

Kudremukh Iron Ore Company Limited (KIOCL): The Death Knell and Beyond

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Case Analysis I

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The case study of export-led iron ore mining with its attendant social, legal, economic, and environmental dimensions is increasingly relevant as many similar cases are unfolding across India, pitting “development” against “conservation”. This analysis presents my perspective as a practising conservation scientist, who happened to play a long-term role beyond mere observation in this case as it unfolded over four decades. In the interest of full disclosure, I would like to state: (1) From 1966 onwards, I have hiked in these mountains as a young naturalist, and a student of engineering at what is now the National Institute of Technology, Surathkal; (2) In 1982-84, I had conducted an ecological survey of the endangered lion-tailed macaque discovering new populations in Kudremukh, eventually leading to the notification of the National Park in 1987 by the Government of Karnataka; (3) I have also been actively involved in the wildlife conservation advocacy in Kudremukh from the 1970s, and provided scientific advice to NGOs that finally litigated the issue in the Supreme Court of India, leading to the 2002 Judgment ordering closure of these mines by 2005.

I believe the following issues are critical to understand the implications of this case for the wider ‘conservation *vs* development’ debate that is unfolding as the nation pursues often conflicting goals of achieving economic growth and social equity without undermining environmental sustainability.

SCIENTIFIC, ECOLOGICAL, ENVIRONMENTAL ISSUES

As far back as in the 1970s, the need for ‘preservation of biodiversity’ (visualized as interacting plant and animal communities, some with great potential economic value) was recognized as an international and national developmental priority, over and above the traditional concerns of economic growth and equity. Furthermore, the ‘ecosystem services’ value of a mountainous forested area like Kudremukh for watershed protection was well-recognized by forestry and wildlife sciences and the laws already in place. None of these considerations appeared to have weighed in when this export-led iron ore mining was jump-started in Kudremukh during the emergency political

The current issue of *Vikalpa* has published a case titled, “Kudremukh Iron Ore Company Limited (KIOCL): The Death Knell and Beyond” by KN Murthy and DVR Seshadri. This Diagnoses features analyses of the case by K Ullas Karanth, Achal Raghavan and Rajiv Motwani.

regime (1974-76), which suppressed normal democratic avenues for questioning the decision. Regardless of the broader issue of the rate at which India's iron ore resources should be mined, either for domestic use or export, it was well known even then that iron ore was a common mineral found all over the country existing in higher concentrations elsewhere. On the other hand, it was already known that Kudremukh site forms the largest block of biodiversity-rich tropical rainforests in the Western Ghats and it plays a crucial watershed role for major rivers originating in this steep terrain with a rainfall exceeding 7,000 mm per year. These ecological factors were simply not considered in the initial decision to site the mine at Malleswara. To my knowledge, no open-cast mine of this size is sited anywhere in the erosion-prone tropical rainforest regions of the world on such steep terrain, at such a high altitude under such an intensive rainfall regime. As the putative guardian of local people's interest, even the then Deputy Commissioner in Chikmagalur, as well as some of the wildlife conservationists like us, had raised these issues when the decision was made. These arguments were not against mining *per se*, but against the decision to site this mine at Kudremukh.

The second often ignored issue is the impact of not only the mining, but of its ancillary activities on the surrounding forests and wildlife. The Border Roads Organization of the Indian Army, which carved out the highway to Mangalore through virtually untouched wilderness not only caused immense damage to forest habitat in the process, but also to the wildlife from unfettered hunting by army personnel. Several new public access roads were also cleaved into this wilderness, particularly between Kalasa-Malleswara-Karkala and from Sringeri to SK border, opening up these remote areas to illegal hunting, timber smuggling and other undesirable human impacts. Even the ill-conceived attempts of KIOCL and the Forest Department to 'green' the natural shola-grasslands by planting exotic trees led to further expansion of road networks.

Advancing scientific knowledge actually led to the enactment of the Wildlife Protection Act in 1972, the Forest Conservation Act in 1980, and the Environmental Protection Act in 1986. With the notification of the 600 sq km Kudremukh National Park in 1987 around the 48 sq km mining lease area, it should have been obvious to the company that expectation of its lease extension beyond 1999

was illogical. Such an extension would have flown the face of a major global societal shift in favour of environmental sustainability, reflected in the country's governance and legal systems. Following the National Park notification, these conservation concerns only multiplied with emergence of new knowledge about impacts of habitat fragmentation on natural ecosystems through the new science of landscape ecology, as well as from scientific studies of endangered species and environmental impacts in Kudremukh.

Therefore, it cannot be reasonably claimed that there was a time lag between KIOCL's corporate attitudes and social shifts. The company in fact recognized these social shifts. It spent enormous amounts of money on 'environmental protection measures' attempting to arrest the massive soil erosion generated by its mines. However, most of these measures were ineffective at best and cosmetic at worst. They did not mitigate siltation of Bhadra River and the irrigation system, which sustained 100,000 hectares of productive agriculture. In addition to the Karnataka Irrigation Department's 1982 study, which pointed out 20 times higher silt loads, subsequent rigorous studies by reputed hydrologists and geologists¹⁻⁴ conclusively confirmed this problem. These studies showed that the sub-catchment around Kudremukh, which occupies only 6 per cent of the overall catchment of Bhadra River, contributed 60 per cent of the silt load. By 2004, this siltation was estimated to have led to loss of storage capacity of nearly 1-tmcft in Bhadra reservoir.

Against all this scientific evidence, the company could only produce studies conducted by its own hired consultants, which showed no silt loads in the river. This was not hard to explain: whereas scientific studies had shown that the soil erosion was episodic and occurred during monsoon, the consultant's studies were conducted in the dry season when there was no erosion or silt in the river. In fact, the Irrigation Department's studies that pointed at high silt loads were discontinued by the Government, possibly to protect the company's 'green' credentials. However, this problem was belatedly acknowledged even by the State Government by its own rejection of the proposed expansion of mining into Nellibeedu and Gangadikal areas in 1995 (the former would have discharged even more silt into Bhadra river and the latter would have opened up a fresh source for silting of River Tunga).

Although somewhat clouded by its own verbosity, the final 46-page judgment of the Supreme Court (All India Judicial Reporter 2002: SC 724) is thus solidly backed by hydrological, geological, and ecological evidences that were cogently presented by conservation advocacy groups, which the company could not counter effectively.

SOCIAL, POLITICAL AND CONSERVATION ADVOCACY ISSUES

From a social and political perspective, there were several distinct interest groups affected by the mining project, all of which tried to influence the final outcome. These are listed below in somewhat crude, practical categories, which I believe are sufficient for this analysis.

1. The company's executives, board members, officials in the Ministry of Steel, and company employees including their local dependencies in Kudremukh
2. Business associates of the company including powerful commercial interests in Mangalore, Port workers' unions, foreign and local collaborators, contractors, and suppliers
3. Other government departments, particularly in the district of Chikmagalur, Mangalore, and Bangalore city where the company has a major presence
4. Farmers along the Bhadra River banks and in the command area of Bhadra Dam
5. The State Forest Department with a mandate to enforce conservation policies and law
6. Advocacy groups primarily promoting immediate interests of people living in enclaves within the National Park
7. Advocacy groups with a priority for wildlife conservation interests, who were also surrogates for interests of wild plants and animals bearing the full negative impact of the project.

Basically, interest groups listed at 1-3 above were strongly in support of continued mining operations because all of them perceived large material gains from the presence and activities of the company. All of them employed their social clout to support and favour the company throughout the period from 1970s to the present day. Political leadership of all political parties at both state and national levels strongly supported the continuation of the mining in Kudremukh, even while protesting loudly about mining in eastern Karnataka region with much lower rainfall, flat terrain, little biodiversity, which holds iron ore of much higher quality. The only exception to

this trend was the final stand of the Karnataka Government before the Supreme Court in 2002 as a result of public campaigns against mine. Notably, heads of several Hindu temples in the region around Kudremukh consistently and publicly opposed the mine.

Numerically, the largest constituency affected by the mining operation, is the farming community along the banks and in the command area of Bhadra River (and Tunga River if Gangadikal were to be mined). The command area farmers, a well-organized pressure group, were basically unaware of the scientific issue of siltation that affected the dam, and were brought in to campaign only in 2000-2001, largely because of advocacy groups that reached out to educate them.

The advocacy groups which prioritized human interests locally in Kudremukh came in two flavours: some were influenced by the 'Maoist ideology' and others by the 'Hindutva' ideology. Both groups claimed to speak for inhabitants of remote settlements located within the Kudremukh National Park. While both these groups opposed the mining company strongly and publicly, they also simultaneously demanded the abolition of the Kudremukh National Park and relevant wildlife protection laws, which they termed as 'anti-people'. Their early efforts at litigation against mining in the High Court of Karnataka were weakened by such inconsistent stances. Most arguments they made against mining were sweeping and emotional, and failed to convince the Courts. These failed attempts also made it difficult for others to litigate in the same Courts. Allied to such local groups were the varied and ephemeral agitations proclaimed by writers and intellectuals of various hues in the State Capital. These demanded, impractically, that all mining should stop instantly. However, during 2001-2002, all these social movements played a role in shaping broader public opinion against the mining and pushed the Karnataka Government to file the crucial revised affidavit in the Supreme Court asking for a termination of mining by 2005.

