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Kathryn Hochstetler

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Environmental impact assessment: evidence-based policymaking in Brazil

Kathryn Hochstetler

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Guest editors: Linda Hantrais, Ruth Kattumuri & Ashley Thomas Lenihan

Department of International Development
London School of Economics and Politics Science
London WC2A 2AE
k.hochstetler@lse.ac.uk

ORCID: 0000-0003-2960-058X

@hochstet

Kathryn Hochstetler is Professor of International Development at the London School of Economics and Political Science. She has published extensively on environmental politics in Brazil and Latin America, including the prize-winning *Greening Brazil: Environmental Activism in State and Society* (Duke University Press, with Margaret E. Keck).

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Abstract:

Environmental impact assessment (EIA) procedures aim to prospectively collect evidence about the environmental impacts of economic projects and to avoid or compensate for those costs. This article asks whether such procedures have been effective in Latin America after many regional countries returned to some version of the developmental state after 2000. It does so by surveying the procedural effectiveness of Latin American regulations comparatively before turning to a deeper study of the Brazilian case. In Brazil, which has some of the strongest EIA procedures in the region, it finds that stakeholders make very different assessments of EIA effectiveness, not least because they define the standard differently. Economic actors in and out of the state criticize Brazilian EIA as ineffective from a transactive standpoint, which questions the time and cost associated with environmental licensing. Environmental and community activists see EIA as ineffective in achieving the substantive sustainability ends they value. Neither appreciates the procedural improvements licensing professionals have offered. The article concludes that EIA invites a broader set of stakeholders than did classic developmental states, but cannot on its own adjudicate among the resulting multiple visions of how to carry out development strategies.

Keywords: environmental impact assessment, environmental licensing, Brazil, Latin America, developmentalism

Environmental Impact Assessment (EIA) has become one of the most common environmental regulations in the world (Morgan, 2012, p. 6). The heart of EIA is a process that accumulates and evaluates information about the likely impacts of proposed economic projects on the physical environments and local communities that host them (Glassen, Therivel, & Chadwick, 2012). The EIA process requires that someone – usually the firm carrying out a project – prospectively consider how a project is likely to change baseline environmental conditions in its area of impact. Much of this information is provided by natural scientists and engineers, but full analysis of impacts requires social scientific analysis to assess social and economic changes as well. This evidence-based process operates with a view to preventing or ameliorating the negative impacts of the project and proposing compensation for the unavoidable harms. Those assessments are then reviewed by a separate actor, most often an environmental agency, that may grant or deny an environmental license for the project. EIA processes also commonly include some form of consultation with the local host community (Hochstetler and Tranjan, 2016, p. 500).

The article begins with a discussion of how EIA might intersect with recent economic development strategies in Latin America. In many countries of the region, EIA processes are the main opportunity for public discussion of the advantages and disadvantages of specific development projects. As a result, EIA is an important locus for viewing how socio-environmental evidence becomes an input into decisionmaking and how policymakers respond to such evidence. I argue that EIA is potentially compatible with developmentalist strategies, which aim to create the underpinnings for long-term national development, as sustainability is crucial for that goal. Nevertheless, EIA introduces a set of considerations and actors that have historically been left out of economic policymaking. Conflict is a common result, not least about

whether EIA is effective and what effective EIA requires.

This general introduction is followed by a comparative analysis of current EIA processes in Latin America that provides insights into how regional governments collect environmental evidence for their decisionmaking. The comparison is based on a number of textual indicators that allow asking which of the regional EIA systems is the most procedurally effective – that is, how closely legal texts follow expected ‘standards and practices’ (Chanchitpricha and Bond, 2013, p. 66). A fuller consideration of effectiveness requires more detailed empirical investigation, so the article then proceeds to a case study of Brazilian EIA. The article’s overarching conclusion is that even EIA processes that are comparatively strong technically remain enmeshed in political contestation over national development strategies in Brazil and Latin America, perhaps especially when states are active participants in planning and carrying out development projects (see also Barandiaran, 2015; Jaskoski, 2014). These conflicts reflect the different perspectives stakeholders bring to the question of what constitutes effective EIA (Chanchitpricha and Bond, 2013).

