The Journal of Peasant Studies

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/fjps20

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To cite this article: Amod Shah (2022): Rethinking 'just transitions' from coal: the dynamics of land and labour in anti-coal struggles, The Journal of Peasant Studies, DOI: 10.1080/03066150.2022.2142568

To link to this article: https://doi.org/10.1080/03066150.2022.2142568

Published online: 15 Nov 2022.

THE JOURNAL OF PEASANT STUDIES
https://doi.org/10.1080/03066150.2022.2142568

Routledge
Taylor & Francis Group

FORUM ON CLIMATE CHANGE AND CRITICAL AGRARIAN STUDIES

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Rethinking 'just transitions' from coal: the dynamics of land and labour in anti-coal struggles

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ABSTRACT

Communities resisting large coal mining projects navigate the significant tensions between imperatives of urgent climate action and economic growth in complex and contingent ways. Drawing on empirical research in a mining region of Central-Eastern India, this paper examines how the changing 'agrarian' context of rural livelihoods and household reproduction within mining-affected communities shapes the motivations of local anti-coal struggles, and the articulation of climate-change related concerns within them. It argues that such a conceptualization of political contestations over coal extraction points to crucial possibilities for building broader counter-hegemonic movements for more inclusive 'just transitions' away from coal.

KEYWORDS

Anti-coal struggles; climate justice; just transitions; agrarian change

1. Introduction

Coal is a key driver of climate change and the single largest contributor of global CO_2 emissions (IEA 2019; Olivier and Peters 2020). With the window to avoid impending climate catastrophe steadily narrowing, it is not surprising that 'end of coal' as emerged as a crucial rallying call for climate movements and global climate policy (Rosewarne, Goodman, and Pearse 2014; UNFCCC 2021). Such national and global-level anti-coal mobilizations driven predominantly by the need for urgent climate action, in combination with the numerous local struggles against proposed and existing coal mines across the world, have been instrumental in reducing overall dependence on coal. Global coal demand has not yet peaked, but its share of the energy mix remains on a slow decline (IEA 2019, 16). Recent commitments to limit and eventually phase out coal-based power generation during the Glasgow COP26 climate conference in November 2021 will likely accelerate this shift, though at a much slower pace than needed (Abnett and Piper 2021; de Hoog and Kirk 2021).

These efforts stand in contrast to the continuing importance of coal-based economies in many parts of the world. Global coal power generation capacity has doubled since 2000 with rapid growth in China, India and other industrializing countries (Carbon Brief 2020;

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Goodman et al. 2020, 1). More than 70% of India's electricity use depends on coal, and domestic production for thermal power and industry has risen by 40% in the last decade (Carbon Brief 2019; Permual 2021). The state-owned Coal India Limited expects to increase yearly production to 1 billion tonnes by 2024, a 44% increase from 2019 levels (PIB 2020). These estimates exclude private sector coal mining, which is also rapidly expanding with a massive ongoing push to liberalize the sector as part of the *Aatmanirbhar Bharat* (self-reliant India) programme announced during the Covid-19 pandemic (Aggarwal 2021a; Jagannath 2020).

Coal thus remains central to economic growth strategies of India and much of the industrializing world. These countries have strongly resisted a rapid phase out of coal use, pointing to their relatively low per capita emissions and the need to ensure that global climate action efforts do not unfairly hinder their development trajectories (Sethi 2021). India's Ministry of Coal recently declared that '[B]eing an affordable source of energy with substantial reserve, coal is going to stay as major source of energy in the foreseeable future' and that, notwithstanding its commitment to achieve net zero emissions by 2070 at the Glasgow conference, 'the pace of transition to cleaner energy sources in India is to be viewed in the light of national circumstances, and principle of common but differentiated responsibilities and respective capabilities, the transfer of climate finance and low cost climate technologies' (Ministry of Coal 2022).

Crucially, actual policy efforts to facilitate an eventual shift away from fossil fuel-driven growth remain narrowly defined and limited in scope. In March 2022, for instance, the Indian government announced a 'just transition' project in select districts of the country with declining coal production (Aggarwal 2021b; Srivastava 2022). Over an eight-year period, the Central coal ministry aims to spend about $1 billion on the socio-economic rehabilitation of communities in the vicinity of closed or abandoned coal mines, and those likely to cease production in the next few years.[1] Such efforts are a long overdue recognition of the significant challenges and uncertainties of post-coal futures for communities that are heavily dependent on mining-related employment. However, vast regions of the country where coal mining is more recent, and likely to rapidly expand going forward, have been left out of their ambit. More generally too, narratives of a 'just transition' away from coal tend to emphasize the labour and employment dimensions of coal mine closures (Roy, Kuruvilla, and Bhardwaj 2019, 285–6; World Bank 2021)

The fragmented global consensus and widespread uncertainties underlying the 'end of coal' have crucial implications for how we understand the politics of anti-coal struggles and just transitions, particularly in India and other industrializing countries. If calls for stronger climate action are not translating into rapid declines in coal extraction in these settings, can they provide a sustained and effective basis for mobilizing against coal mining? Indeed, local resistance to coal mining projects has increased in scale and prominence, but climate-related concerns often play a limited role in the framing and demands of such struggles (Goodman et al. 2020, 67–8; Paprocki 2021). Conde (2017,

[1]Such plans also point to the increased global funding being made available for 'just transitions' away from coal as part of climate action efforts (see, for instance, CIF 2021). India's recently announced project is similarly contingent on financial support from the World Bank.

