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# Searching for a recipe for success: environmental citizen petitions under free trade agreements

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## ABSTRACT

Submissions on enforcement matters (SEMs) allow civil society members to assert that one party to a free trade agreement (FTA) is failing to enforce its domestic environmental laws. Submissions that survive every step of the SEM process result in a ‘factual record’ prepared by a secretariat on enforcement matters. Relying on qualitative comparative analysis and an original dataset compiling the 158 SEMs submitted under the framework of US FTAs, I investigate what conditions make submissions more likely to succeed in leading to a factual record. I find that the existence of previous submissions dealing with the same facts, submissions against developing countries, and the presence of at least one non-governmental organization as a submitter contribute to a submission’s success, but only in conjunction with other conditions and for a limited number of cases. This result provides overall evidence that secretariats’ decisions are unbiased by the factors examined in this paper.


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## Introduction

Preferential trade agreements (PTAs) increasingly include public participation provisions in their environmental chapters. While these provisions are often vague and poorly enforceable, one procedure is more elaborate: the submission on enforcement matters (SEM) process. SEMs are written documents filed by non-governmental organizations (NGOs) or citizens asserting that one of the PTA’s parties is failing to enforce its environmental laws. Submissions are compiled and assessed by a secretariat and may lead to the publication of a factual record if the secretariat considers it warranted and the PTA’s parties agree to its production and publication. Factual records

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consist of an investigative report documenting the environmental, legal, or public health aspects of the breach that the submitters allege.

As the final step of the SEM process, I consider the publication of a factual record to indicate that a given submission is 'successful.' This conception of success, labeled process success, is more easily trackable and measurable than other forms of policy success such as legitimacy, efficiency, or popularity. In this procedural sense, the vast majority of SEMs are *not* successful and are dismissed by secretariats. Relying on an original dataset compiling the 158 SEMs submitted between 1995 and 2022 under the framework of PTAs concluded by the United States (US), I investigate under which conditions SEMs are more likely to succeed. Factual records may provide governments with 'incentives to act' on environmental law enforcement (Raustiala 2003, p. 260, Kong 2021, p. 283). Finding the conditions under which SEMs are most likely to result in a factual record thus provides lessons on how to improve civil society participation in environmental governance. This is critical to ensure that state environmental commitments are implemented, which could contribute to reinforcing their legitimacy, as well as government accountability and transparency.

I use qualitative comparative analysis (QCA) to test the effect of the following conditions and their various combinations: the existence of a previous submission dealing with the same alleged facts, the government targeted by the submission, the identity of the submitters, and the nature of the environmental issue. I find that the existence of previous submissions on the same facts, submissions against developing countries, and the presence of at least one NGO as a submitter contribute to a submission's success, but only in conjunction with other conditions. The solution term is highly consistent but only covers 27% of the cases examined. This result suggests that secretariats on enforcement matters are not biased toward specific environmental issues, governments, or submitters.

The rest of this article proceeds as follows: First, I briefly review the literature on public participation in global environmental governance and explain the functioning of the SEM process. Next, I introduce the four categories of conditions expected to contribute to the success of a submission. I then describe the data and methodology used to assess the effect of the said conditions. Last, I turn to the presentation and discussion of the QCA results before concluding on opportunities to improve the SEM process and avenues for future research.

## Participatory environmental governance and the SEM process

Public participation is defined by Macnaghten and Jacobs as 'the involvement of ordinary citizens in both decisions about and the implementations of social and economic change' (1997, p. 6). The concept has gained significant

attention from policymakers and scholars working on environmental governance since the 1992 Rio Declaration on Environment and Development (Le Prestre 2020, p. 181). Principle 10 of the Rio Declaration acknowledges that ‘environmental issues are best handled with the participation of all concerned citizens, at the relevant level.’

