

Diversion of 660.749 ha of forest land for mining of Bauxite ore in Lanjigarh Bauxite Reserve in favour of Orissa Mining Corporation in Kalahandi and Rayagade districts in Orissa.

A SITE-INSPECTION REPORT ON THE ISSUES CONCERNING WILDLIFE CONSERVATION

This note relates to observations made with respect to the issues relating to Wildlife Conservation during a site visit to the mining site at Lanjigarh Bauxite Mining lease area, which was carried out in pursuance of the Order issued by the Government of India, Ministry of Environment & Forests vide their F. No. 8-23/2005-FC of 01st January, 2010. The visit to the site was made between 21 January 2010 and 24 January 2010.

BACKGROUND:

The **Hon'ble Supreme Court's Orders** dated 23.11.2007 w.r.t. I.A. NO. 1324 & 1474 IN WRIT PETITION (CIVIL) NO. 202 OF 1995 and dated **8.8.2008** w.r.t. I.A. NO.2134 OF 2007 IN WRIT PETITION (CIVIL) NO. 202 OF 1995 on **grant of clearance for diversion of 660.749 ha of forest land** to undertake bauxite mining on the Niyamgiri Hills in Lanjigarh had allowed MoEF to grant approval in accordance with law.

During the processing of the proposal at different levels of the Ministry of Environment & Forests for the diversion of the above mentioned land a number of issues concerning environment, forest cover, ecology of the area, tribes and people and wildlife in the proposed mining area had been scrutinized. The issues concerning wildlife conservation revolved mainly around the following points:

1. The significance of the area from the point of view of wildlife conservation point, given that it did not form a part of any National Park, Wildlife Sanctuary or a Biosphere Reserve;
2. Threats posed by mining activity to the habitat and the populations of endangered species including, among others, the elephant, sambhar, spotted deer, leopard, sloth bear, barking deer etc., found in the area;
3. Threats posed to the stability of the natural ecosystem in the ecologically sensitive area.

Admissions and denials, as well as approaches for mitigation of the problems that could arise for the conservation of wildlife in the area had been considered by various competent authorities and legal angles examined before the signal to go-ahead with the diversion of 660.749 ha of a compact

site over land constituted as forest in the districts of Kalahandi and Raygade was allowed to be given.

Certain conditions had been imposed to ensure that the impact on wildlife, in addition to other issues relating to Environment and Forest Conservation and people inhabiting the region was reduced to bare minimum. The main approach was to bring a meeting point between Conservation and Development. For the implementation of the action points various documents, including the following, were approved:

1. A Wildlife Management Scheme modified under the guidance of the Wildlife Institute of India, was approved by the PCCF(WL) & CWLW, Orissa for implementation at a cost of Rs 50.53 crore, and the funds were placed in position for this purpose by the applicants for diversion of forest land for mining of bauxite ore. Prescribed Wildlife Management Scheme is expected to take care of the issues relating to the conservation and management of wild life populations in the project impact area.
2. Treatments have been prescribed in a Conservation Plan prepared for the interspersed forest area sandwiched between mining units on the mining lease area.
3. A Conservation cum Development Plan (2007-12) has reportedly been prepared by SC&ST Development Department, Govt of Orissa.
4. Indian Bureau of Mines approved the modified Mining Plan for lease area of 721.323 ha on 16.01.2009.
5. As per CMPDI, The proposed mining activity will have no impact on the aquifer in the plain area.
6. WII has confirmed that Dongria Kondhs do not inhabit the proposed mining site. Development of people within a 50 km radius of the Project is planned with support from the Project.
7. Dongria Kondhs consider the hill at Hundijali as a sacred place, the seat of Niyam Raja, 8-10 km away. Cultural rites are not being impacted by mining Project since the mining site is not in their way.

Environmental Clearance was granted by MoEF on 28 April 2009: MoEF No J-11015/221/2005 - IA.II(M),

Stage I clearance from Forest Conservation angle was granted vide MoEF's No 8-23/2005-FC dated 11 December 2008.