84–5) also argues that motivations and narratives underlying opposition to mining may be strategically combined with more 'global' discourses on indigenous rights and environmental and climate justice, but cannot be reduced to the latter.

This paper argues that a closer focus on the changing 'agrarian' dynamics within mining affected communities are useful for understanding why local anti-coal struggles coalesce around their particular demands, and how environmental and climate concerns are articulated within them. Through an examination of political contestations over a large coal mining project in the Tamnar region of India, it highlights the significant impacts of mining-related dispossession on processes of agrarian production, dependence on agricultural and non-agricultural wage labour, and practices of daily and intergenerational social reproduction. Local communities have mobilized strongly in response to these impacts, combining demands for agrarian and climate justice in meaningful and instructive ways. The paper ends with brief reflections on the possible implications of such a broadened conceptualization of anti-coal struggles for counter-hegemonic movements seeking truly 'just transitions' away from coal.

2. Conceptualizing the politics (and political possibilities) of anti-coal struggles

The varied political character of local struggles against resource extraction has been an important focus of existing research. Studies point to the crucial role of project or sector-specific characteristics, political opportunity structures and cross/multi-scalar alliances in shaping strategies, discourses and outcomes of resistance to large-scale mining projects (Conde and Le Billon 2017; Dietz and Engels 2017; Prause and Le Billon 2021; Temper et al. 2020). Others emphasize the distinctive dynamics of resource governance and politics that tend to emerge within sub-national 'extractive regimes' and 'political settlements' linked to mining (Adhikari and Chhotray 2020; Bebbington et al. 2018, 12). Such interventions provide a more nuanced perspective on how the particular contexts of extractive projects are implicated in the emergence and character of political contestations over them. At the same time, understanding if, and how, diverse place-based struggles over resource extraction can come together within wider social movements requires a complementary focus on their linkages to the broader structural dynamics of contemporary capitalism and climate change.

In an influential recent essay, Nancy Fraser (2021) points to the possibility of building an explicitly anti-capitalist politics around the urgent task of confronting the climate crisis and dominant responses to it. Her arguments, which draw extensively on long-running debates in ecological Marxism and feminist critiques of social reproduction, centre around capitalism's inherent tendency to perpetuate multiple ecological and social-reproductive crises. The deeply interlinked nature of these crises in capitalist societies also implies that any such progressive eco-politics must necessarily incorporate both environmental and non-environmental objectives. Fraser's call for counter-hegemonic climate movements to transcend the 'merely environmental' (Fraser 2021, 96) extends – to a systemic level – grassroots conceptions of environmental and climate justice that encompass concerns of well-being and livelihoods, claims for recognition of alternative ways of life, and challenges to dominant understandings of relationships between humans and non-human natures (Schlosberg and Collins 2014, 360–1). Such perspectives see

environmental change and social justice as closely interlinked, calling attention to how affected communities have mobilized strongly against forms of ecological degradation that threaten their material interests and value systems (Bebbington et al. 2008, 2891; Guha and Martinez-Alier 1997; Martinez-Alier 2002). Indeed, more radical demands for climate justice in coal mining contexts have also pushed for an explicit recognition that anti-coal struggles cannot be limited to reducing CO2 emissions, but must challenge long-running systems of capitalist exploitation and oppression (Still Burning 2021, 9–12; see also Borras et al. 2021, 12–3 for a broader discussion on radical climate justice approaches).

The systemic nature of the climate crisis thus offers a common material basis for bringing together diverse movements, both 'environmental' and 'non-environmental'. However, struggles over the 'climate' are not uniform, but rather must be understood as the outcome of the context-specific and historically situated unfolding of climate change politics in particular settings (Borras et al. 2021, 5–8). In discussing contemporary agrarian struggles and the possibilities they offer for building a counter-hegemonic climate politics, the authors of the forum framing paper draws on Wright's (2019) typology of multiple strategic logics of anti-capitalism. They suggest that even if movements understand and engage with climate change politics in diverse ways, their combined actions can still contribute to the ultimate goal of 'eroding capitalism' (Borras et al. 2021, 14–16). We can therefore think of a plurality of objectives of local responses confronting climate change impacts and dominant responses to them, many of which may nevertheless be consistent with a broadly anti-capitalist orientation.

Finally, such an expanded understanding of the motivations and composition of climate-related movements calls attention to the enabling conditions for broader coalition building. Reflecting on the emergence of struggles for 'agrarian climate justice' that combine demands for agrarian and climate justice (Franco and Borras 2019) in Myanmar, Sekine (2021) argues that a changing political context of rural democratization and expanding political opportunity structures, especially at the national level, have played an important role in complementing and supporting the efforts of diverse local struggles. Calmon, Jacovetti, and Koné (2021) similarly explore the possibilities for building alliances between peasant and environmental movements in Mali. They suggest that agrarian climate justice has emerged as a progressive mobilizing frame to counter dominant narratives of climate security, in large part through the implementation of localized initiatives like village land commissions. Both these interventions also highlight the crucial, but difficult, task of scaling up and broadening agrarian climate justice struggles in a contemporary global context where agrarian and land politics on the one hand, and climate politics on the other, are increasingly closely intertwined.