Twenty-first century developmental states: what role for environmental evidence?

After a generation of neoliberal rollbacks, many Latin American states have returned to playing a more central role in their national political economies after 2000, akin to an earlier generation of developmental states (Johnson, 1982; Woo-Cumings, 1999). They built hydroelectric dams, roads, and other infrastructure projects on a grand scale. They encouraged more extraction of oil, minerals, and other natural resources in light of the highest commodity prices in decades. They

offered public finance for private projects and contracted private firms to carry out some of their ambitious plans (Montero, 2014; Weyland, Madrid, & Hunter, 2010). Many countries in the region had also adopted new environmental regulations in the 1990s, including EIA regulations requiring them to consider systematically the effects of projects on the physical environments and local communities where they are to be located (Hochstetler, 2012). The post-2000 return to developmentalism thus marked the first intersection of EIA and state-led development strategies in the region. As such, it offers an excellent opportunity to view the nexus between environmental evidence and economic policymaking in an important, middle-income region.

Developmental states, in their ideal typical form, are ‘defined by state intervention that is technocratically oriented towards the long-term development needs of the whole economy, even determining which industries should rise and fall’ (Hochstetler and Tranjan, 2016, p. 498). The theoretical construct of the developmental state, which grew out of Chalmers Johnson’s (1982) path-breaking study of Japan, upheld the ideal of a state bureaucracy that was able to see beyond particularist interests to the larger economic interests of society as a whole (Wade, 1990, p. 29). In order to maintain this strict focus on the development goal, elite bureaucrats typically made economic decisions in a political system that was either fully authoritarian or where political actors and civil society were shut out of economic decisionmaking (Johnson, 1982, pp. 17–22). The classic developmental states considered little information from actors like environmental scientists, social scientists or local communities (Hochstetler and Tranjan, 2016, p. 500).

Classic developmental states concentrated economic decision-making in finance, industry, and trade ministries. Yet a developmental state with the characteristics just described might be

compatible with the scientific procedures of EIA. After all, if states are concerned with broad, long-term national interests, they should consider the environmental foundations of their economic projects. The concept of sustainable development was coined to capture exactly that balance (Happaerts & Bruyninckx, 2014). The highly technical quality of scientific evidence and analysis is also compatible with the mode of analysis of the developmental state.

Including information and evidence on impacts from communities and social scientists is more difficult. From the standpoint of the classic developmental state and its proponents, the understanding of the role of society is a close match to the ‘NIMBY’ (Not in My Back Yard) understanding of local resistance to projects. In this perspective, such a response represents narrow self-interest in the face of public goods. Daniel Aldrich (2009, p. 1) summarises this point of view: ‘Everyone wants cheap gasoline and lower heating bills, but no one wants to live next to an oil refinery or a fuel storage facility’. From a different perspective, empirical research on the NIMBY phenomenon has shown that such interpretations greatly understate the diversity and character of much opposition to projects (Horst, 2007). Citizen responses may even be constructive, offering real and manageable improvements to proposed projects. Decades of citizen resistance to hydroelectric dams in Brazil, for example, have forced project planners to be much more careful in their project designs than they were in an earlier generation of plants (Hochstetler, 2011).