Compliance of the action points under the set of conditions stipulated under the grant of in-principle approval of the government was reported by the State Government of Orissa.

The site inspection, therefore, focused on the current status of issues relating to wildlife conservation at the mining lease site and the ecosystem in which it lies. The site inspection took place on 22 & 23 January 2010. The approach and the observations made are given below:

APPROACH:

a. Interaction with people: While traveling by road in the districts of Rayagade and Bhavanipatna (Kalahandi) on way to Lanjigarh on 22 January 2010 random unscheduled halts were made for direct interaction with people to understand their views about the mining project at Niyamgiri hill. Care was taken to closely explore the views held by people who identified themselves as adivasis and were living in their traditional tribal way in small hamlets along the road passing through the forest.

Other persons with whom interaction took place included Hon'ble Member of Parliament from Kalahandi, District Collector of Kalahandi, Forest Officers, Officials of Orissa Mining Corporation and M/S Vedanta Alumina Ltd., and the members of the public and tribal youth we came across accidentally near Niyamgiri ridge.

b. Independent Technical Surveys:

For an overall perspective of the structure of the forest ecosystem in the rugged hilly topography a one hour (approx) aerial survey by helicopter was carried out over the lease area, covering proposed mining units, adjacent forest and hill ranges and semi-rural habitation areas.

For quick analysis of the natural condition of the area before mining starts an Ecosystem approach was employed for interpreting the ecological indicators in the field. The ecological indicators in the landscape were sought and examined to the extent it was possible during the site inspection.

For examining immediate status of issues regarding wildlife conservation in the diversion area for mining work visit was made on-foot and by road, wherever road existed,

OBSERVATIONS MADE DURING SITE INSPECTION:

Observations and interpretations of evidences noticed are given below:

A. Violation of the provisions of law under Wildlife Protection Act, 1972.

- i. No evidence of hunting or damage to wildlife habitat by the staff or officials of the OMC or the Vedanta Alumina Ltd., at the mining lease site came to our notice.
- ii. There was no evidence of damage to the wildlife habitat by felling of trees at the mining site on the dates of inspection.
- iii. At the fringes of forest outside the lease area and near the human habitations at the base of the hill below the mining lease area some people, apparently local inhabitants, were seen carrying posts and branches of trees felled by them – they carried axes with them. The wildlife habitat around the mining units within the lease area did not appear to be disturbed.
- iv. There was no evidence of any mining of ore in the lease area.

Observation: Site inspection did not reveal any violation of laws relating to wildlife conservation by the OMC or VAL in the lease area.

Special Note: The threat to wildlife in the forests around Lanjigarh from activities considered illegal under the provisions of Wildlife Protection Act, 1972 is real. Increase in local demand for cheaper, unregulated fuelwood and structural timber by new settlers not directly employed by the upcoming industrial complex is the main cause of increase in threat to wildlife and wildlife habitat in and around Lanjigarh. The advancing settlement of people in Lanjigarh, upcoming consumer goods markets, and concentration of people not indigenous to the area needs to be controlled by the concerned authorities in the State Government.

b. Loss of wild life habitat affecting their population structure

During the site inspection evidences of the presence of spotted deer and hare, and digging for roots by porcupines and human beings were noticed in the area. Evidences of the presence of other larger animals were not observable on the hard barren blanks in the lease area. Evidences of presence of elephants, tiger, leopard, or other larger animals did not come to our notice, mainly because the barren rock does not easily lend to registering tracks and foot-prints of such animals.

However, their presence in the forest around the lease area cannot be ruled out. Enquiry from a local tribal pointed to the presence of an animal that he described to be large with stripes. Confirmation of its true identity was not possible as the hyena and tiger, animals coming close to his description, carry stripes on their bodies.