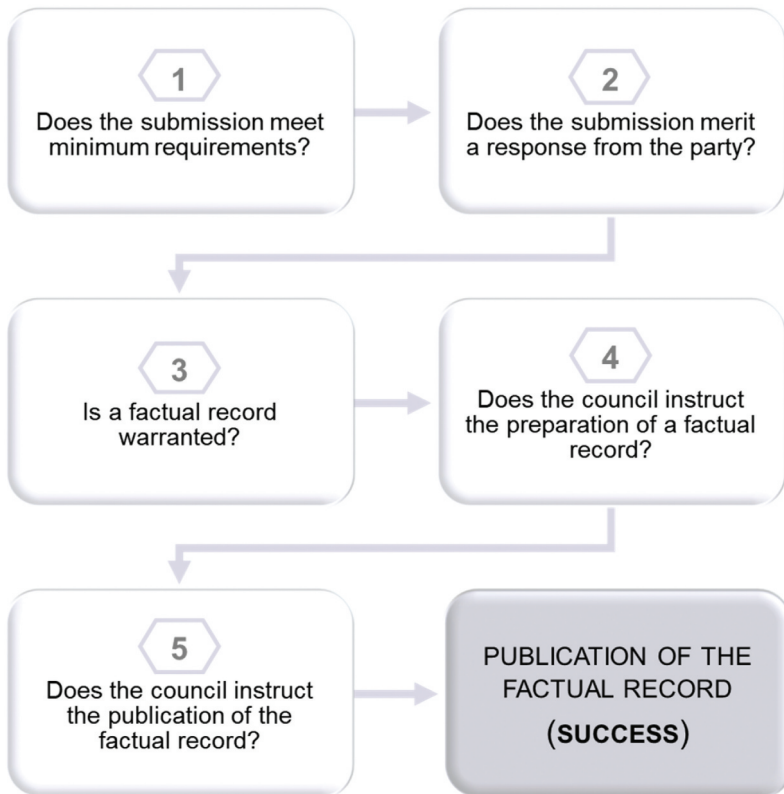
Various strands of literature investigate public participation in environmental governance. For instance, scholars working on green democracy (e. Smith 2003, Eckersley 2004) and ecological citizenship (Dobson 2006, Hayward 2006, MacGregor 2014) offer theories about individual values and institutional characteristics that could help society better respond to environmental challenges. These normative accounts, however, do not aim to explain the successes and failures of participatory processes. Moreover, they typically focus on participation in environmental *decision-making* rather than participation in the *implementation or enforcement* of state environmental commitments. The latter has received more attention from legal scholars (e.g. Malone and Pasternack 2005, Siedenfeld and Nugent 2005, Kravchenko *et al.* 2011). In contrast with this paper, however, legal studies do not examine citizen enforcement mechanisms in a causal way and usually fail to consider all existing SEM processes together.<sup>1</sup>

Public participation obligations in global environmental governance take many forms. Numerous environmental treaties, such as the Paris Agreement,<sup>2</sup> the Stockholm Convention,<sup>3</sup> and the Espoo Convention<sup>4</sup> include broad requirements to enhance public participation. Some of them also create more formal stakeholder committees, such as the UN Convention to Combat Desertification’s civil society organization panel.<sup>5</sup> Environmental treaties typically do not involve citizens and NGOs in the enforcement of state environmental commitments. Two notable exceptions include the 1998 Aarhus Convention, whose conference of the parties created a compliance mechanism through which members of the public may make communications concerning a Party’s compliance with the convention,<sup>6</sup> and the more recent 2018 Escazú Agreement.<sup>7</sup>

