
Article:
Enns, C., Bersaglio, B. and Sneyd, A. (2019) Fixing extraction through conservation : on crises, fixes and the production of shared value and threat. Environment and Planning E: Nature and Space, 2 (4). pp. 967-988. ISSN 2514-8486

https://doi.org/10.1177/2514848619867615

EPE: Nature and Space

Fixing Extraction through Conservation: On Crises, Fixes and the Production of Shared Value and Threat

Journal:	*Environment and Planning E: Nature and Space*
Manuscript ID	EPE-18-088.R1
Manuscript Type:	Article
Keywords:	Extraction, Biodiversity Conservation, Spatial Fix, Socioecological fix, Value
Abstract:	We are currently witnessing a global trend of intensifying and deepening relationships between extractive companies and biodiversity conservation organisations that warrants closer scrutiny. Although existing literature has established that these two sectors often share the same space and rely on similar logics, it is increasingly common to find biodiversity conservation being carried out through partnerships between extractive and conservation actors. In this article, we explore what this cooperation achieves for both sectors and reflect on some of the broader implications of this trend. Using illustrative examples of extractive-conservation collaboration across sub-Saharan Africa, we argue that new entanglements between extractive and conservation actors are motivated by two purposes. First, partnering with conservation actors serves as a spatial and socio-ecological fix for extractive companies in response to multiple crises that threaten the sector's productivity. Second, new forms of collaboration between extractive and conservation actors create pathways for both sectors to produce new value from nature. We conclude by discussing the justice implications of fixing extraction through conservation, suggesting that as extractive and conservation actors produce new value from nature they simultaneously re- and de-value certain certain forms of human and non-human life. Our analysis leads to pressing questions about whether collaboration between these two sectors represents a trial run for 'capital switching' in the future, as well as what the justice implications of capital switching might be given that the production of hierarchical differences is central to the production of value. Ultimately, this article links theoretical work on spatial and socio-ecological fixes with scholarship on value in capitalist nature to reveal how efforts to fix the extractive sector through conservation are also driving the production of new forms of shared value to the benefit of both sectors.

- Globally, relationships between extractive companies and biodiversity conservation organisations are deepening and intensifying
- We argue that new and intensifying entanglements between extractive and conservation actors are motivated by two purposes
- First, these partnerships serve as a spatial and socio-ecological fix for the extractive sector
- Second, the convergence of extractive and conservation interests enables both sectors to produce more and novel value from natures
- Through partnership, extractive and conservation actors attempt to re-work socionatural relationships, processes and landscapes to solidify their control over natures

Fixing Extraction through Conservation:
On Crises, Fixes and the Production of Shared Value and Threat

1. Introduction

First Quantum Minerals – a Canadian based mining company whose principal activities include copper exploration, extraction and development – holds large mining concessions in Zambia. In Zambia's Copperbelt Province, the company operates both the Kansanshi and Kalumbila mines, which account for a significant amount of Zambia's overall copper production. First Quantum has long claimed to be one of the more important contributors to Zambia's economy as the largest individual taxpayer in the country (Bochove and Mitimingi, 2018). Yet, in March 2018, the Zambia Revenue Authority sent the company a US $7.9 billion tax bill, along with a letter that stated it had significantly underpaid its taxes over a period of six years (Bochove and Mitimingi, 2018). First Quantum was quick to publically dispute this claim, but its shares fell over 10 percent the same day (McGee, 2018). This incident was just one of a string of disputes between the mining company and the Zambian government, reflecting ongoing tensions between between First Quantum and its host state.

Less than two weeks after news broke about First Quantum's revised tax assessment, the company announced that it would be investing US $2 million in wildlife conservation projects in the near future (Zambian Eye, 2018). First Quantum populated its Facebook page with pictures of rangers in West Lunga National Park in Zambia during the same week, explaining how the company works with Zambia's Ministry of Tourism to set up ranger camps and pay rangers' salaries to help fight illegal hunting. A critical perspective on First Quantum's interest in biodiversity conservation might hold that this was simply a public relations ploy, as the company attempted to redirect its shareholders' and the general public's attention towards its positive contributions to Zambian society. In other words, First Quantum's most recent commitments to biodiversity conservation could be interpreted as 'greenwashing' – the act of projecting a caring image without significant change to harmful business practices (Hamann and Kapelus, 2004).

Yet, a closer examination of First Quantum's participation in biodiversity conservation activities reveals that the company spends far more time and resources investing in conservation than one might expect of a mere public relations ploy. For example, around its Kansanshi mine in the Zambian Copperbelt, First Quantum has designated 1,400 hectares of its concession as a protected wildlife reserve (FQM, 2014). In this reserve, it is reintroducing several species that were previously indigenous to the area, including giraffes, zebras, elands, kudus, lechwes, pukus, impalas, ostriches and wildebeests (FQM, 2014). Further west, First Quantum has invested in the reintroduction and conservation of wildlife in the West Lunga Management Area, which neighbours its Trident mine site (FQM, 2016). The company has also created a large forest reserve and a second wildlife reserve near this mine site and the neighbouring human settlement of Kalumbila (FQM, 2016). First Quantum explains in its annual reports that it invests in wildlife protection and conservation projects as part of its overall vision of improving the environments where it operates – striving to have net positive impacts on both the environment and biodiversity.

First Quantum's keen interest, significant investment and growing involvement in biodiversity

conservation in Zambia is part of a much broader trend globally in which extractive and conservation actors are becoming increasingly entwined. This convergence of extractive and conservation interests manifests in extractive companies establishing new protected areas, such as wildlife reserves, as in the case described above. Yet, extractive companies are also partnering with public and private conservation actors to carry out a wide range of other conservation-related activities, including: building security infrastructure in and around protected areas, such as fences and security outposts; implementing carbon trading schemes; establishing community-based conservancies and resource management programs; training and equipping park rangers; raising community awareness about conservation initiatives; initiating captive breeding and rewilding programs; and commissioning conservation research. Given that biodiversity conservation is not typically seen as being within the remit of extractive companies, this trend of entanglement between the two sectors is a puzzle worth further attention.

In this article, we critically examine new partnerships between extractive and conservation actors – drawing on illustrative cases from across sub-Saharan Africa to detail key areas of cooperation between the two sectors. We assess what such cooperation achieves for both sectors and reflect briefly on some of the broader implications of this trend. Existing neoliberal nature literature has examined complementarities between natural resource extraction and biodiversity conservation, demonstrating that extraction and conservation activities increasingly occur in the same spaces and make use of similar logics, strategies and technologies (Büsher and Davidov, 2013; Seagle, 2012; Norris, 2017). In this article, we suggest that we are witnessing an intensifying and deepening of relationships between extractive companies and conservation organisations that warrants closer scrutiny. Rather than simply sharing the same space or relying on similar ideas and tools, biodiversity conservation is increasingly being carried out through partnerships between extractive and conservation actors in pursuit of shared interests.

Specifically, we argue that new and intensifying entanglements between extractive and conservation actors are motivated by two purposes. First, we conceptualise the extractive sector's growing interest, investment and involvement in biodiversity conservation as both a spatial and socio-ecological fix. Through our analysis, we show how partnering with the conservation sector enables extractive companies to temporarily resolve crises that threaten their productivity and profitability. This includes crises arising from environmental degradation and natural resource depletion that ultimately result in underproduction, as well as crises associated with social opposition or political resistance to environmental degradation caused by the sector. In other words, we illustrate how the emergence and intensification of cooperation between the extractive and conservation sectors relates, in part, to the extractive sector's need to resolve both the first contradiction of capitalism, which relates to an inherent tendency towards underconsumption or overproduction, and the second contradiction of capitalism, which relates to the imperative of continual growth in the context of finite natural resources (O'Connor, 1988).

Second, we offer one plausible explanation for why the conservation sector is willing to participate in 'fixing' extraction. We argue that new forms of collaboration between extractive and conservation actors forge new pathways for both sectors to produce value from nature. As these two

sectors partner with one another and undertake various activities related to biodiversity conservation, natures are valued, revalued or devalued. We provide examples of how some natures – which might have previously gone unexploited or unconserved – are assigned value through initiatives implemented in partnership between extractive and conservation actors, while other natures are devalued – rendered as disposable or even as a threat to capitalist production. This contribution is important, as focusing on the spatial and socio-ecological fix alone does not explain why conservation actors are willing to be enrolled in the extractive sector's work. However, bringing value into our analysis enables us to show how cooperation between these sectors creates new opportunities for producing value from nature to the benefit of both sectors.

Kay and Kenney-Lazar call for research that 'consider[s] value as central to nature–society relationships, suggesting "value in capitalist natures" as an emerging framework around which research could be organized' (2017a: 306). This article responds to this call by highlighting collaborations between extractive and conservation actors as an emergent pathway through which value is being produced from nature. At the same time, our analysis links literature on value with that on spatial and socio-ecological fixes. Doing so enables us to show that the reworking of landscapes, processes and relationships does not just temporarily resolve or 'fix' capitalist crises; it creates new opportunities for seemingly unlikely coalitions of actors to come together in order to produce and extract value from nature in novel ways.

