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Journal

Climate and Development, ahead-of-print(ahead-of-print)

ISSN

1756-5529

Author

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Publication Date

2023

DOI

10.1080/17565529.2023.2264259

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Peer reviewed

Violent transitions: towards a political ecology of coal and hydropower in India

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ABSTRACT

The concept of just transition is often defined as a process of including particular kinds of fossil fuel workers in the transition towards low-carbon energy. Missing from such liberal framings of just transitions is an engagement with how the extraction of both fossil fuels and low-carbon energy is contingent upon state violence and the expropriation of Indigenous and frontline communities' lands. In contrast to liberal framings of just transition that focus on the inclusion of fossil fuel workers as stakeholders, this article calls for an investigation of 'violent transitions', which refers to the ways in which the expansion of fossil fuel and low-carbon energy infrastructures are predicated upon direct state-sanctioned violence – including the criminalization of dissent, protests, and mass mobilization through police violence and arrests – to facilitate processes of land expropriation. Drawing upon a comparative analysis of 121 coal and hydropower projects in India, the article argues that both coal and hydropower energy transitions are characterized by significant state-sanctioned violence. Such historical injustices must be redressed and repaired in India's emergent just transition policy frameworks.

1. Introduction

In 2020, Indian Prime Minister Narendra Modi unveiled an initiative called 'Unleashing Coal' to auction 41 new coal blocks, which have the production capacity of one third of the country's total national output, for private and foreign-direct investment (Ministry of Coal, 2020). These 41 additional coal blocks would supplement the output of Coal India, which is expected to produce one billion tons of coal annually. The expansion of the coal industry will be concentrated in regions that have been ravaged by decades of state violence and mass displacement in India's tribal districts, where approximately 60% of the country's forests are located (Ministry of Tribal Affairs, 2014, p. 49). India, as several studies have noted, is in the midst of a fossil-fueled transition towards increased coal extraction (Edwards, 2019; Oskarsson et al., 2021; Roy & Schaffartzik, 2021). At the same time, the country is also set to expand low-carbon infrastructures by an unprecedented 500 GW by 2030. The Government of India is offering substantial financial incentives to develop hydroelectric dams to speed India's 'green' energy transition. The Himalayas, for instance, have been reframed as a site for the development of over 100,000 MW of hydroelectric dams to mitigate carbon emissions. Both fossil fuel and low-carbon transitions, however, draw upon forms of state violence and land expropriation to expand extractive industries. Peaceful, non-violent movements that challenge the expansion of extractive energy industries are far too often criminalized or subjected to police violence. India is in the midst of multiple violent energy transitions towards both increased fossil fuel and low-carbon

energy extraction that further marginalize Indigenous (Adivasi) and frontline communities.¹

Debates concerning energy transitions in India have begun to pose questions of justice, drawing upon 'just transition' frameworks rooted in the Global North. The Ministry of Coal has recently announced that it will establish a World Bank-financed just transition division (Jai, 2022). There is also an Inter-Ministerial Committee on Just Transition from Coal (2022, pp. 8–9) which has recommended engaging 'representatives from the affected local communities' around coal mines and power plants to produce a 'redevelopment and repurposing plan'. For energy transitions in India to be truly just, as several studies have emphasized, it is critical for just transition policy frameworks to engage with regionally sedimented histories of how Indigenous and frontline communities – particularly rural and marginalized communities of Adivasis, Dalits, landless farmers, and artisanal fishers – have been displaced from their lands and livelihoods (Bhushan et al., 2021; Chhotray, 2022; Lahiri-Dutt, 2023; Oskarsson & Chhotray, 2021; Pai & Zerriffi, 2021; Roy et al., 2019; Shah, 2022). While this body of literature has effectively highlighted the need to address the loss of land and livelihoods in the transition away from coal, thus far inadequate attention has been paid to the relationship between state-sanctioned violence and land expropriation in just transition policies. This article analyzes what I call 'violent transitions', which refers to the ways in which the expansion of fossil fuel and low-carbon energy infrastructures are predicated upon direct state-sanctioned violence – including the criminalization of dissent, protests, and mass mobilization through police violence and arrests – to facilitate processes of land acquisition.²

To investigate the relationship between state violence and energy transitions, this article examines the cases of the coal and hydropower sectors in India, the two largest sources of fossil fuel and low-carbon electricity generating capacity in the country. The article draws upon the framework of political ecology to conceptualize India's energy transitions by foregrounding the ways in which regional histories of power shape often-violent conflicts over land and energy (Baviskar, 2001; Damodaran & Padel, 2018; Peluso & Watts, 2001; Sundar, 2019; Watts, 2021). I focus on direct state-sanctioned violence given that it is integral to global energy transitions, as a recent survey of fossil fuel and low-carbon projects has demonstrated (Temper et al., 2020). Yet discussions of state violence are often missing from India's emergent just transition policy frameworks. For example, Sravan and Mishra (2023, p. 1) argue, 'just transition and Sustainable Development Goals can both be achieved by involving the military as a stakeholder' without any consideration of well-documented pogroms of state-sanctioned violence against Adivasis in coal-dependent forested districts.³ Such theories of just transitions tend to erase and elide the forms of state violence and land expropriations wrought by extractive energy transitions. The framework of just transition emphasizes the inclusion of all stakeholders, and especially workers formally employed in fossil fuel industries, in the process of transitioning towards a low-carbon economy. Stakeholder governance, however, is rooted in liberal conceptions of inclusion and participation, which assume that all actors have equal opportunities to participate in state-led energy transitions. Yet, as Pulido (2017, p. 524) has argued, the state is not a neutral purveyor of liberal ideals of participation, inclusion, and justice, but rather 'a site of contestation'. In contrast to liberal participatory approaches to just transitions, I emphasize the ways in which histories of state-sanctioned violence shape coal and hydropower transitions.