Evaluating the effectiveness of EIA in 21st century development strategies requires sensitivity to the multiple understandings that stakeholders may bring to the concept. An earlier generation of scholarship assumed that effective EIA meant matching a particular set of valued procedures,

already described as the *procedural* approach. The growing proliferation of stakeholders requires attention to the standards they hold. *Substantive* effectiveness ‘shows the achievement of expected objectives’, usually sustainability (Chanchitpricha and Bond, 2013, p. 66). But other stakeholders may be particularly concerned with *transactive* effectiveness, which asks EIA to produce outcomes at low cost in an expeditious time frame (Chanchitpricha and Bond 2013, p. 69). Finally, a *normative* lens on effectiveness considers broader societal and individual goals that are set by the context or culture (Chanchitpricha and Bond, 2013, p. 69). For example, these could include democratic norms that look for a fit to popular preferences. From the start, the larger number of stakeholders in modern developmentalism makes conflict over whether EIA is effective seem more likely.

To move beyond these hypothetical discussions of the relationship between developmental strategies and EIA processes, the next section compares EIA processes in the Latin American countries. The comparison emphasises how EIA creates a framework that can be used to bring evidence about environmental and other impacts into economic policymaking. In this comparison, Brazil rises to the top, with procedures that appear among the strongest in the region.

Environmental impact assessment in Latin America

Table 1 presents the results of an index of the quality of the national EIA processes across the Latin American region. To construct this index, the author examined online documentation of the legislation and regulation of the most recently established EIA process in each country, along

with any available secondary materials (for example, Abers, 2016; author, 2011; Barandiaran, 2015; Jaskoski, 2014; Palerm & Aceves, 2004). Since, in most cases, only the legislation itself was available, the index stresses factors that can be identified in the text of EIA regulations. Scores were averaged for four subcomponents of the overall evaluation. The evaluations are set comparatively, so that a high score means the EIA process is good for the region, but not necessarily ideal EIA practice. As a rough indicator of procedural effectiveness, the index treats all components as equally important and is focused on national-level processes.

[Table 1 about here]

The first component of the index asked whether it is an environmental agency itself that assesses and approves the environmental impact study. Initial versions of EIA often placed responsibility for environmental permitting with the same sectoral ministries that were responsible for promoting particular economic activities. For example, a Ministry of Mines would issue permits for mining projects it was otherwise supporting, a clear conflict of interest (Jaskoski, 2014, p. 875). By the time of the latest iterations of EIA regulations, virtually all Latin American countries gave responsibility for environmental permitting to environmental agencies, a choice that is likely to improve consideration of environmental impacts. The exceptions are Argentina, which still had not regulated a 2005 law calling for a single national EIA process; Paraguay; and Peru, which passed a law moving all EIA to its environmental ministry but has still not provided regulation for the implementation of the law (Jaskoski, 2014).

A second component of the index evaluated the transparency of the process: how easily an

interested party could have access to an environmental impact study. The availability of the EIA for study by members of the public, including interested scientists and academics, potentially promotes higher quality EIA studies, following the logic of studies on the role of transparency in policymaking (Gupta & Mason, 2014). When evidence is presented more broadly, additional actors can review it and suggest improvements and additional information. The prospect of such review should encourage the firm undertaking the study to produce a higher-quality product in the first instance.

The variation in availability was substantial. At the high end, all the documents associated with Brazilian national licensing (since 2005) and some state licensing processes are publicly available on an easily-searchable website. This can run to thousands of technical pages, and represents high accessibility for knowledgeable Portuguese readers with internet access (Hochstetler, 2011, p. 356). At the other extreme, in countries including Colombia and Ecuador, citizens must individually petition to see an EIA. The modal format in the region is that projects are announced in a public newspaper or sometimes the environmental agency's own communications, and interested citizens then have between 10 and 20 days to go to a central location to see the study or a summary of it. Consequently, levels of transparency around impact assessment studies are generally quite low. Throughout the region, meaningful access to EIA documents is a special problem for speakers of indigenous languages (Palerm & Aceves, 2004).