Although this article is largely a theoretical exercise, it draws on concrete examples and is informed by our individual and collaborative research into extraction and conservation over the last five years. As our central objective is to explain a trend of deepening entanglements between the extractive and conservation sectors, we do not rely on one case study alone but instead draw on various illustrative examples to evidence our claims. Many of the examples used were identified through discourse, narrative and semiotic analysis of websites, reports and documents produced by extractive companies, conservation organisations and multistakeholder initiatives that facilitate collaboration between the two sectors. Other examples come from field observations – including site visits, key informant interviews and focus group discussions – in Cameroon, Kenya, Tanzania and Zambia between 2014 and 2018. Given our research backgrounds, we use cases from various African contexts in the analysis that follows; however, we think it is important to point out the relevance and significance of our analysis is global. Both conservation and extraction are highly globalised sectors. Moreover, we see evidence of the convergence of extractive and conservation interests in other parts of the world – a point we return to in the conclusion.

We begin this article by briefly introducing existing literature that considers the relationship between extractive industries and biodiversity conservation. Next, we reflect on what motivates new and intensifying entanglements between extractive and conservation actors. In section three, we illustrate how partnering with the conservation sector works as a spatial and socio-ecological fix for the extractive sector. In section four, we argue that collaborating with each other also enables both sectors to create more and novel value from nature and, in some cases, to extract additional value from nature. We conclude this article by discussing the broader implications of this trend and outlining directions for further research.

2. Extractive-conservation convergence in Africa

In this article, we define the global extractive sector as the people, companies and processes involved in extracting non-renewable raw materials from the earth and converting them into value (Bridge, 2009). Extractive practices, organisational structures, labour needs and socio-environmental impacts vary significantly across the sector (Bridge, 2002; Bury, 2005; Bakker and Bridge, 2006). However, there are overarching similarities that make it possible to talk about trends in the extractive sector as a whole – such as how the sector creates value and the implications of this in society, especially among resource-dependent communities (Bebbington and Bury, 2013; Bridge, 2009). Over the past decade or so, escalating demands for oil, gas and minerals have driven unprecedented investments in the extractive sector globally. This has had political, social and economic implications for actors at all scales. It has also resulted in ecological devastation, including deforestation, habitat fragmentation and soil and water contamination, as new investments in the sector have driven clear-cutting, infrastructure expansion, urbanisation and migration (Edwards et al., 2013).

If, in the 21st century, the extractive sector is seen as 'spoiling Eden' (McAfee, 1999), the biodiversity conservation sector tends to be presented in opposite light. The conservation sector is often portrayed as the solution to fundamental challenges facing the future of the planet. More specifically, *market-based conservation* is promised to enable a 'return to Eden' in a world where industrialism has 'run amok' (McAfee, 1999). Market solutions and growing financial interest in the natural world are forefronted in public discourse: Carbon markets are promoted for their ability to offset greenhouse gas emissions; wetlands and species banks are promised to address environmental degradation caused by industrial development; and ecotourism is encouraged as a means of using conserved nature to drive socio-economic development (Büscher and Fletcher, 2015). As Igoe et al. write (2010), the struggle to save our planet through market-based conservation is now hegemonic.

Given the contrasting narratives that surround the extractive industries and biodiversity conservation, it might seem that resource extraction and biodiversity conservation are fundamentally incompatible ideologies. Yet, land use and spatial analysis reveal far more overlap and complementarity between the two sectors than is commonly assumed. Research by the World Resource Institute (2003) indicates that at least three quarters of all resource exploration and extraction activities on the planet overlap with biodiversity conservation areas. Moreover, one third of mining activities globally occur in ecologically stressed watersheds, with one quarter of these occurring within a 10-kilometre radius of areas that the International Union for the Conservation of Nature (IUCN) labels as 'strictly protected' (WRI, 2003). With demand for rare earth metals and minerals on the rise, resource exploration and extraction in ecologically sensitive areas are likely to remain common in the future.

The spatial overlap between these two sectors has led some researchers to challenge the assumption that natural resource extraction and biodiversity conservation are fundamentally incompatible projects (Büscher and Davidov, 2013, 2015; Norris, 2017; Seagle, 2012; 2013). This research has revealed that the dichotomy between these two sectors is imagined rather than real.

Although images and discourses surrounding extraction and market-based conservation differ greatly, at their core both sectors share a similar mandate and motivation: They largely exist to transform nature into valuable commodities for exchange, whether such commodities are nuggets of gold or wilderness getaways (Mendoza et al., 2017: 5). As Duffy (2013) writes, both the extractive and conservation sectors are oriented towards deepening and extending neoliberal logic across a greater range of 'non-human natures'. It follows that both sectors would find themselves expanding into the same landscapes in search of surface or subsurface natural resources. With this in mind, it is also unsurprising that both sectors make use of similar logics, strategies and technologies to enclose land and to assign value to nature (Busher and Davidov, 2013; Seagle, 2012; Norris, 2017). In summary, existing research convincingly shows that there is a remarkable degree of similarity between two sectors that are commonly portrayed as being at odds.

Importantly, however, the relationship between these two sectors increasingly extends beyond operating in the same space and under similar logics: The extractive and conservation sectors are now explicitly pursuing an agenda of cooperation. During the 1990s, many conservation organisations were hesitant to partner with extractive companies; but this is no longer the case. Wildlife Conservation Society, Fauna and Flora International, The Nature Conservancy and the World Wide Fund for Nature (WWF) all have close ties with the extractive sector. Extractive companies participate in global biodiversity conservation initiatives, such as IUCN's Business and Biodiversity Programme. Moreover, extractive industry associations have been established with the explicit mandate of supporting extractive-led biodiversity conservation. For example, the Energy and Biodiversity Initiative (EBI) was founded in 2001 by major players in both the energy and conservation sectors, including BP, ChevronTexaco, Statoil and Shell International BV as well as Fauna and Flora International, IUCN and The Nature Conservancy. In 2013, EBI was replaced by the Cross-Sector Biodiversity Initiative (CSBI). The CSBI aims 'to develop and share good practices related to biodiversity and ecosystem services in the extractive industries' through a partnership involving the International Petroleum Industry Environmental Conservation Association (IPIECA), ICMM, the Equator Principles Association, the European Bank for Reconstruction and Development, the International Finance Corporation and the Inter-American Development Bank (CSBI, 2018). Furthermore, as discussed in greater detail throughout this paper, individual extractive companies are increasingly carrying out conservation activities of their own – either in collaboration with major conservation players or through their own conservation foundations. While such trends might once have seemed paradoxical, today the extractive and conservation sectors are explicitly pursuing an agenda of cooperation.

3. 'Fixing' extraction through conservation

In the following sections, we turn to ideas about crises, fixes and value to explain why extractive and conservation interests have converged. To begin with, we suggest that new and intensifying forms of cooperation between extractive and conservation actors can be understood as a spatial and socio-ecological fix for the extractive sector. Specifically, partnering with the conservation sector provides the extractive sector with a means of sustaining capital accumulation in an era where it faces multiple

crises, including crises related to production and legitimacy.

The spatial fix

Rooted in Marxist critique and initially theorised by David Harvey (Harvey 1981, 1982, 1985a, 1985b, 1996, 2001, 2003), spatial fix refers to the temporary offsetting of capitalist crises through spatial expansion. Work by Harvey and others offers useful insights into the various ways that space can be reorganised to fix capitalist crises through processes such urbanisation, gentrification or deindustrialisation (see Brenner, 1998; Glassman, 2006, 2007; Lang and Knox, 2009). Some scholars have written about how the reorganisation of global space can also serve as a fix, involving processes such as imperialism, colonisation and economic globalisation or transnational neoliberalism. These examples of spatial expansion and reorganisation are fixes in that they serve to temporarily neutralise threats to the ongoing accumulation of capital. By expanding into new spaces – both literal and figurative – to access cheaper sources of labour and raw materials, it becomes possible to alleviate crises of underconsumption or overproduction.

Curiously, frontier natural resource extraction has received relatively little attention in theoretical work on the spatial fix (Zalik, 2015: 2451) – perhaps because it is such an obvious and, therefore, seemingly uninteresting example. Yet, a few exceptions do exist, such as work by Zalik (2015), Barry (2013) and Scott (2013). Such scholars argue that oil and gas infrastructure, like pipelines, exemplify a spatial fix in response to the first contradiction of capitalism – capital's inherent tendency towards underconsumption or overproduction. By building infrastructure that can move oil from one region of the world to another, oil companies and states alleviate such crises. Oil and gas cartels offer another example of a spatial fix in the extractive sector. By limiting the production and distribution of oil and gas in certain parts of the world, cartels sustain high profits and prevent overaccumulation at a global scale (Bina, 2006; Mitchell, 2002). Spatial fixes such as these are enacted through coordination between companies, states and intergovernmental organisations to prevent or offset economic crises in the extractive sector. Along similar lines of reasoning, frontier natural resource extraction can be understood as a fix for capital's inherent tendency towards underconsumption or overproduction: By expanding into new spaces, extractive companies can often access cheaper sources of labour and raw materials to alleviate such crises.

