Political ecology explanations for ineffective environmental governance for sustainability in the Amazon: a comparative analysis of cases from Bolivia, Brazil, Colombia, and Peru

Pilar Morales-Giner [1 a]

Martina Laura Speranza [a]

Marliz Arteaga [a]

Andrea Baudoin Farah [b]

Sinomar Ferreira da Fonseca Junior [a]

Angélica García Villacorta [a]

Pamela Montero Álvarez [c]

Martha Rosero Peña [a]

Stephen G. Perz [a]

[a] University of Florida, USA

[b] Colorado State University, USA

[c] The School for Field Studies, USA

Abstract

There is an extensive literature on environmental governance, which refers to multi-stakeholder processes to arrive at collective decisions about how natural resources will be managed. Recent work on environmental governance has focused on outcomes in terms of social-environmental sustainability. However, questions remain about the effectiveness of environmental governance in practice for yielding sustainable social or environmental outcomes. In cases where environmental governance processes prove ineffective, political

---

[1] Dr. Pilar Morales-Giner, Martina Laura Speranza, and Prof. Stephen G. Perz, Department of Sociology and Criminology and Law, University of Florida, United States. Email: pmorgin@ufl.edu, martinasperanza@ufl.edu, sperz@ufl.edu. Marliz Arteaga, Sinomar Ferreira da Fonseca Junior, and Dr. Angélica García Villacorta, School of Natural Resources and the Environment, University of Florida, United States and Center for Latin American Studies and Tropical Conservation and Development Program, University of Florida, United States. Email: marliz@ufl.edu, sinjunior@ufl.edu, pamela.monteroal@ufl.edu, angiegarciav8@gmail.com. Dr. Martha Rosero Peña, Conservation International & Center for Latin American Studies, UF. Email: mcrosero@ufl.edu. Dr. Andrea Baudoin Farah, Assistant Professor, Ecosystem Science and Sustainability Department, Warner College of Natural Resources, Colorado State University, United States. Email: Andrea.Baudoin_Farah@colostate.edu. Dr. Pamela Montero, the School for Field Studies, United States. Email: pamela.montero@fieldstudies.org. Acknowledgments: Tropical Conservation and Development Program (TCD) at UF. Portions of the research for the upper Madera, southern Amazonas-northern Rondonia, and Colombia cases were supported by the Gordon and Betty Moore Foundation (Grant #7715). Gabriel Cardoso Carrero and Eduardo Bongiolo created the map that shows the location of the five case studies. We would also like to thank two referees for their suggestions on this article.

ecology offers analytical approaches involving explanations that can account for unsustainable outcomes. In addition, an emergent literature on environmental governance provides frameworks to evaluate its effectiveness by unpacking it with regard to diverse criteria. These two literatures together permit analysis of how political ecology and other potential explanations can account for ineffective environmental governance in terms of specific unmet criteria. Analysis of ineffective environmental governance is likely to be especially valuable in a comparative perspective, in which multi-case studies can reveal the extent to which political ecology explanations predominate across cases. We focus on the Amazon, a large region with high social and biological diversity and where competing stakeholders engage in conflict over governance of natural resources. We pursue a comparative analysis of five cases where environmental governance has been ineffective in terms of sustainable outcomes. In each case, we identified five key explanations for ineffective environmental governance. We then coded those explanations with regard to whether they invoke issues highlighted by political ecology. We also coded them considering environmental governance evaluation frameworks to identify the unmet criteria for environmental governance to be effective. We then pursued a comparative analysis of similarities and differences across the cases. The findings indicate that political ecology issues are predominant among explanations for ineffective environmental governance across all five cases. The results also reveal which environmental governance evaluation criteria are most often unmet among the cases. The findings highlight the importance of political ecology for understanding ineffective environmental governance, and permit delineation of specific criteria for effective environmental governance that can be the focus of strategies to improve environmental governance for sustainability.
Keywords: governance, political ecology, sustainability, environment, conservation, development, indigenous, Amazon

Résumé

Il existe une littérature abondante sur la gouvernance environnementale, qui fait référence aux processus multipartites pour arriver à des décisions collectives sur la façon dont les ressources naturelles seront gérées. Des travaux récents se sont concentrés sur la durabilité socio-environnementale. Cependant, dans la pratique, la gouvernance environnementale ne donne pas toujours des résultats durables. L'écologie politique offre une approche analytique pour comprendre pourquoi. Une littérature émergente sur la gouvernance environnementale évalue également son efficacité. Ces deux littératures permettent d'analyser les critères spécifiques non satisfaits de la bonne gouvernance environnementale. L'analyse de la gouvernance environnementale inefficace est susceptible d'être particulièrement utile dans une perspective comparative, dans laquelle des études multi-cas peuvent révéler dans quelle mesure les explications de la gouvernance environnementale prédominent d'un cas à l'autre. Nous nous concentrons sur l'Amazonie, une grande région à forte diversité sociale et biologique, où des parties prenantes concurrentes s'affrontent pour la gouvernance des ressources naturelles. Nous proposons une analyse comparative de cinq cas où la gouvernance environnementale s'est avérée inefficace. Dans chaque cas, nous avons identifié cinq explications clés et les avons codées en fonction des questions invoquées par les écologistes politiques et les cadres d'évaluation de la gouvernance environnementale. Nous avons ensuite procédé à une analyse comparative des similitudes et des différences entre les cas. Les résultats montrent que les questions d'écologie politique sont prédominantes parmi les explications de l'inefficacité de la gouvernance environnementale dans les cinq cas. Les résultats révèlent également quels critères d'évaluation des gouvernance environnementale ne sont pas respectés. L'article souligne l'importance de l'écologie politique pour comprendre la gouvernance environnementale inefficace et permet de définir des critères spécifiques pour l'améliorer.
Mots-clés: gouvernance, écologie politique, durabilité, environnement, conservation, développement, indigènes, Amazonie

Resumen

Existe una gran cantidad de literatura sobre gobernanza ambiental, que refiere a procesos de decisiones colectivas de múltiples partes interesadas sobre cómo gestionar recursos naturales. Estudios recientes sobre gobernanza ambiental se han centrado en los resultados en términos de sostenibilidad socioambiental. Sin embargo, quedan dudas sobre la efectividad de la gobernanza ambiental en la práctica para producir resultados sociales o ambientales sostenibles. En los casos en que los procesos de gobernanza ambiental resultan ineficaces, la ecología política ofrece enfoques analíticos que involucran explicaciones que pueden dar cuenta de resultados que no son sostenibles. Además, literatura emergente sobre gobernanza ambiental proporciona marcos para evaluar su efectividad a través de desglosar la gobernanza ambiental en términos de diversos criterios. Estas dos literaturas juntas permiten el análisis de cómo la ecología política y otras posibles

explicaciones pueden dar cuenta de la ineficacia de la gobernanza ambiental respecto a criterios específicos no alcanzados. Consideramos que el análisis de la ineficacia de la gobernanza ambiental puede ser especialmente valioso en una perspectiva comparativa, en la que los estudios de casos múltiples pueden revelar hasta qué punto predominan las explicaciones de la ecología política en todos los casos. En este estudio nos enfocamos en la Amazonía, una región con una alta diversidad social y biológica en donde partes interesadas se involucran en conflictos por la gobernanza de recursos naturales. Realizamos un análisis comparativo de cinco casos en los que gobernanza ambiental ha sido ineficaz en términos de resultados sostenibles. En cada caso, identificamos cinco explicaciones clave sobre la ineficacia de la gobernanza ambiental. Luego codificamos esas explicaciones en términos de si invocan problemas identificados por la ecología política. También los codificamos aplicando marcos de evaluación de la gobernanza ambiental para identificar los criterios no cumplidos. Luego, realizamos un análisis comparativo de similitudes y diferencias entre los casos. Los hallazgos indican que los problemas identificados por marcos teóricos de ecología política son predominantes entre las explicaciones donde la gobernanza ambiental es ineficaz. Los resultados también revelan qué criterios de evaluación de la gobernanza ambiental no se cumplen con mayor frecuencia entre los casos. Los hallazgos resaltan la importancia de la ecología política para comprender la ineficacia de la gobernanza ambiental y permiten la delineación de criterios específicos para la gobernanza ambiental efectiva y para mejorar la gobernanza ambiental para la sustentabilidad.
Palabras clave: gobernanza, ecología política, sustentabilidad, medio ambiente, conservación, desarrollo, indígena, Amazonía

1. Introduction

Environmental governance broadly refers to multi-stakeholder processes to arrive at collective decisions about how natural resources will be managed (e.g., Lemos & Agrawal 2006; Bridge & Perrault 2009; Evans 2012). Much of the literature on environmental governance has focused on the stakeholders involved, the role of the state, processes of deliberation, and how key decisions are made (e.g. Newig & Fritsch 2009; Emerson, *et al.* 2012; Holly, *et al.* 2012; Brondizio & Le Tourneau 2016). Such work has however begged questions about the effectiveness of multi-stakeholder processes, notably with regard to outcomes of environmental governance. A recent statement by Agrawal *et al*. (2022) has called for a pivot in work on environmental governance from an emphasis on process, to "governance for sustainability." By invoking sustainability as a general goal of environmental governance, attention centers upon the conditions surrounding the strategies of stakeholders that can help explain social-environmental outcomes.

The focus on environmental governance for sustainability raises questions about explanations for cases where multi-stakeholder efforts prove ineffective. Political ecology offers various explanations for cases of ineffective environmental governance, generally highlighting issues of power, inequalities and conflicts among stakeholders with differing interests. Political ecology calls attention to social injustices and asymmetric power relations that may block or inhibit such outcomes, with a particular focus on the political economy and its scalar impacts on particular places (e.g., Blaikie 1999; Bryant & Bailey 1997; Robbins 2020). Hence while environmental governance processes may be laudable for stakeholders seeking sustainability, political ecology offers a suite of explanations for why environmental governance proves ineffective for achieving it.

At the same time, a recent literature has emerged on frameworks for the evaluation of the effectiveness of environmental governance (e.g., Morales-Giner *et al.* 2021). Such frameworks typically specify lists of conditions and practices as criteria that must be met if environmental governance is to be considered effective. If political ecology offers the potential to explain cases where environmental governance is ineffective, evaluation frameworks can identify how such explanations may correspond to requisite criteria for environmental governance that have been violated. In turn, identifying which criteria for environmental governance were violated can permit adoption of particular strategies to meet those criteria and thereby improve the prospects for effective environmental governance.

A multi-case approach can evaluate political ecology explanations and unmet environmental governance criteria. It permits comparisons to see which explanations tend to prevail across cases. Political ecology often highlights the importance of context-specificity. We are interested in the extent to which political ecology explanations may predominate among various explanations, both for a particular case and across several cases. Here it is important to recognize that the issues political ecologists study may arise along with

other explanations. This makes a comparative approach especially useful for evaluating the relative predominance of political ecology variables in explanations across cases.

With regard to evaluating the effectiveness of environmental governance, recent work has yielded a variety of different frameworks. Whereas each evaluation framework has its strengths and limitations (Morales-Giner *et al.* 2021), together they offer an opportunity to arrive at a single integrated framework that can be applied to multiple cases. In a multi-case comparative approach, a common framework offers the advantage of identifying the criteria for environmental governance more often violated. That in turn can inform policy and planning efforts focusing on criteria known to be more commonly unmet.

We pursue a comparative analysis of the importance of political ecology explanations for ineffective environmental governance across multiple cases in the Amazon basin. The Amazon basin is an environmentally important region of the world where states, private economic interests, and community stakeholders wield unequal power and have historically engaged in political contestation over the political ecology of resource management (e.g., Schmink & Wood, 1992; Simmons *et al*., 2007). The contemporary Amazon remains a region where sustainability is hard to achieve in the face of power inequalities and political conflicts (e.g., Ezzine-de-Blas *et al*., 2011; Fisher *et al*., 2020; Perz *et al*., 2008).

We begin by reviewing traditions in political ecology and adopt an actor-oriented approach that highlights diverse stakeholders. We then focus on Latin American political ecology and discuss specific explanations that it offers. The article turns to evaluation of the effectiveness of environmental governance, focusing on recent frameworks and their differences. We then turn to our methodological discussion. There, we propose a common evaluation framework that integrates criteria from multiple sources. We then discuss our comparative approach, and introduce five Amazonian study cases, focusing on the social-environmental goals of key stakeholders seeking sustainability. We then pursue a multi-step analysis to understand why environmental governance was ineffective using an inductive approach, in which an expert familiar with a study case identified five key explanations for lack of a sustainable outcome. The second step was for the team to do a deductive analysis involving coding to interpret whether the explanations identified involve political ecology issues such as power inequalities and political contention. That allowed case-specific analysis of the predominance of political ecology among the explanations identified.

In a third step, for each explanation, we applied the environmental governance evaluation framework to identify criteria that were violated. That afforded case-specific analysis of how often specific criteria went unmet. Fourth and finally, we pursued a comparative analysis of the political ecology explanations and the unmet environmental governance criteria across the five cases. This permitted a broader appraisal of the political ecology explanations which predominate across the five cases, showing that those explanations correspond to numerous violations of requisite criteria for environmental governance. The comparisons also showed that certain environmental governance criteria were violated more often than others, again varying across cases.

The article concludes with a discussion of implications for political ecology and environmental governance in the Amazon, and the importance of political ecology criteria when evaluating the sustainability of environmental governance.

2. Background

Perspectives in political ecology and environmental governance

Political ecology critically analyzes the significance of power and political inequalities in production systems, knowledge, discourse, and collective action as they influence social conflicts that may lead to environmental conservation or degradation (Adams & Hutton, 2007; Neumann, 2009; Robbins, 2012). Consequently, political ecology encompasses a range of theoretical arguments and methodological traditions as well as topical foci. In one typology presented by Bryant and Bailey (1997: 24), an actor-oriented approach is used to understand environmental conflicts as an outcome of the interaction between different stakeholders with competing interests and goals. They observe that this approach calls particular attention to the roles of unequal stakeholders who often engage in political contention. An actor-oriented approach also recognizes that

different actors operate at different scales. Local communities, regional organizations, national governments, and trans-national corporations may cooperate or contest one another in conflicts over environmental questions.

The actor-oriented approach in political ecology resonates with certain definitions of environmental governance, for example Lemos & Agrawal (2006) who highlight multi-stakeholder processes related to collective decisions about managing natural resources. As they note, environmental governance refers to a "set of regulatory processes, mechanisms, and organizations through which political actors influence environmental actions and outcomes" (Lemos & Agrawal 2006: 298). In this shared focus on stakeholders, political ecology underscores the challenges of power inequalities that arise in multi-stakeholder processes in environmental governance (e.g., Adger, Brown, & Tompkins, 2005; Baud *et al.*, 2011; Newell, 2008; Wyborn, 2015). Whereas environmental governance tends to highlight diversity among stakeholders as engendering complementary contributions to support better governance outcomes, political ecology studies argue power inequalities among stakeholders as potentially undermining sustainability. Actor-oriented perspectives in political ecology thus offer a political approach to explaining the outcomes of multi-stakeholder governance (Armitage *et al*., 2012; Emerson, Nabatchi, & Balogh, 2012; Perz *et al.*, 2008; Reed & Bruyneel, 2010).

Both approaches highlight multi-scale processes. If multi-stakeholder approaches in environmental governance have driven cross-scale strategies to improve environmental outcomes, actor-oriented political ecology highlights how power inequalities may map onto the scales where political actors with larger-scale ambits of operation can exert more influence (Bixler *et al.*, 2016; Bulkeley, 2005; Perz *et al.*, 2008). Whereas multi-scale environmental governance holds out the prospect for crossing scales to improve environmental outcomes, actor-oriented political ecology understands scale in terms of power inequalities that impede sustainability.

Latin American political ecology and explanations for sustainability outcomes

Research that adopts the actor-oriented approach to political ecology has documented power inequalities as explanations for environmental conflicts and sustainability outcomes (e.g., Adkin, 2016; Ahlborg & Nightingale, 2018; Bebbington, 2012; Dunlap & Sullivan, 2020; McCreay & Lamb, 2014; Osborne, 2015). However, the details of how power inequalities among stakeholders lead to specific outcomes vary among contexts. Because we take up study cases in the Amazon in this article, we focus our discussion of political ecology explanations on the contributions of Latin American scholars. Latin American political ecology has often highlighted actor-oriented approaches and has offered multiple explanations for environmental conflicts as related to unsustainable social and environmental outcomes. We review it in this section.