The State Forest Department's role throughout these events has been somewhat vacillating, depending on individual officials and political pressures they had to bear. The Chief Wildlife Warden and the State Forest Department boldly rejected the permission to extend mining to Nellibeedu and Gangadikal in 1995, a step that proved crucial in stopping the mine expansion, which was to be followed by major investments by multinational steel com-

panies. Blocking the expansion essentially meant that KIOCL did not enjoy the support of these multinational partners in influencing subsequent government decisions.

As the company continually violated forest laws until 2004, local forest officials generally recognized and booked these individual offences, resisting pressures from above. However, after 2004, they appear to have turned friendly to the company, ignored its violations of forest laws, and even began harassing the conservation advocacy groups that tried to monitor the mining company's compliance with the Supreme Court's final judgment. To this day, this mining-friendly attitude persists, as evidenced by the lack of concrete action to evict the company from the national park and deemed forests as mandated by the court judgment and to recover losses estimated at Rs. 156 crore caused by the company, as estimated by the Comptroller and Auditor General of India.

Of all the above named interest groups, advocacy groups believing in the primacy of wildlife conservation were numerically the smallest. However, their ability marshal the evidence against the mine in the public arena through a powerful video documentary* that was aired on local cable networks and presented as evidence in the Supreme Court; more importantly, evidence in the form of hard scientific data¹⁻⁴ countering the company's consultants, was vital to the final outcome. A key element of their success was sourcing evidence from diverse scientific domains ranging from ecology to hydrology and meticulous documentation of legal violations by the company. They did not rely on rhetoric and religious sentiments, as is sometimes the case with environmental advocacy litigation in India.

However, my personal view is that even this success of conservation advocacy groups in the Kudremukh case depended on a crucial step taken by the Supreme Court in constituting a 'Green Bench' backed up by a Central Empowered Committee with several 'green' members. This step arose from the ongoing 'Godvarman Writ Petition 202' of 1995, which enabled many conservation advocacy groups in India to seek remedies for violation of forest and wildlife laws directly in the Supreme Court through *Amicus Curiae*, an eminent senior counsel. This factor levelled the legal playing field at a crucial stage in the chain of events enabling the conservation advocacy

groups to challenge KIOCL which could readily hire the highest priced legal talent in the country at public cost. In the absence of WP-202 related factors mentioned above, the conservation advocacy groups lacked resources to obtain legal relief in the Supreme Court. However well-intentioned and well-equipped they were to make their case, they were unlikely to have been able to do so before the highest court in the land.

CORPORATE GOVERNANCE ISSUES

There are several serious issues of corporate governance involved in the Kudremukh case which need deeper examination. The original mining plan envisaged that the company would operate only for 30 years ending in 1999. The notification of the national park and enactment of tough Forest Conservation and Environmental laws in 1980s should have made it amply clear to the company executives that the lease was unlikely to continue. The state and central governments also repeatedly warned the company to look for ore deposits elsewhere as the lease ran out. Despite this, the company went ahead and invested several million rupees in a pelletization plant tailored specifically to process Kudremukh ore — about Rs.330 crore in a ductile and spun pipe project and about Rs.120 crore in refurbishing the slurry pipe line even as the mining lease ran out.

Furthermore, the company (despite being owned by the Central Government or perhaps because of it) committed clearly in violation of the Forest and Environmental laws. These violations included increasing the height of Lakya Dam by 35 meters leading to submergence of a national park area of 340 hectares; illegal formation of roads while prospecting in 1994-95; illegal road formation for repairing the slurry pipe line in 2000; and after the mine closure in 2005, diversion of water from Lakya Dam to Mangalore via the slurry pipeline in contravention of laws preventing intra-basin transfer of river waters. It is manifested to the present day in continued retention of company's equipment and personnel from areas from which it has been evicted by the Supreme Court's judgment.

It is also noteworthy that even after the Supreme Court's final judgment, the company has spent large sums of money in filing repeated 'curative petitions' and encouraged its labour unions to do the same, relying on some of the most expensive legal talent in the country. All these attempts have predictably failed, leading to substantial

* <http://www.youtube.com/watch?v=bmGDj5xn9Ik>

wastage of public funds. The same has been the case with the company's massive advertising campaigns promoting its own 'greenness' while buying media support, in a social context where such 'quid pro quos' are considered undesirable.

With this background in view, the question of corporate governance involved is simple: Would the board of a well-governed private sector company have allowed its senior executives to take such risky commercial gambles, to break conservation and inter-state river laws and blithely go on wasting tax payer's money in litigation and seeking publicity in this manner? I suspect not, and, submit that only a public sector undertaking with ample political patronage and broad social and financial support like KIOCL could do this.

Overall, the Kudremukh case is an important milestone in the 'development vs conservation' debate that keeps being replayed across India. It holds valuable lessons for those fighting on both sides of this divide. In the governance context, it shows that being a public sector company does not automatically guarantee responsible social behaviour. Within the domain of environmental advocacy, this case highlights the importance of basing conserva-

tion arguments on science rather than on sentiments and of using democratic processes of an open society to address environmental problems.

ENDNOTES

1. For more background on this case visit <http://www.youtube.com/watch?v=bmGDj5xn9Ik> and <http://www.indiatogether.org/2005/oct/env-kudremukh-orig.htm>
2. The scientific evidence about soil erosion presented in this case is published in the following peer-reviewed articles: Shankar, R; Thompson, R and Galloway, R B (1994). "Sediment Source Modeling: Unmixing of Artificial Magnetisation and Natural Radioactivity Measurements," *Earth and Planetary Science Letters*, 126, 411-420.
3. Krishnaswamy, J; Bunyan, M; Mehta, V K; Patil, N; Naveenkumar, S and Karanth, K U (2006). "Impact of Iron Ore Mining in Kudremukh on the Bhadra River Ecosystem," In Krishnaswamy, J; Lele, S and Jayakumar, R (Eds.), *Hydrology and Watershed Services in the Western Ghats, India*, New Delhi: Tata McGraw-Hill, pp. 193-211.
4. Krishnaswamy, J; Bunyan, M; Mehta, V K; Jain, N; and Karanth, K U (2006). "Impact of Iron Ore Mining on Suspended Sediment Response in a Tropical Catchment in Kudremukh, Western Ghats, India," *Forest Ecology and Management*, 224, 187-198.
5. Sandeep, K; Shankar, R and Krishnaswamy, J (2011). "Assessment of Suspended Particulate Pollution in the Bhadra River Catchment, Southern India: An Environmental Magnetic Approach," *Environmental Earth Sciences*, 62, 625-637. 

Case Analysis II

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Introduction

The KIOCL case, set in 2002, represents an early example of an increasingly familiar and recurrent challenge in today's business world:

- How does a corporation achieve a *sustainable and fair balance* between business interests (such as growth and profit) and environmental concerns?
- Is it at all possible to evolve a "green business strategy" which is good for the world and also good for the company's bottom line?
- How does one balance the *conflicting interests* of various stakeholders in such a situation?
- Are such issues to be dealt with in a "business as

usual" manner, or do they involve *principles of ethics* that deserve serious consideration?

Recent developments—such as the conditional environmental clearance given for the POSCO steel plant project in Orissa involving forest land of over 1,250 hectares, and the Lavasa township project in Maharashtra – have brought this subject to prominence even more strongly.

The Crisis

Hari Prasad, Managing Director, KIOCL, is struggling to come to terms with the October 2002 Supreme Court ruling that gives the organization a grace period of three years to wind up its mining operations at Kudremukh,

located in the Western Ghats, in a mountainous and densely forested area, classified as a “global biodiversity hotspot”. The area is blessed with tremendous variety of rare flora and fauna. It is a pilgrimage spot for the local population, and also popular with tourists due to its scenic beauty.

The “wind up” ruling has come as an abrupt shock to Hari Prasad and his senior executives. The “Green Bench” of the Supreme Court, which is a special entity created in 1995 to deal with environmental issues, has based its verdict on the following “green” considerations:

- By destroying nature and the environment, man is committing matricide, having in a way killed Mother Earth.
- The seminal issue involved is whether the approach should be ‘dollar-friendly’ or ‘eco-friendly.’
- Environmental protection is big in terms of the size of the problem faced and the solutions required.
- Global warming, destruction of the ozone layer, acid rain, deforestation, overpopulation, and toxic waste are all global issues which require an appropriate global response.

The Supreme Court has also turned down the company’s appeal to be allowed to continue mining in the already broken up area in Kudremukh. The Court did not accept KIOCL’s argument that such a concession would help smoothen the winding-up process of the company.

The Track Record

Set up as a 100 per cent export-oriented Public Sector Unit (PSU), KIOCL had established a consistent track record for sales and profit – so much so that it had earned for itself the “Mini Ratna” rating from the Government. However, the mining and beneficiation process for extracting the iron ore was inherently damaging to the environment.

Large expanses of forest land have had to make way for drilling, blasting, excavation (using heavy machinery), enrichment, and subsequent pelletization. The process also gave rise to a large amount of waste, called “tailings,” which consists of silica and water. This waste was pumped into the Lakya Dam, where the solids settled down at the bottom. This meant that there was a continuous and inevitable accumulation of waste product at the dam site, as long as the mining activity continued. During monsoons, the river Bhadra was also subjected to pollution by mined soil.