The above discussions speak to key considerations for conceptualizing the politics and political possibilities of contemporary anti-coal struggles. First, despite clear systemic links between fossil fuel-driven capitalist growth and the climate crisis, coal mining-affected communities often do not explicitly articulate their opposition in relation to climate change. The mobilization of climate-centred narratives is thus best understood as a contingent outcome of local resistance to coal extraction and related coalition-building processes playing out in specific political-economic contexts. Second, an emphasis on the diverse non-environmental concerns that shape motivations and strategies of anti-coal

struggles does not imply that the 'environment' or 'climate' are not important considerations for them. Rather, these reflect varied ways of understanding and engaging with contemporary capitalism and climate change politics, and the need for more expansive notions of climate justice and 'just transitions' which meaningfully incorporate them.

Discussions within critical agrarian studies provide important insights for unpacking these complex political dynamics of local anti-coal struggles and their incorporation of climate change-related concerns. More specifically, they draw attention of the changing context of livelihoods and social reproduction within the predominantly rural settings of coal mining projects, and its influence on the motivations and political character of collective opposition by affected communities. In this sense, political contestations over coal extraction can be understood as simultaneously 'climate' struggles confronting a key driver of the climate crisis and 'agrarian' struggles around the transformation of land and labour relations in mining-affected areas.

3. Agrarian dynamics of anti-coal struggles

Critical agrarian studies scholarship has focused closely on how processes linked to contemporary capitalist development shape and reconfigure the dynamics of agricultural production, wage labour and social reproduction, and its implications for rural politics (Akram-Lodhi and Kay 2009; Bernstein 1996, 39, 2006). Of particular relevance to the present analysis is the argument that a key feature of neoliberal globalization is the intensified fragmentation of the bases of reproduction of a large and growing share of the working population (Bernstein 2006, 454–5). Within agriculture, for instance, it is increasingly rare to come across landless rural workers depending solely on agricultural wage labour, or small holding farmers completely reliant on agricultural petty commodity production for their survival (Bernstein 2006, 454). Rather, a large proportion of rural households now reproduce through diverse combinations of waged and self-employment, both within and outside agriculture and across multiple spatial locations. They represent heterogenous 'classes of labour' that 'depend – directly and indirectly – on the sale of their labour power for their own daily reproduction' (Panitch and Leys 2001: ix, cited in Bernstein 2006, 455).[2]

Two assumptions underlying Bernstein's conceptualization of classes of labour require closer attention. First, rural classes of labour are highly diverse in how they combine land and labour to resolve their particular crises of reproduction. Nevertheless, they all remain, directly or indirectly, net sellers of labour power (see also Pattenden 2016, 23 and Lerche 2010, 65–66 for an elaboration of Bernstein's arguments). Focusing on the political implications of such an understanding, Pattenden (2018, 1042) argues that, heterogeneous classes of labour nevertheless share a common (and primary) interest in improving the levels and terms of their access to wage employment.[3] Second, in its insistence that

[2]There are important similarities to Shivji's (2017) conceptualization of 'working people', which argues that under neoliberalism, capital expropriates not just surplus value from wage labour, but also part of the necessary consumption of small producers. While such an understanding is broadly consistent with Bernstein's understanding of the growing challenges to simple reproduction of classes of labour, Shivji emphasizes the functional role of self-exploitation of the working population for contemporary capital accumulation.

[3]Bernstein (2006, 456–457) himself takes a more ambivalent stance, arguing that contemporary political struggles of classes of labour – many of which centre around demands for land – are best understood as disparate and context-specific responses to their crises of reproduction, rather than earlier systematic class struggles.

classes of labour do not reproduce outside of conditions of generalized commodity production and, in particular, the sale of their labour power, such a conceptualization tends to de-emphasize the role of non-commodified forms of land and labour within households' social reproduction strategies. Both assumptions have been challenged by other recent contributions.

Jacobs (2018) and Zhan and Scully (2018), for instance, both position land as a key basis of political struggle. They argue that a large proportion of the working population in South Africa and China are increasingly engaged in insecure and poorly compensated wage labour which does not guarantee their survival. Smallholding agriculture and other land-based occupations are thus essential for their livelihood security and simple reproduction. In both countries, (semi)proletarian households have strongly resisted efforts to expropriate and dispossess them from their landholdings (Jacobs 2018, 895; Zhan and Scully 2018, 1031–2). Such resistance calls attention to the continuing importance of land and agrarian production within the otherwise fragmented reproduction strategies of many households engaged in wage labour, and the proliferation of anti-dispossession movements motivated by communities' 'defence of the semiproletarian condition' (Levien, Watts, and Hairong 2018, 869).[4] It suggests that land and labour may both serve as crucial and complementary loci of rural political mobilization. The focus then shifts to the diverse ways in which they are actually combined in particular local contexts, and on how this can influence the motivations and character of the collective struggles that emerge.

Such perspectives also highlight the importance of land beyond its role in alleviating wage labouring households' crises of simple reproduction, the predominant focus of Bernstein's classes of labour. Dependence on land represents more than just a survival strategy brought about by low wages and insecure wage employment. Jacobs (2018, 893) points out that deep historical ties to agriculture and consciousness of land rights have been a key motivation for residents of Zabalaza in South Africa to occupy urban land for farming and raising livestock. For many wage working populations, land continues to provide the primary basis for reproducing the wider social relations and identities that underpin production processes (Borras et al. 2022; Cousins et al. 2018). This broader understanding of social reproduction processes also suggests that households depend on 'a range of access to a range of land' to facilitate their engagement in (agricultural) production and wage labour (Borras et al. 2022).