In India, much legislation – the Provisions of the Panchayats (Extension to Scheduled Areas) Act (PESA), Forest Rights Act (FRA), as well as the Fifth and Sixth Schedules of the Indian Constitution – has been passed to protect Indigenous lands, which are rooted in common ownership of lands, forests, and waterbodies. In practice, however, both state-owned and privately held coal companies have succeeded in circumventing these laws by resorting to violence and judicial coercion. When Adivasis claim their legal rights to 'Jal, Jangal aur Jameen' (Water, Forest and Land), the state has responded by flouting laws and violently repressing resistance (Swamy, 2018). Indigenous lands have been colonized by the Indian state and its juridical and military apparatus to enable ongoing fossil fuel extraction (Kikon, 2019). Indeed, as the Adivasi scholar Virginius Xaxa (2022, p. 34) argues, 'the extension of civil, political and social rights has become the arena of legitimizing the expropriation of resources from tribal people'. Will just transition policy frameworks, which are rooted in liberal conceptions of participation and inclusion, constitute yet another vehicle for the expropriation of the lands and livelihoods of Adivasi and frontline communities? How can liberal frameworks, which fail to acknowledge, let alone repair, histories of state violence and dispossession lead to a just transition away from fossil fuels and towards low-carbon energy? By analyzing the role of state violence in coal and hydropower

projects, I highlight the ways in which just transition policy frameworks must move beyond the limitations of liberal legal conceptions of participation and inclusion to redress and repair, rather than disavow, the forms of state-sanctioned violence that facilitate land expropriation for energy transitions. The next section of the article provides a methodology and theoretical framework for examining the political ecology of coal and hydropower. The remainder of the article presents an analysis of state violence in 64 coal projects and 57 hydroelectric dams in India and discusses the implications of this analysis for the country's emergent just transition policies.

2. Methods and theoretical framework

Recent scholarship on the political ecology of energy transitions has called for comparative research designs to build theory and generate policy recommendations (Sovacool, 2021). Drawing upon the Global Atlas for Environmental Justice (EJ Atlas), this article analyzes the intensity of violent environmental conflicts in 64 coalmines and coal-fired power plants and 57 hydroelectric dams in India. Created in 2011, the EJ Atlas (2023) is a geospatial database that documents environmental conflicts from around the world.⁴ The database is co-produced by hundreds of scholars, non-governmental organizations, and activists (EJ Atlas, 2023; Temper et al., 2015). This collaborative process foregrounds the knowledges of Indigenous and frontline communities within the context of struggles to 'defend their land, air, water, forests and their livelihoods' from extractive development (EJ Atlas, 2023). This article's methodology builds upon studies which analyze EJ Atlas data to understand how place-based movements which challenge extractive fossil fuel and low-carbon energy projects encounter forms of state violence and repression (Del Bene et al., 2018; Martinez-Alier, 2021; Roy & Martinez-Alier, 2019; Temper et al., 2015, 2020; Tran & Hanaček, 2023). As Martinez-Alier (2021, p. 13) has noted, the EJ Atlas is 'recognized as a tool useful in the field of comparative, statistical political ecology'. This article triangulates coal and hydropower projects listed in the EJ Atlas database with multiple sources, including national and regional energy policies, litigation and environmental impact assessments, newspaper articles, non-governmental advocacy reports, and peer-reviewed scholarship. Each coal and hydropower project analyzed in this article therefore draws upon multiple references, including the EJ Atlas as well as a range of primary and secondary sources, to foreground the role of violence in India's multiple energy transitions.

2.1. Comparing coal and hydropower transitions

This article provides a comparative assessment of violent conflicts in India's coal and hydropower sectors, in part, because they are the largest sources of fossil fuel and low-carbon electricity generating capacity and are therefore critical to the country's twenty-first century energy transitions. Before proceeding to a discussion of the political ecology of India's energy transitions, I review the scale of ongoing coal and hydropower transition trends in the country. Although India has committed to expanding low-carbon energy to achieve 'net-zero' carbon emissions by 2070, the country will be

undergoing a transition towards increased coal extraction in the short and medium-term. As India's newly constituted Inter-Ministerial Committee on Just Transition (2022, p. 2) emphasizes,

any coal transition and related activities are not envisaged both in the short and medium term. Rather, new coal mines are going to be open in the future to meet the energy and coal demand, which includes consolidation in favour of big mines.

Seventy-seven percent of the expansion in coal production (329 metric tons per annum) will take place in Odisha, Chhattisgarh, and Jharkhand (Global Energy Monitor, 2022, p. 7). Though coal demand will increase by 63% to 1.3–1.5 billion tons by 2030 according to the draft Economic Survey completed in 2021–2022, the share of coal in India's energy mix will decline due to the adoption of low-carbon technologies (Inter-Ministerial Committee on Just Transition, 2022, p. 2).

