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Battles over Bauxite in East India

The Khondalite Mountains of Khondistan

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Aluminium India and Grassroots Movements Protecting Mountains

The aluminum industry is among the world's most important industries, crucial to the development of industrial and consumer societies over the course of the twentieth century. The industry has also had tremendous societal and environmental impacts during this period. Yet, when observers critique this industry they generally focus on the refineries and smelters that produce alumina and aluminum rather than on the raw material from which these materials are refined, the mining of which has devastated huge areas of land and has caused serious environmental problems in countries such as Jamaica, Guinea, Australia, India, and Vietnam. That bauxite has never been sold for a price commensurate with the damage done by mining it – cheap bauxite is the *sine qua non* of the aluminum industry – compounds these problems by limiting the financial and economic benefits derived by bauxite-producing states and regions and thus their ability to address the environmental effects of bauxite mining. In addition to environmental concerns, however, bauxite mining has had and continues to have significant political, social, and cultural effects on the communities and peoples from whose lands the bauxite is taken.

This is especially true for the Kond peoples who live in the mountains of southern Orissa State and northern Andhra Pradesh, in eastern India. Hundreds of small tribal communities dot these mountains, whose cappings

represent the most significant deposits of bauxite in India. For these communities, bauxite mining has dramatically disturbed their way of life and adversely affected their standard of living. Although aluminum companies and even many other people in India see the bauxite cappings of the mountains of India's Eastern Ghats range as an underutilized resource ready and suitable for economic exploitation, Adivasi culture and most Kond people consider the mountains as sacred entities and sources of life itself. Mining them for bauxite, to Konds, is nothing less than sacrilege; the scant economic benefits neither justify nor compensate for the host of problems that bauxite mining leaves in its wake.

The region of East India known as Khondistan was conquered by the armies of the East India Company from the 1830s to the 1860s. It was during the subsequent era of British colonial rule that the economic potential of the region's rich bauxite and other mineral deposits in the Eastern Ghats was first articulated. Because these mountains corresponded very closely with the region inhabited by the Kond tribe, also known as the Kuwinga, Kondho, Kondh, and Khond peoples, geologist T.L. Walker named the mountains' base rock "khondalite" in 1902, "in honour of those fine hill men the Khonds."¹ This name, khondalite, is a particularly appropriate one for this mineral given the central place that the mountains occupy in the economy, culture, and religion of the Kond people, who now number close to 1 million.

Building on the work of the British geologists who surveyed the area from the 1860s to the early 1900s, Cyril Fox published a series of blueprints for extracting the resources of Khondistan in the 1920s and 1930s. His reports evaluated the resources contained within most of the region's mountains, even the most remote such as Karlapat, which has recently attracted the attention of mining companies like BHP Billiton. Fox also highlighted the region's hydroelectric potential, anticipating the series of massive dams and reservoirs built from the 1950s to the 1990s, as well as the potential for new railways linking Khondistan and its resources to the port at Vizag (Visakhapatnam), which is now India's biggest port.²

If the initial attention paid to the bauxite deposits of Khondistan was part and parcel of Britain's colonial project of development in East India, subsequent interest in exploiting the deposits in the post-independence period has appealed to other justifications, at least rhetorically. In 1975-76, the Geological Survey of India surveyed the bauxite deposits in southern Orissa and northern Andhra Pradesh in part because of the need to give "the tribal

people [of the region] the fruits of development."³ It was this geological survey that jumpstarted the renewed interest in the bauxite potential of the Eastern Ghats in the late twentieth century by highlighting the accessibility of the deposits, with a particular reference to the railways connecting them to the busy port of Vizag and to markets beyond, especially in Japan.⁴ Published on the eve of an international conference on bauxite at Trivandrum, in India's southwest, in 1979, the survey's report focused attention on the largest bauxite deposit in the Eastern Ghats, located in a collection of five mountains named Panchpat Mali. When the Indian government established the National Aluminium Company (Nalco) as a public sector aluminum company in 1981, its vertically integrated operations were based in Orissa and relied on bauxite mined from Panchpat Mali,⁵ which even today produces approximately 40 percent of the bauxite mined in India. Part of Nalco's mandate as a publicly owned company, however, was to ensure that India and its people received as many of the benefits as possible from the mining and refining of the country's bauxite.

The late 1980s saw the creation of the Jawaharlal Nehru Aluminium Research Development and Design Centre (JNARDDC) in Nagpur, inspired by the Jamaica Bauxite Institute. Partially funded by a grant of 170 million rupees from the United Nations Development Programme, the JNARDDC was ostensibly intended to emulate the efforts of its Jamaican counterpart to ensure that Jamaica received a fair price for its bauxite.⁶ India, it seemed, had learned a lesson from its experiences from the 1950s to the 1970s.

During those decades, a number of aluminum refineries and smelters were built in India as joint ventures with foreign companies. Alcan and its subsidiary Indian Aluminium (Indal) built a series of refineries and smelters in Kerala, Maharashtra, and Bihar, with a smelter at Hirakud, in north-west Orissa, constructed between 1950 and 1956. Additional refinery-smelter complexes were built by the Madras Aluminium Company (Malco) with Italian assistance near the Mettun dam on the Cauvery River (now known as the Kaveri River) in Tamil Nadu State; by the Bharat Aluminium Company (Balco), with Russian and Hungarian involvement, at Korba, in what is now Chhattisgarh; and by the Hindustan Aluminium Company (Hindalco) at Renukoot, in the south of Uttar Pradesh on the border with Madhya Pradesh. Each of these complexes required a new dam or reservoir to provide them with the water and power they needed to operate, each of which imposed great financial costs and hardships on the local people. Begun in 1959 as a joint venture between G.D. Birla and American industrialist Henry Kaiser's grandson Edgar, Hindalco had the Rihand Dam built to supply the

Renukoot complex, followed by several other Kaiser-built dams in quick succession.⁷

Financed in part by loans from the World Bank arranged through the influence of George Woods shortly before he became president of the bank in 1962, the Rihand Dam created one of India's biggest reservoirs in the south of Uttar Pradesh. In the process, it displaced an estimated 200,000 mostly tribal people without proper compensation or warning. Moreover, the power generated by the dam was sold to Hindalco at a twentieth of the normal rate, a price guarantee that lasted for twenty-five years.⁸ The dam at Hirakud that supplied the Indal and Alcan operations in north-west Orissa displaced at least another 150,000 people from their homes, causing immense difficulties as well as, reportedly, the deaths of two government administrators during the subsequent unrest.⁹ In the early 1980s, an article in the prestigious journal *Economic and Political Weekly* pointed to "the past, not very pleasant, history of the Indian aluminum industry" as a reason for pessimism about the effects of the establishment of the new Nalco aluminum complex in Orissa.¹⁰ An earlier article in this same journal pointed out that the low price paid for its bauxite, thanks to the power of the international aluminum cartel, its vast consumption of electricity and water, and the extensive pollution it would create, all undermined the benefits of the complex and argued against allowing it to proceed.¹¹