Key focus areas for unpacking the 'agrarian' context underlying political contestations over coal mining thus include the dependence on diverse combinations of agricultural production *and* wage labour within diversifying and fragmented rural livelihoods, and the incorporation of commodified *and* non-commodified labour and land within household social reproduction strategies. The following sections examine a specific case of local political contestations over coal mining in the Tamnar region of India to elaborate on how such an approach can be operationalized, and what it can tell us about the intermingling of 'agrarian' and 'climate' concerns in anti-coal struggles.

[4]Both authors do, however, caution that such resistance rarely indicates a conscious effort to withdraw from or reduce workers' dependence on wage labour, nor does it highlight a broader trend towards 're-peasantization'. See, for instance, Moyo and Yeros (2005) for this latter perspective.

Figure 1. Geographical location of Tamnar and Mand-Raigarh coal field. Source: Coal Mine Surveillance & Management System, National Center of Geo-Informatics (NCoG), https://ncog.gov.in/CMSS/guest/guestGisDashboard

4. Introducing the case: anti-coal struggles in Tamnar

The empirical focus of this paper is on local opposition to coal mining in Tamnar, an administrative block of Raigarh district in Chhattisgarh, India (see Figure 1). Tamnar lies within the vast Mand-Raigarh coalfield, a 3445.77 sq. km. expanse of land with large mineable coal reserves. By one 2014 estimate, only about 1.1% of the coalfield's total land area has already been directly affected by mining activity (CMPDI 2014). However, Tamnar and other relatively new regions of coal extraction have become increasingly important to India's coal economy, particularly as attention shifts away from more established and heavily mined areas (GSI 2021).

The Mand-Raigarh coalfield is further sub-divided into 72 'coal blocks' earmarked for development as independent mining projects, of which mining activity has so far commenced for 11 projects (CMPDI 2022). The present paper relies primarily on extensive field research conducted in two villages situated adjacent to one such currently

operational coal mine. This included 70 qualitative semi-structured interviews with village residents and detailed notes from 10 local meetings during the period from September 2019 to March 2020. These findings have been supplemented by data from an earlier land dispossession study conducted in the same villages in February 2012, and from interviews with local movement participants and other actors conducted during shorter visits to the region, in July 2016 and April 2019.

The two study villages are among eight surrounding villages whose lands have been partially dispossessed by the same mining project. This mine was originally allocated by the government to a private thermal power producer, which commenced mining operations here in 2006. Prior to its establishment, village residents received very limited information about the project, so that the arrival of the mine and initial land acquisition processes were a surprise for many. This period saw limited and mostly individualized resistance from land-losing households. However, organized community opposition in the two study villages has emerged gradually and strengthened, as the mine's cumulative impacts on local livelihoods and the environment have amplified.

By the time of a large subsequent round of land acquisition in 2010, there were sustained protests against the substantial irregularities in land acquisition procedures by the mining company, including the falsification of mandatory consent for the project from village *gram sabhas* (local governance institutions), illegal transfers of indigenous *Adivasi* land, and coercion and intimidation of landholders.[5] Residents also began to mobilize against the mine's negative impacts on the local environment, in particular high levels of air and water pollution, declining groundwater levels, damage to village habitations due to mine blasting, and loss of access to village commons and forests. These impacts were particularly severe in the two study villages, which saw the expansion of mining activities closer to inhabited areas of the villages.[6] Remediation and compensation for these impacts has remained a key and consistent demand of local protests in subsequent years. Such efforts also received an unexpected boost in 2014, when the Indian Supreme Court ordered the cancellation of 214 coal blocks nationwide due to illegalities in their allocation processes. Since then, the mine has been operating under the temporary custodianship of a state-owned coal mining corporation, which has limited further expansion of mining and land acquisition.

Demands for greater employment in the project have been another crucial focus of local struggles. State-level rehabilitation policies in Chhattisgarh mandate the provision of at least one permanent job for each family whose land is acquired but, in practice, these job opportunities were almost exclusively provided to large landholders. In 2016, after a sustained blockade of the mine, there was a large increase in the number of jobs made available to affected households. At least one member of most land-losing households in the two study villages currently has an informal 'contract' job in the mine. These jobs are poorly paid and highly insecure, but provide an important support for household incomes. The risk that renewed protests will stall production has also been a strong motivation for the mine operator to ensure the continued availability of informal jobs.

[5]Shrivastava, Gupta Bhaya, and Worsdel (2020) highlight that there have been similarly widespread violations and subversion of consent provisions for large-scale land acquisitions across India.

[6]This was an outcome of the private mine operator's plans to not relocate inhabited areas of the affected villages, but to limit open-cast mining to agricultural and common lands and forests.