Due to limited availability of information, it is not surprising that citizen participation is not central to EIA in most countries, the third component of the index. A few countries – Bolivia, Cuba, the Dominican Republic, Ecuador, and Panama – require consultations with affected

populations, and more do so for certain categories of high-impact projects. Bolivia and Peru have recently joined the small number of countries that require ‘free prior informed consent’ from indigenous populations for projects in their lands (Fontana & Grugel, 2016, p. 253). For high-impact projects, most countries have some provisions for possible public hearings, although there is a great deal of variance in how likely they are to happen. The most common provision for citizen participation is that citizens can submit written comments on the EIA that will be considered and possibly included in the final assessment. The EIA regulations are uniformly opaque on the details of how the consultation is to be done. Given the limited availability of information, consultation is often limited by citizens’ lack of knowledge of the project beyond what is presented in the consultation meeting itself (Abers, 2016).

Finally, the study considered the length of time the country’s EIA process had been in place, asking whether any major revisions have been made in EIA processes since 2002. The technical quality of environmental regulation implies that even a well-meaning and capable government needs years to put new requirements into practice (Landim & Sánchez, 2012). Impact assessment as widely practiced requires double teams with substantial expertise: one in the private sector to generate the original assessment of the environmental impact and how to mitigate it, and one in the public sector to evaluate the private analysis (Glassen, Therivel & Chadwick, 2012). The array of necessary skills crosses many disciplines. In addition to state capacity, the length of time regulations have been in place also affects firms’ and citizens’ familiarity with the process.

Regional countries generally created environmental agencies and regulations only after undergoing transitions to democracy in the 1970s and 1980s, with Brazil and Mexico the most prominent exceptions (Hochstetler, 2012).

Formal arrangements of the kind surveyed here provide a useful snapshot of the procedures regional countries have established to try to bring evidence about environmental impacts into their economic decisionmaking processes. These five dimensions yielded the EIA capacity measures in Table 1 and the final summaries of low, medium, and high procedural effectiveness. They show that most regional countries struggle to do EIA well: they have recently established procedures with limited transparency and consultation. Scientific expertise is also often limited. For the countries with low EIA effectiveness, the return to developmentalism looks much like the classic version with little attention to the environmental and social impacts EIA is meant to spotlight. The higher-ranked countries offer more opportunity to assess how policymakers and others respond to newly systematic evidence about the impacts of their economic projects. The final section of the paper examines this question in Brazil.

EIA in Brazil: evaluations and responses to EIA practice

Brazil is one of a small number of Latin American countries that initiated its environmental institutions on a timetable of its own choosing, creating a national environmental agency in 1973. A National Environmental System followed in 1981, leading in turn to the second environmental licensing requirement in the region in 1986 (Hochstetler, 2012). Brazilian EIA reflects longer experience and more qualified analysts than that of its Latin American neighbours. There have been steady improvements, although its licensing still shows many gaps in quality (Landim & Sánchez, 2012). The Brazilian Institute of the Environment (Ibama, in its Portuguese acronym) in the national Ministry of the Environment evaluates multistate and complex projects, while

state licensing agencies handle smaller projects. Only the national level is discussed here.

Most countries have just one environmental license, while Brazil requires three, for the planning, construction, and operation stages. The licensing agencies often put numerous conditions on the license of one phase that must be addressed before the next can be granted. Ibama and the subnational agencies handle not just physical environmental impact, but also include determinations from other agencies about impacts on indigenous groups, national historical patrimony, and other impacts that become part of the final licensing decision. Their own environmental impact assessments also address social and economic impacts, so Brazil's 'environmental' licenses cover unusually broad terrain. Evidence from the social sciences is particularly important for evaluating the non-physical impacts, as is consultation with local communities.

In 2003, the Workers' Party won the national presidency and, over the next years, launched expansive, state-led programs of investment in infrastructure (Montero, 2014). This expansion coincided with unusually high prices for commodities that also spurred economic expansion. All these projects needed environmental licenses, with the numbers of licensing processes under review leaping from 791 in 2005 to 1672 in 2013. In 2012 alone, Ibama issued 700 licenses (Moura, 2016, p. 125). Environmental licensing became front page news as the over-burdened system struggled under an avalanche of criticisms that it was either far too rigid and time-consuming or far too permissive, with corresponding proposals for reform. Licensing agents also sought improvements in a system they acknowledged to be flawed. The remainder of this section explores those different proposals and how they conceived of the effectiveness of Brazilian EIA.