One body of work in Latin American political ecology highlights neocolonialism, the persistent dependence of state development policy on supporting the activities of transnational enterprises on lands claimed by indigenous and other traditional peoples (e.g., Alimonda *et al.*, 2017; Leff, 2015; Machado Araoz, 2015; Palacios, 2006). It highlights the exploitative actions of the state and/or foreign stakeholders from outside the lands being exploited or degraded. Such exploitative action denies previous claims to territory and natural resources and results in conflicts and unsustainable use. Conversely, the liberating potential of decolonization and recognizing the value of indigenous worldviews and longstanding cultural practices are viewed as key to achieving environmental sustainability and social justice (e.g., Escobar, 2018; Leff, 2015; Toledo & Barrera-Bassols, 2008; Torres & Verschoor, 2020).

Neo-extractivism involves extraction of raw materials for export, justified by the rents generated for the state, which are then used to fund popular social benefits programs. Scholars argue that it creates burdens for the impacted communities in extractive sites suffering extensive environmental damage and negative health outcomes. Economic globalization and regional integration catalyze resource extraction, but at a cost. Such work specifically highlights state policies that involve resource appropriation for specifically extractive activities, particularly mining (e.g., Arias Hurtado, 2017; Barzola & Baroni, 2018; Gudynas, 2010; Svampa, 2015).

A third point of emphasis in Latin American political ecology is state authoritarianism with regard to planning for development projects. There is routine exclusion or justification of the oppression of local peoples, predominantly indigenous and other traditional groups (e.g., Porto-Gonçalves, 2012; Romero & Sasso, 2014).

The planning of infrastructure and other development projects is often conducted in a top-down fashion, even where stakeholder participation and consultations are legally required in the design and licensing stages. Social exclusion occurs when "participation" in planning processes is just the provision of information by the state, rather than real solicitation of stakeholder input. State aggression can also occur when state security forces use violence or threats to oppress subaltern groups, notably when they protest. State authoritarianism underlies oppressive actions, which permit the imposition of development projects on local peoples without their consent and often over their objections.

Research in this field highlights political corruption as an explanation for conflicts among stakeholders over the implementation of large-scale development projects (e.g., Alimonda, 2011; Castro *et al*., 2017). The corrupt actions of powerful stakeholders help to explain why projects of dubious economic value and questionable social and environmental consequences proceed, even when outright state oppression is not involved. Instead, states, banks and corporations may illegally collude in sophisticated ways to suspend feasibility studies or evaluations of environmental impact, declare 'states of emergency', or otherwise skip deliberative processes. Whether via state-corporate clientelism or outright state capture, political corruption is a key theme in Latin American political ecology used to explain environmental conflicts and unsustainable outcomes.

A final theme worth noting in Latin American political ecology concerns the diverse tactical repertoires of subaltern stakeholders (e.g., Alimonda *et al*., 2017, Escobar, 1998). They may pursue a wide range of resistance tactics in the face of neocolonial enterprises, neo-extractive activities, authoritarian states, and corrupt development interests. Case studies, including those cited above, illustrate a range of tactics including direct action (marches, roadblocks, etc.), communication strategies (including online as via social media), public referenda (e.g. referendums against mining projects), and legal strategies (such as lawsuits to obtain legally required consent). Whereas much of the Latin American political ecology literature critiques the actions of powerful stakeholders that cause environmental conflicts, work on subaltern tactical repertoires highlights strategies to seek more sustainable outcomes.

Political ecology, including Latin American political ecology, offers a variety of explanations for unsustainable outcomes, but there are some notable limitations. One issue is that political ecology studies are often ethnographically oriented, generally focusing on a single case or a particular context. While this allows great depth of understanding, it cannot identify broader patterns and insights unless these appear as the research looks 'outward and upward' to higher order processes. In that regard, it is useful to pursue multi-case approaches in political ecology research that permit comparison among cases and allowing broader inferences. There are some examples in the political ecology literature (e.g., Bixler, *et al*. 2015), and they usefully complement more context-specific single-case studies.

Frameworks for evaluation of Environmental Governance

The political ecology literature and its detailed case studies can be used to explain the sustainability outcomes of environmental governance efforts. But there is also an environmental governance literature that offers frameworks to empirically evaluate its effectiveness in practice. Rather than using theoretical insights about effective governance (cf. Partelow, *et al*. 2020), the evaluation literature has sought to recognize criteria for environmental governance in different evaluation frameworks. Some of this work comes from international institutions who have developed lists of detailed criteria and requisites to be met for environmental governance to be effective (UNDP, 2014; World Bank, 2020). The assumption behind them is simply that the criteria must be met to reach effectiveness. Unmet criteria may be analyzed in more depth, and related to the drivers of transformation or change identified by political ecologists.

Here we select and discuss three publications on environmental governance evaluation frameworks that offer listings of criteria: Waddington, *et al*. (2019), Vizeu Pinheiro, *et al*. (2020) and Bennett and Satterfield (2018). We picked these three because they are recent and build on earlier proposals, they focus on environmental issues in governance, and they were constructed with developing countries in mind. In addition, they incorporate multiple evaluation criteria, traversing theoretical perspectives.

Waddington *et al*. (2019)

These authors provide an extensive review of governance literature regarding citizen engagement in the provision of public services in low- and middle-income countries. Drawing from the World Bank (2017) and USAID (2016), they present the "PITA" framework, which features four key concepts: participation, inclusion, transparency, and accountability. The authors argue that all four PITA mechanisms are required for effective governance. They operationalize "participation" in terms of citizen input in designing and implementing projects to provide public services. Regarding "inclusion", governance processes should focus on strategies to promote opportunities for participation by marginalized or vulnerable groups. For "transparency", the authors assert that governance processes should involve broad public disclosures of information about the design, planning, and implementation of available services. Finally, to advance "accountability", the authors argue that governance processes should include monitoring and reporting mechanisms to actively hold the state and other participants responsible for their decisions.

The PITA framework has some notable advantages. It is based on a widely used definition of governance promulgated by the World Bank, and its four components are commonly enunciated requirements for effective governance. Another advantage of PITA is that it provides a parsimonious framework. It makes explicit reference to diverse stakeholders, including state actors (government and administrative institutions) and non-state actors (civil society organizations and citizens).

PITA does, however, have some limitations. One is that its parsimonious formulation can be seen as too limited, as other frameworks are much more detailed. Another is that governance processes are subject to power inequalities among stakeholders. Even though PITA recognizes the importance of inclusion of marginalized groups, that does not by itself guarantee that their disadvantages vis-à-vis powerful groups will be accounted for. PITA can also be seen as limited, because it focuses on features of governance as a process rather than outcomes like sustainability.

Vizeu Pinheiro *et al*. (2020)

A second framework for evaluating the effectiveness of environmental governance comes from the Inter-American Development Bank and the World Justice Project (Vizeu Pinheiro *et al*., 2020), which produced the "Environmental Governance Index" (EGI). Vizeu Pinheiro *et al*. (2020) drew from the United Nations Environmental Program approach to "rule of law", which in turn derives from the principles of rule of law at the Rio+20 Declaration on Justice, Governance and Law for Environmental Sustainability. The EGI encompasses 11 items for the evaluation of environmental governance. However, many of the EGI's items are actually related to economic sectors relevant to natural resource management (e.g., mining, watersheds, agriculture, etc.) rather than criteria for environmental governance *per se*. That said, the first four elements of the EGI, under the pillar of "environmental rule of law", are eminently relevant to an evaluation of environmental governance: 1) "regulation and enforcement", 2) "civic engagement", 3) "fundamental environmental and social rights", and 4) "access to and quality of justice." Each of these components has sub-elements: regulation and enforcement include "clear and appropriate institutional mandates", "effective coordination across institutions", "institutional capacity of environmental authorities", and "institutional transparency and accountability"; civic engagement includes "access to information" and "public participation"; fundamental environmental and social rights includes "right to freedom of association, expression and assembly" and "rights of environmental defenders are effectively guaranteed"; and access to and quality of justice includes "access to fair and timely dispute resolution" and "effective judicial remedies and enforcement."

The EGI framework features criteria focused on universal rights, and it was designed to permit comparisons across cases. Because it pays particular attention to issues of rights and justice, the EGI is well-suited to recognize power inequalities as threats to effective governance of the environment. Limitations include the many sub-items in the EGI, making some distinctions hard to keep clear for the purposes of interpretation in specific contexts, such as the sub-elements concerning access to and quality of justice. Further, the EGI takes a formal perspective on environmental governance, largely focusing on state agencies and

limiting civic engagement to one dimension. This may reflect its conceptualization at the national scale, making it more challenging to interpret environmental governance effectiveness at other scales.

Bennett and Satterfield (2018)

These authors conducted a literature review about the elements of good environmental governance until they reached thematic saturation. They tend to rely on multi-stakeholder approaches to environmental governance (e.g. Armitage *et al*., 2012; Boyd *et al*., 2015; Lockwood, 2010; Wyborn, 2015). They developed a broad evaluation framework around four main objectives. These are 1) effectiveness, which "supports the maintenance of system integrity and functioning"; 2) equity, which encourages "inclusive processes and produces fair outcomes"; 3) responsiveness, which "enables adaptation to diverse contexts and changing conditions"; and 4) robustness, which "ensures that functioning institutions persist, maintains performance, and copes with perturbations and crises" (Bennett and Satterfield, 2018: 7). Each objective has multiple attributes. Effectiveness includes "direction", "coordination", "capacity", "informed", "accountable", and "efficient"; equitable includes "recognition", "participation", "fair", and "just"; responsive includes "learning", "anticipatory", "adaptive", "innovative", and "flexible"; and robust includes "legitimate", "connected", "nested" and "polycentric." The authors maintain that the framework should be adapted to the context in which it is applied. However, the authors emphasize the importance of addressing all four objectives in any evaluation of environmental governance.

This framework's major strength is that it includes numerous indicators to permit a thorough evaluation of environmental governance. Another strength is that the authors have included not only different aspects of environmental governance processes but also outcomes. However, the framework presented by Bennett and Satterfield focuses on objectives and attributes at the level of the system, which moves attention away from specific stakeholders. In addition, this framework does not clearly anticipate scale issues, such as the need to recognize differences in complexity if the system is local or global. A third critique is that the numerous elements of the framework make it harder to sustain distinctions among terms like "fair" and "just", or "informed" and "learning", or "adaptive" and "flexible."

The strengths and weaknesses of these evaluation frameworks are in many instances complementary. While the first is more parsimonious, the second and third are more detailed. In addition, each includes evaluation criteria that do not appear in one or more of the other sources. This opens the possibility of drawing on these three frameworks to construct an integrated framework for evaluating environmental governance.

3. Methods

To address the question of the importance of political ecology explanations for cases of ineffective environmental governance in terms of sustainability, we pursued a multi-case comparative analysis. To that end, our methods included several steps. First, we worked with the three frameworks for evaluation of environmental governance to arrive at an integrative framework. That allowed for incorporation of insights from extant publications in a single framework that could then be applied to multiple cases to permit comparisons. Second, we focused on the Amazon and identified study cases where there is contention over resource management issues among diverse stakeholders, including those with goals for environmental governance that prioritize outcomes in terms of social and environmental sustainability.

While our original intent was to explain effectiveness, we found that environmental governance was ineffective in every case with unsustainable outcomes, because they ran contrary to stakeholder goals. We thus shifted our research focus to explaining the lack of effectiveness. Third, an expert for each study case identified five key explanations for why environmental governance was not effective. The case study experts drew on diverse data sources including field observations, stakeholder interviews, workshops, and governmental and other documents. Fourth, the expert and other team members coded those explanations to interpret whether they invoked political ecology explanations for ineffective environmental governance. We used multiple coders to manage subjectivities in interpretation, and went with the majority opinion. This permitted analysis of the prevalence of political ecology explanations among all explanations. Fifth, the study case expert and other team

members also coded each explanation in light of the environmental governance evaluation framework to identify unmet criteria for effective environmental governance. This related explanations, including political ecology explanations, to criteria for environmental governance that were violated. Finally, we made comparisons across the five cases to see how prevalent political ecology explanations were overall and to identify the environmental governance criteria most often violated. We also analyzed differences in political ecology explanations and unmet environmental governance criteria.

An integrated framework for evaluating the effectiveness of environmental governance

We drew on frameworks for evaluation of environmental governance in Waddington, *et al*. (2019), Vizeu Pinheiro, *et al*. (2020), and Bennett and Satterfield (2018). We first pursued a conceptual analysis of those three frameworks to derive a single list of criteria for evaluating environmental governance. In Morales-Giner *et al.* (2021), we detail the steps that we took to conduct the conceptual analysis that resulted in a list of criteria for evaluating environmental governance. Briefly, we first listed all of the environmental governance criteria from each of the three sources in a common table. We then conducted a conceptual review to identify where criteria in different sources had the same or highly similar definitions. This in turn permitted identification of other criteria that differed or had highly distinct definitions among sources. There were also some cases, as noted in Bennett and Satterfield (2018), where different criteria seemed very similar. From those similarities and contrasts, we were able to integrate elements of the three frameworks to derive a single set of criteria for evaluating environmental governance.

Amazonian study cases

We focus on five study cases in the Amazon (see Figure 1):

1) the TIPNIS area in central Bolivia,
2) the Upper Madera watershed at the frontier between northern Bolivia and southwestern Brazil,
3) the BR-319 highway corridor in southern Amazonas and northern Rondonia in southwestern Brazil,
4) the Colombian Amazon, and
5) Madre de Dios in southeastern Peru.

We selected these cases based on deep knowledge about each by at least one of the co-authors of this article. We also selected these cases for reasons tied to the evaluation of environmental governance. In each case, one finds watersheds or landscapes with various types of legal frameworks concerning their management, diverse stakeholders with competing interests and goals concerning the use of natural resources, and complex processes in efforts to realize environmental governance. Of particular importance is that in each case, efforts to achieve environmental governance have fallen short in terms of the stated goals of stakeholders seeking social-environmental sustainability. This key similarity provides a basis for making comparisons about explanations for ineffective environmental governance.

That said, each study case has context-specific details. The particular resource management questions vary among cases. Some concern management of fisheries in watersheds (the Upper Madera), while others involve autonomy of local peoples to manage their lands (TIPNIS, southwestern Brazil, Colombia, Madre de Dios). The array of stakeholders, including those who prioritize social-environmental sustainability, is also context-specific. Some cases feature indigenous peoples (TIPNIS, southwestern Brazil, Colombia) while others highlight other traditional peoples (Upper Madera, Madre de Dios). In some cases, conservation organizations are key collaborators of local communities (Upper Madera, southwestern Brazil, Colombia). The specific threat to sustainability differs among the cases. In some instances, sustainability is threatened by increased extractive activities (e.g., TIPNIS, Colombia, Madre de Dios), but others involve large-scale infrastructure projects (e.g.,

Upper Madera, southwestern Brazil). The variability among cases offers opportunities for comparisons to identify similarities and differences in explanations for ineffective environmental governance.

