



‘Extractive bodies’: A feminist counter-topography of two extractive landscapes

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ABSTRACT

This article engages in a discussion about the ‘quieter registers of power’ along the resource frontier. It builds a feminist counter-topography of the formation of extractive subjectivities in two extractive landscapes—a uranium mining project in Tanzania and a coal mining area in Tajikistan. We explore these two disparate but connected sites through the formation of embodied subjectivities—i.e., the ways in which extractive forces shape people’s intimate senses of self. In both places, embodied emotions manifest in rumours about gender, sexuality and reproduction. To re-materialise our understandings of power at the extractive frontier, we offer the concept of ‘extractive bodies’—a plural figure representing the heterogeneous, dynamic and porous bodies of men, women, children and the elderly as shaped by extractive forces. We also read the rumours emerging from these two places as quiet, but not silent, forms of resistance. These rumours are material and symbolic expressions of a ‘*mal de vivre*’ which is symptomatic of how people live at the extractive frontier. Overall, this counter-topography contributes to feminist political ecology scholarship on the embodied impacts of and responses to extraction on the resource frontier.

1. Introduction

Tanzania’s first uranium mine opened in 2015, although commercial mining never started. The Russian-owned Mkuju River Project is an open-pit mine set to make Tanzania one of the world’s ten biggest uranium producers. It is located in southern Tanzania, where wildlife conservation limits access to land and offers few jobs or other economic benefits, leaving most people reliant on small-scale agriculture. People in the villages closest to the mine enthusiastically support the project and hope to acquire mining work for themselves and their families. Despite the pause in the development of the mine, local people worry they are losing out on work when they see foreigners and people from other regions of Tanzania migrating to the area to take jobs at the mining project.

However, in the nearby village of Mandela, some villagers speak about a *homa* (Kiswahili for fever), a sickness linked to mining activities. Young men explain that the *homa* reduces the strength of the male body, specifically fertility. This *homa* is sometimes linked to water contaminated by mining activities, and other times is linked to working at the mine site itself. As rumours of the *homa* and fears of male infertility spread, the mining company attempted to curtail the rumour by inviting

villagers to the mine to drink the water, promising to test the water quality in surrounding areas and hosting village-based forums to speak directly with young men about their concerns.

At the same time, more than 6000 km away from Mandela, another story of extraction unfolds in Tajikistan. In 2013, a Sino-Tajik open-pit coal mine was established in the village of Kante in the Fann Mountains. The mine dominates the southern slope of a mountain once mined by informal (now displaced) miners. Since the fall of the Soviet Union, men, women and children have informally mined in Kante. Their modest donkeys and axes contrast with the conspicuous ‘Chinese’ mine’s heavy machinery. Mining in the village—whether formal or informal—represents men’s only alternative to labour migration to Russia. The Sino-Tajik mine does employ some male villagers, though most engineers and managers come from China or Tajikistan’s major cities. This leaves some men both hopeful for jobs at the mine and angry that ‘the Chinese are taking all [their] coal’.

Like in Mandela, desires for employment in the mine coexist alongside other anxieties. Several rumours have emerged in Kante, fuelled by narratives of disappearing coal being ravaged by ‘the Chinese’. The first asserts that the expansion of the ‘Chinese’ mine will dispossess villagers from their only source of livelihood besides migration and force them to

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leave their homes. The second suggests that donkeys and other animals that disappear from the village are being eaten by the Chinese workforce. The final set of rumours circulates about a group of women who mine coal high above the village, where they know that they will go unseen. It is considered *qyb* (Tajik for shameful) for women to work in mines; villagers say these women are tired (*monda*), spoiled/bad (*ganda*), unusable and loose. Their work prevents them from ‘making good babies’, taking care of the household and attending to their family responsibilities—it is also rumoured to make them promiscuous, dangerous and sexual.

These two ethnographic vignettes touch on how the development of extractive activities in these two *a priori* disconnected sites creates strikingly similar place-based disruptions.¹ Geographical, historical and contemporary differences abound between these Central Asian and East African locations, as well as the two extractive sites themselves (e.g., stage of extraction, resource mined, technologies used). This litany of dissimilarities may appear significant enough to deter any form of connection; yet this article identifies similar responses to extraction at these disparate sites. Without mitigating differences or homogenising local specificities, we aim to explore the tensions present in both sites, starting with the material and symbolic body. We privilege the ways in which processes and practices of extraction in these two places impact the most intimate senses of self—people’s embodied subjectivities.

This objective is grounded in multiple rationales. First, the commitment to connect these *a priori* disconnected places is rooted in the empirical similarities that we noticed *a posteriori* in our respective ethnographic sites. Recent studies have productively interrogated large-scale extractive and infrastructural projects which are, by design, multi-sited and spatially separate (Arboleda, 2020; Barry and Gambino, 2020; Cowen, 2020). Yet, we see our effort as distinct: rather than simply comparing cases, we forge a way of thinking about and studying extractivism through embodiment, which attends to the micro scale without disregarding macro-level dynamics (Caretta et al., 2020). Epistemologically and methodologically, this objective recognises that building connections between disparate locations based on everyday, personal and intimate scales constitutes a privileged angle from which to understand how broader structural processes unfold and are reworked at the local level. As such, this project develops a feminist counter-topographical approach inspired by Cindi Katz (2001; 2011) and its application and expansion by other feminist geographers (e.g., Mountz, 2011; Pratt and Yeoh, 2003; Faria, 2017; Caretta and Cheptum, 2019).

For Katz, topographies are ‘a detailed examination of some part of the material world, defined at any scale, from the body to the global, in order to understand the salient features of the world, and their mutual and broader relationships’ (2001, p. 1228). Counter-topographies, in turn, are a methodological tool, but also a political project, one that calls for building analytical connections between different places without erasing the social and material practices sedimented in each place. To do this, Katz calls for developing ‘contour lines that represent not elevation but particular relations to a process’ (2001, p. 1229). For instance, Katz (2001) examined the connections between Howa in Sudan and Harlem in New York to understand how global restructuring impacted and was reworked, focusing on aspects of social reproduction. Our counter-topography follows this example and looks at the embodied subjectivities of villagers in Mandela and Kante. Analysis at this scale reveals emerging dynamics on extractive frontiers—places long part of broader extractive and capitalist systems that are home to resources previously inaccessible or unknown. In Tajikistan and Tanzania, we

consider the way frontier time (Tsing, 2003) and the changing dynamics of legitimacy, identity and social relations (Watts, 2018) impact localities, particularly how gender and sexuality are reworked in the context of extractivism.

The second rationale is embedded in our focus on bodies, particularly, embodied subjectivities. Our notion of embodied subjectivity reflects the experiences of individual (gendered, raced, aged, sexed) bodies entangled with the self, with both altering and altered by social, political and ecological encounters. Mandelans and Kanteguis’ responses to the extractive powers at play in these two locations manifest in embodied terms, as shown in the short vignettes that open this article—through emotions of fear and anxieties felt through the body, as well as through rumours about how the mines/or extractive landscapes shape gendered, sexed and reproductive bodies. At the same time, this striking feature of our two ethnographies speaks to a growing scholarship on the role of ‘quieter registers of power’ in shaping extractive subjectivities (Frederiksen and Himley, 2020). This scholarship recognises how power operates in extractive sites through obvious/direct forms (Watts, 2018) and explores more subtle forms of power (e.g., Murrey, 2016; among others).

Within this emerging body of work on subject formation in resource extractive zones, literature on the embodied, gendered, sexed and intimate aspects of this process is becoming more prominent (Lahiri-Dutt, 2013; 2022; Cohen, 2014; Murrey, 2016; Jenkins, 2014; Behzadi, 2019; Balderson, 2022; and others). Still, critical resource scholarship has much to gain from analytical engagements with feminist political ecology (FPE), which explores more discrete scales or personal topics by centring the home, body and/or gender, sexuality, reproduction and emotions in analyses of environment/society relations (Sultana, 2009; 2021; Elmhirst, 2011; Mollett and Faria, 2013; Truelove, 2011; Caretta et al., 2020). At the same time, this focus on bodies, emotions and rumours draws attention to resource materialities (Bakker and Bridge, 2006; Richardson and Weszkalnys, 2014)—and away from discursive notions of power—to highlight how resource extraction transforms places and people.