Local enquiry for availability of water in pools or drains within the lease area on the hill top drew a blank. Water was reported to be available in lower elevations and hills outside the lease area.

The wildlife habitat had stunted tree growth at mining site, indicating thin layer of soil; but the growth of the same species of trees growing on the slopes of the hill below the lease area was better and denser, indicating richer habitat for wildlife species that prefer woodlands. Spotted deer are animals of forest edge, while hare prefer open ground.

The interspersion of the blank areas with small stretches of forest on the plateau-like hill top, and the growth of dense stands of tall trees on the hill slopes is an ecologically qualifying feature of the area. The wildlife of the area is governed by the distribution of the resources offered by this ecosystem.

Observations:

Mining activity had not started in the lease area and it is premature to comment upon the impact on wildlife habitat and population structure in the lease area.

In the 660.749 ha of lease land, 270.489 ha forest growth is interspersed with 390.26 ha mining blocks. The mining units are in four clusters of

mining sites. Over the mining lease area 20 ha will be mined at any particular time in order to reduce the intensity of shock impact of this activity and distribute it over space and time for the duration of the mining project. As per the estimated volume of denudation caused by felling of trees in the area, if 50,000 trees are to be cut and 16,00,000 to be planted in different area, away from the site of mining. Further, it is informed that 3,55,300 m³ top soil and 2,000,000 m³ waste from mining will be temporarily dumped in predetermined places and liquidated in 5 years. Thereafter there will be no more dumping.

The effect of removal of trees and top-soil on the continuity of the wildlife habitat at the site is bound to be irretrievable, and cannot be treated as nominal. Dumping of overburden, even if it is for 5 years, is again a source of permanent impact on wildlife habitat.

Mining is an activity that directly and openly impacts the basic element of an ecosystem: the foundation of the trophic structure of the ecological web of life on which wildlife survives. Therefore, it is to be expected that mining will have its impact on the natural ecosystem of the area where it is being undertaken.

Special Note:

In a fringe of grass surrounding one of the mining ore unit, a mat of grass seeds 12-inch x 9-inch (approx.) was seen laid out by ants on a small flat surface of bare rock, presumably for drying out in the sun. In another spot, a blue wasp was seen dragging away a paralyzed golden spider after it had immobilized it by its sting. It is also stated that golden lizard is found in the area, but it could not be observed from direct sighting or other signs and evidences. The observation made at the site indicates that similar other patches around the lease area also provide micro-habitat for biodiversity of a nature that is characteristic of the Niyamgiri hill ecosystem.

The uniqueness of the micro-habitats can be prevented from permanent loss if no further grant of lease in such areas is allowed. The gene-pool of local species of wild grasses and other plants, small insects, arthropods and other life-forms that colonize barren spaces will be of immense value for reclamation of mined surface only if they are not decimated through award of permission to mine ore in the rest of the Niyamgiri ecosystem. Otherwise, the loss of wildlife habitat of special nature, as found in the area, and the population structure of the foundation of the ecosystem's equilibrium is bound to be disturbed beyond the elastic limits of recovery of the environmental quality. Examples of NALCO and other mining sites do not suffice because there is no comparison made between the status of biodiversity in the area before and after the mining was taken up and what is its present status; nor such a comparison is applicable to different situations so as to safely predict the likely impact of large scale mining in a natural ecosystem.

c. **South Orissa Elephant Reserve - a linking corridor for elephants in Orissa**

OBSERVATIONS:

Evidences of the presence or movement of elephants in the mining site were not noticed during the site inspection on 22.01.2010. During our interactions with local people en-route Lanjigarh from Rayagade enquiries about the presence or movement of wild elephants in the region indicated that the elephants did occasionally visit their crops from the forests in the region. But the level of man-elephant conflict in the area was not as severe as is seen in the Jharkhand, south-Bengal and Chhattisgarh inter-State elephant range.