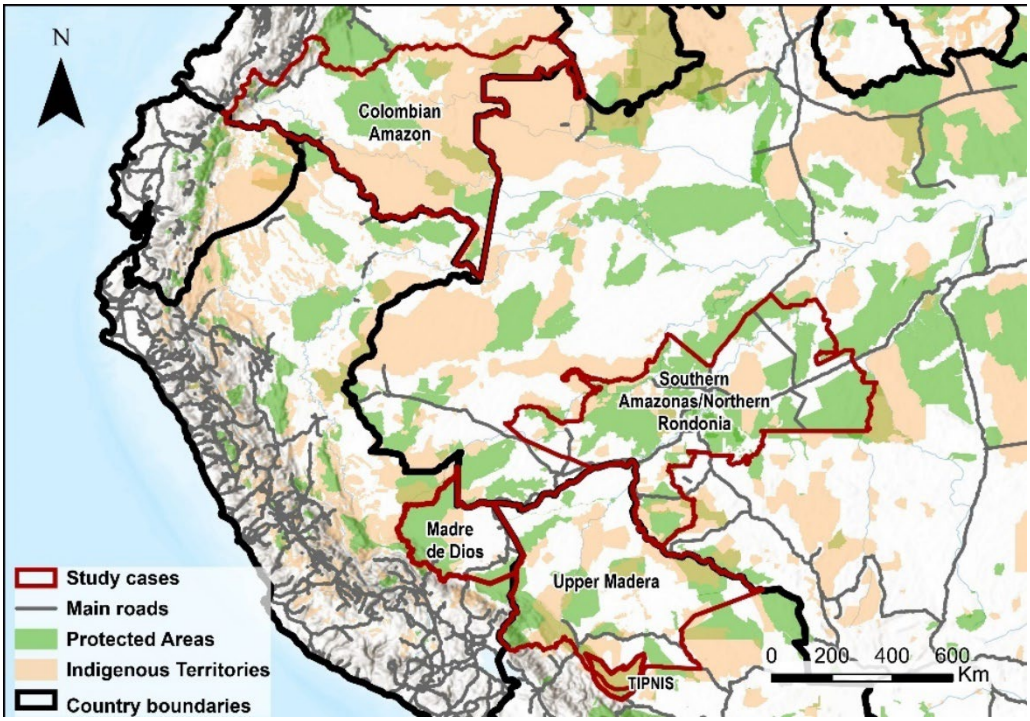

Figure 1: Five case studies in the Amazonian portions of Bolivia, Brazil, Colombia and Peru.

Identification of explanations for ineffective environmental governance

For each case, the study case expert first identified explanations for ineffective environmental governance in terms of outcomes that ran contrary to goals stated by stakeholders seeking sustainability. Each expert is a co-author with deep knowledge of their case, having conducted their PhD dissertation on environmental governance in the area. Experts had conducted extensive fieldwork using diverse methods, which permitted identification of key stakeholders and contentious resource management issues. Most case studies are based on a combination of participant observation (through community visits, attending public hearings, etc.), various types of interviews (surveys with questionnaires, key informant interviews, oral histories, etc.), and review of documentary sources (government documents, media reporting, NGO reports, etc.). Experts employed triangulation among those sources to support their identification of explanations for ineffective environmental governance. For analytical tractability, we constrained this step in the analysis to have experts identify what they considered to be the five most important explanations for ineffective environmental governance. While we recognize that limiting the number of explanations may miss some factors, it was necessary to manage the depth of analysis in each case, along with breadth of analysis across cases for comparisons.

We emphasize that the experts were not guided or otherwise oriented to select explanations of any particular theoretical perspective. In that regard, identification of explanations was an inductive exercise based on available data sources. Put another way, identification of explanations did not *a priori* privilege political ecology explanations per se. Identification of explanations was thus theoretically open, which affords analysis of the question of whether political ecology explanations would in fact predominate.

Coding of political ecology issues in explanations

We then coded the explanations for each study case in terms of whether they could be interpreted as invoking issues featured in political ecology. These political ecology explanations included issues pertaining to unequal power relations among stakeholders (often involving the state), state policies that prioritized unsustainable resource extraction (especially for export), state authoritarianism, state corruption, cross-scale processes that were top-down or imposed by powerful stakeholders, conflicts among stakeholders (including violence), neocolonialism (including lack of recognition of non-western worldviews) and similar topics featured in Latin American and other political ecology studies. Examples of "other" explanations included cultural explanations (group beliefs and practices), institutional explanations (bureaucracy, insufficient capacity), logistical issues (communication, coordination), and ecological processes (biophysical dynamics, extreme events).

For each case, three co-authors conducted the coding: a co-author who works in the Amazon and was familiar with the case and the political ecology literature, a co-author who does not work in the Amazon but is familiar with Latin American political ecology explanations, and a co-author more generally familiar with the political ecology literature. This combination of coders encompassed a range of familiarity about the case and the political ecology and Latin American political ecology literatures. That provided a means of managing subjectivities and thereby ensuring validity in interpretations of explanations in terms of political ecology. At the same time, including codes from the same people (for two of the three coders) across all the cases helped ensure a degree of reliability to support comparisons among cases.

In turn, use of multiple coders permitted checks in the reliability and validity of the coding. Specifically, we evaluated the level of agreement among coders. We calculated agreement between the three coders for each of the five explanations for each of the five study cases, or 25 coding decisions. The level of agreement was high, ranging from 96% to 100%, and averaging 97%. Where there was disagreement, we report the coding decisions of the majority.

For the analysis of political ecology codes, we then turned from the qualitative interpretive approach to a more quantitative assessment. For each case, we summed the number of political ecology explanations relative to the five explanations. This permitted analysis of the prevalence of political ecology among the explanations.

Coding of criteria for evaluating the effectiveness of environmental governance

Having identified political ecology explanations in each of the study cases, we then applied the integrated evaluation framework to interpret the five explanations in terms of the criteria for environmental governance. We therefore coded each explanation for ineffective environmental governance, in terms of the criteria that were unmet. We coded explanations by determining if the actions of the key stakeholders, notably the state, encouraged, supported, impeded or prevented achievement of each criterion. During coding, we looked for ways in which explanations related to specific aspects of environmental governance processes and their implications for sustainability outcomes. In coding explanations for unmet criteria in the environmental governance evaluation framework, we paid particular attention to specific stakeholders, notably the state and other powerful actors like corporations for their roles in the key planning processes that resulted in ineffective environmental governance. We also drew on field data to note outcomes of strategies by local peoples, as well as their roles in key decisions, especially those that negatively affected them.

In the coding process, we explicitly allowed for the possibility that a given explanation could violate multiple aspects of good environmental governance. If an explanation found state authoritarianism, for example, this could mean environmental governance conditions like accountability, coordination, multi-level collaboration, inclusion, justice/rights, and participation were not met. Similarly, a lack of state enforcement capacity implied other violations of environmental governance criteria, such as access to information, capacity, direction or mandate, and transparency.

To manage subjectivities about what might count as encouraging or impeding achievement of the criteria for good environmental governance, three team members coded the explanations for each case: the expert, who had deep knowledge about the vagaries of the environmental governance efforts in their study

case, a co-author who works in the Amazon and was generally familiar with the study case, and a co-author who does not work in the Amazon. This ensemble of coders encompassed a range of perspectives from deep knowledge of the case to outside perspectives, but all three coders participated in creation of the integrated environmental governance evaluation framework, so there was a shared understanding of the criteria. The coding process thus took account of diverse perspectives on the explanations to manage potential sources of interpretive bias and thereby improve validity. At the same time, as with the political ecology coding, including environmental governance coding from the same people (for two of the three coders) across cases helped ensure a degree of reliability to support comparisons.

We then evaluated the level of agreement among coders for the environmental governance criteria. We calculated agreement between the three coders for each case out of 11 criteria by 5 explanations, or 55 coding decisions. Overall, coding agreement was 81%, and ranged from 62% to 93% among different criteria and cases. Where differences in coding occurred, we report the majority codes.

For the analysis of environmental governance codes, as with the political ecology analysis, we moved from the qualitative interpretive approach in the coding to a quantitative assessment. For each case, we summed the number of times a given environmental governance criterion was violated across the five explanations for ineffective environmental governance. On that basis, we could evaluate the relative frequency with which each environmental governance criterion was unmet.

Comparative analysis

In the final step, we pursued a comparative analysis across the five cases, focusing on the different codes associated with explanations. Comparisons among the cases are possible due to the use of multiple coders and the reliability checks that we made for agreement. In particular, comparisons of the unmet environmental governance criteria are feasible due to coding based on a shared evaluation framework.

For the comparative analysis, we summed the number of political ecology and environmental governance codes across cases. This permitted determination of the predominance of political ecology explanations across the five cases. This also allowed different types of comparisons (cf. McMichael 1990; Tilly 1984). We first pursued "inclusive" comparisons, which involve identification of commonalities in explanations across observations. For the political ecology coding, the inclusive comparisons simply involved evaluating whether political ecology comparisons constituted a majority of the explanations in each case. With five explanations for each of five cases, we could evaluate how many explanations out of 25 were coded as 'political ecology issues.' We also examined which specific political ecology explanations tended to be the most commonly invoked, especially if they arose in a majority of the cases. For the environmental governance coding, the inclusive comparisons meant identifying which criteria for effective environmental governance were unmet the most often across the cases. Again, with five explanations for each of five cases, we could identify which environmental governance criteria were unmet most frequently out of 25. To the extent that there are commonalities in political ecology explanations and environmental governance criteria unmet, the inclusive comparisons permit limited generalizations across the cases.

We also conducted "exclusive" comparisons to identify differences in political ecology and environmental governance codes. For the political ecology coding, we looked to see if political ecology explanations were equally prevalent across cases. We also looked for specific political ecology explanations that arose in a minority of the cases. For the environmental governance coding, we used exclusive comparisons to see if criteria were especially important in a minority of cases but not others. The exclusive comparisons thus permit identification of the different ways in which environmental governance may be rendered ineffective, due to different political ecology explanations and by violation of different environmental governance criteria.

4. Findings

Integration of environmental governance evaluation criteria from three frameworks

Governance criteria	**Waddington, *et al*. 2019**	**Vizeu Pinheiro, *et al*. 2020**	**Bennett and Satterfield 2018**
1. Access to information/ knowledge: Stakeholders have gained or can gain access to information		Monitoring, information Access to information	Informed Learning
2. Accountability/ legitimacy: Decision makers may face consequences for their decisions	Accountability	Transparency and accountability	Accountable Legitimate
3. Innovation/ adaptation: The governance process may be revised over time			Anticipatory Adaptive Innovative
4. Capacity: the state and other stakeholders can contribute productively to governance		Capacity	Capacity Efficient
5. Coordination: The state and other stakeholders can communicate and collaborate in the governance process		Coordination	Coordination Connected Nested Polycentric
6. Multi-level: Stakeholders operating on different scales can participate			Flexible
7. Direction/ mandate: Stakeholders have clear goals		Clear institutional mandates	Direction
8. Inclusion: Marginalized stakeholders can participate	Inclusion	Rights to freedoms to (association, etc.)	Recognition
9. Justice/ Rights: The rights of stakeholders are respected, and violations are prosecuted		Rights to freedoms from (violence, etc.) Dispute resolution Enforcement	Fair Just
10. Participation: Stakeholders can provide input that is incorporated into decisions	Participation	Participation	Participation
11. Transparency: The process, inputs and basis for decisions must be made available to stakeholders before they are made	Transparency	Transparency and accountability	

Table 1: Comparison of governance evaluation criteria across three frameworks.

In Table 1, we present the environmental governance criteria from our integrated framework, based on the three source frameworks. The first column presents each criterion and a definition, and the second, third and fourth columns show the corresponding items from Waddington, *et al*. (2019), Vizeu Pinheiro, *et al*. (2020), and Bennett and Satterfield (2018), respectively. While the meanings of the concept behind each criterion are not exactly the same across the sources in every case, we sought to ensure that the meanings differed among the criteria in the integrated framework, based on published frameworks and their distinctions.

Consequently, similar criteria in a given source were placed in the same column in Table 1. Because our integrated framework is a single list that combines the contrasting lists from the three source frameworks, we regard the criteria in the first column as a working though not definitive framework for the evaluation of environmental governance.

The first column of Table 1 thus lists eleven (11) criteria for evaluating environmental governance, derived from the three sources. We organize the resulting criteria alphabetically. We suggest that environmental governance can be evaluated in terms of:

1) access to information/knowledge,
2) accountability/ legitimacy of stakeholders, especially the state,
3) adaptation/innovation in the process of environmental governance,
4) capacity of participating stakeholders, especially the state,
5) coordination among stakeholders in the decision-making process,
6) cross-scale or multi-level articulation of stakeholders,
7) clarity of direction or mandate for stakeholders in governance processes,
8) inclusion of marginalized stakeholders,
9) justice/rights of stakeholders are recognized,
10) stakeholders can participate and thereby provide input that is incorporated into decisions, and
11) transparency concerning the basis for decisions before they are made.

Our basic argument is that if one or more of the criteria in the left column are not satisfied, environmental governance will be less effective in achieving sustainability outcomes. Because the criteria are process-oriented, a more effective environmental governance process will meet the criteria in Table 1.

The list is important because it incorporates contributions from multiple sources and thus offers an integrated framework for evaluating the effectiveness of environmental governance. Our list of criteria for environmental governance provides a common basis for evaluating multiple cases, which in turn permits comparative analysis and thus broader conclusions. Because the list of criteria in column 1 of Table 1 amount to a provisional framework, we return to its limitations and opportunities for improvement in our conclusions.

Case studies of ineffective environmental governance: The role of political ecology and environmental governance criteria

Having presented the integrated framework for evaluation of environmental governance criteria, we introduce our five Amazonian study cases. For each, we introduce the case and its key environmental governance issue, along with the key stakeholders, highlighting those with goals that feature social-environmental sustainability. We then briefly recount the recent history of environmental governance efforts in the case, focusing on the decade of the 2010s. The accounts feature how environmental governance was ineffective: outcomes did not match the sustainability goals of key stakeholders. The discussion then presents five explanations for the unsustainable outcomes that we identified. For each explanation, we report results from our coding of whether the explanation invokes a political ecology issue. We also report findings from our coding of explanations in terms of environmental governance criteria that were unmet. This permits a case-by-case analysis of the prevalence of political ecology issues in explanations for ineffective environmental governance, as well as identification of environmental governance criteria most often violated.

Bolivia: The decline of environmental governance in the TIPNIS Area

The Isiboro Sécure Indigenous Territory and National Park (TIPNIS) is located in the southern portion of the Bolivian Amazon, between the floodable savannas of Moxos and the Andes foothills (Beneria Surkin, 2002; SERNAP, 2002). The TIPNIS covers about one million hectares and is very rich in fisheries, forestry, and biodiversity (Beneria Surkin, 2002). It is collectively owned by three indigenous groups, the Mojeño-Trinitario, Yuracaré, and Chimane. It is co-managed between the National Service of Protected Areas (SERNAP) and the territory's indigenous organization (*Subcentral* TIPNIS), which answers to the assembly of

community leaders (*encuentro de corregidores*), the peak authority in the territory (Lehm, 1999; SERNAP-Subcentral TIPNIS, 2007).

The TIPNIS is a site of contention because indigenous environmental governance is actively being undermined. The TIPNIS is coveted by outside interests including coca growers' unions, cattle ranchers, timber traders, fishers, and oil companies (Baudoin Farah, 2019). The southern border of the territory has been colonized by highland migrants dedicated to growing coca (SERNAP, 2011). Since 2011, long-standing tensions between indigenous peoples, coca growers, cattle ranchers, and the state-crystallized around a conflict over a road project that would bisect the TIPNIS and open a path for colonization of the core protected areas of the park (Rivera Cusicanqui, 2018). The government of President Evo Morales (2006-2019) sought to impose this road as part of its national development strategy (Rivera Cusicanqui, 2018). Illegal fishing and timber extraction are increasing in the territory, as well as wildlife poaching, drug trafficking and agriculture beyond permitted limits (SERNAP, 2011; Baudoin Farah, 2019). A new departmental zoning plan in Beni (*plan de uso de suelo*, or PLUS) was approved in 2019, without indigenous people's input. The new PLUS allows for conversion of 53% of the department to agricultural use (Fundación Tierra, 2019). This situation is likely to lead to further encroachment on indigenous lands, changes in land use, loss of traditional ecological knowledge, and environmental degradation (Paneque-Gálvez, *et al.*, 2018).

For their part, the indigenous people who oppose the road and the new PLUS demand that the state respect their autonomy to govern their territory. In particular, indigenous groups have demanded that the road either not be built or at least be routed around the TIPNIS, thus permitting the preservation of forested lands. Indigenous people consider their governance proposals offer a sustainable pathway, because they seek to protect their lands, livelihoods systems and cultures while fostering new economic opportunities such as ecotourism, wild cacao harvesting, and ranching on natural pastures as sustainable means to improve their quality of life.