Being conscious of the damage it was inflicting on the environment and the local communities, KIOCL did implement several measures to minimize the harmful impact. A quarter of its capital costs was spent on environment-related amelioration measures. Noise and dust levels were minimized; afforestation was carried out to replace a part of the green cover that was lost; and neighbouring villages were extended developmental aid.

However, the company faced persistent opposition from environmental activists and NGOs, who maintained that these actions were merely “lip-service,” designed to cover up the harm being done to the overall ecosystem. Moreover, the company did not have a blemish-free record with the law – having illegally raised the height of the Lakya Dam in order to contain the ever-increasing burden of “tailings.” This also resulted in 340 hectares of forest getting submerged. Additionally, attempts by the company to expand its area of operation – in a designated “national park” area – were stalled owing to fierce opposition.

Regulatory Changes

From the time of KIOCL’s inception in the ‘70s, to the time it was served the “wind up” notice in 2002, the regulatory and legislative mechanisms in India pertaining to environment protection and forest/wildlife conservation had undergone significant changes.

In chronological order, the following new laws and measures were enacted, showing the Government’s increasing awareness of the need to marry economic development with conservation and other “green” considerations:

- *Wildlife (Protection) Act, 1972* – which was designed to mandate *better protection to biodiversity rich areas* such as the Western Ghats. A consequence of this Act was the formal notification of the Kudremukh National Park (KNP) in 2001 – which had a direct (and negative) impact on KIOCL’s attempts to expand its mining activities in Kudremukh.
- *Forest (Conservation) Act, 1980* – which placed the powers regarding *use of forest lands* solely in the hands of the Central Government. The formation of the Green Bench in the Supreme Court, which ultimately ordered the closure of KIOCL’s mining, was a consequence of this Act.
- *Environmental (Protection) Act, 1986* – which fixed standards for *ambient environmental factors* and im-

posed *limits on pollution*. The Supreme Court has established a track record of coming down heavily on companies which violate the letter and spirit of this law.

Management's Mind-set

Sooner or later, every one of the above important milestones in the environmental regulatory framework of India has had a significant impact on the operations of KIOCL; however, the management of the company seems to have been less than sensitive to the strategic and operational implications of such laws.

Virtually, every decision (and action) of the management appears to have been dictated by business and bottom-line considerations; the ethical implications pertaining to the current and future damage to the ecosystem appears to have been given very little weightage. The fact that KIOCL was a profit-earning "Mini Ratna" PSU seems to have bred a sense of entitlement (for special treatment) amongst the top management.

The overall "business/profit/entitlement" mind-set of the management team can be gauged from the following statements and actions:

- "Finding a new mine site would be very difficult...a very expensive proposition...that we can ill afford..."
- "It is unbelievable that the Supreme Court has been so harsh on a public sector company" – as if PSUs were entitled to special privileges and exemptions from law.
- "This judgment does not make any economic sense"
- Attempts to expand the mining to the Nellibeedu area, which fell under a designated national park region, in order to cater to increasing global demand
- Unilateral (and illegal) raising of the Lakya Dam height in order to continue to accommodate the ever-increasing mass of tailings
- Dropping the (technically feasible) projects for converting the tailings to clay tiles, and the surplus water to packaged drinking water, on the grounds that the market for such products was saturated – whereas going ahead with the projects would have been a neat solution to the tailings accumulation problem, which is an environmental time-bomb in the making.
- Attempts to build another dam at another site, since Lakya Dam was full – thereby spreading the hitherto unresolved tailings pollution issue to yet another site
- Using the Prime Minister's office to apply pressure on the Karnataka government for renewal of the mining

lease, and side-stepping regulations by getting the mining area excluded from the designated national park area

- Basing arguments for renewal of the mining lease on the premise that the original lease has over-riding priority over laws that were enacted subsequently; and that significant sums of money invested in the project so far would go to waste if the mining activities were to be shut down.

At the same time, from a motivational and morale point of view, it must be conceded that Hari Prasad and his team are only going through normal human reactions – when they see an entity (i.e., KIOCL) on which they have invested hard work and commitment for long years being forced to shut down by an apparently uncaring legal authority (i.e., the Supreme Court).

Changing Times

In the decades that have passed since KIOCL's inception, the rules of the game have changed dramatically. Governments and societies the world over have become increasingly aware of (and concerned with) issues such as global warming, pollution, sustainability, and the fragility of the global ecosystem. Stringent laws have been enacted in recent years, and an increasingly aggressive band of "green" activists and the media lose no time in pointing out what they see as questionable environmental behaviour on the part of corporations. KIOCL cannot remain insulated from such developments.

Dealing with environmental issues now requires going beyond mere compliance to legal requirements. Companies need to consider the higher standards of *ethics*. The principle of "*ecological ethics*" or "*deep ecology*" takes the view that "non-human parts of the environment deserve to be preserved for their own sake, regardless of whether this benefits human beings." This principle is eminently applicable in KIOCL's case.

In a similar vein, according to noted American philosopher, John Rawls, "What justice demands of us is merely that we hand over to the next generation a world no worse than we received from the generation before us." This view is equally appropriate in this situation.

Taking this philosophy one step further, Bolivia is set to pass the world's first series of laws which will grant rights to Mother Nature which are equal to the rights of humans. Called "The Law of Mother Earth," this legislation

will establish 11 new rights for Nature, including the right to continue vital processes free from human alteration, the right to pure water and clean air, the right not to be polluted, and so on. It remains to be seen whether other countries will follow this lead taken by Bolivia.

The Way Forward

Having been presented with a *fait accompli* by the Supreme Court, Hari Prasad and the other senior managers at KIOCL need to do the following:

- Accept the new reality — that KIOCL exists as a part of an overall ecosystem, where actions of one entity impact all the other parts.
- Look at KIOCL's future goals as a combination of profit-making, and discharging ethical obligations to "spaceship earth" – the total ecological system. The two goals are not mutually exclusive.
- Recognize that the basis on which the company was given a lease in the '70s is no longer relevant now. KIOCL has to fall in line with current norms and thinking as far as ecology is concerned.
- Get rid of the "why are we getting singled out" mentality. The need of the hour is an aggressive outward-looking focus.
- Apply the principle of "sunk costs" – literally — to all the money that has been invested in the project and its surroundings. In other words, the past should not dictate future decisions.
- Evolve a "green business strategy" for the company, which could be a combination of the following initiatives:
 - o In the short term, expand the pelletization activity, using raw material from other suppliers who are carefully vetted for "green" practices. This will keep the cash-flow going.
 - o Execute the clay tiles project on a war footing, notwithstanding its apparently doubtful profit potential. This will result in a permanent "clean-up" of the vast accumulated mass of process waste at Lakya Dam. This is a moral and ethical obligation that KIOCL needs to discharge on priority. Given the increasing awareness of society in general about such issues, and the spread of green building techniques, there is a possibility that KIOCL could charge a small premium on the pricing of the tiles, by appropriate positioning.
 - o Co-opt the state Government and the green activists, as also other stakeholders such as the workers and the local population, in developing the Kudremukh area into an ecotourism and pilgrimage centre. This will give a boost to the local economy.
 - o Draw up a plan with the central government for re-greening the entire area that has been stripped of forest cover by KIOCL's activities over the years. Ensure that the trees so chosen are appropriate for the ecosystem in that area. Set a timeline for returning the forest area to its former glory. Seek government aid for this initiative, if needed.
 - o Convert the entire Kudremukh mining experience —with all its twists and turns—into a business opportunity for KIOCL. Capture all the do's and don'ts through a knowledge management process, and offer the knowhow as strategic consulting services to other mining companies which are faced with similar situations worldwide. ✓

Case Analysis III

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"The mine site and the Lakya Dam look like fresh wounds to a sea of greenery" – This one sentence from the case sums it all up adequately.

The case illustrates an example of an organization that did not sense that the world around it was changing and

hence could not take adequate measures to keep itself afloat in the new environment. The core competence of KIOCL was exclusive access to a mine in the Kudremukh National Park and when that core competence was taken away, they were not at all prepared with Plan B. Environment sensing and re-evaluating the go/no-go assump-

tions of any business plan at regular intervals is an absolute must and failure to do so is likely to result in a disaster. In this specific context, the assumptions made about the environment, core competence, and the mission (to some extent) in the present and for the future by various stakeholders of the KIOCL organization were all out of date and hence the fate of the organization was doomed since the problem identification happened too late in the day.

How The Environment Changed Significantly since the 1960's?

More Emphasis on "Green"

Kudremukh was recognized as one of the global biodiversity hotspots of the world with a lot of rich flora and fauna some of which are still being discovered. Power, irrigation, and drinking water supplied in the region were also affected as a result of the activities of KIOCL. Forest cover had reduced dramatically (barely 20% left) over the last 20 years. The common man was beginning to get smarter about the environment and hence it was not just the ecologists who were increasingly concerned about the activities of KIOCL. Opencast mining is a very destructive activity causing virtually irreparable damage. The difference between abandoned and currently mined areas and the adjoining natural grasslands and forests is very stark even to the common man.

Increase in Conservation Consciousness

In general, conservation consciousness across all strata of society had increased. A Green Bench was constituted by the Supreme Court to deal with cases of the nature of KIOCL. There were stricter rules and laws — Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Environment Protection Act, 1986 and the laws for establishing national parks, etc. Hence, the operating environment had changed over the years and Kudremukh had done little to adapt to the changing environment apart from making sure that it "complied" with the new norms from a legal point of view while failing to analyse the long-term impact of each of these changes.

