

Exploration in India

THE ELUSIVE SPARKLE

India's diamond production in modern times has never been anything worth writing home about. The same applies to gold. But expectations are being revived with a number of international companies aggressively exploring the Indian sub-continent.

Philip D Anthony assesses the progress made so far.

Once upon a time, the diamond crown rested easy. India was a source of diamonds much before Brazil, South Africa or Borneo came into the picture. Many of the world's most famous diamonds – Kohinoor (793 cts, 1350), the Great Moghul (787 cts, 1650), the Regent (410 cts, 1701) and the Orloff (189 cts cut, 1735) were from

India. True, some stones continue to be discovered in major rivers of south and central India but, unfortunately, the sources of precious stones have largely remained undetected.

A closely held sector by the Central government, it was only in 1993 that the Indian government allowed entry of the private sector into mining. Companies were allowed to mine 13 minerals, including gold, diamonds and platinum. In 1999, overseas players too were allowed to enter the sector. Since then, a total of 165 reconnaissance permits have been granted by the government, covering an area of 219,665 sq km in ten Indian states. Currently, international mining giants such as BHP Billiton, Phelps Dodge, Rio Tinto, De Beers and Australian Indian Resources are prospecting in the country. These companies were upbeat about discovering "significant gold and diamond deposits" in India, although no reserves have been found yet, the Federation of Indian Mineral Industries (FIMI) announced recently. Last year, the government approved a total of US\$ 865.43 million of foreign investment in the mining sector.

India's known diamond reserves are currently estimated at 4,580,336 cts, according to the country's National Mineral Inventory. Some 84,000 carats are to be sold annually.



Deccan Gold

Drilling activity at Mangalgatti (N Karnataka)

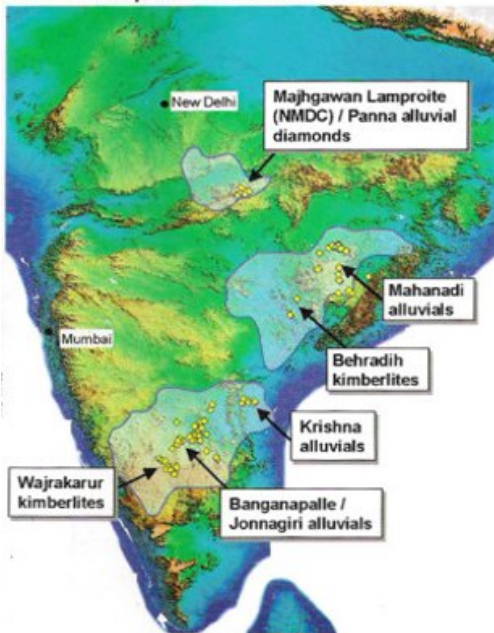
Rio Tinto



Diamonds from Indian kimberlite

India has 23.85 million tonnes of gold ore reserves, according to the Geological Survey of India (GSI) and the Indian Bureau of Mines. India's reserves of rubies, sapphires and garnets are estimated at 469 kg, 450 kg and 51,736,615 tonnes respectively. Gold ore has been found in the western state of Rajasthan and southern states of Andhra Pradesh and Karnataka in the last three years.

Diamond exploration areas in India



Foreign direct investment (FDI) up to 100 per cent is allowed through the established route for exploration and mining of precious metals, except for diamonds and precious stones. Presently, for diamonds and other precious stones, 74 per cent FDI is allowed through the automatic route and beyond this limit, cases are considered by Foreign Investment Promotion Board (FIPB) on a

case-to-case basis. However, the government is set to increase the FDI limit to 100 per cent in mining of diamond and precious stones as well. In a cabinet note, the Department of Industrial Policy and Promotion (DIPP) has reportedly proposed such a hike to rationalise the FDI policy in the mining sector.

Early this year Chhattisgarh's chief minister Raman Singh stated quite confidently that, "Chhattisgarh will dictate the diamond price in world markets and India will be the real diamond king." Chhattisgarh boasts of being India's richest region in terms of its mineral wealth (including diamonds) and it has the potential to emerge as the region's diamond bowl. Several companies, including De Beers, are on an exploration binge and mining in the state is slated to begin by 2008. Raman Singh is optimistic that by 2010, the state would earn US\$ 5.7 billion annually.