The advent of liberal environmentalism in the early 1990s has turned international trade agreements into another major forum of environmental governance (Bernstein 2001, McCarthy 2004). Recent PTAs include full-fledged environmental chapters that are sometimes more enforceable than environmental treaties (Jinnah and Morin 2020). Among a vast variety of environmental clauses, PTAs increasingly include civil society participation provisions. To cite but one example, the 2012 EU – Colombia – Ecuador – Peru Trade Agreement provides that ‘the Sub-committee on Trade and Sustainable Development shall convene once a year . . . a session with civil society organisations and the public at large, in order to carry out a dialogue on matters related to the implementation of this Title.’<sup>8</sup> Recent databases allow researchers to observe that public involvement in the enforcement of

state environmental obligations is more frequent in PTAs than in environmental treaties and consists of an elaborate citizen complaint mechanism.<sup>9</sup> The process, formally called ‘submissions on enforcement matters,’ was originally created under the North American Free Trade Agreement’s (NAFTA) side agreement on the environment: the North American Agreement on Environmental Cooperation (NAAEC). It later diffused to other PTAs concluded between the US and several Latin American partners: the 2004 US – Central America Free Trade Agreement – Dominican Republic (CAFTA – DR), the 2006 US – Peru Free Trade Agreement, the 2006 US – Colombia Trade Promotion Agreement, and the 2007 US – Panama Trade Promotion Agreement.

The SEM process is carried on by an environmental secretariat established by the PTA and proceeds in five main steps (see [Figure 1](#)). First, the secretariat assesses whether the submission meets minimal requirements related to language, identification of the submitter(s), and sufficient documentary evidence. Second, if the



**Figure 1.** Schematization of the SEM process.

secretariat determines that the submission is compliant, it then decides whether the submission merits requesting a response from the government allegedly failing to enforce its domestic environmental laws. In making this second decision, the secretariat must ensure that: (1) the submission alleges harm to the submitter(s); (2) the submission raises matters whose further study would advance the goals of the PTA's environmental provisions; (3) private remedies available under the concerned party's law have been pursued; and (4) the submission is not drawn exclusively from mass media reports. Third, if the submission survives the first two steps, and in light of the submission and the government's response, the secretariat determines whether a factual record is warranted. At this stage, the secretariat decides whether the government's response leaves open central questions that a factual record could shed light on. If the government advises the secretariat that 'the matter is the subject of a pending judicial or administrative proceeding,' the process is put to an end. Fourth, if the secretariat considers a factual record is warranted, and only if the council of parties instructs it to do so by vote,<sup>10</sup> the secretariat prepares a factual record. A factual record is an 'investigative report that includes technical, scientific, and legal information as well as interviews with government officials and analysis from independent experts. It documents the environmental, legal, and/or public health aspects of the situation.'<sup>11</sup> Last, the council decides whether to make the factual record available by a final vote.<sup>12</sup>

The SEM process of the NAAEC has been studied widely in the legal scholarship. However, existing studies tend to focus on the numerous procedural limitations of the process (e.g. Wold *et al.* 2004, Knox and Markell 2012, Davidian 2015, Hester 2015, Welts 2015) rather than investigating conditions for success.<sup>13</sup> They also typically discuss a limited number of submissions rather than the full population.

Moreover, while the trade-environment politics scholarship has extensively investigated the determinants (e.g. Morin *et al.* 2018, Jinnah and Morin 2020) and consequences (e.g. Bastiaens and Postnikov 2017, Brandi *et al.* 2020) of environmental provisions in PTAs, these studies have largely overlooked public participation provisions, including the SEM process. Yet, as Markell (2010, p. 427) puts it: 'successes and challenges of the process should be of special interest to those interested in governance mechanisms intended to advance government transparency and accountability and opportunities for citizen involvement.' The next section presents theoretical expectations about the conditions for success of the SEM process.

## Directional expectations for success

Explaining policy success is not an easy task. For one thing, ‘success will always be contested to some degree’ (Marsh and McConnell 2010, p. 575). For another thing, success is multi-dimensional. Marsh and McConnell (2010) usefully distinguish *process success* (i.e. the legitimacy, functioning, sustainability, and innovation of the policymaking process), *programmatic success* (i.e. the implementation, outcomes, and resource efficiency of the policy), and *political success* (i.e. the policy’s popularity). Existing studies on SEMs have investigated these three dimensions. For instance, Knox and Markell (2012) assess the ‘performance’ of the SEM procedure according to the extent to which citizens are using it (*political success*), whether procedural justice is guaranteed (*process success*), the effectiveness of environmental law enforcement (*programmatic success*), and deeper civic engagement (*programmatic success*).

