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Development blind spots and environmental impact assessment: Tensions between policy, law and practice in Brazil's Xingu river basin☆

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A B S T R A C T

This paper explores the tensions involved in Environmental Impact Assessments (EIAs) and environmental licensing through a detailed analysis of the legal disputes and public contestations surrounding two projects, a large hydroelectric dam and a gold mine, which are proximately located to each other. Broadly, we argue that EIAs may function to reinforce rather than genuinely inform or potentially resist prevailing developmental logics. The research extends David Mosse's argument that development self-perpetuates "success" through participation and procedural licensing mechanisms while on-the-ground realities diverge significantly. It offers a critical examination of EIA utility and processes through identifying three general mechanisms within EIA and environmental licensing procedures that contribute to approval of projects and promote a perception of their legitimacy, while detracting from the intended purposes of EIAs as opportunities for meaningful public discussion and sustainability-oriented decision making. These mechanisms include discourses that entrench project necessity and make them appear inevitable, public participation, and the isolated treatment of related projects. This work situates an understanding of particular EIAs within a deeper process of regional territorial development and resource extraction.

1. Introduction

Environmental Impact Assessments (EIAs) were originally devised to mitigate detrimental environmental consequences through offering scientific assessments of proposed projects, but in practice, EIAs are frequently outweighed by economic and political concerns, especially in the developing world (Bawole, 2013, Jay et al., 2007). Similarly, development practitioners rely upon public participation with the aim of more adequately responding to local people's needs and stakeholders' concerns, yet in practice, these efforts frequently become mechanisms of co-optation, through which the projects of more powerful political and financial actors are projected and the logics of project success are promoted (Cooke and Kothari, 2001, Mosse, 2011a).

The research presented here delves into the question of how EIAs function in relation to national agendas for energetic and extraction-oriented development within the context of the Brazilian Amazon. Specifically, we ask: how are laws and regulations associated with the EIA and environmental licensing protocols used by both project proponents and critics, and what are the effects in terms of project outcomes? Scholarship on EIAs tends to look enthusiastically toward the ability for such assessments to positively inform projects, but there is a relative dearth of understanding about how EIA procedures may also function in a less-positive manner. Our work interrogates project licensing in Brazil, and contributes toward a more nuanced understanding of how participation, EIA procedures, and individual project focus contribute toward a broader political economy of resource extraction. Drawing upon Mosse's analysis of international development practice (2005) we argue that the participatory processes, de-politicization through scientific assessments, and the single-project focus EIAs may be used to re-frame broader development agendas and narrate project success, even when the very legitimacy of the projects is legally dubious, at best. Ultimately, these mechanisms shore up perceptions of legitimacy and inevitability for projects that promote extractive political-economic aims and depoliticize extractive development interventions, while neglecting environmental and social concerns expressed in legal actions.

This paper focuses on two projects located only 10 km from each other on the Xingu river, in the Brazilian Amazon, within the state of Pará. The Amazon region is a tropical rainforest ecosystem of global significance, and both of the projects are high-profile nationally and

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internationally. The Belo Monte hydroelectric project is slated to be the world's fourth-most productive dam when operating at full capacity. The other case study is gold mining project in the same geographic region of Brazil called the Volta Grande Mining Project (hereafter Volta Grande). The Volta Grande mine is run by the Canada-based Belo Sun Mining Corporation (hereafter, Belo Sun). It is an open pit mine, involving investments of approximately $380 million, and when constructed would be Brazil's largest gold mine. Given their prominence, these projects are significant cases for assessing the relevancy and role of EIAs in relation to sustainable development politics. Project licensing processes – in which EIAs are a prominent component – present important moments for legal challenges, social contestation, and adaptation of projects, prior to full operational authorization.

In Brazil, numerous procedural and bureaucratic challenges, as well as the powerful ruralista agricultural political bloc exert pressure to reform EIAs through streamlining and simplifying EIAs and environmental licensing processes (Fonseca et al., 2017). Our research contributes to the EIA debate in Brazil since it discusses how EIAs function in current practice, in two bellwether cases. Our aim is to explore the effects of EIAs on regional development trajectories. This paper offers evidence that EIAs may give projects an appearance of inevitability and may promote the appearance of legitimacy of actions taken by powerful economic and political actors seeking project approvals, ultimately promoting and reinforcing narratives of sustainable development in the Amazon region that are essentially extractive in orientation. This research highlights three mechanisms that give rise to such phenomena: first, project proponents create a perception of necessity for intervention based on discourses about regional poverty, the need for more investment, and the supposed sustainability benefits of a project. Second, public participation is used as a step to co-opt stakeholders and legitimize projects that entail hefty environmental and social consequences. Third, EIAs may de-politicize developmental interventions by positioning project evaluation within bureaucratic and institutional logics of technocratic management, while silencing corruption, larger territorial transformations, and human rights violations.

2. Methods

In this paper, case studies help illustrate our argument concerning how the uneven power dynamics involved in EIA procedures function to create perceptions of project success and legitimacy, especially as they are situated within larger regional development politics. Case study research offers a contextually-rich basis for understanding developmental phenomena (Baxter and Jack, 2009, Yin, 2003). The empirical basis of research in the case study sites involved participant-observation at approximately 25 NGO-led local meetings, as well as three public hearings, and several meetings of municipal health and environmental councils and public hearings. Field and interview notes and relevant transcripts were collected and then coded with an aim of identifying key themes. In the case of the Belo Monte dam, ethnographic field research based in the region first began with preliminary field research in 2005, and then became formalized in 2006–2008 with two years of focused participant-observation, taking place predominantly at the offices of the Altamira-based Pastoral Land Commission. Accompaniment of the case and subsequent research trips involved interviews in Brasilia, São Paulo, and Belem in 2009 and 2010. Follow-up research specifically focused on Belo Monte contestation was conducted in 2012 and 2016, during which approximately 30 semi-structured interviews were conducted. Analysis of environmental licensing procedures was carried out through a review of all relevant legal documentation and transcripts of public hearings. Participant-observation in meetings organized by civil society to discuss the Volta Grande gold mine also complemented document review. In total, well over 100 interviews were conducted with public officials, local activists, and others directly working on or directly affected by the Belo Sun mine and Belo Monte dam projects.