Such on-ground mobilizations have been complemented with an increasing reliance on the legal system. Direct legal challenges to mining-related land acquisition processes are difficult, since India's eminent domain laws allow for the compulsory acquisition of land for any loosely defined 'public purpose'. In response, residents of the study villages have increasingly opposed the expansion of the mine through more progressive environmental protection laws. In 2013, they approached the National Green Tribunal (NGT) which has legal jurisdiction over cases related to environmental protection. This first complaint demanded action against the company for illegal diversion of forest land for mining and mining-related pollution in the study villages. A second NGT case, filed in 2018, called for action against environmental violations and widespread pollution due of poorly regulated coal mining and industrial activity in the Tamnar region. In both cases, the court has passed favourable interim rulings requiring the state to actively intervene and redress these violations. They represent important legal victories for affected communities' efforts to limit unchecked land acquisition for coal extraction and its substantial socio-environmental costs.

Within the evolving and multi-faceted political dynamics of organized resistance to coal mining in the study villages, preventing the further loss of land for mining activities, expanding opportunities for wage work in the mine, and protecting the local environment thus serve as crucial – and seemingly contradictory – motivations for community mobilization. Local anti-coal struggles were unsuccessful in preventing the establishment of the mine, but they have been instrumental for the uneasy present status quo in which the project operates with substantial restrictions on its continued expansion and a growing recognition of the need to mitigate its negative impacts. At the same time, there remain significant challenges for a complete closure of the mine, not just at the level of law and state policy, but also in terms of the contraction of local wage employment opportunities this will likely cause. To better understand how these goals and demands have emerged, and how they link to a broadened conceptualization of climate justice struggles, the following section examines the changing dynamics of land, labour and social reproduction in the two study villages.

5. Coal mining and agrarian change: land, labour and social reproduction in mining-affected communities

Land dispossession for mining has functioned as a large external shock to existing, predominantly agrarian livelihoods in the study villages. A comparison of village-level population Census data from 2001 (prior to establishment of the mine) and 2011 (soon after two large rounds of land acquisition) highlights the scale of this disruption (see

Table 1. Change in sources of work in study villages, 2001 and 2011.

	Share of total workers			
Year	Cultivators	Agricultural labourers	Household industry workers	Other workers
2001	75.7%	14.4%	5.3%	4.6%
2011	47.3%	41.0%	0.0%	11.7%

Source: Census of India 2001 and 2011.

Table 1). Over this period, the share of the working population in the study villages reported to be engaged in agricultural cultivation declined from 75.7% to 47.3%, while that of agricultural labourers rose from 14.4% to 41%. Total village households also declined by almost a tenth due to (partial or complete) migration of land-losing households.

Census findings are instructive but present a limited picture of the changing livelihood dynamics in the study villages. They neglect the gradual pace of mining-related land dispossession for many households. Formally acquired land has often remained unutilized for many years, during which time land losers are able to continue cultivating it. As of December 2016, only about half of the mine's total area had already been excavated or utilized for project-related infrastructure. The large reported increase in proportion of agricultural labourers also almost entirely comprises the Census sub-category of 'marginal workers', suggesting a high likelihood of their engagement in other non-agricultural work. Perhaps most crucially, household livelihoods and reproduction strategies have reoriented and stabilized over time, as they have responded to mining-related land dispossession and collectively mobilized against its impacts. For instance, many have utilized the compensation from land acquisition to purchase agricultural land in nearby villages, cultivating it alongside their remaining landholdings in the study villages. This has facilitated a continued engagement in agricultural cultivation despite the loss of land to the mine.

It is extremely important to recognize that, as with rural dispossession for mining and industry in other settings, the impacts of the coal mine in the study villages have been diverse and unequal, based on multiple overlapping and intersecting axes of social differentiation. Nevertheless, organized resistance to the project has gradually coalesced around particular demands for land, wage labour and environmental protection. This evolving political consensus among affected households reflects specificities in how mining-related dispossession has transformed the local agrarian context. The discussion that follows presents wider research findings and vignettes summarizing the experiences of a few households to elaborate on these differentiated but patterned impacts of mining.

5.1. Agrarian petty commodity production and accumulation

Agriculture was central to household livelihoods and reproduction in the study villages prior to the establishment of the mine, though the nature of this dependence varied widely. Among indigenous *Adivasi* households, which comprised more than 70% of the study village population, a small proportion were large landholding households engaged in petty commodity production, predominantly of rice. Most *Adivasi* households however had small to medium landholdings, and generally combined cultivation with the seasonal hiring out of their labour. There were relatively few landless or marginal landholders that relied exclusively on agricultural wage work. Dominant caste farming communities, officially designated as Other Backward Classes (OBCs), were the other major population group in the study villages. The large majority of these households were petty commodity producers with medium to large landholdings. *Dalits* and so-called 'upper caste' communities made up a very small share of the population. Mining-related land dispossession has not led to major shifts in the social composition of the study villages. However, differences in initial landholdings are an important determinant of how households have navigated its impacts.

Most large landholding households – both *Adivasis* and OBCs – were able to use compensation from land acquisition for the mine to buy additional agricultural land in nearby villages, often ones where they have existing familial ties. Some were also co-opted through higher compensation levels, or benefited from rent-seeking opportunities as brokers and aggregators during the land acquisition process. As a result, most of them have not experienced a substantial reduction in overall landholdings. Nevertheless, the fragmentation of landholdings has led many households to either split across different villages (often one adult son moving with their immediate family) or to lease out part of their land instead of cultivating it themselves. Many also report significantly lower agricultural productivity on their remaining land in the study villages, linked to high levels of air and water pollution from mining activity. These households thus face growing constraints on their ability to accumulate and expand through agrarian petty commodity production.

