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Political ecologies of the post-mining landscape: Activism, resistance, and legal struggles over Kalimantan's coal mines

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ABSTRACT

This study explores contestation over the meanings, rules and practices of coal mine reclamation and mine closure in the context of East Kalimantan, Indonesia's major coal producing province. As mining intensified in the province, and coal was mined out, concessions were left with large mine voids un-refilled and abandoned without closure – many within close vicinity to human settlements. Following an extended campaign led by a diverse group of social movement actors, utilising various advocacy and litigation strategies, the East Kalimantan legislature adopted a provincial regulation in 2013, reinforcing higher-level regulations that mandate coal mining companies to conduct reclamation and post-mining clean up. The regulation was the first time that activists had directly influenced policy regulating mining at the sub-national level in Indonesia. Yet the policy outcome alone has not been sufficient to shape change: an estimated 1735 coal mine voids remain un-refilled in East Kalimantan, and the number of human fatalities from deaths in mine voids continues to grow. Remediation of mine sites is rarely performed to return land to its pre-mined conditions. By bringing together relevant scholarship in political ecology, the politics of development and legal geography, we analyse the relationships between pact-making, political settlements, contestation and policy reform related to the governance of post-mine landscapes.

1. Introduction

In East Kalimantan, strip or open-pit mining for coal is the dominant form of industrial land use. The province is home to the majority of Indonesia's coal reserves, and in its current spatial land zoning plan, 5.2 million hectares of the province have been allocated for mining, predominantly coal [1]. Abandoned, un-reclaimed mining sites with vast mine voids – many that fill up with water – scar the province's lowland landscapes. Most are located within access of the waterways along which the coal extracted from these pits had been transported in river barges out to waiting ships. To date, 32 children have drowned in these exposed, water-filled voids, many located only hundreds of meters from residencies.[1]

On 7th November 2013, the East Kalimantan governor passed Provincial Regulation (Perda no. 8 of 2013) on the Management of Reclamation and Post-Mining, mandating that reclamation must be conducted to rehabilitate a mined site's ecological functions ([2]:1).[2] The regulation also required that an independent commission be established to oversee this reclamation. The regulation came as a result of years of advocacy and organising by predominantly local social movement actors, with support from national NGOs. This marked the first time that social movement organising had changed policy regulating mining at the sub-national level in Indonesia. The regulation reiterates requirements for reclamation and mine closure as mandated by higher national regulations, but details further mine site rehabilitation requirements for mine investors, including revegetation of mined land and refilling of mine pits, as well as reporting and monitoring obligations. The Perda's requirement for establishing a

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[1] A full list of all 35 victims (32 of whom were children, aged between 5 and 18) to have died by drowning in unreclaimed mining pits in East Kalimantan is included as supplementary material.

[2] Specifically, according to point (a) of the general considerations, the provincial regulation requires that reclamation must be conducted 'with the objective of returning the site's ecological functions and to support sustainable development'.

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commission to oversee reclamation was additional to any provisions set out in national statutes. Yet despite these laws and regulations, little has changed with mining reclamation in practice. This combination of unprecedented success in changing laws with failure to secure their implementation is the problem tackled in this paper. We address this puzzle by combining analytical lenses from political ecology, political settlements theory, and legal geography. We suggest that these frameworks help understand both how institutional (legal) change became possible, and the continued obstacles frustrating rollout of that legal change.

In Indonesia, the extractive sector is notorious for its entrenched rent-seeking and opaque licensing processes – a legacy of the Suharto era [3]. The political economy of coal sector governance and energy policy is shaped by a distribution of power and inter-elite pacts that are closely controlled by Indonesia's 'highly cohesive and complex oligarchy' ([4]:36, [5]). Indonesia's business class is 'more powerful, more liquid, and more engaged in resource industries than ever before' ([6]:2), and this is particularly the case for the coal sector which is dominated by national companies and investors (as opposed to transnational mining corporations). Political actors forge bargains with wealthy business actors, distributing access to government contracts and concessions for natural resource extraction in exchange for campaign funds [7,8]. These interests hinder the implementation of laws in relation to environmental protections [9] and mining governance reforms. Yet at the same time, a small but growing social movement is targeting the extractives sector in Indonesia, seeking institutional changes regarding, inter alia, the governance of licensing, land accumulation practices, fiscal arrangements, and ecological and social impacts. Scholarly literature has only recently begun to explore Indonesia's mining social movements, and their strategies [10,11,8]. Through an analysis of coal mining in East Kalimantan, this paper contributes to this incipient literature by posing two research questions: (a) how, and to what extent, have social movements been able to influence extractive industry governance by penetrating the political relationships and bargains that prioritize elite interests; and (b) when social movements do successfully manoeuvre through the political settlement to influence the policy process, what factors influence the possibility that the policy changes which they secure are implemented?

In addressing these questions, we fulfil both an empirical and a theoretical purpose. Empirically, we describe the factors and processes that have produced the abandoned, post-mine landscapes of East Kalimantan. We then examine the strategies adopted by social movement actors in East Kalimantan who have sought to reform mine reclamation policy; by mobilising to confront the expansion of mining, then by narrowing their focus, to engage in direct negotiations with public sector actors. These strategies led to sub-national policy reform – the East Kalimantan regulation on reclamation and post-mining noted above. We then address the factors that frustrated the implementation of this reform and other mining reclamation related policies. These factors range from flaws in the design of the regulation itself, through constraints on capacities to adequately implement the law, and on to the extensive networks that link political actors, miners and paramilitary organisations (*organisasi kemasyarakatan*, commonly known as *ormas*) who seek to intimidate and deter local activists and leaders.

Our theoretical purpose has two components. First, we speak to the need for more political ecological research into post-mining landscapes. Conflicts over resource extraction often include conflicts over how the human-environment will be transformed post-extraction: environmentally, socially, culturally and economically. How that post-extraction landscape is managed, governed and contested therefore merits more attention than has heretofore been the case. Indeed, as mines opened early in the post 1990s commodity boom begin to close down, the governance of the post-closure human-environment becomes that much more urgent of a topic to address. Second, we suggest ways in which political ecologies of resource extraction might engage with concepts that are being developed in research on the politics of development and legal geography. Legal geography is useful to reveal how socio-spatial settings shape how laws and regulatory structures materialize, are given meaning, and are deployed [12] to enable the legal spaces in which extractive industries operate [13]. Political settlements theory helps understand how relationships among elites and social movements shape the emergence and contestation of laws and governance arrangements in the first place, in ways that illuminate the simultaneity of political obstacles to, and opportunities for, institutional change.

Our focus on post-closure coal mines also means that the paper addresses a particular sort of "energy landscape" [14] produced by coal-intensive energy policy in Indonesia and the countries that import its coal (Japan, India, and China, in particular [15]). We illuminate how the obstacles to improving human rights and environmental standards in the governance of these landscapes are closely related to the problems of incumbency and obstacles to an energy transition beyond coal (cf. [16,17]) – and that, therefore, a lock-in to coal energy likely also implies the continued production of hazardous post-closure landscapes that compromise human and environmental health.

In the following two sections we develop this theoretical argument and explain our research methods. Then the fourth, fifth and sixth sections present our evidence and analysis. Section 4 documents the ways in which political economy and political settlements have driven the expansion of coal mining in Indonesia and specifically in East Kalimantan, producing landscapes that are socially and environmentally hazardous. Section 5 documents the evolution of civil society and social movement organisation strategies that have tried to respond to this expansion of coal mining as well as to its landscape effects. Section 6 describes the different obstacles that have frustrated these civil society strategies and in particular the implementation of new laws designed to improve practices of mine reclamation. These obstacles range from disputes over the meaning of "restoration" through to networks of political influence and organised violence through which parties to the political settlement around coal seek to sustain their incumbency. The final discussion and conclusions move from this focus on East Kalimantan to broader themes in the political ecology of resource extraction.

2. Political settlements, tussles over law and political ecology

Political ecology, a body of work that addresses environmental questions through the lens of political economy and social and environmental justice [18–20], has paid increasing attention to the centrality of mineral and hydrocarbons extraction in contemporary environmental politics [13,21,8]. Reflecting broader patterns in political ecology, this work has emphasised informal and extra-legal politics, paying particular attention to socio-environmental conflicts and forms of resistance more than to the ways in which formal legislation and party politics influence nature-society relationships surrounding resource extraction [13].