The research presented here focuses on the legal-historical context of permitting for the Belo Monte project, which subsequently informs the Volta Grande project. This fills an important gap, since scholarship on this part of the Amazon largely focuses on the Belo Monte case in isolation or in relation to other Amazonian hydroelectric projects, with little attention to the relationship of the dam to other regional development politics (e.g. Bratman, 2014, da Fonseca and Bourgoignie, 2011, Fearnside, 2005, Hall and Branford, 2012, Klein, 2015, Randell, 2016). Environmental assessment scholarship identifies the need for more research concerning the context-specific dimensions of how power, discourses, agency, and expectations (among other non-rational variables) can shape and influence environmental assessment (Cashmore and Axelsson, 2013, Cashmore et al., 2008, Cashmore and Richardson, 2013). Additionally, these cases are relevant because the Amazon region is one of global importance because of its cultural and biological diversity, its role in global climate change, and its abundant freshwater. Like other countries, Brazil has strong environmental laws and institutions, but continues to pursue industrial and economic development aggressively. These cases are illustrative of the tensions between environmental protection and economic growth goals in Brazil and other developing countries. Moreover, they illustrate theorization, largely from Mosse (2004, 2005, 2011b) and Li (2007) on how projects become narrated into larger institutional logics of success, and reveal how EIAs may perpetuate uneven power dynamics (Cashmore et al., 2008). As such a large project, the Belo Monte dam plays a key role as an influence in Brazilian hydroelectric and energy policy, and the Belo Sun mine is similarly symbolically and economically significant for the Amazon region.

3. Theory: environmental licensing and public participation in development projects

Scholarly debate exists both over how best to conduct licensing within environmental assessments, and what role unequal power dynamics play in influencing environmental assessments (Cashmore and Richardson, 2013). For some, increased thoroughness of EIAs, greater transparency, and issuance of best practice guidelines can avoid many commonly-encountered flaws in licensing processes (Hofman, 2015, Ritter et al., 2017). Scholars generally view public participation as a net benefit for many constituencies affected by project impacts, because it can strengthen engagement and local community influence over environmental assessment processes (Appiah-Opoku, 2001, Bawole, 2013, Morgan, 2012). But the notion of what meaningful participation entails is itself contested, and can lead to a wide variety of outcomes in terms of environmental assessment process' relationship to sustainable development outcomes (Rozema et al., 2012). Critical development theorists, on the other hand, suggest that procedural measures can be a tokenistic way of pushing projects forward, with documentation and participatory processes being privileged over actual content and resulting in harms for community members (Bebbington, 2004, Li, 2009). In this view, participation can co-opt communities, and reinforce projects that ultimately do little to benefit community members. At the most extreme, some argue that participatory processes may become a “tyrannical” force, promoting imposition of projects (Cooke and Kothari, 2001). EIA effectiveness, similarly, is frequently hampered by a technical and procedural focus, rather than concentrating on the role and form of EIAs in relation to debates over societal values, priorities, and power differentials (Cashmore and Axelsson, 2013, Cashmore et al., 2004).

Examination of both discourses and technical processes can help reveal how power operates within environmental assessment and environmental licensing research. Anthropologist David Mosse argues that in practice, development projects and actors in the aid industry may promote perceptions of development interventions as legitimate, while subsuming deep ideological differences and shortcomings of projects within narratives of success. Rather than more genuine participation or

'on the ground' interpretations of success and legitimacy, project promotion becomes a self-fulfilling prophecy of professionally-imagined achievements that are discursively and bureaucratically reinforced. Policies and projects are "brought to life and replayed" by contradictory interests during implementation, making development practice ultimately driven by actors and institutions more than national policy (Mosse, 2004, 2005). Both participatory procedures and thorough documentation processes function to recruit various actors into a coherent narrative about the success of development interventions. Beyond their legal role, participatory models promote wider policy goals and establish institutional legitimacy, allowing development projects to work within systems that represent success as a self-fulfilling prophecy (Mosse, 2005, 2011b). Development projects are thus reproduced by the more powerful actors within development bureaucracies, despite prevailing concerns from stakeholders about the impacts of particular projects and the larger aims of development interventions.

Stakeholder perceptions on the utility and role of environmental assessments also matter a great deal to governance outcomes and sustainable development. While involvement, transparency, and access to information may promote empowerment (Cashmore et al., 2007), treating projects in isolation from each other may also ignore synergistic effects of projects and create a perception of inevitability surrounding project approval (Ritter et al., 2017). Further, by treating related projects in isolation, the affected places and people are able to be represented as amenable to the 'technical' solutions of development (Li, 2007), and while diminishing the political controversies involved in making such interventions (Ferguson, 1994). Geographers have also recognized the need for more regionally-based understandings of development interventions, and this paper additionally helps to fill that gap (Soja, 2015).

3.1. EIAs in Brazilian law

Around the world, EIA procedures should guarantee that prior to approval, decision-makers have both fully considered the social and environmental impacts in their decision and that affected communities have participated fully in the process (Hunter et al., 2015). The participation components of project licensing and EIA procedures require that relevant constituencies acknowledge the risks and impacts of a project, and that they were listened to by governments. Achieving this level of consultation and participation is notoriously challenging, although public protests from lack of adequate consultation and violations of 'Free, Prior, Informed Consent' (FPIC) laws also can cause significant damage to public relations, as well as costs associated with delays from protests and legal actions (Dias, 2017). FPIC is required under the International Labor Organization's Convention 169 and the United Nations Declaration on the Rights of Indigenous Peoples, to which Brazil is a signatory. The FPIC mechanism is especially applicable to indigenous groups and other traditional populations (such as maroon communities and traditional riverine communities) who are affected by a project. On paper, Brazil conforms to international best practices in environmental licensing, but in practice FPIC processes frequently fall short, leading to complaints of human rights violations (Hanna and Vanclay, 2013).

Brazil has a unique system of three-stage licensing, wherein preconstruction, installation, and operation licenses must be sequentially granted. In this highly decentralized system, a number of different agencies are involved in licensing processes and setting the terms of reference for EIAs (Biller, 2003, Fonseca et al., 2017, Glasson and Salvador, 2000). In the Brazilian context, EIAs and project feasibility studies are frequently based on narrow cost-benefit analyses, and are treated as both a cumbersome and a cosmetic step within an already onerous licensing process (Fearnside, 2015). Environmental Impact Assessments (EIAs) are constitutionally required whenever an activity has significant environmental impact. FPIC is included within the EIA through public hearings and specific terms of reference articulated by relevant authorities, although engaging traditional knowledge and conducting ongoing engagement with indigenous and other traditional populations is a well-known challenge (Hanna et al., 2014). Public dissemination of EIAs are a requirement for environmental licensing, which occurs prior to the issuance of later licenses. As designed, the process is meant to modify projects, gradually evaluate them, and adapt to concerns during project implementation.

