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## Rich lands, poor people

The mineral map of India is one that will gladden any potential investor: vast tracts of territory, overlying massive, rich – and some entirely untapped – deposits of minerals like coal, iron, bauxite, manganese and chromite. For investors, these hold promises of unimagined wealth; for the land's lawmakers, these constitute the very pillars of their idea of the 'Modern State'. Prospecting and extraction, with each group helping the other, could be a cakewalk. Almost.

What queers the picture is a small truth which has remained elusive, ignored or misunderstood over the years: these minerals lie under the same lands which hold most of India's biologically-diverse forests and water systems. What's more, the nation's poorest, most marginalised people inhabit these lands, its richest. The land and its resources give these people their means of sustenance. The people, a large majority of whom are tribals, have lived in this symbiotic bond for centuries.

Minerals, however, are essential for a nation which stands poised on the threshold of a promising future, and must be extracted. Which means the land, its resources and its people must make way for the miners. Enamoured by the mining industry's promises of progress, Indian planners and lawmakers have accomplished this with clinical and brutal precision. Forests are razed, waterways polluted and clogged, farmlands transformed into wasted tracts, and mining dust hangs heavy in the air. As for the people, they are summarily evicted, with little promise or prospect of compensation or rehabilitation.

But are these immense costs commensurate with the 'development' gains that mining promises, and which governments harp on? Statistics say they are not. Most mining areas of the nation remain mired in grinding poverty and deprivation.

Decades of this lopsided view (and practice) of 'development' are bound to have their fallouts – and a growing popular anger has been one of these. In places, this anger has found an expression through spiraling violence, as in cases of regions plagued by Naxalism. In others, peaceful but strident popular protests have been the order of the day.

All this points to one incontrovertible truth: that mining, essential as it is, is not a simple 'dig and sell' proposition for a country like India. Its challenges are immense: protection and preservation of environment and inclusive development of all sections of society.

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- Conventional wisdom and geological evidence suggest that India is richly endowed with mineral resources. Explorations have found over 20,000 known mineral deposits and recoverable reserves of more than 60 minerals.
  - If India's forests, mineral-bearing areas, regions of tribal habitation and watersheds are all mapped together, they will overlay one another on almost the same areas. In other words, India's major mineral reserves lie under its richest forests and in the watersheds of its key rivers – these lands are also the homes of India's poorest people, its tribals.
  - The three tribal-dominated states of Orissa, Chhattisgarh and Jharkhand are the most productive mineral-bearing states as well. They together account for 70 per cent of India's coal reserves, 80 per cent of its high-grade iron ore, 60 per cent of its bauxite and almost all its chromite reserves. Also, the forest cover in these states is far higher than the national average.
  - Of the top 50 mineral-producing districts in the country, almost half are tribal. The average forest cover in these districts is 28 per cent, much more than the national average of 20.9 per cent.
  - An estimated 1.64 lakh ha of forest land has been diverted for mining in the country. The forests in districts like Jajpur in Orissa, Dhanbad in Jharkhand and Bardhaman in West Bengal have been decimated by mining.
  - A large part of the country's mineral-bearing areas is in the grip of Naxalism: 40 per cent of the mineral-rich districts in the top six mineral-producing states are affected by the movement, which is opposing the lopsided development that mining brings in.
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# Rich lands, poor people

India is a mineral-rich country. It has a vast geological potential of over 20,000 known mineral deposits, and is in the top ranks in production of some key minerals such as coal, iron ore, chromite and bauxite. According to the Geological Survey of India (GSI), the national exploring agency, the country is yet to tap its complete potential: it has huge reserves of important minerals awaiting exploration and exploitation.

Unfortunately for India, almost all its minerals are in the same regions that hold its greenest forests and most abundant river systems. These lands are also largely inhabited by India's poorest and most marginalised people – the scheduled tribes and scheduled castes – who depend on the very same forests and watersheds for their survival.



DEBANJAN BANDOPADHYAY

India's mineral reserves are largely concentrated in the states of Orissa, Chhattisgarh and Jharkhand, which also have the highest numbers of people living below the poverty line

Mining in India, therefore, is not a simple 'dig and sell' proposition as it is made out to be by industry. It is, in fact, a highly complex socio-economic and environmental challenge: at stake are natural resources as well as people – forests, wildlife, water, environmental quality and livelihoods.

## ■ THE RESERVES AND THEIR SPREAD

Within the country, the geographical distribution of fossil fuels (mainly coal) and metallic mineral reserves is highly uneven. Coal and metallic mineral reserves are spread across central and eastern India along the states of Madhya Pradesh, Chhattisgarh, Jharkhand and Orissa, as well as some areas of Maharashtra (bordering Chhattisgarh and Madhya Pradesh) and Andhra Pradesh (bordering Chhattisgarh and Orissa). Coal is also found in Assam and Meghalaya, while lignite occurs along the Eastern Ghats in Tamil Nadu.

India's iron ore deposits are in Orissa, Chhattisgarh, Jharkhand, Karnataka and Goa. The deposits of copper, lead and zinc are mainly in Rajasthan, while the reserves of bauxite are concentrated in the states of Orissa, Chhattisgarh and Andhra Pradesh. Unlike coal and metallic minerals, non-metallic minerals show an even geographical spread across India. For instance, limestone deposits are spread from Himachal Pradesh in the north to Andhra Pradesh in the south and from Gujarat in the west to Meghalaya in the east.

With respect to concentration of mineral deposits, Jharkhand, Orissa and Chhattisgarh emerge as the three top mineral-bearing states (see Box on pages 4-6: *Minerals in India*). About 70 per cent of India's coal, 80 per cent of its hematite iron ore (high-grade ore), 60 per cent of bauxite, 40 per cent of manganese and almost all its chromite are found in these three states.<sup>1</sup>

If all kinds of minerals, including sand, stone and brick earth are taken into consideration, then almost every district in the country can be said to produce one or other kind of minerals. However, out of the 604 districts in India, mining for fuel, metallic and non-metallic industrial minerals (also referred to as major minerals) is undertaken in 274 districts (including 46 districts where coal and lignite are mined). Of these, 50 districts are extensively mined and produce large quantities of major minerals. These include seven districts in Chhattisgarh; six each in Jharkhand, Orissa, Andhra Pradesh and Madhya Pradesh; three each in Rajasthan, Gujarat and Maharashtra; two each in Goa and Karnataka; and one district each in Tamil Nadu, Uttar Pradesh, Assam, Meghalaya, West Bengal and Himachal Pradesh (see Annexure).

## Minerals in India

### The deposits and their locations

Out of India's total area of 3.29 million sq km, systematic geological mapping has been conducted over 3.15 million sq km.<sup>1</sup> According to the Indian Bureau of Mines (IBM) which prepares an inventory of mineral deposits for the country, India has recoverable reserves of 58 minerals, excluding fuel minerals.

### Coal

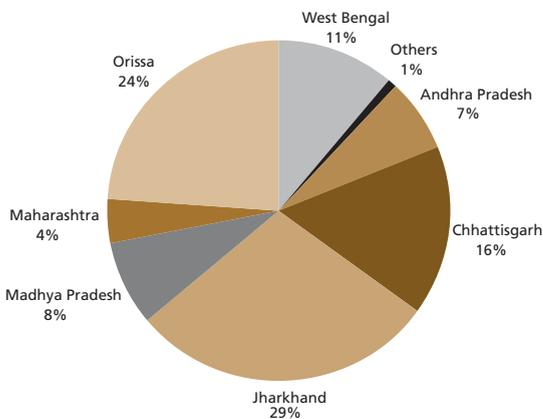
The coal resources of India are available mainly in the sedimentary rocks of the older Gondwana formations of peninsular India; some coal is also found in the younger tertiary formations of north-eastern/northern hilly regions.<sup>2</sup> Explorations by government agencies till January 2006 have established coal reserves of 253 billion tonne. Of this, about 96 billion tonne are proven reserves. A majority of the reserves – 87 per cent – are of non-coking coal.<sup>3</sup>

In terms of distribution of coal reserves, Jharkhand leads with 29 per cent of the total reserves in India (see Graph 1: *Distribution of coal reserves*). India produced about 407 million tonne (MT) of coal in 2005-06, about 70 per cent of which was accounted for by Jharkhand, Chhattisgarh, Orissa and Madhya Pradesh.<sup>4</sup>

### Iron ore

India has large reserves of high grade iron ore. Hematite ( $\text{Fe}_2\text{O}_3$ ) and magnetite ( $\text{Fe}_3\text{O}_4$ ) are the main ores of iron. Hematite, which has higher iron content, constitutes 52 per cent of the country's reserves, and is found in the states of Orissa (which accounts for 33 per cent), Jharkhand and Chhattisgarh. About 80 per cent of the magnetite ore deposits occur in the southern states, especially Karnataka (see Graph 2: *Distribution of iron ore reserves*).<sup>5</sup>

**GRAPH 1: Distribution of coal reserves**  
Jharkhand and Orissa have more than 50 per cent



Source: <http://www.coal.nic.in/>, as viewed on November 8, 2006

## A profligate sector

India prides itself for having one of the best quality of iron ores in the world in terms of iron content. This has led to a situation where most Indian iron and steel plants reject iron ore containing less than 62 per cent iron. In contrast, the iron and steel industry across the world uses iron ore containing even 50 per cent iron.