Critiques from inside

Licensing practitioners agree more readily on the flaws than the positive elements of Brazil's environmental impact system. In a recent survey, 77% thought implementation requirements were poorly executed, 77% criticised the participation of non-environmental government agencies, and 76% saw problems with public participation. Almost as many saw a misfit between EIA and guidelines in other planning processes (74%) and a failure to learn lessons (73%) (Duarte, Dibo, Siqueira-Gay, & Sánchez, 2017, p. 4). Many of these complaints are about actors outside the licensing agencies themselves, which saw a number of improvements during this time. In 2003, Ibama had just 3-4 permanent licensing analysts and about 100 consultants (Ibama, 2009), but this was followed by a substantial professionalisation of the agency. The number of federal licensing analysts had grown to 400-450 a decade later, all of whom had passed qualifying tests in various disciplines. Retention has been an ongoing issue, however, partly due to low salaries but also to a sense that the career is not socially valued (Toledo, 2014).

The other feature of these critiques is that they are primarily procedural in nature, as are the solutions that licensing practitioners have proposed. For example, in 2011, they contributed to new legislation that set out the responsibilities between federal, state, and municipal levels of licensing more clearly (Law 140/2011). This law did little to change licensing behaviour, but the topic had been a major target of judicial challenges, which now changed focus (Toledo, 2014). The state licensing agencies and the National Environmental Council (Conama) also worked together with hosting communities and the wind power industry to develop new guidelines that would allow wind plants that met certain criteria – not on dunes or in protected areas, with

community consent, and so on – to receive expedited licensing (Conama Resolution 462/2014). Part of the motivation for this was to use environmental licensing requirements less as a block to undesirable projects and more as an incentive for choosing greener alternatives (Santos, 2014). This reflects a significant and constructive effort to rethink the purpose and framing of environmental licensing.

The Ministry of Environment has also been working in recent years to try to develop more comprehensive new national legislation on licensing, but environmental activists have withdrawn from what they call an excessively hasty process, while business and economic actors have been working toward very different alternatives. In general, the proposals for change from the licensing agencies themselves are ones that value the evidence that EIA produces, but seek judiciously to streamline the process where possible.

Critiques from policymakers

That approach is too cautious for many of Brazil's politicians and proponents of new infrastructure and extraction projects. They have come to see environmental licensing as a significant bottleneck in national development plans (Bragagnolo, Lemos, Ladle & Pellin, 2017; Knijnic, 2014). Legislators proposed at least fifteen versions of laws governing environmental licensing between 2004 and 2015, according to a background study conducted for the lower house of the National Congress (Hofmann & Araujo, 2015, pp. 3-4). Many aimed to rework environmental licensing altogether, while others took on only pieces of the process. Several were intended to make the process more rigorous, but the proposals that advanced furthest were designed to speed up and minimise the intrusion of EIA.

Legislative Proposal 3719 originated in the lower house in 2004 and shares important similarities with the Senate's Legislative Proposal 654 of 2015. Both are associated with parties that were once part of the governing coalition with the Workers' Party (PT), but led successful impeachment proceedings against PT president Dilma Rousseff in 2015. The heart of their economic base is the 'ruralist' coalition of industrial agriculture and natural resource extractors, but key industrial coalitions have also signed on to similar proposals (Confederação Nacional da Indústria, 2013). Both proposals aim to streamline the process by exempting more activities from licensing, particularly those that were central to the state's developmentalist agenda. They also set short time frames for evaluation, limited the ability of assessors to ask for more information, and minimised public input. PLS 654 also shortens the process to have only one license while PL 3729 removes criminal punishment for infractions. The net result would be to significantly reduce the amount of evidence gathered and analysed about environmental impacts.