Says Alan Campbell, explorations manager, De Beers, India, "Private sector participation is enhancing the potential of discovery of new diamond mines in India. De Beers India was first granted Reconnaissance Permits (RPs) in Andhra Pradesh and



"It is too early yet to speculate."

John Burgess
exploration manager
India, Rio Tinto

Rough Diamond Shortages Predicted

Any diamond exploration effort will be followed with great interest by the industry. According to a Reuters report, shortages in the rough diamond market are likely to worsen in the near future. Since the Canadian discoveries of the early 1990s, no major new mines have been discovered. Last year's rough diamond production was stagnant in carat terms, but rose by US\$ 1 billion to US\$10.2 billion with prices rising 20 per cent. De Beers has sold off much of its US\$ 5 billion stockpile since 2001 and so has Russia.

Production at BHP Billiton's Ekati Diamond Mine in Canada is past its peak and has seen production fall 38 per cent and the jury is still out on whether Rio Tinto will close its Argyle Mine in Australia, the major world source of small stones. Analysts say that by 2012 the gap between rough supply and demand could reach US\$ 4 billion at current price levels. According to Chaim Even-Zohar, MD, Tacy Ltd, the uncertainty is driving diamond manufacturers to pay a premium just for secure access to rough.

In the face of rough shortages consumer demand is strong and rising, as De Beers figures showed an increase of eight per cent in the US market last year and a three per cent rise in the Japanese market. De Beers' efforts to promote diamond sales in Asia helped produce double-digit sales growth in China, India and Turkey in 2004.

100 per cent FDI Likely in Diamond Mining

The central government is considering permitting 100 per cent foreign direct investment (FDI) in mining of diamonds and precious stones. The FDI cap at present is 74 per cent. The move is expected to facilitate the induction of modern mining technologies and reduce the dependence of a thriving gems and jewellery industry on imported rough.

The department of industrial policy and promotion (DIPP), which has proposed 100 per cent FDI in diamond/precious stones mining in a Cabinet note has, in fact, favoured a "rationalisation" of the FDI policy in the mining sector by totally opening it up.

"Diamond deposits in South Africa are being depleted fast. There are few new mining ventures in Australia and Canada too. In this context, India will have to aggressively tap domestic resources for raw diamonds," a senior DIPP official said, adding that there was tremendous scope for reducing wastage of the non-metallic resource during mining, if modern technologies were employed.

Karnataka at the end of 2000 and obtained further licences in Chhattisgarh at the end of 2002."

Last year, De Beers spent US\$ 5 million – five per cent of its global exploration budget – on prospecting for diamonds in India. Since 1994, De Beers has invested US\$ 14.3 million in India and employs 63 people at its offices in Bangalore and New Delhi. At that time, a spokesperson had commented: "The results confirm that India is a highly prospective country." De Beers expenditure in India for 2005 is budgeted at US\$ 7.7 million.

Six companies, including De Beers and Diamond Prospecting Pvt Ltd, Rio Tinto, Adamas Prospecting Pvt Ltd and Geo Mysore Services India have conducted land surveys of roughly 1,600 square miles and all these companies have detected kimberlite-rich belts. In November 2002, Dwyka signed an agreement with BHP Billiton for exploration of hard rock diamond deposits in India. BHP Billiton had already established a broad portfolio of prospective tenements in India following two years of preliminary diamond exploration. The alliance covers an extensive portfolio of tenements exceeding an area of over 55,000 sq km and contains at least four known diamondiferous kimberlite pipes.

In another development late last year, De Beers India (DBI) signed a JV with Deccan



"India can catch up."

Sandeep Lakhware
MD, Deccan Gold

Gold Mines Ltd (DGML). The agreement envisaged De Beers prospecting for diamonds in concessions owned by DGML in south India, while the latter would look for gold in concessions owned by De Beers in central India. In the event of a gold find, DGML would be free to sell after paying 5 per cent of the proceeds to DBI, while any diamond finds would result in sales only through De Beers. Initially, the government had questioned the arrangement and had asked for details. "However," Sandeep Lakhware, MD, Deccan Gold confirmed, "now the arrangement has been found acceptable by the government and we should be able to go ahead as planned."