While India's coal industry continues to expand, the country is also amidst an unprecedented hydropower transition. Hydropower generates 145 GW (13%) of India's total energy capacity. India is the second-largest growth market for hydroelectric dams in the world and it will add 30 GW of new hydroelectric capacity by 2030 (International Energy Agency, 2021). Many of the new hydropower projects are sited in the Himalayas, where 30 major hydro power projects are under construction (Athrad, 2023). The government has classified both small and large-scale hydroelectric dams as renewable energy which, in turn, provides new forms of financial support to developers and new regulations to accelerate 'land-access and permitting challenges' (International Energy Agency, 2021, p. 56). Hydropower dams are especially land-intensive and characterized by a 'particularly high level of repression, criminalization, and assassination of social leaders' (Temper et al., 2020, p. 12). While this article is limited to a comparative analysis of violence in India's expanding coal and hydropower sectors, the broader concept of violent transitions highlights the role of state-sanctioned violence in the political ecology of energy transitions.

2.2. The political ecology of coal and hydropower

Political ecology provides a theoretical framework to understand violent conflicts over access to natural resources that are rooted in particular historical and geographical contexts (Peet et al., 2011). While scholars of environmental security have posited that ecological conflicts are a product of a singular cause such as the 'resource curse', political ecologists have offered an alternative conceptualization of what Peluso and Watts (2001, p. 25) call 'violent environments' which explains how particular environments shape the 'ways violence is expressed and made expressive'. Political ecologists have paid close attention to how power relations among unequal actors – multi-lateral institutions like the World Bank and IMF, central and regional governments, military and police power, multinational corporations, non-governmental organizations, and social movements – shape global processes of extraction (Goldman, 2008). I draw upon political ecology to not only make a comparative assessment of how coal and hydropower projects are made possible through violent

conflicts between unequal actors, but also to highlight the limitations of liberal just transition policy frameworks which fail to address the role of state-sanctioned violence in facilitating land expropriation for energy transitions. Three insights from political ecology concerning energy extraction and land expropriation are particularly relevant to an analysis of violent energy transitions within the context of India.

First, political ecologists have analyzed the ways in which fossil fuel and low-carbon energy industries draw upon liberal forms of governance, such as corporate social responsibility and public hearings, to legitimize processes of extraction (Le Billon, 2021; Watts, 2005). State-led environmental polices often legitimize the expansion of extractive industries, which operate with legal impunity. Indeed, as Pulido (2017, p. 529) has argued, rather than redressing environmental injustices, 'the state has developed numerous initiatives in which it goes through the motions, or, "performs" regulatory activity, especially participation without producing meaningful change'. The frequent infringements of legal safeguards to tribal lands by the Indian state and regional governments to enable the expansion of coal and hydropower projects discussed below confirms this insight. Whereas liberal framings of just transition seek to work with and through the state, the political ecology of energy transitions enjoins us to adopt a critical view of the state and the forms of violence it sanctions. Three tiers of 'stakeholders' are, for instance, being proposed for India's Just Transition Taskforce chaired by the Ministry of Coal: state representatives including those from the Ministry of Coal, coal industry representatives, and representatives from coal-dependent communities (Figure 1). While such schemes call for the inclusion of representatives from affected communities, in practice, state violence and land expropriation prohibit Indigenous and frontline communities from expressing dissent, let alone shaping energy transition and land use policies. This article draws upon political ecology to identify 'the limits liberalism imposes' on just transition policies which requires 'more critical engagement with liberal theory' (Thomas & Rhiney, 2023).

Second, political ecologists have conceptualized energy transitions as extractive processes which involve the removal of natural resources, often through violent force. Energy transitions are not frictionless market-based processes that generate employment but rather extractive processes in which powerful vested interests, such as fossil fuel industries, assert their control over land, labour, and natural resources (Appel et al., 2015; Huber, 2015; Lahiri-Dutt, 2014; Valdivia, 2018). Land expropriation for coalmines and coal-fired power plants has further dispossessed rural and marginalized communities, often without necessarily generating employment for these communities (Roy et al., 2019). As Oskarsson and Chhotray (2021, p. 20) have argued,

a just transition needs to cater to the millions of people who find precarious, but nevertheless crucial, livelihood support in the informal coal sector at the moment. The people who should benefit from returned coalfields should thus be those who (i) have historical claims to the region and lost their lands for a pittance, typically adivasi groups, and (ii) informal workers and other more recent migrants to the coalfields, typically of Dalit and other lower caste backgrounds.

	Tier 1	Tier 2	Tier 3
Members	Ministry of Coal Representatives from relevant central ministries Non-governmental experts from relevant sectors	Representatives from state governments, coal companies and civil society	Representatives from local communities District authorities and project staff
Role	Oversight Financing	Develop and oversee regional development framework Align asset closure to broader regional public policy	Develop and implement closure plans with public consultations Monitor implementation

Figure 1. India's proposed just transition task force. Source: adapted from report of the inter-ministerial committee on just transition from coal under the sustainable growth pillar of the India-US Strategic Clean Energy Partnership (2022).

Though exhaustive data on the social impacts of the coal industry are not available, studies confirm that Adivasi and Dalit communities are disproportionately impacted by the development of coal mines and coal-fired power plants on their lands (Nayak, 2022; Noy, 2022; Shah, 2022). However, far less attention has been paid to the role of state-sanctioned violence in the transition away from coal even though military counter-insurgency campaigns, state-sponsored militias, and special police forces have been embroiled in armed conflicts and struggles over control and access to the coal bearing ancestral forests and lands of Adivasi communities (Damodaran & Padel, 2018; Sundar, 2019). To address this oversight, this article emphasizes the role of state-sanctioned violence in enabling the expansion of coal mines and coal-fired power plants in India.