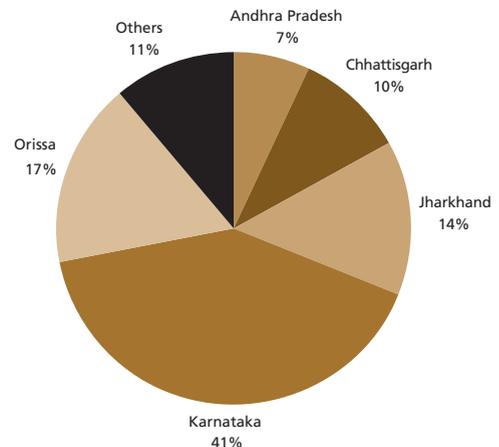
With total resources of 22 billion tonne, India is one of the leading producers as well as exporters of iron ore. The country accounts for three per cent of the world's iron ore reserves; Ukraine, with 21 per cent, has the largest deposits.<sup>6</sup>

The production of iron ore, constituting of lumps, fines and concentrates, was 154 MT in 2005-06, of which about 40 per cent were lumps and 56 per cent, fines. These were produced by about 270 operational mines.<sup>7</sup> The state-wise production data is not available for the year 2005-06 but in 2004-05, Orissa was the major producer, accounting for 28 per cent of the total production in the country. It was followed by Karnataka with 26 per cent, Chhattisgarh and Goa with 16 per cent each, and Jharkhand with 11 per cent.<sup>8</sup>

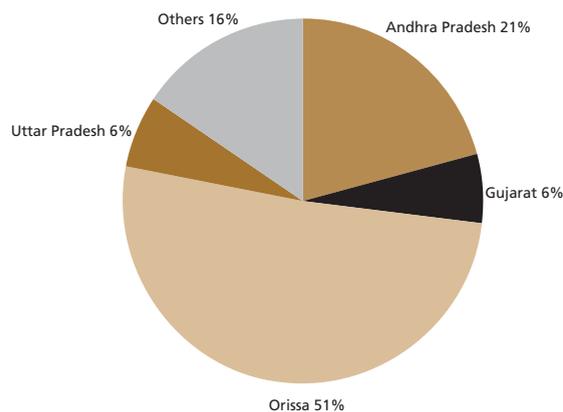
### Bauxite

The total resources of bauxite in the country are placed at 2,926 MT; these include 524 MT of reserves. About 27 per cent of the reserves are of metallurgical grade and 54 per cent of metallurgical mixed grade. The reserves of refractory and chemical grades together account for 11 per cent. The principal states with bauxite reserves include Orissa, which alone accounts for 51 per cent of the total reserves (see Graph 3: *Distribution of bauxite reserves*).<sup>9</sup>

**GRAPH 2: Distribution of iron ore reserves**  
Magnetite makes up 87 per cent of Karnataka's reserves



Source: Anon, 2005, *Indian Minerals Yearbook 2005*, Indian Bureau of Mines, Nagpur, pp 47-2-47-33

**GRAPH 3: Distribution of bauxite reserves***More than half of the reserves are in Orissa*

**Source:** Anon, 2005, *Indian Minerals Yearbook 2005*, Indian Bureau of Mines, Nagpur, pp 17-1-17-2

At the global level, Australia has the largest reserves of bauxite. India's share is just about four per cent, but it still ranks among the top countries with bauxite reserves.<sup>10</sup>

In 2005-06, India produced about 12 MT of bauxite from 191 mines; National Aluminium Company (NALCO), a public sector enterprise, alone produced about 40 per cent of this. Orissa accounted for the maximum production (41 per cent), followed by Gujarat (20 per cent), Jharkhand (13 per cent), Maharashtra (12 per cent), Chhattisgarh (nine per cent) and Tamil Nadu (two per cent).<sup>11</sup>

### Manganese ore

In India, manganese occurs mainly as bedded sedimentary deposits associated with the Gondite series of Madhya Pradesh, Maharashtra, Gujarat and Orissa.

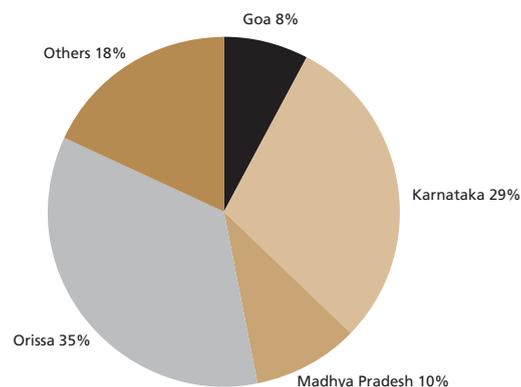
Total manganese resources in the country amount to 295 MT, of which 104 MT are reserves. Orissa has the largest manganese reserves – about 35 per cent of the country's total (see Graph 4: *Distribution of manganese reserves*).<sup>12</sup>

At the global level, South Africa has the largest reserves of manganese (80 per cent of the world's total); India's contribution is only about one per cent.<sup>13</sup>

In 2005-06, India produced about two MT of manganese ore; Orissa dominated the production figures with 37 per cent, followed by Maharashtra (24 per cent), Madhya Pradesh (19 per cent) and Karnataka (16 per cent).<sup>14</sup>

### Lead and zinc

Lead and zinc are the most widely used non-ferrous metals in the world. The total resources of lead and zinc ore in India is 485 MT. Almost 90 per cent of this is in Rajasthan (see Graph 5: *Distribution of lead and zinc reserves*).<sup>15</sup> At the global level, China holds the largest reserves, accounting for more than 21 per cent of the world's total.<sup>16</sup>

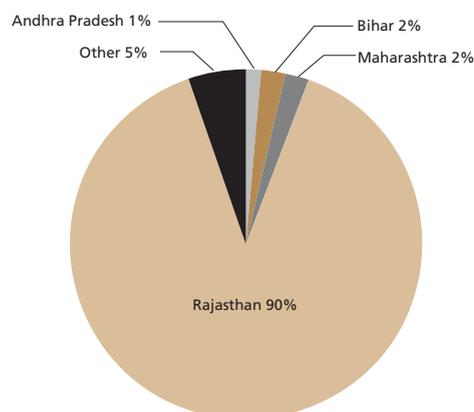
**GRAPH 4: Distribution of manganese reserves***Orissa leads in reserves as well as production*

**Source:** Anon, 2005, *Indian Minerals Yearbook 2005*, Indian Bureau of Mines, Nagpur, pp 55-2

In 2005-06, India produced about five MT of lead and zinc ore: this included 97,572 tonne of lead concentrate and 8,93,287 tonne of zinc concentrate. Hindustan Zinc Limited, which has its own captive mines in Rajasthan, is the major producer of primary lead and zinc metals in the country.<sup>17</sup>

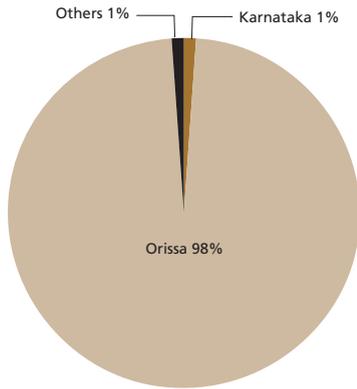
### Chromite

In India, almost 98 per cent of the chromite reserves are present in Orissa, mostly in the Sukinda valley of Jajpur district<sup>18</sup> (see Graph 6 on page 6: *Distribution of chromite resources*). The country has total resources of around 179 MT, comprising of 47 MT of reserves.<sup>19</sup>

**GRAPH 5: Distribution of lead and zinc reserves***Rajasthan dominates in reserves and production*

**Source:** Anon, 2005, *Indian Minerals Yearbook 2005*, Indian Bureau of Mines, Nagpur, pp 52-2

**GRAPH 6: Distribution of chromite reserves**  
Orissa has 98 per cent of the total resources



**Source:** Anon, 2005, *Indian Minerals Yearbook 2005*, Indian Bureau of Mines, Nagpur, pp 52-13

At the global level, Kazakhstan holds the largest chromite reserves (26.1 per cent). India's global share is a bare 0.32 per cent,<sup>20</sup> yet the country was the second highest producer of chromite in 2003-04.

The production of chromite in 2005-06, by about 20 mines, was more than three MT. Tata Iron & Steel Company (TISCO), the Orissa Mining Corporation and Balasore Alloys Ltd are the major names in the sector, and Orissa (99 per cent) is the key producer.<sup>21</sup>

**Limestone**

Limestone, the principal raw material in cement manufacturing, is

found in Karnataka (which holds 29 per cent of the country's total reserves), Andhra Pradesh, Gujarat and Rajasthan (see Graph 7: *Distribution of limestone reserves*).<sup>22</sup>

Total resources of limestone of all categories and grades is estimated at 1,70,459 MT; seven per cent of this is reserves. Cement-grade limestone accounts for more than 80 per cent of the total reserves.<sup>23</sup>

The production of limestone in 2005-06 was 170 MT, produced by about 570 mines. About 96 per cent of this was cement-grade limestone.<sup>24</sup>

**Diamonds**

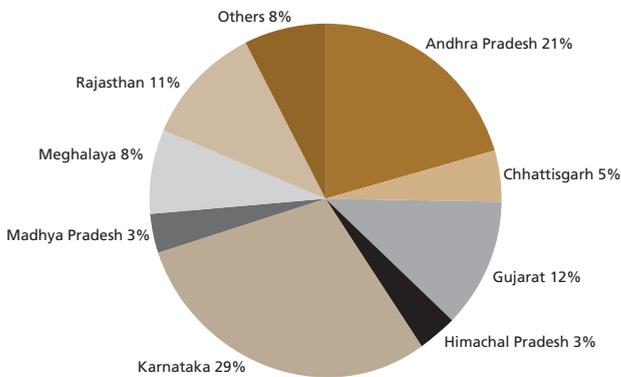
Diamond fields in India are grouped into four regions – the south Indian tract of Andhra Pradesh; central Indian tract of Madhya Pradesh; Behradin-Kodwalli area in Raipur (Chhattisgarh) and Tokapal-Dugapal area in Bastar (Jharkhand); and the eastern Indian tract in Orissa between the Mahanadi and Godavari valleys.<sup>25</sup>

India's resources of diamonds are placed at around 45,80,336 carats as per the United Nations Framework Classification. Of the total resources, 17 per cent is gem-grade and 18 per cent industrial-grade. The remaining resources are unclassified.<sup>26</sup>

State-wise, 40 per cent of the reserves are held by Andhra Pradesh (see Graph 8: *Distribution of diamond reserves*). Congo has the largest reserves of diamonds in the world, accounting for 28 per cent of the global total.<sup>27</sup>

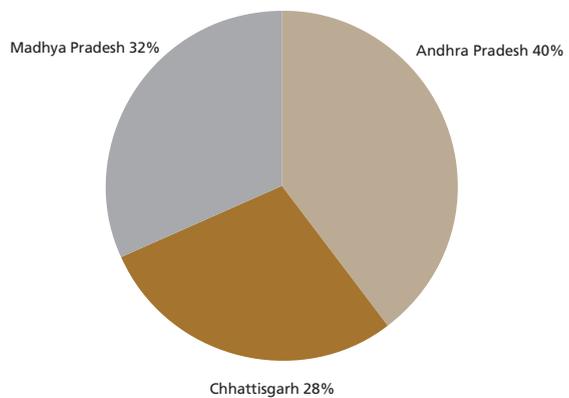
Though officially India produced about 44,170 carats in 2005-06, the unofficial production is estimated to be much higher. There are only two legally operating mines, both in the public sector, located in Panna in Madhya Pradesh. Of the total official output, rough and uncut gem variety constituted 28 per cent, while the remaining 72 per cent was of industrial grade.<sup>28</sup>

**GRAPH 7: Distribution of limestone reserves**  
Karnataka and Andhra Pradesh account for the major share



**Source:** Anon, 2005, *Indian Minerals Yearbook 2005*, Indian Bureau of Mines, Nagpur, pp 53-2

**GRAPH 8: Distribution of diamond reserves**  
Madhya Pradesh is the only producer in India



**Source:** Anon, 2005, *Indian Minerals Yearbook 2005*, Indian Bureau of Mines, Nagpur, pp 53-2

## ■ MINING, FORESTS AND TRIBALS

In general, India's major mineral-producing districts are characterised by large forest covers, big tribal populations and a high incidence of poverty and backwardness (see Box: *Fatal overlap* and Map 1.1 on page 8: *India – forests vs minerals*). The average forest cover of the 50 major mineral-producing districts stands at 28 per cent; the total forest cover in these districts is 11,890,400 hectare (ha) – 18 per cent of the total forest cover in the country.