Nonetheless, despite this type of opposition, the publicly owned Nalco operations in Orissa went forward. Although Nalco was founded in part to mitigate the foreign exploitation of India's peoples and resources, the results of Nalco's operations in Orissa demonstrate that nationally owned companies can also have poor environmental records and relations with local peoples. Approximately 6 million tons of bauxite are now mined on Panchpat Mali every year by a workforce of four hundred unskilled, semi-skilled, and skilled labourers, who earn a daily wage of between 55 and 117 rupees – between \$1 and \$3. Using about seventy "dozer-rippers" and trucks, the workers have created an open-cast mine on top of the mountain that stretches for several kilometres already; the bauxite ore is transported 14.6 kilometres on a conveyor belt from Panchpat Mali to the Damanjodi refinery. Completed in 1985, the conveyor belt alone displaced at least three thousand people from nineteen villages. Nalco had promised to ensure that "people who were happy peasants enjoying fruits [sic] of their labour amidst natural surroundings yesterday are not rendered homeless and unemployed today, leading the life of destitute because of their sacrifices in the national interest."¹²

This promise was not kept. There were never enough jobs for all land displaced persons (LDPs), and what jobs there were for displaced people rarely if ever materialized in practice without the payment of a bribe, as the authors learned in conversations about even the most unskilled of labouring and bauxite mining jobs.¹³ For LDPs resettled in Amlabadi, the main resettlement colony at Damanjodi, life was extremely difficult. Whereas in their former villages they had had cattle, goats, sheep, and kitchen gardens in which they grew vegetables, after their resettlement, as explained by one young tribal woman, they were forced to live in homes with an

asbestos roof, and everything is earthen, only a thin layer of cement. It is unsafe to live in ... In Damanjodi people are living with hardship, some even have not enough to eat a meal. It was nice before, at least they had land, nobody was starving. Now, no land and no cattle. So no food ... Unemployment and even educated unemployed are everywhere ... We have lost everything ... Nalco is death for us.¹⁴

The people displaced between 1984 and 1990 by the construction of the Upper Kolab Dam, which provides power to the Damanjodi refinery, had a very similar experience. At least fourteen thousand of these LDPs – estimates of the total number vary widely because the state government has not kept a proper count – from more than sixty villages now live in poverty-stricken rehabilitation villages.¹⁵

The construction of Nalco's smelter at Angul, in central Orissa, also displaced thousands of local people. Officially, the smelter displaced four thousand families from 40 villages, though the Rengali Dam, from which it draws much of its water and power, displaced at least another 224 local villages. Local protests and resistance to the construction of this dam between 1972 and 1978 were suppressed ruthlessly by the police, a story of repression and intimidation that is not well known outside the area, though this history of repression by the local authorities almost certainly contributed to the desperate act of resistance by a local man who stabbed and killed the Additional District Magistrate Gopabandhu Pattnaik as he addressed a crowd in Angul in December 1987.¹⁶ The protests did not succeed in preventing the formation of Nalco or its mining of the bauxite cappings of Panchpat Mali, but resistance to other bauxite projects in the Eastern Ghats has been more successful. In the years since Nalco was formed in 1980 there have been repeated attempts by other mining companies to gain access to most of the other bauxite-capped mountains in this region. As of

2010, every one of these attempts had been thwarted by local campaigns to protect the mountains.

In 1997, for example, Sterlite Industries signed a memorandum with the government of Orissa regarding mining the mountain Niyam Dongar, the largest and most heavily forested mountain in the Niyamgiri range. By 2003, the company was proceeding with its plan to build a new refinery and smelter in Orissa to process the bauxite ore and had even listed itself on the London Stock Exchange – as Vedanta Resources – to raise the necessary capital. Despite appearances, however, the company had not yet secured actual mining rights on Niyam Dongar, and the local tribe that inhabited the Niyamgiri range, the Dongria Konds, resisted the company's plans fiercely.¹⁷ For the Dongria Konds, the mountain peaks within the Niyamgiri are sacred to their principal deity, Niyam Raja, the "King of Law." As a result, though they cultivate the mountainsides, they have maintained a strict taboo against logging on the mountain tops, a taboo that has preserved the forests on the peaks of the Niyamgiri and on Niyam Dongar in particular. Needless to say, this taboo on logging on the summit of Niyam Dongar translated easily to a taboo on mining in the same area.¹⁸ Unable to overcome the tribal opposition to its plans, the development of Sterlite/Vedanta's bauxite mine on the mountain has stalled. The project's associated alumina refinery at Lanjigarh, however, has been relatively more successful if no less controversial.¹⁹

In September 2005, the Central Empowered Committee (CEC) released a long report on the Vedanta refinery at Lanjigarh. This agency, which advises India's Supreme Court on forests and forest policy, strongly criticized the refinery, and its report detailed numerous legal problems with the way that the project was approved and proceeded, especially for cutting forest without permission and for building the refinery without first getting clearance to mine the nearby mountain whose bauxite the refinery was to depend on. The CEC also argued that the refinery should never have been approved because it was located right on the banks of the Bansadhara River, where it flows below Niyam Dongar, which was bound to be seriously polluted by waste from this refinery, as has indeed happened. By delinking the clearance applications for the refinery and the proposed bauxite mine on Niyam Dongar, Sterlite/Vedanta had started construction on an overall project that it well knew was unlikely to be approved because of the magnificent primary forest covering the bauxite deposit. This is why the CEC objected strongly to the refinery's construction below the mountain – since it represented an investment that would be hard to halt, and likely to force

through later clearance for the mine.²⁰ Equally importantly, although this was an issue ignored by almost all of the assessments of the project, which focused on its economic or, as with the CEC, its environmental impact, there have been a number of fatalities associated either directly or indirectly with the Lanjigarh refinery, though the practice of subcontracting many of its operations and services has enabled Vedanta to underreport the actual number.²¹ In effect, the CEC's recommendations were circumvented by the decision by the judges overseeing the case at India's Supreme Court to commission additional reports, including one from the Central Mine Planning and Design Institute – a subsidiary of Coal India and therefore not an independent institution – that argued, laughably, that mining on Niyam Dongar would actually be beneficial since the micro-cracks that mining caused in the side of the mountain would “facilitate run-off” and help “re-charge ground water.”²²

Even before the campaign to prevent Vedanta from mining on Niyam Dongar, another people's movement had saved Gandhamardan, the bauxite mountain with perhaps the second-best forest cover, between 1984 and 1987. Balco had expressed an interest in mining bauxite on this mountain in the early 1980s and had even constructed a now-ruined town for the project's hundreds of expected workers, as well as a nine-kilometre road up the mountain to the project's site. Opposition to this project, however, united the area's tribal peoples, dalits, and Hindu faithful, and even attracted support from activists across India. Dalit women played a particularly prominent role in this opposition: at one point, Jambubati Bijira, a woman from Dungripalli village whose husband worked for Balco, organized a group of women who stopped the progress of mining and other vehicles up the mountain by laying their babies on the road in front of the trucks, shouting that the drivers should just run the babies over, since they would have no future if the mountain was mined. Unsurprisingly, Jambubati's leading role in protests cost her husband his job.