As both laws moved through congressional hearings and committee votes in 2016, environmental licensing professionals, activists, and legal representatives presented counter arguments in testimony and collective statements. Their critiques claimed that the proposed legislation would destroy effective licensing to an extent that would be unconstitutional *and* ineffective. One group of 136 organisations signed a Manifesto against PLS 654, arguing that, 'To eliminate the spaces for direct participation by affected and interested people is the least efficient way of facing the conflicts inherent in big infrastructure projects' (Instituto Socioambiental, 2016). If communities could not participate normally, they threatened, they would judicialise the claims.

The backdrop here is that Brazil has a Ministério Público (MP; loosely, a public prosecutor) that is very active on environmental and consumer issues and frequently focuses on EIA cases (McAllister, 2008). Interestingly, one of Ibama's reactions to constant legal oversight was to make as much information publicly available as early as possible, in hopes of learning of potential opposition before it could move to a formal complaint process (Ibama, 2009). All actors carry out the licensing process fully aware that their decisions are likely to be closely scrutinised and may end up in court (Knijnic, 2014; Toledo, 2014). Court injunctions can stop a project altogether and more frequently delay them in ways that make the project less viable (McAllister, 2008). The Federal MP presented a legal statement (Parecer Jurídico No. 4-4^a CCR) in 2015 stating its legal objections to the Senate legislative proposal, making it clear it would challenge the proposal and similar ones in court as unconstitutional.

A similar set of partisan actors was working simultaneously to push a constitutional amendment (PEC 65/2012) that would have forestalled such constitutional challenges. Clumsily written, it asked only that an environmental impact study be presented for priority economic projects, but did not provide for analysis of the study and said the project could not be blocked. It also omitted citizen consultation. The Federal MP again presented an analysis saying that the amendment conflicted with too many immutable constitutional provisions, such as human rights and environmental protection provisions, to be allowed (Ministério Público Federal, 2016) and this particular version now appears dead. The sentiments and motivations behind these initiatives remain unchanged, however, and similar proposals are likely to return.

This group of stakeholders is consistently most concerned with the transactive effectiveness of EIA, looking for low costs and short time frames. Its proposals show much more concern with the developmental effects of projects, and openly advocate setting aside sustainability criteria for especially important projects, much as classic developmentalism did.

Critiques from civil society

Even as one group of actors is looking to accelerate environmental licensing and limit the evidence it collects and uses, another is working to expand the scope of Brazilian EIA. The title of a 2014 book (translated) – *Forms of killing, dying, and resisting: The limits of negotiated resolutions of environmental conflicts* (Zhouri & Valencio, 2014) – succinctly captures the stakes considered to be at risk. EIA and its consultations are exactly such a ‘negotiated resolution’ now increasingly rejected by activists who would like to see much more substantial debate about the substantive socioenvironmental costs of projects than environmental licensing has allowed so far.

Consultations with affected communities are one of the weakest parts of Brazilian EIA, according to a survey of 131 academic papers published in English and Portuguese on the topic. Evaluation of socio-economic impacts is seen to be frequently ignored or highly subjective (Duarte, Dibo, & Sánchez, 2017, pp. 275-276). Consultations for the Belo Monte hydroelectric dam included 4,417 participants, who asked 682 questions in hearings that ran 30 hours (Hochstetler, 2011, p. 360). Even so, indigenous and other local forest peoples were still heavily affected by the final project, and opponents supported a series of legal challenges in Brazil and at the OAS that targeted the procedures and outcomes of the EIA process (Hochstetler, 2011). In six routine infrastructure cases since 2000, Rebecca Abers (2016) found that the consultations

were perfunctory, with most of the focus on presenting the project. Questions were answered in highly technical language or brushed off, and there was little evidence that the community participation affected the projects. Communities have been able to use the legal system to support their claims (Hochstetler, 2011), but it requires framing the arguments primarily in procedural terms.