Following Andrews and McCarthy [13], this paper suggests that there is value in paying greater attention to the ways in which laws mediate how resources are extracted, and how tussles over these laws become instrumental in determining how extractive industry investment expands, as well as the influence of this expansion on human and community rights, landscapes and environments. That formal laws occupy an important place in mediating these relationships should not be a surprise. If they were unimportant, extractive industry companies would not employ small legions of lawyers, nor would legal defence and advocacy be such prominent strategies among civil society organisations responding to resource extraction [22,23]. Put another way, law is a key instrument in practical political ecology. Similarly, legal geography has illuminated the importance of law in mediating relationships between space, economy and society [24], and, more recently, the use and management of environmental resources and the expansion of extractive industries [13,25–28].

If law is important in mediating human-environment relationships, then in addition to how this mediation operates in practice, it is also important to theorize and explain how laws come into being and are given meaning [27,29], how these meanings translate into 'material outcomes because [the law] has the explicit backing of the state' ([26]:615–616), and more generally whether and how laws are implemented. Political ecology's historical emphasis on political economy, the relationships between patterns of accumulation and institutions, struggles over meaning [30] and social movements [31] are helpful here, as also are more recent approaches exploring the ways in which narratives and discourses surrounding coal-based energy can both consolidate and contest incumbent energy regimes [15,32,33]. We suggest, however, that these approaches can be usefully combined with work on political settlements, for reasons we outline below [34,35].

The political settlements literature has emerged as a friendly critique of the institutionalist turn within economics, particularly development economics. It emphasises the simple, but often under-developed, point that institutions such as laws are a product of explicit and implicit agreements among elites regarding how opportunities should be distributed in society. This does not mean that institutions (including laws and regulations) are merely a direct product of such inter-elite pacts – institutions can outlive particular pacts, and they are always subject to some degree of contention as factions excluded from these pacts seek to enhance their own access to opportunities and rights [36]. Furthermore, the stability of institutions depends considerably on a politics of ideas which determines dominant notions of what is a legitimate and illegitimate distribution of power and opportunity, and, relatedly, what is legitimate policy (including energy policy: cf. [15]). Even when the political settlements literature has intellectual origins that are not traditionally drawn on by political ecologists, this insight regarding the importance of inter-elite relationships and the politics of ideas that can help stabilize them, is a helpful complement to political ecological analysis of environmental conflicts.[3]

Within a political settlements framework, social movement contestation of existing laws would be understood as the efforts of so-called "excluded factions" to challenge the dominant settlement and the way in which it distributes opportunities and costs in society (for instance, how far it allows coal mining elites to simply abandon mined out landscapes, or instead requires them to restore these landscapes). The extent to which social movements succeed in such contestation depends on how far a contentious politics of ideas might open space for institutional changes that are not in line with elite interests [38], as well as on the resources that movements are able to mobilize and that enhance their "holding power"; their power to persist in these struggles and hold out against the power of elites [35]. This implies that any effort to analyse movement capacity to modify laws demands attention to the human, financial and other resources that movements are able to mobilize, and to the strategies and tactics that they use in negotiating with formal institutions.

A political settlements approach (and our own approach here) would therefore interpret law as a result of the interplay between inter-elite politics, the insurgent efforts of movements and other factions excluded from the settlement, and the extent to which elites acquiesce to the modification of laws and regulations so as to incorporate or mollify such factions. In this reading, law is neither an instrument for the simple legitimation of the state or the protection of capital accumulation, nor an independent arbiter of disputes over rights and obligations. Instead laws reflect relationships of power at any given moment of time as well as at prior moments (because there is always considerable inertia in the speed with which laws change). Laws, like all institutions, change for a variety of reasons that range from contentious politics through to simple drift and internal contradictions [36].

The literatures on the extent to which movements and protests are able to influence policy [39] has similarly emphasized the importance of addressing the strategies, coalitions and alliances that movement actors forge, including with state agencies, to achieve policy and institutional outcomes [40–42]. Analyses of cases in which movements have had success in affecting policy relating to extractive industry governance have shown that these details are extremely important in determining the extent to which movements secure changes in the laws that would otherwise be endorsed by the over-arching political settlement [22,40,43]. While not all these details easily lend themselves to theorisation, they are themselves elements of how to conceptualize movement power and capacity to open "cracks" [44] within a dominant settlement.

In this paper, we draw on these different ideas to analyse the extent to which social movements have been able to influence laws regarding post-mine landscape reclamation in Indonesia, with a focus on coal mining in East Kalimantan. We work from political ecology's emphasis on the importance of broad political economy drivers of human-environment relationships, while being explicit in relating these drivers to the nature of pacts between different economic and political elites at national and sub-national levels and the cultural politics of policy ideas, though our focus is far more on domestic politics than on the efforts of transnational alliances to disrupt coal-based energy regimes [8]. In line with Andrews and McCarthy [13], we focus on negotiations over laws, and the potential to modify human-environment relationships in contexts where coal extraction occurs. Following Silva et al. [39], we document the conditions under which movements have been able to change laws. We pay particular attention to the links among the strategies and tactics that movements adopt, including protest, research aimed at shifting public debate, lobbying elected representatives, negotiating with investors and policy makers, engaging in electoral politics, and bringing legal challenges [22,45]. In particular, the ability of social movements to articulate mining related grievances and bring these priorities into policy discussions enabled movement actors to influence agenda setting (c.f. [46]). However, we also emphasize that securing the roll-out and implementation of laws is just as important as changing legislation, and in this domain, movements have been less successful. The political settlements literature helps explain this limited success.

3. Methods

In addressing these questions, we draw on the following sources of data. Key informant interviews and site observations were conducted between December 2018 and May 2019. Interviewees were selected across a range of institutions: national and sub-national government; non-governmental organisations; social movement and community-based organisations; mining companies; and academia. Twenty-one interviews were conducted in East Kalimantan, and two in Jakarta (see Fig. 1 for map). All interviews were held in Indonesian, with transcripts (where interviews were recorded) and interview notes translated into English by Toumbourou. We also ran a focus group discussion with eight participants from civil society organisations and lawyers, and attended a discussion meeting held by Mulawarman University's Law Faculty and the mining social movement organisation, JATAM, and another discussion on corruption in extractives with civil society actors and lawyers. Interviewees were initially selected on the basis of the authors' knowledge of key actors; others were identified through snowballing, with interviewees suggesting other people to interview. While it was hardest to secure interviews with mining company staff, some such interviewees were recruited opportunistically during other meetings. Interviews addressed general themes related to the research question but also focused on the East Kalimantan provincial regulation

[3] The political settlements approach has been applied across an increasingly wide range of sectors and countries (see for instance www.effective-states.org) though not particularly in Indonesia. On applications of the approach to extractive industries see [22] and [37].

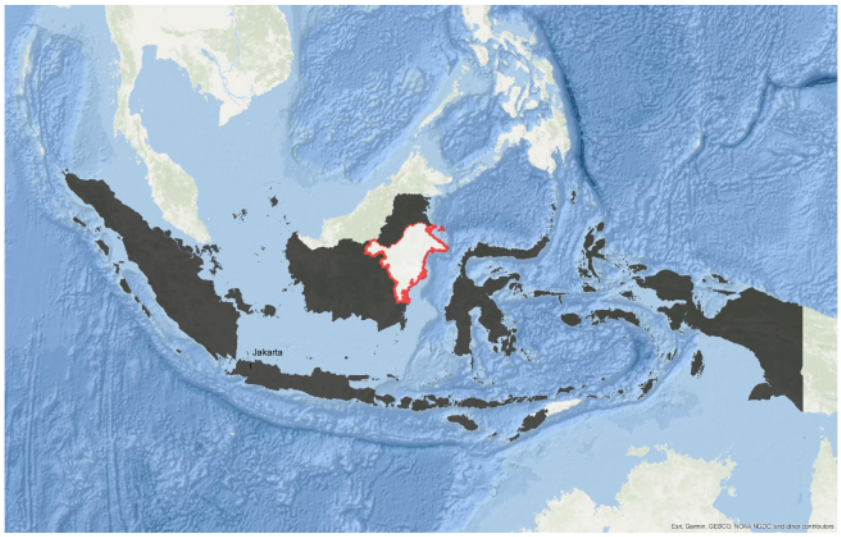

Fig. 1. Map of Indonesia: red boundary outlines the province of East Kalimantan. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

no. 8/2013 on mining reclamation and post-mining clean up. This allowed us to ground discussions of the politics of mine closure regulation in a particular case, and to explore informants' understandings of how this provincial regulation was developed, and how it was (or was not) being implemented. Interview data was complemented by analysis of legal, operational and other documents. These included: relevant regulations and laws; environmental impact assessments; mine reclamation plans; and government agency as well as NGO investigation reports.[4]

Complementing the use of 2018–19 data, the analysis also draws on thirty-two interviews conducted by Bebbington between 2015 and 2017. These interviews were conducted in English with national (and some international) key informants working in Indonesian civil society, the Indonesian government, international NGOs and foundations, mining companies, and development organisations. Finally, Toumbourou and Muhdar have worked in Indonesia and Kalimantan as, respectively, a Program Officer for an international foundation working on democratisation and natural resources, and an advisor to state bodies and nongovernmental groups in Kalimantan. Knowledge gained from these experiences has also informed the analysis.