Faced with this type of protest, India's central Ministry of Environment and Forests held a high-level enquiry into bauxite mining on Gandhamardan at the end of which the ministry eventually sided with the protesters and stopped the project in 1987.²³ Nonetheless, an American company, Continental Resources, retains a provisional mining lease for Gandhamardan and, with reports of interest by Nalco and Vedanta, plans for a dam on the Lower Suktel River nearby continue to be linked to a planned refinery to process the mountain's bauxite. Villagers expected to be displaced by this

dam face continuous intense pressure to sign away their land to allow the dam to be built.²⁴

Five years after the struggle to save Gandhamardan, the battleground shifted to a new alumina project being developed in the Kashipur region of Orissa. Initiated as a joint venture between the Indian company Tata, Norway's Norsk Hydro, and the Alcan subsidiary Indal, the Utkal project planned to mine the bauxite on Bapla Mali and then refine it into alumina at a new refinery near Kashipur town (Rayagada district). Here too, tribal peoples and dalits engaged in an extensive campaign to protect their lands from being taken over and their mountain from being deforested as a result of mining for bauxite, as well as to prevent the diversion of water from the Baro and Sano Nadis [Big and Little Rivers], needed to operate the refinery, which would result in the displacement of forty thousand additional villagers. After seven years of protests opposing these projects, police brutality against the local peoples culminated in an incident where police opened fire on a group of tribal protesters at Maikanch village in December 2000, killing two men and a young boy.

The deaths of the three protesters at the hands of the police delayed the development of the Utkal project while an inquiry examined the incident. In the meantime, Norsk Hydro and Tata both withdrew from the project, and even the government of India seemed to take notice of the high human cost of these bauxite projects. In his Republic Day speech on 25 January 2001, India's president, Kocheril Raman Narayanan, proclaimed that

the mining that is taking place in the forest areas is threatening the livelihood and survival of many tribes ... Let it not be said by future generations that the Indian Republic has been built on the destruction of the green earth and the innocent tribals who have been living there for centuries.²⁵

Nevertheless, after a delay of three years, the project began anew. However, following the renewal of the repression of villagers and their protests in 2005 by the Orissa police on behalf of the Utkal consortium, Alcan itself finally withdrew from the project in April 2007, under intense pressure from Canadian activists outraged over the numerous violations of laws and human rights associated with the Utkal project. The project has since languished, though power and water supplied by the Indravati Dam, built with the aid of World Bank loans between 1989 and 1997 at a tremendous human cost – an accident at the dam on 28 July 1991 killed an estimated two

hundred mostly tribal workers – has been piped to supply Vedanta's alumina refinery at Lanjigarh since 2006.

In recent years, Hindalco and its sister company Aditya Aluminium, both controlled by the Birla family that had built the Rihand Dam, have entered into negotiations with the government of Orissa to open new bauxite mines on Kodinga Mali and Mali Parbat. Here too, the local peoples have expressed their opposition to the proposed mines as well as to the new Birla-group refinery planned for refining the ore from Kodinga Mali into alumina. In these instances, however, local opposition to these projects has been affected by the presence of Maoist groups in the region. Much of the local resistance to the aluminum companies' plans has been organized by a Maoist-supported organization called Chasi Mulia Adivasi Sangho (Cultivating Labour Tribal Society – CMAS), and on one occasion this organization used force to reclaim tribal lands that had been illegally taken over by moneylender-traders through age-old techniques of compound interest loans and bureaucratic trickery. Yet, the prominence of Maoist leadership within the region and its resistance movement has provided a justification for heavy-handed police action against the protesters in the guise of combating Maoist rebels. In November 2009, for example, when the CMAS organized a protest outside a police station in Narayanpatna to protest police brutalities in tribal villages – the region had been invaded by several thousand armed police searching for Maoist rebels – police marksmen shot and killed two of the organization's leaders. Over a hundred other individuals were arrested and, as documented by Amnesty International, the atrocities committed by the police in the villages continued unabated.²⁶

In all, a report prepared by India's Ministry of Environment and Forests in 2007 indicated that various aluminum companies had signed a total of fifty-four memoranda of understanding regarding mining bauxite on ten mountains in the former Kalahandi and Koraput districts of Orissa. To their advocates, including both the companies themselves as well as the government of Orissa, these projects offer tremendous economic and developmental benefits that would alleviate much of the poverty in Orissa. In 2007, lawyers representing Vedanta in a series of hearings before India's Supreme Court made just such an argument in defence of the company's planned bauxite mine on Niyam Dongar and its alumina refinery at Lanjigarh. These projects, they stated, would provide everyone in Kalahandi "two square meals a day."²⁷ To advance their interests, however, the companies and their supporters rely on inaccurate data – the report referred to above by the Ministry of Environment and Forests, for example, is full of inaccuracies. It

minimizes the extent of forest on these mountains, among other basic facts, as well as the environmental and other risks of the bauxite projects. Public relations and press campaigns often minimize the extent of local opposition to these projects.²⁸ Companies have also been willing to flout India's environmental and other regulations in pursuit of their projects, as happened several times in 2004-10, when Vedanta was chastised by various authorities for felling extensive stands of trees without permission for factory projects in Chhattisgarh and Orissa, as well as for "provisional clearance" of its mining site on Niyam Dongar.²⁹

Equally egregious is the way that the true interests of the Konds and other peoples of Orissa have been pushed to the side by those advocating the exploitation of Orissa's bauxite reserves. Despite the extensive opposition of the Dongria Konds on Niyam Dongar and of other tribal peoples throughout the Eastern Ghats, the belief persists among pro-development elements that the creation of jobs is adequate justification for the social and cultural upheaval and the environmental degradation caused by bauxite mining in the mountains, though the jobs turn out to be far fewer and less long-term than promised. These pro-development elements also point to plans to make companies like Vedanta pay large sums of money to reforest the mountain peaks, to develop wildlife management plans, and to contribute to tribal development in the villages surrounding their operations. These plans, however, are inadequate and often hollow; a recent report from the Norwegian Government Pension Fund blacklisted Vedanta because of its poor environmental and labour record in Orissa and other areas in India, and in other countries too.³⁰ Nonetheless, the company's defenders insist that its contributions to a special-purpose vehicle, consisting of the Orissa Mining Corporation and Sterlite, and established with the government of Orissa, will adequately protect the interests of the tribal peoples.