Inflow of \$\$\$ into the Country

One of the primary objectives of KIOCL was to bring foreign exchange into the country. In the 1990's, this was no longer such a major consideration since the liberaliza-

tion era was upon us. Hence, the foreign currency brought in by KIOCL was not as attractive as it used to be.

Influence with the Government

The era of liberalization and privatization had brought an end to the License Raj and hence KIOCL's lobbying with the Government had a smaller impact than before.

Misplaced Facts?

- An initial study in the 1960's revealed that deposits at Aroli had 5 million tonnes of ore that was mineable. Yet, investments were made that indicated that there was significantly larger amount of ore available — Contract with the Shah of Iran was for 150 million tonnes and capacity of the mining plant was 22.5 million tonnes a year.
- "The economic loss to the country is pegged at \$75 million annually." However, this loss did not consider the damage to the environment and other intangibles like loss in productivity/efficiency, irrigation, power, and drinking water supply apart from irrevocable damage to the environment. By 2000, \$75 million was considered small for India.
- The other investment of \$1.25 billion (made initially for the infrastructure) was anyway going to be lost because the withered ore extraction was almost complete and to mine primary ore (300 million tonnes of it), new technology and methods of transport were required. This implied a significant amount of new infrastructure expenditure.

Political Angle

- As is evident from the case, KIOCL's battle was highly politicized and hence several parties on either side had their own vested interests. An example is the license for Gangrikal deposits, which was first granted and then revoked.
- The case talks about a thought — "Are the days of the PSU over?" — this also indicates the presence of a political angle.

Other Problems

KIOCL's case got further (directly or indirectly) weakened by the following:

- Kudremukh township attracted others who encroached on forest land.

- Improper handling of the waste by KIOCL – An illegal solution of raising the height of the Lakya Dam was resorted to.
- Loose soil during the monsoon season led to the silt load below the dam being 10 times more than the permissible limit which affected the storage of irrigation water in the Bhadra reservoir.
- On several instances, KIOCL was accused of lobbying with the Government to get special favours.

Did KIOCL Do Enough?

KIOCL did reduce water, noise, and air pollution, but that was not enough. It did a lot to reduce usage of chemicals and produce as little waste as possible. However, because of the nature of the ore and the content of iron in it as well as the requirement of the beneficiation process, a lot of waste was produced and the Lakya Dam was flooded. The timing of the environmental award (in 2002) also raised eyebrows.

Following are some Instances of KIOCL's arrogance:

- It conducted prospect work at Nellibeedu for \$10 million without a proper approval. It also constructed 40 kms of new roads.
- It increased the height of the Lakya Dam without approval (in 1994). This led to the submersion of 340 hectares of dense forests.
- It violated the condition of not breaking into new forest areas when the temporary extension was granted in 1999 (proven to be overshoot by 58 hectares).
- Bursting of the slurry pipe resulted in scattering of a large amount of slurry and extensive damage.
- It had a sense of ownership of the mine.
- It believed that renewal of the license was obligatory on the part of the government. Hence, it even went ahead with a project to replace slurry pipelines costing \$40 million.
- It made infrastructure-related investments even before licenses were given.

No Future Plans

KIOCL completely relied on the Kudremukh mine. All technology and infrastructure were based on magnetite ore only rather than the more abundantly available haematite ore. Hence, the organization was unable to procure raw materials from other sites.


Studies Arrived at Different Conclusions

Several studies on the environment initiated by different parties were inconclusive or had radically different conclusions thereby making it difficult to get a clear picture of the situation. NGOs claimed that KIOCL was insensitive to the environment and were not forthcoming with details of compliance with the environment policies and norms.

Alternatives: What KIOCL Could Have Done?

- Re-evaluate the assumptions it made at regular intervals to enable early problem identification.
- Sense the environment, competition, and market better.
- Think about what value it provides to customers. The company could have scaled more in terms of revenue and profits if it had done some value analysis. If it would have been a \$500 million organization as compared to the \$75 million in terms of the taxes it paid to the government, perhaps things might have been different.
- Think about alternatives to its single core competence.
- Introduce carbon credit like system. Could the organization have made up the loss to environment by other initiatives to compensate for the damage at the Kudremukh site?
- One of the main losers were the employees of the company although they were offered the VRS scheme. Could anything else have been done for them?

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MANAGEMENT CASE

describes a real-life situation faced, a decision or action taken by an individual manager or by an organization at the strategic, functional or operational level

Kudremukh Iron Ore Company Limited (KIOCL): The Death Knell and Beyond

K N Murthy and D V R Seshadri

On a gloomy evening in October 2002, Hari Prasad*, Managing Director of the Kudremukh Iron Ore Company Limited (KIOCL), was cautiously reviewing a copy of the judgment of the Supreme Court of India that he had received a few hours ago. Reading through the judgment, Hari's thoughts wandered,

This judgment is a death blow to KIOCL. We have just a three-year grace period to wind up operations at Kudremukh. This mine is the only source of raw materials for the company, without which the company cannot survive. No other company, placed under similar circumstances, has been asked to shut shop. We were hoping for tougher terms of lease but instead have been asked to shut shop! Going by the tenor of the judgment and the range of issues, it may not be possible to get the judgment revoked. Finding a new mine site would be very difficult under the highly competitive conditions prevailing in the country. And even if we find one, migrating to the new location would be a very expensive proposition, one that we can ill afford at this point in time. We do not have any debts or liabilities, but have thousands of dependent families who depend on the functioning of the mine. And what about the huge economic loss that KIOCL's closure would bring to the country? It is unbelievable that the Supreme Court has been so harsh on a public sector company.

Established in 1976 as a 100 per cent export-oriented unit under the Ministry of Steel, KIOCL is a part of the conglomerate of steel companies owned by the Government of India under the aegis of the Steel Authority of India Ltd (SAIL). Being a highly profitable company, through the 1990's, KIOCL paid a handsome annual dividend in the range of USD 50 million on the share capital and remitted annual taxes and royalties in the range of USD 75 million to the State Government of Karnataka. It has also been a good pay master to its employees. Apart from adopting environment-friendly technologies, the company also had a reasonable record of corporate social responsibility towards local communities. However, signs of trouble started to appear on the horizon when KIOCL sought to get its lease further renewed for a 20-year-period. The original lease had expired in 1999.

KEY WORDS

Nature Conservation

Mining

Beneficiation

Pelletization

Corporate Social
Responsibility

* Name changed for anonymity

Note: Much of the case has been developed based on readily available information in the public domain (as the story of the company occupied national and state headlines for years due to the pending legal case filed in the Supreme Court of India.)

Starting in the early 1990s, environmental groups and social activists increasingly applied pressure on the company as the irreversible change that KIOCL's mining had brought about in Kudremukh was antithetical to the concept of conservation. The environmental groups vehemently opposed the mining lease renewal on ecological and legal grounds. Saran*, a leading member of one of the groups that spearheaded action against the company, rues:

“Western Ghats is one of the twenty-four global biodiversity hot spots. Kudremukh National Park, positioned at the middle of 1,600 kilometer long Western Ghats, that runs parallel to India's western coastline, is host to a large number of endemic species, some of which are under serious threat of extinction. This apart, Kudremukh is the main catchment area for three important rivers that supply water to scores of townships and irrigational lands across states in South India. To protect such critical landscapes, we have a national policy to reserve 4% of all land exclusively for conservation purposes. In other words, we use 96% of available land for meeting our needs. Can we not then spare at least a small parcel of land for the survival of millions of other creatures that exist in our country? Can we not allow nature to perform the ecological processes which are so vital for our own survival? Where is the necessity to export minerals like iron at the cost of our invaluable biological wealth? A very ecologically sensitive area like Kudremukh needs to be preserved and not exploited for a few million dollars. The country has enough of those dollars!”

As the lease renewal issue became highly contested, the Government of India was reticent to act immediately. Instead, it granted annual work permit to KIOCL a couple of times, hoping that matters would get settled in the meantime. However, this only made things worse for the company. Eventually, the issue ended up as public interest litigation in a specially constituted Green Bench of the Supreme Court of India, which ordered the closure of the company.

The Supreme Court's judgment came as a rude shock to the senior management at KIOCL as reflected in the following comment:

* Name changed for anonymity

“The country stands to lose USD 150 million annually on account of the cessation of mining operations of KIOCL. Loss in terms of existing infrastructure that has already been invested at the mine site will be around USD 1.25 billion and all the public money invested on the project so far will go down the drain. This judgment just does not make any economic sense!”

KUDREMUKH IRON ORE COMPANY LTD.

The Company Arrives and Establishes Itself as a Star Trading Company

Kudremukh Iron Ore Company Ltd. (KIOCL), a fully funded Government of India enterprise, was established in April 1976 to cater to the requirement of the Shaw of Iran. The mining lease of the National Mineral Development Corporation (NMDC) was granted to KIOCL by the President of India in November 1976. The State Government of Karnataka (successor to the Mysore State) helped the company to acquire 160 hectares of private land and transferred it to the new company for establishing a township. KIOCL inherited 3,203 hectares of forest land and 1,402 hectares of non-forest government land (total of 4,605 hectares).