Two significant challenges confront EIAs and project licensing in Brazil, on the whole. First, environmental laws are often inconsistently enforced. The politics of weak environmental enforcement in the Amazon are attenuated by geographical distance, frontier land use dynamics, historical impunity for crimes, and long-standing legacies of corruption in the federal and state governments. Second, conventional and unconventional forms of corruption (including work-around practices known as the jeito) tend to subvert Brazilian laws, a phenomenon which is also relatively common throughout Latin America. Despite strong legal structures in Brazil – most notably from the federal Ministério Público,[1] implementation is weak, political corruption is significant, and the justice system is slow (McAllister, 2008, Schmitt and Fernando Paiva, 2015). Compounding these factors, nationally-established priorities for rapid infrastructure development and export-oriented growth augment the environmental and social risks presented by new extractive industries and infrastructure projects, especially in the Amazon (Biller, 2003, Killeen, 2007, Moretto et al., 2012, Ritter et al., 2017, Singh, 2012).

Brazilian licensing policies aim to contribute a thorough analysis and comprehensive assessment of environmental impacts so that they can be mitigated. In practice, however, when project proponents do not comply with the conditions established in a license, those conditions frequently become carried forward as conditions of subsequent licenses. In Brazilian practice, public hearings and EIAs are balanced against innumerable other economic, political, and instrumental considerations (Biller, 2003, Fearnside, 2015, Fonseca et al., 2017, Glasson and Salvador, 2000). As is also frequently the case in other countries, environmental licensing can be long, slow, and expensive, but ultimately result in little actual differences in terms of project implementation (Beattie, 1995, Hanna et al., 2014, Weston, 2010).

The EIA process in Brazil is often perceived as cumbersome, and it is often put into practice tokenistically. Compounding those challenges, the broader political context in Brazil tends to prioritize economic growth over environmental protection and human rights concerns, thus positioning EIAs within the contradictory position of being a legally important step, but rather toothless in practice. In addition to being legally mandated, EIAs may beneficially serve to provoke social debate, spur institutional reforms, and offer creative influences for policy design (Bartlett and Kurian, 1999, Nilsson and Dalkmann, 2001, Owens and Cowell, 2002, Petts, 1999). Other more critical work interrogates the connections between EIA processes and mechanisms, and acknowledges that EIAs can promote corruption (Williams and Dupuy, 2017), or may be instrumentally circumvented (Wood, 2003). Still, we know little about how EIAs and project licensing work in practice with regard to the politics of project development, and the politics of sustainable development more broadly within the Brazilian context.

4. Case study analysis

High-profile land conflicts, indigenous activism and organizing, anti-dam protests, and environmental conflicts in the Xingu river basin have taken place since the 1970s, when the Belo Monte dam was first

[1] The Ministério Público is an independent institution whose main goal is to defend the juridical order and social and individual interests. Environmental issues are considered an arena of common societal concern and their work is thus highly relevant to EIA and public participation processes. The most analogous institution in the United States is the office of the Attorney General, although there are some significant differences between the two.

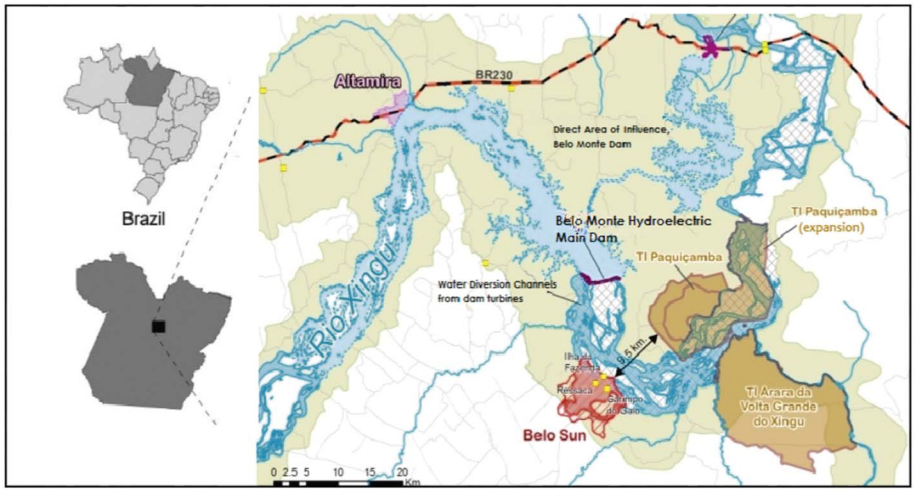

Fig. 1. The Belo Sun and Belo Monte Dam Projects, in the state of Pará, Brazil. Map modified based on Instituto SocioAmbiental (ISA) geoprocessing (2013), with data from IBGE, FUNAI, and the EIA/RIMA for Belo Monte and EIA/RIMA Belo Sun.

proposed and the Transamazon highway was initially cut through the rainforest (Bratman, 2014). The area is considered to be a significant area for conservationists and those interested in indigenous ethnic protections; the Xingu river basin is widely recognized to be of archeological significance, it is rich in biodiversity and endemic species, and is home for over 26 indigenous tribes. Additionally, given its vastness of relatively untapped primary resources, the Xingu basin is considered a keystone region planners interested in infrastructure development and energy sector modernization (Bratman, 2015, Nobre et al., 2016, Schwartzman et al., 2013).[2]

The Belo Monte dam and the and the Belo Sun mining operations at Volta Grande occur in close proximity to each other, along the Xingu River, near to the Transamazon highway and the city of Altamira in the northern state of Pará (see Fig. 1). While artisanal gold mining took place in the region for decades, the Belo Sun mining interests at Volta Grande have only taken shape recently, with initial mining rights acquisitions taking place from 2010 to 2015, generally coinciding with the Belo Monte hydroelectric project approval processes (see Fig. 2). This stretch of land and river along the Xingu river is marked by decades of contested sustainable development politics in the Amazon (Schwartzman et al., 2013). In addition to traditional small-scale fishing and artisanal gold mining taking place in the region, small-scale farming and ranching has been commonplace since the 1970s. The project sites are also adjacent to the world's second-largest biodiversity corridor and several indigenous areas.

4.1. Environmental impact assessment and the Belo Monte hydroelectric project

Belo Monte is slated to be the fourth largest dam in the world, estimated to produce 11,233 megawatts (MW) per hour when operating at maximum capacity, with around 516 km^2 of flooded area (Fearnside, 2005, Hall and Branford, 2012).[3] Belo Monte is a keystone project for Brazilian energy planners, who aim to put in over 34 Amazonian dams in hopes of bolstering the national energy grid with renewable energy by 2021[4] (Economist, 2013). Dam-building in the Amazon is argued to be beneficial as a domestic source of clean, renewable energy, which offers complementarity to the national electric grid. Forecasters contend that relative to annual growth rates, Brazil's energy production should increase by between 56% - 88% (International Energy Agency, 2013). The desire for a stronger state presence and BRL $500 million in social investments offered many local stakeholders compelling justification to support Belo Monte. For those in opposition, Belo Monte was perceived megaproject causing detriment to fragile Amazonian ecosystems and many vulnerable indigenous populations of the region. Just as construction on the Belo Monte dam was being completed, the project was again thrown into the center of national political discussions. The Operation Car Wash (Lava Jato) corruption investigations revealed that between 1 and 2% of the project's BRL $14 billion (at current exchange rates, around $4.5 billion USD) in construction costs[5] went into illicit campaign donations for candidates from Brazil's major PT and PMDB political parties in 2010, 2012, and 2014 (Haidar and Gorczeski, 2016).