It is precisely because of the close ties between the aluminum companies and various local and state interests and officials in Orissa and elsewhere, however, that tribal peoples believe they cannot rely on the state, state agencies, or state vehicles to protect them. The Konds have extensive experience of ill-treatment at the hands of state and local officials. Sri Lasu Jani, who lives in a village at the base of Panchpat Mali, has complained on several occasions about the pollution, the dust from blasting, and the other effects of Nalco's bauxite mining on the mountain that have severely degraded the once exceptionally fertile surrounding lands. The officials ignored the complaints. According to Jani,

We have been writing applications to the authorities three or four times. Still they don't care. The Collector [a senior administrator] invited a few elders of our community and then abused them by calling them goats, sheep, bloody fools, and they were beaten by the security forces. We had to run away from there. The police told us before not to come with arms, otherwise it would have turned violent. Still, they charged and fired gas on us. Seventy of us had false cases made against us. Fifteen of us still have court cases pending against us for the last five years. They don't listen or give us any jobs.³¹

And if local protests against bauxite projects or the aluminum companies become too onerous, the companies almost always have recourse to the police and other tools of state repression. In November 2007, for example, thirty thousand farmers demonstrated in Hirakud against plans to divert even more water from the Hirakud Reservoir to power two new aluminum smelters for Vedanta and a joint project by Hindalco and Aditya Aluminium. The demonstration ended with the protestors being lathi-charged by the police, a common riot control tactic in India using a lathi, or wooden baton. Following this incident, Orissa's chief minister Naveen Patnaik did invite the movement's leaders to a meeting at which he promised that some of Hirakud's water would be reserved for farmers. Given the demands on Hirakud from the two new as well as the existing smelters and other industries, this promise, like so many others, is extremely unlikely to be kept.³²

It seems to be hard for mining executives and many government officials to understand the strength of opposition to the bauxite projects in the Eastern Ghats. The belief that these projects will bring development and wealth to a region long mired in poverty led these executives and officials to dismiss the opposition as anti-development and ignorant of the benefits of industry. Yet, this belief ignores the fact that the tribal peoples have already had significant experience with the ill-effects of the aluminum industry; it also ignores the overarching importance of the mountains in their lives, culture, and value systems. In his autobiography, Gopinath Mohanty, one of Orissa's most renowned writers, recalls a conversation he had with an official conducting India's census in 1941. When the official asked Mohanty to state his religion, he replied, "*Dongar*" – mountains – an answer that amused the official greatly.³³ Despite this reaction, Mohanty's response actually reflected the Konds' profound belief that each Khondalite mountain is a sacred entity, for them as well as for many Hindus who live in their vicinity.

Moreover, in addition to their religious and cultural significance, the Konds recognize that the mountains play an important ecological role in maintaining the fertility of the surrounding region's lands and fields. According to *The Secrets of Metals*, "Without aluminum there would be no fertile earth,"³⁴ thanks in large part to the ability of aluminum to bond with other elements and compounds in the earth, including notably water, which is fundamental to the soil's capacity to retain moisture. It is no surprise that the regions where bauxite is concentrated include some of the world's largest and most biodiverse forests, among them the Amazon Rainforest, the Cape York Peninsula in Australia, and parts of West Africa and East India. In Khondistan, geologist T.L. Walker noted the contribution of the bauxite mountains to the region's exceptional fertility at the beginning of the twentieth century. He observed the abundance of fresh water that originated high in the Eastern Ghats, including in the area "south of Korlapat where, in March, in the dry season, I noticed a tiny rill which dashed down the precipitous face of one of these hills, to be utilized to irrigate a second rice crop in the fields of the valley below."³⁵ The introduction of bauxite mining in the mountains, however, has had a profound effect on the region's agricultural economy. Konds living in the villages below Panchpat Mali describe how they used to rotate crops and grow two crops per year. Since bauxite mining on Panchpat Mali began in 1980, this is no longer possible. As described by Sri Lasu Jani, a leader of one of the affected communities, "Our water sources are drying because of mining. We cannot rotate our crops ... we are struggling to survive."³⁶

The Konds have also been living with the effects of pollution from mining and refining bauxite since the early 1980s. Nalco's smelter at Angul, in Orissa, for example, experienced major spills of toxic waste from ash ponds during a cyclone in 1999 and on 31 December 2000 when a containing wall broke, damaging land and buildings in twenty villages and causing a large number of deaths on each occasion (the exact number being next to impossible to calculate, as is all too common in such incidents). In September 2004, a national news report highlighted fluoride contamination that was proven to have affected five hundred acres of cultivated fields near the smelter, whose crops were declared unfit for consumption. The reporter interviewed local villagers suffering from diseases such as skeletal fluorosis, attributed to the smelter's pollution; since Nalco denies responsibility and the villagers cannot themselves afford the necessary medication, their medical problems remain untreated. The Nandira and Brahmani Rivers near the

Angul smelter are seriously polluted – the fish in a thirty-kilometre stretch of these rivers have all died because of the pollution – and a report from the Supreme Court Monitoring Committee on Hazardous Wastes on the Nalco smelter from 2006 confirmed that fluoride and other emissions from the smelter were unacceptably high, while toxic spent pot lining, a hazardous waste, was not being disposed of properly.³⁷

According to international standards, the first rule of a development project is that all parties to the project should be better off.³⁸ By this standard, the bauxite projects in Orissa are not development. As expressed by Bhagaban Majhi, one of the leaders of the Kashipur movement against the Utkal project on Bapla Mali,

Agya, unnoti boile kono? [Sir, what do you mean by development?] Is it development to displace people? The people for whom development is meant should reap benefits. After them, succeeding generations should reap benefits. That is development. It should not be merely to cater to the greed of a few officials. To destroy the millions-of-years-old mountains is not development.³⁹

Bhagaban went on to say,

We have sought for an explanation from the Government about the people who have already been displaced in the name of development. How many have been properly rehabilitated? You have not provided them with jobs; you have not rehabilitated them at all. How can you again displace more people? Where will you relocate them, and what jobs will you give them? You tell us first. The government has failed to answer our questions. Our fundamental question is: How can we survive if our lands are taken away from us? We are tribal farmers. We are Earthworms (*Matiro poko*). Like fishes that die when taken out of water, a cultivator dies when his land is taken away from him. So we won't leave our land. We want permanent development. Provide us with irrigation to our lands. Give us hospitals. Give us medicines. Give us schools and teachers. Provide us with lands and forests. The forests we want. We don't need the company ... But the government is not listening to us.⁴⁰

There is thus a wide gap between the conceptions of development articulated by the aluminum companies and state officials on the one hand and the tribal peoples of Orissa on the other hand, and the Kondhs will not accept

being made to sacrifice their culture, their way of life, and even their lives in the name of national progress, whose benefits are almost exclusively reserved for others.⁴¹

In India, industrialization and development have displaced an estimated 60 million villagers within the last sixty years, including more than 2 million mostly tribal peoples and dalits in Orissa alone.⁴² Very few of these displaced peoples have been properly compensated for their losses, nor experienced an improvement in their standard of living. Most, in fact, have lost their land and their livelihood as farmers and as a result even their food security. Despite company and government projections of the generation of great wealth, “sustainable development,” “attractive resettlement and rehabilitation packages,” and “corporate social responsibility,” the people most affected by the bauxite development projects in the Eastern Ghats face even more hardship and poverty than anything they had known before. Unfortunately, the “projects meant to reduce poverty are the ones adding to the numbers of the poor.”⁴³ The economic problems caused by development are well established. Even World Bank studies have acknowledged that for the displaced peoples of East India, “income restoration” post-displacement remains elusive and that in most cases their standard of living declines drastically.⁴⁴

The Threat of Cultural Genocide

It is the cultural risks of development, however, that are the most devastating to the tribal peoples of Orissa.

As a result of bauxite mining, what is actually happening over large areas of East India is a process of cultural genocide. In contrast to the devastation wreaked on neighbouring south Chhattisgarh, where over six hundred tribal villages have been burned and countless atrocities have been committed by Salwa Judum, a pro-mining tribal militia armed by the police to fight against Maoists, the tribal peoples of south and west Orissa are not at risk of being physically exterminated, but they face nonetheless the extinction of their culture, a psychic death that is difficult for non-tribal peoples to appreciate. In India as in the West, mainstream culture is no longer rooted in the soil or in the lands that villages have worked for generations.

