THE BOTTOM LINE

A recent mining boom in Odisha accelerated and diversified economic growth in the Indian state. However, the boom did not reduce poverty in the mining region. Meanwhile, unsustainable mining practices have severely affected the region’s air and water quality. Efforts to improve mining practices will require greater capacity for planning; reliable and timely data; and modernization of the institutional and regulatory framework surrounding the mining sector. A pilot project funded by the World Bank has suggested the way forward in the Keonjhar-Jajpur Resource Corridor. The activities described are led by Michael Stanley (Global Solutions Lead, Extractives) and Vikram Menon (Senior Governance Specialist).

MINING FOR INCLUSIVE GROWTH IN ODISHA, INDIA

Why is this issue important?

Conflict, irregularities, and illegalities can sap the potential of resource-rich regions

A responsible mining sector free from conflict, irregularities, and illegalities can ensure that India’s resource-rich regions are developed in a holistic manner.

India has an abundance of natural resources, in particular iron ore and bauxite. The eastern state of Odisha, a mineral-rich area with a long mining history, accounts for 28 percent of India’s iron ore reserve, 59 percent of its bauxite reserve, 24 percent of its coal reserve, and 98 percent of its chromite reserve.

However, the ongoing development of India’s mining sector has become contentious in many places, notably in Odisha, where conflicts have simmered over mineral licensing, social and environmental issues, and misalignment of the sector’s development activities with broader master plans. Partly as a result of such conflicts, Odisha’s growth has not yet fulfilled its potential to reduce poverty and improve environmental and social sustainability. At the same time, inadequate systems for managing resources, maintaining records, and collecting data have frustrated a complete assessment of the mining sector’s effects on the local and regional environment. Environmental clearances granted by the state government have been the subject of conflict between a mistrustful public and proposed or current mining operations.

These issues constitute a missed opportunity to leverage the mining boom for more than direct economic benefits. They also imperil the continued growth of the sector, promising an economic ripple effect downstream. In 2014, the Shah Commission, set up to enquire into illegalities in mining in Odisha, highlighted a need for reform and action to better manage and regulate the sector.

What can be done?

The World Bank is helping India’s mining sector grow in a more holistic manner

With the goal of developing the mining sector in an inclusive and responsible manner, the World Bank has implemented a pilot project that provides technical assistance to the federal government of India and to the state of Odisha. The pilot is designed to align the development of mineral resources with master planning for infrastructure, ecosystems management, and inclusive growth and to help India’s Bureau of Mines apply internationally accepted methods of mine planning in Odisha. The main themes identified for support in the pilot project are detailed in box 1. Several of those themes correspond to elements of the Sustainable Development Framework for the Indian Mining Sector (SDF), a 2011 strategy document of the Indian Ministry of Mines. The project began operation in 2012 and concluded in 2015.

Resource corridors are the basic unit of the integrated system of spatial planning and natural-resource management adopted for deployment in Odisha. The resource-corridor focus makes it possible to articulate a sequence of extractive-industry investments in infrastructure, goods, and services and to integrate those investments with other actions to be taken by the private and public sectors so as to produce sustainable economic development and diversification within a defined geographic area.

Initially chosen for the pilot was the Keonjhar-Jajpur Resource Corridor (KJRC), the center of mining activity in Odisha (figure 1). The KJRC has historically contributed more than 60 percent of Odisha’s iron ore production. In light of variations in data availability and quality, however, the pilot’s focus was moved to the Joda Circle, the part of the KJRC for which the best data were available.
“The resource-corridor focus makes it possible to articulate a sequence of extractive-industry investments in infrastructure, goods, and services and to integrate those investments with other actions to be taken by the private and public sectors so as to produce sustainable economic development and diversification within a defined geographic area.”

Box 1. Themes of the World Bank’s pilot project on mining and inclusive growth in India

Theme 1
Cumulative impact of sector, with cluster focus. Environmental, social, and economic dimensions of mining based on trends; competing demands and effects of activity on shared natural and human resources. (SDF principles 2, 4, 5.)

Theme 2
Mineral reserve inventory and dynamics. Extraction trends and fluctuations; trends in domestic consumption and exports; short-term resource assessment based on UNFC classification. (SDF principles 1, 2, 4.)

Scenario development. Assessment of the sector’s needs for infrastructure and human and natural resources.

Theme 3
Sector institutions. Assessment of roles and responsibilities of various agencies to ensure coordination and application of the SDF.

Data-based tool for use in making planning decisions and dissemination of results of concerned departments.

Theme 4
Priorities for planning. Potential for private sector and civil society participation; identification of other development opportunities and complementarities with regional development; input into state plans for inclusive growth.


The resource-corridor approach of the pilot addresses supply-side bottlenecks created by congestion in transportation infrastructure, enhances the efficiency of mining operations, and ensures greater revenue generation and sustainable development through better sector governance. The improved spatial planning resulting from the corridor-based approach also enables efficient identification of alternate and strategic land uses, such as forest and wildlife conservation (notably preservation of an elephant corridor running through the KJRC).