At present, facing both significant cost over-runs, corruption-related investigations, and hefty fines from non-compliance of various licensing criteria, the return on investment for Belo Monte is half of that which was estimated at the outset, and many companies involved have sold off their investments in the project (Scaramuzzo and Pereira, 2016).[6] Still, Brazil's ambassador to the UK narrated success in the Belo Monte case. “Based on lessons learned, Brazil has developed a comprehensive legal, technical, environmental and social consultation process, including on terms of compensation, safeguards and corrective measures, aiming to guarantee that social, economic and environmental benefits are enjoyed by all, particularly local communities, fauna and flora.” (dos Santos, 2017). Relying on rationale that Belo Monte's run-of-river dam model was a more sustainable way of gaining energy from the Amazon, and also that consultation processes were a strong part of project

[2] Belo Monte ranks behind the Three Gorges, Itaipú, and Xiluodu dams. Three Gorges and Xiloudu are in China, and Itaipú is a binational dam, at the Brazil –Paraguay border.

[3] Belo Monte is technically a run-of-river dam, not a reservoir dam. Versions of the project originally drafted in 1975 involved a reservoir more than seven times that size, flooding many indigenous tribes. The current flooded area estimates vary between 440–600 km^2. The size of the reservoir created by the Itaipú dam, for comparison, is significantly larger, at 1350 km^2, and the Tucuruí dam's reservoir is 2,875 km^2. Norte Energia notes that the national average of flooded areas for hydroelectric plants is 0.49 km^2/MW of installed capacity, whereas Belo Monte will impact 0.04 km^2/MW.

[4] Over 70% of Brazil's energy comes from domestic hydropower.

[5] The initial budget for Belo Monte was $18 billion reais, but by the time of its final completion, $31 billion reais are the total estimated costs of the project. Approximately $22 billion reais was financed by the Brazilian state-owned National Bank for Social and Economic Development (BNDES). Several of the construction companies involved have had their senior leaders already imprisoned as a result of the investigations. The construction companies that built Belo Monte included Odebrecht, Camargo Corrêa, Andrade Gutierrez, Queiroz Galvão, OAS, and five smaller companies.

[6] Majority holdings (50.02%) in the project are controlled by the Norte Energia consortium, which is comprised of Neoenergia, Cemig, Light, Vale, Sinobras, J. Malucelli, and the pension funds from Petros (Petrobrás) and Funcef (Caixa), and the nationally-owned Grupo Eletrobrás owns 49.98%.

Year	Belo Monte Dam	Volta Grande Mining
2002	Project re-invigorated from the 1970s proposal; new viability studies conducted by Norte Energia.	
2005	Congressional decree allowing Belo Monte once viability studies are completed; resolution stating Belo Monte would be the only hydroelectric dam built in the Xingu	
2006	Pro-dam rally and march in Altamira	
2007	Belo Monte Hydroelectric Project included in the Plan for Accelerated Growth (PAC I)	
2008	An anti-dam indigenous-led meeting, called the Second Encounter of the Xingu, takes place	
2009	First environmental impact statement (EIS) is filed at IBAMA	
2010	Preconstruction permit issued by the Federal Environmental Agency – IBAMA. The agency's head, Roberto Messias Franco, resigns over related differences of opinion.	Verena Mineração filed a draft TOR for the EIA of the Volta Grande mining project with the State Environmental Agency (SEMAS)
2011	Inter-American Human Rights Commission finds Brazil guilty of violations of FPIC. IBAMA's new head, Abelardo Bayma Azevedo, also resigns. Construction begins.	Verena Mineração was bought by Belo Sun and changed its corporate name to Belo Sun Mineração Ltda.
2012	Protests against dam continue, especially in conjunction with the international Rio+20 meeting. Legal requests filed in 2008-2010 remain largely un-adjudicated.	Belo Sun files its EIS and its non-technical summary.
2013	In Altamira, rates of murders double, traffic accidents increase by 144%, and sexual violence rates reach new highs. The population in the city doubles between 2010-2014. 25,000 urban residents are displaced from their homes and relocated.	The State Environmental Council voted in favor of granting the preconstruction license; A court injunction suspended the environmental license.
2014	Intermittent work stoppages due to worker conflicts and court injunctions which are later over-ruled.	Preconstruction license was issued by SEMAS; A court injunction suspended the preconstruction license.
2015	Operation license issued	
2016	Dam is inaugurated by President Dilma Roussef; Corruption scandal testimonies indicate that between 1-2% of Belo Monte construction monies went into campaign kickbacks.	Brazilian National Council of Human Rights visited the area of the Volta Grande Project and heard local affected communities.
2017	Some of the initial pre-conditions from the EIA remain unsatisfied, most notably the connection of homes in Altamira to the sewage system and the new hospital.	SEMAS and Belo Sun carried out workshops with local communities; SEMAS issued the installation license on February 2. Two subsequent injunctions, followed by reversal decisions, temporarily suspended the installation license.

Fig. 2. Timeline of Belo Monte Dam and the Volta Grande Projects (2002–2016).

development, this was the most recent representation of a success narrative in the case.

While Belo Monte EIA was on paper "excellent," the project itself and the procedures used to vet it were problematic in practice. Three key areas of concern with the EIA process can be distinguished. First, despite the apparent thoroughness of the EIA, the process was so technical that it avoided the broader questions concerning development desires and trajectories for the region. The EIA for the Belo Monte project was 20,000 pages long, in 35 volumes. Independent experts argued that the EIA involved "attempting to hide its grave consequences…and attempting to repair technical problems in the previous project" (Experts Panel, 2009). Scientists created a parallel compilation to the EIA, including twenty-eight studies that projected different and more negative impacts and additional consequences from those in the official EIA study (Experts Panel, 2009). The scientific and procedural critiques led to a total of nine court-mandated stoppages and over twenty lawsuits that were issued by the Ministério Público in regard to the Belo Monte case. This included injunctions after the operating license was granted and further injunctions after the dam's first turbines were already installed. The concerns that injunctions responded to included massive fish kills in the Xingu river (Pará, 2016),[7] and the improper installation of Altamira's sanitation system, which was one of the pre-conditions of the licensing (Garzón, 2015).[8] Such dimensions of project analysis depoliticized the ideological debates over the dam, rendering the debate technical (Li, 2007) rather than values-driven or focused upon alternative forms of development activities and visions for development.