At the same time, frontier natural resource extraction can also be seen as a spatial fix in response to the second contradiction of capitalism – namely, the tendency of capitalist production relations and productive forces to destroy rather than conserve the conditions they rely on for production (O'Connor, 1988). As easily accessible oil, gas and mineral reserves are exhausted, the productivity of extractive industries faces a looming crisis. Yet, as Robbins et al. write, 'the crises caused by the treadmill of accumulation can be avoided, in theory, as long as capitalist production and consumption can be extended to new places…' (2014: 110). In order to resolve environmental degradation and natural resource depletion, it is necessary for extractive industries to expand into new commodity frontiers.

Increasingly, extractive companies are moving into spaces previously deemed to be off-limits or no-go zones because of their perceived intrinsic natural value, such as biodiversity, ecosystem

services or sites of cultural and spiritual significance. For example, nearly two thirds of Africa's natural world heritage sites – regarded as globally important sites of biodiversity conservation for their ecological significance and natural beauty – have been identified as promising sites for mining, oil and gas exploration and extraction (WWF, 2015). Such sites include Selous Game Reserve in Tanzania and the Namib Sand Sea in Namibia (WWF, 2015) These sites contain species considered to be endangered or vulnerable to extinction as well as rare landforms, such as shifting sand dunes. WWF reports that the number of mining and oil and gas concessions in or overlapping with natural world heritage sites is quickly expanding (WWF, 2015). Other research has reached similar conclusions about the expansion of commercial mining, oil and gas exploration and extraction into areas with natural value across Africa. For example, both Edwards et al. (2013) and Mascia et al. (2014) note a growing trend in which protected areas across Africa are being degazetted, downgraded or downsized to accommodate natural resource extraction. A recent example of this occured in July 2018, when the Democratic Republic of Congo (DRC) announced that parts of Virunga and Salonga National Parks, two UNESCO World Heritage Sites, may be open for oil exploration and drilling (BBC, 2018).

By expanding into areas that historically had boundaries and buffer areas to safeguard against extraction, the extractive industries are temporarily alleviating or postponing crises associated with degraded and depleted natural resource reserves. Harvey's (1998) original work on the spatial fix drew attention to the relationship between limits and crises, noting that resolving capitalist crises requires overcoming the limits of nature's productivity. In this case, the extractive sector is reestablishing conditions needed for production by extending its activities beyond the boundaries constructed between protected areas and non-protected areas.[1] In doing so, they are fulfilling O'Connor's (1988) observation that the self-limiting productivity of nature can be temporarily overcome by identifying and deploying appropriate spatial fixes.

Nevertheless, extractive-led environmental degradation and natural resource depletion does not occur in a social vacuum and, consequently, the self-limiting productivity of nature is not the only type of crisis facing extractive companies. Rather, the extractive industries have also been confronted with a growing crisis of social legitimacy, which represents an additional threat to their conditions of production. This crisis can be observed in the growing social movements and other forms of resistance to extractive industries around the world – resistance spurred on by what the general public sees as the exploitation of nature and people in the sector. Thus, although expansion into new frontier spaces enables extractive companies to resolve one of its crises, this fix is insufficient – and may even fly in the face of – resolving it's legitimation crisis. In response, extractive companies are simultaneously partnering with the conservation sector as a socio-ecological fix.

The socio-ecological fix

A recent body of work extends Harvey's conceptualisation of the spatial fix to argue that capitalist crises can also be temporarily offset by socio-ecological fixes. Ekers and Prudham (2015)

[1] Importantly, spatial fixes are often paralleled or made possible by regulatory fixes that change socially-constructed boundaries. For example, new spaces for extraction are opened-up by regulatory shifts, such as the degazettement of protected areas, amendments to mining laws or offering of fiscal incentives for investments in newly 'opened' spaces (see Rasmussen and Lund, 2018).

conceptualise the socio-ecological fix as the re-working of socionatural relationships, processes and landscapes to secure the conditions of future production. Work by Ekers and Prudham (2015; 2017a; 2017b) and others usefully describe the various ways that 'socionatures' can be reorganised to temporarily resolve capitalist crises. For example, Ekers (2015) shows how state sponsored reforestation projects that employed relief labour in Canada during the 1930s served as a socio-ecological fix in response to crises caused by deforestation and economic decline. McCarthy (2015) suggests that a large-scale transition towards renewable energy sources might serve as a socio-ecological fix to multiple crises created by over-reliance on fossil fuels, including concerns about resource depletion and the eroding legitimacy of the sector. In short, this literature suggests that remaking and reconfiguring socio-ecological relationships can alleviate crises of underconsumption and overproduction that threaten the ongoing accumulation of capital.[2]

As stated above, the extractive industries are currently facing a legitimacy crisis, which represents a clear threat to their conditions of production. At the global scale, this legitimacy crisis can be partly attributed to growing concerns about climate change (McCarthy, 2015). It can also be linked to a number of high-profile environmental disasters caused by extractive operations and the fallout of these catastrophes. The dumping of billions of tons of untreated mining waste into the Ok Tedi River from the Ok Tedi Mine in Papua New Guinea in the mid-1980s and the 11 million gallon crude oil spill that occurred when ExxonValdez crashed into a reef in Alaska's Prince William Sound in 1989 are two prime examples of widely-publicised environmental disasters that gripped a global audience. By causing irreparable damage to sensitive ecologies and the human lives and livelihoods intricately connected to them, these events have challenged the reputation of the sector as a whole.

For those living near extractive sites and who are directly exposed to the risk of these types of disasters, resistance against natural resource extraction is also increasingly common (Bebbington and Bury, 2013). Local-level resistance often relates to the fact that the conditions needed to produce value in the extractive sector – such as secure access to land and natural resources – tend to be the same 'conditions of production [that] comprise the lifeworlds and livelihoods of billions of people' (Surprise, 2018: 5). As land is subjected to degradation and natural resources are depleted by the extractive sector, mines and drilling sites emerge as key sites of sociopolitical struggle.

From everyday resistance to roadblocks to divestment to violence, resistance against the extractive sector threatens capital accumulation. Research that attempts to quantify the cost of resistance against extractive industries finds that 'a major, world-class mining project with capital expenditure of between US $3 and US $5 billion [suffers] roughly US $20 million per week of delayed production in net present value terms as a result of community conflict' (Franks et al., 2014: 7578). Moreover, the intensity and material risks caused by resistance are likely to increase as extractive companies expand into more ecologically-sensitive areas and as activism around fossil fuel extraction and greenhouse gas levels intensifies.

[2] As McCarthy notes, the idea of the socio-ecological fix 'is consistent with the work of Marx, Harvey, and the Regulation approach, but it adds capitalism's constitutive imbrications with biophysical environments as an element of its structural dynamics (see also Bridge, 2000)' (2015: 2495). Given that the trend we consider in this article involves forming partnerships in order to appropriate and create value out of new aspects of the biophysical world, we find the idea of the socio-ecological fix particularly relevant to explaining this trend.

In recent decades, participating and investing in biodiversity conservation has become central to how the extractive sector responds to the contradictions and crises associated with natural resource extraction. As the EBI explains:

> … a company's track record for performance on biodiversity – and other social and environmental issues – can in turn affect its global competitiveness, in terms of access to key business resources, including land, oil and gas resources, capital and labor. A company with a positive reputation for responsibly addressing and preventing biodiversity impacts may become a company of choice for governments, investors, business partners and employees. In contrast, not managing biodiversity properly can be a long-term constraint on business and limit opportunities for future activity (2003: 18).

More recently, IPIECA reiterated this idea, arguing that the extractive sector must demonstrate an interest in biodiversity conservation in order to maintain conditions of production, stating: '[biodiversity and ecosystem management] can be critically important in meeting stakeholder expectations, avoiding costly redesigns and project delays, maintaining licence to operate, and gaining access to new business opportunities' (IPIECA-IOGP, 2016: 3). In fact, in recent years, managing biodiversity conservation issues has become such a material concern for extractive companies, leading them to report on their biodiversity impacts and initiatives on an annual basis. The United Nations Environment Programme (UNEP) has gone so far as to produce an 'A-Z' glossary of commonly used biodiversity terms for extractive companies (UNEP-WCMC, 2003).