Probably the main explanation limiting effective environmental governance in the TIPNIS is the progressive political fracturing among indigenous communities (Paz, 2012). The road question and other political pressures have divided TIPNIS communities against each other over the past decade (Rivera Cusicanqui, 2018; Molina, 2018). Political polarization over the road, and more broadly over development pathways for the TIPNIS, has prevented communities from gathering, deliberating, and making decisions (Baudoin Farah, 2019). In 2017, the TIPNIS *Subcentral* split into two organizations, both claiming representation over the whole territory. Consequently, two assemblies of communal leaders were held in different communities, competing for attendance. The most important space for deliberation thus lost legitimacy and capacity (Baudoin Farah, 2019). The political fragmentation of communities contributes to generating but not resolving overlapping claims, ambiguity about rules, and conflicts. Consequently, fundamental issues like the use of natural resources and planning for sustainable livelihoods have not been widely discussed in recent years (see Albuquerque Moraes, 2018). In particular, management plans are not being implemented and have not been updated since 2002.

Another explanation for ineffective environmental governance is that the relationships of communities with outside stakeholders, including indigenous leaders, have also fragmented. The state, activists and NGOs have been injecting resources into local organizations to either promote or resist the road project, deepening the political divisions in the TIPNIS. The circulation of money in a context of lost legitimacy, polarization, and weakened local institutions has fostered corruption and distrust. In addition, the transparency of indigenous leadership has declined as indigenous leaders, who live in Trinidad (Beni's capital), barely communicate their activities by radio or visit communities anymore (Baudoin Farah, 2019). Political divisions and the decline of transparency lead to a loss of local political legitimacy. Whereas political legitimacy would permit dialogue for environmental governance, divisions have reduced governance capacity in the TIPNIS.

If political divisions among local peoples are the key proximate explanation for the lack of effective environmental governance in the TIPNIS, the underlying explanation for those divisions is also eminently political, because it resides mostly with the Bolivian state. The Morales administration was an indigenist-socialist regime that touted indigenous rights, but it was also highly authoritarian toward indigenous groups

that sought autonomy. It did promulgate the 2009 Constitution, which recognizes comprehensive rights for indigenous peoples, including self-government, autonomy, and self-determination. However, legislation passed since 2010 limited indigenous local governance. The Morales government also pressured indigenous groups to agree to infrastructure projects, hydrocarbon exploration, and the expansion of agriculture in protected areas. Technical personnel in state agencies like the National Institute of Agrarian Reform (INRA), the Forests and Land Authority (ABT) and SERNAP, were replaced with political appointees. These agencies thus acted as branches of the executive, a reduction in the division of powers within the state. The participation of SERNAP in a much-questioned consultation process on the TIPNIS road project in 2012 drastically reduced trust in the institution and weakened co-management in practice (APDHB, n.d.; SomosSur, 2016).

A fourth explanation of ineffective environmental governance is also political, and concerns state violence, coercion, and persecution that have been systematically used to intimidate and coopt indigenous organizations (Rivera Cusicanqui, 2018). Efforts to negotiate or express grievances, like prior consultations, marches, and demands before human rights courts, were blocked or ignored, undermining the effectiveness of environmental governance (Baudoin Farah, 2019). The state was reluctant to implement prior consultation processes, government authorities refused to meet with marchers, and the Morales administration disregarded the verdict of the International Rights of Nature Tribunal of 2019 calling for the stoppage of the road project. These observations point to the limits of institutional approaches to explain ineffective environmental governance (Agrawal, 2003). Instead, state-society power imbalances and deep-rooted inequalities play an important role in preventing effective environmental governance. The recent setbacks in territorial autonomy and local environmental governance that accompanied the newly centralized state in Bolivia show that even Constitutional changes for recognition of indigenous rights are not enough if there is no political will to protect institutional channels for grievances and participation in decision making about resource management.

Fifth, environmental governance in the TIPNIS has also been hindered by a cultural factor: limited inter-generational transmission of cultural, institutional, and historical knowledge (Baudoin Farah, 2019). Environmental governance improved from the 1980s to the 2000s in the TIPNIS, from territorial and autonomy demands to the establishment of territory rangers, the construction of a collective cattle-ranching unit and woodwork enterprise, and the implementation of management plans for commercialization of spectacled caiman (Caiman yacare) skins (Mendizabal, 2010; SERNAP, 2002; Choquehuanca, 2011). Since then, young generations have not been well-versed about the struggles and lessons of that history. Rural families are increasingly multiethnic and connected to urban spaces. Formal education in the territory is often provided by young highland teachers doing their "province year", who are unfamiliar with local history and language. Thus, there are few opportunities for older generations to pass on their knowledge and experience about environmental governance to younger generations, and there is a growing language barrier between older adults and young people. The lack of spaces for inter-generational dialogue raises questions about the transfer of leadership. Learning, adaptation, and innovation are greatly impeded by the lack of the inter-generational transfer of knowledge and leadership turnover.

Our analysis of political ecology factors among the five explanations for ineffective environmental governance in the TIPNIS area appears in Table 2 in the top row. Four of the five explanations invoke political ecology issues: 1) community political fragmentation, 2) loss of legitimacy of local leaders, 3) state authoritarianism, and 4) state persecution. Whereas the first highlights local political conflicts, the second calls attention to changing relationships with outside actors that resulted in the loss of legitimacy among local leaders, and the third and fourth feature the role of the state in oppressing local peoples. Some of these political ecology explanations correspond to major themes in Latin American political ecology, such as the negative effects of state authoritarianism.

Table 2 also presents findings from our coding of the explanations in light of the integrated environmental governance evaluation framework. For our interpretive discussion of our coding, due to space limitations, we focus on the first explanation, local political fragmentation. We interpreted divisions among indigenous communities and the *subcentrales* as problematic for environmental governance in terms of 1) lack of information flows among competing factions, 2) reduced capacity among divided organizations, 3) lack of

coordination and communication, 4) different goals among groups, 5) insufficient participation in community meetings and events, and 6) limited transparency by local leaders. In this explanation, as among others, multiple criteria for effective environmental governance were unmet. More broadly, in the TIPNIS case, all five explanations for ineffective environmental governance involved several unmet criteria. Comparing across explanations, the environmental governance criteria most often unmet were access to information, coordination, and transparency, with each being violated in four of the five explanations.

Governance Criteria	**TIPNIS 1: Community Political Fragmentation (Political Ecology)**	**TIPNIS 2: Lack of Local Leader Legitimacy (Political Ecology)**	**TIPNIS 3: State Authoritarianism (Political Ecology)**	**TIPNIS 4: State persecution (Political Ecology)**	**TIPNIS 5: Lack of inter-generational transmission**
1. Access to information/ knowledge	X	X	X		X
2. Accountability/ legitimacy		X	X	X	
3. Innovation/ Adaptation		X	X		X
4. Capacity	X				
5. Coordination	X		X	X	X
6. Multi-level			X	X	
7. Direction/ mandate	X	X			
8. Inclusion			X	X	
9. Justice/ Rights			X		
10. Participation	X		X	X	
11. Transparency	X	X	X	X	

Table 2: Violations of environmental governance criteria found in various explanations for ineffective governance in the Bolivia/TIPNIS case. Political ecology explanations are identified.

Bolivia and Brazil: Governance of dams in the binational frontier of the Upper Madera Watershed

The Madera River is the largest tributary of the Amazon, and a key watershed for biologically and economically important migratory fish species on which local communities depend. The Upper Madera at the Bolivia-Brazil border has however been targeted for the development of the Madera Hydroelectric Complex, a series of mega-dams intended to generate energy, mitigate climate change, enhance river navigability, and spur national development (Fearnside, 2014, 2019; Arias, 2011). This series of dams has profound implications, socially, politically, and ecologically. Yet, there exists no formally established system for binational governance to engage stakeholders who will be affected or to mitigate negative impacts.

The binational area of the Upper Madera encompasses the departments of Beni and Pando in Bolivia and the state of Rondônia in Brazil. Currently, two dams (Jirau and Santo Antônio) are fully functional in Brazilian territory, a third dam is planned on the binational frontier (Cachuela Ribeirão Preto), and a fourth is planned for construction in Bolivia (Cachuela Esperanza). A key problem in the planning process has been the lack of recognition of the social-environmental impacts of the Brazilian dams in Bolivian territory (Fearnside, 2014, 2019; Arias, 2011). These impacts could be exacerbated by the construction of the two other dams.

The binational frontier of the Madera Complex encompasses numerous different stakeholder groups (Tito & Fernández, 2014). Recent workshops in the Upper Madera identified relevant stakeholders in the debate

over the binational (Ribeirão Preto) and Cachuela Esperanza Dams (GIA 2021). A stakeholder analysis (cf. Reed *et al*. 2009) from those workshops helped clarify the configuration of stakeholders and their perceived power and interests from the perspective of local organizations (GIA 2021). The main stakeholders identified in the Upper Madera workshops are community organizations, municipal leaders, local associations of farmers, forest product extractivists, fishers, the construction company, and national governments.

The configuration of stakeholders and their interests makes evident that the environmental governance of the Upper Madera has not been effective for achieving sustainability goals. The analysis of power and interests showed that most local stakeholders oppose the dam and that those groups are largely disenfranchised by the national governments in the planning process (GIA 2021). That is because two other stakeholders, municipal leaders and the construction company, favor the dam. Stakeholders opposed to the dams highlighted sustainability goals such as conserving the fisheries and other natural resources for communities in the Upper Madera. Construction of new dams will likely generate negative impacts on fish migration, fisheries and communities (Arias, 2011; Fearnside 2014). Stakeholders in favor of the dams emphasized that construction will bring jobs and cheap energy to the region. The stakeholder analysis makes evident that national governments and stakeholders in favor of the dams have more power and influence over the planning process, which impedes effective environmental governance and the sustainability of local fisheries and community livelihoods. Governance appears ineffective with regard to sustainability goals, because two dams were built on the Upper Madera, and two more are planned.

A first explanation for ineffective environmental governance concerns the top-down politics of the Bolivian state, which has exhibited authoritarian tendencies toward local stakeholders. As noted above in the TIPNIS case, the government of President Morales was highly centralized and authoritarian, with a top-down approach to policy. The Bolivian state promulgated numerous laws restricting action by independent NGOs, lawyers, and the media, creating a hostile environment for human rights defenders (Human Rights Watch, 2020). Consequently, the Bolivian state was able to advance the Madera Hydroelectric Complex despite resistance. In 2009, the Bolivian government sought to have Brazil pay for the impacts of the Santo Antônio and Jirau Dams. But then there was silence until the beginning of 2016 when the Bolivian state agreed to go forward with the binational Ribeirão Preto and Cachuela Esperanza dams. This occurred without consulting the communities already affected by earlier dams and despite warnings by scientists and conservation NGOs about negative social and ecological impacts, including loss of fisheries, flooding, and threats to health (e.g., Clemons, 2008).

A second explanation stems from power relations in the negotiations between the two national governments about infrastructure projects. Negotiations between governments inhibited cross-scale communication, excluded local stakeholders, hindered broad participation, and resulted in a lack of transparency. The two governments focused on tensions between their respective interests in energy generation, with Bolivia as producer and Brazil as consumer. Disputes between the two parties reflected a high-level struggle over energy, in which Bolivia sought to include the upstream impacts caused by the Jirau and Santo Antônio dams in the negotiations, a bargaining issue rejected by Brazil despite IBAMA's (the Brazilian Environmental Institute) admission that the two dams would have major negative impacts in Bolivia. In 2014, a major flood caused by retaining water behind Jirau and Santo Antônio led to the loss of livelihoods in Bolivian communities. The lack of an enforcement mechanism in agreements between Bolivia and Brazil made it impossible for Bolivia to seek reparations for the harms caused by the dams. Exclusion of consideration of dam impacts in high-level negotiations thus resulted in a lack of effective governance in the upper Madera watershed.

A third explanation concerns the cultural politics of the Bolivian state, evident in its lack of sympathy for the concerns of lowland populations. While the Morales government was founded upon a highland indigenous identity and improved provision of social services to many poor populations, it neglected the needs of lowland peoples. The Bolivian government sought to redistribute land in the lowlands to highland populations via agricultural colonization as a political strategy to gain votes. Such colonization is based on the assumption that the Amazon is an empty space and that deforestation for agriculture is a straightforward path to development. The Morales government thus failed to acknowledge Amazonian cultures and ecosystems, which undermined good governance in the Upper Madera.

Fourth, the Bolivian state has pursued a problematic approach to planning by meddling in lowland institutions rather than allowing stakeholders to deliberate autonomously. There is a Law of Autonomy and Decentralization, promulgated in 2010. But because the Bolivian state centralized its power, it used this law to intervene in local deliberations and thereby coopt lowland groups and their organizations. This has resulted in the division of local stakeholders against each other, as also seen in the TIPNIS case, with negative consequences for effective environmental governance, including loss of legitimacy, lack of coordination, and more.

A final explanation concerns Bolivia's polarized political context, with a strong ruling party and a fragmented political opposition, which has undermined trust among political factions. The irregular election in 2019 led to a deep political crisis that temporarily removed Morales' party from the Government, only to have his party overwhelmingly win in the October 2020 elections. There is little hope that policies and strategies will change regarding the construction of dams in the Upper Madera watershed.

The coding of explanations for ineffective environmental governance in the Upper Madera case appears at the top of Table 3. For this case, all five explanations feature issues highlighted by political ecology because they highlight politics and unequal power relations. Several of the explanations also reflect major themes in the Latin American political ecology literature, including state authoritarianism, top-down policies, and high-level negotiations that exclude local peoples.

Governance Criteria	**Madera 1: State Authoritarianism (Political Ecology)**	**Madera 2: International negotiations that exclude local stakeholders (Political Ecology)**	**Madera 3: Lack of state interest in lowland cultures (Political Ecology)**	**Madera 4: Lack of local autonomy to deliberate (Political Ecology)**	**Madera 5: Polarized political culture (Political Ecology)**
1. Access to information/ knowledge	X	X	X		X
2. Accountability/ legitimacy	X	X		X	
3. Innovation/ Adaptation	X	X			X
4. Capacity					
5. Coordination	X	X		X	X
6. Multi-level	X	X	X	X	X
7. Direction/ mandate					X
8. Inclusion	X	X	X	X	
9. Justice/ Rights	X	X	X	X	
10. Participation	X	X	X	X	
11. Transparency	X	X	X	X	X

Table 3: Violations of environmental governance criteria found in various explanations for ineffective governance in the Bolivia/Brazil Upper Madera case. Political ecology explanations are identified.

Regarding coding of explanations in light of the environmental governance criteria, we focus on the first explanation, authoritarianism of the Bolivian state. That political ecology explanation violated numerous criteria for effective environmental governance, including 1) limiting access to knowledge about dam impacts, 2) hindering accountability by centralizing power, 3) lack of responsiveness to local concerns, 4) lack of

coordination with lowland groups, 5) lack of cross-scale collaboration with local organizations, 6) exclusion of lowland groups from decision making, 7) undermining lowland indigenous rights, 8) limiting stakeholder participation during consultations, and 9) lack of transparency about infrastructure plans. State authoritarianism can thus be viewed as broadly contrary to effective environmental governance in terms of numerous unmet criteria. In the upper Madera case, two criteria were undermined in every explanation of ineffective environmental governance: cross-scale collaboration and transparency. Moreover, several criteria were unmet in four explanations: access to information, coordination, inclusion, and justice/rights.

Brazil: Infrastructure planning without Indigenous people's consent in southern Amazonas-northern Rondonia

Free, prior, and informed consent (FPIC) is a legal instrument for governance required under ILO Convention 169 (ILO, 1989). ILO 169 was ratified by Brazil in 2002 (Brasil, 2004). FPIC requires public consultations with affected groups. Consultations must be conducted openly and transparently, in good faith with accurate information, and free from any forms of intimidation or manipulation (ILO, 1989). The consultation must be considered satisfactory by affected groups, so they can freely give their consent prior to project implementation. These characteristics make FPIC an important tool, because it stands to modify the process of infrastructure planning, with consequences for environmental governance.

In the Brazilian Amazon, indigenous peoples have invoked the right to FPIC to participate in planning of development projects, and to influence decisions about infrastructure projects that may impact their lands. By empowering indigenous people to participate in decision-making processes, FPIC supports environmental governance and protection of indigenous territories (MPF, 2021). Indigenous groups have therefore sought to develop their own FPIC protocols to exert greater influence over infrastructure decisions by indicating who should be consulted, who should carry out the consultation, when and where the consultation should occur, how indigenous people will make decisions, and what they can expect from consultations in terms of outcomes (Papillon and Rodon 2017; Tomlinson 2019). Conservation organizations have supported the calls for implementation of indigenous FPIC processes as a tool for environmental governance (APIB, 2013).