Six of these districts have forest cover more than 50 per cent of their geographical areas. Of the 50 districts, about 62 per cent have a forest cover that is more than the national average of 20.6 per cent. The districts where forest cover is less than 10 per cent are – usually – either those where mining has been going on for a long time or those that are located in arid and semi-arid regions. Districts like Dhanbad in Jharkhand, Jajpur in Orissa and Burdwan in West Bengal fall in the first category: long years of mining have devastated their forests. In the second category are districts like Kutchh, Jamnagar and Amreli (in Gujarat) and Bhilwara (Rajasthan).

Barring Gujarat, the forest cover in the remaining top five mining states – Andhra Pradesh, Orissa, Chhattisgarh, Jharkhand, and Madhya Pradesh – is above the national average. Chhattisgarh has the highest forest cover: around 43 per cent. Jharkhand has forests on 30 per cent of its land, while Orissa and Madhya Pradesh have forest cover on 27 and 26 per cent of their lands, respectively.

Mining and quarrying has destroyed large tracts of forest land in these areas. One estimate by the government puts the total forest land diverted for mining between 1980 and 2005 at 95,003 ha.<sup>2</sup> Other sources point to a much higher figure. Based on



AGNIMIRH BASU / CSE

***Sparse and sparser: mining eats up forest land. Tribals, who depend on these forests for livelihoods, suffer***

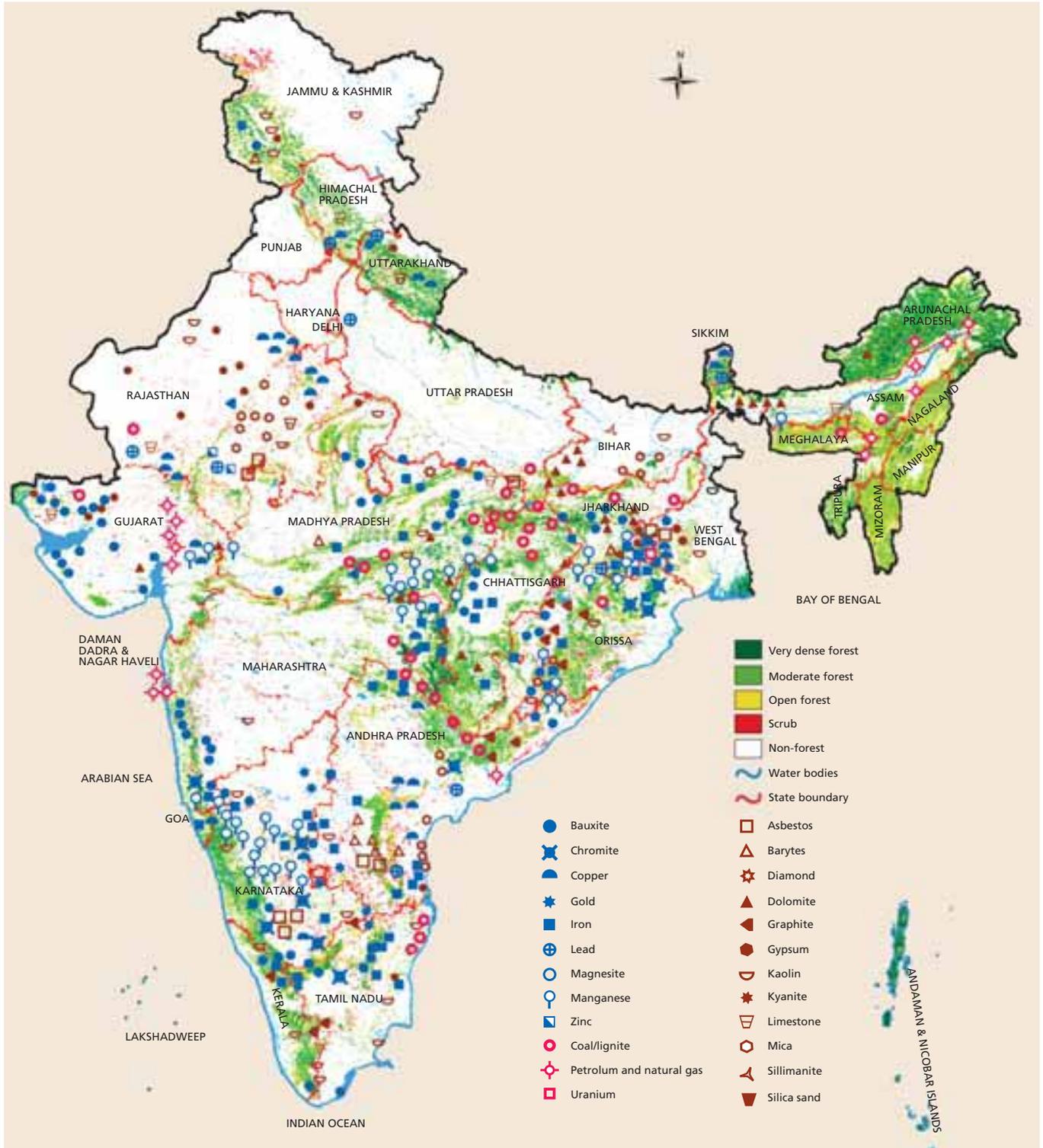
### Fatal overlap...

*...of mineral deposits, forests and tribal areas is clear from the characteristics of some major mining districts*

- Keonjhar, Orissa, produces the maximum amount of iron ore in the country. Officially, it has around 31,256 ha of land under mining (illegal mining is rampant). The district also has 39 per cent of its geographical area under forests; 45 per cent of its population is tribal.
- Dantewada in Chhattisgarh is the top iron ore producer in the state, accounting for 69 per cent of the total output. The forest cover here is as high as 62 per cent, while the tribal population is 79 per cent.
- West Singhbhum, a major iron ore producer in Jharkhand, has 39 per cent of its area under forests; 66 per cent of its population is tribal. The district produces 16 MT of iron ore, accounting for almost 100 per cent of iron ore production in the state.
- Goa, fast emerging as the hub of iron ore export after Bellary in Karnataka, has more than 100 mine leases in each of its two districts. Both districts also have a high forest cover: 65 per cent in south Goa and 51 per cent in the north.
- Korba in Chhattisgarh, which produces the maximum amount of coal in the country, has about 51 per cent of its geographical area under forests.
- Angul, the biggest coal-producing district in Orissa, has forests on 42 per cent of its area.
- Chatra in Jharkhand, the second highest coal producer in the state, has forest cover on 48 per cent of its area.
- Udaipur in Rajasthan has the maximum land under mining in the state. It is the second biggest producer of lead and zinc in India. It is also the most forested district in the state and has forest cover on 23 per cent of its area, much more than the national average. Udaipur is also a tribal district; tribals make up about 46 per cent of its population.
- Of the six major mining districts of Madhya Pradesh – Katni, Rewa, Satna, Shahdol, Sidhi and Chhindwara – five (Rewa is the exception) have more forest cover than the national average; forest cover in Sidhi and Chhindwara is 85 and 80 per cent more than the national average, respectively.
- The coalfields of the north-eastern districts of Tinsukia in Assam and Jaintia Hills in Meghalaya have forest cover on 40 and 64 per cent of their geographical areas, respectively. Both these are also tribal districts.
- Khammam in Andhra Pradesh, one of the leading coal producers in the state, has forest cover on 45 per cent its geographic area and is also a tribal district.

**MAP 1.1: India – forests vs minerals**

India's mineral deposits are largely beneath its remaining forests



Source: Anon, 2001, *Environmental Atlas of India*, Central Pollution Control Board, New Delhi

information available from various sources including the Union ministry of environment and forests (MoEF), the total forest land diverted for mining in India has been estimated to be as high as 1,64,610 ha.<sup>3</sup>

Even this figure would be higher if it took into account the forest land diverted before 1980 when many coal mines took over vast areas of land – mostly forests. Examples are Hazaribagh and Dhanbad in Jharkhand and Burdwan in West Bengal.

What makes things especially complicated for India is its large tribal population – numbering 84.3 million – which is approximately above eight per cent of its total population.<sup>4</sup> Most of these tribes inhabit lands that are mineral-rich: 90 per cent of India's coal and 80 per cent of its other minerals are found in tribal areas.<sup>5</sup> Of the 50 major mining districts of the country, almost half are tribal districts.<sup>6</sup> The co-existence of tribals and minerals is widely acknowledged within the government as well, but with a 'twist'. For instance, the website of the Union ministry of mines says: "Mineral deposits generally occur in remote and backward areas with poor infrastructural facilities. Mineral-bearing areas are also often inhabited by tribal population."<sup>7</sup> The implicit message in

this statement is that mining is essential to bring backward tribal areas into mainstream 'developed' India.

As most tribals also inhabit forest areas, their livelihoods and economy are closely intertwined with the fate of the forests and water sources. According to the Forest Survey of India, Dehradun, the average forest cover in tribal districts of the country is 37 per cent, which is 85 per cent more than the national average.<sup>8</sup>

Forest degradation due to mining and other development projects has significantly depleted the ecosystem, rendering the tribal population more socially and economically vulnerable. The impact, naturally, has been disproportionately higher on these already poverty-stricken and marginalised people.

The problem is likely to get more acute as the government continues its industrialisation drive, pegged at exploiting its vast natural resources – without investing much thought or action in safeguarding its people and environment. The crisis has not escaped the attention of some national leaders (such as the late former president K R Narayanan – see Box: *Two presidents, two Indias*); but they have been few and far between, and the country has chosen to ignore their messages.