However, in addition to bolstering the reputation of the extractive sector, partnerships between the extractive and conservation sectors introduce a new way of managing extractive landscapes. Importantly, this multi-sectoral approach to land and natural resource management can help extractive companies to (re)establish the conditions needed for production. For example, the Campo Ma'an and Mban et Djerem National Parks in Cameroon were established with financing from the consortium of oil and gas companies behind the Chad-Cameroon Petroleum Development and Pipeline Project. When the Chad-Cameroon Pipeline was initially proposed in the late 1990s, the consortium faced a legitimacy crisis. Civil society organisations in Cameroon and around the world feared that the state was not strong enough to regulate the oil and gas sector and that environmental degradation would follow. Due to this legitimacy crisis, the consortium was initially unable to secure financing for the petroleum development and pipeline project. To overcome this challenge, it proposed two national parks as a way of offsetting environmental degradation linked to the pipeline project, as well as other environmental initiatives outlined in a comprehensive Environmental Management Plan. Doing so enabled the consortium to appease concerns about the impacts of the pipeline project and, subsequently, secure financing. Today, the WWF and Cameroon Ministry of Forestry and Wildlife co-manage Campo Ma'an and Mban et Djerem National Parks with continued financing from the oil and gas consortium (WWF, 2018). By reimagining extractive landscapes as spaces where oil development and biodiversity conservation can co-exist, and by enrolling conservation 'experts' in the management of these spaces, the consortium was able to overcome a potential crisis.

De Beers' Forevermark brand offers another example of how 'landscapes are produced, how

human and nonhuman organisms and socionatural relationships are transformed and how labor processes are restructured in order to address or offset (at least temporarily) entangled social and environmental crises of capitalism' (Ekers and Prudham, 2015: 2438). In 2015, sales of diamonds declined globally by two percent while De Beers' revenues fell by roughly one-third and its operating profits fell by more than half (Financial Times, 2016). A number of different factors explain declining demand for diamonds; however, one important factor is that some millennials from privileged classes are increasingly concerned with ethical sourcing. One strategy that De Beers is using to convince millennials that its diamonds are ethical is by marketing its 'Forevermark' brand of diamonds as a symbol of wildlife conservation. This requires real and imagined transformations to the ecological landscapes within its mining concessions. De Beers has set aside significant amounts of land in its concessions for conservation – an activity that it carries out in collaboration with various conservation actors. The Forevermark brand's website depicts these conservation activities. It is decorated with beautiful pictures of savanna landscapes filled with charismatic megafauna, such as herds of elephant and giraffe. It also includes short films, which describe how buying a Forevermark diamond helps to protect wildlife. Piet Oosthuizen, Senior Manager Ecology and De Beers Properties, states in one of these films: 'If it was not for diamonds we would not be in a position to contribute to conservation effort[s]. We can actually say that conservation is because of … diamonds' (De Beers, 2015). This example effectively shows how enrolling new elements of nature into circuits of capital – even symbolically – works as a socio-ecological fix to crises of underconsumption.

In this section, we have shown how deepening relationships between the extractive and conservation sector are, at least in part, a means of resolving the multiple crises that threaten the economic productivity and profitability of the extractive sector. Based on our observations of converging interests between these two sectors, we think it is worth reiterating McCarthy's (2015) point that although socio-ecological fixes may seem progressive upon first glance, this may not be the case upon closer examination. As we demonstrate above, new partnerships with the conservation sector enable the extractive sector to expand its activities into ecologically valuable landscapes and ecosystems that were previously deemed to be off-limits or no-go zones and to overcome or displace crises, including crises of legitimacy, overproduction and underconsumption.

4. Extraction, conservation and the production of shared value

In 2010, Pricewaterhouse Coopers advised businesses attending the World Economic Forum that growing pressures for businesses to pay attention to biodiversity loss should be seen as a business opportunity rather than a nuisance. As their paper states:

> … it should be remembered that where there are risks there are also opportunities; with new trading mechanisms and markets, new technologies and design approaches, and improved land-use models, a new green economy presents a myriad of new areas for businesses to create value (PwC, 2010: 2).

In this final section, we shift our focus towards the new forms of value that are created when the extractive sector and conservation sector partner – arguing that these new forms of value help to explain why the conservation sector is willing to participate in 'fixing' extraction. To support this

argument, we show how new and deepening partnerships between extractive companies and conservation organisations are also 'putting nature to work in powerful new ways' (Moore, 2015: 1). Often informed by neoliberal approaches to biodiversity conservation, new partnerships between the extractive sector and conservation actors are serving to produce new value from nature and, in some cases, to incorporate nature (materially and symbolically) into circuits of capitalist exchange and accumulation. In what follows, we unpack key aspects of value production in spaces where extractive and conservation actors work together – offering specific examples of how extractive-conservation partnerships are producing more and novel natures that are both visible and useful to capitalism.

Our analysis is informed by Collard and Dempsey's (2017a) work on orientations of capitalist nature, a typology introduced by the authors' to describe the multiple ways human and non-human natures are oriented to capitalist production. In their typology, Collard and Dempsey (2017a) outline how nonhuman bodies and populations come to bear capitalist and non-capitalist value and the role that perceived differences and hierarchies play in the value they come bear. The authors detail five hierarchical orientations of humans and nonhumans in relation to capitalist value. These are: (1) 'officially valued' (direct inputs of capital, including free or waged labour, unfree or indentured labour and commodities); (2) 'the reserve army' (relative surpluses, such as reserves of labour, inputs and commodities that have future exchange value); (3) 'the underground' (useful inputs that contribute to capitalist production but that are unwaged or unpriced); (4) 'outcast surplus' (things deemed to be of no use to capital or waste produced by capitalist production that is not repurposable); and (5) 'threat' (humans or nonhumans that endanger capitalist production) (Collard and Dempsey 2017a).

Importantly, these orientations are neither constant nor consistent across space and time. Rather, as political economic modes change, so too do the ways that nature is oriented towards capital (Collard, 2018). Like Collard (2018), we are interested in the changing, varied ways that nature is valued, revalued or devalued within particular political economic modes of capitalism. Specifically, we consider the value orientations that different humans and non-humans come to occupy within spaces of extractive-conservation convergence in Africa. In some cases, natures are valued as 'official' or 'unofficial' commodities or, to use Castree's (2003) terms, as 'real' or 'proxy' commodities. In other cases, however, natures are produced in ways that might not ultimately lead to capital accumulation but still represent new sources of use value. Moreover, partnerships between extractive and conservation actors also often work to preserve nature that presently lacks economic value – or is resistant to commodification (Castree 2003) – but that could give life (figuratively or literally) to commodities in the future. These are two reasons we find Collard and Dempsey's (2017a) typology so insightful: It directs our attention to the multiple ways that nature can be oriented towards capitalist systems of production and enables us to show how extractive and conservation actors are involved in this (re)orienting process. It also helps us to move beyond a narrow concern with market success and failure, revealing instead the varied processes involved and implications of producing value from nature (Asiyanbi, 2018).

Producing official value through partnership

To begin with, the convergence of the extractive industries and biodiversity conservation makes

possible the creation of new officially valued natures. Referring to Collard and Dempsey's (2017a) typology, this category includes both commodities and enclosed land. One example of how official value is being created through new and deepening partnerships between extractive and conservation actors is through ecotourism. For example, First Quantum Minerals' newly established Kalumbila Wildlife Reserve in northwestern Zambia is creating new opportunities for the commodification of nature. As the company explains in its most recent corporate sustainability report:

> There's a vision emerging of Kalumbila as a gateway for eco-tourism in the North-Western Province, with easy access not only to West Lunga but to other great national parks such as Kafue, as well as to the massive wildebeest migration routes on the Liuwa Plains, and to places like Mwinilunga, which has one of the largest concentrations of diverse bird species in Africa. This expected growth in tourist traffic will create niche support businesses. In addition, there are many other wildlife-related activities that can potentially contribute to prosperity, from beekeeping in the mavunda to scientific research projects – including those seeking deeper insights into climate change. So as we work with our various partners to protect what's here today, we're helping to create a more hopeful future (FQM, 2016: 101).

The company describes its other wildlife reserve in a similar light, stating that its 1,400 hectares reserve at Kansanshi is providing 'a foundation for developing the local tourist industry, and therefore a more diverse economy that can be sustained beyond the life of the mine' (FQM, 2014). The landscapes within and surrounding First Quantum Minerals concessions are being reimagined and reshaped for wildlife-based tourism, with the ultimate goal of creating a commodified wilderness experience that can be sold to tourists (see Büscher and Fletcher, 2017). In this sense, by partnering with conservation organisations and public conservation authorities, First Quantum Minerals is playing a lead role in turning natures within and around its concessions into natures that capital can 'see' (Robertson, 2006).

Another example of official value being created from nature through new partnerships between the extractive and conservation sectors is through enclosed land. This example is a bit less straightforward than ecotourism because extractive companies and conservation organisations often do not own the land they use: Rather, they are granted access and use rights to land temporarily through concessions or leases. Although they cannot sell the land as a commodity, the land they are granted control over is still fundamental in the production of value (Andreucci et al., 2018). In other words, current and future rents can be derived from land that extractive companies and conservation organisations use even though they do not own it. By partnering with one another, extractive and conservation actors have identified an effective way of increasing the amount of land that they have access to and control over, which enables them to produce more and new 'official' value from nature.