While this research design has the strengths of experiential knowledge and engagement over time, it is far from perfect [47]. It is possible that the authors' prior direct involvement in issues discussed here has influenced the analysis, as well as the ways in which interviewees responded to us – though it is also the case that most interviewees (with the exception of several from non-governmental organisations) were unaware of Toumbourou's earlier roles. Discussions within the wider team (not all of whom have had such roles) have been used to guard against bias in the analysis and writing. Similarly, drawing on interviews from two separate bodies of work – one specifically directed at our research questions, the other directed at the national context of resource extraction in Indonesia – brings the challenge of combining information collected at different moments and for different, albeit related, purposes. Finally, the case study, qualitative design of the research reduces claims to generalizability. That said, our theoretically informed approach to analysing the data leads us to claim that the research does identify causal factors that should be considered in studies of the coal sector elsewhere, even if these factors will not necessarily be present in all cases.

4. Coal in East Kalimantan: political drivers and human-environment transformations

4.1. The politics and political economy of coal mining expansion in East Kalimantan

Coal mining first began in East Kalimantan under the Dutch colonial administration [48,49], but was scaled up in the mid-1960s when the Suharto-led New Order regime's policies opened coal extraction to foreign investment. The Suharto administration introduced two laws in 1967 to cultivate the coal mining industry. The 1967 Mining Law opened up the coal mining sector to foreign investment, and prevented landowners from refusing to release land if mining investors offered 'fair' compensation ([50]:227]). The 1967 Foreign Investment Act then allowed foreign investors to repatriate their earnings and protect them from expropriation. These laws left local communities with few options for veto when large-scale mining companies began to arrive in the 1970s and 1980s. Land appropriation for large-scale mines – issued with so-called Coal Contracts of Work (PKP2B for the Indonesian acronym) – involved forced but compensated land acquisition for communities residing in areas targeted for concessions [51].[5] Coal production increased in the decades that followed, with contracts for large-scale mining operations distributed to patronage networks in exchange for political support to the Suharto administration [53]. This intersection of coal, patronage, and the formation of inter-elite political pacts at both national and sub-national levels has continued through to the present.

While coal extraction grew under Suharto, it was during the *reformasi* period following his fall in 1998 that the mining boom reached full swing. *Reformasi* involved reforms promoting electoral democracy and competitive elections, together with administrative and political

[4] In particular, reports from JATAM on the sites of drowning deaths; police investigation reports following drownings; and a Komnas HAM report by the government on the same issues.

[5] Establishing East Kalimantan's largest coal mine, Kaltim Prima Coal, for example required the resettlement of an entire village ([52]:15).

decentralisation [54,55]. While decentralisation created new spaces for political participation, it also opened up new opportunities for corruption at the subnational level [8]. One of the later reforms, the 2009 Minerals and Mining Law (Law no. 4/2009), passed authority to district and municipal administrations to issue mining licenses, a power that had previously been vested in central government. The law introduced a change from the PKP2B contract system to a mining license system. Mining investors must obtain one of three types of licenses: a mining business license (*Izin Usaha Pertambangan, IUP*) for exploration and production; a special mining business permit (*Izin Usaha Pertambangan Khusus, IUPK*);[6] or a people's mining permit (*Izin Pertambangan Rakyat, IPR)* [57].[7] IUP and IUPK licenses are for mid-sized operations, with the concession area capped at 15,000 hectares. PKP2B are generally for larger operations (concession size is arranged by contractual negotiation) and remain in place until their expiry, at which point they would be transferred to the new license system. In effect, this gave subnational authorities control over access to coal deposits, meaning that mining companies had to come to agreements with these authorities in order to operate. This new power incentivized local bureaucrats and elites to raise revenue and collect illegal levies to fund expensive election campaigns to run for district head, a position that would (if they were elected) give them access to rents from extractives [9,58]. However, the new powers given to district heads to control mining were not accompanied by improved regulation or protections: mining practices were 'unrestrained and unscrupulous' ([50]:225), with 'little regard for environmental protection' ([9]:162).

At the same time as these reforms were unfolding, demand from China, India, Vietnam and elsewhere created incentives to expand coal production. As the great majority (around 70–80%) of Indonesia's coal production is exported [59],[8] fears that this demand might falter in the longer term have also led Indonesia's coal mining sector to lobby for policy that would expand the domestic market, in particular by encouraging the government to prioritize a suite of new coal-powered electricity plants as part of national energy policy. In 2014 President Joko Widodo announced a plan to fast-track the addition of 35 gigawatts (GW) of new generating capacity by 2019, some 20 GW of which was to be in the form of new coal plants (though was later scaled back), with plans to add a further 15 GW of coal-based capacity by 2025 [61,62,8].

This demand for coal, coupled with political incentives to grant coal licenses in return for political and financial support, led to a surge of mining in East Kalimantan. Subsequent to the issuance of the 2009 Minerals and Mining Law, eight hundred mining licenses were issued in the province between December 2009 and December 2010 alone [63]. By 2017, 1404 mining business licenses (IUP and IUPK) and 33 large-scale PKP2B mining contracts had been issued across East Kalimantan,[9] covering more than half of the province's total land area [64]. IUP and IUPK license holding companies are typically medium-sized enterprises, often subsidiaries of larger holdings companies fully or partially owned by Indonesian political elites working with both domestic and international public and private financing. Fig. 2 details 510 mining concession sites in the province (not all concession data are publicly reported). The province produced 52% of Indonesia's thermal coal, contributing to Indonesia's position as the world's largest exporter of thermal coal [62]. This growth has been accompanied, however, by serious environmental and human impacts, including forest loss and carbon emissions; water pollution; and risks to human health and life. As is often the case for such impacts, the methods employed at a mine site are of clear importance.

4.2. Human-environment transformations due to coal mining

The vast majority of coal in East Kalimantan is mined through open-cut mining [65], also described as strip mining [10]. Open-cut mining involves clearing large tracts of often-forested land to access brown surface coal. The layer of surface soil and rock above the coal, known as the overburden, is stripped of all vegetation then removed and deposited in a pile that, according to regulations, should be within the concession site [66]. Open-cut mining results in major disturbances to landscapes, causing extensive deforestation [67], and severely damaging underground and surface hydrology and hydrological cycling [68]. When mining ceases,[10] mine voids – often hundreds of metres below the natural water table – fill with groundwater, rainfall and runoff. Acid and metalliferous drainage (AMD, also known as acid mine drainage) results from the exposure of sulphide-rich crushed rock to rainfall, causing heavy metals (that would otherwise remain buried in intact rock) to discharge from water filled mining pits into groundwater and cause contamination of ground water [70,71]. Acidic mine waters are potentially toxic to organisms living in the aquatic environment [72], and to human health.

An investigation by independent journalists into the water quality in abandoned mine voids in East Kalimantan revealed dangerous amounts of heavy metals [73].[11,12] Coal mining has also resulted in an increase in the number and severity of floods, with the city of Samarinda being flooded 150 times between 2009 and 2014 at an estimated total cost of some $9 million [75]. Increased flooding caused by coal mining is also a likely cause of dramatic sedimentation in three lakes in the local Mahakam River Basin, which is home to 147 indigenous species of freshwater fish: 'Thirty years ago, these lakes were 15 m deep and clear; today, they are only 2 m in depth and their water is murky' ([76]:58).

Such concerns were reflected by communities in the villages of Mulawarman and Kerta Buana, both in Kutai Kartenegara district (one- and two-hours' drive north of Samarinda city), where large-scale coal mines have expanded to abut village residences. Upstream water flows have been cut off, and tailings and acidic water in waterways have reduced rice and crop yields (respondent #1). The following quotes highlight villagers' reflections on the impacts of coal mining.

> *'Water from the base of the mining pit here, the mine that's currently productive, it flows immediately into the river. The [river] feeds farmers' sawah (wet rice). The effect has been that yields are just a portion of*

[6] While IUP and IUPK are similar license types, IUP is for mining conducted in areas zoned by the central government as commercial mining business areas, while IUPK is for mining conducted in areas zoned as state reserve areas – land reserved for the 'strategic national interest' ([56]:10).