However, in infrastructure planning in Brazil, FPIC is rarely used. A 2015 study showed that there were 3,000 development projects in Brazil that would affect indigenous people that nonetheless lacked FPIC (Rojas Garzon, 2016). Brazil has also failed to comply with indigenous demands for FPIC (APIB, 2013; Rojas Garzon, 2016; Sauré, 2020).

The case of government proposals to pave the BR-319 highway in southern Amazonas and northern Rondonia is illustrative of these issues. In this area, BR-319 passes several indigenous territories (Ferrante *et al*., 2020) and protected areas (Carlos and Meirelles, 2018). Simulations of the impact of paving the BR-319 in a business-as-usual scenario indicate there will be widespread deforestation and forest degradation along the road (Barber *et al*., 2014, Santos Junior *et al*., 2018, Ferrante *et al* 2020). The Brazilian government has nonetheless advanced paving of BR-319 without considering the socioeconomic and environmental impacts in the licensing process (REET Brasil 2020). Furthermore, the government has made no effort to implement FPIC with the traditional and indigenous peoples along the road (MPF 2020). Without FPIC, the perspectives and practices of indigenous groups are ignored. Insofar as indigenous groups draw on deep histories of sustainable use of lands and rivers around BR-319, the lack of FPIC to advance road paving indicates ineffective environmental governance with regard to social-environmental sustainability. For their part, indigenous groups have argued that FPIC is crucial to ensure effective environmental governance and thus sustainability along the BR-319 corridor.

The Brazilian state's actions to advance plans to pave the BR-319 thus beg for explanations. One is the use of deceptive practices, in that infrastructure promoters in the Brazilian state tried to marginalize regulatory agencies by acting in a non-transparent manner. In June of 2020, the National Transport and Infrastructure Department (DNIT) issued a public notice to pave the 72.2 km "middle stretch" of BR-319. However, Federal Public Ministry (MPF) prosecutors moved against DNIT because it did not follow the requirements of the Environmental Impact Assessment previously agreed upon with IBAMA. The MPF called the DNIT notice an act of bad faith by creating deceptive expectations with a political motivation to garner public support for the

road (MPF, 2020). A prosecutor from the MPF highlighted the necessity to comply with ILO 169 via FPIC as a requirement before licensing of road paving (REET Brasil, 2020).

A second explanation is also eminently political: hostility toward indigenous rights by the administration of President Jair Bolsonaro (in office 2019-2022). Bolsonaro's campaign speeches declared that if he was elected, not another square centimeter of indigenous land would be demarcated. Presidential decrees correspondingly reduced the power of IBAMA and the National Indian Foundation (FUNAI) and attempted to move those agencies under the Ministry of Agriculture.

A third explanation concerns the politics of land titling, via the Brazilian state's attempt to change the legal status of officially recognized indigenous lands. In April 2020, FUNAI published normative instruction Nº 09 (IN 09), which would facilitate the titling of private properties in indigenous lands (FUNAI, 2020). Legally, indigenous lands are an asset of the nation, and therefore inalienable. IN 09 consequently put both indigenous people and private interests at risk by creating a situation where the state might issue false titles (Justiça Federal, 2020, MPF, 2020b). Further, IN 09 does not consider FPIC with indigenous people, which makes clear the lack of support from FUNAI for indigenous people.

A fourth explanation is also political: beyond the executive branch, there are legislative initiatives to undermine indigenous rights. A set of bills and constitutional amendments would undermine the rights of indigenous people in the Amazon (Abessa, *et al*., 2019). For example, the Brazilian congress advanced legislative bill PL 2633/2020 (Silva, 2020) to replace what critics called *Medida Provisoria da Grilagem*, or the Land Grabbing Provisional Measure (MP 910/2019). MP 910/2019 allowed undesignated public lands of up to 1,650 ha in the Amazon to become private property. Under PL 2633/2020, occupation can occur by self-declaration without state inspection. Such legislation thus permits unregulated land occupation for speculation or resource extraction, which are unlikely to involve forest conservation or sustainable use.

A final explanation concerns the authoritarianism of the Bolsonaro administration, which for four years populated environmental regulation and indigenous affairs agencies with military personnel. Many initiatives by the Brazilian state under Bolsonaro were consequently promulgated via top-down processes imposed upon indigenous groups. Such moves sidestep the possibility of employing FPIC as a tool for multi-stakeholder environmental governance.

Table 4 presents political ecology coding of the five explanations for ineffective environmental governance in southern Amazonas and northern Rondonia. All five explanations invoke political ecology themes, because they reflect power inequalities between the state and indigenous stakeholders. Indeed, they feature the willingness of multiple elements of the Brazilian state to use deceit or raw power to oppress indigenous peoples. As in other cases, state authoritarianism is salient, along with legal maneuvers and deceptive practices that favor outside stakeholders for the sake of imposing infrastructure projects and/or facilitating resource exploitation.

Table 4 also presents findings from our coding of explanations in terms of environmental governance criteria violated. We focus on the first explanation, concerning bad faith declarations by a state agency seeking to advance infrastructure. That explanation violated numerous criteria for environmental governance, including 1) access to information, 2) legitimacy before other state agencies, 3) coordination among agencies, 4) cross-scale collaboration, 5) inclusion of indigenous stakeholders, 6) recognition of the rights of indigenous groups to FPIC, 7) participation by indigenous and other stakeholders and 8) transparency as to the motives behind public declarations. Other explanations from this case made clear that the authoritarianism of the Brazilian state has been more openly hostile to environmental governance than that of the Bolivian state in previous cases, which adopted a more clandestine approach, though both violated numerous criteria for environmental governance. In southern Amazonas-northern Rondonia, all five explanations ran counter to environmental governance in terms of multi-level governance, inclusion, justice/rights, and participation, while four explanations undermined access to information, accountability, and transparency.

Governance Criteria	Brazil 1: Bad faith declarations by state agencies (Political Ecology)	Brazil 2: State Executive hostility to Indigenous Rights (Political Ecology)	Brazil 3: Illegitimate State changes in land tenure rules (Political Ecology)	Brazil 4: Legislation against Indigenous Rights (Political Ecology)	Brazil 5: State Authoritarianism (Political Ecology)
1. Access to information/ knowledge	X	X	X		X
2. Accountability/ legitimacy	X	X		X	X
3. Innovation/ Adaptation					X
4. Capacity					
5. Coordination	X			X	X
6. Multi- level	X	X	X	X	X
7. Direction/ mandate			X		
8. Inclusion	X	X	X	X	X
9. Justice/ Rights	X	X	X	X	X
10. Participation	X	X	X	X	X
11. Transparency	X		X	X	X

Table 4: Violations of environmental governance criteria found in various explanations for ineffective governance in the Brazil/Southern Amazonas-Northern Rondonia case. Political ecology explanations are identified.

Colombia: Challenges to environmental governance by Indigenous peoples

Indigenous groups in Colombia have long been organized and are supported by conservation organizations and religious groups. Indigenous groups have thus developed autonomous governance institutions, including those recognized in the Colombian constitution. Initiatives supporting the environmental governance of strategic ecosystems in the Colombian Amazon have often focused on the sacred territories of indigenous communities. The establishment of the Indi Wasi National Natural Park and other protected areas involved multi-stakeholder governance initiatives that included civil society, indigenous groups, and the national government (Parques Nacionales de Colombia, 2001). These protected areas have co-management guidelines that recognize indigenous practices, such as shamanic practices (Revelo Rebolledo, 2019). Environmental governance efforts in Colombia have also advanced proposals for the design of "green infrastructure" to minimize the negative social and environmental impacts of development projects.

However, governance in the Colombian Amazon has become problematic in light of recent political changes. Specifically, the cessation of the insurgency against the Colombian state in 2016 has actually undermined governance efforts and threatened sustainability in the Amazon (Krause, 2020). Whereas past planning efforts were highly inclusive of indigenous peoples and other subaltern stakeholders, that is less evident now. Instead, the Colombian state has prioritized new infrastructure, and extractive interest groups have begun claiming land and natural resources using violence and other illegal means. Such shifts fail to recognize the history of environmental governance and undermine prospects for social-environmental sustainability. This shift begs for explanations.

One key explanation concerns Colombia's history of political violence (Human Rights Watch Colombia, 2020). While much of Colombia's political violence occurred in cities and focused on hostilities among political

elites and their followers, the armed conflict also impacted indigenous and Afro-descendent peoples (Comisión de la Verdad, 2022). Recent violence has increasingly focused on indigenous groups, community leaders, labor leaders, and environmentalists, often in small towns and rural areas, including in the Amazon. After the peace accords in 2016, violence in the country has paradoxically escalated and claimed the lives of more than 1,000 indigenous and social and environmental leaders (Duarte, 2020; González Perafán, 2020). Violence is fundamentally anathema to accountability, inclusion and transparency, and other hallmarks of environmental governance.

A second explanation concerns the lack of state authority in the Colombian Amazon. Because the insurgents controlled substantial portions of the region, the cessation of conflict has resulted in a lack of state presence. That has facilitated the entry of economic interests in logging, mining and land speculation, and the rise of drug trafficking activities. All such outside actors assert claims over indigenous lands and natural resources, leading to growing conflicts with local peoples. The incursion of extractive and drug trafficking interests into the Amazon has meant unsustainable resource use and harm to indigenous peoples.

A third factor concerns Colombian development policy. While President Juan Manuel Santos' administration decided in 2018 not to build the *Marginal de la Selva* Highway, the Colombian state is advancing other infrastructure projects in the Amazon region. The Colombian state sees infrastructure as a means of promoting economic growth. However, the state has a history of supporting unsustainable resource extraction, whether in terms of mining, logging, or ranching. Drug trafficking also threatens forests, rivers and indigenous peoples.

A fourth explanation in Colombia is state authoritarianism. Beyond armed groups and economic interests, the Colombian state itself has a history of violence against local peoples. While much of that must be viewed in the context of armed conflict against insurgents, there have also been instances where the military and police forces acted violently against indigenous and Afro-descendent peoples demanding recognition of their cultural and territorial rights. Over the past two decades, the Colombian state has tended to exclude local actors and indigenous communities from planning processes for development projects. Recently, former Colombian President Iván Duque refused to meet with the assembly of the *La Minga* indigenous movement. As a consequence, despite the Covid-19 crisis in 2020, between 8,000 and 10,000 people marched to the national capital of Bogotá to propose a political debate with the president, but again Duque refused dialogue (PARES, 2020).

A fifth factor concerns the politics of worldviews, evident in the differing ontologies of western organizations and indigenous peoples in Colombia. Whereas western society follows a dualistic ontology, which features differences between humans and nature, many indigenous groups follow a relational ontology, which highlights social-ecological and spiritual relationships with nature (Blaser, *et al*. 2013; Bottazzi & Dao, 2013; Escobar, 2018). Ontological differences might seem like obscure abstractions, but they define how environmental governance processes are understood, and thus how they are implemented. Relational ontologies underscore how environmental governance decisions impact local peoples whose cultures and management practices are intricately related to biophysical systems. By contrast, dualistic ontologies may lead to governance decisions and management practices that ignore such relationships, and consequently privilege short-term economic growth over long-term cultural and environmental sustainability. The process for the declaration of the *Indi Wasi* National Natural Park is one of several examples in which dual and relational ontologies, represented by the Colombian state and indigenous groups respectively, dialogued in a planning process. However, the value of relational ontologies in these experiences have not been recognized by subsequent governmental regimes.

Governance Criteria	Colombia 1: Violence (Political Ecology)	Colombia 2: Lack of state presence (Political Ecology)	Colombia 3: State imposed development projects (Political Ecology)	Colombia 4: State Authoritarianism (Political Ecology)	Colombia 5: Lack of respect for indigenous ontologies (Political Ecology)
1. Access to information/ knowledge		X			X
2. Accountability/ legitimacy	X	X	X		
3. Innovation/ Adaptation				X	X
4. Capacity		X			
5. Coordination		X		X	X
6. Multi-level		X		X	
7. Direction/ mandate		X			
8. Inclusion	X		X	X	X
9. Justice/ Rights	X		X	X	X
10. Participation	X		X	X	X
11. Transparency	X		X		

Table 5: Violations of environmental governance criteria found in various explanations for ineffective governance in the Colombia case. Political ecology explanations are identified.

The top of Table 5 shows the coding of political ecology explanations for ineffective environmental governance in Colombia. All five explanations feature political ecology issues of politics and power inequalities. As in all previous cases, state authoritarianism again appears, as do state policies that are promoted in a top-down way, or advance resource extractivism. In contrast to previous cases, outright violence often plays a prominent role, whether perpetrated by armed groups, extractive interests, or the state itself. In addition, political ecology explanations are reflected in the politics of different ontologies, as evident in the interests of different stakeholders, notably when relational ontologies are ignored.

Table 5 also presents findings for Colombia from the coding of explanations in terms of unmet criteria for effective environmental governance. As in other cases, we focus on the first explanation, political violence. Like authoritarianism, political violence undermines environmental governance in various respects, in terms of 1) accountability and legitimacy, 2) exclusion (or outright liquidation) of vulnerable groups, 3) violations of rights and institutional justice procedures, 4) direct contravention of participation, and 5) lack of transparency via its frequently clandestine nature. Political and other forms of violence pose problems beyond the criteria given in the environmental governance frameworks, an issue to which we return in our conclusion. Looking at the five explanations for ineffective environmental governance in the Colombian case, we found that those most often unmet were inclusion, justice/rights, and participation, violated in four of the five explanations.

Peru: Sustainable management of palm forests in Madre de Dios

The Department of Madre de Dios (MDD), located in the southern Peruvian Amazon, is internationally known as one of the world's most biodiverse areas. MDD also possesses significant cultural diversity, including many indigenous groups (Wessendorf 2008). Much of the region's population relies on the management of natural resources for their livelihoods. The economic history of MDD mostly consists of primary sector activities involving extraction of forest products such as rubber and timber as well as subsoil resources such as hydrocarbons and especially gold, and agricultural cultivation and livestock husbandry. MDD also has a tradition of agroforestry systems that feature forest tree species known to yield multiple products, notably palm.

Palms are common in the Amazon and can be found in many distinct habitats (Smith 2014; Ter Steege, *et al*., 2013). Indigenous groups and other rural communities use them in cooking, construction, utensils, crafts, and medicine (Shanley, *et al*. 2012). Consequently, palms are among the most important Amazonian plants, economically and culturally (Smith 2014).

Over the last ten years, deforestation has increased in Madre de Dios in many habitats where economically important palm species occur. One example concerns flooded forests, called *aguajales*, named after the aguaje palm (Mauritia flexuosa). *Aguajales* are being cleared, replacing an ecologically productive and economically valuable habitat with degraded land. Similarly, there is deforestation of upland forests in Madre de Dios. In addition to deforestation, commercial palm management is shifting communities away from their traditional practices. Harvesting of some palm products is declining, and some harvesting practices are increasingly unsustainable. These shifts in land use reflect a context where environmental governance is proving to be ineffective. Indicators include deforestation and unsustainable management of palm plantations.

One key explanation concerns the effects of economic integration via large-scale infrastructure. Over the last ten years, a key driver of change in Madre de Dios has been the construction of the Inter-Oceanic Highway (IOH). While road building facilitates access to natural resources, the economic integration it brings about poses challenges for good environmental governance (Perz, *et al*., 2008). The positive aspects of the road include reduced transportation costs, economic development, and improved access to health care and education. However, the paving of the Inter-Oceanic Highway also facilitated the migration of people into the region from the Andes, including many engaged in informal or illegal gold mining. Because gold mining in MDD is alluvial, it drives deforestation of vast areas of *aguajales*. In addition, the IOH fostered the clearance of forests, with their palm trees, for agriculture. Further, economic integration undermines traditional palm management practices in communities, even if deforestation is not occurring. Members of several indigenous communities have abandoned traditional palm management practices and want to move to urban environments to have access to better educational and economic opportunities.