> The household continues to cultivate about 7–8 acres of land in the village and another 9 acres of land bought in another village 10 kms away. They rely mainly on family labour, with some additional labour hired in from the village during sowing and harvesting periods. However, output from remaining land in the study village is about half of the other landholdings. In the previous year they earned about Rs. 4,00,000 (USD 5300) in total, after accounting for all expenses. (Interview 9, 15 October 2019 and Interview 41, 1 November 2019)

The vast majority of *Adivasi* households with small- and medium-sized landholdings have experienced very significant disruptions to their existing agrarian livelihoods. Most were able to purchase some agricultural land in other villages but given the low levels of compensation, their total landholdings have generally fallen. Earlier strategies of household reproduction focused on predominantly subsistence-oriented production of their own landholdings and limited hiring out labour to larger landholders have also become increasingly untenable given the decreasing landholding sizes in the study villages. Responses vary widely within this broad strata of affected households, but tend to involve a combination of more intensive cultivation of their remaining landholdings to produce a marketable surplus, and a growing reliance on non-agricultural wage employment.

> The household cultivates about 4 acres of land in the village, split between rice paddy and lentils and oilseeds (they also own 2.5 acres of land in a nearby village). They rely on family labour for cultivation. A tractor has to be hired in for ploughing rice fields, seeds and pesticides are purchased from nearby private shops, while fertilizer can be procured on loan from state-owned providers. They are able to sell a part of their produce, but also depend on income from their son's job in the mine. (Interview 6, 13 October 2019)

Table 2. Indicators of agricultural cropping intensity, input use and credit access for Raigarh district, 2006–07 and 2016-17.

Year	Share of net cropped area cultivated more than once each year	Share of gross cropped area treated with fertilizers	Share of operational holdings with institutional credit
2006–07	5.2%	40.2%	3.4%
2016–17	13.9%	93.9%	44.9%

Source: Tables 1B, 2A and 2B, Input Survey, Agricultural Census, https://inputsurvey.dacnet.nic.in/districttables.aspx.

These evolving dynamics of agricultural production due to coal mining in the study villages are reinforced by broader structural processes of agrarian change. In recent years, Chhattisgarh and its neighbouring states have emerged as priority areas for a 'Second Green Revolution in Eastern India' (Bhatt et al. 2016), where relatively low levels of agricultural productivity and favourable agro-ecological conditions are seen to provide vital opportunities for agricultural development. Towards this end, there has been significant expansion of state support for developing irrigation infrastructure, provisioning improved high-yielding seeds and subsidised fertilizers, and improving agrarian extension services and marketing infrastructure. Crucially, public procurement of rice at state-mandated minimum support prices has also steadily increased (Varma 2018).

Such state interventions have led to a significant acceleration in the processes of agricultural commercialization and intensification. Chhattisgarh's production of rice paddy rose by 60% between 2005–06 and 2016–17 (Varma 2018). Agricultural Census data for Raigarh district highlights how rural producers have rapidly moved away from traditional rice varieties to cultivate input-intensive and high-yielding varieties which are procured through the public system. Levels of agricultural mechanization and reliance on institutional credit have also risen (see Table 2).

Agrarian livelihoods in the study villages are thus characterized by the accelerating development of productive forces and market linkages. These processes have facilitated a deepening of petty commodity relations, including for households previously engaged in subsistence-oriented agriculture. However, losses of cultivable land due to mining and the fragmented nature of household landholdings mean that avenues for agrarian accumulation and further social differentiation remain highly limited. In this sense, mining-affected households in the study villages share a strong common interest in retaining and cultivating their remaining landholdings.

5.2. Wage labour in rural livelihoods

While a continued engagement in agriculture provides vital support for household incomes in the study villages, very few households can rely solely on the cultivation of their remaining landholdings for their reproduction. Most large landholders were able to secure a 'permanent' job in the mining company for one male household member along with monetary compensation for their acquired land. Other family members remain substantively engaged in the cultivation of their remaining landholdings. The combination of better paid, regular wage employment in the mine and agricultural petty commodity production is able to ensure sufficient means for the reproduction of these households. They do remain dependent on the hiring in of some agricultural labour, but the requirement for wage labour is limited by the reduced size of landholdings in the study villages.

> The household retains 7.5 acres of land in the one of the study villages. They cultivate rice paddy on their landholdings, relying predominantly on labour from immediate and extended family members. During peak periods of sowing and harvesting (approximately one month in the year), they also have to hire in labour. (Interview 36, 29 October 2019)

The vast majority of land losing households, however, have secured wage employment in the mining project in the form of informal 'contract' jobs. About 60 men from the study

villages are currently employed for tasks like pump operation, blasting, fire control, surveying and sweeping. Each worker only gets 16–18 days of work per month, and labour contractors that employ them are frequently changed. The mining company has also subcontracted actual coal excavation and transportation activities that require more skilled workers like machinery operators and drivers to smaller companies, which rarely hire local residents. Most small to medium landholding households therefore combine poorly paid, insecure wage employment in the mine with the intensified cultivation of their remaining land and, in some instances, land hired in from larger landholders.