[7] Regional Governance Law (Law no. 23/2014) shifted the responsibility for issuing IUP licenses from district or municipal governments to provincial governments.

[8] Indonesia, the world's leading exporter of coal [8], exports predominantly bituminous (middle rank coal) and subbituminous coal (second division low rank coal). Its lignite coal production has however increased since 2010, reflecting demand for cheap sources of coal particularly from China and India [60].

[9] 2017 figures from the East Kalimantan energy and mineral resources agency. Data varies across levels of government: according to the Ministry of Energy and Mineral Resources (MEMR), as of September 2018, East Kalimantan had 998 IUPs in operation – the most of any province in Indonesia – with 215 non-clean and clear. In July 2018, the Director General of Mineral and Coal (*Dirjen Minerba*), within the Ministry of Energy and Mineral Resources, documented almost 8 million hectares of mine pits that have not been reclaimed to date across Indonesia.

[10] Open-cut coal mines reach the end of their economic life when the cost of resource extraction outweighs its financial value, 'such as when the coal seam has dipped so far that the cost of removing rock from above is prohibitively expensive' ([69]:6).

[11] Metals identified included manganese, iron, mercury, chromium, cobalt, zinc, arsenic, selenium, cadmium, barium, lead and thallium.

[12] In neighboring South Kalimantan, hazardous waste from intensive, largely unregulated coal mining activities is contaminating the province's streams and rivers, threatening about half the provinces water bodies. Discharges containing iron, manganese, and aluminum, among others, were found reaching South Kalimantan's water bodies and surrounding environment [74].

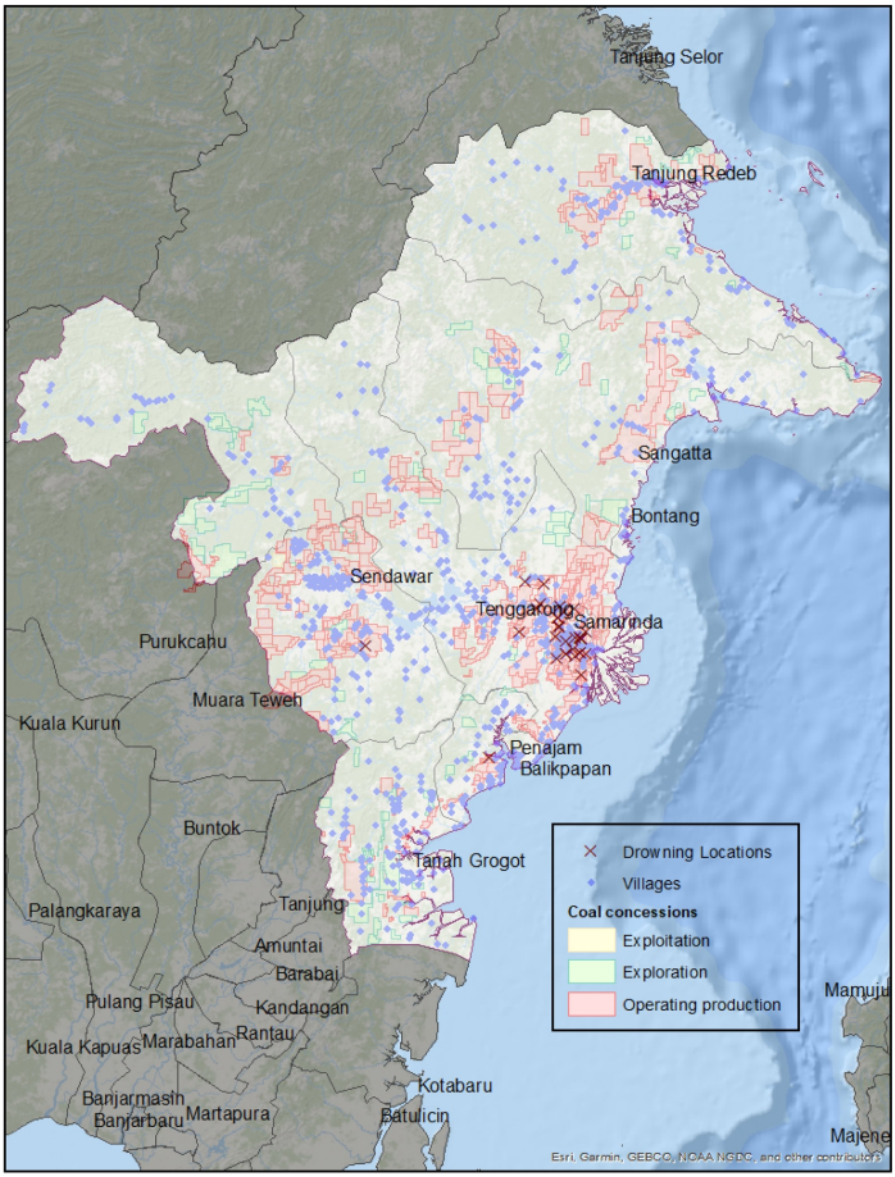

Fig. 2. Indicates the location of 510 mine concessions (including IUP, IUPK, IPR and PKP2B type concessions). The cross marks indicate sites of drowning in water filled mine pits, compiled from media reports and detailed in the following section. (Prepared by using geospatial data provided by JATAM East Kalimantan, 2018).

what they were. Most farmers' [rice] yields have reduced from 8 tons a year to 4 tons a year per hectare. Most people here grew vegetables, chilies mostly' (respondent #1, resident of Kerta Buana village and activist, 9 December 2018).

'We don't have enough water now. There's lots of problems with farming now. Our harvest is not like it used to be: there's so much dust, and tailings. Farming is not good like it used to be… All our sawah growing land is now owned by the company. I borrow land from the company to plant rice… It's in the wet season that is the worst time, when it floods, the tailings pond spills over [into the sawah] … We used to get a minimum of 30 sacks of rice per harvest, but now we only get 15 sacks. The most we could ever get [now] is 20 sacks' (respondent #7, middle-aged woman farmer, Mulawarman village, 9 December 2018).

'It wasn't until 2001, or 2002, that mining [open pit] started here. It started to be bad then. Open pit mining. It affected water supplies, water sources were cut off by the mining. Before mining, even after one month, two months of dry season we'd still have enough water. Now we only get water from the rain for the sawah [rice paddy]' (respondent #9, older male farmer, Kerta Buana village, 9 December 2018).

Alongside these impacts on water and soil fertility, these water-filled mine-pits have introduced new risks of drowning into the landscape. Between 2011 and 2019, 35 deaths have occurred at former coal mining sites in East Kalimantan [77–80]. Fig. 3 indicates the sites of drownings, the majority of which have occurred in and around Samarinda. These deaths most frequently involved children falling into and drowning in water-filled, unfenced mine pits, typically close to where people lived. As illustrated in