There are also political-economic factors undermining good environmental governance: high commodity prices, most notably for gold. High gold prices drive informal and illegal mining operations, which are more profitable than other livelihood alternatives. Miners invade protected areas seeking gold, or traffic fuel and mercury illegally to support mining. Globalization of commodity markets drives the creation of these commodity chains, regardless of whether extraction is effectively governed.

A third explanation for ineffective governance in Madre de Dios concerns weak regulatory agencies. One aspect of this problem is institutional and involves the fragmented administrative structure of the Peruvian state (Muñoz, 2021). In MDD, there is no clear chain of authority for environmental regulation. Multiple agencies may cite one another as the key authority, permitting environmental infractions. With gold mining being so profitable, there is great potential for corruption of government officials charged with regulatory oversight (DTOC, 2021). Legislators who collude with mining interests will promulgate laws to regulate gold mining but will fail to adequately fund the enforcement of those laws (Espin, 2018). Further, because of limited funding and low pay, law enforcement personnel will accept bribes in return for looking the other way when mining infractions are committed (Cárdenas, 2022). Corrupt law enforcement personnel will also tip off miners about impending enforcement efforts. Meanwhile, landowners and other stakeholders who seek to defend their land claims against miners find limited state support.

A fourth explanation concerns limited collaboration in the management of palm plantations. Projects to support palm management in rural areas are not well-coordinated and commercial operators are not well connected. As a reflection of the lack of connections, stakeholder involvement in environmental governance processes for palms is limited. The consequences for environmental governance are evident in the example of conservation concessions, a key tool for improving palm management. To create a concession, a governmental agency, the National Institute for Natural Resources (INRENA), must review the application and issue the approval. The challenge is that the bureaucratic procedures for approval take substantial time, and communities must exert significant effort to develop relationships, and to trust outside organizations. In the meantime, illegal activities do not face such delays and can undermine environmental governance of *aguajales* and other forests where palms are managed.

A fifth explanation for ineffective environmental governance concerns the low level of environmental monitoring by stakeholders. Monitoring is an important activity to ensure that there is information to support environmental governance deliberations and decisions. In the case of *aguajales* and other palm forests, it is crucial to monitor management projects and other initiatives to evaluate their effectiveness. If outside organizations cannot sustain monitoring, then the capacity building of communities for monitoring becomes crucial. However, monitoring is rare in MDD, because most communities do not have the technical know-how or level of trust required.

The coding results of political ecology explanations for ineffective environmental governance in the case of palm management in MDD appear in the top of Table 6. The first three explanations invoke political ecology concerns, and all three are themes emphasized in Latin American political ecology: 1) economic integration via large-scale infrastructure, 2) high commodity prices in global markets that drive resource extraction for export, and 3) weak state regulation due to political corruption. The other two explanations underscore institutional and logistical matters involving collaboration and monitoring that are less eminently political.

Governance criteria	**MDD 1: Regional Integration via Large-scale Infrastructure (Political Ecology)**	**MDD 2: High global prices for commodities extracted for export (Political Ecology)**	**MDD 3: Weak state regulation due to jurisdictional conflicts and corruption (Political Ecology)**	**MDD 4: Lack of logistical coordination in local projects**	**MDD 5: Lack of environmental monitoring**
1. Access to information/ knowledge	X		X	X	X
2. Accountability/ legitimacy	X	X	X	X	X
3. Innovation/ Adaptation	X		X	X	
4. Capacity			X	X	
5. Coordination	X	X		X	X
6. Multi-level	X		X	X	
7. Direction/ mandate	X	X	X	X	
8. Inclusion	X				X
9. Justice/ Rights	X	X	X		
10. Participation	X				
11. Transparency	X	X	X		X

Table 6: Environmental governance violations of the criteria found in various explanations for ineffective governance in the Peru/Madre de Dios case. Political ecology explanations are identified.

Table 6 also provides findings from coding of explanations in terms of unmet environmental governance criteria concerning palm management in Madre de Dios. The first explanation cited, economic integration via large-scale infrastructure, undermines environmental governance in numerous ways. Regional integration via highway paving facilitated the arrival of new stakeholders interested in unsustainable extractive activities like informal and illegal gold mining. Integration thus violated numerous environmental governance criteria, including 1) access to information, 2) legitimacy of local leaders, 3) responsiveness of local institutions, 4) coordination among stakeholders, 5) cross-scale collaboration, 6) shared goals, 7) inclusion of vulnerable peoples, 8) recognition of the rights of marginalized groups, 9) participation by diverse stakeholders, and 10)

transparency due to informality and criminal activities. Integration thus violates nearly all requisites for effective environmental governance. Across the five explanations for ineffective environmental governance of palms in MDD, problems of accountability/ legitimacy arose every time, followed by issues of access to information, coordination, shared goals, and transparency, unmet in four of the five.

5. Comparative analysis

We conclude with multi-case comparisons in terms of 'political ecology explanations' and unmet criteria for environmental governance in the five Amazonian cases, summarized in Table 7. We first undertake inclusive comparisons by examining the predominance of political ecology explanations across cases. Out of a total of 25 explanations (5 explanations for each of 5 cases), 22 invoke issues highlighted by political ecologists. Political ecology explanations also comprised a majority in all five of the study cases. Further, we looked at whether political ecology explanations were the most important in each case. We found that the top three explanations were all based on political ecology investigations. In these two important respects, issues highlighted by political ecologists primarily explain ineffective environmental governance.

Table 7 also presents the specific explanations for ineffective governance. We employed inclusive comparisons to examine the prevalence of particular political ecology explanations to see if they arose in most or all cases. The role of the state is pre-eminently important, for its authoritarianism and its lack of presence, and its mistreatment of indigenous stakeholders. We found state authoritarianism appears in four of the five cases (TIPNIS, Upper Madera, Brazil, Colombia), along with state persecution or neglect of indigenous peoples (TIPNIS, Upper Madera, Brazil, Colombia) followed by lack of state presence in three cases (Upper Madera, Colombia, MDD/Peru).

We also pursued exclusive comparisons of explanations across the cases. While some specific explanations were common, most differed across cases. The three most common political ecology explanations only summed to ten of the 22 in Table 7. Most political ecology explanations only occurred once, including important ones like the presence of violence, and regional integration occurring through infrastructure projects. Others often highlighted in the Latin American political ecology literature also appeared, like commodity prices for extractive exports leading to negative local outcomes. Overall, political ecology offers a powerful explanatory framework for ineffective environmental governance across multiple cases. At the same time, specific political ecology explanations vary among cases, which underscores the importance of context-specificity.

Table 8 presents the findings from the comparative analysis regarding the environmental governance criteria. We begin the environmental governance analysis with inclusive comparisons. We calculated the sums of unmet environmental governance criteria across the cases, with the totals shown in the rightmost column. Because there are five cases each with five explanations, the number of possible violations ranges up to 25. The criterion for effective environmental governance most often unmet was transparency (19 violations out of 25 explanations), followed by access to information/knowledge, accountability/legitimacy, and coordination (each with 18 violations), and then multi-level/cross scale issues, lack of inclusion, and poor justice/rights (17 violations each). These findings suggest that explanations for ineffective environmental governance tend to point to broadly similar obstacles where subaltern stakeholders are unable to contribute to decision-making. This highlights power inequalities among stakeholders, notably in terms of access to knowledge. They also tend to reflect the most predominant political ecology explanations involving state authoritarianism, oppression of subaltern stakeholders, and lack of state presence.

Explanation	Bolivia: TIPNIS	Bolivia/ Brazil: Upper Madera	Brazil: Southern Amazonas-Northern Rondonia	Colombia	Peru: Madre de Dios	TOTAL Political ecology explanations ranked
1	Community political fragmentation (Political Ecology)	State authoritarianism (Political Ecology)	Bad faith declarations by state agencies (Political Ecology)	Violence (Political Ecology)	Regional Integration via large-scale infrastructure (Political Ecology)	**5**
2s	Lack of local leader legitimacy (Political Ecology)	International negotiations that exclude local stakeholders (Political Ecology)	State executive hostility to Indigenous rights (Political Ecology)	Lack of state presence (Political Ecology)	High global prices for commodities extracted for export (Political Ecology)	**5**
3	State authoritarianism (Political Ecology)	Lack of state interest in lowland cultures (Political Ecology)	Illegitimate State changes in land tenure rules (Political Ecology)	State imposed development projects (Political Ecology)	Weak state regulation due to jurisdictional conflicts and corruption (Political Ecology)	**5**
4	State persecution (Political Ecology)	Lack of local autonomy to deliberate (Political Ecology)	Legislation against Indigenous Rights (Political Ecology)	State authoritarianism (Political Ecology)	Lack of logistical coordination in local projects	**4**
5	Lack of inter-generational transmission	Polarized political culture (Political Ecology)	State authoritarianism (Political Ecology)	Lack of respect for indigenous ontologies (Political Ecology)	Lack of environmental monitoring	**3**
Total political ecology explanations by case	**4**	**5**	**5**	**5**	**3**	**22**

Table 7: Comparison of political ecology explanations for ineffective environmental governance across five Amazon cases.

Governance criteria	Bolivia: TIPNIS	Bolivia/ Brazil: Upper Madera	Brazil: Southern Amazonas-Northern Rondonia	Colombia	Peru: Madre de Dios	TOTAL
1. Access to information or knowledge	4	4	4	2	4	**18**
2. Accountability and legitimacy	3	3	4	3	5	**18**
3. Innovation and adaptation	3	3	1	2	3	**12**
4. Capacity	1	0	0	1	2	**4**
5. Coordination	4	4	3	3	4	**18**
6. Multi-level	2	5	5	2	3	**17**
7. Direction or mandate	2	1	1	1	4	**9**
8. Inclusion	2	4	5	4	2	**17**
9. Justice/ Rights	1	4	5	4	3	**17**
10. Participation	3	4	4	4	1	**16**
11. Transparency	4	5	4	2	4	**19**
Total by case	**29**	**37**	**36**	**28**	**35**	**165**

Table 8: Comparison of violations of the criteria for effective environmental governance in the five Amazon cases.

The findings at the bottom of Table 8 permit a medley of inclusive and exclusive comparisons. On the one hand, if the range of possible values runs from 0 to 55 possible violations (for 5 explanations coded across 11 criteria), all of the cases fall in a relatively narrow range from 28 to 37. Viewed in terms of quartiles, all of the cases indicate that between 50% and 67% of the criteria were violated, a majority. On the other hand, the same findings viewed in terms of exclusive comparisons show that violations still varied in extent, from roughly half to a substantial majority. There were more violations indicated in the Upper Madera, Brazil and MDD in Peru than elsewhere. The overall number of violations thus differed from place to place.

Some commonly violated criteria, such as accountability and coordination, were unmet in most explanations across all five cases. But for the most commonly unmet criterion, transparency, we found that violations occurred in most or all explanations in all cases, except in Colombia. A similar pattern emerged for other commonly violated governance criteria, such as access to information. Therefore, both inclusive and exclusive comparisons of commonly unmet governance criteria are necessary to adequately capture patterns across cases. Other environmental governance criteria, such as multi-level problems, inclusion, and lack of participation, were always or almost always violated in the Upper Madera, Brazil and Colombia, but less so in the TIPNIS and MDD in Peru. Hence even among commonly unmet environmental governance criteria, there was variation among cases.

Some findings in Table 8 came as a surprise. Before the analysis, and indeed after the political ecology analysis, we had expected to see more frequent violations of inclusion, justice/rights and lack of participation. Such issues are routinely highlighted in the political ecology literature on environmental conflicts. But more often we found a lack of access to information, accountability and transparency. Similarly, the focus on the Amazon as a frontier region led some co-authors to expect there to be issues with local capacity and coordination, especially across multiple scales. While these were cited many times as problems, capacity per se was not. Systematic evaluations of environmental governance, especially when conducted across multiple cases, can thus reveal unexpected findings.

6. Discussion

Our analysis offers insights about the central role of political ecology in explanations for ineffective environmental governance in the Amazon. Political ecology encompasses explanations that reveal why sustainability is lacking across the five cases. It is, therefore, a very useful theoretical approach to understand ineffective environmental governance.

The comparative analysis highlighted the role of the state, as did the inclusive comparisons. Explanations included state authoritarianism, the persecution of indigenous peoples, and a lack of state presence. With regard to state authoritarianism, in the TIPNIS and Upper Madera, the Bolivian state pursued a strategy of centralizing power to enact policies in a top-down fashion by passing various measures to restrict the autonomy of other stakeholders. In southern Amazonas-northern Rondonia, the Brazilian state followed a distinct authoritarian path by militarizing executive agencies as a means of pursuing top-down policies that excluded other stakeholders. The Colombian state has a history of authoritarianism enacted via outright violence against local stakeholders.

State persecution of indigenous peoples varied. In the TIPNIS, the Bolivian state employed a mix of deception and coercion against lowland indigenous groups, which relates to the case of the Upper Madera, where it exhibited a lack of sympathy toward lowland indigenous cultures. By contrast, the Brazilian state was more openly hostile toward indigenous peoples under the Bolsonaro administration, reducing the power of agencies like FUNAI, while legislators pushed to permit private properties inside indigenous lands. Another contrast was highlighted in Colombia, where despite a high level of indigenous organization, the Colombian state increasingly fails to acknowledge relational ontologies among indigenous peoples.

State neglect or lack of presence occurred in the Upper Madera, and the Bolivian and Brazilian states engaged in high-level negotiations and largely ignored input from local and regional stakeholders. In Colombia, the state has mostly been absent from the Amazon due to the presence of the insurgency, which is now being replaced by extractive economic interests. In MDD/Peru, there are weaknesses in regulatory oversight due to lack of agency coordination and the prevalence of corruption.

Beyond the role of the state, exclusive comparisons revealed many other political ecology explanations for ineffective environmental governance. These include issues highlighted in the Latin American literature, such as neocolonialism, neo-extractivism, regional integration, and land tenure conflicts, as well as political fragmentation among communities. The large number of distinct political ecology explanations that occurred in a minority of cases confirm the overall explanatory power of the approach for understanding ineffective environmental governance, as well as the context-specificity of the particular political ecology issues operating among cases.

The analysis also unpacked the specific environmental governance criteria unmet, in order to understand why sustainability was not achieved. When we applied the political ecology explanations to a shared environmental governance evaluation framework, inclusive comparisons showed that many environmental governance criteria were commonly violated. Lack of transparency was the most commonly cited problem, followed by a lack of accountability or legitimacy, a lack of access to information or knowledge, and lack of coordination among stakeholders. The findings for commonly violated environmental governance criteria call for particular attention to those essential elements. Strategies to improve transparency, access to knowledge, and coordination are especially likely to be important in supporting environmental governance efforts and thus, positive sustainability outcomes.

At the same time, our comparisons revealed differences in how often environmental governance criteria were violated. Violations were frequent across the cases but there were specific contextual factors. While in principle all of the criteria in the evaluation framework need to be met for environmental governance to be effective, the findings indicate that particular criteria are particularly hard to meet.

There are also positive implications from our findings for improving the effectiveness of environmental governance. One is that engagement with the state is crucial for effective governance. While that general conclusion may not be surprising, the findings also point to particular strategies. An important example concerns public ministries, which are charged with ensuring that states represent citizens in cases where their rights are threatened or violated. Engaging public ministries thus offers a legal avenue for environmental governance. Another implication arises from understanding top-down initiatives and the oppression of local

peoples. These cases highlight the value of using decolonization frames to recognize the ontologies and practices of indigenous peoples and other local groups. They have deep wells of experience and knowledge in local resource management that support long-established cultural practices. Whereas the persecution of indigenous groups was often cited as an explanation for ineffective environmental governance, acknowledgment of indigenous ontologies and practices can improve outcomes and hence sustainability. Finally, some criteria from the environmental governance evaluation framework were coded more often as unmet. In terms of addressing these, practical and specific strategies are needed. Transparency and poor flows of information can be addressed via public relations and other communication strategies. In many of our cases, local stakeholders have developed PR strategies to counter governmental claims before large publics (GIA 2021). Accountability can be encouraged via observatories, which involve sustained stakeholder monitoring of governance processes by governments. Observatories make publics more aware of dates for public audiences and other key events, resulting in broader participation and often greater pressure on decision makers to act in the public interest. In turn, such strategies can serve to redirect government decisions toward decisions that will yield more sustainable outcomes, and/or mobilize publics against regimes that act otherwise, whether via direct action or elections.

