of mining on Niyamgiri hills, it is need to understand the process of mining. As per the REIA,

“Mechanized open cast mining is proposed for the deposit particularly due to low overburden thickness, high bauxite thickness and high production levels. The method of mining would be conventional method of horizontal bench with top slicing.



Before starting mine production, mine construction work including mine development will be completed over a period of two years. This comprises completion of access road removal of vegetation cover and removal of topsoil in a phased manner, keeping in pace with the mine development and production schedule. Initially, the topsoil will be stacked over the external topsoil dump. Then the exposed overburden will be excavated as per the mine development programme. The excavated overburdens initially will be placed at the external dumps.

For the production of bauxite, it has been proposed that the thin sections/portion of bauxite (say upto 5 to 6 m) on every bench will be

excavated by the use of the ripper cum dozer, wheel loader, and 35 tonnes dumper. The thicker sections/portion (say 5 to 10 m thick) of bauxite will be mined by drilling and blasting. The blasted material will be loaded by hydraulic excavations and subsequently transported by 35 tonner dumper to semi mobile Crusher Hopper. The crushed bauxite ore will then be sent to the Alumina refinery by conveyors.” (REIA Report under title heading ‘Description of the proposed project & operations’, page No. 4 & 5)

Mining in Niyamgiri hills, which is one of the most ecologically biodiverse areas of the state with its wide range of flora and fauna, rivers and streams defies logic and reasoning. It becomes even inhuman and anti-conservation when one sees gross undervaluation of the close interaction between the local tribes especially the primitive tribe ‘Dongaria Kondha’ with the nature and other forms of life in Niyamgiri.

Some of the impacts are highlighted below:

- **Impact on Flora and Fauna**

The proposed mining area is located on a plateau on top of Niyamgiri hill ranges, which includes Niyamgiri R.F, Niyamgiri P.R.F; Khambesi P.R.F and some Protected Forest blocks. The alumina refinery plant is situated at the footstep of Niyamgiri hill near Lanjigarh. The approach road to the proposed mining site and conveyors belt for transporting of ore from the mining site to Refinery plant passes through very dense and rich forests. Secondly, as it is being open cast mining, it will generate high noises during excavation, drilling, transportation, blasting and crushing operations. Thirdly, it will also pollute the air through emissions from various sources like drilling, blasting, transportation and crushing operations.

The constant traffic on the road by the heavy machinery and trucks, continuous operation of machineries, blasting, influx of outsiders and run-off water from the mining site during the monsoon season would destroy the rich ecosystem of Niyamgiri hills and lead to the destruction of wildlife natural habitat.

The REIA report prepared by Tata AIG Risk Management Services Ltd., Mumbai



(TARMS) for SIL further strengthens the above consequences. It clearly mentioned in the REIA report under title heading 'Land Environment' in page No. 11, that ***the proposed project will result in change in land use pattern. There will be reduction in the forest cover (mainly reserve***

forest cover). Similarly, an article published in 'The Hindu Business line' on August 2004, it says that **"a rich resource would be lost forever if the mines become operational."** The Fact Finding Team members also expressed their concern over the mining and recommended for alternate option of sourcing ore. To quote their report:

"Any mining in this area is bound to destroy the biodiversity ++++. Under these circumstances, alternative sources of ore should be explored for the Project." (Findings of the team (iv), Fact Finding team Report).

The impact of the industrial activity and influx of outsiders is already visible in shape of quarries on the edge of the Niyamgiri Reserve Forest and the felling of trees in many parts of the RF area. Though the mines are yet to start operation, the future effects are already being felt. The Fact Finding Team found many evidences in this regard. In their report they have clearly mentioned that,

"++The location of the rehabilitation colony has been decided totally ignoring the interest of conservation of forests. It is just few meters away from the Niyamgiri Reserved Forest. Adverse impact of this colony and the labour force staying near the forest is already visible. The team saw four stumps of freshly cut sal trees in Niyamgiri forests." (Findings of the team (III), Fact Finding team Report)

Instead of taking steps to declare the area as proposed by the Working Plan Office of Kalahandi Forest Division as a Wildlife Sanctuary, the state government is thinking

of allowing mining in this immensely important biodiverse and wildlife rich area which will have disastrous and irreversible effects on the survival of the existing wildlife . It is feared that the local tiger and elephant population will abandon the hill once the industrial activities commence.