For activists and social scientists alike, one attempted solution to this flaw has been gathering more evidence about socio-economic and environmental impacts, even developing their own alternative impact studies (McCormick, 2009). But their aim is increasingly one that may challenge the institution of licensing itself. Inside Ibama – and in the world of EIA more generally – environmental licensing is understood as a way to improve a proposed economic project from the environmental point of view rather than a decision about doing the project or not (Glassen, et al., 2012; Ibama, 2009; Toledo, 2014). In the view of many environmental and community activists, EIA should be about the latter decision, with communities given much more ability to reject projects they oppose and some categories of activities like large hydroelectric dams excluded altogether (for example, Greenpeace, 2016). This is exactly the outcome that the project proponents want to make impossible.

Conflicts over the right way to think about effectiveness underlie such differences. Economic actors favour transactive effectiveness, often directly traded-off with the substantive effectiveness activist demand. The two sides have been engaged in open conflict over which of them can claim normative effectiveness, or the right to say their view reflects the popular will. Licensing practitioners prefer to take a narrower view and focus on procedures and information

as they relate to particular projects, without engaging the broader claims.

Conclusion

Environmental impact assessment is an important regulatory instrument for bringing evidence about environmental and social impacts to bear on policymaking. In principle, EIA should make economic projects more sustainable, but it will only do so if evidence is collected well and analysed carefully. This is a challenging task for developing countries, especially when states are setting out ambitious development strategies with extensive state participation. EIA effectively pits one part of the state against another, a fight that economic agencies typically win. The article shows that current EIA frameworks across the Latin American region are set up with characteristics that limit the likelihood that EIA processes will collect, disseminate, and analyse socio-environmental information in influential ways. Brazil emerges as one of the regional bests – on paper – but a final case study shows that, even there, EIA is critically embattled.

Comparatively strong environmental licensing, with extensive judicialisation of important projects, has resulted in ongoing efforts to roll back EIA processes. Many policymakers would rather not have effective investigation of the effects of strategic projects, or would rather not have more evidence than that which can be quickly gathered and allow the project to proceed. They are countered by civil society actors who are determined to hold the line, if not to push impact assessment further, with more attention to social data. The quiet improvements within the licensing community itself go largely unnoticed by both sides.

Table 1 above documents that the current round of developmentalism is different in Latin America: all the countries in the region have introduced regulations requiring procedures that will provide information about environmental and social impacts. However, some of the regulations themselves are too weak to achieve much. Even the country which has some of the strongest EIA procedures on paper, Brazil, shows that while EIA is crucial for inviting stakeholders who will speak for substantive sustainability ends, it is an invitation to a struggle rather than the gateway to a certain, balanced outcome between environment and development.

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Table 1. EIA ratings for Latin American countries

	Score (of 3; 1 is highest)	Agency	Transparency	Consultation	Established
Argentina	3.0 Low	3	3	3	3
Bolivia	1.8 Medium	1	2	1	3
Brazil	1.3 High	1	1	2	1
Chile	1.8 Medium	1	2	2	3
Colombia	1.8 Medium	1	3	2	1
Costa Rica	2.0 Medium	1	2	2	3
Cuba	1.8 Medium	2	3	1	1
Dominican Rep.	2.0 Medium	1	2	2	3
Ecuador	1.5 High	1	3	1	1
El Salvador	1.5 High	1	2	2	1
Guatemala	2.0 Medium	1	2	2	3
Honduras	1.8 Medium	1	3	2	1
Mexico	1.5 High	1	2	2	1
Nicaragua	2.0 Medium	1	2	2	3
Panama	1.8 Medium	1	2	1	3
Paraguay	2.5 Low	3	2	2	3
Peru	2.5 Low	2	2	2	3
Uruguay	2.0 Medium	1	2	2	3

Source: Author's data based on review of EIA texts, as described in the article manuscript.

Venezuela is excluded because of legal and regulatory uncertainty at the time of writing.