## Two presidents, two Indias

*Former presidents Abdul Kalam and K R Narayanan held completely opposite views on the mineral industry*

*"Let it not be said by future generations that the Indian Republic has been built on the destruction of the green earth and innocent tribals who have been living there for centuries. Let it not be said of India that this great Republic, in a hurry to develop itself, is devastating the green mother earth and uprooting our tribal populations."*

– President Narayanan, 2001

*"The facilitation for the project through provision of land, infrastructural development, community development etc, can be done by the government agencies whereas the investment in the mine and the associated technological inputs can come from the private sector... In addition, the private sector must have the freedom to run the mine in a cost-effective manner."*

– President Kalam, 2003

Six years ago, India had a president who spoke about development with caution, cognisant of the fact that the current model of development sacrifices human rights and the environment in the pursuit of investment and industry. In his 2001 address to the nation on the eve of Republic Day, the late president Narayanan referred to this problem as the "dilemmas of development", and he asked that the country consider carefully how it chose to develop its mining industry.

President Narayanan was particularly concerned about mining's impact on scheduled tribes: "...the developmental path we have adopted is hurting them and threatening their very existence..." He was challenging the country to confront the environmental and social costs of India's growing domestic demand for minerals and, as an exporter, India's willingness to accommodate foreign demand. He was not

against developing industry, but he did speak out against encouraging industry if it was not in the best interest of all of India's citizens. "While the nation must benefit from the exploitation of these mineral resources, we will have also to take into consideration questions of environmental protection and the rights of tribals," he had said.

President Kalam was, on the contrary, more concerned about the welfare of industry. On November 1, 2003, he gave the inaugural speech for the 19<sup>th</sup> World Mining Congress and Expo in New Delhi, in which he spoke of the importance of increased exploration and mining and the need to increase mineral production to feed India's growing appetite for minerals, without once mentioning the impacts this would have on forests and tribals of the country.

The main themes of president Kalam's speech revolved around the need to attract more private investment and feed increased demand by rapidly increasing India's production of major minerals, especially coal. Early on in his speech, the president had expressed concern over the lack of investment in the industry, which he blamed on many things including problems in land acquisition and community development demands.

While president Narayanan believed India needed to re-evaluate its practice of meeting increased demand with unchecked production, president Kalam declared that India must increase mineral production as much as 10 times in the case of coal: "Indian mining industry should expand the scope of its contribution to the GDP from the existing three-five per cent to over 10 per cent. We should work for increasing the productivity from 0.5 tonne per man-year to 5 tonne per man-year in underground coal mines using long wall mining and from 15 tonne per man-year to 30 tonne per man-year in open-cast mines."

Unfortunately, president Narayanan's concerns have very few takers today in the government. While Narayanan spoke of the constitutional protection afforded to tribals and their lands ("We cannot ignore the social commitments enshrined in our Constitution"), it seems the present government is more than willing to ignore this too.

## ■ RIVERS AND MINERALS: CLOSE BONDS

The role of mining in changing the hydrological profile of a region is also being increasingly acknowledged and debated.

Hard rocks are the major sources of minerals. Out of the country's geographical area of 3.20 million sq km, as much as 1.82 million sq km is built up of hard rocks and is thus, potentially mineral-bearing. But there is also a problem: hard rocks usually abound in hilly terrains linked to forests, and both forests and hills are the major sources of water for our rivers. Hard rock mining, therefore, not only affects land and forests, but also rivers and waterways.

Mining also impacts rivers in other ways: overburden is dumped into valleys, filling streams and rivers, and deforestation leads to increased run-off. The two, in combination, increase floods. Whether it is iron ore in Goa or Karnataka, bauxite in the hills of Chhattisgarh or Orissa, coal in Madhya Pradesh, or limestone and magnetite in Uttarakhand, open-cast mining on catchment slopes has played havoc with nation's water resources.<sup>9</sup>

An analysis of distribution of minerals vis-à-vis river basins indicates that a significant portion of India's mineral reserves are in areas which are either near the origins or in the catchments of rivers (see Map 1.2: 'Mined' rivers).



*Lost river: unless thoughtfully planned and carried out, mining will destroy water sources, like this one in Goa*

Most of India's iron reserves are found along the courses and watersheds of rivers such as the Indravati in Chhattisgarh, Baitarani in Orissa, Tungabhadra in Karnataka and Mandovi in Goa.

Over 80 per cent of the coal in Jharkhand and a substantial portion of the Raniganj coalfields in West Bengal lie within the Damodar river basin. Coal is also found all around the Godavari and its tributaries in Maharashtra and Andhra Pradesh and along the distributaries of the Son in eastern Madhya Pradesh and western Chhattisgarh. The Mahanadi-Brahmani basin holds all the coal reserves of Orissa, while the coal in Nagpur region lies under the Kanhan river.<sup>10</sup>

In Rajasthan, mica is distributed between and around the rivers Sambhar, Luni and Chambal, while in Orissa, it is found around the Mahanadi. Chromite is found around the tributaries of the Cauvery, and along the Tungabhadra, Baitarani and Brahmani rivers in Orissa. Limestone occurs near the Chambal, while bauxite deposits exist near the Chenab, Mahi, the tributaries of the Krishna and Cauvery, Mahanadi, Tungabhadra, and near the river Sind (in Madhya Pradesh).

Unless they are carefully planned and thoughtfully carried out, mining activities in these regions are bound to degrade the catchments and alter the courses of the rivers. For example, the state of Chhattisgarh also holds the catchments for at least four major river systems – the Mahanadi, Godavari, Narmada and Ganga. Large-scale mining in the state is degrading all the catchments, affecting the quality and quantity of water in the rivers.

Mining of sand, stone and gravels from riverbeds is another cause for concern. With rapid urbanisation and growth in the housing and infrastructure sector, the demand for these minerals has gone up significantly over the past few years – and most of this demand is being met by rampant mining of riverbeds, often illegally. This is changing the course of rivers and eroding their banks.

Besides this, mining also leads to increased sedimentation and pollution of a river: examples include the Bhadra river in Karnataka and Shankhini in Chhattisgarh. Overburden and wastes from mines run into a river, choking it. Mining also affects local availability of water as it consumes large volumes of water and breaches the groundwater, thereby altering the hydrological regime. Forty per cent of the captive limestone mines of large-scale cement plants in India have breached the groundwater in their regions.<sup>11</sup>

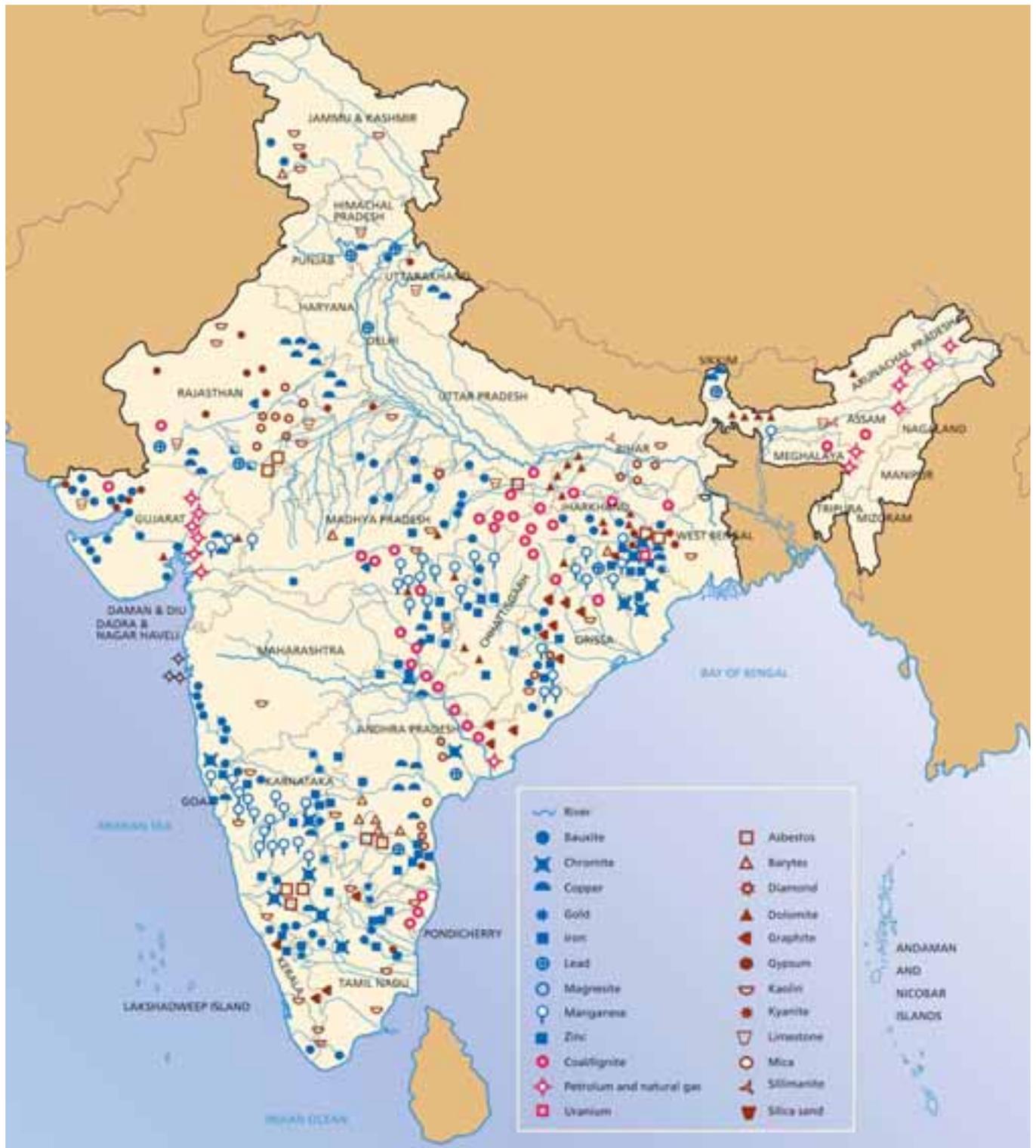
Consumption by mineral-based industries adds to the stress: due to the presence of minerals and water in the same area, most such industries prefer to set shop along or near the rivers. These not only consume large quantities of water, but also discharge their effluents into the river. The rivers Brahmani and Damodar are examples of such rivers.

Mining near river basins, especially in underground coal mines, involves the additional risk of accidents due to inundation. In 1975, over 350 miners lost their lives in a gruesome accident in Chasnala in Jharkhand when water gushed into the mines.