Rough diamonds produced from Rio Tinto's Argyle (Australia) and Diavik (Canada) mines constitute about 30 per cent of the total stones cut and polished in India. It is another big player at the forefront of diamond exploration in India, collecting literally thousands of samples, conducting geophysical surveys and drilling hundreds of targets. By the end of 2005, Rio Tinto expects to have committed at least US\$ 20 million exploring for diamond mines here. After four years of efforts, Rio Tinto has discovered twenty-five kimberlite pipes ranging in size up to 20 hectares. John Burgess, exploration manager, India, Rio Tinto states, "Early studies suggest that several of these pipes have interesting diamond content and evaluation work is in progress. It is too early yet to speculate as to diamond grades or per carat values; considerably more sampling is necessary and this is in progress."

Rio Tinto



Diamondiferous kimberlite outcrop in India

Policy Power

Government support plays a crucial role in this elusive search for precious stones. Rajeve Bhandari, MD, De Beers India, says, "Amendments to the Mines & Minerals (Development & Regulations) Act, 1957 and the Mineral Concession Rules, 1960 have been positive steps in the development of the mineral sector in India. The procedures for approvals for aerial surveys, transfer of title from reconnaissance permit to prospecting licence and prospecting licence to mining lease need to be simplified. This would potentially improve the speed of discovery and pace of development of resources." Campbell too asserts the same, "Ongoing refinement of the Indian fiscal and mining statutes are required in order to make India's mineral sector internationally competitive."

Burgess also raises a few pertinent points regarding the regulatory scenario: "Improved exploration rules and accelerated exploration licence grants would also help. Reducing 10,000 sq km reconnaissance permit areas to prospecting licences after a three-year period is difficult given that the current licence limit is only 25 sq km per company per state. This is too small an area and too rapid a reduction for the effective completion of exploration. Rio Tinto's Argyle mine, so important to the Indian cutting and polishing industry, took nine years to discover from the commencement of exploration. Hundreds of targets over a very large area had to be systematically checked and rejected before success was finally achieved. The mine could have been missed if sufficiently large permits were not allowed."

Lakhware comments that the exploration and development of natural resources is a highly speculative activity involving a high degree of financial risk, which is more acceptable to the private sector. This is why bigger mining nations of the world invite and encourage private sector investment in this industry. This has resulted in large mining revenues being generated from discoveries made by the private sector. "Government involvement in these countries is limited to identifying areas for exploration and supporting the private sector through research and development of advanced exploration techniques," he explains.

On the factors that hinder India's mining potential, Lakhware says, "The government of India's liberalisation policy announced in 1993 encouraged foreign direct investment. However, reconnaissance permits were issued seven to eight years after the policy statement was made. Although more than a decade has passed since liberalisation, the mining legislation and Forest and Environment acts have not been revised *very much* to make them investor-friendly. Administrative procedures of the pre-liberalisation era still cause bottle-necks. RP and PL applications are held up in government offices for years. It is difficult even today to purchase aerial photographs useful in mineral exploration. The reports of the Geological Survey of India, which could provide the platform for taking up exploration at a more advanced level, are so exorbitantly priced as to discourage their use, particularly when you cannot access the supporting materials like drill cores and reference samples as these are not preserved in core libraries."

Moving Forward

So what can the government do to make a difference to the fortunes of those who are investing their time and money? Lakhware feels that to facilitate more rapid discoveries and conversion of resources into exploitable reserves, the Indian mining legislation together with the mindset of the bureaucrats and those at the helm of the government mining organisations should undergo a sea change. "There are several areas that need immediate attention," he says. Large area reconnaissance permits must be followed by correspondingly proportionate prospecting licence blocks, and not a fixed 25 sq km or proposed 100 sq km. Application of GPS systems in survey and demarcation procedures must replace the age-old practice of using village maps which still demarcate 100s and 1000s of sq km on 1 inch = 660 feet scale.