Special Note:

Mining area constitutes 0.05% of 7713 sq km of proposed South Orissa Elephant Reserve to be constituted for 179 elephants. The herd structure of the population of 179 elephants, their movement patterns and the range over which they move were not available. Niyamgiri, Patragurha, Raulaghimiri, Nachinigura, Hatisal, Karanja and Jalakrirha RFs; Khambesi, Nimagiri, Batarilima, Kudlima, Dahikhal, Sarambi, and Chatikuna and the Protected Forest of Jungle Block reportedly form the Buffer Zone of the elephant habitat.

The forest areas where elephants were reported to move were the two arms of the nebula-like linkages connecting the central hill formation near Niyamgiri and the forest areas stretching toward Karlapat, Kalahandi and Bissamcuttack. These can be seen on the the Google Earth scan for the area bounded within the Longitudes of 83° 11' E and 83° 40' E and Latitudes 19° 21' N and 19° 50' N, which shows a nebula shaped mountainous geological formation in the central section of the landscape. On a Survey of India map Sheet No 65 M (Scale 1:250,000) this formation is shown to range west of the road passing through Bissamcuttack-Tikaraparha-Sibapadar-Ambadala etc. Lanjigarh, the site of Alumina Refinery of M/S Vedanta Aluminium Ltd, nestles in the northern cusp of this formation. On a 1:50,000 scale, the Survey of India sheet No 65M/6 shows the administrative and topographic details and different kinds of land-use to which the area is subjected. The forest area of 660.749 ha in which mining for Bauxite ore is proposed is located in the higher reaches of the hill stretched in east-west direction just south of Lanjigarh village. Google Earth scan is a satellite depiction of the land, its topography, forest cover and land-use pattern by human population as a composite unit.

The satellite imagery indicates the presence of tenuous forested links that connect the Niyamgiri forest with other larger patches of forest in the east, west, south and north. These links are ecological wildlife corridors that allow the movement of wild animals between different sections of their habitat for ensuring that strong genetic enrichment for biodiversity is maintained in the area.

Bauxite ore is reportedly present over an extensive stretch of the hill formation. There is a good scope for mining for bauxite in areas beyond the 660.749 ha lease currently under consideration. **The impact of mining at Lanjigarh Bauxite Reserve on wildlife corridors, and elephant range may not be serious if it is confined to the present lease area and more areas are not opened up for bauxite mining till the present lease area is reclaimed fully.**

d. **Possible impact on environment and overall ecology of Niyamgiri hills**

The entire landscape is structured into three easily recognizable ecological land profile categories:

Category I: The natural forest ecosystem in which there are no permanent human settlements or habitations.

It is self-sustaining ecological entity. The level of human disturbance in this area is bare minimum.

Category II: The retrograde, secondary forest ecosystem in which primitive agricultural practices, like shifting cultivation, are practiced. Some of the natural self-sustaining processes are compromised by human intervention to the extent that monocultures are introduced for a short duration in a multi-tiered vegetative cover profile, and the land is later allowed to revert back to the natural ecosystem. The productivity of the land is reduced but not lost completely.

It represents partially subsidized natural ecosystem that has been reduced from its natural status of climax forest to secondary forest ecosystem because of human activities.

Category III: The **subsidized semi-rural/ semi-urban human-dominated landscape** in which human populations exploit forest based inputs for meeting their needs for fuel, food, and introduce extraneous influences into the natural ecosystem with non-indigenous resources such as seeds, chemicals, fertilizers, etc., imported to the site to aid their survival. Growth and harvesting of monoculture of non-indigenous species of plants, permanent settlements, low dependence level on natural resources, low contribution to conservation of nature and wild natural resources are the main indicators of this category of ecological units in this area. The human habitation proceeds towards urban economy and not towards ecosystem based economy.

It has ecologically the lowest compatibility with natural forest ecosystem.