A modern mining plant was set up with the help of Met-Chem, a Canadian consultant. The plant was capable of extracting 22.5 million tonnes of raw ore and producing 7.5 million tonnes of beneficiated ore annually. A road (110 kms in length) was constructed connecting the mine site to the nearby townships and to the port town of Mangalore. Lakya Dam was constructed to supply water to the mining plant and also store the mine waste. High tension electric lines of 11,000 kilowatt capacity were drawn from the nearby hydropower generation houses and taken through the rugged hilly terrain to the mine site. Pipelines were laid to carry ore slurry to the Mangalore port. The New Mangalore Port was dredged and deepened to allow the movement of heavy ocean liners to carry the products of the company to overseas markets.

A new township for accommodating 10,000 people was created with the necessary facilities such as pure drinking water, drainage, lighting, basic educational institutions, a 50-bed hospital, a market place, and a recreational park. It took four years and an estimated USD 650 million to create the township. The mine and plant facilities were commissioned on schedule in August 1980. However, a

changed political scenario in Iran resulted in the termination of the order placed with KIOCL. Hence KIOCL had to look for alternate markets which it soon discovered in other countries.

Firmly established as a 100 per cent export-oriented Public Sector Unit (PSU) by 1981, KIOCL grew to become one of Asia's largest mining and pelletization complexes in less than a decade. It worked at full capacity most of the time and exported products to Japan, China, Taiwan, Indonesia, Italy, Australia, and Iran besides catering to a number of business market customers in the domestic market such as Ispat Industries, Vikram Ispat, and Jindal Vijayanagar Steel Ltd. KIOCL had an enviable performance track record and was always profitable. Because of its consistent and outstanding performance, KIOCL was counted among the top ten PSUs in India. It earned the status of a star performer among the PSUs. Because of its smaller size compared to the giants in the oil sector, railways, etc., it was accorded the status of 'Mini Ratna' (small gem) by the Government of India. Table 1 provides a glimpse of the company's financial performance before its closure was ordered in 2005.

In the late nineties, KIOCL faced problems because of a recession in the international markets arising out of the East Asian crisis. Demand slumped in China and Japan. The recession then spread to the Middle East on account of a drop in the crude oil prices. Stocks piled up and KIOCL had to stop production for 46 days. It had earlier faced production losses due to irregular power supply by the state electricity agency and also because of interlocking court judgment, etc. But the company managed to come out of these crises and continued to demonstrate its stellar performance.

The company was conferred with many awards for achievements such as export, best overall performance, excellence in organizational management, energy conservation, rational utilization of natural resources, pollution control, environmental conservation, etc. It also received the ISO 9000 and ISO 14001 certification. KIOCL established itself as a reliable supplier of iron ore concentrates and iron oxide pellets in the international market.

Mining and Beneficiation Processes

The initial scope of KIOCL's mining was limited to weathered ore, as the processing of primary ore demanded a technology that was not available with the company. Open cast mining in bench terraces, up to 14 meters high and 50 meters wide is the standard unit for removing the ore. Terraces are created by drilling about 50 to 100 bore holes (300 mm diameter each) and blasting from deep inside with high power explosives using milli-second delay detonators and effective stemming method. The ore so loosened is then excavated in the standard-sized benches using heavy machinery and sent for processing. Equipment used in mining and processing are power rotary shovels, drills, 120-tonne capacity haulage trucks, heavy dozers, graders, gyratory crushers, magnetic separators, ball mills, etc.

Ore-rich soil is first crushed into fine powder and then beneficiated in wet condition using magnetic separators. By this method, the low-grade ore is enriched to 68 per cent. Concentrated ore is made into slurry and pumped over a distance of 13 km to a cliff on the Western Ghats from where it flows by gravity to Mangalore. Slurry is then filtered to produce filter cakes with 9 per cent moisture.

Table 1: Company Performance at a Glance (Financials in million US \$)

Parameter	2001-02	1999-00	1998-99	1997-98	1996-97
Production (quantity, '000 tons)					
a) Concentrate	5,410	5,000	5,750	5,042	6,125
b) Pellets	3,215	2,737	3,285	2,525	2,900
Exports (quantity, '000 tons)					
a) Concentrate	2,306	2,136	2,819	2,376	3,315
b) Pellets	3,211	2,686	3,235	2,650	2,830
Total Sales (revenue)	160	130	138	122	132
Foreign Sales (revenue)	133	108	116	107	117
Indian Sales (revenue)	27	22	22	14.5	15
Net Profit Before Tax	23	15	15	6	20

In 1987, a pelletization plant with a capacity of 3.5 million tonnes per year was commissioned at Mangalore for production of high quality blast furnace and direct reduction grade pellets for export. The Pellet Plant Complex comprised of a filter plant, wet grinding mills, mechanized ship loading unit, 28 megawatt captive power plant, roll press, pelletization discs, furnaces, etc. The entire processing operation from crushing to ship loading was automated and computer controlled to maintain strict quality control. Process modifications were carried out regularly to ensure that the product quality conformed to market needs.

During the process of beneficiation, large quantities of waste, nearly 2/3rd of the extracted ore, (technically called tailings) were produced. These tailings contained high quantity of silica in the form of slurry – 55 per cent water and 45 per cent solids. The tailings were pumped into the Lakya Dam, where the muck would settle down and the decanted water would flow into the standing stock of water. There was no other overburden (waste) at the excavation site or waste in the crushing plant. The tailings had to be stored carefully to avoid polluting/silting of nearby water courses. Lakya Dam thus helped store about 10-12 million tonnes of tailings annually.

The Leased Mine Area and its Transformation

The area leased to KIOCL stood out as an enclave in an otherwise thickly wooded forest area. The well-endowed and fully established Kudremukh Township was given the status of notified area in 1982 under the Karnataka Municipalities Act 1962. Thus, it was able to put up a small committee of its residents to take care of the civic facilities and manage the day-to-day affairs. The township attracted a good number of small traders who supplied essential commodities, vegetables, milk, meat, etc., to the residents of the township. Some of them encroached on forest lands and settled down along with their cattle permanently. The township also needed many electricians, carpenters, plumbers and other service providers. Progressively, public services like police station, fire station, post office, bus station, Sunday market, etc., also became available. The company offered a few support services like refueling station, a well-furnished guest house, and a restaurant. Security to the mining area, the plant, Lakya Dam, and other important installations was provided by a company of the Central Industrial Security Force (CISF). Good connectivity, scenic landscape, and

decent and reliable support facilities attracted a number of tourists to Kudremukh. Overall, the township was abuzz with activities through most of the year except during very heavy monsoon.

The mine and the crushing plant were designed for a three-shift, 24-hour operation. Crushing plants were established close to the excavation point to minimize travel time of heavy-duty dumper trucks. Active mining was done at the highest points first. To facilitate operations, the area remained lit up in the night. Heavy vehicle movement, high decibel noise, occasional blasting of ore bed, and overnight lighting left the mine with little peace. During monsoon, rain water mixed with freshly-mined soil could be seen running down the slopes and joining nearby streams or directly into the river Bhadra.

The Kudremukh area looked rugged, hilly, and green for most part of the year. In summer, the shola grasslands appeared golden-brown. However, in sharp contrast to this were the areas surrounding the Lakya Dam, which were vast stretches of solidified mud and finely ground muck. The mine site and the Lakya Dam area seemed like fresh wounds to a sea of greenery (See Appendix 1 for a detailed description of the natural resources of the Western Ghats and the Kudremukh area) .

Green Credentials

KIOCL was different from other mining companies in many ways. A quarter of its capital costs was incurred on environment-related factors. The processing technology adopted by the company was reasonably safe and environment-friendly.

Surface mining of weathered ore involved removal of entire ore-bearing soil in the bench. Consequently, there was no mine overburden (waste) left on the site or around the area. The ore was made wet during excavation and beneficiation process. As some amount of dust is found in the air on account of the movement of dumper trucks, the company made arrangements for hourly sprinkling of water on haul tracks using a fleet of seven truck-mounted water tankers. Blasting of ore beds would eject a puff of dust into the air. This activity was carried out once or twice a week. In order to reduce the height of the puff, charge holes were covered with gasbags. Dust in the ambient air was constantly monitored by the company and necessary follow-up action was taken. The waste water from the beneficiation process contained only

naturally occurring elements like silica. No chemicals were added to the plant process water. Further, beneficiated ore was piped to Mangalore, totally eliminating surface transport. Consequently, there was no pressure on the road network to transport the material to Mangalore, and hence there was no vehicular emission.

Other important precautionary measures taken up by KIOCL included deep installation of gyratory crushers 40 meters below the ground level to reduce the noise level. The company undertook massive afforestation and planted nearly 8 million seedlings within the lease area to attenuate the noise and dust levels. The National Remote Sensing Agency, Hyderabad confirmed the increase of green cover by 2.75 sq kms in the leased area. In response to the findings of the Water Resources Development Organization in mid-eighties, suggesting that silt loads downstream the Bhadra were more than ten times the normal level, the company built a few check dams, silt traps, and gabions to stop the direct flow of rain water runoff into the river. Silt from these structures would be removed regularly soon after the monsoon.