The framework of political ecology also calls for an evaluation of low-carbon energy transitions as extractive processes of land expropriation. As the second-largest dam builder in the world, 4,300 dams have displaced over 4.4 million people in India, an estimated 40–50% of which are from Adivasi communities (Fernandes, 2004; Ministry of Tribal Affairs, 2014; Mohanty, 2005; Purohit, 2016). Studies have demonstrated that in the Indian context, dams often do not address energy poverty or provide adequate jobs to project-displaced and impacted communities. Indeed, dams have enclosed so-called 'wastelands' which rural and marginalized communities rely upon for their livelihood (Baviskar, 2015 [1995]; D'Souza, 2008; Gidwani, 2007). The literature on the political ecology of low-carbon energy has foregrounded what Baka (2017, p. 977) calls 'energy dispossessions' which encompass the enclosure of common lands and 'providing forms of energy incommensurate with local needs'. In short, while low-carbon energy is being extracted to generate electricity for large-scale urban and industrial consumption, common lands for agriculture and firewood collection are enclosed by low-carbon energy transitions (Stock & Birkenholtz, 2021). This article contributes to ongoing debates in 'new political ecologies of renewable

energy' (Knuth et al., 2022) by foregrounding the ways in which state violence and the criminalization of dissent enable the expansion of low-carbon infrastructures, focusing on the case of hydroelectric dams.⁵

Third, political ecologists have underlined the ways in which processes of land expropriation violently sever Indigenous relationships with land. While colonial and postcolonial histories of land are often absent from liberal analyses of just transitions, Sovacool et al. (2023, p. 4) have argued that post-colonial theories of justice are concerned with 'land justice, in that much knowledge is rooted in good relations with the land, which colonialism continues to degrade'. Theories of just transition are premised upon liberal notions of territory and private property that occlude the land relations, territoriality, and forms of belonging of Indigenous communities. As Mehta (1999, p. 119) put it in his classic study of liberalism and empire, 'liberals have failed to appreciate that territory is both a symbolic expression and concrete condition for the possibility of (or aspirations to) a distinct way of life'. In contrast, political ecology has centred 'indigenous ways of knowing the land' rooted in struggles for ancestral territory and sovereignty (Middleton, 2015, p. 561). Just energy transitions must account for violent colonial and postcolonial histories of the expropriation of Indigenous lands (Doyon et al., 2021). These forms of historical violence are not only inscribed upon the lands and forests that marginalized communities rely upon but as political ecologists have argued, forms of violence are also inscribed on the bodies of marginalized tribes, castes, and genders (Baviskar, 2001; Doshi, 2017; Ranganathan, 2022). As Whyte (2020, p. 3) argues, 'there are few reasons for indigenous peoples to trust societal institutions that propose projects that are on or affect indigenous lands, whether they are solutions to or drivers of anthropogenic climate change'. In the following sections, I turn to a discussion of direct state violence involved in India's coal and hydropower energy transitions which undermines the land rights of Indigenous and frontline communities.

3. Results and discussion: the intensity of coal and hydropower conflicts

This section compares the intensity of coal and hydropower conflicts in India using the EJ Atlas, which categorizes environmental conflicts as latent, low, medium, or high-intensity. According to the EJ Atlas (2023), latent conflicts are characterized by ‘no visible organizing at the moment’ and low-intensity conflicts exhibit ‘some local organizing’. By contrast, medium-intensity conflicts involve ‘street protests, [and] visible mobilization’ whereas high-intensity conflicts are defined as ‘widespread,’ involving ‘mass mobilization, violence, [and] arrests’ (EJ Atlas, 2023). Drawing upon EJ Atlas case sheets, this article analyzes 64 coal projects, including coalmines and coal-fired power plants, and 57 hydroelectric dams in India (Figure 2).

In total, 87.4% of coal projects were either medium or high-intensity conflicts, while 12.4% of all coal projects were characterized by latent and low-intensity conflicts. 85.9% percent of dams involved either medium or high-intensity conflicts, while a total of 14% of dams were marked by latent and low-intensity conflicts. These results suggest that both coal and hydropower projects are characterized by frequent medium and high-intensity level conflicts. In total, 51.5% of coal projects and 40.3% of hydropower projects involved mass mobilization, arrests, and violence. High-intensity conflicts, in both the coal and hydropower sectors, involved violent conflicts over land acquisition, as I discuss below. In the following sections, I analyze key examples of coal and hydropower projects categorized as high-intensity conflicts in the EJ Atlas which involve widespread mobilization, arrests, and violence. I supplement EJ Atlas data on coal and hydropower projects with peer-reviewed scholarship, policy and legal documents, newspaper articles, as well as reports by non-governmental organizations, and environmental activists.

3.1. Coal transitions

Although 51.5% of coal projects involve high-intensity conflicts, according to the EJ Atlas, just transition policy frameworks fail to account for these historical and ongoing injustices. Policy advocates of just transitions have called for ‘good governance’ and ‘inclusive decision-making processes’ to plan for a transition away from coal. Yet, as India’s Inter-Ministerial Committee on Just Transition (2022) indicates, there are no immediate plans to transition away from coal. Instead vast projects of expansion are underway. Furthermore, far from involving marginalized communities in decision-making processes, in practice, the expansion of India’s coal industry has been enacted through state violence, the enclosure of forest and agricultural lands, and the circumvention of legal safeguards to tribal lands. When Adivasis oppose the expansion of the coal industry and simply assert their constitutional rights to land under the Fifth Schedule, as well as PESA and Forest Rights Act (FRA), state violence and judicial coercion have ensued. To return to Xaxa’s (2022, p. 34) observation, it is possible that ‘inclusive’ just transition policies may serve as yet another ‘arena for legitimizing the expropriation of resources from tribal people’. In contrast to calls for ‘participation’ and ‘inclusion’ in decision-making processes, this section evaluates the role of state violence in the political ecology of India’s coal transition. To illustrate this argument, this section presents a detailed discussion of key examples of state violence and land expropriation in the EJ Atlas, with a focus on regional states where coalmines and coal-fired power plants continue to expand, including Madhya Pradesh, Chhattisgarh, Jharkhand, and Andhra Pradesh.