▪ Impact on Geohydrology

Bauxite deposits are situated on the upper portion of hills as 'caps'. They are by nature porous and permeable, which makes them good retainers of ground water upto 30% of volume. This water manifests itself in the form of perennial streams where the bauxite layers meet the underlying impermeable layers of laterite. Located at great heights, they effectively act as overhead aquifers, similar to the glaciers in Himalayas, feeding the rivers with water during the lean season.

Mining of bauxite will destroy the aquifers. Perennial streams, which owe their origin either directly or indirectly to the bauxitic 'caps', will dry up. The Jamaican experience of the impact of bauxite mining on the water retention capacity has been documented (<http://www.american.edu/TED/bauxite.htm>), and can be referred to for evidence. This will result in the drying up of streams, underground water resources and Vamsadhara and Nagabali rivers, leading to desertification of the area. (www.indyamedia.org.uk/en)

The impact on Vamsadhara river can be easily assess from the changing decision of Vedanta Alumina Limited. According to the REIA report, *Water requirement for the proposed project is estimated at 75m³/day of which 50m³/day will be required for dust suppression purpose at the mine +++. The needed water will be supplied from the Alumina refinery complex which will source required water from the Vamsbadhana river.*



However, Vedanta Alumina Limited has now started construction of barrage over Tel river, near Kesingha as it knows that in long run Vamsadhara could not supply required water as it is going to severely affected by the mining.

The Fact Finding team also mentioned similar thing in their report. To quote it:

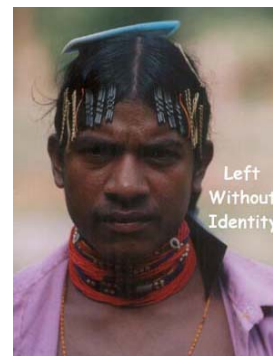
“++Further, the hills form the origin of Vamsadhara river. The rivulets coming across these hills are source of water for the local communities. Any mining in this area is bound to destroy the biodiversity and affect the availability of water for local people. The question of pollution of Bansadhara river is also there. ++”

▪ Impact on Local Tribal

The Niyamgiri hills, which are going to be adversely affected by the proposed bauxite-mining project also, happen to be home to Dongaria Kondhas, one of Orissa's most distinctive and traditional tribes.

Their social, economical and cultural life is closely interlinked with Niyamgiri hills. Most importantly their believes and identity are confined to the Niyamgiri hills.

The Niyamgiri hill holds the highest rank owing not only to its physical characteristics but also on account of the religious lore associated with it (Forest Tribes of Orissa, Vol.-1, The Dongaria Kondha, page No. 319)



The proposed mining area that falls on the top of Niyamgiri hills, (Niyamgiri R.F, Khambesi R.F, Niyam dongara P.R.F) is one of the most sacred places of Dongaria Kondhas. They believe that ‘Niyamraja Penu’ and other gods and goddess are living there. *From the vantage point of this elevated location, it is easy for their highest regarded god ‘Niyam Penu’ can observe their activities and protect them from all odds. Hence hunting, cutting and felling of trees, slashing and etc., on Niyamraja range continues to be a taboo, owing to long standing belief in his sovereignty*

and omnipresence. (Forest Tribes of Orissa, Vol.-1, The Dongaria Kondha, page No. 319)

If the proposed project is implemented, the Dongarias Kondha shall lose their precious home, culture and heritage and ultimately would be left without identity as they strongly believe that one must possess movable and immovable properties anywhere in Niyamgiris to claim himself to be a



Dongaria. Central Government and State Government already pumped crores of money for the overall development of this primitive tribe under banner of 'Dongaria Kandha Development Authority', which will also turn futile in near future.

Not only will the project spell doom for these tribes and the ones whose lands fall under the alumina plant area, it would also devastate the local ecology-springs, rivers, and many endangered species. The people of south Orissa will lose their permanent source of water from Vamsadhara and Nagavalli, which irrigate their fields and meeting their drinking water, needs.

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