Industrial effluent treatment plants at the site enabled removal of grease and oil from the effluent coming out of the truck shop. Waste oil, grease, metal scrap, etc., were completely processed inside the plant and reused. Domestic sewage of the township was processed in the activated sludge treatment plant before being released into streams. KIOCL also had a designated yard for disposal of solid municipal wastes. Nothing was disposed off in the open. No smoke or harmful chemicals rose from the mine site or processing plant. The concerned public agencies agreed that the company managed environmental parameters well within the prescribed limits and that there was no pollution hazard in KIOCL areas and operations. For its efforts, the company won an environmental award in 2002.

Shouldering Corporate Social Responsibility

KIOCL also undertook several voluntary social initiatives to foster an atmosphere of trust and goodwill among the local communities. To start with, the company supported the resettlement of thirty two families displaced from the lease area. It also provided financial assistance to support piped drinking water supply to the neighbouring villages, conducted free health camps, and contributed modest donations to a few hospitals in the surrounding region

for buying critical medical equipments. Funds were also donated for construction of additional classrooms, developing school playgrounds, distributing books, laying rural roads, constructing foot bridges to remote villages, providing street lights and traffic signaling systems in key towns in the surrounding areas. The total cost of such activities amounted to USD 10 million over several years. It also gave a handsome corpus of more than USD 10 million to the Forest Department for the development of Kudremukh National Park (KNP).

Attempts to Expand and Diversify

By 1995, the company had exploited nearly 300 million tonnes of weathered ore. KIOCL products were in good demand overseas. Therefore, the company decided to expand its capacity to 30 million tonnes of crude ore to produce 10 million tonnes of beneficiated products annually. KIOCL wanted to extend its mining into nearby ore deposits as the life of the present mine was almost coming to an end. The company sought and obtained a prospecting license to explore the mining potential of the adjoining Nellibeedu area (4 kms. away) in 1994. Prospecting work was completed at a cost of USD 10 million. About 60 million tonnes of ore reserves were found. The company was in the process of applying for a new lease for 310 hectares when it encountered legal hurdles because Nellibeedu fell inside the jurisdiction of the KNP and granting of a new lease for mining was not permitted in the national park area.

At the time of undertaking the prospecting work, the status of the national park was tentative, which got confirmed at a later date. Prospecting license for Gangrikal deposits were also issued but quietly withdrawn by the government at the instructions of the national park authorities. Thus, the only option for the company was to extract the primary ore lying below the weathered ore in the present mine. Met-Chem, Canada, a key consultant to the company, confirmed the availability of 400 million tonnes of primary ore of which 300 million tonnes were stated to be mineable. However, extraction of primary ore required changes to be made to the engineering design of the processing plant and also additional infrastructure for mining and transportation of the ore.

Consequently, the company planned to expand the present capacity and work as long as the weathered ore lasted and then shift to extraction of the primary ore.

However, there was a serious space constraint for storing the resulting tailings. The Lakya Dam was full and increasing the production or using primary ore which had only 27 per cent iron content warranted more space to store the waste. Therefore, the company floated the idea of constructing a new dam on the west side of the mine site at Kachige Hole that was within the leased area. NIRCON, a Chennai-based consultant, examined the proposal and confirmed that it was feasible. A public hearing was scheduled on the environmental impact assessment of the new dam construction. Many NGOs were present during the hearing. All of them opposed the idea of construction of a new dam by the company. All further action got stalled.

With a view to diversify its range of products, in 1987, the company commissioned a pellet plant at Mangalore with an annual capacity of 3.6 million tonnes. As a captive unit, it added value to the company's products but its fortunes were closely tied to the Kudremukh mine because the technology was meant to process magnetite and not hematite. It was also proposed to produce pig iron at Mangalore and a joint venture company was launched to set up the plant. KIOCL also planned to establish a coke oven plant at Karwar, another port town 400 kms to the north of Kudremukh. The proposal was approved by the state government. In addition, the company proposed to manufacture clay tiles with the muck in Lakya Dam, and produce packaged drinking water using the unpolluted stream water abundantly available in Kudremukh. Both projects were found technically feasible, but with the market being saturated, the outcome seemed uncertain. KIOCL did not pursue the ideas further.

Trouble Begins Afar and Spreads

For three decades after gaining Independence, India's focus was on accelerated economic development using available resources like land, water, minerals, etc. The country needed foreign exchange for capital investment, import bill funding, and technology purchases. However, the fallout of the ill-planned developments began to show up at the national level. Conservation consciousness increased in India due to the ongoing international events, and national action to contain the consequences of reckless industrialization slowly began to take root. First in place was the Wildlife (Protection) Act, 1972 under which biodiversity-rich areas like Western Ghats were to get better protection and National Parks and Sanctuaries

were to be constituted. Action on the provisions of this legislation began many years later. The formation of the Kudremukh National Park was a consequence of some of these unfolding phenomena. The intention to constitute this park was published in the official gazette in 1987 and final notification was issued in June 2001.

The second landmark legislation was the two-page Forest (Conservation) Act, 1980. This was an extraordinary Act that centralized the powers for diverting forest lands in the hands of the central government. Complex issues were involved in implementing the provisions of this Act and the checkered political establishment was somewhat lax in its implementation. A number of issues started reaching the courts. By 1995, the Supreme Court of India decided to get involved in a big way to sort out such issues and constituted a separate Green Bench. This Bench opened the doors to all pending issues and allowed them to be brought up and placed on its table. Many interim directions were issued on a range of forest-related issues and one of them concerned mining in national parks. The court wanted that pending final notifications of the national parks be issued expeditiously. It also imposed a ban on mining in national parks. This hit the KIOCL tangentially in the beginning but directly later on.

The third important legislation was the Environmental (Protection) Act, 1986 which fixed standards for ambient environmental factors and imposed limits on pollution loads. An elaborate administrative set up of state and central pollution control boards came into existence to implement the provisions of this Act. The Act has undergone extensive amendments over time and covers almost every industry. The Supreme Court constituted an empowered committee under this Act to scrutinize almost every subject matter relating to the above three Acts and advise the Court. The special Green Bench that was constituted in the Supreme Court duly considered such advice before passing judgments. It is generally observed that the Court is strongly in favour of protecting the ecology, environment, and biodiversity and hence delivered tough verdicts.

At the time the KIOCL mining contract was firmed up in 1967, neither the Wildlife Protection Act (1972) nor the Forest (Conservation) Act, 1980 or the Environmental Protection Act (1986) were in force. The company was started in an era when development was the mantra and nothing else mattered as much. KIOCL invested USD 220

millions in establishing the mine, processing plant, and necessary infrastructure. An additional USD 25 millions was incurred later on raising the height of the Lakya Dam and constructing pollution control structures. However, none of these were of any consequence to the Court, when the KIOCL matter came up for hearing in front of the court's Green Bench.

Trouble also Brew in the Backyard of the Company

As the company was commencing its operations in 1980, ecologists surveyed the significance of the Kudremukh area and came out with recommendations for strict nature conservation. This information was considered during the process of notifying Kudremukh as a national park. The Water Resources Development Organization, an R&D unit of the Irrigation Department, did a pilot study of the siltation levels in the Bhadra River and sounded an alarm that the silt load below the mine was nearly ten times the permissible limit and that it could affect the storage of irrigation water in Bhadra Reservoir.

In 1994, KIOCL raised the height of Lakya dam by 35 meters to increase its storage capacity without necessary authorization. This led to submersion of 340 hectares of dense forests. It became an issue with the Forest Department as well as the irrigation authorities. The company had violated certain terms of Nellibeedu prospecting license. About 40 kms of new roads were formed that attracted the attention of NGOs and central government officers. Similarly, KIOCL violated the condition of not breaking into new forest areas when the mine lease was given temporary extension after the original lease expired in 1999. In defence, the company claimed that it had committed no such violation. But remote sensing images proved that the company's claims were wrong. KIOCL had overshot the mine boundary by 58 hectares. On one occasion, the bursting of the slurry pipe inside KNP had led to the spewing of 4,000 tonnes of slurry. For all these violations, many cases were filed by the local forest officers and KIOCL was slapped with huge fines, which were paid to escape criminal proceedings. A few of the cases got dropped on account of weak and insufficient evidence. These incidents unnecessarily put the company on the back foot.

Being a company owned 100 per cent by the Government of India and having gotten its bequest through the President of India, the company always felt a sense of

ownership of the mine and its appurtenants. It also believed that it was serving an important national cause by earning precious foreign exchange. The fact that the company was holding a lease over the land for mining and that it had to vacate the place some day did not seem to bother the top management very much. They were always under the impression that the local government agencies should help the company in doing a better job.

To support its claims of being benign to the local ecology, the company instituted a number of scientific studies by reputed national institutions. Some of them honestly stated that the mining activity was a deep intrusion into the ecology of KNP and an extension of the activity would have a cascading effect on the ecosystem. At the same time the reports of these institutions also acknowledged the fact that the company was complying with all the environmental norms. As the lease renewal was proving elusive, the company requested that a letter be sent from the Prime Minister's office to the Karnataka State Government, requesting renewal of the lease. The matter received due attention and the process of settlement of the national park was concluded, the area leased to the company being excluded from the national park. This infuriated the NGOs. They approached the Supreme Court with public interest litigation in May 2001.