Theoretical perspectives on governance tend to make certain limiting assumptions that can be addressed by a political ecology framework, especially Latin American political ecology. For one thing, approaches to environmental governance developed in the Global North do not address histories of colonialism and violence. In contrast, Latin American political ecology features those issues, along with a constellation of related concepts. Second, governance perspectives exhibit a rationalist foundation, evident in their western dualistic ontologies that separate societies from nature. Latin American political ecology highlights relational ontologies among indigenous and other traditional peoples that explicitly offer frameworks for decisions with sustainability at the forefront. Third, governance perspectives tend to assume that states are democratic and legitimate. A central argument of Latin American political ecology is precisely the opposite, a contention supported by our findings. Latin American political ecology thus underscores the importance of the decolonization of thought as a key to avoiding environmental degradation and social injustice.

These observations imply that political ecology offers avenues for engagement with environmental governance. Political ecology largely explains ineffective governance, and by unpacking environmental governance into its requisite criteria, we can identify specific targets for political interventions. However, such applications require context-specific interpretations of environmental governance criteria in light of political ecology explanations if strategic action in response is to be effective. Further engagement of political ecology and therefore environmental governance looks to be a very productive line of inquiry.

In that spirit, we treated our integrated evaluation framework as being provisional. It seems useful to critically interrogate the effectiveness of environmental governance by questioning its key criteria. There are definitional issues in certain aspects of environmental governance that need clarification. Should coordination among stakeholders operating on a given level of scale and multi-level governance be considered separately? Should accountability and legitimacy be combined? In the Colombian case, a history of violence was one explanation of poor environmental governance. How should governance account for violence? If governance is grounded in a rationalist dualistic ontology, how best to recognize relational ontologies?

In the encounter between political ecology and environmental governance, a final issue concerns the tension between context specificity and breadth of applicability of findings. We managed this via inclusive and exclusive comparisons, using quantitative counts and qualitative interpretations. This is an alternative to Bennett and Satterfield's (2018) suggestion to adapt governance frameworks to different contexts. Our approach allows for identification of similarities and differences among contexts with particular specificities, using a shared evaluation framework. That said, our approach relied on case study experts and their interpretations of stakeholder perspectives. Future research can complement this effort by more directly involving stakeholders in analyses. Lived experiences of insiders are may still be distinct from interpretations academic outsiders.

7. Conclusion

We conclude by noting a final challenge to the use of frameworks to evaluate environmental governance. All of the evaluation frameworks we employed were organized around lists of criteria deemed to be necessary to promote sustainability. However, such lists, even if extensive, are also reductive, for the consequent evaluations assume that their criteria that are more or less independent from one another. But it is likely that in any environmental governance process, one requisite criterion will be interdependent with the others. This is a fundamental lesson from political ecology research into complexity. The suggestion we have made that 'lack of transparency' is an especially common problem does not mean that improving transparency will do the most to make environmental governance more effective. Instead, we can only say that ameliorating transparency may improve it in most cases. That, however, begs questions about how addressing transparency can be facilitated by addressing other unmet criteria. There is, therefore, a need to pursue a more systemic, integrative approach to analysis of environmental governance by focusing on how the different evaluation criteria interact. Authoritarian states pose numerous governance problems beyond a lack of transparency; therefore, addressing authoritarianism implies understanding multiple interacting factors working against effective governance. Thus, future political ecology investigations in the Amazon region need to draw on evaluation frameworks, but these analyses need to continue to account for interactions among environmental governance criteria.

Abbreviations

DNIT - National Transport and Infrastructure Department (Brazil)

EGI - Environmental Governance Index

FUNAI – Brazilian Indigenous National Agency

IBAMA- Brazilian Institute of the Environment and Renewable Natural Resources

MDD - Department of Madre de Dios (Peru)

MPF - Federal Public Ministry (Brazil)

SERNAP - National Service of Protected Areas (Bolivia)

TIPNIS - The Isiboro Sécure Indigenous Territory and National Park

References

Abessa, D., Famá, A., & Buruaem, L. (2019). The systematic dismantling of Brazilian environmental laws risks losses on all fronts. *Nature Ecology & Evolution, 3*(4), 510–511. http://doi.org/10.1038/s41559-019-0855-9

Adams, W. M., & Hutton, J. (2007). People, parks and poverty: political ecology and biodiversity conservation. *Conservation and Society*, *5*(2), 147-183.

Adger, W. N., Brown, K., & Tompkins, E. L. (2005). The political economy of cross-scale networks in resource co-management. *Ecology & Society, 10*(2). https://doi.org/10.5751/ES-01465-100209

Adkin, L. (Ed.). (2016). *First world petro-politics: The political ecology and governance of Alberta.* University of Toronto Press.

Agrawal A. & Gibson C. C. (1999). Enchantment and disenchantment: The role of community in natural resource conservation. *World Development 27*(4), 629–649. http://doi.org/10.1016/S0305-750X(98)00161-2

Agrawal, A. (2003). Sustainable governance of common-pool resources: Context, methods, and politics. *Annual Review of Anthropology*, *32*, 243-262. http://doi.org/10.1146/annurev.anthro.32.061002.093112

Agrawal, A., Brandhorst, S., Jain, M., Liao, C., Pradhan, N., & Solomon, D. (2022). From environmental governance to governance for sustainability. *One Earth*, *5*(6), 615-621. https://doi.org/10.1016/j.oneear.2022.05.014

Ahlborg, H. and Nightingale, A. J. (2018). Theorizing power in political ecology: The where of power in resource governance projects. *Journal of Political Ecology, 25*, 381-401. https://doi.org/10.2458/v25i1.22804

Albuquerque Moraes, R. (2018). Políticas indígenas: aportes desde el TIPNIS. *Cuestión Agraria*, *4*, 203-220.

Alimonda, H., (ed.) (2011). *La naturaleza colonizada: Ecologia politica y mineria en America Latina*. CLACSO.

Alimonda, H., Toro Perez, C. & F. Martin, F. (eds.) (2017). *Ecologia politica Latinoamericana: Pensamiento critico, diferencia latinoamericana, y rearticulacion epistemica*. CLACSO.

APDHB. (n.d.). Informe de la Comisión Interinstitucional Iglesia católica y Asamblea Permanente de Derechos Humanos de Bolivia sobre la consulta previa, libre e informada en el Territorio Indígena y Parque Nacional Isiboro Sécure, Informe por comunidad visitada. APDHB. Retrieved October 22, 2020 from https://www.fidh.org/IMG/pdf/bolivia609esp2013.pdf

APIB. (2013). Public letter of APIB about regulation of proceedings of the right of consultation granted by ILO Convention 169. Letter signed in Brasília. Retrieved October 22, 2020 from https://apiboficial.org/?lang=en

Arias Hurtado, C. (2017). Neoextractivismo en América Latina y Colombia: Una reflexión desde la ecología política. *Revista Controversia 208*, 15-53. https://doi.org/10.54118/controver.vi208.1083

Armitage, D., de Loe R. & Plummer, R. (2012). Environmental governance and its implications for conservation practice. *Conservation Letters, 5*(4): 245-255. https://doi.org/10.1111/j.1755-263X.2012.00238.x

Ávila-García, P. (2016). Hacia una ecología política del agua en Latinoamérica. *Revista de Estudios Sociales*, *55*, 18-31.

Aysem, M. (2019). Participation(s) in transnational environmental governance: Green values versus instrumental use. *Environmental Values, 28*(1): 101-121. https://doi.org/10.3197/096327119X15445433913596

Barber, C. P., Cochrane, M. A., Souza, C. M., & Laurance, W. F. (2014). Roads, deforestation, and the mitigating effect of protected areas in the Amazon. *Biological Conservation, 177*, 203–209. http://doi.org/10.1016/j.biocon.2014.07.004

Barzola, E. J., & Baroni, P. A. (2018). El acercamiento de China a América del Sur. Profundización del neoextractivismo e incremento de conflictos y resistencias socioambientales. *Colombia Internacional*, *93*, 119-145. https://doi.org/10.7440/colombiaint93.2018.05

Baud, M., de Castro F., & Hogenboom, B. (2011). Environmental governance in Latin America: Towards an integrative research agenda. *European Review of Latin American and Caribbean Studies, 90*, 79-88.

Baudoin Farah, A. (2019). *"Volver a hablar con la Gente del Agua": Meanders of indigenous autonomy in the Isiboro Sécure Indigenous Territory and National Park (TIPNIS), Bolivia*. PhD dissertation. University of Florida.

Bebbington, A. J. (2012). Underground political ecologies: The second annual lecture of the Cultural and Political Ecology Specialty Group of the Association of American Geographers. *Geoforum, 43*, 1152-1162. https://doi.org/10.1016/j.geoforum.2012.05.011

Beneria Surkin, J. (2002). Caracterización técnica de aspectos históricos, culturales, socioeconómicos organizativos y de gestión del Territorio Indígena Parque Nacional Isiboro Secure (TIPNIS). *Proyecto Manejo de Áreas Protegidas y Zonas de Amortiguación MAPZA*. Retrieved on October 22, 2020 from https://www.bivica.org/file/view/id/485

Bennett, N. J., & Satterfield, T. (2018). Environmental governance: A practical framework to guide design, evaluation, and analysis. *Conservation Letters 11*(6): 113. http://doi.org/10.1111/conl.12600

Bixler, R. P., Wald, D. M., Ogden, L. A., Leong, K. M., Johnston, E. W., & Romolini, M. (2016). Network governance for large-scale natural resource conservation and the challenge of capture. *Frontiers in Ecology and the Environment, 14*(3): 165-171. https://doi.org/10.1002/fee.1252

Blaikie, P. M. (1999). A review of political ecology. *Zeitschrift für Wirtschaftsgeographie*, *43*(1), 131-147.

Blaser, M. (2013). Ontological conflicts and the stories of peoples in spite of Europe: Toward a conversation on political ontology. *Current Anthropology, 54*, 547–568. http://doi.org/10.1086/672270

Bottazzi, P., & Dao, H. (2013). On the road through the Bolivian Amazon: A multi-level land governance analysis of deforestation. *Land Use Policy, 30*, 137–146. http://doi.org/10.1016/j.landusepol.2012.03.010

Boyd, E., Nykvist, B., Borgström, S., and Stacewicz, I. A. (2015). Anticipatory governance for social-ecological resilience. *Ambio, 44*, 149-161.

Brasil. (2004). DECRETO No 5.051, DE 19 DE ABRIL DE 2004 Promulga a Convenção no 169 da Organização Internacional do Trabalho - OIT sobre Povos Indígenas e Tribais. In *Diario Oficial da Uniao (Issue D)*. https://doi.org/http://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2004/Decreto/D5051.htm#textoimpressao

Bridge, G., & Perreault, T. (2009). Environmental Governance. In Castree, N. *et al*. (eds.) *A Companion to Environmental Geography* (pp. 475-497). Wiley Blackwell. https://doi.org/10.1002/9781444305722.ch28

Brondizio, E. S., & Le Tourneau, F. M. (2016). Environmental governance for all. *Science*, *352*(6291), 1272-1273. https://doi.org/10.1126/science.aaf5122

Brown, J. C. & Purcell. M. (2005). There's nothing inherent about scale: Political ecology, the local trap, and the politics of development in the Brazilian Amazon. *Geoforum 36*, 607-624.

Bryant, R. L., & Bailey, S. (1997). *Third world political ecology*. Routledge.

Bulkeley, H. (2005). Reconfiguring environmental governance: Towards a politics of scales and networks. *Political Geography 24*(8): 876-902.

Cardenas, (2022). Corruption at every level: Who profits from destruction of Peru's Amazon. In *The roots of environmental crime in the Peruvian Amazon*. (Pp. 37-40). Insightcrime & Igarapé Institute.

Carlos, H. S. A., & Meirelles, F. de A. (2018). *Análise da implementação de unidades de conservação sob influência da Rodovia BR-319*. IDESAM.

Castro, E. M. R. D. (2017). *Territórios em transformação na Amazônia: saberes, rupturas e resistências*. Núcleo de Altos Estudos Amazônicos/UFPA.

Choquehuanca, J. (2011). Plan de Manejo de lagarto (Caiman yacare) 2011-2015 para el Territorio Indígena y Parque Nacional Isiboror Sécure (documento de trabajo). SERNAP-MAPZA.

Clemons, K. S. (2008). Hydroelectric dams: transboundary environmental effects and international law. *Florida State University Law Review*, *36*, 488-534.

Comisión de la Verdad (2022). Resistir no es aguantar. Retrieved October 22, 2022 from https://www.comisiondelaverdad.co/pueblos-etnicos

Department Against Transnational Organized Crime. (2021). Organization of American States. Secretariat for Multidimensional Security - OAS Catalog in Publication Data. https://www.oas.org/en/sms/dtoc

Duarte, C. (2020). ¿La violencia hacia los líderes sociales es despolitizada? La Silla Llena. Retrieved October 22, 2020 https://lasillavacia.com/silla-llena/red-social/la-violencia-hacia-los-lideres-sociales-despolitizada-72092

Dunlap, A., & Sullivan, S. (2020). A faultline in neoliberal environmental governance scholarship? Or, why accumulation-by-alienation matters. *Environmental Planning E: Nature and Space 3*, 552-579. https://doi.org/10.1177/25148486198746

Emerson, K., Nabatchi, T., & Balogh, S. (2012). An integrative framework for collaborative governance. *Journal of Public Administration Research and Theory*, *22*(1), 1-29.

Escobar, A. (1998). Whose knowledge, whose nature? Biodiversity, conservation, and the political ecology of social movements. *Journal of Political Ecology*, *5*(1), 53-82. https://doi.org/10.2458/v5i1.21397

Escobar, A. (2018). *Designs for the pluriverse: Radical interdependence, autonomy, and the making of worlds.* Duke University Press.

Espin, J. (2018). *Regulations, enforcement and policies to address environmental harms in artisanal and small scale gold mining (ASGM) in Peru*. PhD Dissertation, University of Florida.

Evans, J. P. (2012). *Environmental governance*. Routledge.

Ezzine-de-Blas, D., Börner, J., Violato-Espada, A. L., Nascimento, N., and Piketty, M. G. (2011). Forest loss and management in land reform settlements: Implications for REDD governance in the Brazilian Amazon. *Environmental Science & Policy 14*, 188–200. http://doi.org/10.1016/j.envsci.2010.11.009.

Fisher, J., Stutzman, H., Vedoveto, M., Delgado, D., Rivero, R., Quertehuari Dariquebe, W., *et al*. (2020). Collaborative governance and conflict management: Lessons learned and good practices from a case study in the Amazon Basin. *Society and Natural Resources 33*, 538–553. http:doi.org/10.1080/08941920.2019.1620389

Fearnside, P. M. (2014). Impacts of Brazil's Madeira River dams: Unlearned lessons for hydroelectric development in Amazonia. *Environmental Science & Policy*, *38*, 164-172.

Fearnside, P. M. 2019. Impactos das hidrelétricas na Amazônia e a tomada de decisão. *Novos Cadernos NAEA 22*(3), 69-96. http://dx.doi.org/10.5801/ncn.v22i3.7711

Ferrante, L., Gomes, M., and Fearnside, P. M. (2020). Amazonian indigenous peoples are threatened by Brazil's Highway BR-319. *Land Use Policy 94*, 104548. http://doi.org/10.1016/j.landusepol.2020.104548

FUNAI. (2020). INSTRUÇÃO NORMATIVA No 9, DE 16 DE ABRIL DE 2020. *Diário Oficial da União. Ministério da Justiça e Segurança Pública/Fundação Nacional do Índio*. Issue Edição: 76, Seção: 1, Página: 32. Brazil.