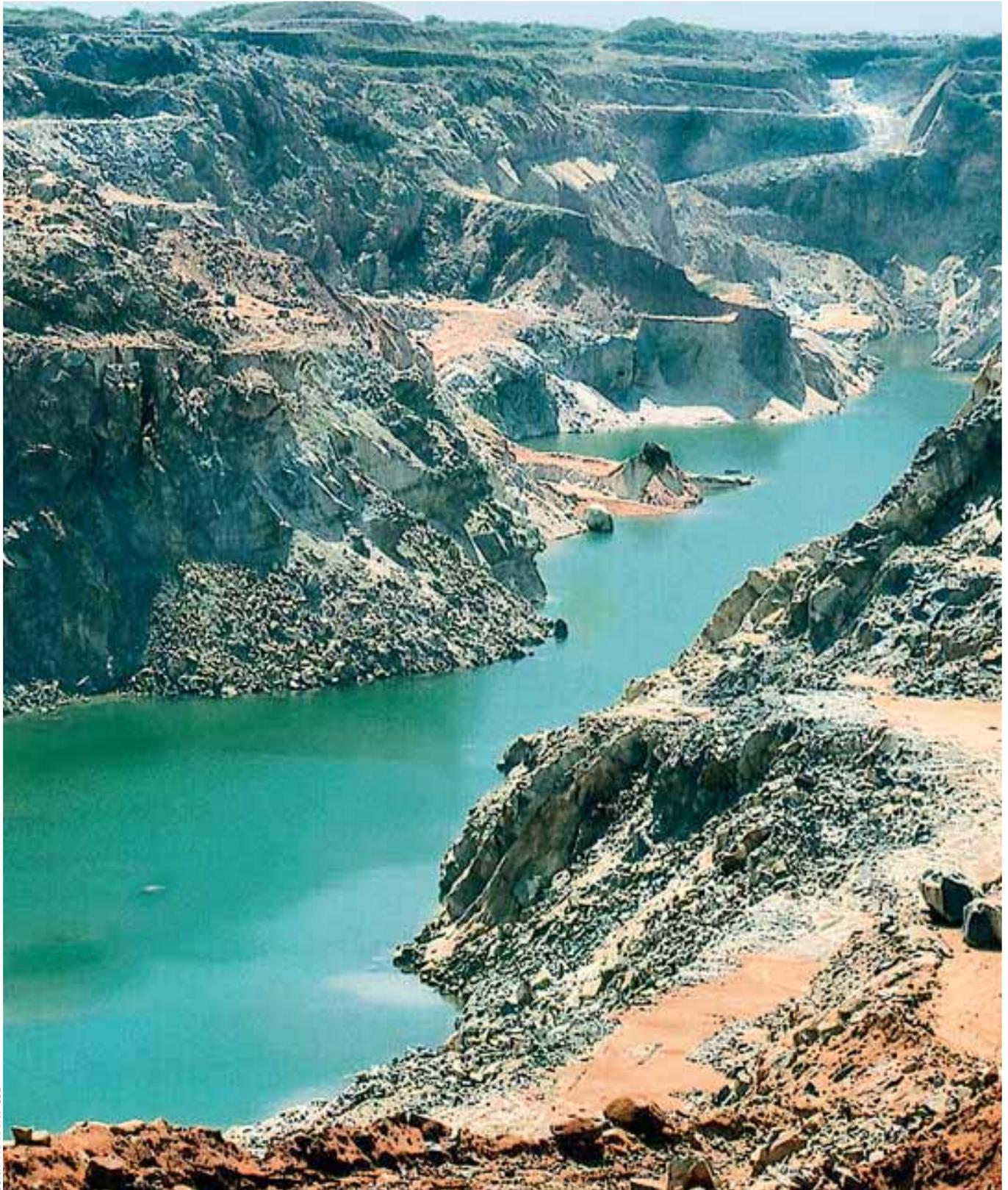
The impacts of mining and mineral-based industries on some key watersheds of the country have been summarised in the following pages.

## MAP 1.2: 'Mined' rivers

Most mineral reserves in India lie near the origin or in the catchments of rivers



Source: Compiled by the Industry and Environment Unit, Centre for Science and Environment, New Delhi, 2006



SUNITA NARAIN / CSE

*Mining in the watersheds leads to increased sedimentation and pollution of rivers; it also affects local availability of water*

### ● The Damodar

Flowing through Jharkhand and West Bengal, the river's watershed covers almost 25,000 sq km.<sup>12</sup> In its upper stretch, the Damodar twists through six coalfields (north and south Karnapura, east and west Bokaro, Ramgarh, Jharia and Raniganj) owned by Coal India Limited. The valley is one of India's most industrialised regions:<sup>13</sup> added to these coalfields are 28 iron ore mines, 33 limestone mines, five copper ore mines and 84 mica mines, which are along the river's coastline. In addition, the numerous coal washeries add considerable pollution load to the river. The region produces 60 per cent of India's medium-grade coal.<sup>14</sup> The river "drain[s] almost the entire coal mining area under the Central Coalfields Ltd (CCL), the Bharat Coking Coal Ltd (BCCL) and the Eastern Coalfields Ltd (ECL) – all three subsidiaries of the public sector Coal India Limited (CIL)."<sup>15</sup> This is also evident in the amount of forest land that has been lost: according to Sacred Sites International, a US-based non-profit organisation dedicated to the preservation of sacred sites and traditional culture, the lower valley had a 65 per cent forest cover once upon a time; today, it stands at a meagre 0.05 per cent.<sup>16</sup>

It is no wonder then, that the Damodar is one of India's most polluted rivers. The source of much of this pollution is large-scale

sedimentation and non-point source pollution that has been increasing along with the clearing of land. About seven MT of eroded material is brought down from deforested lands and deposited in reservoirs of the Damodar valley by the Damodar and Barakar rivers annually. About 66 per cent of the total land area of the upper Damodar valley has been affected by different forms of erosion. The rate of silting in Maithon reservoir is recorded at more than seven million cubic metre (mcm) annually, as against the designed rate of 0.84 mcm – thus exceeding the projected figure by nine times.<sup>17</sup> The MoEF has indicated that the growth of mining and loss of forest cover are real threats to the Damodar river valley.<sup>18</sup>

### ● The Mahanadi

The Mahanadi basin extends over an area of 1,41,000 sq km. Lying in the north-east of the Deccan plateau, the basin covers large areas in the states of Chhattisgarh and Orissa, and some areas in Jharkhand and Maharashtra (see Map 1.3: *The Mahanadi river basin*). The river rises in a pool six km from Pharsiya village near Nagri town in Raipur district of Chhattisgarh, and falls into the Bay of Bengal, traversing a total distance of 851 km.<sup>19</sup>

**MAP 1.3: The Mahanadi river basin**

*The river hosts some major coalfields, iron ore mines and a number of mineral-based industries*



Source: Compiled by the Industry and Environment Unit, Centre for Science and Environment, New Delhi

The river hosts a number of mining complexes and mineral-based industries. On its upper stretches, there is the Bhilai Steel Plant and the Urla iron and steel complex in Durg district. There are also some cement plants at Durg and Raipur.

The other major industrial point on the upper stretch in Chhattisgarh is Korba, which has also been identified by the Central Pollution Control Board (CPCB) as a critically polluted area in this river basin. The major sources of pollution at this stretch are Bharat Aluminium Company Limited (BALCO), Korba Super Thermal Power Station (KSTPS), Hasdeo Thermal Power Corporation and the coal mining operations of South Eastern Coalfields Limited (SECL).

The river, when it enters Orissa, supports several more mineral-based industries. The basin has the misfortune of hosting two of India's largest coalfields: the Ib Valley and the Talcher coalfields in Orissa, which together produced about 70 MT of coal in 2005-06.<sup>20</sup> The river also has bauxite on its banks: in Orissa, local communities have fought against BALCO to protect the Gandhamardan hills, from where originate a number of the springs that feed the tributaries of the Mahanadi. Besides, the other industries along the river and its tributaries include thermal power plants at Choudwar, cement plants at Bargarh, coal mining at Rampur, aluminium smelter at Hirakud, and several small-scale cement, refractory, steel and sponge iron plants at Jharsuguda.

#### ● *The Brahmani*

The Brahmani-Baitarani basin extends over an area of 51,822 sq km and covers large areas in Orissa and Jharkhand and some parts of Madhya Pradesh.

The river, with a catchment area of around 39,000 sq km, originates as two major distributaries – the Sankh and the Koel from the Chhotanagpur plateau in Jharkhand – and joins at Veda Vyasa near Rourkela in Orissa to form the Brahmani. It flows through the Eastern Ghats in Sundergarh, Keonjhar, Dhenkanal, Cuttack and Jajpur districts of Orissa and empties into the Bay of Bengal. The major portion of its catchment area lies in Orissa; and due to the vast mineral deposits in this area and the easy availability of water, several industries have come up in and around the river basin.

At its upper reach, the river is polluted by effluents from the Rourkela Steel Plant, Rourkela Fertiliser Plant and the iron ore-mining industries of Bonai subdivision. The pollution level increases in the middle section due to drainage from the coal belts and industrial wastes from the Angul-Talcher region, mainly emptied into it by its tributary, the Nandira.

The NALCO smelter at Angul has also contributed to the poor quality of the surface and sub-surface water. The effluent discharged from plant has increased the fluoride level in the drinking water. Downstream, the Brahmani is polluted by mine discharges from the Sukinda belt and industrial activities in Duburi.

#### ● *The Godavari*

The Godavari originates near Triambak in Nasik district of Maharashtra, and flows through the states of Chhattisgarh,

Madhya Pradesh, Karnataka, Orissa and Andhra Pradesh. The Godavari basin extends over an area of 3,12,812 sq km. Its four important tributaries are the Manjira, Pranhita, Indravati and the Sabari.

The discharge of the river is not very impressive because of moderate annual average rainfall in the basin. Moreover, the river and its watershed are affected due to industrialisation and urbanisation, as the river passes through a number of mineral-rich districts – Nagpur, Wardha, Nashik, Chandrapur and Yavatmal in Maharashtra; Bastar and Jagdalpur in Chhattisgarh; Chhindwara and Seoni in Madhya Pradesh; Warangal, Khammam, Kakinada and Adilabad in Andhra Pradesh; Bidar in Karnataka; and Jeypur in Orissa. All these areas add to the pollution load in the river and are also eating away into its watershed.

The mines of Western Coalfields in Nagpur and Chandrapur belt are along the Godavari basin. In addition, there is a super thermal power plant at Chandrapur, some coal washeries and several cement plants in the area which draw from the tributaries of the river and also discharge into it. A recent phenomenon has been a mushrooming of sponge iron plants in the area. Mining of sillimanite, corundum and pyrophyllite in Bhandara district also adds to the pollution.

The Indravati, a major tributary of the river passes through Bastar, where the National Mineral Development Corporation (NMDC), the biggest iron ore producer in the country, operates. The tributaries of the river receive thousands of tonne of iron ore fines from the mines of NMDC as they pass through Bastar. Several steel plants are also coming up in this area, which will add to the pollution load of the river.