For example, De Beers states that 200,000 hectares of land around its mines are set aside for conservation, and that this land is home to numerous indigenous and endangered species of wildlife (De Beers, 2018). Over the past decade or so, De Beers Group has begun to shift towards 'more holistic' management of the land set aside for conservation by creating connections between its conservation spaces through an initiative called The Diamond Route (De Beers, 2018). The Diamond

Route links De Beers Group properties, as well as other conservation spaces that span across South Africa and Botswana, and is promoted as a space for biodiversity conservation, conservation research and training and ecotourism. Researchers can apply to conduct research, postgraduate students can do experiential learning and tourists can stay in luxury accommodation, go on safari and visit cultural and heritage sites within The Diamond Route. At the same time, De Beers leases some of this property out to other conservation actors, including South African National Parks (SANParks) (De Beers, 2016), who use the land to support their own initiatives. This illustrates how partnerships between extractive and conservation actors can be used to reorganise socionatural landscapes so that ongoing forms of capital accumulation are relegitimised – such as diamond mining – while also making new forms of official value production possible, such as through land rent and ecotourism.

Producing reserve value through partnership

In addition to creating official value, partnerships between extractive and conservation actors are creating 'a sort of "reserve army" of potentially commodifiable nonhuman natures' (Collard and Dempsey, 2017a: 78). Collard and Dempsey (2017a) define the reserve army as natures that are not yet commodities but that promise to deliver future use or exchange value. The creation of new forest reserves in and around mining concessions offers one example of how this type of value is being created through partnerships between the two sectors. From Newmont Gold in Ghana to First Quantum Minerals in Zambia to Rio Tinto in Madagascar, establishing new forest reserves within and around mining concessions is an increasingly common strategy used by mining companies in Africa that aspire to have a 'net positive' impact on biodiversity. For example, around 1,665 hectares of forest will be affected by Rio Tinto's mining operations in Madagascar (Temple et al., 2012). Rio Tinto is attempting to offset this impact by restoring and conserving over 6,000 hectares of littoral forest – an area over four times larger than the company's impact (IUCN and Rio Tinto, 2012). At the same time, Rio Tinto is working to create a supply of fast-growing species in areas surrounding its reforestation projects so that communities can access and use timber for fuel without having to enter the replanted forested areas that Rio Tinto is conserving (Rio Tinto, 2016). This project, which has been designed in collaboration with IUCN, is one example of how extractive companies work with conservation organisations to produce natures with use value, but that also have the potential to be commodified in the future.

Captive breeding programs are another example of reserve value being created through new partnerships between the extractive and conservation sectors. Through such initiatives, extractive companies and conservation organisations help bring into being wildlife that are not commodified *per se* but have the potential to bear capitalist value in the future. For example, wildebeest were among the first indigenous species to be reintroduced into First Quantum Minerals' Kansanshi mine wildlife reserve in Zambia (FQM, 2016). Over the past few years, the wildebeest population has flourished in the reserve, which now supplies wildebeest to its second wildlife reserve in Kalumbila, adjacent to the company's Trident mine site and managed by Trident Foundation (FQM 2016). Eventually, the wildebeest population in the Kalumbila reserve will provide starter populations for protected zones within West Lunga Management Area – a national park that is also supported by Trident Foundation

and First Quantum Minerals (FQM, 2016). As First Quantum Minerals works with public and private conservation actors to reintroduce native animal species across northwestern Zambia, conserved wildebeest are becoming potentially commodifiable and exchangeable goods. While not yet officially valued as a commodity, it is possible to see how wildebeest could become 'lively commodities' if other national parks and private reserves wish to pay for starter populations.

Producing underground value through partnership

Collard and Dempsey's typology (2017a) also captures how nature can serve as a 'hidden underground' of value production. They define the underground as natures that contribute directly and indirectly to commodity production but are unwaged or unpriced, noting that the nonhuman underground has 'recently become subject to greater attention in various levels of government, in science and in economics. Ecosystems are increasingly seen as making human life and capitalist social relations possible' (Collard and Dempsey, 2017a: 90). Examples that Collard and Dempsey (2017a) offer of underground value include bees that pollinate crops and microbes that break down dead organisms – both of which enable agricultural goods to be produced and exchanged as commodities. They also refer to the commons and public goods as services freely provided by ecosystems that are needed for capitalist production (see Collard and Dempsey, 2013).

Through cooperation, extractive companies and conservation organisations aim to protect and, to some extent, control the hidden underground value of nature, which is important for producing and reproducing the conditions of production. For example, the President of Gabon recently announced the establishment of marine protected areas in more than 23 percent of Gabon's territorial waters (Tullow Oil, 2014). The decision to set aside this space for marine conservation was informed by research conducted by Tullow Oil and the Wildlife Conservation Society on the biodiversity and health of Gabon's marine environment (Tullow Oil, 2014). In addition to contributing to a stronger baseline understanding of Gabon's coastal and marine environment and protecting the global commons, this research informed the country's marine spatial planning process, resulting in specific zones off the coast being designated for oil industry activity, commercial fishing and community fisheries (Tullow Oil, 2014). This spatial planning was important, as the oil industry, commercial fishing sector and community fishers are all (differently) dependent on the invisible work done by nature to accumulate capital or pursue their livelihoods. For example, the oil industry needs access to rock formations under the ocean floor that contain oil while fishers require access to reefs that both nurture and sustain marine species. Thus, Tullow Oil and the Wildlife Conservation Society are creating further reserve value by supporting the creation of new marine protected areas in Gabon. Yet, at the same time, the spatial planning of these new protected areas – and the divvying up of which sector gets to use which space – also helps to ensure that the hidden underground value of the ecosystems can continue to support the multiple types of capitalist production that take place off Gabon's coast.

5. Extraction, conservation and the production of shared threat

In the previous section, we outline three different types of value that extractive and conservation

actors produce and extract from nature by partnering with one another. In this final section, we reflect briefly on the implications of this – drawing attention to the violence inflicted on natures that are deemed to be either of no value or to be a threat to extraction and conservation interests. In their typology, Collard and Dempsey suggest that 'certain bodies and natures are rendered wholly and enduringly superfluous to the needs of capital' (2017a: 91) while others are perceived as a threat to capitalist production. They refer to these categories of human and non-human natures as the outcast surplus and threat, respectively. In this section, we illustrate how new and intensifying forms of cooperation between extractive and conservation actors have violent implications for human and nonhuman populations deemed to be superfluous or threatening to the needs of capital.

Since the beginning of colonial expansion in Africa, large areas of land continue to be cleared as a 'necessary' step in the extraction of natural resources (Hall, 2011). As outlined above, this trend continues when extractive companies move their operations further into intact landscapes as a spatial fix. Yet, rather than drawing attention to the expansion of their own activities as a key threat to biodiversity and the lives that biodiversity sustains, extractive companies often present human populations neighbouring their concessions as the *real* threat to nature. Annual sustainability reports narrate how companies partner with conservation organisations to 'save' biodiversity, which involves managing and surveilling nearby communities. Such narratives serve to flip the tables – presenting human populations living within and around extractive concessions as standing in the way of resolving ecological crises rather than acknowledging the central role that the extractive sector itself plays in initiating and perpetuating ecological crises.

Farmers engaged in small-scale agriculture is just one population commonly named as a threat to nature through partnerships between extraction and conservation actors. For example, in a short film produced by De Beers about its award-winning Diamond Route initiative, the company describes how farmers have been uprooted from their land to protect biodiversity (De Beers, 2015). As De Beers explains: 'When we took the land over many years ago, [the land] was basically used for agricultural purposes – farming domestic animals. Since we took it over, we have managed to get it back to the current natural environment. The key is you need to look after your land and then restock the properties with the animals that have occured [here] naturally for many years' (De Beers, 2015). Such narratives explicitly designate farmers as a threat to biodiversity while also implicitly suggesting that farmers impede the growth of the wildlife conservation and ecotourism sectors.

First Quantum Mineral also describes smallholder farmers as a threat to nature and to the production of capitalist value through nature. The company explains that 'some measure of deforestation was necessary' to develop its mine site but that the pressing sustainability concern has been figuring out how to prevent local farmers from following suit (FQM, 2014: 53). As the company narrates:

> As work began on the Trident development in northwest Zambia, First Quantum's construction team faced a dilemma. In order to create access roads, build the ore processing plant and begin preparing the pit, some of the area's natural forest had to be cleared away … But now that the trees were actually coming down, what was the most responsible way to way to dispose of them? The easy route, and the one

> favoured by many resource companies, was to bulldoze them into piles and burn them. But that would send absolutely the wrong message to communities around the Trident project. First Quantum environmentalists were already trying to steer local farmers away from traditional slash-and-burn deforestation, proposing more sustainable approaches to increase yields from their existing lands. What's more, lighting a series of giant bonfires would be a terrible waste of good timber. The solution was so elegantly simple that the only question within the environmental team was why no one had thought of it before: the company would build a sawmill and put the timber to good use around the project site – and create additional jobs in the bargain (FQM, 2014: 53).