Numerous consultations, rational management structures, and governmental oversight actions took place in the Belo Monte EIA. The effect of such extensive processes was paradoxical, producing an overabundance of documentation that lead some meaningful insights from public input to become ignored. IBAMA digitized more than 39 bound volumes from public hearings and the environmental licensing process, each around 600 pages long. More was not necessarily better participation, in this case; in interviews, during July 2012, IBAMA officials

[7] This impact is particularly serious because fish is the main source of protein and livelihoods for the Volta Grande area residents (RIMA Belo Monte).

[8] See Processo n° 0003072-96.2016.4.01.3903 - Justiça Federal em Altamira (PA), and TRF1, Processo n°. 0053298-77.2016.4.01.0000.

recalled: “The most difficult part is to work on top of the dam site, as it is having impacts on the population, serious impacts, but we can only work on mitigating the effects. The role we play is often just as “speaking crickets” trying to let people know what must be done…”, IBAMA personnel spoke about Belo Monte as the project with the most paperwork and most extensive consultation in their memory. The EIA and environmental licensing procedures thus offered a representation for the broader public that the Belo Monte licensing was fully participatory, when in fact, participation surrounding the project remained problematic. Local movement groups criticized the lack of dialogue in the format of public hearings, demonstrated by protest in several public consultation meetings, as well as multiple indigenous protests concerning the project, indicating violations of the FPIC law (Hanna et al., 2014). Rather than reconciling the conflicting values of stakeholders, as happened in Cashmore et al.'s (2008) study of EIAs, in this case, we see evidence of Mosse's argument of processes taking place that promote the perception of legitimate decisions being made to authorize projects by representing them as desirable and fully above board, whether or not such projects actually deserve to be legitimated (Mosse, 2005).

Last, legal loopholes and work-arounds also became an essential mechanism for eliding concerns and narrating success in the Belo Monte case. As the three stages of licensing proceeded, allowances for “conditions” to be placed on the licenses as addenda grew increasingly large. Based on a precedent from 2003, this allowed licenses to be granted and moved forward, although the list of conditions attached to licenses allowed projects to proceed to the next stage of the licensing was ever-growing in the Belo Monte case. For the Belo Monte preliminary environmental license, issued in February 2010, forty environmental preconditions were attached, in addition to thirty-eight separate conditions pertaining to indigenous peoples.[9] Despite most of the conditions for subsequent licenses not being addressed, the licensing process for Belo Monte continued apace (see Fig. 2). Fines were leveraged for non-compliance, and there were delays and work stoppages, but the social and environmental concerns and criteria for licensing remaining unmet overall provided little ground for re-shaping or significantly altering the course of the project itself (Bratman, 2015, 2014). At present, the Belo Monte dam is built, yet some environmental impacts anticipated in the EIA such as repeated fish kills and lack of urban water treatment systems, continue to harm local communities (Branford, 2016, Carneiro, 2015, Pará, 2016). The use of licensing conditionalities allowed the project to proceed according to the overall timeline for the project construction, subject only to minor delays and fines. As a result, Norte Energia was publicly positioned as a good-faith development partner, thus perpetuating a broader narrative that the project was legitimately proceeding according to legal licensing protocols. In fact, many additional legal objections to the project lingered in the courts, and the lists of conditionalities associated with the license was truly exceptional in its length.

Rather than using legal procedures and technical environmental and social consultations to protect the human rights, democratic processes, and local environment, instead, such protocols ultimately perpetuated the advancement of the Belo Monte project. A legal instrument which was established during the Brazilian dictatorship involving security interests (suspensão de segurança) was used to over-rule several court injunctions in the Belo Monte case. This instrument is based on a rationale that an injunction could pose a threat to national security, health and the economy (Justiça Global, 2014). Human rights concerns also permeated how the Belo Monte project was handled, including allegations of cultural genocide against indigenous groups. A 2012 Inter-American Commission on Human Rights ruling found that Brazil violated FPIC law in the Belo Monte case (Hanna and Vanclay, 2013, Jaichand and Sampaio, 2013, Timo, 2013). While these findings helped to convey the illegitimacy of the Belo Monte project to an international audience, the values of participatory engagement and socio-environmental protection that the domestic courts should have protected were largely undermined by the logics of economic growth and national security. These functioned to emphasize to Brazilian audiences that the project was necessary and even essential.

4.2. The Belo Sun mining project

The Belo Sun mine at Volta Grande is designed to be the largest gold mine in Brazil. The Volta Grande project covers a total area of 2356.41 ha or 23,5641 km^2 (see Fig. 3).[10] The project is run by Belo Sun Mining Corporation Ltd., a Canadian mineral exploration company with a Brazilian subsidiary (Belo Sun Mineração Ltda.). The company is owned by Forbes & Manhattan Inc., which is a merchant bank of private equity (Manhattan, 2012). The open-pit mining operations will take place along the banks of the “big bend” (literally translated to volta grande) of the Xingu River. The Volta Grande mine is located in the municipality of Senador José Porfírio, Pará State, just a few kilometers south of where the Xingu river was diverted by the Belo Monte dam.

The Volta Grande is recognized by the Brazilian Environmental Ministry as a priority area for sustainable use (Ministério do Meio Ambiente, 2007, Brazil, 2007). The residents near the mining site include riverine peasants (who are legally protected as “traditional” populations), artisanal miners, and indigenous communities. There are at least eight archeological sites in Volta Grande, according to the EIA for the project.[11] The main areas that will be directly affected are three nearby villages with 977 total residents.[12] Additionally, three indigenous communities will be affected, involving lands located between 12 and 39 km from the mining site.[13] The environmental licensing process and EIA of the Volta Grande Project involved numerous legal and technical concerns. Below, we detail how despite the significant flaws with licensing, the EIAs and project licensing stages functioned as mechanisms to create a perception of necessity, legitimacy, and inevitability surrounding the project development.

The first concern surrounding the Volta Grande EIA involves omissions of environmental impacts and consultations on the Environmental Impact Statement (EIS), which resulted in a document that appeared thorough and legal, but which actually involved substantial omissions, both of people's participation and of legally-mandated environmental assessments. The EIS was filed in 2012 in conjunction with a request for a pre-construction license of the project.[14] In 2013, concerns were raised about the EIS within the deliberative discussions of the State Environmental Council (COEMA) on the basis of three central

[9] This is notably exemplified in the Belo Monte and Jirau hydroelectric cases, when installation and operational licenses were granted despite having nearly 2/3 of the preconditions being un-fulfilled. Tribunal de Contas da União, Acórdão No. 2.212 Plenário, Relatório de Levantamento. Avaliação do IBAMA (2009), www.tcu.gov.br.