While the state is supposed to be a purveyor of justice, it has instead prioritized the interests of extractive industries over and above the constitutional rights of Adivasis (Damodaran & Padel, 2018). The Provisions of the Panchayats (Extension to Scheduled Areas) Act (PESA) is a legislative act which

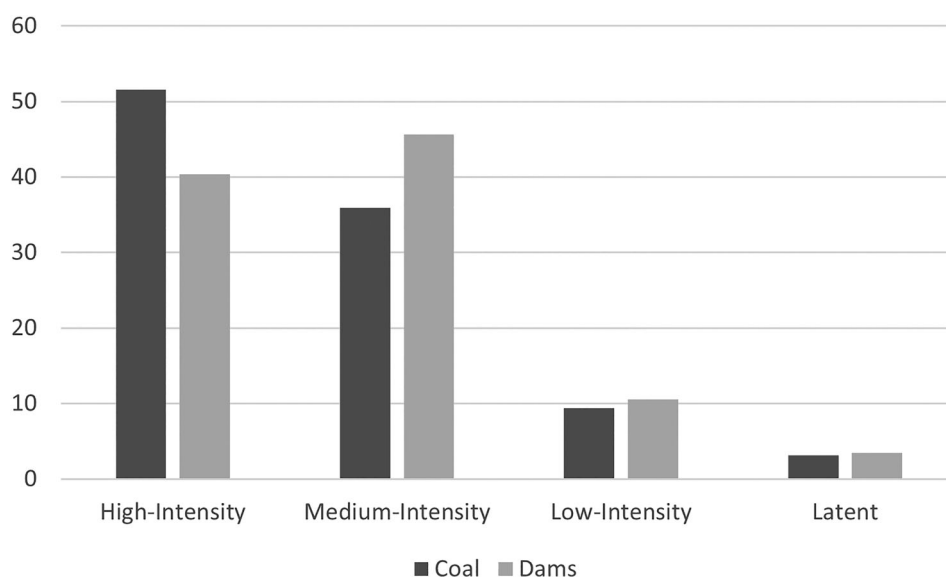


Figure 2. Percentages of intensity of conflict for coal projects and hydroelectric dams. Source: author’s analysis of 64 coal projects and 57 hydroelectric dams in the EJ Atlas (2023).

requires the consent of village-level gram sabhas (village councils) prior to land acquisition (Choubey, 2020). In Madhya Pradesh, violent conflicts among police, Adivasis, and environmental activists ensued after the controversial Mahan coalmines – a joint venture between Hindalco Industries and Essar Power – acquired lands without consulting the gram sabha of Choura village. However, ‘a forged gram sabha resolution was submitted to obtain clearances’ and in response, ‘5,000 Adivasis decided to march in protest to the Mines Office on 26 December 2009 (the thirteenth anniversary of the day PESA was notified)’ (Ghosh, 2021, p. 452). Despite evidence of forgery and malfeasance, land acquisition proceeded in violation of not only PESA but also the FRA which protects Adivasi claims to forest lands. According to a study by Talukdar and Pillai (2022, p. 105), the state and coal industry engaged in a series of practices designed to circumvent the FRA: company agents ‘harassed women’ who protested the felling of trees; legislative officials ‘threatened MSS [Mahan Sangharsh Samiti, or ‘Mahan Resistance Front’] women with rape’ and gendered violence; ‘police refused to investigate their complaints and sometimes even planted false charges’ against activists; and the state government authorities circumvented the ‘community consent process in 53 villages’. Working with Greenpeace, Adivasis challenged the project’s forest clearances. Although the proposed Mahan coalmines were ultimately canceled by the Modi government, a wave of repression against Greenpeace followed (Talukdar, 2018). Police confiscated Greenpeace media equipment in Mahan. ‘This is especially ironic’, Greenpeace India (2014) noted, ‘since it comes just days after the district collector promised a free and fair Gram Sabha on community consent for Essar and Hindalco’s mine, to replace a forged resolution last year’.

In other cases where Adivasis protest the dispossession of their lands, state-owned fossil fuel enterprises proceed with land acquisition that violates the provisions of PESA. The Hasdeo Arand forest in Chhattisgarh, for instance, is the home of the Gond community who have been the stewards and caretakers of one of India’s largest forests, which sits atop more than five billion tons of coal. Yet state authorities have refused to recognize community forest rights of Adivasi communities citing that such legal rights are ‘coming in the way of coal mining operations in the area’ (Kohli, 2018, p. 1). In response to the coal industry’s expansion plans in Chhattisgarh, a series of anti-coal movements – including a 300-kilometer long non-violent Gandhian march – have been launched to assert the right to Adivasi self-governance of Fifth Schedule areas under PESA and the Forest Rights Act. The Chhattisgarh Bachao Andolan – an alliance of people’s movements in Chhattisgarh – released the following statement, clarifying that twenty gram sabhas had passed resolutions against coal mining in the area:

These forests are Schedule-V areas under the Constitution, where the Panchayats (Extension to Scheduled Areas) Act, 1996, and the Forest Rights Act, 2006, are applicable and, therefore, the consent of gram sabhas (village councils) is required prior to any mining in the region. 20 gram sabhas of the region have passed unanimous resolutions against coal mining and any auction/allotment of mines in their area. (Sethi, 2015)

In spite of sustained opposition from gram sabhas, the government allocated several coal blocks in the region (Gupta & Roy-Chowdhury, 2017). As construction for the second phase of Parsa East Kente Basan coal mine in Chhattisgarh began, a ‘heavy police force’ was ‘deployed’ for ‘treecutting’ and ‘10 villagers have been detained for allegedly obstructing official work’ (Economic Times, 2022).