This story is pertinent for a couple of reasons: In addition to framing local farmers as a more significant threat to forests than large-scale, industrial mining, the story also highlights the company's eagerness to create additional value from nature by turning deforestation into an opportunity for both labour and capital.

Recognising the politically- and often racially-charged nature of the term in Africa, 'poachers' are another population that is commonly depicted through partnerships between extractive and conservation actors as a threat to both nature and the production of value through nature. For example, Total states that biodiversity around its Tilenga project in Uganda has been degraded 'due to poaching and other pressures from humans' (Total, 2018: 14). In response, the company has initiated an anti-poaching program with 'specialist' local and international organisations (Total, 2018). First Quantum also identifies poachers as a threat that must be managed, stating:

> Poaching remains a problem, particularly in a cultural context where the name for a species is often synonymous with 'meat'. To discourage hunting, the [Kansanshi wildlife] reserve has a team of rangers patrolling 24 hours a day, along with a conservation officer who works with nearby communities to build awareness around wildlife protection. That attitudes are beginning to change is evidenced by the recent success of a neighbourhood watch program in which volunteers actively support the rangers in their anti-poaching efforts. As a result, poaching incidents have been virtually eliminated over the past two years (FQM, 2014: 60).

Finally, De Beers too has pinpointed poachers as a threat to be neutralised. In 2017, De Beer's subsidiary in Namibia donated three vehicles for use by Namibia's Save the Rhino Trust. The Ministry of Environment and Tourism and Save the Rhino Trust responded by thanking De Beers 'for their continued efforts to safeguard the precious rhinos for future posterity' (De Beers, 2017). Each of these examples illustrates how extractive-conservation partnerships 'devalue, denigrate and make worthless' populations that stand in the way of producing value through nature (Collard and Dempsey, 2017b: 314).

While it is beyond the scope of this paper to offer a thorough discussion on the broader implications of this trend for human populations that are devalued, we agree with Collard and Dempsey's (2017a; 2017b) argument that devaluation serves the interests of patriarchy, racism and colonialism. It can be argued that the convergence of extractive and conservation interests sustains

hierarchies rooted in deeply problematic assumptions about – and unequal relationships between – groups of different genders, identities, races, species, etc. On the one hand, smallholder producers are displaced from their land, criminalised for their livelihoods or even killed if they live in countries where shoot-to-kill anti-poaching policies exist. On the other hand, large-scale industrial extraction is permitted to continue despite its clear and proven links to environmental degradation and climate change. This raises important questions that warrant further attention through future research concerned with specific violences perpetrated through partnerships between extractive and conservation actors. This research focus is particularly urgent, given that new regulations and laws are being put in place globally that require extractive companies to evidence their commitment to protecting biodiversity. If extractive and conservation interests are going to continue to converge, more attention must be paid to how the valuing and devaluing of nature by these two sectors subjects certain human and nonhuman populations to violence.

6. Concluding discussion

> A mine's obligation to preserve biodiversity doesn't end at the concession fence. In addition to its area of direct environmental impact, there's the broader ecosystem to consider, along with aspects of sustainability that may extend across an entire region. As well, conservation efforts extend over time, addressing challenges that often predate development and will require attention well beyond the project's lifespan. This is the far-reaching perspective First Quantum brings to the Trident mine in Zambia (First Quantum Minerals, 2016: 96).

In the above quote, First Quantum positions itself as far more than just an environmentally-conscious extractive company: It describes itself as an active and persistent force for biodiversity conservation. As has been illustrated throughout this article, such discourse reflects a growing global trend of entanglement between the extractive and biodiversity conservation sectors. Given that biodiversity conservation in its current form would not have been understood as falling within the remit of the extractive sector historically, we see this trend as deserving of further research and thought.

In this article, we rely on empirical evidence from Africa to argue that convergence between the extractive and conservation sectors serves at least two key purposes. First, partnering with conservation actors enables extractive companies to temporarily resolve two interconnected crises: (1) ongoing forms of environmental degradation and natural resource depletion that threaten the productivity and profitability of extraction and (2) opposition to the extractive sector's ill-perceived environmental track-record, including a general lack of social legitimacy. Second, through collaboration, both extractive and conservation actors produce more and novel value from nature, which can be exchanged and accumulated by each sector.

Untangling new and intensifying forms of collaboration between extractive and conservation actors offers further insights into how different natures – as well as relationships between human and nonhuman forms of life – are transformed in response capitalist crises and fixes. Table 1 (see below) summarises how we see different natures being oriented in relation to capitalist value, as extractive and conservation actors collaborate to 'fix' natural resource extraction through conservation. Whereas

some types of nature are privileged as sources of official or reserve value through extractive-conservation partnerships (e.g. ecotourism or forest reserves), others are recognised, conserved and protected because of their value in reproducing the conditions needed by both sectors for capitalist production (e.g. protected marine habitats). Other types of nature still are deemed to be of no value or even a threat to extraction-conservation partnerships and, therefore, are discarded or actively suppressed within the capitalist socio-ecological order (e.g. clearing land for small-scale farming). As relationships between these two sectors deepen, it appears that a clear hierarchy is being established for the way that nature should be used and valued in and around extractive concessions. This hierarchy is largely premised on ensuring that nature is organised in a way that global capital can 'see' and circulate through – in line with neoliberal conservation.

[Insert Table 1 here]

This final point brings us to the justice implications of fixing extraction through conservation. Given the scope of this paper, it is not possible for us to sufficiently speak to the ways that capitalist value hierarchies are informed by different expressions of racism, sexism and speciesism (and vice versa). However, such '-isms' are intimately linked to colonial ways of knowing and valuing nature. For example, charismatic megafauna, like elephants and rhinos, were highly prized and prodigiously hunted by colonizers as valuable sources of prestige and wealth, with ivory being a vital commodity in the British Empire (Steinhart, 2006). In seeking to protect this value, physical and structural violence was enacted against indigenous populations whose livelihood activities were framed as a threat to wildlife, ivory stocks and, ultimately, empire (Steinhart, 2006). It is no coincidence that these same charismatic megafauna play starring roles in conservation initiatives implemented by extractive companies today or that the devaluing of similar human populations and their livelihoods remains central to the value being produced through extractive-conservation partnerships. This can be seen in the continued shifting of blame for environmental degradation and biodiversity loss away from large-scale, industrial extraction towards everyday people, such as smallholder farmers. In other words, the production of social difference and hierarchies is crucial to the production of value (Pulido 2017) and the ways in which extractive-conservation partnerships are producing this hierarchical difference is intricately connected to the colonial past (see also Mamdani 1999; 2003; Kepe 2009).

By reproducing difference and hierarchy in this way, extractive-conservation partnerships are able to re-work socionatural relationships, processes and landscapes in ways that both sustain and further their control over nature. For example, in northern Kenya, Tullow Oil has entered into a five-year agreement with a conservation organisation called the Northern Rangelands Trust (NRT) to establish six wildlife conservancies in the company's concessions. Once operational, these conservancies will host a team of armed rangers supported by an NRT special task force trained in weapons handling, combat operations and advanced first aid. The partnership between Tullow Oil and NRT increases the social legitimacy of Tullow Oil by demonstrating that the company is aware of its negative social and environmental impacts and is taking steps to mitigate these impacts. At the same time, establishing militarised conservancies around its operating and drilling sites also spatially

secures the company's activities – an important undertaking, given that banditry, cattle raiding and general insecurity are seen to be common in the area. Moreover, if successful, this partnership will enable NRT to expand its footprint in northern Kenya, where its programmes have been described as 'Colonialism 2.0'.[3] Similarly, it seems that vast areas of land currently being used for extraction within De Beer's Diamond Route are being primed to become land used for biodiversity conservation in the future. As detailed both above and in more detail by Benjaminsen et al. (2008), land transactions between De Beers and the conservation sector are already enabling this transformation to take place. These examples suggest that a 'settler-colonial character' is often at play in both the fixes being pursued and values being produced through extractive-conservation partnerships (Ekers 2018).

Our observations also lead us to question whether the trend of increasing engagement, fixing and value production through extractive-conservation partnerships may be a trial run for 'capital switching' (Harvey 1978) in the long-term. As the extractive sector becomes more overtly contested, will the conservation sector inherit the extractive sector's control over humans, non-humans and landscapes? Moreover, what might the justice implications of this capital switching be, given the fundamental role that the production of social difference and hierarchies plays in this process? To conclude, we see ample room for further research into emergent linkages between the extractive and conservation sectors – not just in Africa but in North America, Oceania and other parts of the globe as well. The present moment is primed for research that engages with the 'politics and contradictions' inherent in these two sectors' efforts to fix capital and create new and novel forms of value by reconfiguring socionatural relationships, processes and landscapes (Ekers and Prudham 2015). Towards this goal, 'value' represents a rich analytic for critical engagement with the different ways that landscapes, human and nonhuman lives and relationships between them are being transformed by the convergence of extractive-conservation interests in response to capitalist crises.