This paper focuses on *process success* by investigating the conditions under which a submission is more likely to survive the entire SEM process, i.e. to reach the publication stage in [Figure 1](#). Understandably, *programmatic success* in the sense of improved enforcement of environmental laws is more important to submitters than the publication of a record that is not binding on the targeted government. However, the causal chain explaining better enforcement of environmental laws is much more indirect and uncertain than the one explaining the publication of a factual record. Indeed, improved enforcement may have little to do with a given submission. Hence, examining the conditions for process success is a more prudent analytical step. In addition, the publication of a factual record may send a signal to petitioners that their voices are heard, which they may consider as a first meaningful step toward achieving their more ambitious goal of improved environmental protection.

I adopt the underlying assumption of causal complexity to investigate the conditions under which a submission is more likely to succeed. Causal complexity consists of three interlinked features: equifinality, conjunctural causation, and causal asymmetry (Lieberson 1985, Ragin 1987). Equifinality indicates that various, mutually non-exclusive factors can explain the publication of a factual record. Conjunctural causation suggests that the impact of a single condition on the outcome (i.e. the publication of a factual record) depends on its combination with other conditions. Finally, causal asymmetry means that the absence of a factual record is not necessarily caused by the absence of the conditions that lead to its presence. In other words, different causal factors may explain the occurrence and the non-occurrence of the outcome (Schneider and Wagemann 2012, p. 78).

Since the literature on the SEM process does not provide sound theoretical foundations about combinations of conditions for the success of

a submission, I take an inductive approach. I examine four main categories of conditions for the success of a submission: the existence of a previous submission dealing with the same alleged facts, the government targeted by the submission, the identity of the submitters, and the nature of the environmental issue.

First, I expect a submission to more likely result in a factual record if another submission dealing with the same facts has already been assessed by the secretariat in the past. I consider submitters as boundedly rational actors with incomplete information at hand and a limited capacity to process new information (Simon 1972). Therefore, while first-time submitters may already have enough resources and knowledge to succeed on their first attempt, I expect it to be the exception rather than the rule. The dismissal of a submission provides important information to submitters, such as the criteria that failed to be met or the counterarguments of the targeted government. If the initial submitters are willing to try the process again, or if other submitters want to take up a dismissed case, the new information about the failure of the previous submission may help them better prepare. For instance, in the *ALCA-Iztapalapa* case,<sup>14</sup> the secretariat determined that the submission did not contain sufficient information and did not allow the identification of the alleged violated laws.<sup>15</sup> A few months after the secretariat's determination, the submitter argued that 'a lack of resources prevented him from amending his original filing in the time provided.'<sup>16</sup> Therefore, he submitted a new submission to the secretariat. This time, the secretariat considered that his submission about the pollution generated by a footwear factory affecting his family's health met the minimum requirements. The secretariat further considered that 'although Mexico [had] undertaken some inspection and oversight activities, the fact that the Submitter [asserted] that alleged environmental violations [continued] despite those activities, compounded with the history of complaints and inspections against [the company] and the penalties thereon since 1994, [persuaded] the Secretariat that a factual record [was] warranted.'<sup>17</sup>

Second, I expect SEMs against developing countries to be more numerous and more likely to result in factual records than SEMs against Canada or the US. In the case of the NAAEC, which represents 61% of the SEMs, the development of a factual record needs to be instructed by at least two parties among Canada, Mexico, and the US. Moreover, the SEM process was created to ensure that developing countries trading with the US would enforce their domestic environmental laws more consistently (Knox 2001, p. 54). The higher bargaining power of Canada and the US makes it less likely that a factual record is instructed if one of these countries is implicated in the alleged violation of environmental laws. In addition, the US and Canada have much more financial and technical resources than developing countries to provide satisfactory responses to the secretariat. Last, developing countries



have fewer or less efficient domestic legal avenues to use as an alternative to the SEM process, which makes submissions against them more likely (Bailey 2004, Knox and Markell 2012, p. 520, Peña 2023, p. 6).