In Andhra Pradesh, several coal mines in the Warangal and Adilabad district are located within the watershed of the river. Besides, these two districts also add on to river pollution due to extensive limestone, iron ore and manganese mining in Adilabad. The coalfields of Singhareni Collieries Company Limited in Karimnagar also contribute to the pollution of the Godavari. In Visakhapatnam district of Andhra Pradesh, bauxite mining in the Eastern Ghats is being opposed by local communities mainly over the issue of water.

The stretch in Orissa is also not free of industrial pollution. Jeypore district houses industries as well as the Kolab and Machkund thermal power stations.

These cases are not unique: this is the fate which most rivers in the country are saddled with. Unfortunately, very little research has gone into the subject of how mining menaces India's watersheds and rivers. Without a cumulative environmental impact assessment process, the real impact of mining on India's watersheds will neither be assessed in full nor curtailed.

It is very important, therefore, to study and understand how mining will alter the hydrological regime of the country. Moreover, this should be reflected in legislation; there is no legislation at present on water and mining, and the mineral policy also ignores it.

## ■ THE MIRAGE OF MINING AND GROWTH

Across the world, the mining industry has been hard-selling dreams – of development, employment and growth. It has consistently tried to project a pro-people image by promoting the idea that mining will unleash growth in backward areas and will pull the indigenous communities into the ‘mainstream’, thereby improving their lives and livelihoods. But has it really done so?

At the macro level, things appear to be different. States like Jharkhand, Chhattisgarh and Orissa, that have a high level of dependence on mineral resources, demonstrate low per capita incomes compared to states which do not depend completely on their mineral wealth (examples are Tamil Nadu, Maharashtra and Gujarat) (see Table 1.1: *Minerals and state economies*). The mineral-dependent states also have higher levels of poverty, lower growth rates and higher levels of mortality, malnutrition and morbidity.

India is not the only country where mining is linked with poverty and poor development outcomes. In most nations of the world, a high level of mineral dependence is associated with retarded economic performance. This phenomenon is so widely and commonly observed that it has been given a name – the ‘resource curse’.

A study by the World Bank, *Environmental and social challenges of mineral-based growth in Orissa*, has attributed institutional weakness and political economy as some of the reasons behind the resource curse. The study found that resource-rich economies exhibit weaker institutions compared to resource-poor countries. A recent global study by the Food and Agriculture Organization finds that mineral-rich states have weaker property rights and poor enforcement of the law and that these, in turn, have led to retarded development outcomes. An analysis of the Indian states also reconfirmed that mineral dependence leads to poorer quality institutions, which in turn results in impaired growth and development outcomes.<sup>21</sup> Evidence shows that point resources – resources extracted from a narrow geographical base – weaken



AGNIMIRH BASU / CSE

**Instead of integrating tribals into the mainstream, mining has marginalised them further**

institutions and accountability. In the case of a country with all of its wealth concentrated in a few pockets, most of the political and administrative power goes into promoting and facilitating extraction of these resources instead of focusing on development of the area. This has been found in case of Orissa, where policies so far have focused on developing the mineral sector, rather than on broad-based development.<sup>22</sup>

Resource curse, thus, is very much a reality in the mineral-rich areas of India. Of the 50 major mining districts, 60 per cent figure among the 150 most backward districts of the country (see Map 1.4 on page 16: *Poverty amidst plenty*).<sup>23</sup> Four of these mining districts – two from Orissa and one each from Jharkhand and Chhattisgarh – are among the top 25 backward districts of the country; 13 of these districts figure in the top 50 backward districts of the country.

A closer look at a few districts gives a clearer picture of the phenomenon of resource curse:

- Adilabad has the highest number of mines in Andhra Pradesh and is ranked third in terms of total value of mineral

**TABLE 1.1: Minerals and state economies**

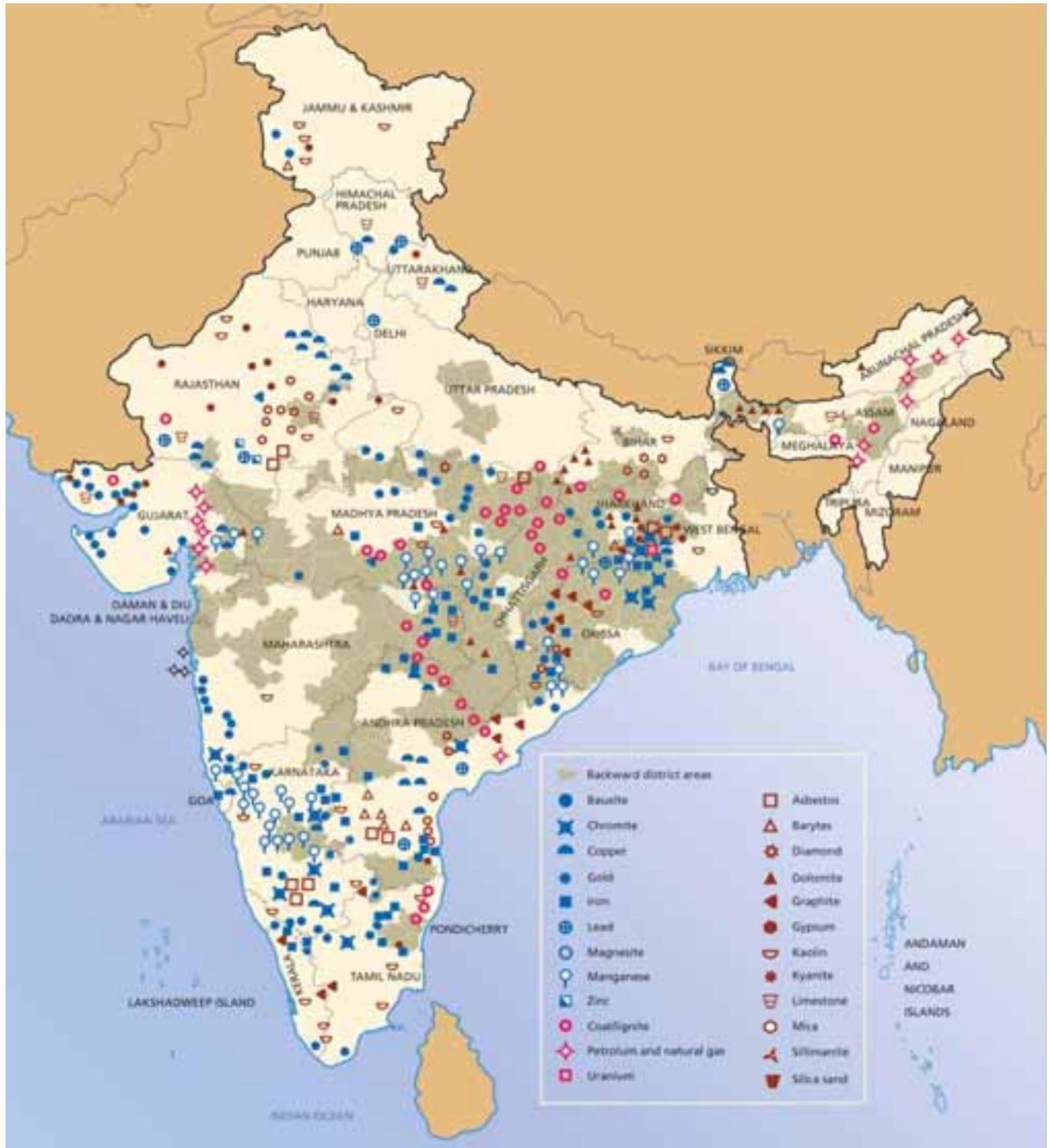
*An inverse relationship exists between dependence on mineral wealth and per capita income*

| State        | Contribution of minerals in the state GDP (percentage) | Per capita net state domestic product at factor cost in Rs (2003-04) |
|--------------|--|--|
| Chhattisgarh | 12   | 6,692  |
| Orissa       | 6.6  | 5,265  |
| Jharkhand    | 13.2   | 6,651  |
| Gujarat      | 3  | 13,022   |
| Tamil Nadu   | 0.72   | 12,348   |
| Maharashtra  | 0.86   | 15,082   |

**Sources:** Directorates of Economics and Statistics of respective state governments; *Indian Minerals Yearbook, 2005*, Indian Bureau of Mines, Nagpur

MAP 1.4: Poverty amidst plenty

Mineral-bearing districts continue to be among the most backward districts of the country, in spite of the immense wealth they generate



Source: Anon, 2003, 'Identification of districts for wage and self-employment programmes', *Report of the Task Force*, Planning Commission, New Delhi



AGNIMIRH BASU / CSE

**India's mineral-rich districts are marked by grinding poverty, low literacy and poor human development indicators**

production, but it is one of the least developed districts in the state. According to the 2001 census, Andhra Pradesh had a per capita income of about Rs 10,000, while Adilabad's was only Rs 8,291. The district also lacks physical and social infrastructure: only 55 per cent of the households have electricity compared to the state average of 67 per cent. While the percentage of rural households with access to safe drinking water in the state is 77 per cent, it is 61 per cent in Adilabad. The district lags behind in education as well with a literacy rate of just over 50 per cent compared to the state's average literacy rate of 65 per cent.<sup>24</sup>

- Keonjhar, the most mined district of Orissa and the centre of its iron ore production, has quite a few dubious distinctions to its credit. Its infant mortality rate (number of deaths in first year of the birth per 1,000 live births) is 20 per cent higher than the state's average. About 60 per cent of its population lives below the poverty line and its per capita district domestic product is one of the lowest in the state. According to the 2001 census, the percentage of rural households with access to safe drinking water in Orissa was 63 per cent; in Keonjhar, the percentage was a meagre 39 per cent.<sup>25</sup>
- Dantewada is fast emerging as the most favoured destination

in Chhattisgarh for steel companies due to the presence of high-grade iron ore. It ranks seventh among the 150 most backward districts in the country. Only about 22 per cent of the households in Dantewada have power connections. Provisions for safe drinking water are available for only half of the households (53 per cent), much lower than the state average (71 per cent). Only one-third of the population is literate – once again, lower than the state average.<sup>26</sup>