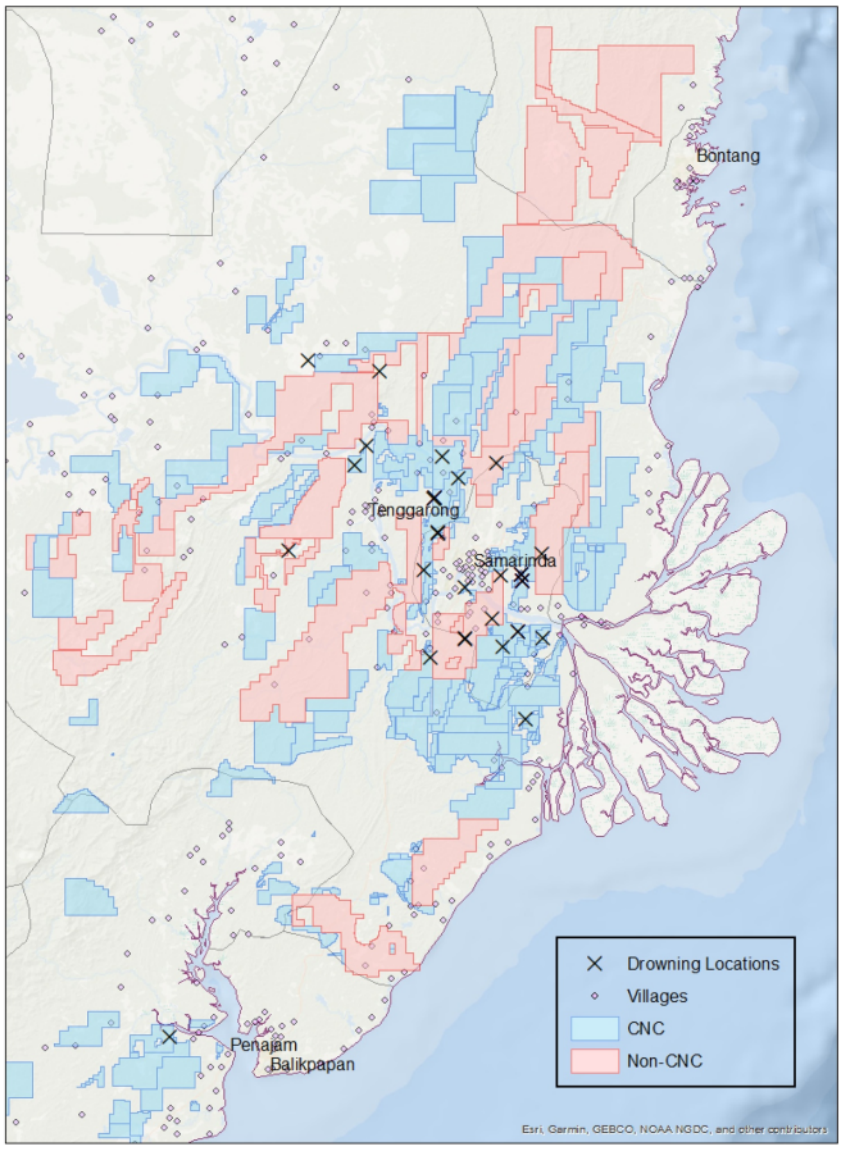

Fig. 3. Cross marks indicate sites of drownings in mine pits. Thicker cross marks are associated with multiple deaths at a single site. Coloured blocks indicate boundaries of coal mining concession areas (including IUP, IUPK, IPR and PKP2B type concession). Blue blocks are mining concessions that have obtained clean and clear (CNC) status, while red blocks are non-clean and clear (Non-CNC). (Prepared by using geospatial data provided by JATAM East Kalimantan, 2018; sites of drownings determined from media reports – detail of deaths and concession sites available in supplementary materials). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Fig. 3, drownings have occurred in mine concessions granted with "clean and clear" status, a review process requiring mining companies to prove with documentation that they have fulfilled a number of legal obligations, including mine reclamation requirements.[13] A growing number of houses have been lost to mining-related landslides. For instance, on 29 November 2018, in Sanga-Sanga sub-district (an hour's drive south of Samarinda city), five houses were destroyed in a landslide caused by the coal mining activities of PT Adimitra Baratama Nusantara (a subsidiary of PT Toba Bara Sejahtera), located around 100 m from the housing settlement [81].[14]

[13] Clean and clear certifies that miners have no outstanding royalty obligations or tax debts, have fulfilled environmental commitments including those relating to mine reclamation, have no property delineation issues and have obtained any necessary forestry permits ([52]:18).

[14] The proximity of the coal mine to residencies violates regulations that limit the vicinity of mine sites to 500 m from housing settlements.

4.3. The governance of post-mine landscapes

The creation of abandoned, hazardous landscapes (a form of "energy landscape" [14]) was facilitated by a legal context promoting investment but creating few measures to ensure that mining companies would restore mining sites after closure. During the coal boom, mining regulations did not require companies to have exit strategies nor to place guarantee bonds that would finance mine-site reclamation should the company not do so [58]. Degraded landscapes have frequently been the result of coal mining companies going bankrupt, ceasing operations and abandoning the mine site with no restoration work done at all.

It was only in 2010 that regulations were introduced at the national level requiring mining reclamation. Government Regulation no. 78/2010 on Reclamation and Post-Mining states that exploration and production IUP holders are obligated to perform reclamation. It requires mining business license holders to submit a reclamation and post-mining activity plan, and to set aside a Reclamation Guarantee in

the form of a time deposit. The regulation does not detail requirements for treating mine pits. The government regulation was implemented with a ministerial regulation issued in 2014,[15] which does not require mining companies to fill in their final mine voids. Instead the regulations provided further detail for requirements relating to revegetation of mined sites and for managing voids. The 2014 ministerial implementing regulation was revised in 2018 with Ministry for Energy and Mineral Resources (MoEMR) Regulation No. 26/2018 on the Implementation of Good Mining Rules and Supervision of Mineral and Coal Mining, yet detail in the revised regulation remains largely the same as with the earlier version. It remains the case that no government regulation specifically requires the refilling of mine voids. We now turn to activism around the risks presented by post-mining landscapes, exploring how it has been successful in eliciting new rules regarding reclamation of mine sites, but much less successful in securing their implementation.

5. Contesting the post-mine landscape: the initial evolution of civil society approaches

This increasingly damaged and hazardous post-mine landscape, together with the weak, under-specified and poorly enforced nature of national laws on mine-site reclamation, have influenced social movement activity. While movement organisations' agendas and priorities clearly vary [82], and there has been significant debate among organisations regarding the most appropriate strategies to pursue, general patterns can be discerned. In earlier years, movements had assumed more contentious positions, and primarily aimed to block mining and to advocate for community rights to property and consultation. However, as time went on, social movement organisations, NGOs and some government actors in East Kalimantan increasingly sought to strengthen the regulation of post-mine landscapes, which in turn meant increased civil society interaction with the government and legal processes.

The first Civil Society Organisation (CSO) dedicated to mobilising against mining in East Kalimantan was JATAM (the Mining Advocacy Network), who established a presence in the province in 1998, three years after forming as a mining-focused arm of the national environmental network WALHI (Indonesian affiliate of Friends of the Earth) [83]. JATAM's early focus was to raise awareness with local communities and document the ecological and social impacts of the large-scale coal mining companies that had been issued Coal Contracts for Work (focus group discussion, 14 December 2018, also [8]). A leading activist with JATAM East Kalimantan reflected on JATAM's early focus on countering state narratives that emphasised only the economic benefits of mining:

> *'I remember our campaign ten years ago, at the beginning of regional autonomy, when mining was expanding fast. The argument posed was that mining brings economic opportunity and jobs for the region. It was all about money. We attacked these, pointed to the human rights issues. That this is a land problem, conflicts over natural resources in Indonesia related to mining have a human rights dimension. Mining results in corruption and violence, they use preman [mafia], or ormas*[16] *[paramilitary groups] to protect [mining companies], they still do'* (JATAM activist, 12 December 2018).

As mining advanced across the province, JATAM turned their organising efforts to mobilise families and communities whose relatives or neighbours had drowned in exposed, water-filled mine pits. JATAM also maintained pressure on national and regional government and law enforcement agencies to pursue sanctions and improve reclamation, through lobbying and regular protests outside the governor's office and provincial parliament (focus group discussion, 14 December 2018).[17] Similarly, in 2009 a Samarinda-based civil society network Pokja 30 partnered with Jakarta-based NGO Indonesia Parliamentary Centre (IPC) to pressure the East Kalimantan parliament to create a regulation to govern mining. While initially successful in engaging East Kalimantan parliamentarians in discussions of draft regulations, this initiative ultimately failed.

Frustrated by the lack of government progress on mining governance, in January 2012, JATAM facilitated a community forum, bringing together various community organisations and academics to discuss possible legal avenues. The forum discussions agreed on a civil lawsuit approach, and the *Gerakan Samarinda Menggugat, GSM* (Samarinda Lawsuit Movement) was initiated. Taking nearly two years to prepare, the GSM organisers brought together 19 plaintiffs consisting of farmers, fisherman and other impacted individuals who claimed that mining was polluting and diminishing their water supplies [84]. The GSM filed their case with Samarinda District Court on 25 June 2013 to sue provincial and national level government actors for negligence and incompetence in their management of exposed mining pits. While the court took a year before a ruling was announced on 16 July 2014, the pressure from the court case and the increased public interest it produced created further impetus for parliament to address mining reclamation and mine closure.[18]

Alongside this litigation, a number of NGOs began to seek ways to support the provincial government in addressing permitting and compliance issues related to land-based industries, including mining.[19] At one April 2013 workshop, participants agreed to form an independent stakeholder team of NGOs, local academics and government officials to conduct the license review process. Civil society actors at the same workshop also committed to form a coalition, the Community Coalition for Mining Awareness in East Kalimantan (KOMPPAK), to address post-mining reclamation. KOMPPAK focused its efforts on lobbying for a provincial regulation mandating reclamation of mining activities.

