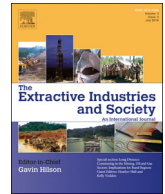




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Original article

## Extracting environmental justice: Countering technical renditions of pollution in India's coal industry

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## ABSTRACT

Coal extraction and processing remains at the heart of energy security in India. As ever larger amounts of electricity are produced to support overall economic growth, this creates environmental justice challenges as people in the coal-producing areas are exposed to perilous air pollution levels. Federal technocrats shape the environmental governance of coal, prioritizing energy security and de-emphasizing the environmental health risks associated with coal extraction and processing. We argue that these technocrats render the pollution technical to continue the expansion of the nation's energy supply. In response, pollution-affected people in the central Indian state of Chhattisgarh increasingly attempt to take technical approaches to contest high levels of pollution to counter the government's claims about acceptable levels of pollution. This tactic relies on an increased ability to counter expert pollution data collection and analysis. The approach requires connections with wider civil society networks who have the technical and legal knowledge required to quantify and judicially contest air pollution practices. Given conditions of great regulatory uncertainty in spite of well-developed legal norms, we conclude that a strategy based on long-term community cohesion and awareness-building, combined with independent air pollution monitoring by the impacted stakeholders, are crucial for sustained coal pollution mitigation.

### 1. Introduction

Air pollution is a critical problem in both urban and rural India, estimated to be responsible for 1.62 million premature deaths per year (Smith et al., 2014; Smith and Sagar, 2014). As the economy and the overall population grows, the pollution levels are expected to escalate further (Goenka et al., 2015; Guttikunda et al., 2014). The other side of India's present energy and pollution dilemma is that almost 300 million people lack access to electricity, with many more facing crippling shortages (Kale, 2014). With 60% of the nation's existing electricity supply derived from coal, the country struggles to balance the need to alleviate energy poverty, reduce fossil fuel use, and abate the high air pollution levels associated with the extraction, processing, and use of coal (IEA, 2015). While renewable energy efforts are on the rise in India, the 'coal nation' (Lahiri-Dutt, 2014) remains heavily dependent on fossil fuel energy.

The government of India acknowledged the severity of pollution when it designated forty-three critically polluted industrial clusters in 2009 (Central Pollution Control Board, 2009). The designated industrial areas require special pollution abatement, with restrictions on

new or extended industrialization in their immediate vicinity. Despite the promising nature of this initiative, many of the industrial clusters have been removed from the list with only an action plan rather than actual, verifiable air quality improvements. One of the areas initially included on the critically polluted list is the city of Korba in Chhattisgarh state. This article explores the everyday pollution challenges in Korba to exemplify the environmental justice tensions associated with the promotion of economic growth and energy security in contemporary India. With expanding coal mines and a heavy concentration of coal-fired thermal plants, Korba simultaneously faces a disproportionate range of environmental health hazards, community displacement, and energy poverty.

With roots in the disproportionate exposure to environmental hazards among minority and low-income populations in the United States (Taylor, 2014), global initiatives increasingly frame environmental problems as environmental injustices to explore environmental racism and uneven development processes. Around the world a range of groups and individuals adopt environmental justice discourses to explain the intersections between "environmental exclusion and social exclusion, and between environmental degradation and economic exploitation"

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(Agyeman et al., 2003: 8). Historically and contemporarily marginalized, the official government categories of Scheduled Caste (SC) (or *Dalits*, ‘the oppressed’ or lowest caste peoples) and Scheduled Tribe (ST) (*Adivasi* or indigenous) are disproportionately exposed to the environmental and social risks associated with India’s coal extraction. Of the total Korba district population, 10.3% percent are *Dalits* and 40.9% are *Adivasis* (Government of India, 2011). Close to some of Korba’s main coal mines, the proportion of impacted Scheduled Castes and Tribes increases. For example, the Kusumunda coal mine core zone comprises 6.4% *Dalits* and 49.3% *Adivasis* (South Eastern Coalfields Limited, 2014). The Gevra coal mine expansion impacted 7510 *Adivasis* in the core zone (Central Mine Planning and Design Institute Limited, 2013). These communities are particularly vulnerable to mine displacement, with historically poor records of resettlement and associated livelihood losses (Lahiri-Dutt, 2014: 186).

These environmental injustices in India’s expanding coalfields perpetuate uneven development in the nation. This research is an attempt to understand how civil society can impact the underlying power structures that foster repeated coal-related environmental pollution violations, with *Dalit* and *Adivasi* communities most likely to be impacted. We examine the politics of environmental knowledge as a possible way to collect independent pollution measurements, but also as a focal point for community mobilization for people living in the vicinity of coal mines, coal-fired thermal power plants, and the waste generated from these activities. Initial fieldwork carried out by one of the authors involved interviewing civil society activists from across Chhattisgarh in March 2014. Subsequently, both authors conducted qualitative research in December 2014 with Chhattisgarh human rights professionals and Indian activists. We sought to understand how dense energy industrialization in Korba, Chhattisgarh impacts the everyday experience of pollution and health of residents. We conducted informal interviews with residents living close to the following locations in and around Korba: (1) Gevra coal mine; (2) Bharat Aluminum Company Ltd. (BALCO) plant and coal ash dyke; (3) Chhattisgarh State Electricity Board (CSEB) coal ash dyke; and (4) CSEB power plant. Residents were Hindus, Muslims, and Christians predominantly from SC or other backward castes backgrounds, with a limited number of *Adivasi* respondents. From these conversations we have gained a preliminary understanding of how Korba residents and civil society members understand environmental pollution and the possibilities to question the severe pollution levels in their areas.