[3] Interviews in Il Ng'wesi Conservancy and with pastoralist civil society organisations in northern Kenya between February 16–20, 2015 and on May 18, 2016 and May 21, 2016.

References

Asiyanbi, A (2018) Financialisation in the green economy: Material connections, markets-in-the-making and Foucauldian organising actions. *Environment and Planning A: Economy and Space* 50(3): 531–548.

Andreucci, D, Garcia-Lamarca, M, Wedekind, J, Swyngedouw, E (2017) 'Value grabbing': A political ecology of rent. *Capitalism, Nature, Socialism* 28(3): 28–47.

Bakker, K and Bridge, G (2006) Material worlds? Resource geographies and the matter of nature'. *Progress in human geography 30*(1): 5–27.

Barry, A (2013) *Material politics: Disputes along the pipeline*. Oxford: John Wiley & Sons.

Bebbington, A and Bury, J (2013) *Subterranean struggles: New dynamics of mining, oil, and gas in Latin* America. Dallas: University of Texas Press.

Benjaminsen, T, Kepe, T, and Bråthen, S (2008) Between global interests and local needs: conservation and land reform in Namaqualand, South Africa. *Africa* 78(2): 223–244.

Bina, C (2006) The globalization of oil: A prelude to a critical political economy. International Journal of Political E*conomy* 35(2): 4–34.

Bochove, D and Mitimingi, T (2018) First Quantum Gets Time to Solve $7.9 Billion Zambia Tax Row. *Bloomberg* Available at: https://www.bloomberg.com/news/articles/2018-07-05/first-quantum-given-time-to-solve-7-9-billion-zambian-tax-row (accessed 18 December 2018).

Brenner, N (1998) Between fixity and motion: accumulation, territorial organization and the historical geography of spatial scales. *Environment and Planning D: Society and Space* 16(4): 459–481.

Bridge, G (2009). Material worlds: Natural resources, resource geography and the material economy. *Geography Compass* 3(3): 1217–1244.

Bridge, G (2002) Excavating nature: Environmental narratives and discursive regulation in the mining industry. In: Herod A, Tuathail G and Roberts S (eds) An unruly world?: Globalization, governance and geography. London: Routledge, pp. 219–244.

British Broadcasting Corporation (BBC) (2018) DR Congo explores oil drilling allowed in wildlife parks. Available at: https://www.bbc.co.uk/news/world-africa-44662326 (accessed 18 December 2018).

Bury, J (2005) Mining mountains: neoliberalism, land tenure, livelihoods, and the new Peruvian mining industry in Cajamarca. *Environment and planning A 37*(2): 221–239.

Büscher, B and Davidov, V (eds) (2013) *The ecotourism-extraction nexus: Political economies and rural realities of (un)comfortable bedfellows*. London: Routledge.

Büscher, B, and Fletcher, R (2015) Accumulation by conservation. *New Political Economy* 20(2): 273–298.

Büscher, B, and Fletcher, R (2017) Destructive creation: Capital accumulation and the structural violence of tourism. *Journal of Sustainable Tourism* 25(5): 651–667.

Castree, N (2003) Commodifying what nature? *Progress in Human Geography* 27(3): 273–297.

Collard, R (2018) Disaster capitalism and the quick, quick, slow unravelling of animal life. *Antipode* online first: 1–19.

Collard, R and Dempsey, J (2013) Life for sale? The politics of lively commodities. *Environment and Planning A* 45(11): 2682–2699.

Collard, R and Dempsey, J (2017a) Capitalist natures in five orientations. *Capitalism, Nature, Socialism* 28(1): 78–97.

Collard, R and Dempsey, J (2017b) Politics of devaluation. *Dialogues in Human Geography* 7(3): 314–318.

Cross-Sector Biodiversity Initiative (CSBI) (2018) Our work. Available at: http://www.csbi.org.uk/our-work/ (accessed 21 July 2018).

De Beers (2015) Elephants star in new Forevermark film. Available at: https://www.debeersgroup.com/en/building-forever/our-stories/elephants-star-in-new-forevermark-film.html (accessed 21 July 2018).

De Beers (2016). De Beers consolidated mines wins top conservation award. Available at: http://www.debeerswildlife.co.za/wp-content/uploads/2016/06/De-Beers-Consolidated-Mines-wins-Top-Conservation-Award-1.pdf (accessed 20 December 2018).

De Beers (2017) Vehicle donation aids fight to protect rhino. Available at: https://www.debeersgroup.com/en/building-forever/our-stories/vehicle-donation-aids-fight-to-protect-rhino.html (accessed 21 July 2018).

De Beers (2018) Biodiversity and conservation. Available at: https://www.debeersgroup.com/building-forever/our-impact/environment/biodiversity-and-conservation (accessed 20 December 2018).

Dressler, W, Fletcher, R, and Fabinyi, M (2018) Value from Ruin? Governing Speculative Conservation in Ruptured Landscapes. *TRaNS: Trans-Regional and-National Studies of Southeast Asia* 6(1): 73-99.

Duffy, R (2013) The international political economy of tourism and the neoliberalisation of nature: Challenges posed by selling close interactions with animals. *Review of International Political Economy* 20(3): 605–626.

Ekers, M (2015) A fix in the forests: Relief labor and the production of reforestation infrastructure in Depression-Era Canada. *Environment and Planning A* 47(12): 2537–2554.

Ekers, M and Prudham, S (2015) Towards the socio-ecological fix. *Environment and Planning A* 47(12): 2438–2445.

Ekers, M and Prudham, S (2017a) The metabolism of socioecological fixes: Capital switching, spatial fixes, and the production of nature. *Annals of the American Association of Geographers* 107(6): 1370–1388.

Ekers, M and Prudham, S (2017b) The socioecological fix: Fixed capital, metabolism, and hegemony. *Annals of the American Association of Geographers* 108(1): 17–34.

Ekers, M (2018) Financiers in the forests on Vancouver Island, British Columbia: On fixes and colonial enclosures. *Journal of Agrarian Change* Online First.

Energy and Biodiversity Initiative (EBI) (2003) *Integrating biodiversity conservation into oil and gas development*. Washington: Conservation International.

Edwards, D, Sloan, S, Weng, L, Dirks, P, Sayer, J, and Laurance, W (2014) Mining and the African environment. *Conservation Letters* 7(3): 302–311.

First Quantum Minerals (FQM) (2014) *Sustainability report*. Vancouver: FQM.

First Quantum Minerals (FQM) (2016) *Sustainability report*. Vancouver: FQM.

Forevermark Limited (2018) Protecting Nature's Beauty. Available at: https://www.forevermark.com/en/our-diamonds/responsibly-sourced/protecting-natures-beauty/ (accessed 18 December 2018).

Franks, D, Davis, R, Bebbington, A, Ali, SH, Kemp, D, and Scurrah M (2014) Conflict translates environmental and social risk into business costs. *PNAS* 111(21): 7576–7581.

Glassman, J (2006) Primitive accumulation, accumulation by dispossession, accumulation by 'extra-economic' means. *Progress in Human Geography* 30(5): 608–625.

Glassman, J (2007) Recovering from crisis: The case of Thailand's spatial fix. *Economic Geography* 83(4): 349–370.

Hall, R (2011) Land grabbing in Southern Africa: The many faces of the investor rush. *Review of African Political Economy* 38(128): 193–214.

Hamann, R and Kapelus, P (2004) Corporate social responsibility in mining in Southern Africa: Fair accountability or just greenwash? *Development* 47(3): 85–92.

Harvey, D (1981) The spatial fix – Hegel, Von Thunen, and Marx. *Antipode* 13(3): 1–12.

Harvey, D (1982) *The Limits to capital*. Oxford: Blackwell.

Harvey, D (1985a) *The urbanization of capital: Studies in the history and theory of capitalist urbanization*. Baltimore: Johns Hopkins University Press.

Harvey, D (1985b) The geopolitics of capitalism. In: Gregory D and Urry J (eds) *Social relations and spatial structure*. London: Macmillan, pp. 128–163.

Harvey, D (1996) *Justice, nature, and the geography of difference*. Cambridge: Blackwell.

Harvey, D (2001) Globalization and the 'spatial fix'. *Geograohische Revue* 2: 23–30.

Harvey, D (2003) *The new imperialism*. Oxford: Oxford University Press.

Igoe, J, Neves, K, and Brockington, D (2010) A spectacular eco-tour around the historic bloc: Theorising the convergence of biodiversity conservation and capitalist expansion. *Antipode* 42(3): 486–512.