By focusing on embodied subjectivities in these two sites, we build a feminist counter-topography of these extractive zones and develop two main arguments. The first is analytical and methodological. We want to centre attention on what we refer to as ‘extractive bodies’, a plural figure representing the heterogeneous, dynamic and porous bodies of men, women, children and the elderly as shaped by extractive forces. Extractive bodies are a ‘contour line’, to continue Katz’s (2001) topographical metaphor, to re-materialise our understanding of how extractive power operates in these resource frontiers. The second argument focuses on the nature of these impacts and power relations. Rather than seeing companies using various strategies and techniques to form compliant extractive subjects (cf. Frederiksen and Himley, 2020), we expand understandings of ‘quieter registers of power’ by starting with the material and symbolic body. As extractive projects (are anticipated to) change landscapes, simultaneous desires for inclusion and fears of dispossession/exclusion emerge in both Mandela and Kante. These tensions manifest through rumours about bodies’ capacity for (re)production and their gendered and sexed characteristics. In Tajikistan and Tanzania, we see these rumours as embodied (felt through the body) and symbolic expressions of a ‘*mal de vivre*’ that is symptomatic of how people live at the extractive frontier. At the same time, we emphasise how rumours in both sites act as embodied struggles and, at times, subtle forms of resistance against extraction.

This article is organised as follows. First, we review the literature on embodied subjectivity on the resource frontier. Then, we return to our respective sites and place their current extractivism within longer histories of colonial, socialist and capitalist resource exploitation. The next section empirically considers extractive subject-making in these two sites, with an analytical focus on the shaping of ‘extractive bodies’. Our discussion section brings the two sites into conversation via the contour line of ‘extractive bodies’. We conclude with reflections on what our

¹ Stephanie Postar conducted fieldwork in 2014/16 at the uranium mining project in Tanzania and Negar Elodie Behzadi conducted research in 2014/15 at the coal mining project in Tajikistan. Both used ethnographic methods, participant observation and interviews. NE Behzadi used visual methodologies (photography, film) and S Postar undertook participatory mapping, oral histories and archival research.

counter-topographical approach can bring to understanding power and subject formation on the resource frontier.

2. Embodied extractive subjectivities: A feminist counter-topographical approach

The explosion of recent scholarship on resource frontiers expands beyond the more ‘classic’ conceptualisations including: the frontier as remote, marked by a single front, the renegotiation of rules and the absence/expansion of state authority (Tsing, 2003; Peluso and Lund, 2011; Kelly and Peluso, 2015; Peluso, 2017; Rasmussen and Lund, 2018; Watts, 2018; Faxon, 2021). This literature emphasises how ‘new’ extractive frontier dynamics are facilitated by novel methods of extraction and emergent forms of financialisation (as in Mandela and Kante) (Maconachie and Hilson, 2011). It also explores, like in the case of Frederiksen and Himley (2020), emerging modalities of power, particularly how large firms form compliant extractive subjects through tactics of persuasion, seduction and manipulation. Rather than via event-based, spectacular forms of physical violence, coercion and authority, these ‘quieter registers’ represent the diffuse formations of power used to expand and maintain access to resources (ibid.). Firms and their allies use multiple tactics as governmental technologies to produce new subjectivities and lifeworlds. Subject formation does not occur in a vacuum and is influenced by contextual histories and inequalities. However, many authors argue that socio-political lives in these areas often become dominated by extractive firms, suggesting the formation of ‘extractive subjects’ via a top-down exercise of power.

Our approach adds a bottom-up view to Frederiksen and Himley’s (2020) conceptualisation of extractive subjectivities. We consider subject formation in the context of an extractive landscape containing both large-scale/formal extraction and small-scale/informal extraction (in Tajikistan) and an extractive zone prior to commercial mining (in Tanzania). Rather than starting from top-down tactics used by firms, we begin with how the exercise of power is lived and experienced in the everyday. Following feminist approaches to subjectivity (de Lauretis, 1989; Benhabib, 1999), we believe that tracing subject formation from the materiality of everyday lives allows for a consideration of how people’s senses of self are fluid, and reconfigured by a multiplicity of heterogeneous forces, factors and actors—not just powerful strategies and discourses. The tactics of extractive companies and their allies are just some of the forces shaping the formation of subjectivities. These tactics meet local norms and histories, cultural practices, habits, personal trajectories, gendered, raced, sexed and aged bodies, and their encounters with resources in the mundane, everyday and intimate. As FPE scholar Juanita Sundberg describes in relation to conservation practices, tactics of companies, institutions and their allies contribute to already existing and ‘interlocking systems of power along multiple axes’ (2004, p. 55) that can be better understood through ethnographic exploration. Her perspective resonates with other FPE scholars’ work on subjectivities and how changing ecologies (re)produce, but also reconfigure, intersectional categories of difference (Elmhirst, 2011; Mollett, 2017; Mollett and Faria, 2013; Sundberg, 2017; Nightingale, 2011).

Focusing on ‘extractive bodies’ as central sites for understanding extractive subjectivities builds upon generations of feminist scholarship that has valued embodied, situated and experiential ways of knowing (Haraway, 1988; Johnson et al., 2021; and others). It also draws on conceptualisations of the body as a window into how the everyday and intimate connect to broader scales from the national to the global (Williams and Massaro, 2013; Grosz, 1994; and others). Heterogeneous forces meet in bodies where they are made sense of, felt and reworked. Bodies are porous, intimately related to the environment, commodified and fragmented rather than a black box on which power is mapped (Sharp, 2000; Lock, 2017; Grosz, 1994; Longhurst, 2001). FPE scholars have shown how differences (gender, age, sex, race, etc.) are inscribed onto bodies, which are made/remade or implicated in environmental changes, disruptions and the resistances to them (Sultana, 2009;

Truelove, 2011; Elmhirst, 2011; Mollett, 2017; Behzadi, 2019; Berman-Arevalo and Ojeda, 2020). Bodies (human and otherwise) together with natural resources (as well as other life and nonlife) ‘share in reproductive metabolisms crossing scales, species, and systems’ (Ahuja, 2015, p. 367). Linking the nonhuman with the body invites considerations of contamination (Caretta and Zaragocin, 2020), while recognising the limitations of narratives that focus solely on bodies as polluted (Murphy, 2017; Hoover, 2017). Contamination can catalyse resistance to extractivism (cf. Caretta and Zaragocin, 2020; Liboiron, Tironi and Calvillo, 2018). The body exposed becomes a living archive of toxic presences (Bagelman and Wiebe, 2017), particularly relevant for those in extractive zones.

In this article, we link the physical body with the emotional self in the formation of extractive subjectivities. Landscapes and their degradation are not just material; they also produce emotions, which are embodied and relational, and shape resource management, including ownership, access and use (Sultana, 2011; Graybill, 2019; Lempinen and Lindroth, 2021; Behzadi, 2019). Embodied feelings and their manifestation are often ways to externalise or voice ‘slow dissent’—protracted, quiet forms of resistance (Murrey, 2016). In some ways, the cases we examine could be interrogated through the lens of ‘resource affect’ (Weszkalnys, 2016), the kind of affective dissonances of hope and doubt that are entangled in the generative processes inherent in capitalist dynamics of resource extraction (i.e., wealth creation and destruction). We attend to the mixed emotions of fear and aspirations for inclusion as embodied, clarifying how resource affect, not only top-down discourse and violence of the state and other actors, creates consenting extractive subjects (Lyll, 2017). While our approach is grounded in the body, we embrace the perspective that affect is also carried in signs and symbols, as we will consider in these cases of perceived contamination (Newell, 2018). Building from these feminist and political ecology insights, our counter-topographical approach attends to the materiality and specificity of each extractive landscape, and to the symbols and metaphors which powerfully inform changing relations and practices along different resource frontiers.

3. Topographies of Tanzanian uranium and Tajikistani coal

Mandela and Kante are topographies of global extractivism and ‘new’ extractive frontiers. Emerging forms of territorialization, the ‘control of people and resources by controlling territory or land’ (Peluso and Lund, 2011, p. 673), characterise the transformational dynamic fundamental to ‘new’ frontiers. This territorialisation ‘challenge[s] existing institutional arrangements’ (Rasmussen and Lund, 2018, p. 389), making previously inaccessible resources, land and labourers available to be commodified—particularly noteworthy in these two post-socialist contexts. This includes the encroachment of privatised formal mining activities in a state-controlled wilderness area in Tanzania and large and small-scale mining on previously collectively owned land in Tajikistan. It also includes emerging forms of corporate development: new(?) actors in development, new models of international cooperation and public-private partnerships. Historic forms of colonialism and economically imperialist logics also have ongoing presences in these topographies, illustrated below.