Coal transitions in India have been enacted through long-term processes of land acquisition which are punctuated by state violence. In Jharkhand, Coal India constructed the North Karanpura coalfield on Adivasi lands. Coal India’s subsidiaries own and operate opencast coalmines, a particularly land-intensive process in which forests, rivers, and soil are stripped from the earth to enable coal extraction, consequently producing what Lahiri-Dutt et al. (2012, p. 41) call ‘new refugees displaced by coal’. Given the scale of open cast coalmines, and India’s contentious politics of land acquisition, how does the state acquire forests and agricultural lands for coal mining? Oskarsson et al. (2019) have argued that the process of acquiring land for the North Karanpura coalfields must be understood as an incremental and cumulative process of dispossession: first, lands are acquired for ‘coal blocks’ which are later subdivided into coalmines that, in turn, continue to acquire lands and dispossess rural and marginalized communities. Such cumulative processes of dispossession are, in part, accomplished through state violence which enables the acquisition of lands. The construction of new coalmines in North Karanpura, for instance, has been opposed by villagers who have resisted selling their agricultural lands. In 2015, when 200 villagers protested processes of land acquisition for a coalmine in Hazaribagh jointly owned by Coal India Limited and the National Thermal Power Corporation, Roy and Schaffartzik (2021, p. 7) report that police violence, including the use of tear gas and twenty-two rounds of bullets, injured six people who were arrested while they were receiving medical assistance in the hospital. The police fired sixty rounds of bullets at protestors in October 2016, killing five and injuring another 40 during a protest at the village of Chiru Barwadhi (Chowdhury, 2016; Roy and Schaffartzik, 2021, p.7).

Much like coalmines and coal-fired power plants in central and eastern India, coal-fired power plants in coastal states have been the site of litigation, popular protest, and violent conflicts over land (Kohli & Menon, 2016; Kumar, 2021, 2022; Oskarsson et al., 2021). In 2010, three-thousand police were deployed to block farmers and fishers who were protesting the siting of the 2,640 MW Sompeta Power Plant on the coastal wetlands of Andhra Pradesh (Jahnavi & Satpathy, 2022; Times of India, 2012). Police had criminalized the assembly of more than five people under Section 144 to prevent further protests and reclaim the land that protestors had occupied (Times of India, 2012). During violent clashes with the police in July 2010,

protestors were beaten and shot during which three had died and hundreds got severe fractures and spinal injuries. Hundreds have been imprisoned and the legal cases are still going on and there are ‘shoot at sight’ orders on some of the protestors. (Jahnavi & Satpathy, 2022, p. 115)

While people’s movements ultimately succeeded in halting the development of coal-fired power plants in Sompeta, the

murder of anti-coal protestors is unfortunately not uncommon in contemporary India.

Indeed, twenty anti-coal activists have been killed in India from 2006 to 2016 (Global Energy Monitor, 2023). Six anti-coal protestors in Jharkhand who opposed land acquisition for coal projects have been killed (Global Energy Monitor, 2023; Kiro, 2018). In certain cases, like that of Jesuit nun Sister Valsa John – who organized campaigns to reclaim Adivasi lands under PESA in Jharkhand – anti-coal activists have been ‘hacked to death’ by ‘individuals hired by coal mining companies’ (Global Energy Monitor, 2023; Hansdak, 2011).⁶ The expansion of coalmines and coal-fired power plants has been enabled by the murder of anti-coal activists, expropriation of Adivasi lands, criminalization of dissent, and the abuse of legal safeguards to tribal lands, including PESA and the FRA. Any discussion of a just energy transition must account for and repair these histories of state violence. The liberal framework of stakeholder inclusion therefore falls woefully short of the demands of rural communities. In the following section, I will explore the ways in which state violence plays an equally important role in the making of hydro-power energy transitions.

3.2. Hydropower transitions

While India is in the midst of a violent transition towards increased coal extraction, hydropower infrastructures are also being constructed at an unprecedented pace. Hydroelectric power is being touted as a ‘green’ and ‘sustainable’ alternative to fossil fuels. Yet many of the violent features of coal extraction also define the construction of dams, as rural and marginalized communities that oppose the expansion of dam infrastructures are often subjected to state-sanctioned violence for challenging the expropriation of their lands. Indeed, 40.3% of hydropower projects, according to the EJ Atlas, feature high-intensity conflicts. Much like in the case of coal, the expansion of dams also involves the circumvention of existing legal frameworks that protect Adivasi land rights, such as PESA and FRA, and further involves the criminalization of any attempts to defend these legal safeguards. The violent displacements generated by hydroelectric dams are often omitted from just transition frameworks rooted in liberal imaginations of ‘green’ transitions, which instead focus on participation and inclusion. In contrast, this section analyzes key examples of large-scale and run of the river dams to foreground the ways in which low-carbon energy transitions have been, and continue to be, enacted through forms of violence.