THE CONTEST

Nature conservation NGOs have been working in Karnataka, as elsewhere in India, for more than two decades, often in association with the Forest Department. Many NGOs have been associated with Kudremukh too for years and have closely followed the developments in the region. They have been opposing mining in Kudremukh ever since it began, but all in vain. In the mid-nineties, the NGOs approached the High Court of Karnataka requesting it to pass an order to stop mining in Kudremukh. But they were not successful. However, they found an opportunity to raise their voice once again at the time of KIOCL's lease renewal in 1999 and brought on record whatever evidence was available against mining. The Supreme Court too by then had delivered judgments in favour of strict conservation of nature in various other cases in the country. All this helped the NGOs put together a cogent argument against mining in Kudremukh. Armed with legal and other evidentiary information, they began a campaign against mining in Kudremukh and also against the company. Petitions were

submitted to the concerned authorities to stop the renewal of the mine lease. The NGOs contended:

“Biodiversity-rich landscapes like Kudremukh National Park form less than 1% of India’s landscape and should not be sacrificed at the altar of economic development. These landscapes play a major role in stabilizing climate, soil and water resources. Merely looking at them as areas bearing abundant and widely available minerals like iron ore and allowing the continuation of mining which has been going on for the last 25 years with minimal economic gain would surely be an extremely shortsighted policy our country can ill afford to adopt.”

The NGOs refused to accept the environment-friendly mining claims of KIOCL and argued that the company was virtually environmentally-insensitive. Every single environment protection measure taken up by the company including the planting of trees (essentially consisting of species such as Eucalypts and Acacias, which were unsuitable to environmentally-sensitive areas like Kudremukh) was contested. When the hearing relating to the final notification of the National Park came up, the NGOs pleaded for two important points in the Supreme Court. The first was regarding the exclusion of leased forest land to KIOCL from the National Park notification. This was considered to be *ultra vires*, and therefore the NGOs contended that exclusion should not be entertained and that the leased land should be brought back under the fold of National Park. The second plea was that as mining inside a National Park was prohibited, there was no question of renewal of the mining lease of KIOCL.

On its part, KIOCL argued that it had a vested right for lease renewal on the present mine site; that extension to Nellibeedu and Gangrikal was contemplated many years ago and was put in writing in the original lease deed itself; that believing that lease renewal was obligatory on the part of government, the company had made huge infrastructure related investments; that the company had existing contracts with foreign buyers, which, if not kept, would lead to huge liability costs; that the National Park was a post development and therefore could not override the antecedent lease terms; that national and local economy would be hit hard if mining was discontinued, etc.

The state and central governments were dilly dallying over the matter and often kept changing their stance on

renewing the mine lease. Other pro-mining and anti-mining lobbies also presented their opinions in the Supreme Court. The battle was highly polarized and also acquired political overtones.

Concerns of Supreme Court

The Green Bench of the Supreme Court heard the arguments of the various NGOs and KIOCL and finally delivered its verdict in October 2002. It had many general concerns over the issue of environment which was expressed in the judgment. Some excerpts read as follows:

‘By destroying nature and the environment, man is committing matricide, having in a way killed Mother Earth. Technological excellence, growth of industries and economical gains have led to depletion of natural resources irreversibly. Indifference to the grave consequences and lack of concern and foresight have contributed in large measures to the alarming position. In the case at hand, the alleged victim is the flora and fauna in and around Kudremukh National Park, a part of the Western Ghats. The forests in the area are among 18 internationally recognized “Hotspots” for bio-diversity conservation in the world.’

‘The seminal issue involved is whether the approach should be ‘dollar friendly’ or ‘eco-friendly’

‘Nature hates monopolies and knows no exception. It has always some leveling agency that puts the overbearing, the strong, the rich, the fortunate substantially on the same ground with all others,’ said Zarathustra.

‘It is necessary to avoid massive and irreversible harm to the earthly environment and strive for achieving for the present generation and the posterity, a better life in an environment more in keeping with their needs and hopes.’

‘.....there is constitutional imperative on the Central Government, State Governments and bodies like municipalities, not only to ensure and safeguard proper environment but also an imperative duty to take adequate measures to promote, protect and improve the environment, both man-made and natural environments.’

'In the last century, a great German materialist philosopher warned the mankind, "Let us not, however, flatter ourselves over much on account of our human victories over nature. For each such victory, nature takes its revenge on us. Each victory, it is true, in the first place, brings about the results we expected, but in the second and third places, it has quite different, unforeseen effects which only too often cancel the first.'"

'It (environmental protection) is big in terms of the size of the problem faced and the solutions required; global warming, the destruction of the ozone layer, acid rain, deforestation, overpopulation and toxic waste, are all global issues which require an appropriate global response. It is big in terms of the range of problems and issues: air pollution, water pollution, noise pollution, waste disposal, radioactivity, pesticides, countryside protection, conservation of wildlife; the list is virtually endless.'

'The tide of judicial considerations in environmental litigation in India symbolizes the anxiety of Courts in finding out appropriate remedies for environmental maladies.'

'The state to which the ecological imbalance and the consequent environmental damage have reached is so alarming that unless immediate, determined and effective steps are taken, the damage might become irreversible.'

'The aesthetic use and the pristine glory (of nature) cannot be permitted to be eroded for private, commercial or any other use unless the courts find it necessary, in good faith, for public good and in public interest to encroach upon the said resources.'

'Sustainable development is essentially a policy and strategy for continued economic and social development without detriment to the environment and natural resources, on the quality of which continued activity and further development depend. Therefore, while thinking of the developmental measures and needs of the present, the ability of

the future to meet its own needs and requirements have to be kept in view. While thinking of the present, the future should not be forgotten. We owe a duty to future generations and for a bright today, bleak tomorrow cannot be countenanced. We must learn from our experiences of past to make both the present and the future brighter. We learn from our experiences and mistakes from the past, so that they can be rectified for a better present and the future. It cannot be lost sight of that while today is yesterday's tomorrow, it is tomorrow's yesterday.'

In the process of discussing the importance of ecology and nature, the Green Bench virtually traversed human history, from ancient days to the present. It also quoted extensively from the Constitution of India, discourses of philosophers and the Supreme Court's earlier judgments. It disagreed completely with the arguments submitted by the company and endorsed the views of the Forest Advisory Committee which found that lease renewal is not tenable under the present circumstances. The Bench also acknowledged that KIOCL needed time to wind up, and hence provided a three-year time frame from the date of judgment. The company was asked, in no uncertain terms, to shut down operations in Kudremukh by December 2005. Certain costs were imposed to ensure the implementation of safety while vacating the mine.

Bad Mining Continues Elsewhere; Why Single Out Kudremukh?

The company firmly believed that an outstanding PSU that it was, with a genuine concern for environment, would be allowed to continue its mining activities. It had therefore gone ahead with replacing the slurry pipelines at a cost of nearly USD 40 million, even when the lease renewal issue was pending in the Court. Therefore, the verdict of the Supreme Court came as a rude shock!

On his way home, Hari mulled:

"Kudremukh is not the only environmentally-sensitive region in India. A lot of coal, bauxite and iron ore mining have been going on in rich forest belts in the states of Orissa, Chhattisgarh, Jharkhand and Bihar, in the eastern part of India. These regions have been subjected to the ravages of mining for much longer than Kudremukh, whereby large tracts of forests and small private

holdings of poor indigenous people have been transformed into wastelands. There is also lot of muck and pollution as a result of these mining operations. Yet, none of these mines have been asked to close! At best only more conditions or costs have been imposed when their lease renewal issues reached the Court. Why then single out Kudremukh? Is it because most of the other mines belong to the private sector? Are the days of PSUs over?"

EPILOGUE

Following the Supreme Court judgment, KIOCL scouted for a suitable iron mine within Karnataka and also in the neighbouring states, but these efforts were unsuccessful. The company offered a voluntary retirement package to its employees, but hardly one-third of them opted for this scheme. The rest continued to work on the payrolls of the company. As the Indian labour laws do not easily allow compulsory retirement, the company had no choice but to retain the remaining employees. It realized that its cash reserves would not last too long. Thus worried, KIOCL pleaded once again to the Supreme Court to be allowed to mine the remaining 100 million tonnes of weathered ore and 300 million tonnes of primary ore in the already broken up area in Kudremukh. They also brought to the court's notice their unsuccessful efforts in finding a suitable mine outside of Kudremukh. The company believed that allowing it to mine the remaining ore in Kudremukh would help it wind up smoothly, ensuring

the safety and stability of the mined areas as well as a steady reduction of its financial and other liabilities.

The Court did not accede to the company's plea and maintained that KIOCL must cease operations in the Kudremukh area by December 31, 2005. However, the company continued to manufacture pellets and pig iron at its plant in Mangalore, the raw material being sourced from other mines. Only hematite ore was available from these other sources, whereas the plant needed magnetite ore. Consequently, the plant had many technical problems and its production fell sharply to about 20 per cent of the previous levels in the very next year. Technical modifications were made and production was restored to 80 per cent in the following year. Maintaining the massive fixed infrastructure of nearly 1,600 houses in the Kudremukh Township and other large equipments and facilities became a grave issue. The buildings could not be sold for commercial purposes as they were situated inside a national park. The state government was willing to acquire the buildings on book value which was a very nominal amount. The company felt that this proposal was unviable, as it would stand to lose substantially from a financial perspective. No alternative use could be found for the township, and the matter hung in the balance. The sale of machinery and equipment was delayed as import of these duty-free equipments needed clearance from the Customs Department. And, when the sale was finally made, KIOCL got only scrap value. 'What next?' is the big question KIOCL faces today, to which there are no easy answers.