Not all social movement actors were in agreement with the focus on reclamation. One academic active in the anti-mining social movement noted:

> *'What I wanted to see was East Kalimantan produce a regulation about mining, requiring that permits are audited. Not just about reclamation; with just reclamation as a focus, it does not look at the problems with*

[15] Ministry of Energy and Mineral Resources (MoEMR) regulation no. 7/2014 concerning Reclamation and Post-mining in Mineral and Coal Mining Business Activity.

[16] Ormas are *organisasi kemasyarakatan*.

[17] Local CSOs engaged in mining governance reform related initiatives include Prakarsa Borneo founded in December 2011, as a centre for law, environment and government studies (predominantly functioning as an umbrella for academics to provide legal advice to governments and law makers); Pokja 30, a community empowerment and governance focused NGO; the local branch of the national environment network WALHI; Yayasan BUMI, an environmental education and policy research organisation; and student groups and academics predominantly at the state university, Mulawarman University.

[18] For instance, on 25 January 2013, the East Kalimantan Governor Awang Faroek Ishak issued a circulation letter (*Surat Edaran* no. 180/1375-HK/2013) requiring district heads and mayors across East Kalimantan stop issuing new mining, logging and plantation licenses, and ordering an evaluation of existing licenses' compliance with regulations (though the moratorium allowed companies that had already been granted licenses to continue their operations [85]). Subsequently in April 2015, and following the Corruption Eradication Commission's (KPK) investigation of mining corruption in East Kalimantan, the provincial governor released a regulation in April 2015 (PerGub no. 17/2015) requiring that relevant East Kalimantan agencies evaluate the legal compliance of licenses in the mining, forestry and palm oil sectors.

[19] Sixty-five participants attended the workshop, including local parliament members responsible for mining regulation, representatives of academic institutions, private sector stakeholders (a representative from PT Kaltim Prima Coal), international agencies (including GIZ and The Nature Conservancy), and staff from the president's Delivery Unit for Development Monitoring and Oversight (UKP4).

illegal permits. But Prakarsa Borneo explained that it was a give-take, and that a focus on reclamation was the most likely to gain traction with DPRD. I was clear that I didn't agree with the sole focus on reclamation. I wanted it to include a permit evaluation and audit, identify which operations needed to be stopped, with a location assessment. But Prakarsa Borneo felt that anything else was not going to be possible' (respondent #3, academic, 13 December 2018).

The KOMPPAK coalition targeted the head of East Kalimantan's Provincial Legislative Assembly (*Dewan Perwakilan Rakyat Daerah; DPRD*) Komisi III (the commission responsible for natural resources extraction) [86] who agreed to initiate a proposal of a preliminary draft bill to the DPRD for discussion. With parliamentary approval of the preliminary draft bill, the initiator then formed a special parliamentary committee (*Pansus*) to develop the details of the bill. The Pansus included sixteen politicians representing all political fractions, two administrative staff and two legal experts. To inform the Pansus discussions, external academic experts from a number of regional universities were involved in the process as well as international and local NGOs representing civil society.[20] This was one of the first times that a Pansus had involved representatives from civil society.

On 7 November 2013, the East Kalimantan governor issued Provincial Regulation (*Perda* no. 8 of 2013) mandating and regulating post-mining reclamation in the province. The *Perda* implements higher level laws and regulations relating to mining reclamation, specifically Government Regulation no. 78/2010 on Reclamation and Post-Mining, though it does not specifically mention these laws. The *Perda* was a first in Indonesia, later triggering other provinces to develop similar regulations.

'The Perda [no. 8/2013] and the corresponding PerGub[21] *passed through as a result of the pressure created by environmental NGOs, they created demand for regulation of mining sites after children drowned. NGOs also worked well with DPRD, so that the Perda regulation passed in Prolegda [Program Legislasi Daerah; Regional Legislative Program]'* (respondent #10, law researcher, and former expert member of the monitoring commission, Komwas, 10 December 2018).

The regulation also obligates the provincial government to establish a multi-stakeholder monitoring commission for overseeing post-mining reclamation (*Komisi Pengawas Reklamasi dan Pascatambang; Komwas*) within six months. The commission's role was to coordinate between regional heads involved in mining oversight and government actors involved in monitoring mining reclamation. As one respondent explains, the establishment of the oversight commission is the key strength of the Reclamation Perda, an implementing detail that was not set out in national statues: *'Regarding the Perda Reklamasi, it's strength is that it establishes an oversight commission, which wasn't in existence previously'* (respondent #21, academic and program officer with Prakarsa Borneo).

The success of movement actors in securing Perda no. 8/2013 is explained by several factors. The use of litigation and advocacy, in particular, the Samarinda Civil Lawsuit, generated public pressure on the state to the extent that it had to demonstrate a response. The growing number of deaths in mine voids in East Kalimantan also gave the issue public urgency and led Indonesia's Supreme Audit Agency (BPK) and the Human Rights Commission (Komnas HAM) to investigate these drownings. Their conclusions identified mining governance deficiencies as factors in these deaths. In contrast to prior campaigns, activist lawyers played a prominent role, especially in bridging relations between the movement and institutional actors. They were able to frame a proposed legislative response that was sufficiently narrow and focused to advance even within a context in which coal mining interests had close relationships with national and subnational political actors. On the other hand, this also meant that the narrowly scoped framing of the Perda no. 8/2013 required no more of companies than was already mandated in higher level laws, which may have reduced resistance.[22] Finally, the role of international NGO donors in funding prolonged parliamentary discussions allowed more time for drafting technical papers and the proposed law.

6. Obstacles to implementing a progressive mine reclamation policy

Though Perda no. 8/2013 was initially celebrated as an achievement by movement actors, during interviews most argued that little has changed regarding post-mine reclamation. By 2017, JATAM East Kalimantan estimates that 1735 coal mining pits remain unrehabilitated across East Kalimantan [87]. The provincial energy and mineral resources agency estimate that of the 1404 IUP issued in East Kalimantan, 679 IUP are obligated to store Reclamation Guarantee funds – yet as of May 2017, only 61% (or 413 IUP) had done so [88]. Mining companies in East Kalimantan continue to spend minimal amounts on reclamation. One five-year work plan and budget of a medium sized mining company reviewed for this study had no budget allocations for refilling or managing voids, and the former head of Komwas commented that:

'No companies with mine voids fulfil the reclamation regulations. They are supposed to put up signs, or banners [to indicate the risks of mine voids], and there's specifications of what size the signs need to be, but even then, they don't do that.[23] *They don't put up fences, even though they are supposed to. Companies are supposed to have a security guard, guarding 24 hours, but they do not'*(respondent #20).

In the following, we note the different types of obstacle that have effectively frustrated the implementation of the new policy. These obstacles have to do with contestations over the legal meaning and definition of reclamation, limitations on administrative and judicial capacities to enforce reclamation, through to the nature of the political settlement around coal mining and the networks of intimidation that parties to this settlement sustain in order to quell demands for adequate reclamation and compensation.

6.1. Contested meanings and definitions of what is included in coal mine "reclamation"

Although drownings in mine-voids were one of the principal factors driving Perda no. 8/2013, neither it nor central government regulations specifically require that mine voids be refilled. While a central government official at the Ministry for Energy and Mineral Resources (MoEMR) argued that *'Voids that have been excavated must be backfilled …. it can't just be left in any way'* (respondent #28), national government

[20] External academic experts brought in to be involved in the *Pansus* process were from Universitas Indonesia, Universitas Hasanuddin, Universitas Pajadjaran, Universitas Muslim Indonesia, Universitas Tadulako, Universitas Mulawarman, and Universitas Balikpapan.

[21] In December 2015, the governor issued a decree (PerGub no. 53/2015) formalising the members of Komwas, the multi-stakeholder monitoring commission for overseeing post-mining reclamation.

[22] *'The Perda was passed to make it appear to the public that the East Kalimantan parliament is productive. At the time, parliament did not see it as a threat. It was before the Regional Governance Law no. 23/2014 had been formulated, which moved responsibility for mining to the provincial government. That was why the political elite did not then see the regulation as a threat. The Perda no. 8/2013 is a regulation that mostly adopted PP 78/2010. As a regulation, this Perda exceeded [the obligations set out in] higher laws. The Perda was born out of a political decision, it is not based on legal mandates and government regulations'* (respondent #2, JATAM activist, 30 April 2019).