- Gulbarga and Bellary are two key mining districts in Karnataka. While Bellary is the hub of iron ore mining, accounting for 84 per cent of the iron ore produced in the state, Gulbarga is the largest producer of limestone in the country. Both these districts fare poorly when it comes to human development. Gulbarga is ranked 19<sup>th</sup> and Bellary 17<sup>th</sup> out of the 20 districts of Karnataka on the human development index (HDI). Although Bellary boasts of the largest number of private aircrafts in the country, more than 45 per cent of its population lives below the poverty line. The district does not even have the basic amenities – only about 41 per cent of its households have access to power. The infant mortality rate is much higher than the state's average and life expectancy is lower. Less than 50 per cent of the population of Bellary is literate. The scenario

is similar in Gulbarga, where the rate of literacy is as low as 38 per cent. Poverty is rampant with 45 per cent population below the poverty line (the state average is 33 per cent). Only 63 per cent of the households in the district have access to safe drinking water, while 45 per cent have no power connection. There are only 68 hospital beds per lakh population compared to the state's average of 86 beds per lakh population.<sup>27</sup>

- Both the mining districts in Maharashtra – Yavatmal and Chandrapur – not only figure among the 150 most backward districts of the country, but are also ranked 34<sup>th</sup> and 26<sup>th</sup>, respectively, out of the 35 districts of Maharashtra, on the HDI. Chandrapur, the largest producer of coal and limestone in the state, has only half of its villages linked by *pucca* roads, while only 43 per cent of households have access to safe drinking water. Health facilities are poor, with the infant mortality rate (number of deaths in first year of the birth per 1000 live birth) as high as 106 compared to the state average of 74. The per capita income of Chandrapur is more than 20 per cent lower than the state average; about 47 per cent of the families in the district are below the poverty line. Yavatmal leads in coal production, but lags behind in all other aspects. Around 44 per cent of families in the district are below the poverty line. Less than half the households have access to safe drinking water. The rate of infant mortality is 1.7 times more than the state average, while per capita income is 1.8 times lower.<sup>28</sup>
- Rajasthan is one of the leading non-metallic mineral-producing states of the country. Udaipur and Bhilwara are the key mining districts: the mining industry contributed 31 and 25 per cent to Udaipur and Bhilwara's GDP, respectively, between 1998-2001. But as is the case with the other states, both these districts have failed to benefit from their mineral wealth. The per capita income of Udaipur is lower than the state average. Only 32 per cent of villages in the district have

access to power, while 64 per cent get safe drinking water. About one-third of the district's population is below the poverty line. Udaipur has been ranked 27<sup>th</sup> out of 29 districts in the state in terms of HDI. Bhilwara fares poorly too – with only 32 per cent of its villages with access to power and 60 per cent with access to safe drinking water. Almost half the population in the district is below the poverty line, and literacy rate is only 50 per cent.<sup>29</sup>

- Cuddalore, in Tamil Nadu, produces three-fourths of India's lignite. Groundwater near the lignite mines here has been depleted, leaving local agriculturists high and dry. More than half of Cuddalore's population lives below the poverty line and it is ranked 16<sup>th</sup> out of the 30 districts of Tamil Nadu in HDI.
- Sonbhadra is the most mined district of Uttar Pradesh. It produces more than 20 MT of coal every year, apart from thousands of tonne of limestone and dolomite. It is also one of the most backward districts of the state. About 55 per cent of its population lives below the poverty line and its literacy rate is less than 50 per cent.

There are several other similar examples that go on to prove the theory of 'resource curse' (see Annexure).

One of the more recent studies on mining-poverty linkages has been done by the World Bank as part of a research on strengthening the institutional capacity of the Orissa government to deal with mining-led growth and development. The study focuses on the mineral-rich Keonjhar district. It has selected two blocks: Joda, with a high concentration of mines, and Keonjhar Sadar, which is likely to be mined intensively in the near future.

The study has found that households in Keonjhar Sadar are significantly better off in terms of average cash incomes and ownership of productive assets, compared with those in Joda (see Table 1.2: *Mining prosperity or poverty*). Education levels too

**TABLE 1.2: Mining prosperity or poverty: a case study of Orissa**

*Joda, a more mined block, has poorer quality of life and income compared with the less mined area of Keonjhar Sadar*

| Variable                            | Joda   |        | Keonjhar Sadar |        | Correlation of weighted mean with distance to mines |
|-------------------------------------|--------|--------|----------------|--------|---|
|                                     | Mean   | SD     | Mean           | SD     |   |
| Total cash income <sup>†</sup>      | 21,623 | 14,408 | 25,305         | 26,890 | 0.110*  |
| Days ill <sup>†</sup>               | 37.7   | 35.6   | 25.5           | 26.2   | -0.159*   |
| Adult education <sup>†</sup>        | 20.0   | 28.7   | 33.1           | 33.0   | 0.193*  |
| Better quality of life <sup>†</sup> | 0.8    | 0.4    | 0.9            | 0.3    | 0.136*  |
| Poor quality of house               | 0.8    | 0.4    | 0.8            | 0.4    | -0.016  |
| Livestock asset <sup>†</sup>        | 1.5    | 2.1    | 3.1            | 2.7    | 0.302*  |
| Production asset <sup>†</sup>       | 1.9    | 0.8    | 2.9            | 1.2    | 0.431*  |
| Consumption asset                   | 4.6    | 3.4    | 4.4            | 3.0    | -0.006  |
| Land owned <sup>†</sup>             | 0.9    | 2.3    | 1.6            | 2.9    | 0.134*  |

**Notes:** † Test for equality of block means is significant at the 5 per cent level

\* Significant at the 5 per cent level; SD = standard deviation

**Source:** S Srivastava, 2006, *Environmental and social challenges of mineral-based growth in Orissa*, World Bank, New Delhi

## Parej perishes

*World Bank-supported project leads to poverty and dip in local incomes*

The ghost of Parej continues to haunt the World Bank (WB) even after a decade of its support to the Coal Sector Environmental Social Mitigation Project (CSESMP). It all began in 1997, when the Bank supported Coal India Limited (CIL) in expanding coal mines and production in the 25 mines in Hazaribagh's Parej area, under the Coal Sector Rehabilitation Project (CSR) with an International Bank of Reconstruction and Development (IBRD) loan of over US \$530 million. However, parallel to this, pathetic conditions at the mining site forced the WB to give a loan to CIL under the CSESMP – to mitigate the environmental and social impacts of this mining expansion. CSESMP was approved in May 1996, with a loan of US \$63 million from the International Development Association (IDA). It was envisaged that after being tested and revised as necessary during the five-year time period financed by the Bank, CIL would apply its new environmental and social mitigation policies in its 495 mines.

The debate over the Parej project's impacts revolves around the net loss of local livelihoods due to the coal mines. Every Bank-supported project is approved with the condition that it must increase local income and reduce poverty, but the Bank's own monitoring team had found loss of income among local residents who were displaced by the Parej coal mines.

A recent study by a Delhi-based advocacy group Environics Trust and Hyderabad's Samata has refreshed the debate. These groups studied seven villages, including two resettlement sites of CIL, in Parej mines to assess the current socio-economic status of the people and the impacts of coal mining on their lives.

The study found that displacement due to mining, irrespective of compensation, has greatly impacted annual incomes. Every acre of land in Parej used to sustain the landowning family for six months, and landless families for three-four months. A family owning three acres got a net income of Rs 2,600 a year after taking care of its consumption needs. It also made about Rs 5,000 from working as wage

labour in nearby areas for a minimum of 100 days. From the nearby forests, a family earned Rs 2,000 a year. Thus, each family used to make Rs 9,600 a year – which placed it much above the poverty line for rural areas. Even the landless earned around Rs 7,400 a year from these sources.

All this changed with the coming of CIL. For every three acres of land that it took away, CIL compensated a family with a job. The study found that after a land-holding family shifted to resettlement colonies or other places, its net cash inflow went down. The net annual loss in cash inflow was Rs 9,260 for landed families and Rs 7,060 for landless families. "As net flow has gone down, the indebtedness of both the communities has increased manifold. Now, on an average, a landowning family has to take a loan of Rs 2,000-3,000 per month. Earlier, loans used to be not more than Rs 500 per month, and were taken and repaid within the community," says the study. "Because of shifting, there has not been much impact on the incomes of both landless and landowning families. However, expenditures have increased, thus pushing the residents into a debt trap," points out R Sreedhar, the managing trustee of Environics. Families now spend more money on buying foodgrains, which they were earlier growing on their own lands. The only employment is in the coal mines, while forest access has been barred. As a result, both landowning and landless households are spending the same – about Rs 8,200 – per month.

The CSESMP has the distinction of being the only coal sector project in India to be critically scrutinised by the inspection panel of the Bank for its bad impacts on overall development of the local people. But the Bank has tried to hush up the panel's findings. After this, the WB has not supported any other coal sector project, though it is said to be reconsidering its decision on that count.

Affected residents of Parej are planning to approach the WB. There have been a few sporadic meetings with Bank officials on introducing activities to increase incomes of the project-affected people. While all these parleys are underway, residents of Parej continue slipping into the debt abyss.

– Richard Mahapatra, *Centre for Science and Environment, New Delhi*

are higher for households in Keonjhar Sadar. Households in Joda have reported higher incidences of family illnesses. Wage income is higher in the case of households in Joda, most likely because of the employment benefits of nearby mines. However, the difference is not statistically significant. The study has also concluded that the proximity to mines is detrimental in a number of ways: villages closest to mines bear a greater environmental and economic cost.

Similar studies across the country and elsewhere have shown a co-relation between poverty and mining (see Box: *Parej perishes*). Despite the tall claims of industry as well as government, mining does not seem to usher in prosperity and development on the scales promised; in fact, under current the policies and practices of the government, mining districts and townships have actually slipped deeper into poverty and destitution.



AGNIMIRH BASU / CSE

**False promises: mining does not really lead to prosperity**

## ■ THE RED SHADOW OVER MINING

Poverty and lack of development extract terrible prices – and one of them has been the rapid rise of Naxalism. In 2005, Naxalite violence in India claimed 669 lives: this marked an 18 per cent rise in casualties compared to the previous year.<sup>30</sup> The government scrambled to give an appropriate response. In his address to the nation on August 15, 2006, prime minister Manmohan Singh termed Naxalism as a threat to India's national security. Less than a month after this pronouncement, one of his predecessors – former prime minister V P Singh – came up with a completely different viewpoint: he saw no option but to embrace Naxalism in the present model of development, where forceful acquisition of land and displacement of thousands by the State are the order of the day.

Both the statements were made in their respective contexts; both are revealing. To begin with, they mark the rise and rise of Naxalism as a movement that is giving sleepless nights to the nation. They mark the acknowledgement – among our leaders – of the strength and undisputed popularity of the movement. V P Singh's statement, in particular, also marks a recognition of the



*The Naxals have taken advantage of the alienation and poverty of tribal communities. This is evident from the success of the movement in tribal-dominated areas, which are also mineral-rich*

murderous track that official 'development' policies have taken over the years, pushing people into the arms of such movements.