3.1. Uranium Mining in Tanzania and Mandela

For hundreds of years, coastal Tanzania played a major role in the Indian Ocean trade, importing goods from Asia and exporting locally extracted gold, enslaved bodies and ivory (Alpers, 1975). From the late 19th century, German and, later, British colonial ambitions focused on extracting natural resources (timber, ivory, gold, diamonds, gemstones, uranium, etc.) (Iliffe, 1979; Sunseri, 2009). Despite Tanzania’s relative obscurity in the history of uranium mining (Dumett, 1985; Postar, 2017), colonial geological expeditions sought and identified uranium deposits throughout the early 20th century. From independence in 1961

into the 1980s, Tanzania invited missions to explore for uranium, including from the Soviet Union.² During this period of *Ujamaa* (African socialism, 1960s–1980s), the state undertook the nationalisation of large-scale mines (Bryceson et al., 2012; Kinyondo and Huggins, 2019). In the mid-1980s–1990s, however, structural adjustment policies ended Tanzanian socialism and liberalisation attracted foreign direct investment for mineral exploration and mining (ibid.).

Uranium aligned with Tanzania's increasingly neoliberal vision for the future. The country pledged to increase domestic mineral extraction as part of its commitment to becoming a middle-income country by 2025 (achieved in 2020). Tanzania's interest in exploring for uranium re-emerged in 2005 when the country issued dozens of prospecting licenses. Rights to the Mkuju River Project were purchased by Uranium One, the international mining arm of the Russian State Atomic Energy Corporation (ROSATOM). The project, which is located wholly within the Selous Game Reserve (a state-controlled game reserve with privately leased hunting blocks), officially opened in 2015. Since 2017, Uranium One repeatedly suspended the project, a decision initially attributed to the depressed market for uranium following the 2011 Japanese nuclear disaster (Basov, 2017).

Mandela is one of the closest villages to the uranium mining concession and borders the Selous Game Reserve.³ Now home to over 4,000 people, Mandela lies within but is not formally included in the Mbarang'andu Wildlife Management Area, a buffer zone that protects the Selous from agricultural encroachment, poaching and development. With the mine indefinitely on hold, working aged people complain that they are missing opportunities for mine-related work. Local people feel excluded from the benefits of conservation activities and potential employment with the mining project. This leaves people continuing to rely on small-scale agriculture growing crops (e.g., maize, rice, beans, sesame, tobacco) to sell at local markets.

Since 2016, the company has conducted exploratory drilling to test the effectiveness of in situ leach mining (ISL), a different kind of extraction. ISL mining pumps a solution underground, where it chemically binds with uranium; another well extracts the mineral-laden solution (International Atomic Energy Agency, 2016).⁴ Evidence suggests that it is difficult to return groundwater quality in/around in situ leach mining sites to pre-extraction levels and/or drinking water standards (Saunders et al., 2016), relevant for a uranium mine inside a vast wilderness area covering much of the Rufiji River watershed.

3.2. Coal Mining in Tajikistan and Kante

Like in Tanzania, resource extraction has a long history in Tajikistan. The Russian imperial endeavour was fuelled by resource extraction at its peripheries. After the anticolonial Bolshevik revolution in 1917 and the formation of the Tajik SSR (1924), Soviet modernisation efforts led to the development of industrial resource extraction, particularly of gold, silver, coal, antimony, mercury and others (Kotilainen et al., 2015; Kalinovsky, 2018). While decolonial in theory, such efforts in Central Asia were extractivist in nature and re-created a centre/periphery dichotomy, in which ethnic Central Asians needed to be developed by the Soviets (Behzadi and Direnberger, 2020).

In 1991, the fall of the USSR led to a civil war that was, in part, a battle over access to resources and means of production, including

² Soviet involvement in Tanzania fits into the broader history of Soviet engagement with post-independence African countries (Mbughuni, 2006; Alexander, McGregor and Tendi, 2017).

³ The village was annexed out of a larger neighbouring village to accommodate the Mozambican refugees who wanted to stay in Tanzania after Mozambique's peace treaty in 1992.

⁴ In 2019, this type of 'unconventional' mining extracted more than half of all uranium mined worldwide (World Nuclear Association, 2020), although it has never been used in sub-Saharan Africa.

mining (Dudoignon, 1998). Subsidies and supplies from the USSR stopped, leaving the country with energy shortages (Idrisov, 2020). In 1996, international macro-economic assistance and structural adjustment policies led to deregulation and the privatisation of state-owned enterprises (as in Tanzania). This process created a system whereby state-owned monopolies—including TALCO Resources, an aluminium and energy company—controlled resources (Nakaya, 2009).⁵ By the 2000s, the country still faced chronic energy issues, with the situation worsening in 2012 when Uzbekistan stopped supplying gas. This move threatened Tajikistan's main industry, aluminium production, and led to a domestic 'coal renaissance', including governmental support for large-scale coal extraction and a ban on coal exports. Like in Tanzania, the government sought international investments to help fund these endeavours, resulting in a combination of state control with increasingly significant investment from so-called 'new' actors, including China (Bankwatch, 2017).⁶

Like for Mandela (Tanzania), these macro forces of capitalist expansion shape the local frontier dynamics in Kante (Tajikistan) revealing how resource extraction companies establish themselves in previously inaccessible areas. Situated in the Fann Mountains, Kante is home to approximately 1500 inhabitants and sits on one of Tajikistan's largest coal deposits (Bankwatch, 2017). During Soviet times, Kante was part of a tobacco collective farm (*kolkhoz*) where mainly women worked. Coal exploration in the village started during Soviet times (1950–1958 and 1979–1989), but exploitation (mainly by men) only began after the collapse.

In the 1990s, agricultural fields were abandoned as men started migrating to Russia for work and households began extracting coal for subsistence. In the 2000s, after the country's turn to coal, an informal market emerged, facilitated by truck drivers who bought coal in the village to resell around the country. The commercial open-pit coal mine—a Sino-Tajik joint venture (TALCO Resources and a Chinese operator)—opened in 2013. This 'Chinese' mine, as it is called by the villagers, employs around 300 men from Kante and neighbouring villages but also encroaches on the artisanal mining territory. As we show below, mining in the village is also socio-spatially organised along gendered and aged lines.

4. A feminist counter-topography of extraction: 'Extractive bodies' in Mandela & Kante

The topographies described above reveal how politico-ecological transformations in both Tanzania and Tajikistan have led to the emergence of 'new' extractive frontiers. In both places, extractive forces not only change the landscapes but also people's relationships with their everyday lives and senses of self. In this section, we consider the formation of 'extractive bodies' as a contour line to draw out local specificities and common relationships to the extractive industrial complex. This allows us to unpack how forms of power in resource extractive contexts materialise at the most intimate scales, but also how people live through, make sense of or resist the impacts of extraction at the embodied level.

⁵ Talco Resources, like other state-owned monopolies, has been implicated in multiple fraud and corruption scandals (Heathershaw, 2011).

⁶ There has been much discussion in development literature on the 'newness' of certain non-Western development actors (China, Russia, Brazil) and their increasing role in large-scale extraction projects (Mohan and Lampert, 2013; Cheru, 2016; Lee, 2018). Discussing the particularities of their actions goes beyond the scope of this article. Yet, their presence in both Tanzania and Tajikistan indicates the growth of new forms of cooperation beyond Western investment.

4.1. Uranium bodies

In 2016, one year after the Mkuju River Project officially opened in Tanzania, confusion and frustration dominated discussions about the project in the nearest villages. Young men like Hamidu, 22, wanted to work at the mining site.⁷ He heard about people from other parts of Tanzania who travelled to take up jobs at the project, leaving him feeling that he was ‘losing out on going to the mine’. When Hamidu spoke about his future, rather than emphasizing the prospect of mine work, he thought the improvement of his agricultural holdings held the key to his prosperity. Between destructive wildlife coming from the Selous Game Reserve, the inability to expand agricultural plots into state-controlled conservation areas and low crop prices, Hamidu felt there were few options to improve his livelihood.

