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Do adverse ecological consequences cause resistance against land acquisition? The experience of mining regions in Odisha, India

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ABSTRACT

In India, there is a long history of protest against land acquisition, which has halted a number of development interventions. The issue has been particularly serious in the state of Odisha, which is mineral-rich but backward, economically. While ongoing debates focus mainly on the price of the land and compensation for, and resettlement of, those uprooted by the proposed changes, the present paper focuses on the potential adverse ecological consequences of mining. Through analysis of primary and secondary data, the study finds that there are more negative impacts on the environment and ecology in mining districts than in the non-mining districts of Odisha. However, potential adverse ecological consequences are a dominant cause of protests against land acquisition for mining in the state.

1. Introduction

Mining involves the acquisition of a large amount of land and hence changes in its ownership rights and characteristics. Such changes often lead to conflicts among various stakeholders, including the government, investors and the people who depend on the land for their livelihoods.

In India, attempts at acquiring land for mining in recent years have been met with significant resistance. In many cases, disputes have been so intense that they have delayed the implementation of projects.[1] During 2011–2014, the value of stalled projects stood at 8 percent of India's GDP, the vast majority of which were linked to land acquisition problems (GoI, 2015).

The situation appears to be particularly serious in the state of Odisha, which is one of the most mineral rich but economically backward states in the country. It contains nearly 17 percent of the total mineral deposits in the country (GoO, 2013). The state alone constitutes around 25.82 percent, 32.53 percent, and 56.36 percent of the country's total reserve of coal, iron-ore, and bauxite, respectively and has a heavy concentration of chromite, manganese, and graphite (ibid.). While the state has immense potential for its socio-economic development through extraction of these mineral resources, the amount of land acquired as a proportion of its total requirement for mining and mining-based industrial projects is very low.[2] As a result, only 21.67 percent came to fruition during 2002-13 (Pradhan, 2013). This is a critical issue considering the unsuitability of a large part of the state for farming, the overburden of the population on the sector, and the declining average size of cultivable land holding.

Existing studies, ongoing debates and interventions in the Indian context have focused mainly on the price of land and compensation for and resettlement of affected people as reasons for protests (e.g., Ghatak and Mookherjee, 2014; Marjit, 2011; Ghatak and Ghosh 2011). While these factors are important, the potential adverse ecological consequences of mining are also likely to be crucial. The adverse impacts of mining on ecosystems limit livelihood opportunities, particularly for those who depend predominately on natural resources for their survival and do not hold property rights over land. Even property rights may not be enough, particularly when the affected people lack bargaining power. Resolving the problem of land acquisition requires a deeper understanding of various ecological issues, and addressing them accordingly.

The present paper examines the link between the ecological consequences of mining and households' resistance against land

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[1] For details, see Mishra (2016).

[2] The total land acquired as a proportion of its requirement thus far is only 27.96 percent in the case of mining projects and 39.28 percent for other projects (IDCO, 2015).

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Table 1
Land-use pattern in Talcher as a percentage of total geographical area.

	1992	1996	2000	2003	2006	2008
Land put to non-agricultural uses	6.62	14.30	24.31	26.43	13.83	21.23
Barren and non-cultivable land	0.55	0.09	0.25	0.13	2.29	0.06
Permanent pastures & other grazing land	0.61	4.46	1.00	2.06	2.19	2.06
Cultivable waste	5.24	2.98	2.82	2.63	4.30	2.07
Old fallows	5.96	5.48	6.05	4.80	6.84	7.67
Current fallows	5.67	11.97	7.70	15.28	10.37	16.12
Net sown area	22.29	29.79	29.26	25.88	26.83	20.00
Land under misc. trees, crops, and groves not included net area sown	2.46	1.53	3.22	2.61	1.49	0.76

Source: District Statistical Handbook (various issues) Angul, Directorate of Economics and Statistics, Government of Odisha, Bhubaneswar.

acquisition in the Indian state of Odisha. The study uses both primary and secondary data to explore this issue. The paper is divided into six sections. The methodologies applied and sources of data used in the paper are detailed in Section 2. While Section 3 critically reviews existing studies concerning the ecological consequences of mining in general, Section 4 examines various ecological changes in mining districts vis-à-vis non-mining districts of Odisha. The ecological implications of mining at the household level and peoples' perceptions of the impacts of mining on the environment are discussed in Section 5. Section 6 summarizes the findings, highlighting various policy implications and identifies areas for further research.