Perhaps the most well-known case of mega-dam-induced displacement is the Sardar Sarovar Project, which displaced more than 200 villages and 320,000 people (Chandran, 2017; D’Souza, 2002; Whitehead, 2010). Baviskar’s (2015 [1995], pp. 209–212) now classic account of the Narmada Bachao Andolan struggle against the Sardar Sarovar dam emphasizes the role of the state in criminalizing dissent:

Women, who are strategically placed at the forefront of most demonstrations, are specially subjected to brutal assaults; their clothes are ripped off in public, they are dragged along by their hair – in one incident, a pregnant woman was repeatedly hit on her stomach with a rifle butt.

Peaceful protests were met with police harassment, mass arrests, and gendered violence. Yet even in the context of illicit state violence, leaders of the Narmada Bachao Andolan against the mega-dam called for non-violent resistance to state repression. The state subsequently attempted to co-opt these large-scale non-violent protests, which were led by tens of thousands of Adivasis, through liberal policies of participation and inclusion. The state offered displaced people paltry compensation – inadequate lands and precarious jobs in distant places – that ultimately served to individuate Adivasi communities from one another and their historical relationship to their ancestral lands and rivers (Whitehead, 2010). Police violence and the criminalization of dissent make possible land expropriation and ‘resettlement’ which offer Adivasis little choice but to migrate once their lands are submerged by mega-dams.

In Andhra Pradesh, the Polavaram dam on the Godavari River is likely to exceed the catastrophic social and environmental impacts of the Sardar Sarovar dam on the Narmada. In total, the dam is expected to displace 276 villages and an estimated 177,275 people, according to the project’s Environmental Impact Assessment (Down to Earth, 2015). More than 94,300 acres, including 29,852 acres of *poromboke* common lands, are required for the Polavaram dam (Rao, 2006). Much of the lands for the Polavaram dam are protected tribal lands under the Fifth Schedule and PESA, which have been largely ignored during the process of land acquisition for the project. When Adivasis have voiced opposition to the project, the state has engaged in illegal tactics to secure land – including arrests and ‘false cases’ (Padel, 2014, pp. xiv–xv). After three-thousand Adivasis protested in an appeal to the Mandal Revenue Officer in 2005, violent clashes between the police and protesters ensued, leading to the arrest of 11 activists (Bondla & Rao, 2010, p. 94). More recently, when Adivasi and Dalit leaders have planned protests to call for resettlement and rehabilitation, organizers have been placed under ‘house arrest’ (Naidu, 2021). Umamaheshwari (2014, p. 362) conceptualizes this process as ‘dismemberment’: Adivasi communities are violently amputated from their lands and rivers – and indeed from democratic and development processes. Consequently, Adivasis lose their vocations and identities as they are remade into migrant wage labourers. As Prem Kumar, a displaced community member and protestor emphasized, ‘We are now landless, unemployed, and under heavy debt which we had to take for our survival’ (Land Conflict Watch, 2016).

Since the liberalization of the economy in the 1990s, the Himalayas have been reframed as a site for the development of over 100,000 MW of hydroelectric dams to mitigate carbon emissions. There has also been a shift towards smaller ‘run of the river’ dams that involve the diversion of rivers through channels and subterranean tunnels, which produce new kinds of geological disasters, and the enclosure of forests (Asher & Bhandari, 2021; Gergan, 2020; Vaishnav & Baka, 2022). In Himachal Pradesh, ‘run of the river’ dams have been proposed as an alternative to large dams and the state’s hydroelectric power policies have been amended to fast track small dams of less than 5 MW, often circumventing the FRA and PESA (Thakur & Asher, 2015). In addition, the Directorate of Energy issued an order to both district administrations

and police to provide security to project developers of dams, evidence that 'local opinion, especially dissent, is increasingly being seen as intolerable' (Thakur & Asher, 2015). Although run of the river dams involve both violence and land expropriation, they continue to receive multi-lateral financing and support. The 4.5 MW Hul dams in Himachal Pradesh, for instance, received Clean Development Mechanism financing for reducing carbon emissions (UNFCCC, 2012). Yet Indigenous communities contend that these dams will destroy the lands and livelihoods of local villages and in 2010 peaceful protestors of the Hul dams were attacked by the project company's contractors with 'swords and pistols' (Sanhati, 2010).

Large dams, which are a major source of methane emissions, also continue to be built in the Himalayas (Pomeranz, 2009). The 1,000 MW Karcham-Wangtoo dam in Himachal Pradesh, one of the larger privately owned dams in the Himalayas, encountered opposition from tribal communities in 2006. In December 2006, police opened gun fire at protestors and arrested many tribal leaders, including the presidents of Karcham-Wangtoo Sangharsh Samiti and Khab-Shasho Sangharsh (Sandhu, 2006). In Arunachal Pradesh, a state which plans to construct 50,000 MW of hydroelectric dams, the Buddhist Monpa Indigenous community has protested the siting of the Nyamjang Chhu dams on their ancestral lands. In defiance of bans on public gatherings, the Monpa tribe and Buddhist monks organized a rally at Tawang monastery (Lenin, 2015). Police arrested the monk and anti-dam activist, Lama Lobsang Gyatso, and when protestors sought his release outside the Tawang police station, a Buddhist monk and a protestor were killed by 'police firing' and several more were injured (BBC, 2016). The siting of hydroelectric dams on Indigenous lands in the eastern Himalayas reproduces racialized histories of colonialism which undermine tribal land ownership, as Gergan (2020) has argued. Despite the state violence surrounding land expropriation for dams, state authorities continue to tout hydropower as an integral part of the country's 'green' and 'sustainable' energy transition. While dams have been positioned as a cornerstone of India's transition away from coal, the role of state-sanctioned violence in the making of hydropower infrastructures is omitted from liberal just transition policy frameworks.