Bakari, another man in his early 20s, echoed Hamidu’s concerns about life near the mine: ‘[t]here is not much development. Wildlife is destructive [of crops] (...) We grow crops whose prices are low. We cannot say that young people get employment’, including at the mine. At earlier stages of mining exploration, private sub-contracting companies hired workers on short-term contracts for manual work like road maintenance and trench excavation. At meetings with mining officials, village representatives repeatedly raised their constituents’ questions about how jobs would be made available to local people. Village leaders reiterated that they held lists of people who wanted work at the mine, and that, if the company wanted to hire people, they should go through the village leadership’s lists to fairly allocate jobs (rather than through chance encounters or nepotism). The project planned to hire an estimated 1600 workers at peak periods over the planned 12 to 15-year life of the mine. However, in meetings with village representatives, the mining company representative attempted to ‘manage expectations’ for employment and other mine-related benefits for local communities, particularly as the mine delayed the start of commercial extraction.

Most local people, like Hamidu and Bakari, said they hoped for work at the mining site. Their support came despite concerns about some of the negative aspects of the rapid urbanisation linked to mining areas. As one middle-aged female nurse at a dispensary in Mandela explained, ‘The fear is that if they have uranium, many miners will come. My fear is that we will get more sick people. Food will also be inadequate. Even the housing will not be enough’ for the influx of migrants. Where healthcare (like other social services in the liberalized economy) is readily seen as underserving Tanzanians, the possibility of a flood of labour migrants stoked fears for the fragile public health system. Other residents voiced concerns about increased crime and HIV/AIDS infections linked to the in-migration of miners. Still, people expected the mining project to bring infrastructural improvements to the area, following neoliberal models of private companies building roads to facilitate capital expansion where the national government failed to fund basic infrastructure. Young women, including those who did not expect to work at the mine, explained that transporting crops to markets or the sick to hospitals would be easier if the mining company paved the dirt road running through the village, which currently becomes slippery and rutted during the annual rainy seasons.

The trickle of northern Tanzanians who came to work at the mine led to a pervasive rumour circulating that mining had already started. With so few outsiders passing through, the few who did became noteworthy, rankling local people who felt they should have priority for mine-related jobs. Seeing commercial drilling equipment hauled down the dirt road—through the villages and even getting stuck for days in deep sand near the secondary school—highlighted to locals that activity was taking place at the mining site, located more than 30 km away, past two paramilitary gates and generally out of sight. The spatial layout of the mining site, inaccessible to neighbours who are impacted, also contributed to rumours about the ownership of the mine. Some local

people thought an American company would mine the site, like many other development projects in the country, and were unfamiliar with Russia as a contemporary development actor. As an elected official in a village neighbouring the mine reflected with resignation, ‘[w]e fail to explain too much. We don’t have people involved with the [mining] company’ who can share information.

The rumour that garnered the most attention from the mining company focused on a sickness linked to mining activities, and the fear it incited in men’s bodies. As Hamidu explained, ‘[w]e hear there is a *homa* that comes and reduces the strength of the body’, specifically in terms of male fertility. Both he and Bakari said they were nonetheless interested in working at the mine, despite the *homa*. Still, Bakari acknowledged that ‘[t]here are some who are scared’ of the *homa*. The connection between the mining project and the *homa* is further framed by a link to water. People think water polluted by mining activities causes the *homa*. *Homa* is generally translated as ‘fever’ but has wider connotations throughout the Kiswahili-speaking world (Winch et al., 1996). *Homa* can be an illness itself or may be used to describe an array of illnesses, not just an above-average body temperature.

As rumours of the *homa* spread, the mining company attempted to intervene by strategically bringing local representatives to taste the water at the mining site. The mining company sponsored a trip to the mining area for a few people from each of the villages closest to the concession. At the site, visitors received water to drink and an explanation of the water purification procedures, apparently in an effort to convey the safety of the water at the site for future workers (cf. Welker, 2014). During the site visit, the mining company also explained their plan to test water quality in rivers in the nearby villages, suggesting their attention to emerging concerns about contaminated drinking water beyond the mining site. Tatu, a recently appointed local government official in her mid-twenties, joined the site visit despite being new to the area. ‘We just drank clean water’, she recalled; ‘there was no problem’ with the taste of the water.

In 2018, a civil society organisation conducted workshops in several villages close to the mine to explain ways to make official grievances in the event of environmental or health damage. In the months after, several dozen Tanzanian men wrote a letter to their District government about injuries they sustained while working at the Mkuju River Project. Government officials referred these complaints of infertility and skin lesions to the mining company. The company ultimately responded to the government, dismissing the complaints. Shortly after the workshops, the mining company met with young men in Mandela to discuss the *homa*.

In Mandela and the broader mining area, women and children are responsible for providing water for household use. Therefore, contaminated water in the nearby villages—from rivers or wells—would first come into contact with the bodies of women and children. Yet, men are seen as susceptible to the harmful effects of the *homa*. Although the mining company promised to test village drinking water sources, the company’s community engagement meeting to discuss the *homa* excluded women. The company’s attempt to reach young men specifically unevenly spread information, creating divisions based on bodies defined by age and gender. This approach also assumed that bodies that are not young and male do not experience the consequences of the *homa*.

Scientific studies do not rule out infertility caused by radiation from uranium mining (National Council on Radiation Protection and Measurements, 2013). However, few young men explicitly spoke of radiation (*mionzi*) when describing their understanding of the sickness. Without affirming or denying the health claims, concerns about male infertility caused by the *homa* suggest links between extractive pollution and changing politics around social and physical reproduction. The sense of fear of the *homa* shows the intimate interactions between bodies and natural resources—particularly water, once a mundane necessity—in a new light.

Fears for male bodies working at the mine site tangle with rumours that mining already started, and that male migrants are taking jobs at

⁷ All names are pseudonymized.

the mine. Local people anticipate that men coming to work for the mine (in both its direct and indirect infrastructures) will develop relationships with local women and create new networks spreading social and financial wealth, and perhaps marginalise local men. Men may also be anticipating their bodily pollution if they work at the mine and are exposed to contaminating agents. The embodied risk to a worker of contracting the *homa* and decreasing his fertility appears as an attack on their masculinity both in terms of a man's capacity to bring home wages and to expand his family. For Mandelans, the *homa* may be a commentary on their bodies and how employment at or proximity to the mining site may be debilitating, or on the way the lack of alternative opportunities to extraction-related work limits possibilities for social reproduction.

4.2. Coal bodies

In Kante, the ground is black and the air is filled with the smell of burning coal. Walking around on any given winter day, when around 500 villagers mine illegally, one will hear the clapping of donkeys' hooves and people hailing the animals. Further up the mountain and down into the valley, around 300 men work daily in the legal Chinese mine developed after Tajikistan's coal renaissance and the government's encouragement of foreign investment. The sound of dynamite blowing up the mountain is a constant reminder of the mine's presence. For Issanovitch, a 32-year-old miner who works for the Chinese, and for other men in the village, working for the formal/legal open-pit coal mine is nothing in comparison with the long days working in the underground galleries where villagers have been mining illegally since the fall of the Soviet Union. When Issanovitch was an informal/illegal miner, he would spend hours with other men hitting the coal face with pickaxes in the dark and moist underground galleries. He would be gasping for breath, filling his lungs with coal dust and carrying heavy coal bags. Informal mining is 'heavy work' (*kori vazni*), say men in the village. Dug by villagers themselves, the galleries collapse sometimes, sending miners to the local hospital for weeks of recovery.

Like most men working for the formal mine, Issanovitch recognises the advantages of quitting informal mining and seasonal migration to do lighter work for the Chinese—driving tractors and excavators is certainly less tiring and less dangerous. The bodily relief that comes with this lighter type of work is not the only advantage of the Chinese mine. Working for the Chinese relieves some of the villagers' anxieties about livelihoods, an ever-present concern in the post-socialist period due to increased privatisation and deregulation. Issanovitch and the Chinese mine manager both believe that the mine is good for the Kantegui as it brings 'employment' and 'possibilities for the future'. Promises of inclusion and employment in private capitalist expansion have allowed the Sino-Tajik mine to secure its place in Kante since 2013. Both men and women feel like the Chinese mine presents a valid alternative to labour migration to Russia. 'Men can do something else now,' says Issanovitch, they do not have to leave their families behind, and women can keep their husbands at home. He adds, 'the money is not bad'; the Chinese pay less than informal mining, 'but, at least they pay a salary'.