Yet, tribal culture draws its strength from the land. Deprived of it, the entire basis and structure of tribal society is torn apart. In addition to the destruction of traditional economic systems based on agriculture and cultivation, displacement from home villages fractures the kinship system of tribal society by which social relations follow the pattern of a village’s traditional layout and distance from kin in neighbouring villages. Tribal society

has also seen its religious systems undermined both by the displacement of sacred village sites and by the mining of venerated mountains: one woman from Kinari village, displaced to make way for the Lanjigarh refinery, felt that “even our gods are destroyed” after watching bulldozers flatten her village and its central earth shrine.⁴⁵

Displacement also undermines the material culture and self-sufficiency of tribal society, in which people have always (until recently) grown their own food and made most of what they needed themselves – everything from clothing to housing built of local earth and wood. Above all, however, the power structure of tribal society is altered. Prior to the arrival of the aluminum companies, tribal peoples controlled their own land and resources in a remarkably egalitarian way. Yet, the arrival of the companies and the development they bring forces tribal peoples into a new, corporate-dominated and more hierarchical structure of power and authority in which they occupy the lowest rungs and over which they have few levers of control. Women in particular have a much higher status in tribal society than in mainstream industrial society, which explains in part why women are often at the forefront of campaigns against the bauxite and other development projects.

In effect, when deprived of their land, the political, economic, and cultural systems of tribal peoples are destroyed. Losing their land causes the death of all that they value, including the sanctity of nature, respect for elders’ knowledge, ritual contact with ancestors, growing their own food on family land, making their own houses and tools, and exchanging food and other goods with neighbours in the spirit of egalitarianism. It is for this reason that tribal peoples usually insist that they would rather die than leave their land; they do not share the corporate values emphasizing wealth and financial power that development projects bring in their wake. Yet, resisting the power and wealth of the aluminum companies and their allies in government and elsewhere is extremely difficult: “We’re being flooded out with money” is how tribal elders describe what is happening to their communities.⁴⁶

Consumerism, and the concomitant need to spread consumer values, is at the heart of the new market-driven invasion of Kond lands by aluminum and mining companies. This is not a new phenomenon. As early as the 1830s, British officials, including G.E. Russell, a senior civil servant with the East India Company, advocated establishing markets for Konds on the grounds that “giving them new tastes and new wants will, in time, afford us the best hold we can have on their fidelity as subjects by rendering them dependent

upon us for what will, in time, become necessities of life”; Russell’s superior, Lord Elphinstone, the lieutenant-governor of Madras, agreed, stating that “with the extension of this commerce their wants will increase.”⁴⁷ The Konds of East India, however, have always maintained an ethos of sustainability, resisting the ethos of consumerism upon which industrialization and so much of modern society depends. This places them squarely at odds with recent prevailing societal values in India and especially the interests of the aluminum companies, for whom increasing Indians’ consumption to levels experienced in developed countries is a key goal.⁴⁸ Although most of the new bauxite and aluminum projects in Orissa are focused on the export market – in this, Nalco set the trend, beginning to export over 50 percent of its output around the year 2000⁴⁹ – the success of the aluminum industry as a whole in India depends to a large extent on the proliferation of foils, Tetra Paks, and other aluminum products reaching Indian consumers, as well as on the use of aluminum in construction, the manufacture of cars and trucks, and the arms industry throughout the country.

The Real Costs of Production

There is, however, a perverse and ultimately very destructive principle at the core of the aluminum industry. As much as the various aluminum companies operating in India want to expand production to meet both domestic and foreign demands for their products, they can only do so economically if they have reliable and, most importantly, cheap sources of bauxite. The aluminum industry depends on cheap bauxite as its “starting point of value creation.”⁵⁰ Without access to inexpensive bauxite, the price of aluminum will inevitably increase. The new refineries and smelters in Orissa in particular are not economically viable if they cannot obtain local bauxite cheaply. Vedanta’s refinery in Lanjigarh has been operational since 2007, yet, unable to secure bauxite from Niyam Dongar, it has had to rely on bauxite brought from Chhattisgarh and even as far away as Australia. As a result, Vedanta claims that its inability to mine bauxite on Niyam Dongar is leading to losses of \$100,000 a day at the refinery in Lanjigarh. There is, though, no set price or even a free market for bauxite around the world. Different companies obtain it for wildly different prices depending upon factors such as how much they pay in royalties and taxes, among other things. In 2007, for example, Nalco calculated its raising cost of bauxite to be 236 rupees per ton, of which 172 rupees was the cost of extraction and 64 rupees was the royalty paid for the right to mine it.⁵¹ At the equivalent of about \$6 per ton, this figure is less than one-half of the world’s average cost

for bauxite. Regardless, the entire business model of the aluminum companies depends on securing bauxite as inexpensively as possible.

As a result, the aluminum companies have an entrenched interest in keeping the cost of bauxite low. Unfortunately, the governments with whom they negotiate for the right to mine bauxite are often so desperate for the jobs and other economic benefits derived from bauxite projects – and so fearful that if they impose too high a cost on the companies, they will invest elsewhere – that they too ignore the true cost of producing bauxite. They ignore the costs of the subsidies on electricity, water, infrastructure, and transport that are built into bauxite projects; they also ignore the environmental costs of these projects, including the cost of extensive deforestation around mining sites, the degradation of surrounding agricultural lands, the pollution of local water supplies, or the emission of greenhouse gases and other pollutants from refineries and smelters. A proper cost/benefit analysis of a bauxite project would need to take all of these “external” factors into consideration, which would dramatically affect the economic feasibility of most projects. The Wuppertal Institute for Climate, Environment and Energy in Germany, for example, calculates that producing 1 ton of aluminum results in 85.38 tons of abiotic material – that is, overburden and bauxite waste, among other things – and 9.78 tons of greenhouse gas emissions, and consumes a staggering 1,378.6 tons of water.⁵² The Stern Report (2006) calculates the externality cost of carbon emissions at \$85 per ton; since producing a ton of aluminum emits up to 20.6 tons of carbon dioxide, the true cost of producing aluminum should be more than \$1,000 higher than the approximate international average price of aluminum of \$2,000 per ton based on this one factor alone, though this figure excludes the cost of other emissions from refineries as well as total emissions from reservoirs, coal mines, and the other industries involved in the production of aluminum.⁵³ The figure also excludes the almost impossible-to-quantify costs of the effects of bauxite mining on local ecological and water systems, on the biodiversity and health of local forests, and most importantly, on the local peoples and their way of life.