IPIECA-IOGP (2016) *Biodiversity and ecosystem services fundamentals: Guidance document for the oil and gas industry. IOGP Report 554*. London: IPIECA and IOGP.

International Union for the Conservation of Nature (IUCN) and Rio Tinto (2012) Madagascar: A pilot site for testing NPI tools. Available at: http://www.thebiodiversityconsultancy.com/es/wp-content/uploads/2013/06/Leaflet-IUCN-Rio-Tinto-NPI-Case-Study_Madagascar.pdf (accessed 20 December 2018).

Kay, K (2018) A hostile takeover of nature? Placing value in conservation finance. *Antipode* 50(1): 164–183.

Kay, K and Kenney-Lazar, M (2017) Value in capitalist natures: An emerging framework. *Dialogues in Human Geography* 7(3): 295–309.

Kenney-Lazar, M and Kay, K (2017) Value in capitalist natures. *Capitalism, Nature, Socialism* 28(1): 33–38.

Kepe, T. (2009). Shaped by race: Why "race" still matters in the challenges facing biodiversity conservation in Africa. *Local Environment* 14(9): 871–878.

Lang, R and Knox, P (2009) The new metropolis: rethinking megalopolis. *Regional Studies* 43(6): 789–802.

Mamdani, M (1999) Historicizing power and responses to power: Indirect rule and its reform. *Social research* 66(3): 859–886.

Mamdani, M (2003) Making sense of political violence in postcolonial Africa. In: Lundestad, G and Njolstad, O (eds) *War And Peace In The 20th Century And Beyond*. New Jersey: World Scientific, pp. 71–99.

Mascia, M, Pailler, S, Krithivasan, R, Roshchanka, V, Burns, D, Mlotha, M, ... and Peng, N (2014) Protected area downgrading, downsizing, and degazettement (PADDD) in Africa, Asia, and Latin America and the Caribbean, 1900–2010. *Biological Conservation 169*: 355–361.

McAfee, K (1999). Selling nature to save it? Biodiversity and green developmentalism. Environment and Planning D: Society and Space 17(2): 133–154.

McCarthy, J (2015) A socioecological fix to capitalist crisis and climate change? The possibilities and limits of renewable energy. *Environment and Planning A* 47(12): 2485–2502.

McCarthy, J and Prudham, S (2004) Neoliberal nature and the nature of neoliberalism. *Geoforum* 35(3): 275–283.

McGee, N (2018). Canada's First Quantum expected to pay $1-billion in Zambia tax dispute: Wall Street analyst. *Globe and Mail.* Available at: https://www.theglobeandmail.com/business/article-canadas-first-quantum-expected-to-pay-1-billion-in-zambia-tax/. (accessed 18 December 2018).

Mendoza, M, Fletcher, R, Holmes, G, Ogden, L, and Schaeffer, C (2017) The Patagonian imaginary: Natural resources and global capitalism at the far end of the world. *Journal of Latin American Geography* 16(2): 93–116.

Mitchell, T (2002) McJihad: Islam in the US global order. *Social Text* 20(4): 1–18.

Moore, J (2015) *Capitalism in the web of life: Ecology and the accumulation of capital*. New York: Verso Books.

Norris, T (2017) Shared social license: Mining and conservation in the Peruvian Andes. *Antipode* 49(3): 721–741.

O'Connor, J (1988) Capitalism, nature, socialism: A theoretical introduction. *Capitalism, Nature, Socialism* 1(1): 11–38. PricewaterhouseCoopers (PWC) (2010) *Biodiversity and business risk: A Global Risks Network briefing.* Davos: World Economic Forum. January 2010.

Prudham, S (2009) Commodification. In: Castree, N, Demeritt, D, Liverman, D, Rhoads, B (eds) *A companion to environmental geography*. Malden: Wiley-Blackwell, pp. 123–142.

Pulido, L (2017) Geographies of race and ethnicity II: Environmental racism, racial capitalism and state-sanctioned violence. *Progress in Human Geography* 41(4): 524–533.

Rasmussen, M and Lund, C (2018) Reconfiguring frontier spaces: Territorialization and resource control. *World Development* 101: 388–399.

Rio Tinto (2016) QMM. Biodiversity, communities, and social performance multi year plan: 2016–2021. Available at: https://www.riotinto.com/documents/RT_Biodiversity_and_CSP_multi_year_plan_2016-2021.pdf (accessed 20 December 2018).

Robbins, P, Hintz, J, Moore, S (2014) *Environment and society: A critical introduction*. Malden: Wiley Blackwell.

Robertson, M (2006) The nature that capital can see: Science, state, and market in the commodification of ecosystem services. *Environment and Planning D: Society and Space* 24(3): 367–387.

Said, E (1978) *Orientalism: Western conceptions of the Orient.* London: Penguin.

Scott, D (2013) The networked infrastructure of fossil capitalism: Implications of the new pipeline debates for environmental justice in Canada. *Revue Generale de Droit* 43: 11–66.

Seagle, C (2012) Inverting the impacts: Mining, conservation and sustainability claims near the Rio Tinto/QMM ilmenite mine in Southeast Madagascar. *Journal of Peasant Studies* 39(2): 447–477.

Seagle, C (2013) Discourse, Development and Legitimacy: Nature/Culture Dualism of Mining Engagements in Biodiversity Offsetting and Conservation in Madagascar. In: Evers, S, Campbell, G, and Lambek, M (eds) *Contest for land in Madagascar*. Leiden: Brill, pp. 187–220.

Steinhart, EI (2006) *Black poachers, white hunters: A social history of hunting in colonial Kenya*. Melton: James Currey Publishers.

Surprise, K (2018) Preempting the second contradiction: Solar geoengineering as spatiotemporal fix. *Annals of the American Association of Geographers* online first: 1–17.

Temple, H J, Anstee, S, Ekstrom, J, Pilgrim, J D, Rabenantoandro, J, Ramanamanjato, J B, Randriatafika F and Vincelette, M (2012) *Forecasting the path towards a Net Positive Impact on biodiversity for Rio Tinto QMM.* IUCN and Rio Tinto Technical Series No.2. IUCN, Gland, Switzerland.

Total (2018) T*otal and biodiversity: Commitments and actions*. Courbevoie: Total.

Tullow Oil (2014) Marine protected areas in Gabon. Available at: https://www.tullowoil.com/media/case-studies/marine-protected-areas-in-gabon (accessed 21 July 2018).

United Nations Environment Programme and World Conservation Monitoring Centre (UNEP-WCMC) (2003). *A-Z biodiversity terms: A glossary of commonly-used biodiversity terms*. Nairobi: UNEP.

World Resource Institute (WRI) (2003) *Mining and critical ecosystems: Mapping the risks*. Washington: WRI.

World Wide Fund for Nature (WWF) (2015) *A global assessment of extractive activity within natural World Heritage sites*. London: WWF.

World Wide Fund for Nature (WWF) (2018) *The saving of Campo Ma'an National Park*. London: WWF. Available at: http://wwf.panda.org/?325912/The-saving-of-Campo-Maan-National-Park (accessed 18 December 2018).

Zalik, A (2015) Resource sterilization: Reserve replacement, financial risk, and environmental review in Canada's tar sands. *Environment and Planning A* 47(12): 2446–2464.

Zambian Eye (2018) FQM Trident Foundation invests US$2m in wildlife and conservation projects. Available at: https://zambianeye.com/fqm-trident-foundation-invests-us2m-in-wildlife-and-conservation-projects/ (accessed 18 December 2018).

Table 1: Summary of how extractive-conservation partnership 'fixes' extraction and creates value

Orientations of natures in relation to capitalist value (Collard and Dempsey 2017)	**Producing shared value and threat through partnerships between the extractive and conservation sectors**	**'Fixing' extraction through partnerships between the extractive and conservation sectors**
Officially valued Natures capital sees directly as input, such as commodities	Extractive companies and conservation organisations partner to create new opportunities in ecotourism within and around concessions	**Spatial fix** Partnering with conservation actors to sustain and protect biodiversity enables extractive companies to operate and expand in ecologically sensitive areas (often previously deemed to be off limits) because conservation actors are perceived as having the expertise needed to mitigate the adverse environmental impacts of extractive operations **Socio-ecological fix** Partnering with conservation actors enables extractive companies to recreate extractive landscapes as spaces where extraction and biodiversity conservation can co-exist, and, in doing so, overcome crises of legitimacy
The reserve army Natures that may have official value in the future	Extractive companies and conservation organisations collaborate to establish new forest reserves and wildlife reserves within and around concessions	
The underground Natures recognised as useful for capitalist production but unpriced or unwaged	Extractive companies work with private and public conservation authorities to establish new marine protected areas within and around concessions	
Outcast or threat Natures seen as superfluous to or endangering to capital accumulation	Extractive companies and conservation organisations cooperate to manage and surveil populations using nature in ways deemed by authorities as 'unsustainable' within and around concessions	