> The household is presently able to cultivate about 2.5 acres of their remaining landholdings. They cultivate the land themselves, without the need to hire in labour. They are able to sell a part of their produce, but also need to rely on income from the younger son's job as a contract worker in the mine. (Interview 3, 12 October 2019)

The loss of agricultural land for mining in the study villages substantially limits the demand for agricultural labour, especially outside of seasonal periods of peak cultivation, as most households are able to cultivate their limited landholdings with family labour or kinship-based arrangements. The small proportion[7] of landless and marginal landholding *Adivasi* households in the study villages have borne the brunt of this contraction. Very few of them have been able to secure even informal jobs in the mining project, limiting their ability to diversify livelihoods away from agricultural wage work. These households therefore continue to rely primarily on hiring out their labour to large cultivators in nearby villages, along with other occupations like basket weaving and iron working, and income from rural works programmes.

> The household is landless, and depends on income from making iron farm implements and hiring out agricultural labour. They earn about Rs. 120 (USD 1.5) for a day's agricultural work. However, since people have less land now, such work is harder to come by in the village. (Interview 68, 15 November 2019)

Mining-related land dispossession has thus led to a growing dependence on (non-agricultural) wage labour, even as sources of wage employment and the extent of households' dependence on them vary widely. However, with few exceptions, wage labour is best understood as an important but far from sufficient component of affected households' increasingly fragmented livelihood and reproduction strategies, which tend to involve diverse combinations of the cultivation of remaining landholdings, agricultural wage labour, and insecure wage employment in the mining project.

5.3. Non-commodified bases of social reproduction

Key aspects of rural households' social reproduction are directly linked to or otherwise enabled by their ability to access different types of land, including cultivable agricultural land, village commons and pastures, and forests (Cousins, Forthcoming, 5). As a result, land losses for the mining project, besides altering local dynamics of agricultural production and wage labour, have significantly impacted existing social reproduction strategies in the study villages.

[7]It is possible that some landless and marginal households migrated out from the village post-land acquisition and were not included in the present analysis.

Households report a large reduction in the number of cattle they raise because there is little land available nearby to graze them. The destruction of surrounding forests due to mining activities also means that villagers have to commute much longer distances to collect forest products. Such shifts have a direct impact on the levels and diversity of domestic consumption, as well as on household incomes. For instance, the collection and sale of *tendu* leaves at government mandated prices previously provided a crucial source of cash income, especially for landless and small and medium landholding *Adivasi* households, but has become increasingly scarce with the expansion of the mine.

> The household was earlier able to collect large amounts of produce from dense forests nearby – particularly *tendu* leaves and *char-chironji* seeds – and from *mahua* and mango trees growing on their own land. These were sold to local traders and government agencies, providing significantly higher monetary income than rice cultivation. The loss of forests and trees, coupled with higher pollution, means that this income is very limited now. (Interview 16, 18 October 2019)

Households must therefore increasingly rely on income from agricultural production and wage labour for their consumption needs and survival. *Adivasi* and OBC households with large landholdings and stable employment have been better able to manage this shift. For most other households, however, challenges from limited access to agricultural land and wage labour are intensified by the growing integration of their social reproduction within commodity relations. Women in these households also increasingly engage in income-generating agricultural production and wage labour, alongside unpaid care and reproductive work, to supplement male family members' incomes from informal employment in the mining project.

Nevertheless, substantial elements of household social reproduction in the study villages have remained outside the purview of commodified land and labour relations. With very few exceptions, land-losing households have been able to continue cultivating small amounts of rice and other staple cereals, pulses, and vegetables for their own consumption. This, coupled with the support provided by a relatively well-functioning Public Distribution System (PDS) for rice and a few essential commodities at highly subsidised prices, limits the necessity of securing crucial consumption and nutritional needs through the market. Rural works undertaken under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) also provide crucial supplementary income, particularly for the landless and marginal landholders during lean agricultural periods. In addition, Corporate Social Responsibility (CSR) funds from the mining project have been mobilized for some limited public services – mainly common water supply and lighting – and small contributions to village activities. Daily and intergenerational social reproduction in the study villages thus retains a substantial non-commodified component, the preservation of which is a shared interest of mining-affected households.

5.4. Reconciling demands for 'agrarian' and climate' justice in anti-coal struggles

The above discussion highlights the key concerns that motivate political contestations over coal mining in the study villages. Mining-related dispossession has significantly

restricted the extent to which agriculture – whether through direct cultivation or hiring out of labour – can function as a viable basis for household subsistence and reproduction. However, insecure and poorly paid wage employment in the mine also provides only limited support to household incomes. As a result, most households face varying degrees of a reproduction squeeze, which has to be resolved by combining the intensive cultivation of limited agricultural landholdings, engagement in agricultural and non-agricultural wage labour, and non-commodified forms of land and labour in diverse ways.

Anti-coal struggles in the study villages reflect the evolution of a broad-based political consensus on how to collectively navigate this shifting and increasingly challenging 'agrarian' context of household livelihoods and social reproduction. This includes a recognition of the urgent need of prevent continued losses of agricultural and non-agricultural land, while also pushing for the expansion of wage labour opportunities in the mining project, even if these are insecure and poorly paid. Such ongoing struggles for land and labour may lack the emblematic appeal of anti-dispossession movements grounded in the 'defence of land', but they reflect the reality of many mining projects where strong and sustained local opposition extends well beyond the initial point of land enclosure.