Inclusion in the Chinese mine through employment, however, bears various costs, expressed in bodily terms. Afsar, a 34-year-old excavator, relays the hardships that come with his work. He is not allowed to choose his shifts and must often work nights. He gets back to the room where his entire family sleeps at around 4 AM and silently undresses and washes coal dust from his body. Work for the Chinese can also be precarious. Promises of regularity are often met with unpaid salaries and terminated contracts, leading to new anxieties. Afsar explains the distance between the Chinese and the Kanteguis, including differences in bodily habits. The Chinese are 'not like us,' says Afsar, 'it's hard to work with them'. He continues, 'we don't speak the same language; we don't understand what the managers say (...) they eat with chopsticks (...) and they don't have toilets'. Since the Chinese arrival, rumours have spread claiming that donkeys and other animals are disappearing and being

eaten by the Chinese.

The inclusion of some into employment at the Chinese mine also results in the exclusion of others. This causes strained relationships in the village, characteristic of the social fragmentation involved in extractive capitalism. The men who are not offered jobs with the Chinese often claim that they prefer the hardship of other livelihood arrangements over betraying their values. These men combine informal mining in the winter with labour migration to Russia during spring and summer. While this strategy can be more lucrative, their work is unstable and more difficult. However, villagers speak proudly about informal miners' bodily strength and the physical hardship of their work. They believe this combination of informal mining/migration maintains their autonomy in the face of dispossession.

Many disapprove of the Chinese's role in exhausting the village's coal. Villagers see the formal mine as both a threat to the future of informal mining and to the existence of the village itself. When the Sino-Tajik mine encroached into the informal mining area, coal galleries were closed, informal miners were evicted and villagers' homes and livelihoods were threatened. Walking in this space of overlap between informal and formal mining feels like walking through an unequal battle—the bare and vulnerable bodies of men, children and donkeys face the Chinese heavy equipment that ravages the mountain. These unequal relations between informality/formality are symptomatic of 'new' extractive landscapes around the world. In Kante, the men who work for the Chinese are equally impacted by this spatial conflict. Issanovitch's house is in the recently-occupied area: 'Stones roll down the mountain and come and hit our houses, trucks, donkeys (...) There is a big crack in the back of our house (...) we have repaired it ourselves. We asked for the Chinese to give us money, they said they would, but it has been one year, and we have still not seen anything'. His wife adds, '[w]e're scared of letting children play outside.'

New anxieties have formed over rumours that the Chinese mine will continue expanding and that the village will disappear. Villagers refer to the *hukhamat*'s (local government) invitations to move to another village in the valley. Government representatives never mention the Chinese mine's expansion as a motive for this relocation, instead invoking the dryness of land and demographic pressures in Kante. Yet, as Afsar notes, the 'land is as dry in the valley as it is here'. Men know that 'nothing can be done' and that dispossession is not only at the hand of the Chinese. New forms of capitalist extractivism in Tajikistan are based on state monopolies that work with private actors to dispossess the locals. The Tajik government stands behind 'the Chinese', even 'president Emomali Rahmon's daughter herself', according to some villagers.

Alongside these fears about the village's future, a third set of rumours emerged in the village. These rumours identify another threat related to coal's material and symbolic power to corrupt bodies and minds. The expansion of the informal market and potential income from informal mining has triggered interest from another category of actors—a group of 19 female informal miners who work in an area hidden from the village. In this area, coal is harder to extract, and the informal market smaller since it becomes inaccessible to truck drivers during the winter when the road freezes. Yet, informal mining is the only work option for these women. 'What else can we do?' Sayebah, a female miner in her thirties, asks rhetorically. Sayebah's husband left for Russia, took a second wife and stopped sending remittances. Now, she has two children to feed, and mining allows her to do so. She knows that 'people speak' (*ovoz miche*) with contempt and sometimes deny their existence. Informal mining is one of few possibilities in a country where privatisation and other post-socialist changes have led to widespread female unemployment and protracted male absence.

However, mining is considered shameful (*ayb*) for women. This shaming judges women's bodily work, its bodily impacts and the bodily corruption it entails. Extracting coal is men's work (*mardikor*), people say. Rumours circulate about the women's pasts, their relationships with their husbands, their characters and the impact of extractive labour on their bodies. Villagers also claim that mining can cause women's

infertility—bodily exhaustion supposedly makes them incapable of producing ‘good babies’ and taking care of their homes. The work also involves contact with ‘unknown men’, namely the truck drivers who buy coal. People claim that the women speak to these men and move their bodies in inappropriate, promiscuous, dangerous and sexual ways. These women are seen as tired (*monda*), unreputable, corrupted, bad (*vajron*) or spoiled (*ganda*). Their work and lives in Kante illustrate how villagers rework conditions of capitalist production/reproduction.

The idea of spoiled bodies and minds is also applied to children who work (from the age of five) in informal mining. Around 200 children lead donkeys back and forth into the galleries. While an adult extracts coal with a pickaxe, the children unload coal bags to be sold at markets. Mining leads to physical tiredness and injuries—children fall off donkeys, stones collapse into galleries. This dangerous form of child labour emerged with the new extractive landscape. The elderly residents narrate how coal has slowly crept into the minds of everyone in the village, including children. This is partly because schools lost their centrality after the state’s withdrawal from reproductive activities after the fall of the Soviet Union. Rustam, age 82, remembers the Soviet times when children were not allowed to work and laments how coal is now the village’s only concern: ‘even children and young girls mine in the village!’ His words resonate with Gulnisa, a mother of two in her thirties. ‘Coal!’ (*Komor*) she says, ‘there is only coal in people’s heads’. Her husband takes their nine-year-old son to the mines every day. She silently disapproves. ‘Nothing gets into children’s heads anymore’, she says, ‘heads are empty now, they’re just full of coal’.

5. ‘Extractive bodies’ in counter-topographical perspective

Putting the Mandelan and Kantegui experiences into conversation highlights the contours of common struggles and their embodied natures. This counter-topographical work highlights how resource extraction (either in operation or anticipated) shapes ‘extractive bodies’. In the bodily experience of the extractive zone, human and nonhuman relations are reconfigured by material encounters and contaminations, as well as economic forces and social processes. What emerges empirically from both sites is a concern about bodies becoming physically, socially and politically polluted. From the particularities of the production of extractive bodies, we shift to consider how rumours express tensions between embodied emotions—fear, anxiety of exclusion and dispossession and desires for inclusion—a form of ‘*mal de vivre*’. Extractive subjectivities, therefore, emerge from the material and symbolic, and can be understood by starting with the body.

In both places, the idea of pollution is gendered and includes particular considerations of fertility and sexuality. In Mandela, the polluted body manifests through rumours about a sickness (*homa*) damaging male fertility linked to contamination from the mining project. In Kante, rumours depict women miners as ‘tired’, ‘used’ and ‘spoiled’ (*ganda*). This idea of a spoiled body is material: it is related to the perception of women’s work in mines as damaging their health and reproductive capacities. It is also symbolic: women are perceived to be spoiled; the rumour shapes them as sexually promiscuous, as their work leads them to sell coal to unknown men.

These rumours point to concerns about the sexuality and reproductive capacities of male and female bodies that work and live in extractive landscapes. The hypothetical Mkuju River Project worker symbolically exchanges his manhood for a wage. This formation of the extractive body anticipates the ambiguous legacies of radioactivity from the mining project, as well as the uncharted futures of the mine workers and their families. The possibility of exposure to the *homa* and its impact on fertility threatens men’s masculinity by attacking both their capacity to produce wealth (wages) and to start and maintain families (Stiles and Thompson, 2015). Similarly, in Kante, women’s mining work is also a symbolic attack on men’s masculinity. Rumours touch on the role played by the new coal mining landscape in creating weak and complicit men (men working for the Chinese mine) and dispossessing strong men (the

informal miners). The changing dynamics of the extractive landscape threaten both production (e.g., access to coal and its exploitation for informal mining) and reproduction (e.g., the existence of the village itself, female bodily reproductive capacities and children’s futures). This intimate and symbolic corruption of minds and bodies is reflected in the stigmatisation and sexualisation of female miners’ bodies in Kante and the demasculinisation of men’s contaminated bodies in Mandela.