[23] According to ministerial decision no. 555/K/26/MPE/1995 of the Minister of Energy and Natural Resources, mining pits without fences must have a warning sign at the edge of their concession area.

regulations note only that *"in the instance of mining activities leaving mined pits [behind], there is an obligation to make a plan for the use of the mine pit including: stabilising the slopes; making the mine void safe; restoring and monitoring the water quality and managing the water in the mine void in line with the requirements; and, managing the mine voids"* (PerMen no. 7/2014 article 12, paragraph 6). Some argue this wording in the higher-level national regulation is intentional, the result of intervention by mining sector actors in the policy formulation process:

> *'Before PerMen ESDM no. 1827 K/30/MEM/2018 was published there was PerMen 7/2014 about the implementation of reclamation and post-mining activities for mineral and coal mining. That former regulation is thick with the interests of mining sponsors, in article 12, paragraph 4 and 5. This article was the result of input from mining actors. With this article, it is an entry point for mining companies to not have to conduct closure of mine pits. The article justifies reclamation and post-mining to be about designation of areas for residencies, tourism, water resources and areas of cultivation. Though the PerMen 7/2014 has been revoked, the article that became a loophole for not conducting mine pit closure has remained and was adopted in PerMen ESDM no. 1827 K/30/MEM/2018, a legacy of mining companies' intervention into the policy formulation process'* (respondent #2, activist).

Regardless of the actual cause of this lack of specificity about filling mine voids, it has allowed mining companies to insist that filling pits lies outside the scope of their reclamation obligations: '*Such wording essentially allows for miners to leave voids unfilled'* (respondent #19, law researcher), and according to a subnational government official, *'There's always technical excuses for why reclamation isn't conducted'* (respondent #13, provincial environment agency). The former head of Komwas similarly observed:

> *'We took the position that all the mine pits where children had died were categorised as mining voids. But the companies claimed that these mine pits were not their responsibility. They dug them, but the community then asked to take them over, for irrigation water, or as fish ponds. So according to companies it is not their responsibility'* (respondent #20).

As a result, as a mining sector respondent (#17) themselves noted, miners continue to leave mine voids un-refilled. Another went so far as to argue that voids can be assets: *'voids can be sources of water, in other areas they can become sources of electricity, or fish cultivation, or places for walking'* (respondent #26, Indonesian Coal Mining Association representative).[24] Either way, not refilling voids works to the companies' benefit:

> '*We separate the active pit, which the government says is a void, from the overburden – which we reclaim by revegetating. The void can't be refilled, as we've already heaped up and revegetated the disposal area. This way, the costs are cheaper… Because if it's up to us, we want to minimize costs. …. Reclamation is considered to be complete once revegetation has been established for one year*,' (respondent #17, mining respondent from a mid-size company).

6.2. Administrative and budgetary obstacles to enforcement

If policy design flaws opened the space for coal interests to narrow the meaning of reclamation, administrative and budget constraints complicate enforcement of even these reduced meanings. On the one hand, authority for mining oversight is divided across a number of government agencies, particularly between the provincial energy and mining agency (ESDM) and the provincial environment agency (DLH). More significantly, each agency has too small a staff to be able to regulate the sector. In the provincial ESDM there are only 38 trained inspectors who *'are supposed to conduct inspections every three months, but in practice they only go once a year'* (respondent #22, government official). Lack of budget means that mining inspectors are dependant on company vehicles to pick them up and take them to the company site (c.f. [89]). These inspectors have little power, and can only provide recommendations to higher up officials for sanctions to be applied to companies, with the final decision resting with the governor.

> *'Mining inspectors sometimes do recommend firm sanctions for companies, however the governor then takes administrative measures or sanctions or reaches a compromise agreement with companies. That means that the recommendations of mining inspectors are ineffective, because the final decision is vetoed by higher up officials; the governor'* (respondent #2, JATAM activist).

For its part, the provincial environment agency (DHL) receives the least funding of any provincial government agency. It has only 16 inspectors to cover the province of East Kalimantan and monitor adherence to environmental laws by all industries, not only mining companies.

Just as the administrative state has limited capacities to enforce reclamation laws, so too do the legislative and executive arms of the state. An East Kalimantan parliamentarian respondent observed that parliamentarians were limited in their knowledge of mining regulations, and in their capacity to respond to grievances.

> *'DPRD rarely does visits to the regions. Even though we often get reports. When there was a landslide last week,*[25] *we should have gone to the field. As an individual – because I'm not the head of DPRD – I can't take action immediately by going to the field [to respond to a problem] without permission. I have to follow DPRD's administration process, and get a letter of approval. If I go to the field without approval it is as an individual, not as a politician. This is a barrier to making field visits'* (respondent #14, regional parliamentarian).

6.3. Obstacles to legal enforcement of policy implementation

Compounding such administrative and budgetary limitation in the state are a series of failings within both the police force and judicial system that frustrate enforcement of reclamation laws and regulations. While police officers are given training on environmental laws on their entry to the police force, the local police force has no internal advisory system on how to enforce environmental laws. Academics are called on to provide advice, but the police remain reluctant to enforce laws they don't understand. Civil society actors reported getting little response from local police following grievances. A report by the United Nations' working group on the issue of human rights and transnational corporations and other business enterprises similarly observes the lack of response to reports of deaths in mine sites by local law enforcement: 'It has been reported that effective investigations were almost never conducted and persons responsible were not held accountable' ([90]:2). Moreover, as the head of the criminal investigation unit in Loa Janan sub-district in the heavily mined district of Kutai Kartanegara explained, even when the police at the sub-district level *do* respond to violations within mining concessions, the district police step in and the case often closes. He suggested that this is because higher level police typically protect retired police and military officials who have extensive mining investments.

The courts have also been weak enforcers. An investigation conducted by Komnas HAM in 2016 identified that many companies with IUP licenses were in violation of laws restricting mining from being located within 500 m of residencies, and had left mining pits or sites exposed without a fence or warning sign ([80]:100). Indeed, Pradarma Rupang,

[24] Companies can avoid pits being categorised as voids, by claiming, or strategically leaving seams of coal in mine pits to indicate that they have not completed mining, and consequently avoid an obligation to refill.

[25] The landslide referred to here is the incident in Sanga-Sanga subdistrict, detailed earlier.

organiser with JATAM East Kalimantan reported to Kompas [73] that of the 32 cases of children's deaths by drowning in mining sites at the time, only one has been settled in court: the case of two 6-year-olds, Dede Rahmad and Emaliya Raya, who both drowned on December 24, 2011 in the mining void of PT Panca Prima Mining. The judicial panel sentenced the mining contractor's security guard to two months in prison with a fine of IDR 1000 (US 6.8 cents). The mining company owner or investor was not charged [91]. One parliamentarian noted in interview:

> *'East Kalimantan is heaven for miners. Why is this so? Because sanctions are not applied, they are backed up by many actors. So, it's easy for them'* (respondent #13).

6.4. Political settlements and networks sustaining a political economy of unregulated mining

Underlying these different obstacles are a series of networks, pacts and relationships through which the coal sector protects its incumbency and sustains a political economy of poorly regulated coal mining. A recent NGO report links the six largest coal mining companies in Indonesia, producing more than 50% of Indonesia's coal in 2015, to Indonesian political elites [92].[26] The East Kalimantan mining sector is dominated and controlled by these national mining elites – politicians, and active and retired military and police generals with mining investments. These actors continue to frustrate laws at the national level that would damage their interests, and are also able to influence budget allocation to enforcement agencies, and so constrain their capacities to implement regulations. The highly clientelist system for electing regional heads is a factor here. Berenschot [7] observed key features of Indonesia's 'patronage democracy' that facilitate clientelism: the relative independence of candidates from political parties, which means that political candidates must negotiate and buy the support of a coalition of parties [93]; candidates must build their own campaign networks, and often do so by promising to provide access to natural resources (including guaranteeing the awarding of mining permits) should they be elected [94,63]; and the high costs of political campaigns foster corruption and force political candidates to engage in clientelist deals [4,95].