Naxalism had begun as a peasant movement in 1967, in the tiny hamlet of Naxalbari in West Bengal. The fundamental demand was radical land reform – land to the tiller – and a violent takeover of power was seen as the only means of achieving this. Governments then were completely unwilling (as they are even now) to yield to these demands, and the movement was brutally crushed.

The character of Naxalism changed with the changing times. Forced out of West Bengal, it has now regrouped outside the state – largely in heavily forested areas dominated by tribals in the states of Orissa, Bihar, Jharkhand, Chhattisgarh, Maharashtra and Andhra Pradesh. Its focus has moved to attainment of tribal self-determination and control over local resources – issues for which it has found ready sympathisers among local communities.

In tribal-dominated regions, 'development' has been largely synonymous with the commercial exploitation of forest resources, primarily controlled by the forest department and other government agencies. This has almost obliterated traditional community control of forest resources. Government policies have made out the very existence of tribals as detrimental to India's biodiversity, and displaced them from their lands. Legislations like the Forest Conservation Act, 1980 have made tribals encroachers on the land they have inhabited for centuries. But this tribal alienation from land has not just been a result of the country's conservation policy. Tribals have also suffered for years due to 'development' projects, including mining projects. Naxalism has emerged to exploit the often justified tribal angst against this oppression.

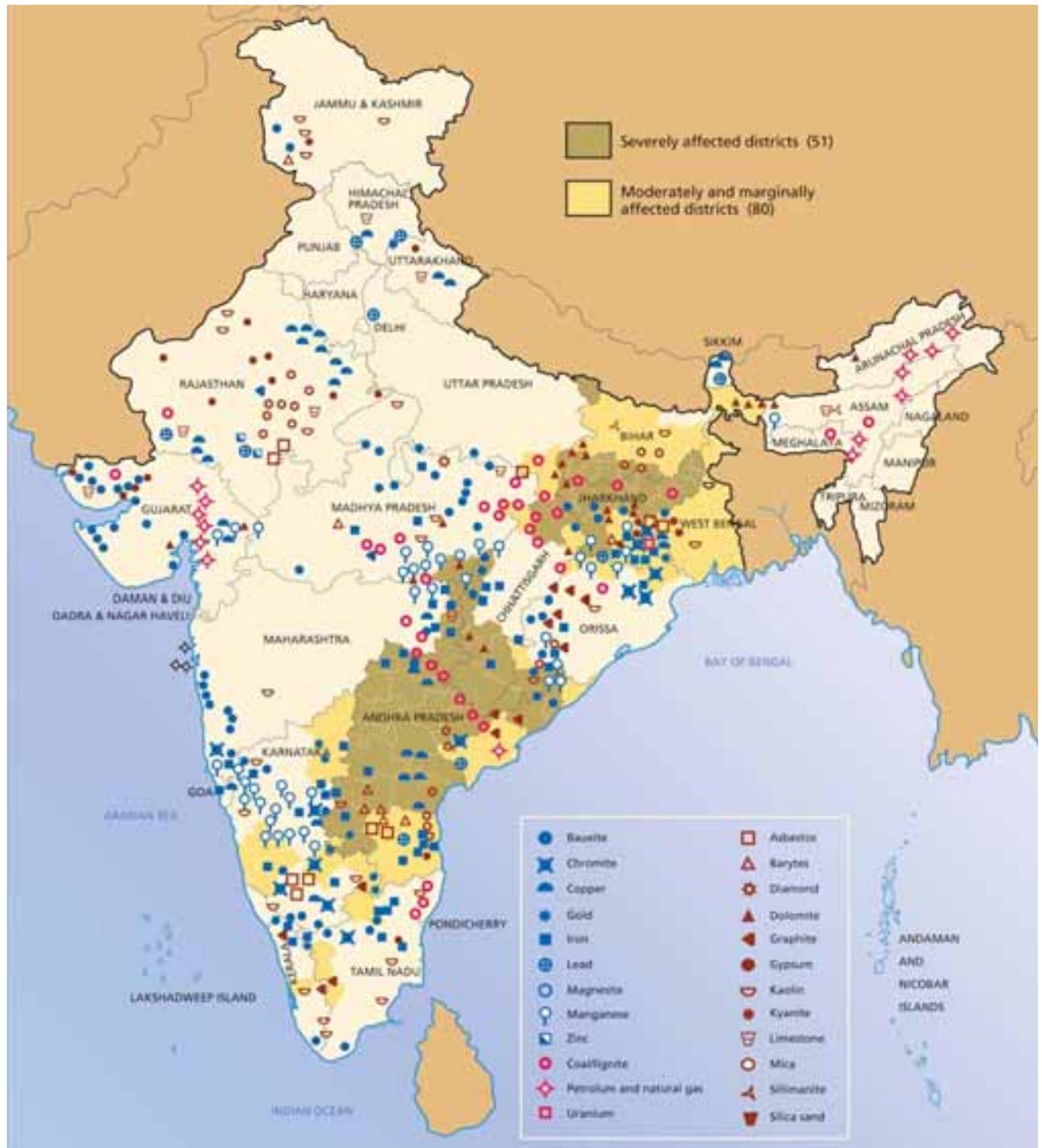
And with India's major mineral resources lying under tribal-dominated forestlands, mining and related projects have – naturally – come into the crosshairs of the Naxals. Today, five of India's top mineral-producing states – Orissa, Jharkhand, Chhattisgarh, Maharashtra and Andhra Pradesh – are fighting the rise of the red brigades in most of their mineral-rich districts (see Map 1.5: *The red spread*).

"It's not development. It is an express highway to speed up exploitation... What they have left for the local people is just air and water pollution," says Communist Party of India (Maoist) – or CPI (M) – central committee member Kosa, while referring to the mega mining projects in Bastar, Chhattisgarh.<sup>31</sup> This Naxal opposition to mining is rapidly acquiring strident tones. On December 20, 2005, the Bihar-Jharkhand special area committee of the CPI (M) sent out a press release opposing the proposed expansion of iron ore mining in West Singhbhum, Jharkhand.<sup>32</sup>

The militant opposition has unnerved the mining industry. A report by the risk management consultancy, Hill and Associates based in Hong Kong terms Naxalism as a "grave operational risk affecting investment climate in the core extractive sector". The report also feels that Naxalism is likely to affect foreign direct investment in the country.<sup>33</sup> "The risk exposure would be greater in pockets where Naxalites have joined the tribals in opposing project-induced human displacement... Areas where industrialisation is in the initial stages of development are more prone to stiff opposition by Naxalites," it says.

MAP 1.5: The red spread

Naxalites are operational in most mining districts, targeting companies as exploiters of poor and tribal people



Source: <http://www.cpcb.nic.in/pamsweb/technicalreport/report1/chapter-11.pdf>, as viewed on May 15, 2007

Traditionally, symbols of government machinery (police forces, the forest department, politicians and railway networks) have been the targets of Naxal violence. Industrial establishments are likely to bear the brunt in the future, says the report. In fact, at their ninth congress held in the beginning of 2007, Naxalites clearly expressed their intention of focusing on areas where mega development projects – including special economic zones, irrigation projects and mining enterprises – were coming up.<sup>34</sup>

The militants have used various tactics for opposing industrial investment. Threats and kidnapping of officials from companies are often used. In Chhattisgarh, they have threatened to attack the facilities of the Tatas and Essar; both the groups are planning huge steel plants in the state. In some cases, they have carried out the threats. There has been a spate of armed attacks in Chhattisgarh, Jharkhand and Orissa aimed at mining companies. Chhattisgarh has borne the brunt of these attacks – the strike on Hindalco being a case in point (see section on Chhattisgarh in Chapter 4). More recently, on May 31, 2007, Naxalites blasted three high-tension power towers in the state, disrupting power supply in large parts of Bastar and affecting iron ore production in the mines run by the state-owned NMDC. According to NMDC officials, the company suffered a daily loss of about Rs 9 crore.<sup>35</sup>

The rise of Naxalism can be directly linked to a certain crisis of faith: India's marginalised populations, including its tribals, can no longer trust their lives and livelihoods in the hands of their

government. Development projects literally pushed down their throats by these governments have become synonymous with poverty and insecurity. With their backs to the wall, these communities believe they have found their way out in the violent ways of the Naxals. In a sense, the phenomenon of Naxalism is as much a crisis of political empowerment as it is of sheer economic backwardness, as it is sadly one of the rare opportunities still available for the marginalised to express their aspirations.

The Indian government's attitude to Naxalism, of course, remains as mulish as ever: as an "internal security threat", Naxalism and its sympathisers deserve to be stamped out decisively by the State's police and army. In his speech, Manmohan Singh claims "...the path of violence can never solve the problems of the poor." On the other hand, he strongly advocates violence to suppress the movement and solve the problems of the government: "Our security forces will respond *appropriately* to the violence unleashed by Naxalites," he says.

It is precisely this myopic vision that is the real problem. Poverty, starvation, malnutrition, unemployment, lack of access to basic necessities like health and education, forced eviction of people from their lands for 'developmental projects' – in official parlance, these do not qualify as threats to 'internal security'. Reactions to all of these, and resistance and protests against them, do.

Various experiences have proved that a vastly different strategy is required if governments are really keen to solve the problem. The first step is an unambiguous acceptance that development policies have failed vast majorities in the country. The second is an understanding of the basic reasons behind the failure of development policies. And the third, and most difficult, is the political will to institutionalise alternative policies.

A prime reason for the spread of Naxalism has been the failure of the State to provide remote areas with facilities for health and education, and the prospect for dignified employment. People in these areas have had to cope with an administration that is always indifferent, often corrupt, and sometimes brutal. Meanwhile, economic development has been powered in good part by wood, water and minerals found on these lands, and for whose profitable exploitation they have often had to make way – most of the time involuntarily. It is important to recognise the fact that in the current system, forced eviction of people from their land and livelihood for projects like mining creates poverty and not prosperity.

Governments need to be sensitive about these issues. They must work to make people in Naxal-infested areas true partners in the development process – by assuring them titles on lands cultivated by them, by allowing them the right to manage forests sustainably, and by giving them a solid stake in industrial or mining projects that come up where they live and at the cost of their homes.

Even if land is necessary for mining, people need to be offered deals that are good enough for them to forgo their existing livelihoods. Finally, and most importantly, governments must recognise and respect the right of a community to say 'no' to a development project. Only then will it succeed in creating an atmosphere where progress, modernisation and industrialisation will walk hand-in-hand with people's aspirations – away from the shadow of guns.



NILMADHAV PANDA

**To bring the people in mining regions out of the guns' shadow, the government must recognise and respect their right to say 'no'**