The material and symbolic nature of these rumours reveals how quiet forms of power shape people’s intimate senses of self and embodied subjectivities across dissonant temporalities. In Mandela, the rumoured *homa* speaks to longstanding social and economic contradictions in the villages near the Mkuju River Project. The introduction of new forms of resource extraction (and resulting wealth) in an area marked by generations of rural poverty also reveals embodied anxieties about new industrial activity, social reproduction and labouring bodies. For Mandelans, mine work in the labour-capital exchange may garner social prestige. Yet, it also incurs a less calculable cost in the form of the *homa* (as an occupational health hazard). While a wage’s impact on family livelihoods would be immediate, the cumulative consequences of toxic exposure from mine work or mine pollution might take decades or generations to be fully revealed (cf. Locke, 2017). Similarly, in Kante, rumours speak to anxieties around the exhaustion of land, resources and women’s bodies. Work in the Chinese mine incurs multiple costs: while men who work in the mine gain immediate employment, their labour poses a risk to the long-term existence of the village. In this extractive landscape, the fear that mining will spoil women’s bodies symbolically alludes to fears over the long-term reproductive impacts of extraction. The nuances of frontier temporality (Tsing, 2003) at each site reflect the urgency of extractive capitalism and the slow, accumulating damages experienced (or feared) as a result of extraction.

In both places, rumours about polluted bodies are expressions of anxieties, fears, disapproval and/or discontent. They voice a form of ‘*mal de vivre*’ that cannot be expressed in any other way. Both coal and uranium—whether already extracted or anticipated—materially shape people’s embodied emotions. At both sites, villagers desire to be included in the economic benefits brought by these new extractive enterprises. Men, in particular, express their hopes for employment in the mines. These longings, however, come with an understanding of the precarious nature of inclusion, as working for the extractive companies has both personal and collective repercussions. In Mandela, men generally pin their hopes for longer-term prosperity on agricultural success, rather than mine work. Still, they say they are eager to work for the mining project and resent being excluded in favour of men from other parts of the country. In Kante, men complain about the personal difficulties experienced when working with the Chinese but accept these precarious work conditions and the longer-term threat to the village to avoid leaving their families for seasonal migration to Russia. Like the contradictions of frontier time, this seemingly dissonant emotionality at both sites reflects the kind of resource affect (Weszkalnys, 2016) inherent in extractive capitalism.

Rumours of polluted bodies are a manifestation of these tensions; at the same time, they act as embodied, quiet, but not silent, forms of resistance. In Mandela, the *homa* serves, in part, to symbolically describe and cope with the uncertainty of this moment of delayed extraction. *Homa* may be a sickness of the symbolic body (Douglas, 1966) or a ‘social illness’ (Scheper-Hughes, 1993). Speaking of the *homa* is a political way for rural Tanzanians to voice concerns about uranium mining and its social and bodily impacts; such concerns may otherwise be unacceptable to their neighbours or result in their exclusion from future minework. In the Tajikistani context, rumours often act as a way of maintaining social control (Harris, 2004). In Kante, however, rumours also act as a way to ‘speak up’. The etymology of the word *ovoz* (rumour) is telling, as the word comes from the Persian ‘to voice, utter, speak’ (Pokorny, 1959, pp. 1135–36). In both places, villagers first attempted to hold mining companies accountable through direct, organised complaints in Mandela and more individual grievances in Kante. Both sites

invoke a kind of ‘slow dissent’ (Murrey, 2016)—where no organised resistance to extraction exists, but ‘the potential to exert pressures against systemic forces over time’ (p. 226) lies in the embodied emotions of those impacted by extraction and in the rumours they spread.

6. Conclusion

This article explores the formation of extractive subjectivities at resource frontiers in Tajikistan and Tanzania. Drawing on feminist scholarship, it takes the body as a privileged site for exploration into how heterogenous forces meet, are felt, are lived and are resisted. Methodologically, our feminist counter-topographical approach allows us to put into conversation two disparate sites in relation to processes of change triggered by global extractive capitalism. We use ‘extractive bodies’ as a contour line (Katz, 2001) to examine the disruptions created in extractive frontiers around gender, sexuality and reproduction. In both sites, rumours about the body express a form of ‘*mal de vivre*’ symptomatic of the expansion of extractive landscapes. At the same time, we argue, these rumours also serve as embodied forms of resistance.

We see Tanzania and Tajikistan as topographies of global capitalism within longer histories of extractivism (pre/colonial, socialist, etc.). In post-socialist Mandela, Tanzania and Kante, Tajikistan, ‘new’ extractive frontiers make previously inaccessible resources, land and labourers available to be commodified. Our counter-topography examines some of the profound and intimate disruptions of lifeworlds induced by the expansion of global capitalist extractivism. In Mandela, rumours circulate that uranium mining has already begun and that sickness linked to mine pollution can cause male infertility in those who work at the mine or encounter contaminated water in nearby villages. In Kante, rumours about the productive exhaustion of land and resources by the Chinese mine emerge alongside rumours of sexual and promiscuous female informal miners and their tired, spoiled bodies that are incapable of reproductive labour. While each site has its own specificities, the intimate and symbolic corruption of minds and bodies (the sexualisation of female miners’ bodies in Kante and the demasculinisation of men’s contaminated bodies in Mandela) speak to concerns about the sexuality and reproductive capacities of male and female bodies that work and live in extractive landscapes. Rumours of polluted bodies in Mandela and Kante express anxieties, fears, disapproval and/or discontent with the shifting logics of extractivism on the frontier.

Our counter-topography allows us to engage with ‘extractive bodies’ as materially and symbolically polluted in ways that we have argued speak to both our understanding of disruption in extractive zones and the kinds of uneventful, everyday and emotional resistance—slow dissent (Murrey, 2016)—that emerges in these landscapes. This concept recognises that there might not be a single catalyst for resistance but that we can still identify resistance in the inconsistent and fractured nature of embodied emotions in extractive landscapes. This approach expands our understandings of the ‘quieter registers of power’ at the extractive frontier by moving away from the top-down tactics and strategies of extractive firms and their allies. Instead, we develop a bottom-up perspective which starts with ‘extractive bodies’, reflecting how peoples’ senses of self are fluid and reconfigured by multiple heterogenous forces, factors, actors and encounters—not only the discourses and strategies of powerful actors.

Our counter-topographical approach and its specific focus on ‘extractive bodies’ makes several contributions to FPE and critical resource scholarship. First, we re-establish the importance of multi-scalar work attentive to how extractive capitalism reorganises gendered, aged and sexed bodies (symbolic and material) and their emotions. Second, our intersectional perspective highlights commonalities between forms of disruption experienced in multiple sites, in relation to how gendered, aged and sexed inequalities emerge, without collapsing difference amongst multiplicity. Crossing scales and linking sites of disruption recognises connections and differences in encounters

with similar processes—in this case global extractivism. Ultimately, this allows us to start, as Katz (2001) invites us, to imagine different kinds of political responses to globalising capitalism.

CRedit authorship contribution statement

Stephanie Postar: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing.
Negar Elodie Behzadi: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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References

- Ahuja, N., 2015. Intimate atmospheres: Queer theory in a time of extinctions. *Glq* 21 (2–3), 365–385. <https://doi.org/10.1215/10642684-2843227>.
- Alexander, J., McGregor, J., Tendi, B.M., 2017. The transnational histories of southern African liberation movements: An introduction. *J. Southern African Stud.* 43 (1), 1–12. <https://doi.org/10.1080/03057070.2017.1278982>.
- Alpers, E.A., 1975. *Ivory and Slaves: Changing Pattern of International Trade in East Central Africa to the Later Nineteenth Century*. University of California Press, Berkeley.
- Arboleda, M., 2020. *Planetary mine: territories of extraction under late capitalism*. Verso, London and Brooklyn.
- Bagelman, J., Wiebe, S.M., 2017. Intimacies of global toxins: Exposure & resistance in “Chemical Valley”. *Political Geography* 60, 76–85. <https://doi.org/10.1016/j.polgeo.2017.04.007>.
- Balderson, U., 2022. Emotional subjectivities and the trajectory of a Peruvian mining conflict. *Environment and Planning E: Nature and Space* 1–20. <https://doi.org/10.1177/25148486221113308>.
- Bakker, K., Bridge, G., 2006. Material worlds? Resource geographies and the “matter of nature”. *Prog. Hum. Geogr.* 30 (1), 5–27. <https://doi.org/10.1191/0309132506ph5880a>.
- Bankwatch, 2017. *Review of the Coal Sector in the Republic of Tajikistan*, LittleEarth/Bankwatch.
- Barry, A., Gambino, E., 2020. Pipeline Geopolitics: Subaquatic Materials and the Tactical Point. *Geopolitics* 25 (1), 109–142. <https://doi.org/10.1080/14650045.2019.1570921>.
- Basov, V., 2017. Russian state corporation suspends \$1.2 billion uranium project in Tanzania, MINING.com. Available at: <http://www.mining.com/russian-state-corporation-suspends-1-2-billion-uranium-project-tanzania/>.
- Behzadi, N.E., 2019. Women miners’ exclusion and Muslim masculinities in Tajikistan: A feminist political ecologies of honor and shame. *Geoforum* 100, 144–152. <https://doi.org/10.1016/j.geoforum.2019.01.001>.
- Behzadi, N.E., Drenberger, L., 2020. Gender and ethnicity in the Soviet Muslim peripheries: A feminist postcolonial geography of women’s work in the Tajik SSR (1950–1991). *Central Asian Survey* 39 (2), 202–219. <https://doi.org/10.1080/02634937.2019.1699777>.
- Benhabib, S., 1999. *Sexual Difference and Collective Identities: The New Global Constellation*. *Signs: J. Women Culture Soc.* 24 (2), 335–361.
- Berman-Arévalo, E., Ojeda, D., 2020. Ordinary Geographies: Care, Violence, and Agrarian Extractivism in “Post-Conflict” Colombia. *Antipode* 52 (6), 1583–1602. <https://doi.org/10.1111/anti.12667>.