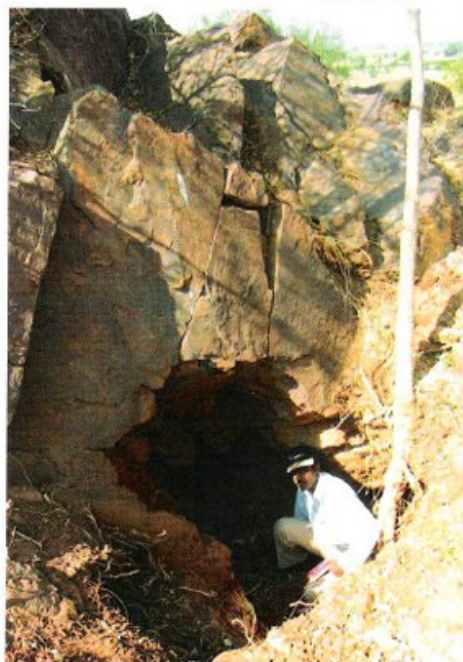
Exploration activities do not cause harm to the environment, yet clearances from the revenue, forest and environment departments at the reconnaissance and prospecting licence stages continue to cause inordinate delays. Clearance procedures should be reformed and simplified. Lakhware rues the fact that bureaucrats still accord



"Procedural requirements need attention."

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MD, De Beers India

Dtocan Gold Mines



Old workings at Ganajur (Karnataka)



“Potential for discovery of more kimberlites.”

Alan Campbell
explorations manager
De Beers India

preferential treatment to the Public Sector Units (PSUs) vis-a-vis the private sector even though the mining legislation applies equally to both. An investor-friendly atmosphere must develop at the Centre and at the state level, he feels.

Nicky Oppenheimer, chairman, De Beers, also highlighted the high costs involved in diamond mining recently in his talk at the International Institute for Strategic Studies, London. “Mining,” he said, “a trade I know well – is a high risk business, demanding very deep pockets, large amounts of upfront capital and very long time horizons. It can take up to US\$ one billion and nearly a decade to bring a diamond mine onstream. A deep shaft goldmine can take up to 20 years to reach operational maturity.”

Burgess concurs that the lead time from the day exploration commences till the possibility of reaping economic returns is long, typically eight years or even more. Moreover, less than one per cent of all prospects explored eventually become mines. Any form of fiscal relief such as lower production royalties, tax breaks, increased investment limits or lower exploration equipment import duties would stimulate international interest.

Indian capabilities can play a useful role in diamond mining endeavours. Campbell says, “India has sufficient infrastructure to allow large-scale exploration. Private

companies are building on the technology and talent already present in India in the most productive manner. A number of large mines are already operational in India which suggests that technology and talents exist and we are positive that these technologies and skills will be furthered in the years ahead.” Bhandari agrees saying, “De Beers has over a hundred years of experience in the development and application of the best technologies covering all facets of the diamond business from exploration to mining to marketing.”

In his presentation at the Mines to Market conference Douglas Ritchie, MD, Rio Tinto, commented, “The country should allow 100 per cent foreign ownership, accelerate the reconnaissance permit process, increase prospecting licence area, from the existing 25 sq km to 500 sq km and reduce royalty on local diamond production.” He voiced concerns on the high corporate tax, which, he said “acts as a disincentive.”

Positive Vibes

Bhandari is confident of a positive outcome. “...De Beers has a track record of localising management in the countries in which it operates... together with the resources in India we are well-poised to deliver on the aspiration to be the partner of choice in the diamond industry,” he says.

Lakhware is optimistic too. He says, “As corrective measures are taken by the government of India we believe that by incurring sufficient exploration expenditure and by using the latest exploration technologies and expertise, many new discoveries will be made and India would become an important producer of gold and diamonds.

“Our country has always been rich in mineral resources. However, it has lacked the vision and strategies adopted by other great mining nations. India can catch up, but it needs to upgrade its thinking.”

To date, De Beers India’s exploration work has led to the discovery of more than 30 new kimberlite pipes, reveals Campbell. “However,” he adds, “It is important to say that these are currently undergoing appraisal for diamond content and that, statistically speaking, economically viable kimberlites are exceedingly rare. We believe the potential for the discovery of more kimberlites exist.”

Deccan Bold



Gold bearing quartz veins at Kalyan