In August 2008, the Supreme Court of India judgment in the Niyamgiri case emphasized the need to strike a balance between environmental and economic interests with regard to development projects through the concept of sustainable development. The judges drew on the concept of green accounting, developed by a team from the Green Indian States Trust and TERI (The Energy Resources Institute, Delhi) by which the net present value (NPV) of forests can be calculated to determine the compensation to be

paid in cases of logging or deforestation.⁵⁴ But implementing this type of polluter-pays principle has introduced a new threat to India's environment: by reducing natural resources to an often grossly underestimated and artificial monetary value, the principle ironically gives resource companies a licence to pollute, and working out the NPV of forests becomes a pretext for selling them off. This is a concept that is completely antithetical to the interests of the local peoples – during the Belamba public hearing in April 2009, Lado Sikoka, a Dongria from Lakhpadar village, stated “Niyamgiri is our Mother. Our life depends on the mountain. Can you pay five lakhs for each tree? Our [government] should not sell out to a foreign company”⁵⁵ – yet, providing that a company is willing to pay the NPV, it may cut down the forest.

In effect, with the closing of many refineries and smelters in developed countries, the production of aluminum is being outsourced to developing countries such as India where environmental and social protections and human rights legislation are weak and regularly circumvented, thus enabling companies to operate as cheaply as possible. The conjunction of interests between the aluminum companies and state governments is endemic in India. In March 1996, for example, R.C. Das, the chairman of the Orissa State Pollution Control Board, wrote a report recommending against allowing any further bauxite mines, refineries, or smelters in the state because of the excessive pollution he had discovered at existing facilities – one refinery and two smelters – in the state and the ease with which the companies involved avoided having to address their deficiencies.⁵⁶ Following the issuance of this report, Das was dismissed from his position by the government of Orissa. Aluminum companies need cheap bauxite to keep their businesses profitable, and so they ignore the true environmental and societal costs of mining and refining bauxite; anxious to benefit from the “development” associated with bauxite mining, governments in Orissa and elsewhere let them. The companies themselves prosper as a result of this arrangement, as do a small number of others inside and outside government.⁵⁷ The vast majority of people, including especially the tribal peoples of Orissa, do not.

This dynamic is not unique to India. Other countries experience or have experienced similar problems with the aluminum industry. Vietnam's tribal highlanders, for example, face the same type of environmental, economic, and social threats from bauxite mining as do the peoples of Orissa. They have also organized similar campaigns against the efforts of Chalco and other companies to mine the bauxite reserves in the mountains of the

country's Central Highlands.⁵⁸ In Brazil, the federal electricity company has been impoverished as a result of its relationship with aluminum companies, and especially because of the privatization of the Tucuruí Dam. Laws and regulations protecting the environment have also been circumvented in the building of new dams and smelters in Iceland and Trinidad, while community movements protesting these projects have been harshly repressed.⁵⁹ And in Jamaica, with its long history involving the heavy environmental and social costs of bauxite mining, there is a campaign to save the Cockpit mountains that parallels the campaigns to save the mountains of the Eastern Ghats in India. The situation in Jamaica is instructive for another reason also, since it was the Jamaican government of Michael Manley that first attempted to increase the cost of bauxite in 1974 by raising the levies imposed on the aluminum companies by roughly \$10, increasing the price of bauxite from \$8 to \$19.94 per ton. Although this was intended to give the Jamaican people a greater share of the benefits of the exploitation of their natural resources, as well as to provide some compensation for the host of environmental and social problems associated with bauxite mining, the aluminum companies responded to the new Jamaican levies with outright hostility and reprisals, as did the government of the United States.⁶⁰ Jamaica's efforts to increase the price that aluminum companies paid for bauxite has not been repeated.

India is thus not alone in grappling with the costs and the effects of bauxite mining. Yet, of all of the world's bauxite deposits, those in India have perhaps the largest density of people living on or around them. As a result, bauxite mining in India is arguably likely to cause the most upheaval and the most devastation to the greatest number of people. The environmental and other costs of bauxite mining are too high, and those who suffer the most from them are the most vulnerable people, including the Konds and other tribal peoples of East India. The principal beneficiaries of bauxite mining remain, of course, the aluminum companies themselves, but their dependence on keeping the price of bauxite low so as to maximize the profits from the rest of their production chain deprives host governments and societies of the full benefits, financial and otherwise, of the exploitation of their natural resources and therefore deprives them of the means to address adequately the various problems caused by bauxite mining. Yet, whereas in the early to mid-twentieth century it was foreign-owned aluminum companies that exploited the bauxite deposits of underdeveloped countries and/or colonial territories without much thought given to the interests of

their peoples, in the late twentieth century, domestic private or even public companies in these countries began exploiting their own resources, usually in close alliance with domestic elites and the backing of national and/or local governments.

Increasingly, therefore, the battles over bauxite no longer pit a developing country and its peoples against the interests of a foreign-owned corporation, as was the case in Jamaica or Guyana in the 1970s or Guinea in the 1960s.⁶¹ Instead, the battles are being waged within a country. In India, the Konds of southern Orissa and northern Andhra Pradesh are fighting for their survival against the local business and political interests that want to mine the Eastern Ghat mountains that form the backbone of the Konds' economy, culture, and way of life. For the tribal peoples near the Lanjigarh refinery, the connection between the refinery with its coal-fired power plant and the local climate changes and declines in rainfall is obvious. The importance of intact mountains and forests is something that the Konds and other tribal peoples know, thanks to the knowledge accumulated by the generations of their ancestors who have lived and worked in them. That knowledge, and the interests of the peoples who hold it, cannot be ignored in the pursuit of the type of "development" at any cost that is currently the focus in so much of East India.

Notes

- 1 T.L. Walker, "The Geology of Kalahandi State, Central Provinces," in *Memoirs of the Geological Survey of India*, vol. 33, pt. 3, 1-22; quotation is at 11.
- 2 C.S. Fox, *Bauxite and Aluminous Laterite* (London: Technical Press, 1932), 136.
- 3 See M.G. Rao and P.K. Raman, *East Coast Bauxite Deposits of India: Report by the Geological Survey of India* (Calcutta: Geological Survey of India, October 1979).
- 4 Even though the Eastern Ghats are not near the coast – many of the mountains are in fact extremely remote – and the rail and road networks connecting the area to the coast were still rudimentary in the late 1970s, the survey named the bauxite deposits India's "East Coast deposits" to emphasize their accessibility and improve the likelihood of their development. The World Bank used accessibility as a key determinant in rating the economic feasibility of bauxite and aluminum projects. See Martin Brown, Alfredo Dammert, Alexander Meeraus, and Ardy Sioutjesijk, "Worldwide Investment Analysis: The Case of Aluminum" (World Bank staff working paper no. 603, Washington, DC, 1983).
- 5 S. Rajagopalam, S. Srinivasan, and K. Vyasalu, "The Orissa Aluminum Complex: Points towards a Debate," *Economic and Political Weekly*, 5 December 1981, 2005-14.
- 6 After its founding in 1989, however, the JNARDDC's research was geared toward servicing the needs of mining companies. By the early twenty-first century,

questions about the centre's "pathetic conditions" and "lack of funds" were being raised in India's Parliament. Parliament of India: Rajya Sabha nos. 66 and 80 (March and December 2002).