- Bryceson, D.F., et al., 2012. Unearthing treasure and trouble: mining as an impetus to urbanisation in Tanzania. *J. Contemporary African Stud.* 30 (4), 631–649. <https://doi.org/10.1080/02589001.2012.724866>.
- Cohen, R., 2014. Extractive desires: The moral control of female sexuality at Colombia's gold mining frontier. *J. Latin Am. Caribbean Anthropol.* 19 (2), 260–279. <https://doi.org/10.1111/jlca.12098>.
- Caretta, M.A., Cheptum, F.J., 2019. Enacting feminist countertopographies: Border crossing through participant led results dissemination. *ACME: Int. J. Crit. Geographers* 18 (1), 25–48.
- Caretta, M.A., Zaragocin, S., 2020. Women's resistance against the extractive industry: embodied and water dimensions. *Human Geography* 13 (1), 3–5.
- Caretta, M.A., Zaragocin, S., Turley, B., Torres Orellana, K., 2020. Women's organising against extractivism: towards a decolonial multi-sited analysis. *Human Geography* 13 (1), 49–59.
- Cheru, F., 2016. Emerging southern powers and new forms of South-South cooperation: Ethiopia's strategic engagement with China and India. *Third World Quarterly* 37 (4), 592–610. <https://doi.org/10.1080/01436597.2015.1116368>.
- Cowen, D., 2020. Following the infrastructures of empire: notes on cities, settler colonialism, and method. *Urban Geography* 41 (4), 469–486. <https://doi.org/10.1080/02723638.2019.1677990>.
- de Lauretis, T., 1989. *Technologies of gender: Essays on theory, film and fiction*. MacMillan, Basingstoke.
- Douglas, M., 1966. *Purity and Danger: An analysis of concepts of pollution and taboo*. Routledge & Kegan Paul, London.
- Dudoignon, S., 1998. 'Communal solidarity and social conflicts in late 20th century Central Asia: the case of the Tajik civil war', Islamic areas studies working paper series, 7, pp. 1–23.
- Dumett, R., 1985. Africa's Strategic Minerals During the Second World War. *J. African History* 26 (4), 381–408. <https://doi.org/10.2307/181656>.
- Elmhirst, R., 2011. Introducing new feminist political ecologies. *Geoforum* 42 (2), 129–132. <https://doi.org/10.1016/j.geoforum.2011.01.006>.
- Faria, C., 2017. Towards a countertopography of intimate war: Contouring violence and resistance in a South Sudanese diaspora. *Gender, Place and Culture: A J. Feminist Geography* 24 (4), 575–593. <https://doi.org/10.1080/0966369X.2017.1314941>.
- Faxon, H.O., 2021. 'After the Rice Frontier: Producing State and Ethnic Territory in Northwest Myanmar', *Geopolitics*, pp. 1–25. Doi: 10.1080/14650045.2020.1845658.
- Frederiksen, T., Himley, M., 2020. Tactics of dispossession: Access, power, and subjectivity at the extractive frontier. *Trans. Inst. British Geographers* 45 (1), 50–64. <https://doi.org/10.1111/tran.12329>.
- Graybill, J.K., 2019. Emotional Environments of Energy Extraction in Russia. *Ann. Am. Assoc. Geographers* 109 (2), 382–394. <https://doi.org/10.1080/24694452.2018.1537843>.
- Grosz, E., 1994. *Volatile Bodies: Toward a Corporeal Feminism*. Indiana University Press, Bloomington.
- Haraway, D., 1988. Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective. *Feminist Studies* 14 (3), 575–599.
- Harris, C., 2004. *Control and subversion: gender relations in Tajikistan*. Pluto Press, London.
- Heathershaw, J., 2011. Tajikistan amidst globalisation: state failure or state transformation? *Central Asian Survey* 30 (1). <https://doi.org/10.1080/02634937.2011.554070>.
- Hoover, E., 2017. *The River Is in Us*. University of Minnesota Press, Minneapolis, 10.5749/minnesota/9781517903022.001.0001.
- Idrisov, T., 2020. Tajikistan's coal dilemma, CABAR: Central Asian Bureau for Analytical Reporting, 12.03.2020, www.cabar.asia/en.
- Iliffe, J., 1979. *A modern history of Tanganyika*. Cambridge University Press, Cambridge.
- International Atomic Energy Agency (2016) *In Situ Leach Uranium Mining: An Overview of Operations*, IAEA NUCLEAR ENERGY SERIES. Vienna.
- Jenkins, K., 2014. Women, mining and development: An emerging research agenda. *The Extractive Industries and Society* 1, 329–339. <https://doi.org/10.1016/j.exis.2014.08.004>.
- Johnson, A., Zalik, A., Mollett, C., Sultana, F., Havice, E., Osborne, T., Valdivia, G., Lu, F., Billo, E., 2021. Extraction, entanglements, and (im)materialities: Reflections on the methods and methodologies of natural resource industries fieldwork. *Environment and Planning E: Nature and Space* 4 (2), 383–428.
- Kalinovsky, A.M., 2018. *Laboratory of Socialist Development: Coal War Politics and Decolonization in Soviet Tajikistan*. Cornell University Press, Ithaca and London.
- Katz, C., 2001. On the Grounds of Globalisation: A Topography for Feminist Political Engagement. *Signs* 26 (4), 1213–1234.
- Katz, C., 2011. Accumulation, Excess, Childhood: Toward a Countertopography of Risk and Waste. *Documents d'analisi geográfica* 57 (1).
- Kelly, A.B., Peluso, N.L., 2015. Frontiers of Commodification: State Lands and Their Formalisation. *Society and Natural Resources* 28 (5), 473–495. <https://doi.org/10.1080/08941920.2015.1014602>.
- Kinyondo, A., Huggins, C., 2019. Resource nationalism in Tanzania: Implications for artisanal and small-scale mining. *Extr. Ind. Soc.* 6 (1), 181–189. <https://doi.org/10.1016/j.exis.2018.08.005>.
- Kotilainen, J., et al., 2015. Corporate social responsibility of mining companies in Kyrgyzstan and Tajikistan. *Resour. Policy* 45, 202–209. <https://doi.org/10.1016/j.resourpol.2015.06.001>.
- Lahiri-Dutt, K., 2013. Bodies in/out of place: hegemonic masculinity and kamins' motherhood in Indian coal mines. *South Asian History and Culture* 4 (2), 213–229. <https://doi.org/10.1080/19472498.2013.768846>.
- Lahiri-Dutt, K., 2022. New directions in research on women and gender in extractive industries. *The Extractive Industries and Societies* 9. <https://doi.org/10.1016/j.exis.2022.101048>.
- Lee, C.K., 2018. *The Specter of Global China: Politics, Labor, and Foreign Investment in Africa*. University of Chicago Press, Chicago.
- Lempinen, H., Lindroth, M., 2021. Fear and hoping in the Arctic: Charting the emotional fabric of resource extraction. *Extr. Ind. Soc.* 8 (2), 100872. <https://doi.org/10.1016/j.exis.2021.01.007>.
- Liboiron, M., Tironi, M., Calvillo, N., 2018. Toxic politics: Acting in a permanently polluted world. *Soc. Stud. Sci.* 48 (3), 331–349. <https://doi.org/10.1177/0306312718783087>.
- Lock, M., 2017. Recovering the Body. *Annual Rev. Anthropol.* 46, 1–14. <https://doi.org/10.1146/annurev-anthro-102116-041253>.
- Longhurst, R., 2001. *Bodies: Exploring Fluid Boundaries*. Routledge, London.
- Lyall, A., 2017. Voluntary resettlement in land grab contexts: examining consent on the Ecuadorian oil frontier. *Urban Geography* 38 (7), 958–973. <https://doi.org/10.1080/02723638.2016.1235933>.
- Mbughuni, A., 2006. Tanzania and the Liberation Struggle in Southern Africa, 1958–1975. Howard University. <https://doi.org/10.1017/S000202060003941X>.
- Maonachie, R., Hilson, G., 2011. Artisanal Gold Mining: A New Frontier in Post-Conflict Sierra Leone? *J. Develop. Stud.* 47 (4), 595–616. <https://doi.org/10.1080/002203810033599402>.
- Mohan, G., Lampert, B., 2013. Negotiating China: Reinserting African agency into China-Africa relations. *African Affairs* 112 (446), 92–110. <https://doi.org/10.1093/afraf/ads065>.
- Mollett, S., 2017. Gender's critical edge: Feminist political ecology, postcolonial intersectionality, and the coupling of race and gender. In: MacGregor, S. (Ed.), *Routledge Handbook of Gender and Environment*. Routledge, New York, pp. 146–158.
- Mollett, S., Faria, C., 2013. Messing with gender in feminist political ecology. *Geoforum* 45, 116–125. <https://doi.org/10.1016/j.geoforum.2012.10.009>.
- Mount, A., 2011. Where asylum-seekers wait: feminist counter-topographies of sites between states. *Gender, Place and Culture* 18 (3), 381–399. <https://doi.org/10.1080/0966369X.2011.566370>.
- Murphy, M., 2017. Alterlife and decolonial chemical relations. *Cultural Anthropol.* 32 (4), 494–503. <https://doi.org/10.14506/ca32.4.02>.
- Murrey, A., 2016. Slow dissent and the emotional geographies of resistance. *Singap. J. Trop. Geogr.* 37 (2), 224–248. <https://doi.org/10.1111/sjtg.12147>.
- Nakaya, S., 2009. Aid and transition from a war economy to an oligarchy in post-war Tajikistan. *Central Asian Survey* 28 (3), 259–273.
- National Council on Radiation Protection and Measurements (NCRP), 2013. Preconception and prenatal radiation exposure: health effects and protective guidance. Bethesda (MD).
- Newell, S., 2018. The affectiveness of symbols: Materiality, magicity, and the limits of the antisemitic turn. *Current Anthropology* 59 (1), 1–22. <https://doi.org/10.1086/696071>.
- Nightingale, A.J., 2011. Bounding difference: Intersectionality and the material production of gender, caste, class and environment in Nepal. *Geoforum* 42 (2), 153–162. <https://doi.org/10.1016/j.geoforum.2010.03.004>.
- Peluso, N.L., 2017. Plantations and mines: resource frontiers and the politics of the smallholder slot. *J. Peasant Studies* 44 (4), 954–989. <https://doi.org/10.1080/03066150.2017.1339692>.
- Peluso, N.L., Lund, C., 2011. New frontiers of land control: Introduction. *J. Peasant Studies* 38 (4), 667–681. <https://doi.org/10.1080/03066150.2011.607692>.
- Pokorny, J., 1959. *Indogermanisches etymologisches Wörterbuch*. Berne and Munich I, 1135–1136.
- Postar, S., 2017. The half-lives of African uranium: A historical review. *The Extractive Ind. Soc.* 4 (2), 398–409. <https://doi.org/10.1016/j.exis.2017.03.002>.
- Pratt, G., Yeoh, P., 2003. Transnational (Counter) Topographies. *Gender, Place and Culture: A J. Feminist Geography* 10 (2), 159–166. <https://doi.org/10.1080/0966369032000079541>.
- Rasmussen, M.B., Lund, C., 2018. Reconfiguring Frontier Spaces: The territorialisation of resource control. *World Dev.* 101, 388–399. <https://doi.org/10.1016/j.worlddev.2017.01.018>.
- Richardson, T., Weszkalny, G., 2014. Resource Materialities. *Anthropological Quarterly* 87 (1), 5–30.
- Saunders, J.A., et al., 2016. Potential aquifer vulnerability in regions down-gradient from uranium in situ recovery (ISR) sites. *J. Environ. Manage.* 183, 67–83. <https://doi.org/10.1016/j.jenvman.2016.08.049>.
- Scheper-Hughes, N., 1993. *Death Without Weeping: The Violence of Everyday Life in Brazil*. University of California Press, Berkeley.
- Sharp, L.A., 2000. *The Commodification of the Body and its Parts*. *Ann. Rev. Anthropol.* 29, 287–328.
- Stiles, E.E., Thompson, K.D. (Eds), 2015. *Gendered lives in the Western Indian Ocean: Islam, marriage, and sexuality on the Swahili coast*. Ohio University Press.
- Sultana, F., 2009. Fluid lives: Subjectivities, gender and water in rural Bangladesh. *Gender, Place and Culture* 16 (4), 427–444. <https://doi.org/10.1080/09663690903003942>.
- Sultana, F., 2011. Suffering for water, suffering from water: Emotional geographies of resource access, control and conflict. *Geoforum* 42 (2), 163–172. <https://doi.org/10.1016/j.geoforum.2010.12.002>.
- Sultana, F., 2021. Political ecology 1: From margins to center. *Prog. Hum. Geogr.* 45 (1), 156–165. <https://doi.org/10.1177/0309132520936751>.
- Sundberg, J., 2004. Identities in the making: Conservation, gender and race in the Maya Biosphere Reserve, Guatemala. *Gender, Place and Culture* 11 (1), 43–66. <https://doi.org/10.1080/0966369042000188549>.
- Sundberg, J., 2017. *Feminist Political Ecology*. In *International Encyclopedia of Geography: People, the Earth, Environment and Technology*. Wiley Online Library, pp. 1–12. <https://doi.org/10.1002/9781118786352.wbieg0804>.