2. Methodology and study area

2.1. Description of the study area

The paper uses primary data collected in the vicinity of the Talcher coalfield, the second largest producer of coal in the country, in Angul district of Odisha. It is also one of the major industrial zones in the state. The past few decades have seen the rapid growth of industrial activities in this area, mainly due to the availability of coal in the region and abundant water in the Brahmani River. The Angul-Talcher region ranks as the seventh-most critically polluted industrial cluster of India (CPCB, 2009). There are instances of people resenting lack of actions on the part of the Odisha State Pollution Control Board (OSPCB) in this regard. The situation is likely to be grimmer with the state government signing memoranda of understandings for setting up a few more steel units and about 10 thermal power plants in the region.

Talcher coalfield has 11 coal mines and 38.65 billion tonnes coal reserves, the highest in India.[3] The coalfields under Mahanadi Coalfields Limited (MCL), a subsidiary of Coal India Limited (CIL). Although more than 27,000 acres of land (both private and government land including forest land) have already been diverted for these mines, affecting more than 15,000 households, attempts are being made to facilitate *further* acquisition of land to accommodate proposed mining projects.[4] The land use pattern in the area has changed considerably over the years (Table 1). While land used for non-agricultural purposes has increased manifold during 1992–93 and 2008–09, the amount of land with trees, crops and groves has also declined considerably. All of these factors, along with an increase in uncultivated fallow land (old and current), have contributed to the decline in the net sown area.

2.2. Methodology, data collection and sampling strategy

The study was two-part: (i) a comparative analysis between the mining and the non-mining districts, with a focus on the six major mining districts[5], to examine ecological changes; and (ii) a household level analysis to examine whether such changes are fuelling resistance to mining projects. A variety of indicators such as changes in forest cover, ground water level and its sectoral usage, extent of water pollution, changes in climatic conditions, and extent of health hazards is used to understand ecological changes and their consequences. Further, descriptive statistics and standard measures of these variables have been applied. The secondary data were sourced from the Official Web Portal of the Ministry of Environment and Forests of the Government of India.

In order to understand whether the ecological consequences have any bearing on protests against land acquisition, a household level analysis was carried out using primary data collected from 225 sample households in six villages (namely Balugaon, Madanmohanpur, Langijoda, Anadipur, Padmabatipur, and Rakas) across two gram panchayats (Kandhal and Padmabatipur) of Talcher block. The sample villages are chosen in such a manner that they lie within a 5 km radius from the mining regions. This is done bearing in mind that the most acute impacts on the environment are more likely to occur in areas located in close proximity to mining sites. Further, coal mining in the vicinity of these villages has been ongoing for more than five decades. Sample households were selected following a proportionate stratified random sampling procedure. The sample size for each village was proportionate to its population size. In addition to carrying out focus group discussions, the present study also used structured questionnaire to collect necessary primary data. This was done so because there are possible conflicts between micro (individual) and macro (community) level interests in the context of the land acquisition debate. All of the households in a particular area may not necessarily oppose land acquisition. Even when a household opposes land acquisition, the underlying motive(s) may be different depending on various household level characteristics. A group level analysis is unlikely to capture such household level factors adequately. In order to capture these aspects, the present paper reports findings from the household survey along with focus group discussions.

3. Review of the literature

The adverse impacts of mining on the stock of natural capital of an economy are multifaceted. There is evidence of mining causing environmental damage (Crispin, 2003), defacing vast terrain due to low recovery of resources (Heemskerk, 2001), being linked with health hazards (Hota and Behera, 2015) and having adverse socio-cultural impacts in local communities (Kitula, 2006). Some of the specific adverse ecological consequences of mining include loss of biodiversity (EAMR, 2013) and forest cover (Wani and Kothari, 2008), depletion of non-renewable resources, transformation of

[3] For details, see the official website of Directorate of Mines, Government of Odisha. URL: http://www.orissaminerals.gov.in/Mines/default.aspx?GL=Ghome

[4] Office of the Block Development Officer (BDO), Talcher (as on April, 29, 2012).

[5] The six major mining districts of Odisha include Angul, Jajpur, Jharsuguda, Kendujhar, Koraput, and Sundargarh. These mining districts are selected on the basis of studies by Mishra (2010) and Mishra and Hota (2011).

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