Alongside such pact-based mechanisms, elites maintain extensive networks with mafia (*preman*) and paramilitary groups (*ormas*) who use intimidation or violence to protect coal-based interests ([10,52]:16). In other cases, *ormas* engage directly in mining themselves or work as contractors to mine owners, the regional police and others. The most notorious of *ormas* groups, *Pemuda Pancasila* (Pancasila Youth), a national paramilitary group, has a strong presence in East Kalimantan in their provision of security to mining companies, and, as Bakker details, a history of 'clearing inhabitants from new project sites through intimidation, violence and arson' ([96]:134). Respondents noted that many subsidiary mining companies in East Kalimantan are linked to senior government actors such as Luhut Binsar Pandjaitan, the current Coordinating Minister for Maritime Affairs, and former Coordinating Minister for Political Legal and Security Affairs, who oversaw the mining and energy sector.[27] Luhut was a former military general strongly linked to local *ormas* through his former Golkar[28] political party links.[29]

Ormas have been mobilized around issues related to mine abandonment. Interviewees pointed to a number of examples where, following children's deaths in mining voids, families did not pursue investigations after experiencing intimidation, or being offered money by companies in return for not filing a police report.[30] JATAM East Kalimantan's office was visited several times by *preman* linked to mining companies prior to and during data collection. In another case, a child, aged 13, had drowned in a mining pit owned by Bukit Baiduri Energi (BBE). JATAM visited the house of the victim's family, and released a press release reporting the death. The next day, 5 November, at 8pm in the evening, around 30 men broke into JATAM's office and ransacked the property, damaging windows and a motorbike belonging to one staff member.[31] This was the second time that JATAM have had to move office. Currently JATAM activists gather away from the office, and several activists have had to move house while they assess the situation.

The deployment of *ormas* is not limited to conflicts related to reclamation. In one transmigrant rice-farming village, residents noted that when blasts from nearby mines began to destroy houses, village efforts to blockade the mine operations [102] were quashed by *ormas: 'When there's issues [and we've taken them to the company], ormas are sent to scare us off. Ormas use intimidation'* (village head respondent #8). The use of *ormas* to provide mining operations with protection from local communities is widespread. Local journalist investigations have revealed how, for example, in a number of locations in East Kalimantan, *ormas* are involved in protecting mining taking place illegally on sites permitted for commercial housing estates [103].

7. Conclusion

There is a clear asymmetry in how laws have operated in regulating coal mining in East Kalimantan. On the one hand, a suite of laws, regulations and policies have facilitated the expansion of extractive industries' operations (c.f. [13]). These laws have reduced obstacles to investment, helped open new frontiers, and weakened instruments designed to reduce the environmental and social impacts of the sector. Conversely, those laws, regulations and policies whose introduction was influenced by social movement and other actors, and which sought to diminish the adverse effects of mining on local communities, have not been adopted with the same vigour as have those that enabled mining's rapid expansion. Neither the courts nor the police have held the coal mining industry accountable for human rights harms that have occurred on abandoned mine sites. Nefarious links between the coal sector and violent paramilitary groups remain hidden from legal scrutiny.

This asymmetry reflects the political economy of coal and the political settlement that sustains this political economy. Energy policy identifies coal as important within Indonesia's energy matrix, and increasingly so, while Indonesia's legal and illegal coal exports to South and East Asia are an important source of revenue for the state and actors within the state as well as an important component of bilateral relations between Indonesia, China, India, Vietnam and other countries.

[26] These companies are: Bumi Resources (which owns Kaltim Prima Coal and Arutmin Indonesia), Adaro Energy, Kideco Jaya Agung, Indo Tambangraya Megah, Berau Coal and Tambang Batu Bara Bukit Asam.

[27] Luhut recently admitted to owning a 6000 hectare coal mine in East Kalimantan [97]. 15 mine voids in East Kalimantan are reportedly linked to holdings company Toba Sejahtra, which is majority owned by Luhut [98].

[28] Golkar (Golongan Karya) was the political party of the authoritarian Suharto regime. Other influential political elites involved in coal mining and linked to the Golkar political party include Aburizal Bakrie, a former cabinet minister and chair of the Golkar political party, who is majority owner of Bumi Resources holding company, which owns Kaltim Prima Coal, Indonesia's biggest coal mine with a 90,000-hectare concession in East Kalimantan.

[29] In East Kalimantan, the provincial branch head of Pemuda Pancasila, Said Amin, has close links to Golkar, and the former Samarinda mayor, Achmad Amins (then with the Golkar party) [99], who was found to have approved 63 mining permits over Samarinda's municipal area without any environmental impact assessment [100].

[30] One police report documents a case following a child's death by drowning in 2016, where a family cancelled the police investigation in agreement with the mining company, Multi Harapan Utama, who owned the concession where the child had drowned in a mine void.

[31] See media coverage [101]; also detailed in a report by the United Nations working group on human rights and transnational corporations and other business enterprises ([90]:3).

At the same time, income from coal helps sustain political alliances at both national and subnational levels: these alliances in turn advocate for and defend the sector's investment interests. Given the disinvestment of all international extractive industry companies from coal mining in Indonesia, the ties between coal and national elites and Indonesian-owned companies have become stronger.

The techniques used to sustain coal's ascendancy include policy and political lobbying, pact-making (c.f. [104]), idea-framing and differentiated funding of the public bureaucracy. We have paid particular attention to the ways in which national political and economic elites exercise power in the sector, noting how the coal industry and its allies have been able to define the understanding of "reclamation" in mining legislation, and also how public bodies that are charged with supervising mines' environmental and social performance are funded at levels that prevent their ability to do such work in ways that are effective and independent. The effect of this is that coal continues to be mined, forest continues to be cleared, greenhouse gas emissions continue, and the sector continues to leave in its wake pit-scarred landscapes that create dangers for people who live in and around these landscapes. Post-mine landscape reclamation remains a largely cosmetic activity.

This does not mean, however, that initiatives such as the issuance of Perda no. 8/2013 in East Kalimantan, should be read as futile, or mere window-dressing for a rapacious sector. The Indonesian state is neither monolithic nor wholly aligned with the interests of the coal mining sector. Political economic elites feel threatened by the authority of the Corruption Eradication Commission (KPK), and there are officials in different ministries and public agencies who are genuinely concerned about the social and environmental implications of abandoned and unrestored coal mine sites. Indeed, if Perda no. 8/2013 was nothing other than functional to mining companies' operations, then they themselves would have proposed such a law in the first place without social movement organisations and their allies having had to lobby for it.

Thus, rather than reading the law as a simple manifestation of the dominant interests within Indonesia's political settlement, its passage can be viewed as an indicator of the politics of possibility, without being starry eyed about how much scope there is for enhanced social and environmental safeguards in Indonesia. The law shows the importance of combining mobilisation and legal work in pushing for reform, and the possibility of crafting narratives that can help open some space for such reform. Such narratives must challenge those employed by coal proponents to maintain coal-dependant energy systems [15] and that seek to divorce coal from the lived experiences of individuals and communities residing in extractive landscapes [32]. At the same time, though, the subsequent plight of Perda no. 8/2013 also shows just how important every detail can be in the crafting of "progressive" laws, and thus how important legal expertise is for strategies of social change (c.f. [89]). The truncated rollout of the law also shows that movements and their allies must develop capacities not only in eliciting policy *reform*, but also and more importantly, in policy *implementation* [39]. Finally, the experience as a whole demonstrates the importance of mobilizing capacities not just in East Kalimantan but also in Jakarta.

Theoretically, we have pointed to the productive ways in which legal geography, political settlements, and political ecology can be brought together to study the governance of extractive landscapes. Legal geography draws attention to the importance of the law in mediating how natural resources are appropriated, controlled and used, by whom and for what [13], and also how the presence and effects of the law vary across space. At the same time, we have shown the importance of understanding how these laws emerge in the first place, and are rolled out, implemented and contested. These processes can be approached through combining the perspectives of political settlements frameworks and political ecology. The former emphasize the importance of understanding the dynamics of inter-elite pacts, and the ways in which these pacts manage relationships with "excluded" actors, for any understanding of which laws do and do not emerge, and if and how different laws are implemented or not. While emphasizing the influence of elites, these approaches are neither static nor do they view law as a purely realist reflection of power. Instead, they also offer conceptual instruments for understanding how progressive legal innovation can occur, be this through the emergence of fractures [44,89] within these pacts, or through bureaucratic "pockets of excellence." These pockets can emerge and survive within government, working not only against the worst excesses of elite preferences but also for normative change in governance and regulation. In turn, political ecology frameworks help link these analyses of elite pacts, laws and legal change to the dynamics of the political economy of natural resources on the one hand, and to the nature of social mobilization and contestation on the other hand. This contestation becomes a force that can destabilize elite pacts, take advantage of fractures as they emerge, and engage and cooperate with bureaucratic actors within government who seek similar forms of change in environmental governance to those pursued by movements. While this article has used this combination of literatures and theoretical insights to understand the emergence, governance and contestation of post-coal landscapes, we would suggest that the framework can also illuminate how a range of energy landscapes, as well as other landscapes dominated by natural resource based economic activity, are produced, governed and contested.

Declaration of Competing Interest

The authors declare no conflict of interest

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Supplementary materials

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