- 7 The Birla dynasty is among India's most powerful industrial families. G.D. Birla himself was a staunch supporter of Mahatma Gandhi – Gandhi's assassination took place in the grounds of Birla's house – yet Birla's companies were arguably among the earliest contributors to the corruption that plagued and still plagues India. Birla established Orient Paper Mills in Orissa in 1940, but the company's pollution of the Ib River led ten years later to Orissa's first case of public interest litigation and a judgment against the company by Orissa's high court. This judgment was later negated by the Orissa River Pollution Act, passed by the Orissa Assembly in 1953, which took away the courts' jurisdiction over river pollution. G.D. Birla, *Towards Swadeshi: Wide-Ranging Correspondence with Gandhiji*, ed. V.B. Kulkarni (Bombay: Bharatiya Vidya Bhavan, 1980), 118; Karunakar Supkar, *Itihaasore Porihaaso* [Ironies of history] (Sambalpur, India: Sukh-Dukh Publications, 2007), 28-32.
- 8 Medha M. Kudaisya, *The Life and Times of G.D. Birla* (Delhi: Oxford University Press, 2003), 334-35; Gita Piramal, *Business Maharajas* (Delhi: Viking, 1996).
- 9 For a more detailed account of the violence in Hirakud and its connection to the Indal/Alcan smelter, see B. Krishna Dhalo, "Sarkar Javaab Diantu" [Government, explain], *Dharitri*, 23 October 2007. For a history of the Hirakud dam, see Philip Viegas, "The Hirakud Dam Oustees: Thirty Years After," in *Big Dams, Displaced People: Rivers of Sorrow, Rivers of Change*, ed. Enakshi Ganguly Thukral (Delhi: Sage, 1992).
- 10 K.V. Subramanian, "Orissa Aluminium Complex," *Economic and Political Weekly*, 30 January 1982.
- 11 Rajagopalam, Srinivasan, and Vyasalu, "The Orissa Aluminum Complex," 2005-14.
- 12 B.C. Muthayya and Jagannath Swaroop Mathur, *Rehabilitation of Displaced Villages: A Study of Nalco Complex, Damanjodi, Koraput District, Orissa* (Hyderabad: National Institute of Rural Development, 1984), 8.
- 13 Statistics on poverty reveal that Damanjodi's district of Koraput is one of India's most poverty-stricken districts. Centre for Science and Environment, *Rich Lands, Poor People: Is "Sustainable" Mining Possible?* (Delhi: Centre for Science and Environment, 2008).
- 14 Amarendra Das and Samarendra Das, *Wira Pdika* (or, *Matiro Poko, Company Loko* [Earth worm, company man]), 2005, filmstrip.
- 15 Bipin K. Jojo, "Political Economy of Large Dam Projects: A Case Study of Upper Kolab Project in Koraput District, Orissa," in *The Nowhere People: Responses to Internally Displaced Persons*, ed. S. Thakaran (Bangalore: Books for Change, 2002).
- 16 Manoranjan Mohanty, Bhupen Mohapatra, and Nirakar Beura, eds., *Khani, Jangal o Janata* [Mines, jungle and people] (Bhubaneswar, India: Ghabesana Chakra, 2004), 33.
- 17 At least two articles in the *Financial Times* in 2003 and 2004 mistakenly reported that Sterlite Industries had in fact secured mining rights on Niyam Dongar. See Khozen Merchant and Kunal Bose, "Holding onto Orissa's jewels: Sale of Nalco, the state company, has been stalled," *Financial Times*, 5 November 2003, 5; Kunal Bose, "Investment interest grows," *Financial Times*, 3 November 2004, 4.

- 18 For a discussion of the efforts of the Dongria Konds to resist the mining of Niyam Dongar, see Prafulla Samantara, *Niyamgiri: Waiting for Justice* (Berhampur, India: Lok Shakti Abhiyan, 2006). See also the Surya Shankar, *The Real Face of Vedanta* (Niyamgiri, India, 2009), at <http://www.youtube.com/watch?v=dSKAfx1mOUY>.
- 19 This refinery has inspired intense local opposition, which has been met by often vicious police repression. For an examination of this repression, see People's Union of Civil Liberties, *A Fact-Finding Report on Physical Attacks on the Villagers Agitating against Their Displacement Due to the Proposed Sterlite Alumina Project in Lanjigarh Block of Kalahandi District* (Bhubaneswar, India: People's Union of Civil Liberties, Rayagada and Bhubaneswar Units, 2003), and Felix Padel and Samarendra Das, "Exodus Part Two: Lanjigarh," *Tehelka*, 13 March 2004.
- 20 Central Empowered Committee, *Report in IA no. 1324 Regarding the Alumina Plant Being Set Up by M/S Vedanta Alumina Ltd. at Lanjarah in Kalahandi District, Orissa* (Delhi: Government of India, 21 September 2005).
- 21 For example, in January 2008, the assistant sub-inspector of the Lanjigarh police station was killed when a truck carrying alumina on the road to the refinery struck his motorcycle. See the coverage of this incident in *Sambad*, 24 January 2008, 1; on Vedanta's public relations efforts to minimize the adverse effects of its environmental and employment records, see a website run by Survival International entitled "Behind the Lies" at <http://www.survival-international.org/>.
- 22 Central Mine Planning and Design Institute, *Interim Report on the Hydrogeological Investigations, Lanjigarh Bauxite Mines, submitted to M/s OMC Ltd., Bhuaneswar* (Ranchi, India: Central Mine Planning and Design Institute, August 2006), 18 and 20.
- 23 Sunderlal Bahuguna, "A voice from Gandhamardan," *Sunday Statesman*, 27 April 1986; "Adivasis up in arms to save nature," *Onlooker*, 1-15 July 1986; People's Union of Democratic Rights, "Report on Gandhamardan Mines," *Mainstream*, 8 November 1986, 30-34; Meena Menon, *The Hindu Survey of the Environment* (Hindu Newspaper Group, 2001), 148.
- 24 See *Dams, Rivers, and People* 2, 12 (2005), <http://www.sandrp.in/drp/jan05.pdf>; Das and Das, *Wira Pdika*.
- 25 Cited in *Frontline* 18, 3 (3-16 February 2011).
- 26 Amnesty International, "India: Probe Killing of 2 Adivasis Leaders and Release Detained Activist in Orissa," public statement, 2 December 2009, ASA 20/021/2009.
- 27 The authors witnessed three of these Supreme Court sessions themselves and were amazed at the farfetched arguments advanced in defence of the bauxite projects. See Writ Petition no. 202 (1995) of petitioner T.N. Godavaraman Thirumulpad (petitioner) versus Union of India and others (respondents), in the matter of Sterlite Industries (applicant), at the Forest Bench of the Supreme Court of India, 8 August 2008.
- 28 At a public hearing on Vedanta's intention to expand the capacity of the Lanjigarh refinery sixfold to 6 million tons per year, held in Belamba village on 28 April 2008, almost all of those in attendance spoke against the proposal and the refinery, which had already heavily polluted the Bansadhara River and caused enormous suffering to the nearby villagers, including those displaced by the refinery. Published accounts of this hearing, however, implied that the people at the hearing had consented to the