Figure 1. Defining elements and boundaries of the Keonjhar-Jajpur Resource Corridor

The two pillars underpinning the resource-corridor approach are the 2009 United Nations Framework for Classifications and the SDF. The UNFC helps classify resources at the mine level based on economic, environmental, and social viability; field project status and feasibility; and geological knowledge. Application of the UNFC methodology will help identify blockages to mineral extraction at the
“The Sustainable Development Framework for the Indian Mining Sector takes a systematic approach to address the challenges facing the sector, incorporating economic, technical, social, and environmental considerations.”

What has emerged from the pilot project?

An assessment of the pilot has yielded specific recommendations for action

An interim assessment of the pilot in the KJRC has suggested several areas for action by the government of Odisha in coordination with the government of India.¹ The action areas are listed below.

**Data collection.** A robust system for the collection and management of data should be developed to inform and guide decision making at both the department and state levels and on both a short- and long-term basis. The data should be captured spatially on a geographic information system (GIS) platform to reveal trends in extraction and resource use, locations where the impact of activity is particularly significant, and areas where more and better planning is most critically needed.

**Implementation of UNFC 2009.** The UNFC guideline encourages the collection and dissemination of information about mining projects, information that is not limited to their technical and commercial viability but rather encompasses their impact on the environment and society. Such comprehensive information enables stakeholders to make informed decisions. Implementing the guideline will help identify blockages to natural resource extraction at the mine level, while also aiding in the systematic classification of mineral resources based on their extractability.

**Management of ore fines.** Lower-grade sources of iron ore generally require beneficiation using techniques such as crushing, milling, gravity or heavy media separation, and screening to improve the concentration of the ore and to remove impurities. The result is the production of large quantities of so-called fines, the management of which can be improved through a spatial analysis of present stores of fines, the projected production of fines, and their likely effect on environmental and social indicators. Identifying appropriate sites near mining areas for the establishment of beneficiation facilities would minimize hazardous transport of fines and encourage their exportation. From a resource-conservation perspective, a detailed cost-benefit analysis should be conducted to determine economic and uneconomic grades and to assess the merit of competing schemes for managing fines.

**Consolidation of small-sized mining leases.** Consolidating small-sized leases would improve the efficiency of the mining industry. Opportunities should be explored to consider sharing of common infrastructure (such as access roads, offices, and workshops) to minimize unproductive space within leases while expanding the effective mining areas.

**Support for planning.** Coordinated planning requires the timely collection, processing and sharing of cross-cutting information among decision makers.

An “SDF Cell” is proposed as a possible data repository and information clearinghouse. The cell would draw inputs from various line departments and provide outputs to departments and ministries, as required. Ideally it would be housed in the state government and would function at a regional level within each mineral corridor, each encompassing several districts affected by mining.

**Transportation planning.** Based on the needs of each resource corridor, transportation planning should include improvements to the road network, better parking facilities to reduce haphazard roadside parking, and expansions of the rail and regional road network.

**Benefit sharing.** Transparent mechanisms for sharing benefits with local communities should be based on stakeholder engagement. In addition to skill development to meet the requirements of the industry, the benefit-sharing plans should encompass housing, health, and education infrastructure to meet the needs of the population. The pool of beneficiaries should include the significant numbers of migrants who are likely to appear under high-growth scenarios. The plans should aim for and monitor overall improvement in the quality of life and incomes in the area that can be attributed directly to the mining sector.

¹. The assessment is contained in “Using Mining for Inclusive Growth in Odisha, India,” a report prepared for the World Bank Group in 2015 by Environmental Resources Management (ERM) India; SRK India Mining, Water, and Environmental Consultants; and Spatial Planning and Analysis Research Center (SPARC Pvt. Ltd.). That report was prepared under two World Bank technical assistance activities entitled “Capacity Support for Indian Bureau of Mines” and “Orissa Mining and Inclusive Growth.”
What is the way forward?

Four initiatives are particularly critical

A better spatial understanding of the mining sector can underpin coordinated regional planning to reduce the negative effects of mining operations and to share benefits more equitably. To advance toward inclusive growth, the government of Odisha should:

- Engage with concerned agencies, departments, and other stakeholders to reach agreement on the policies and institutional requirements needed to support a resource-corridor approach to planning and regulation of the mining sector.
- Set up a pilot SDF Cell with a limited mandate to begin collecting, integrating, processing, and disseminating data to support planning decisions.
- Prepare an initial strategic plan for the establishment of a resource corridor planning unit that could be piloted in the short term to test capacities and institutional mechanisms.
- Identify and begin building partnerships in areas such as capacity building, technical support, database management, and monitoring in an effort to enlist the private sector in addressing gaps in data collection, planning, and regulation, and in leveraging opportunities for win-win action. Successful partnership formats could be expanded to pursue upgrades in infrastructure and improvements in service delivery.

“...underpin coordinated regional planning...”

Martin Lokanc and Noora Arfaa peer-reviewed this brief. Deepika Davidar edited and summarized it.