[10] The Preliminary Economic Assessment posted on the company's website states that the total area of the project is 178,559.30 ha. However, the area which is subject to environmental permit is 2.356,41 ha. See Parecer Técnico 22.520, Processo de Licenciamento Ambiental N. 2012/0000005028, Secretaria Estadual de Meio Ambiente e Sustentabilidade; Belo Sun Preliminary Economic Assessment, available at http://www.belosun.com/files/Technical%20Reports/PEA%20NI%20431-101%20Belo%20Sun%20-%20FINAL%2031-Mar-14_v001_x3khwr.pdf.

[11] The Environmental Impact Statement of the Volta Grande Project P08, Item 5 Análise Integrada do Diagnóstico Ambiental notes that with further studies, the number may in fact be greater.

[12] There are three major mining locations, all of which were the sites of historical artisanal gold mining; Ressaca, Ouro Verde and Galo. Ressaca Village is the largest, with 452 residents. C.f. J.F. (federal district courts on matters of federal interest) ACP N. 0001739–80.2014.4.01.3903, Subseção Judiciária de Altamira.

[13] These are: Paquiçamba – 12 km; Arara da Volta Grande – 16 km; Trincheira Bacajá – 39 km; and isolated indigenous communities living in the Ituna/Itata Lands, which is 29 km away. Although there are several different measurements indicating the distance of the project to indigenous communities, these measurements are the most accepted in the EIA of the project. J.F. ACP N. 0001739-80.2014.4.01.3903, Subseção Judiciária de Altamira.

[14] Volta Grande Environmental Permitting Procedure N. 5028/2012 (on file with author).

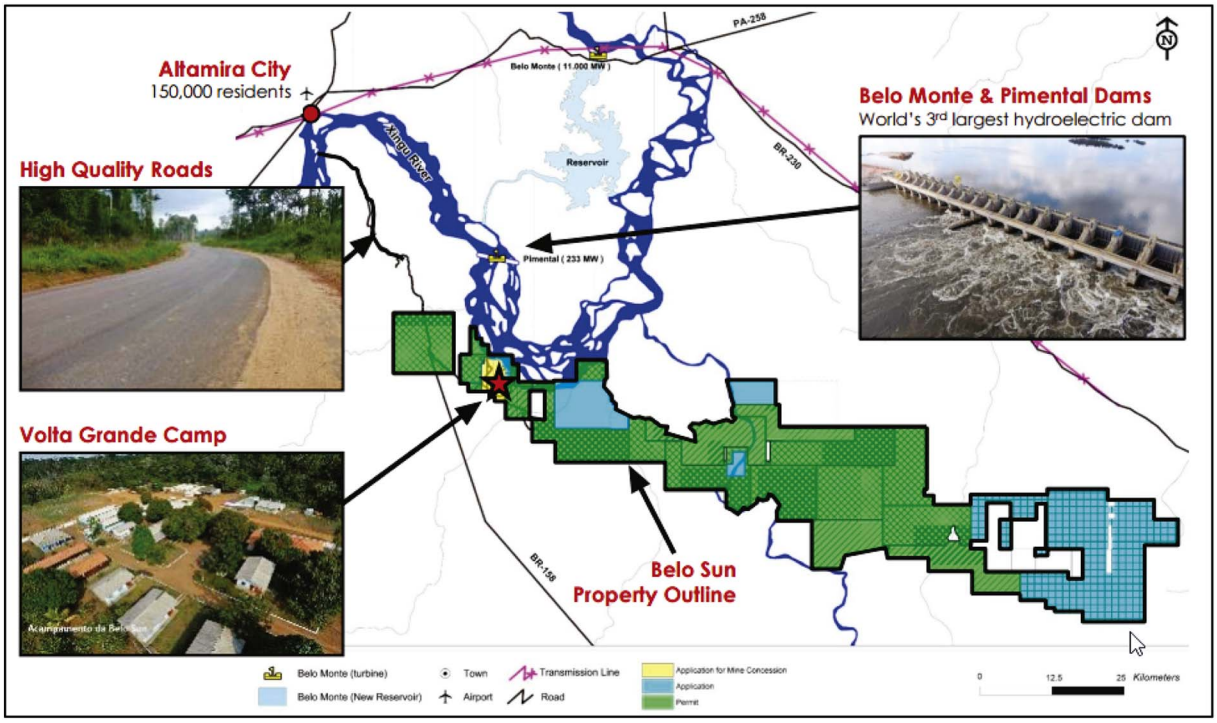

Fig. 3. Belo Monte and Belo Sun projects, Xingu River. Credit: Belo Sun Mining, http://www.belosun.com/_resources/170203_Belo%20Sun_Corporate%20Presentation.pdf

arguments.[15] One argument was that the EIA did not assess impacts of the mining activity on indigenous communities living in the surroundings of the project. Two, certain centrally-involved governmental agencies were required to participate in the EIA of the project, but their input was not included in the process.[16] Moreover, objections were raised that the area of influence of the project was measured in a way that excluded indigenous lands and therefore made the process easier because it skirted the boundaries of indigenous areas excluding the necessity to obtain their FPIC.[17] Distant observers might see the Volta Grande process as one that appears to be scientifically assessed and rigorously discussed through the EIA and the COEMA deliberations, and duly deliberated in the judicial system. Scrutiny of those court procedures and EIA details, however, reveals a different picture, wherein stakeholders including indigenous groups and governmental agencies themselves are increasingly distanced from and disengaged with pertinent decisions surrounding the project. This procedural adherence, coupled with the numerous technical omissions, cultivated an appearance of legitimacy for the Volta Grande project, while circumscribing debate over the project's impacts to questions of technical expertise and control. The more controversial political questions concerning the project relating to the resource extraction itself, and uneven benefits experienced by certain groups from the project were beyond the scope of the analysis.

Participation, even when deeply flawed, rendered the Volta Grande project as something that responded to local needs for infrastructure and jobs, and created a record of successful engagements with stakeholders. In this case, participation concerns were numerous: prior to the first public hearing, the Environmental Impact Statement and its non-technical summary were only made available in Belém located 826 km away from the affected area. Further, the first local public hearing took place outside of the immediate vicinity of the project-affected communities, in the city of Senador José Porfírio. This location made participation of the most affected communities very difficult due to its geographical distance from their actual places of residence. Subsequent attempts to improve public knowledge about and consultation over the project ultimately reinforced the Volta Grande project as it was initially proposed, despite attempts from some well-meaning actors to alter the situation. The Brazilian National Commission of Human Rights heard local communities' concerns in a public forum in October 2016. Based on their findings, the commission recommended that the state environmental secretariat (SEMAS) suspend the installation license, alleging that “indigenous and riverine peasants who live in the region and who are potentially affected by the impacts of the project do not have the most basic information related to the project that is slated to be installed in that area” (Ministério dos Direitos Humanos, 2017). Several meetings organized by SEMAS and Belo Sun with communities were held, but interviews with local participants suggested that there was widespread perception among community members, local NGOs, and the Ministério Público that the aims of those meetings were about accumulating goodwill for the mining operations and “cooptation” of local residents, rather than information-sharing or consultation. Interviewees' accounts described t-shirts and baskets of food being given to residents in the Ressaca village. These gestures ultimately reinforced long-standing clientelistic exchange relationships in the region. Interviews with community members at Ressaca Village about relocation revealed that artisanal miners were not clear about what would happen to their homes and livelihoods, even after participating in public hearings. Participatory frameworks can provide an unassailable record of achievements, with participants validating and endorsing the projects in a way that closes and narrows options, rather than opening up

[15] COEMA is responsible for authorizing the issuance of the pre-construction license of the project.