4. Conclusion

India's Inter-Ministerial Committee on Just Transition (2022) has made several recommendations to accelerate the country's transition away from coal and towards low-carbon energy infrastructures. While acknowledging that India's transition away from coal is a long-term goal, the Committee's recommendations include formulating a 'just transition policy' and producing 'redevelopment and repurposing plans for each coal asset closure with extensive involvement and consultation with local communities' (Inter-Ministerial Committee on Just Transition, 2022, p. 14). Drawing upon the cases of coal and hydropower development, this article has argued that state violence, including police violence and arrests, precludes democratic and meaningful 'participation' in energy policies in India. Indeed, earlier efforts to involve displaced communities in decision-making processes, such as PESA

and the FRA, are often circumvented by extractive industries and state authorities. Drawing upon a political ecological analysis of 64 coal projects and 57 hydropower projects in India from the EJ Atlas, this article found 51.5% of coal projects and 40.3% of hydropower projects involved mass mobilization, arrests, and violence. Moreover, high-intensity conflicts, in both the coal and hydropower sectors, involved violent conflicts over land expropriation.

Not surprisingly India's current just transition policy frameworks do not include any reference to police violence, arrests, intimidation, or murders. Yet, for energy transitions to be truly just, histories of state violence in both fossil fuel and low-carbon industries must be acknowledged and repaired rather than disavowed. At minimum, just transition research and policies should include independent inquiries into police violence, including the complicity of higher-level officials, to account for and compensate households that have lost family members, lands, and livelihoods due to earlier violent energy transitions, as in the case of coal mining in tribal belts and coal power plants in coastal zones. Moreover, there must be consequences, including penal liability, for police officers who engage in violence to expand energy infrastructures and criminalize opposition towards projects. Indeed, just transition policies must include provisions for a permanent ombudsman to adjudicate police and civil rights disputes in energy transitions. In the absence of policies that redress past histories of violence and hold police officers accountable for the criminalization of the right to dissent, just transition policies may act as another arena to legitimate the expropriation of the lands and livelihoods of Adivasi and frontline communities. In contrast to just transition frameworks that focus on liberal precepts of inclusion and participation, it is necessary to analyze the political ecology of energy extraction in ways that are attentive to state-sanctioned violence and ultimately 'the abolition of systems that produce these harms' (Sultana, 2021, p. 1726).

Drawing upon a political ecology of India's coal and hydropower transitions, this article has posed the following questions: Will just transition policy frameworks, which assume liberal conceptions of inclusion and participation, constitute yet another vehicle for the expropriation of the lands of Adivasis and frontline communities? How can liberal frameworks, which fail to acknowledge, let alone repair, histories of state violence and dispossession lead to a just transition away from coal and towards low-carbon energy? To examine these questions, I have analyzed the role of state violence in struggles over coal and hydropower projects. India is in the midst of violent energy transitions: counter-insurgency campaigns are deployed to subdue protests concerning coalmines in forests; entire villages are criminalized for protesting the expansion of hydroelectric dams; and anti-coal as well as anti-dam activists are murdered for challenging processes of land acquisition. Coal and hydropower transitions are marked by the use of direct violence against rural and marginalized communities. If just transition policies fail to reckon with historical injustices of state violence and land expropriation within the context of fossil fuel and low-carbon energy transitions, twenty-first century energy transitions risk reproducing earlier models of extractive development which are neither sustainable nor just.

Notes

1. This article uses the terms Indigenous and Adivasi ('original inhabitants') interchangeably. The term Adivasi is used by Scheduled Tribes as 'a political term of self-reference' (Ministry of Tribal Affairs, 2014, p. 25). For a discussion of the terms Scheduled Tribes and Adivasi within the context of South Asia, see Xaxa and Devy (2021).
2. While coal extraction and dam construction involve structural violence by removing rural and marginalized communities from their land, livelihoods, histories, and cultures, I focus specifically upon the political ecology of direct state-sanctioned police violence that enables land expropriation and criminalizes opposition. For a discussion of structural violence and other forms of epistemic, cultural, ecological, and slow violence in India, see Gupta (2012) and Roy and Martinez-Alier (2019).
3. For an account of state-sanctioned violence in mineral rich India's forests, see Sundar (2019).
4. See Temper et al. (2015) and Martinez-Alier (2021) for a discussion of the history of the EJ Atlas and its methodology.
5. Political ecologists have also examined the forms of structural violence that constitute 'green' low-carbon energy transitions. For example, Stock (2021, p. 5) has analyzed forms of 'infrastructural violence' within the context of solar park development, which encompasses 'violence in the form of denied or disrupted access to resources and flows [that] enables an abdication of responsibility by state institutions responsible for provisioning, like public water and electricity distribution entities'. In addition, Dunlap (2023, p. 924) has analyzed 'green infrastructural harm' that includes 'green deception': the concealment of information concerning low-carbon energy impacts and public hearings.
6. For a global analysis of violence against 'women environmental defenders' which draws upon the EJ Atlas, see Tran and Hanaček (2023). See also Sinclair's (2021, p. 1) analysis of gendered violence in mining industries, which emphasizes how 'resistance can create more equitable gendered social relations to emerge' as well as Lahiri-Dutt's (2023, p. 1) call for a 'feminist manifesto to address the gendered impacts of the coal sector transition in the major coal-producing countries of the Global South'.

Disclosure statement

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

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