OBSERVATIONS

Category I: The ridges and slopes of the hills are mostly covered with dense forest and belong to Category I mentioned above. Bauxite ore is exposed to the surface where level natural blanks show up in the forest cover in the upper reaches of the hills. The blanks are bordered with stunted growth of trees, indicating a thin layer of soil. The 660.749 ha of land falls in this Category.

The surface of the mining units was found to be mostly blank, without tree cover, and with thinly scattered clumps of grass cover and *phoenix* palm. No perennial source of water was noticed at or near the sites for mining. The evidence of collection of rain water in small pools at some spots was noticed. The site for inspection was approached by a very rough boulder-strewn steep track which rose from the base of the hill to the top of the hill.

The mining lease area on the Niyamgiri plateau is currently without any significant ecological damage, but it is likely to bear the impact of mining activity with the start of mining activity. Actual impact will have to be monitored over a longer period of time.

Category II These units are located at the edge of the natural forest and are outside the forest diversion area. The lower slopes of the hill exhibited the presence of such partly subsidized ecological units in patches. Both wildlife and forest dwelling human populations co-exist in a low-conflict situation in such units.

There is not well defined boundary to indicate the limits within which people resort to shifting cultivation at the edge of the forests. But on our way from Rayagade to Lanjigarh it was noticed that the easier slopes along the foot of the Niyamgiri hill were subjected to this kind of activity, converting self-sustaining natural ecosystem to partially subsidized ecosystem. The impact of the Aluminium Project in converting naturally self-sustaining ecosystem on the slopes of Niyamgiri hill into partially subsidized ecosystem was not noticeably evident. The conveyor belt is a linear intervention in this region and is not likely to cause an irreversible impact on this part of the ecosystem in the long run.

Category III: The valleys and plains at the bottom of the hilly formations are occupied by this type of land-use pattern. The Aluminium Ore Refinery has come up on land covering such an ecological unit.

Special Note:

The apprehension of Environmental degradation of the Niyamgiri hills ecosystem by land degradation, geo-hydrological drainage change, air and water quality reduction and public health hazard is not unfounded. More than mining at the site where ore is

exposed, the impact will be generated by human activities in the area which will be a fall out of the concentration of human population in and around the site of the Refinery. It may get irrecoverably aggravated if the entire hill is to be mined. In spite of the two decade experience with NALCO in Panchpatmali Bauxite Mines, where wildlife reportedly frequents the dense forests grown on the reclaimed mined-out areas, gaps will remain in the recovery and restructuring of the ecosystem. Compensatory afforestation cannot create any ecosystem that has been impacted. Afforestation activity limits itself to growing of stands of selected tree species. Afforestation can not return natural elements like waterbodies, marshes, sandbanks, grasslands, glades, rocky-outcrops, top-soil and sub-soil, ground-water regime and other ecological structures that may have existed in the area diverted. The simple reason is that we do not have the expertise to replicate even one of the many natural processes and elements in spite of our scientific and technical advancement.

RECOMMENDATIONS:

The convergence between Development and Conservation of natural resources is achievable by defining a balancing point between conservation of nature - forest and wildlife - and development. This balance point is decided by nature through its ecological limitations and not by human beings at the time of planning economic activities. If limits of ecological elasticity are not exceeded there are chances of designing Projects in which ecological recovery from the after-shocks of the Project activities can be managed. In the present case, the present level of stress in the natural ecosystem can be mitigated by following the identified action points arising out of the ecological considerations to which the proposed Project has been subject, provided the ecological limitations are not lost sight of. However, it is our impression that the ecosystem at Niyamgiri may not allow introduction of further stresses. For this reason it will be in the overall interest of development and conservation of human society, natural environment and wildlife to:

DO NOT ALLOW FURTHER DIVERSION OF FOREST LAND IN THE NIYAMGIRI ECOSYSTEM COMPLEX SPANNING THE FORMATION VISIBLE IN THE SATELLITE IMAGERY OF GOOGLE EARTH.

VINOD RISHI