[16] The federal and state agencies missing authorizations were INCRA (the federal land reform agency), the Brazilian National Forest Service, the Indigenous Affairs Agency (FUNAI), the Ministry of the Army, and the National Institute of Historic and Artistic Heritage. The EIA's Terms of Reference (TOR) requested the following: (…) If the project will be located in indigenous area or in areas of interest of the Indigenous Affairs Agency, project proponent must present FUNAI's authorization. Whether the project will utilize explosives a license of the Ministry of the Army must be presented (…) If it is detected the existence of archeological sites, present the plan of removal or mitigation measures authorized by IPHAN (…)”. Volta Grande Environmental Permitting Procedure No. 5028/2012 (on file with author).

[17] Brazil ratified the international convention ILO 169, and therefore is obligated to carry out FPIC whenever a project affects indigenous lands. See Hanna and Vanclay (2013).

spaces for local stakeholders to express their knowledge and desires (Mosse, 2011b).

Last, permitting procedures functioned as a mechanism that depoliticized the projects through promoting economic development logics over legal protections and institutional checks on power. Two central issues illustrate this phenomenon in the Volta Grande case. First, an over-reach of bureaucratic authority for the Volta Grande project took place by SEMAS, when it approved the installation license. SEMAS's permit was granted exactly five years (to the day) from the initial EIS filing. It was an aberrant overstep of their authority because it comments on the twelve-year operation of the mine, despite the legal authority of the installation license to only allow project construction to take place. While legal challenges do continue to stall the project, such challenges eventually become over-ruled, allowing it to haltingly proceed. Belo Sun faces approximately thirty-five different lawsuits from local miners and communities, involving complaints about illegal purchases of land by the company. Resisting the federal and local pressure against the project, SEMAS generally maintained that federal rulings against Belo Sun are "unfair to the company and may jeopardize the economic well-being of Pará." (Nolen, 2014). The state of Pará proposes that the economic rationale for the project should override all other concerns, based on the reasoning that accruing royalties and taxes (totaling approximately BRL $850 between installation and twelve years of operation)[18] and generating employment (2100 construction jobs and 526 once the mine is operating). Federal and state priorities for economic development thus allow the project to move forward, and these priorities appear predominant over the legal concerns and institutional responsibilities which, by law, should outweigh such concerns.

Compounding the perception of project necessity and the legal complexity of the projects, the Belo Sun mine and the Belo Monte dam were each treated as independent cases, without a comprehensive assessment of the synergistic and cumulative impacts of both projects on the region. The projects are related within the geographies of regional development, and yet were treated as spatially distinct and isolated cases within licensing processes. This omission was critiqued in several legal actions that were filed in federal courts against the State of Pará and against Belo Sun (Regional Federal Court 1st Region). Three legal actions between 2013 and 2014 recognized that EIA analyses were inadequate, and the courts also acknowledged violations including the lack of impact assessment of the Volta Grande project on indigenous communities who live in the surrounding areas as well as their lack of free, prior and informed consent.[19]

Contradictions between the affects and the desired protections for local communities are laid bare when the projects are considered in tandem; the Ressaca village would be abandoned to make way for the Volta Grande mine, but investments in the same village were an EIA-required compensation measure with the Belo Monte project. The proximity between the Belo Monte dam and the Volta Grande site is portrayed by the Belo Sun mining company through a regional representation devoid of indigenous tribes, and rich with the promise of modernization; road and airport infrastructures, coupled with mines and a mega-dam suggest ease of resource extraction in the region (see Fig. 3). As new infrastructures take shape, certain directly-affected communities will become explicitly "unimagined" and certain geographies left out in a "spatial amnesia" that is a hallmark of such broader modernization-oriented development goals (Nixon, 2011). This example also supports Mosse's contention that although certain policies serve as guidance for project implementation, in practice, the underpinning logics of development project continuation will be perpetuated by a variety of actors and processes, including those institutions purportedly in place to safeguard people and ecosystems from the negative consequences of development.

5. Discussion: impact assessments, licensing, and clear-eyed development decisions

In these case studies, we see illustrations of EIA processes that functioned to compound public perceptions of project legitimacy and promoted representations of project benefits. This functioned to allow the projects to move forward despite the legal concerns that remained un-adjudicated. Additionally, although there is widespread perception of legitimacy promoted through the EIA processes, both projects divided local affected communities in their opinion related to their authorization and fostered national and international campaings against their authorization. Taken together, the EIAs and public participation processes associated with licensing procedures discussed in these case studies reveal how the broader regional economic logics (employment, construction leading to more wealth circulation, and long-term energetic supply to fuel further growth) were privileged over legal disputes involving indigenous rights and conditionalities for social and environmental protection. The Belo Monte case raises questions about how much political corruption caused the EIA's intended purposes to break down, whereas the Belo Sun mine suggests that the economics of resource extraction triumphed over other concerns. In both cases, we are witness to the triumph of prevailing logics of development, understood as a process of entrenching capitalist-oriented and geographically uneven and contradictory processes of historical change (Hart, 2001). The EIA processes presented in these cases tend to reinforce such contradictions and unevenness, even as significant legal challenges to both projects were taking place. The approach to EIAs presented here also points to the problems of projects being treated as isolated from each other, despite having inter-related affects on the population and ecology of the region.

The single-project focus of each EIA ultimately allowed both projects to move forward as if each was an isolated intervention, and hence misses a key component of the intention of the EIAs, namely, to as accurately as possible inform how projects are shaped and what their consequences will be. In these cases, the EIAs did not adequately anticipate synergistic effects from the dam, as well as Xingu river fish kills, escalated rates of violence in Altamira, and indigenous cultural losses (Branford, 2016, Carneiro, 2015, Ritter et al., 2017).