- Sunseri, T., 2009. *Wielding the Ax: State Forestry and Social Conflict in Tanzania, 1820–2000*. Ohio University Press, Athens.
- Truelove, Y., 2011. (Re-) Conceptualising water inequality in Delhi, India through a feminist political ecology framework. *Geoforum* 42, 143–152. <https://doi.org/10.1016/j.geoforum.2011.01.004>.
- Tsing, A.L., 2003. Natural Resources and Capitalist Frontiers. *Economic Polit. Weekly* 38 (48), 5100–5106.
- Watts, M.J., 2018. Frontiers: Authority, Precarity, and Insurgency at the Edge of the State. *World Dev.* 101, 477–488. <https://doi.org/10.1016/j.worlddev.2017.03.024>.
- Welker, M., 2014. *Enacting the corporation: an American mining firm in post-authoritarian Indonesia*. Berkeley: University of California Press.
- Weszkalnys, G., 2016. A doubtful hope: resource affect in a future oil economy. *J. Roy. Anthropol. Inst.* 22 (S1), 127–146. <https://doi.org/10.1111/1467-9655.12397>.
- Williams, J., Massaro, V., 2013. Feminist Geopolitics: Unpacking (In)Security, Animating Social Change. *Geopolitics* 18 (4), 751–758. <https://doi.org/10.1080/14650045.2013.816842>.
- Winch, P.J., et al., 1996. Local Terminology for Febrile Illnesses in Bagamoyo District, Tanzania and its Impact on the Design of a Community-Based Malaria Control Programme. *Soc. Sci. Med.* 42 (7), 1057–1067.
- World Nuclear Association, 2020. In Situ Leach (ISL) Mining of Uranium. Available at: <https://www.world-nuclear.org/information-library/nuclear-fuel-cycle/mining-of-uranium/in-situ-leach-mining-of-uranium.aspx> (Accessed: 30 October 2021).