Struggles for socially just and equitable outcomes from coal mining also align closely with more radical understandings of climate justice, even if climate change-related concerns are often not explicitly articulated in their demands and strategies. Residents of the study villages have consistently mobilized against widespread degradation of the local environment due to mining activity, including by partnering with civil society organizations to conduct multiple impact studies that document the extremely high levels of air, water and soil pollution, and related health complaints among affected communities. These studies have also been presented as evidence in their ongoing legal cases before the NGT. Besides imposing multiple financial penalties on the mining company and local government departments for violating environmental norms, the tribunal has set up an independent expert committee to monitor a range of remedial measures. These include the appropriate disposal of fly ash from nearby thermal power plants and industries, restrictions on road transportation of coal by trucks, ensuring drinking water and healthcare facilities for residents of mining-affected villages, and stringent monitoring of air and water pollution levels.

Such efforts have effectively prevented further expansion of the coal mine's production capacity and significantly raised the costs of environmental compliance and remediation. The project thus remains active, but with substantial constraints on its continued operation and economic viability. Such outcomes also become particularly relevant in terms of the possibilities they offer to undermine the rapid ongoing commercialization of coal mining in India, predicated on high private profits through the low cost exploitation of a seemingly abundant resource. There are thus important linkages between the diverse motivations of local anti-coal struggles and calls within radical climate justice movements to confront more systemic dynamics of capitalist accumulation and exploitation that underpin the climate crisis.

6. Mobilizing for 'just transitions' in coal mining regions

Residents of the two study villages that form the empirical basis of this paper are part of a large population spread across numerous coal-rich regions of India. The diverse political

economies of coal extraction that characterize these different regions of coal extraction play a crucial role in shaping the impacts of mining-related dispossession and political contestations over them. However, the present analysis also points to areas where the varied rural contexts of anti-coal struggles converge, and the possibilities these may offer for building broader counter-hegemonic movements that effectively counter dominant understandings of 'just transitions' for mining-affected communities.

There are differences in the extent of reliance on wage labour in coal mining projects between regions like Tamnar and older, more established regions where substantial coal extraction and a significant transition away from agrarian livelihoods have already occurred. In these latter regions, affected households predominantly reproduce through a range of direct and indirect forms of wage employment in mining (Dsouza and Singhal 2021; Montrone, Ohlendorf, and Chandra 2021). However, processes of subcontracting and informalization of the workforce have been a widespread and persistent feature of the post-1990s liberalization of India's coal mining sector (Nayak 2022; Roy 2003). These have led to the proliferation of informal and highly precarious wage work within contemporary coal economies, similar to the experience in the study villages. This points to the need for wider mobilizations for 'just transitions' from coal to incorporate a coherent critique of popular claims that such extractive projects ensure decent employment for affected communities. Crucially, such a critique also has to be linked to the systemic dynamics of coal mining, so that demands for employment *outside* mining – rather than the expansion of work within the sector – emerge as a central focus of political struggle, particularly in newly emerging mining regions.

A second important area of convergence relates to political contestations over the impacts of mining on the local environment. Anti-coal struggles in the study villages demonstrate how a combination of sustained on-ground protests and legal mobilizations focused on progressive environmental protection laws can limit mining activity and the economic viability of projects. Cumulatively, such efforts offer the possibility to significant undermine the dynamics of profitmaking and accumulation that are central to coal extraction and its detrimental climate impacts. Integrating more localized environmental concerns which often motivate such mobilizations – for instance, around air and water pollution, destruction of forests and commons, decreasing groundwater levels, and rising disease burdens – into broader discussions of how the climate crisis and its related politics impact rural areas is a crucial task for counter-hegemonic movements against coal extraction. A related, and more practical, consideration concerns the substantial legal and technical expertise that local struggles need to successfully monitor and challenge violations of environmental laws and regulations by mining projects (Oskarsson and Bedi 2018).

Finally, the broader agrarian context underlying political contestations over coal extraction also points to possible linkages between contemporary mining and agrarian struggles in India. In the study villages, expanding state support for agriculture has been crucial for enabling a vital role for petty commodity production within mining-affected households' increasingly fragmented livelihood strategies. Similar dynamics of state-driven agricultural intensification and commercialization can be seen across many coal mining regions of Central-Eastern and Eastern India. While discussions on recent protests against the proposed liberalization and corporatization of India's agricultural sector have often focused on the role of farmers' movements from former Green Revolution

regions like Punjab and Western Uttar Pradesh, the experience of mining-affected communities in Tamnar suggests that demands for sustained and reliable state support in agriculture may provide a common basis for mobilizing across the country's diverse agrarian contexts. At the same time, broadening the scope of such agrarian movements to engage more directly with the demands of landless workers and smallholding producers is a shared concern, and challenge, both for struggles seeking progressive 'just transitions' from coal extraction and radical agrarian justice struggles in non-mining regions.

Acknowledgements

I am grateful to the forum editors, participants of the 3rd Annual Writeshop in Critical Agrarian Studies and Scholar-Activism, and two anonymous reviewers for their patient support and detailed comments on the paper. Thanks especially to Jun Borras, Julien-François Gerber, Amrita Chhachhi, Shapan Adnan, Nadya Karimasari, Atakan Buke, Suravee Nayak, Babur Hussain, Bruna Figueiredo Gonçalves, Vikas Dubey, Bhoopendra Kumar, Yukari Sekine and Daniela Calmon who provided extremely helpful feedback on earlier drafts. This paper would not have been possible without the guidance and support of many friends in Tamnar who remain anonymous in the text.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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