The above factors may compound legal actions and leave many concerns unaddressed in terms of mitigation, even as development 'success' is narrated by project proponents. In both cases, rhetoric of sustainable development, participatory engagement, and upholding of indigenous rights and social compensation measures tended to promote the projects, representing them within frameworks of technocratic expertise and social benefit. Furthermore, the public hearings did not serve as a space for meaningful dialogue, and the projects and their impacts were not effectively communicated to the affected and relevant members of the public. These case studies, then, support Mosse's observation (2005) that even though projects may be deemed successful by higher levels of management, on the ground, realities may be quite different.

6. Conclusion

This research ultimately suggests that EIA and public involvement procedures may not be as positive, nor as benign, as scholars have traditionally assumed. The participatory engagement processes

[18] The royalties estimates are RS $5 million per year, totaling around R$60 million over the twelve years of operation. In taxes, there is an estimated R$130 in national, state, and local taxes that will be collected during installation, and thereafter RS $55 million per year. Based on our calculations and information from Belo Sun's corporate presentations, over twelve years, the Brazilian government (state and federal) would thus receive USD $270 million in taxes in royalties from the Belo Sun project. For the Canadian Belo Sun company, the estimates are a twelve-year yield of $7.98 billion, based on earnings of $665 million USD per year in NPV value, post-tax, with an IRR between 20 and 32%. See: Corporation BSM. Presentation to Investors. Belo Sun Mining Corp; 2016.; Melo L. Belo Sun Investirá US $5 milhões no Pará em 2017. BVMI. São Paulo2017.

[19] Id., and according to the International Labor Convention No. 169.

described here functioned as a permeable screen through which the projects are passed-through, but not substantively amended or blocked. Second, the cases suggest the force of political and economic factors that keep a project moving forward, based on discourses that such projects will create wealth and jobs, while they simultaneously ignore a host of relevant social concerns. Finally, the cases illustrate how technical management and procedural issues of EIA and licensing procedures make projects appear "theoretically" compliant with legal frameworks, while legal challenges then become grounds for a depoliticized politics of project contestation.

The case studies presented here reveal how participatory processes, de-politicization through scientific assessments, and a single-project focus EIAs may re-frame broader development agendas and perpetuate a narrative of project success. Ultimately, these mechanisms shore up perceptions of legitimacy and inevitability, thereby promoting extractive political-economic aims and depoliticizing extractive development interventions. The implications for power dynamics, following Cashmore and Axelsson (2013) were that despite the potential of environmental assessments for influence, environmental and social concerns expressed in legal actions were largely neglected, while the developmental state agencies behind the Belo Monte project and the corporate influences of Belo Sun maintained power. Mosse writes that participation is a form of representation "oriented towards concerns that are external to the location. Such representations do not speak directly to local practice and provide little clue to implementation" (2011b). This work compliments Mosse's broader argument that procedural mechanisms often promote the appearance of legitimacy, while the on-the-ground realities of project development cast doubt upon the narrative of success. While many development projects are labeled as being community-based, culturally-adapted, and participatory, efforts to achieve these may ultimately function as instruments that advance development that favors external interests and the political manipulations of local elites (Mosse, 2004). Adding to this observation, Li's (2007) and Cashmore and Axelsson's (2013) arguments are that technical processes may strategically serve to benefit powerful interests are illustrated in these case studies. The EIA and environmental licensing processes tended to obfuscate the economic and political motives behind both projects, while instead focusing on scientific and bureaucratic protocols, incomprehensibly long or physically inaccessible studies, and the over-use of participatory consultations as a means of generating impressions project legitimacy.

On more practical levels, the Belo Monte and Belo Sun cases also portray that local resistances and legal actions will involve prolonged and often costly engagements, and that even after the projects are completed, a number of risks will remain in play. Ignoring these factors from the start, and intentionally turning a blind eye to them despite the opportunity offered by the EIA to address those concerns from early on is a risky gamble. Generally, in the Brazilian context, EIAs continue to represent an onerous hoop to jump through for decision-makers and project developers. Within a context where project approval appears inevitable, EIAs will likely continue to be perceived as merely a costly bureaucratic impediment. For local activists and residents, then, EIAs should be seen less as a potential stage for meaningful opposition to be voiced, and rather as a step through which further legitimacy is accorded to projects and where the logics of project development become entrenched. Rather than putting confidence in EIAs, such constituencies might instead seek to find other paths for dissent and project influence.

These cases may offer a new way to think about project licensing processes and how to avoid similar licensing flaws in the future. In theory, EIA processes could meaningfully inform more accurate economic indicators, as well as social and environmental points of concern, and could lead to decisions that avoid environmental harms, human rights violations, and costly work stoppages. Specifically, officials might give greater consideration for monitoring and evidence-based management strategies within the licensing processes (Ritter et al., 2017), or use anti-corruption measures within reforms to EIA design (Williams and Dupuy, 2017). Additional reforms would be well-served to include deeper and sustained attention to culturally appropriate assessments, to develop EIAs in more accessible formats, and to consider involving neutral third parties in assessment frameworks (Dias, 2017, Hanna et al., 2014). Moreover, at the regional level, the cases point to the importance of spurring a regional discussion on development trajectories and values. In keeping with this, incorporation of Strategic Environmental Impact Assessments would provide a more comprehensive assessment of territorially-related projects, considering cumulative and synergic impacts of geographically proximate projects.

An important policy and research question raised by our research that remains unanswered pertains to the Brazilian context of environmental licensing policy: would less thorough licenisng actually be more satisfying, and if so, for whom? The bureaucratically-complicated and often inadequate EIA problems are noted in this article and in other research (see e.g. Bragagnolo et al., 2017, Hanna et al., 2014, Hochstetler, 2011). One interpretation following from Mosse's (2004) analysis is that EIAs tend to promote narration of development project success and allow for extraction and economic growth-oriented business-as-usual models to succeed, regardless of how thorough they appear on paper. Recent Brazilian legislative discussion surrounding EIA reforms are trending toward more cursory social control instead of more thorough participation, transparency, and independent scientific review (Fonseca et al., 2017).[20] The new policies propose to streamline environmental licensing process by putting oversight largely out of the hands of governmental institutions, making those procedures essentially tokenistic in nature. These draft laws, if approved, would likely undermine the participatory and scientific analysis procedures in EIAs, through quickening project approval timelines and procedures. The result would likely remove the need to make a pretense of bureaucratic and legal legitimacy for projects. More research is necessary to adequately understand the net consequences of streamlining the legal and assessment processes, with regard to the economic, social, and ecological costs and risks involved in such reforms. It is important to know more about how and why, in practice, such environmental licensing laws can inform the broader character and politics of sustainable development, in Brazil and beyond.

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[20] These are a 2012 Constitutional amendment, known as PEC-65/2012, Senate bill (PLS-654/2015), and Chamber of Deputies bill (PL-3,729/2004).

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