Fundación Tierra. (2019). Fuego en Santa Cruz. Balance de los incendios forestales 2019 y su relación con la tenencia de la tierra. Informe especial. *La Paz: Fundación Tierra.* Retrieved October 22, 2020 from http://www.ftierra.org/index.php/component/attachments/download/194

González Perafán. (2020). 1,000 líderes y defensores de DDHH. *Indepaz*. Retrieved October 22, 2020 from http://www.indepaz.org.co/1-000-lideres-y-defensores-de-ddhh/

Governance and Infrastructure in the Amazon (GIA) Project. (2021). Project URL: www.giamazon.org

Gudynas, E. (2010). La ecología política de la crisis global y los límites del capitalismo benévolo. *Íconos: Revista de Ciencias Sociales, 36*, 53-67. https://doi.org/10.17141/iconos.36.2010.391

Holly, C., N. Gunningham, & C. Shearing. (2012). *The new environmental governance.* Earthscan.

Human Rights Watch. (2020). *World Report 2020*. *Colombia Events of 2020*. Retrieved October 22, 2020 from https://www.hrw.org/world-report/2021/country-chapters/colombia

Human Rights Watch. (2020). World Report 2020. Bolivia Events of 2019. Retrieved October 22, 2020 from https://www.hrw.org/world-report/2020/country-chapters/bolivia#.

ILO 169. (1989). C169 Indigenous and Tribal Peoples Convention, 1989(169), 1–44. https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C169

Justiça Federal. (2020). Direitos Indígenas, Bens Públicos, Terras Indígenas, Política fundiária e da reforma agrária. Nulidade de ato administrativo Classe: Ação Civil Pública (65). Judiciária de Mato Grosso 3a Vara Federal Cível da SJMT, 1007376-21.2020.4.01.3600.

Krause, T., (2020). Reducing deforestation in Colombia while building peace and pursuing business as usual extractivism? *Journal of Political Ecology 27*(1), 401-418. https://doi.org/10.2458/v27i1.23186

Leff, E. (2015). Political ecology: A Latin American perspective. *Desenvolvimento e Meio Ambiente*, *35*(35), 29-64.

Lehm, Z.A. (1999). *Milenarismo y Movimientos sociales en la Amazonía Boliviana. La búsqueda de la Loma Santa y la Marcha indígena por el Territorio y la Dignidad.* Santa Cruz, Bolivia: Coedición Centro de Investigación y Documentación para el Desarrollo del Beni / Apoyo Para el Campesino-indígena del Oriente Boliviano / OXFAM América.

Lemos, M. C., & Agrawal, A. (2006). Environmental governance. *Annual Review of Environment and Resources 31*, 297-325. http://doi.org/10.1146/annurev.energy.31.042605.135621

Lockwood, M. (2010). Good governance for terrestrial protected areas: A framework, principles and performance outcomes. *Journal of Environmental Management, 91*(3), 754-766.

Machado Araoz, H. A. C. (2015). Ecologia politica de los regimenes extractivistas: De reconfiguraciones imperiales y re-ex-sistencias decoloniales en Nuestra America. *Bajo el Volcan, 15*(23): 11-51.

Mann, C. (2000). Earthmovers of the Amazon. *Science*, *287*(5454), 786-789.

McCreary, T. & V. Lamb. (2014). A political ecology of sovereignty in practice and on the map: The technicalities of law, participatory mapping, and environmental governance. *Leiden Journal of International Law, 27*, 595-619. http://doi.org/10.1017/S0922156514000223

McMichael, P. (1990). Incorporating comparison within a world-historical perspective: An alternative comparative method, *American Sociological Review 55*(3): 385-397.

Mendizabal, W. (2010). *Documento de Sistematización del Proyecto Cacao en el TIPNIS.* SERNAP-MAPZA. Retrieved October 22, 2020 from https://tipnisbolivia.org/2018/11/01/documento-de-sistematizacion-del-proyecto-cacao-en-el-tipnis/

Molina, W. (2018). Carretera, desarrollo y transformaciones de la gobernabilidad del TIPNIS. *Cuestión Agraria, 4*, 7-38.

Morales-Giner, P., Speranza Martina, L., Arteaga, M., Baudoin Farah, A., Ferreira da Fonseca Junior, S., García Villacorta, A., Rosero Peña, M. & Perz S. G. 2021. Multi-criteria frameworks to improve evaluation of the effectiveness of environmental governance in the Amazon. *Frontiers in Forests and Global Change*, *4*, 38. Http://doi.org/10.3389/ffgc.2021.635835

MPF (2020). Impugnação ao RDC eletrônico 216/2020. Cumprimento de sentença contra a Fazenda Pública. 1a Vara Federal Cível da Seção Jurídica do Amazonas. Processo referência: 0005716-70.2005.4.01.3200. MPF Procuradoria da República do Estado do Amazonas.

MPF (2020b). *A pedido do MPF, Justiça Federal em MT suspende efeitos de Instrução Normativa 09 da Funai.* Retrieved October 22, 2020 from https://cimi.org.br/2020/06/pedido-mpf-justica-federal-mt-suspende-efeitos-instrucao-normativa-09-funai/

MPF (2021). Recomendação Lega no 11/2021 5o Ofício/PR/AM/MPF. Inquérito Civil no 1.13.000.001678/2009-42. MPF Procuradoria da República do Estado do Amazonas 5o Oficio. Retrieved October 22, 2020 from http://www.mpf.mp.br/am/sala-de-imprensa/noticias-am/obras-da-br-319-devem-ser-suspensas-ate-que-povos-indigenas-e-tradicionais-sejam-consultados-recomenda-mpf

Muñoz, P. (2021). Peru's democracy in search of representation. In *Divisive politics and democratic dangers in Latin America*. (Pp. 27-31). Carnegie Endowment for International Peace.

Neumann, R. P. (2009). Political ecology: theorizing scale. *Progress in Human Geography*, *33*(3), 398-406. https://doi.org/10.1177/030913250809635

Newell, P. (2008). The political economy of global environmental governance. *Review of International Studies*, *34*, 507-529. http://doi.org/10.1017/S0260210508008140

Newig, J., & Fritsch, O. (2009). Environmental governance: participatory, multi-level – and effective? *Environmental Policy and Governance*, 19, 197-214. doi:10.1002/eet.509.

Osborne, T. 2015. Tradeoffs in carbon commodification: A political ecology of common property forest governance. *Geoforum, 67*, 64-77.

Palacios C., G.A. (2006). Breve guia de introduccion a la ecologia politica (ecopol): origenes, inspiradores, aportes y temas de actualidad. *Gestion y Ambiente,* 9(3), 7.

Paneque-Gálvez, J., Pérez-Llorente, I., Luz, A. C., Guèze, M., Mas, J.-F., Macía, M. J., . . . Reyes-García, V. (2018). High overlap between traditional ecological knowledge and forest conservation found in the Bolivian Amazon. *Ambio,* 47, 908-923. https://doi.org/10.1007/s13280-018-1040-0

Papillon, M. & Rodon, T. (2017). Proponent-Indigenous agreements and the implementation of the right to free, prior, and informed consent in Canada. *Environmental Impact Assessment Review*, 62, 216-224. https://doi.org/10.1016/j.eiar.2016.06.009

PARES. (2020). *Minga y paro nacional: Un viacrucis para el gobierno*. Fundación Paz y Reconciliación. Retrieved October 22, 2020 from https://pares.com.co/2020/10/20/minga-y-paro-nacional-un-viacrucis-para-el-gobierno/

Parques Nacionales de Colombia (2001). *Política de participación social en la conservación.* Bogotá. Retrieved October 22, 2020 from https://redjusticiaambientalcolombia.files.wordpress.com/2012/09/polc3adtica-de-participacic3b3n-social-en-la-conservacic3b3n2.pdf

Partelow, S., Schlüter, A., Armitage, D., Bavnick, M., Carlisle, K. *et al*. 2020. Environmental governance theories: A review and application to coastal systems. *Ecology and Society,* 25(4), 19. https://doi.org/10.5751/ES-12067-250419

Paz, S. (2012). Dos actores, dos modos de vida y un sector social en ascenso: los colonizadores. Retrieved October 22, 2020 from https://cedib.org/post_type_titulares/el-tipnis-en-el-centro-del-interes-global-bolpress-4-9-2012/

Perz, S., Brilhante, S., Brown, F., Caldas, M., Ikeda, S., Mendoza, E., *et al*. (2008). Road building, land use and climate change: Prospects for environmental governance in the Amazon. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *363*, 1889-1895. http://doi.org/10.1098/rstb.2007.0017

Porto-Goncalves, C. W. (2012). A ecologia politico na America Latina: Reapropriacao social da natureza e reinvencao dos territorios. *Interthesis, 9*, 16-50. https://doi.org/10.5007/1807-1384.2012v9n1p16

Reed, M. S., Graves, A., Dandy, N., Posthumus, H., Hubacek, K., Morris, J., Prell, C., Quinn, C., & Stringer, L. C. (2009). Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management*, *90*(5), 1933-1949. https://doi.org/10.1016/j.jenvman.2009.01.001

Reed, M. G. & Bruyneel, S. (2010). Rescaling environmental governance, rethinking the state: A three-dimensional review. *Progress in Human Geography, 34*(5), 646-653.

REET Brasil (2020). Sustainable highways in the Amazon: The case of BR-319. Webinar 2/07/2020. https://www.youtube.com/watch?v=4aCD1mPGXVI

Revelo Rebolledo, J. (2019). ¿Para qué sirven los parques naturales? Legibilidad estatal en el Parque Alto Fragua Indi Wasi, Colombia. *Colombia Internacional, 100*, 121-145. https://doi.org/10.7440/colombiaint100.2019.06

Rivera Cusicanqui, S. (2018). TIPNIS. La larga marcha por nuestra dignidad. *Cuestión Agraria. 4*, 7-38.

Robbins, P. 2012. *Political ecology: A critical introduction*. Wiley.

Rojas Garzón, B. (2016). *Direito à consulta e consentimento de povos indígenas, quilombolas e comunidades tradicionais*. Rede de Cooperação Amazônica – RCA. https://doi.org/16-08520

Romero, H. and J. Sasso (2014). Proyectos hídricos y ecología política del desarrollo em Latinoamérica: Hacia un marco analítico. *European Review of Latin American and Caribbean Studies, 97*, 55-74.

Santos Júnior, M., Yanai, A. M., Sousa Junior, F. O., de Freitas, I. S., Pinheiro, H. P., de Oliveira, A. C. R., da Silva, F. L., Graça, P. M. L. A. & Fearnside, P.M. (2018). BR-319 como propulsora de desmatamento: Simulando o impacto da Rodovia Manaus-Porto Velho. IDESAM Manaos. Retrieved October 22, 2020 from https://idesam.org/publicacao/simula-desmatamento-br319.pdf

Sauré, V. (2020). Consulta prévia, livre e informada da Convenção 169 da OIT: O caso dos megaprojetos portuários no Lago do Maicá, Santarém. In Benassuly, M. (ed.) *Políticas públicas e dinâmicas territoriais no Oeste do Pará*. (pp. 210-232). Ananindeua: Itacaiunas https://doi:10.36599/itac-ed1.013

Schmink, M. and C. H. Wood. (1992). *Contested frontiers in Amazonia*. Columbia University Press.

Schmink, M., Hoelle, J., Gomes, C. V. A. & Thaler, G. M. (2019). From contested to 'green' frontiers in the Amazon? A long-term analysis of São Félix do Xingu, Brazil. *Journal of Peasant Studies,* 46(2), 377-399.

SERNAP. (2002). *Plan de manejo Territorio Indígena – Parque Nacional Isiboro Sécure.* Servicio Nacional de Áreas Protegidas.

SERNAP-Subcentral TIPNIS. (2007). Tercer convenio de administración compartida del TIPNIS suscrito entre el Servicio Nacional de Áreas Protegidas y la Sub-Central del Territorio Indígena Parque Nacional Isiboro Sécure. SERNAP. Retrieved October 22, 2020 from https://tipnisbolivia.org/2018/11/19/tercer-convenio-de-administracion-compartida-del-tipnis-suscrito-entre-sernap-y-la-sub-central-tipnis/

SERNAP. (2001). Evaluación ambiental estratégica del TIPNIS – EAE. Servicio Nacional de Áreas Protegidas SERNAP/ RUMBOL.

Shanley. P., Cymerys., M., Serra. M., & Medina. G., (2012). *Frutales y plantas útiles en la vida Amazónica*. FAO/CIFOR/PPI.

Silva, Z. (2020). PL 2633/2020. Altera Leis: 11.952/09 que dispõe sobre a regularização fundiária em áreas d a União; 8.666/93 que instituí normas para licitações e contratos da administração publica; e a 6.015/1973 que dispõe sobre os registros públicos. Documento electrónico assinado por Ze Silva (Solidariedade/MG). Retrieved October 22, 2020 from https://www.camara.leg.br/proposicoesWeb/prop_mostrarintegra?codteor=1893531

Simmons, C. S., Walker, R. T., Arima E. Y., Aldrich S. P. & Caldas, M. M. (2007). The Amazon land war in the South of Pará. *Annals of the Association of American Geographers, 97*, 567-592.

Smith, N. (2014). *Palms and people in the Amazon.* Springer.

SomosSur. (2016). *TIPNIS: Infamia de una "Consulta" manipulada*. Retrieved October 22, 2020 from https://somossur.net/documentos/20170725_tipnis_consulta.pdf

Svampa, M. (2015). Commodities consensus: Neoextractivism and enclosure of the commons in Latin America. *South Atlantic Quarterly 114*(1): 65–82.

Ter Steege, H., Pitman, N. C. A., Sabatier, D., Baraloto, C., Salomão, R. P., Guevara, J. E., *et al.* (2013). Hyperdominance in the Amazonian tree flora. *Science, 342*, 325-335. https://doi:10.1126/science.1243092

Tilly, C. (1984). *Big structures, large processes, huge comparisons*. Sage Foundation.

Tito, L. S. & Fernández. A. B. (eds.). (2014). *Jóvenes rurales. Una aproximación a su problemática y perspectivas en seis regiones de Bolivia*. CIPCA - Centro de Investigación y Promoción del Campesinado.

Toledo, V. & Barrera-Bassols, N. (2008). *La memoria biocultural. La importancia ecológica de las sabidurías tradicionales.* Icaria.

Tomlinson, K. (2019). Indigenous rights and extractive resource projects: Negotiations over the policy and implementation of FPIC. *International Journal of Human Rights, 23*(5), 880–897. https://doi.org/10.1080/13642987.2017.1314648

Torres, C. & Verschoor, G. (2020). Re-imagining environmental governance: Gold dredge mining vs. territorial health in the Colombian Amazon, *Geoforum*, *117*, 124-133. http://10.0.3.248/j.geoforum.2020.09.013

UN Development Program. (2014). *Governance for Sustainable Development: Integrating governance in the post-2015 Development Framework*. INDP. Retrieved October 22, 2020 from https://www.undp.org/publications/discussion-paper-governance-sustainable-development

USAID. (2016). *DRG integration case study synthesis report.* USAID. Retrieved October 22, 2020 from https://usaidlearninglab.org/sites/default/files/resource/files/case_study_synthesis_report_-_light_version_7.14.16.pdf

Vizeu Pinheiro, M., Rojas Sanchez, L., Chamness Long, S., & Ponce A. (2020). Environmental Governance Indicators for Latin America & the Caribbean. *Inter-American Development Bank & World Justice Project*. Retrieved October 22, 2020 from https://publications.iadb.org/publications/english/document/Environmental-Governance-Indicators-for-Latin-America--the-Caribbean.pdf

Waddington, H., Sonnenfeld, A., Finetti, J., Gaarder, M., John, D., & Stevenson, J. (2019). Citizen engagement in public services in low- and middle-income countries: A mixed-methods systematic review of participation, inclusion, transparency and accountability (PITA) initiatives. *Campbell Systematic Reviews*, *15*, 1-2, e1025. https://doi.org/10.1002/cl2.1025

Wessendorf. K. (2008) *The Indigenous World 2008*. Eks-Skolens.

World Bank. (2017). *World Development Report 2017: Governance and the law*. World Bank.

World Bank. (2020). Sovereign environmental, social and governance data: Data, tools and guidance. Retrieved October 22, 2020 from https://datatopics.worldbank.org/esg/framework.html

Wyborn, C. (2015). Cross-scale linkages in connectivity conservation: Adaptive governance challenges in spatially distributed networks. *Environmental Policy and Governance, 25*(1), 1-15. https://doi.org/10.1002/eet.1657