Appendix 1: Overview of Natural Resources in Western Ghats and Kudremukh Area

The Western Ghats

The Western Ghats (Ghats mean hills in Hindi, the language spoken by a majority of Indians) commence from the southern tip of Peninsular India. They are a long, unbroken chain of hills, arising abruptly from the narrow western coast, straddling 1,600 km south to north across six states. They are spread over 1.8 lakh sq kms (1 million = 10 lakhs) and are 80 km wide at their widest part. The region experiences tropical climate - being warm and humid during most of the year. The western slopes of the Ghats experience heavy rainfall while the eastern slopes receive relatively less rainfall. The average annual rainfall received is in the range of 3,000-4,000 mm (120-160 inches)

and even touches 9,000 mm (350 inches) in the higher elevations of the southern side of the Ghats. A number of rivers have their origins in the region, which act as important sources of drinking water, irrigation, and hydroelectric power. The heavy rains of the region also perform important hydrological and watershed functions. The variation in climatic and rainfall patterns, coupled with the region's complex geography, gives rise to rich vegetation of tropical evergreen forests, moist deciduous forests, dry deciduous forests, scrub jungles, savannas and swamps in the Ghats. The biodiversity rich landscape of the Ghats is home to more than 30 per cent of all plant, fish, herpetofauna, birds, and mammal species found in India. It is estimated that the region nurtures close to four

thousand species of flowering plants, 508 species of birds, 218 species of fish, 157 species of reptiles, 137 species of mammals, and 126 species of amphibians. The region also has a wide variety of spices, fruits, medicinal plants, nationally significant wildlife sanctuaries, tiger/elephant reserves, and national parks. The flora and fauna of the Western Ghats share many common elements with Africa, Madagascar, and South America. Most species of birds and mammals found in the region are those essentially derived from the Eastern Himalayan-Malayan complex after peninsular India became part of Asia. The Western Ghats have thus evolved into one of the richest centres of endemism because this region shares the biological wealth of different regions and also because it remained isolated for eons. This very diversity and endemism qualifies the Western Ghats for being one of the 34 global biodiversity hotspots.

Human influences have had varying impacts on the biodiversity of the Western Ghats. A slow but extensive transformation of habitats in and around the Western Ghats has occurred over time. Hilly agro-ecosystems in the Western Ghats are today dominated by estates – chiefly of plantations of tea, coffee, rubber, and monocultures of various tree species. A large number of dams have been constructed, thus submerging large areas of dense valley forests in the backwaters. Expanding townships, increasing demand for agricultural land, and extensive road networks have fragmented native forests. Human activities have destroyed much of the forest cover, and barely 20 per cent now remains intact, which is under the control of the government (Further details of the region are available in the web resources listed at the end of the case).

Kudremukh Forests

Kudremukh, a 750 sq km area, is dominated by forests and is located at the middle of the Western Ghats in the long south-north straddle, 60 km north-east of the coastal city of Mangalore. The area derives its name from the tallest hill peak (1,892 meters above mean sea level) which looks like the face of a horse (Kudremukh means horse face in the local Kannada language, spoken in the state of Karnataka, of which it is a part). It was a landmark for the Mangalore bound sea navigators when lighthouses did not exist. Large land parcels around this peak were declared as reserved forests well before the First World War. Kudremukh is a hilly terrain, and has three promi-

nent hill ranges. The deep valley between one of the hill ranges, known as the “Bhagawati Valley,” is a famous pilgrim place.

The entire Kudremukh area is a fascinating landscape of deep valleys with rich evergreen forests, ending abruptly into expansive velvet-like grasslands in the sideways. Lay people consider these grasslands as waste lands whereas ecologists consider them as an eco-climax adapted to the high rainfall of 6,000-7,000 mm per annum. These grasslands protect the soil from the torrents of rain. They serve as grazing fields for the wild as well as domestic ungulates. Misconception about their ecological role is widespread among local people and public agencies. Hence, such areas have been commonly subjected to deliberate fires during summer. Despite these human interventions, the grasslands spring up on the first arrival of rain.

Complementing the beauty of the sprawling grasslands are the narrow gnarled tree belts that creep along the gushing stream courses right up to the hill tops and occasionally fan out into impenetrable patches of forests on the table lands. Such patches are popularly known as *sholas*. The breathtaking mosaics of lofty valley vegetation in the midst of vast expanses of grasslands and *sholas* with a profusion of roaring waterfalls and numerous clear streams attract a huge number of visitors, both professional adventurers and lay tourists, from near and far. There are very few roads inside Kudremukh and visitors prefer to hike. Trekkers affectionately refer to this place as the “Switzerland of Karnataka.”

Three rivers take birth in the Bhagawati Valley. Nethravathi, the first of the rivers, is 90 kms long and supplies drinking water to the city of Mangalore. The two other rivers, Tunga and Bhadra, originate on different sides of the valley on the far west, and ultimately join the River Krishna, one of the major rivers in peninsular India. River Krishna flows eastwards over 600 kilometers and joins the Bay of Bengal in the east coast of India. The rivers Tunga and Bhadra irrigate thousands of parched farm lands in the states of Karnataka and the neighbouring Andhra Pradesh. Kudremukh constitutes hardly 6 per cent of the catchment area of Tunga and Bhadra but contributes nearly 30 per cent of the inflow. Birth places of rivers are revered in India and tradition has it that people along the river course perform annual prayers when the river is in spate. Popular religious shrines exist on the banks of these rivers

and attract a large section of people from South India. During the princely era, the local king (Maharaja of Mysore) had a tradition of camping at Kudremukh during summer and offered prayers at 'Gangamoola,' a place where all the three rivers originate. The tradition of offering annual prayers continues even today.

The Government of Karnataka declared Kudremukh as a National Park (Kudremukh National Park, KNP) under the provisions of Wildlife (Protection) Act, 1972. Consequently, it gets the highest legal protection. The first notification of government intention to constitute a national park was issued in 1987. A special Wildlife Division was created in 1989 for managing the national park. The final notification constituting the national park was issued in June 2001. The national park covered 600 sq kms of area at the tri-junction of Dakshina Kannada, Chickmagalur, and Udupi Districts and encompassed the best forests of the region. These dense forests are home to the fast depleting stock of tigers, elephants, king cobras, black panthers, the Great Indian Hornbill, Slender Loris and a variety of nocturnal Malabar Cats. The Indian Institute of Science, a premier scientific organization located in Bangalore, undertook a survey of KNP at the turn of the millennium and listed 392 species of flowering plants, 42 species of mammals, 169 species of birds, 34 species of amphibians, 54 species of reptiles, and 149 species of butterflies, who make this region their home. Kudremukh is the only place in the country (and perhaps the world) where the largest breeding population of the rare lion-tailed macaque exists. New species continue to be discovered and reported from time to time.

Mining Forays in Kudremukh

The Mysore State geologists surveyed Kudremukh in 1913, during the British Raj, well before the formation of Independent India and discovered huge deposits of low grade magnetite iron ore. As India thrives on huge deposits of high grade hematite ore found largely in the eastern part of India, the low grade magnetite deposits of Kudremukh with 34 per cent iron content did not attract much attention at that time. Proximity to the sea, development of techniques for beneficiation of low grade magnetite ore, and a virtual revolution in the mechanism of transport of ore solids in slurry form via pipelines, brought the focus back to these deposits in the mid-1960s.

As a result, the National Mineral Development Corporation (NMDC), a central government agency, initiated detailed investigations in 1965 in association with the Marcona Corporation of USA and the MON Group, Japan. Ore deposits were found over a length of six kms and a width of 800 meters at Aroli, Nellibeedu, and Gangrikal. The first two deposits are situated on the southern bank of River Bhadra and the third deposit on the northern bank. The thickness of the weathered zone varies from 40-100 meters, the average being about 80 meters.

Ore deposits occur as a series of asymmetrically overturned folds thus increasing the depth of the rocks two to three times at few places. The ore body consists of two main ore zones – the weathered ore (upper weathered crust of the ridges) and primary ore (the inner hard core). Primary ore is very hard, contains low-grade iron (27% iron content) and needs to be crushed to very fine size for the release of magnetite. Weathered ore, which is in the upper mantle, is much richer in iron content and easier to extract and process. Investigations at Aroli revealed 7 million tonnes of weathered ore of which only 5 million tonnes could be mined. In 1969, NMDC obtained a 30-year mining lease from the Mysore State Government (the predecessor to the current state of Karnataka) for mining in 5,118 hectares of land. This did not include the Gangrikal deposits (1,174 hectares). However, the lease deed mentioned that once the Aroli and Nellibeedu deposits were exhausted, the Gangrikal deposit would be offered for exploration. A pilot plant was established and trial runs of ore extraction, beneficiation, and transportation were carried out at a cost of USD 250 million. As a market was not readily available for this ore, the launching of the mining project was delayed. To reduce rental liabilities, 613 hectares of leased land in Nellibeedu, which was not required by NMDC immediately, was surrendered to the government on the condition that it would have to be leased to NMDC at a later date. The Government of India was successful in striking a deal with the Shaw of Iran in 1975 for supplying magnetite ore. Initially, Iran had agreed to finance the Kudremukh Iron Ore Project through a USD 630 million loan, and required 150 million tonnes of concentrate to be delivered over a 15-year period. ✓

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Mining is like a search-and-destroy mission.

— Stewart L. Udall