Inspiration for the methodology derives from community pollution monitoring in the southern Indian state of Tamil Nadu, documented by Narayan and Scandrett (2014). While local critiques of industrial pollution in Tamil Nadu were initially rejected as, “ill-informed and anti-development” (3), the results from the community pollution monitoring were ultimately used to challenge and change pollution violations. The results also engendered improved community agency to challenge uneven power relations. In fact, critical community engagements amplifying marginalized voices may provide the, “basis for developing counter-hegemonic strategies that challenge ruling interests” (Narayan and Scandrett, 2014: 2). They also create opportunities to inform and engage understandings of pollution, which is increasingly a local and national challenge in India.

When efforts to deliver long-term air quality improvements have failed, whether initiated by governments, courts, NGO campaigns, or the private sector, this article discusses the possibilities for coal cluster stakeholders to counter the technical rendering of pollution and to implement air pollution regulations. The first section reviews how pollution is governed in a technically rendered manner to ensure the flow of coal to meet national energy aspirations. Next, we present coal pollution regulation in India and the empirical case in Korba, one of India’s main coal hubs with major mining and power generation activities. This empirical setting is contextualized in the following two sections which discuss the possibilities for citizens to question air pollution levels under existing political-economic conditions, and to carry

out their own pollution measurements when existing pollution monitoring and control processes are closed to public participation. Finally, the conclusion highlights the need to build long-term awareness about pollution and cohesion among pollution-affected groups to safeguard legally mandated pollution norms.

## 2. Rendering technical: pollution and the extractive industries in India

Coal extraction and use for electricity generation are closely linked to core processes of economic growth in industry and agriculture, but also remain intimately aligned to aspirations for affluence among Indian elites. India remains dependent on coal and this is expected to continue despite mass displacement, extreme levels of pollution, and increasing climate change vulnerability (Lahiri-Dutt, 2014). The emphasis on power generation for the benefit of the national economy has nevertheless come with significant quality concerns. The provision of electricity in India is “notorious for its systemic inadequacy in quantity and quality” (Chatterjee, 2012, p. 91). Frequent power outages and a lack of feasible power generation alternatives create a national ‘energy crisis’ (Lahiri-Dutt, 2016). In spite of the dire costs of coal-powered development, state support for coal power continues, despite recent improvements in the overall provision of electricity and nascent renewable energy initiatives.

Each stage of coal extraction and processing has unique effects on environmental health. Coal mines and associated waste areas generate significant amounts of dust, which is particularly dangerous to humans as fine particles known as particulate matter (PM<sub>2.5</sub>).<sup>1</sup> The mines often burn uncontrollably leading to the release of toxic gases like Sulphur and Nitrogen oxides (SO<sub>2</sub> and NO<sub>x</sub> respectively) as well as soot which adds to the particulate matter concentration of extraction processes like blasting and excavation. The transport of coal releases additional amounts of dust and soot from diesel engines. The burning of coal in power plants releases PM<sub>2.5</sub>, SO<sub>2</sub>, and NO<sub>x</sub>. Waste in the form of coal ash, finally, is another potential source of PM<sub>2.5</sub> if not stacked properly, and contain a range of toxic trace elements (Hendryx, 2015; Lockwood, 2012).

Studies by the Government of India and numerous independent researchers note the worsening quality of air in Indian cities (Central Pollution Control Board, 2009; Ghosh et al., 2015). Available estimates indicate that the burning of coal results in as many as 80–100,000 premature deaths per year across India (Goenka and Guttikunda, 2013). Studies reveal that residents living close to coal mines suffer disproportionately from poor respiratory health (Hota and Behera, 2015). Attempts to generate power from less polluting or sustainable sources of electrical power have so far largely been unsuccessful (Lahiri-Dutt, 2014) even though solar power has been increasing significantly in recent years (Ramachandra et al., 2011).

Starting in 1992, India introduced an impressive set of laws governing environmental pollutants. The Air (Prevention and Control of Pollution) Act of 1981 regulates air pollution in India, and the Environment (Protection) Act of 1986 provides for the protection and improvement of the environment. The Acts empower the Central Government to establish authorities charged with the mandate of preventing environmental pollution. Despite this legislation, outdated technology and poor environmental governance combine with the sheer scale and speed of change to result in desperately inadequate pollution mitigation. Compounding the nation’s bureaucratic challenges, the strong push for economic growth and linear returns on investment do not promote industries to self-regulate or use innovative pollution abatement mechanisms (Lahiri-Dutt, 2014; Parry, 2003).

While the Indian state has established environmental baselines, and regularly measures and publishes pollution levels, bureaucrats have not

<sup>1</sup> Particulate Matter are particles with an average size less than 2.5 micrometres.

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