- expansion of the refinery. See <http://epgorissa.blogspot.com/>. See also Proceedings of the Public Hearing for Vedanta Aluminium Ltd. held on 25 April 2009 for the expansion of refinery capacity from 1 million tons per year to 6 million tons per year, held at Belamba village under P.C. Rauta, regional officer of the Orissa State Pollution Control Board, Rayagada, and Chudamani Seth, additional district magistrate, Kalahandi, <http://www.youtube.com/watch?v=dSKAfx1mOUY>.
- 29 "Vedanta flouts rules in Orissa, central government wants to know why," *India News*, 27 November 2009, <http://www.indiaenews.com/>.
- 30 Council on Ethics, Norwegian Government Pension Fund, *Report on Vedanta Resources Plc* (Oslo: Ministry of Finance, May 2007), <http://www.freewebs.com/epgOrissa>.
- 31 Das and Das, *Wira Pdika*.
- 32 There are thirteen industrial complexes currently drawing water from Hirakud, with another twenty having agreements with the government of Orissa to do the same. See Paschim Orissa Krishak Sangathan Samanbaya Samiti, *Chasiro Rekha* [Farmer's line] (Sambalpur, India: Paschim Orissa Krishak Sangathan Samanbaya Samiti, 2008). See also articles such as "Naveen's water woes overflowing," *New Indian Express*, 27 November 2007, 3, and "Farmers reject Naveen largesse," *New Indian Express*, 28 November 2007, 6.
- 33 Gopinath Mohanty, *Sroto Swati* (Cuttack, India: Vidyapuri, 2000), 324.
- 34 Wilhem Pelikan, *The Secrets of Metal* (New York: Anthroposophic Press, 1973; trans. of 1952 German ed.), 151.
- 35 Walker, "The Geology of Kalahandi State," 13.
- 36 Das and Das, *Wira Pdika*.
- 37 Reports of the Orissa State Pollution Control Board in 1995 and 2002, available on the Environment Protection Group of Orissa website, <http://www.freewebs.com/epgOrissa>.
- 38 Michael M. Cernea, "Re-examining 'Displacement': A Redefinition of Concepts in Development and Conservation Policies," *Social Change* 36, 1 (2006): 8-35; H.M. Mathur, ed., *Managing Resettlement in India: Approaches, Issues, Experiences* (Delhi: Oxford University Press, 2006).
- 39 Das and Das, *Wira Pdika*.
- 40 Ibid.
- 41 In the United States, indigenous lands affected by uranium mining are known as "national sacrifice areas." American Lakota activist Russell Means has responded to this designation by responding that his people are "fed up with being called a national sacrifice people." Russell Means, "On a New Consciousness of the American Indian Movement," *Lokayan Bulletin* 7 (1982). See also Roger Moody, *Rocks and Hard Places: The Globalization of Mining* (London: Zed, 2007).
- 42 Walter Fernandes, "Liberalization and Development-Induced Displacement," *Social Change* 36, 1 (2006): 110-11.
- 43 Mathur, *Managing Resettlement in India*, 2.
- 44 See World Bank, Report no. 17538, as cited in H.M. Mathur, "Resettling People Displaced by Development Projects: Some Critical Management Issues," *Social Change* 36, 1 (2006): 61-62.

- 45 Comment of a woman to Felix Padel just after she was forcibly resettled to Vedanta's new colony in Lanjigarh.
- 46 This is a phrase used spontaneously by Kond Adivasis facing displacement in Lanjigarh and Kashipur, cited in Padel and Das, "Exodus Part Two: Lanjigarh," in *Tehelka*, 13 March 2004, 22.
- 47 Felix Padel, *Sacrificing People: Invasions of a Tribal Landscape* (Delhi: Orient Blackswan, 2010), 179.
- 48 In the early 1990s, Indians consumed only 0.65 kilograms per capita of aluminum and aluminum products, compared with an average of 25 kilograms per capita in developed countries. S.K. Tamotia, "Distinct Cost Advantage," in *The Hindu Survey of Indian Industry* (Chennai: The Hindu, 2004), 183-85.
- 49 Nalco Annual Reports, 1998-2005.
- 50 *Proceedings of the International Conference on Aluminium*, ed. S. Subramaniam and D.H. Sastry (Bangalore: Aluminium Association of India, Bangalore, 2003).
- 51 Information cited in many sources, summarized, for example, from various Nalco reports on the Environment Protection Group of Orissa website, <http://www.freewebs.com/epgOrissa>.
- 52 Michael Ritthoff, Holger Rohn, and Christa Liedtke, *Calculating MIPS: Resource Productivity of Products and Services* (Wuppertal, Germany: Wuppertal Institute for Climate, Environment, and Energy, 2002).
- 53 Summary of information presented in Felix Padel and Samarendra Das, *Out of This Earth: East India Adivasis and the Aluminium Cartel* (Delhi: Orient Blackswan), chaps. 11, 12, 14.
- 54 See Haripriya Gundimeda, Sanjeev Sanyal, Rajiv Sinha, and Pavan Sukhdev, *Green Accounting for Indian States Projects, Monograph 1: The Value of Timber, Carbon, Fuelwood, and Non-Timber Forest Products in India's Forests* (Delhi: TERI Press for Green Indian States Trust, 2005).
- 55 Proceedings of the Public Hearing for Vedanta Aluminium Ltd. held on 25 April 2009 at Belamba. See <http://www.youtube.com/watch?v=dSKAfx1mOUY>.
- 56 R.C. Das, *Recommendation for Environmentally Sound Growth of Aluminum Industry in Orissa* (Bhubaneswar, India: Orissa State Pollution Control Board, March 1996).
- 57 Corruption and bribery of government officials is a regular feature of mining deals in India. In 2009-11, a series of mining scams was revealed in Orissa, relating mostly to iron ore mines in the north. There is no reason to believe that bauxite mining has been immune to the corruption prevalent in other parts of the mining industry. See Nageshwar Patnaik, "Orissa mining scam runs to Rs 3 lakh crore: Congress," *Economic Times*, 9 March 2010, a review of a new book about this issue titled *The Greatest Scam of the Century*, by the Orissa Pradesh Congress Committee.
- 58 See, for example, "Vietnam and China: Bauxite bashers; the government chooses economic growth over xenophobia and greenery," *Economist*, 23 April 2009, <http://www.economist.com/>.
- 59 On the situation in Brazil, see Stephen Bunker and Paul S. Ciccantell, *Globalization and the Race for Resources* (Baltimore: Johns Hopkins University Press, 2005), 67 onward; on Iceland, see Miriam Rose, "The Icelandic Energy Dilemma and How to

Help: A Masterplan to Exploit Europe's Greatest Wilderness," *Voices of the Wilderness*, Summer 2008; on Trinidad, see Wayne Kublal-Singh, *Ital Revolution* (Trinidad and Tobago: Just World Publications, 2009).

- 60 On the increase in Jamaica's bauxite royalty, see Bonnie Campbell, "The Impact of the Restructuring of the Aluminum Industry in the 1980s on Productive Activities in Guinea," in *States, Firms, and Raw Materials: The World Economy and the Ecology of Aluminum*, ed. Bradford Barham, Stephen G. Bunker, and Denis O'Hearn (Madison: University of Wisconsin Press, 1995), 1999. On the US response to the new royalty, see William Blum, *Killing Hope: US Militarism and CIA Interventions since World War Two* (London: Zed, 2003), 263.
- 61 See the chapters in this volume by Lou Anne Barclay and Norman Girvan, and Robin S. Gendron, for example.