Third, I expect SEMs submitted by NGOs to more likely result in a factual record. Submitters can be NGOs, citizens, firms, or a coalition of several types of submitters.<sup>18</sup> While submissions by firms are very rare, 30% are submitted by citizens only, 46% are submitted by NGOs only, and 19% are submitted by both citizens and NGOs. The SEM process requires sufficient information to allow the secretariat to review a submission, including ‘documentary evidence’ that should not be ‘drawn exclusively from mass media reports.’<sup>19</sup> In addition, the process has often been described by legal scholars and submitters as costly, lengthy, and unduly burdensome (Mitchell 2006, p. 312, Knox and Markell 2012, p. 521, Welts 2015, p. 125). Delgado Gutiérrez (2022, p. 10323) finds that the average time between the initial submission and the publication of a factual record is 4.5 years. Therefore, NGOs are expected to be more successful in the SEM process than citizens alone. NGOs, even small ones, are typically more coordinated and knowledgeable about environmental laws and the SEM process than citizens. NGOs’ presence on the ground may even confer them with more experience and expertise than governments in the implementation of domestic environmental laws (Bernauer and Betzold 2012, p. 63). Such knowledge and resources better the odds that the SEM is compliant with the PTA’s requirements and that the submitters are able to push through the whole SEM process.<sup>20</sup>

Fourth, I expect the nature of the environmental issue at stake to influence the production of factual records. SEMs address a wide variety of environmental issues, such as hazardous wastes, water pollution, the protection of biodiversity, and environmental impact assessments of construction projects. Some issues may be easier to document and evaluate for submitters, and some are more readily experienced by human beings than others. For instance, in the *Río Magdalena* case, the pollution of the waters of the Magdalena River caused direct harm to the river’s users: ‘fruit trees [had] been found to have irreversible rotting in their roots’ and ‘the results of bacteriological analyses [...] showed a high number of fecal coliforms in several agricultural samples.’<sup>21</sup> Therefore, the discharge of wastewater without prior treatment, in contravention of Mexican environmental law, was arguably not challenging to establish for the submitter. Given that the measures mentioned in the Mexican government’s response did not ensure that the wastewater discharges met the necessary conditions to prevent the pollution of the river, the secretariat recommended the preparation of a factual record.

Deriving precise directional expectations about environmental issues is challenging because their interaction with the other abovementioned

conditions may lead to different outcomes. Moreover, a single submission may concern several environmental problems. For instance, the *Villa Veranda Housing Project*,<sup>22</sup> *West Bay Roatán*,<sup>23</sup> *Cuyamel II*,<sup>24</sup> and *Dixon Cove Bay*<sup>25</sup> cases under the CAFTA – DR agreement, which all led to a factual record, dealt with both the impact assessment of a construction project and the protection of the local biodiversity. The next section presents a method to identify the combinations of conditions that are sufficient for a submission to result in the publication of a factual record.

## Data and method

I rely on a new dataset compiling the 158 submissions received between 1995 and 2022 under the framework of PTAs concluded by the US (see Figure 2). I retrieved the data on submissions from the websites of each secretariat on environmental enforcement matters.<sup>26</sup> This database represents the full universe of SEMs. In total, 105 submissions have been received by NAFTA’s environmental secretariat, 43 by the CAFTA-DR secretariat, 5 by the Panama-US secretariat, and 5 by the Peru – US secretariat. In the analysis, I exclude 11 withdrawn or suspended cases<sup>27</sup> and 18 open submissions because they have not had a chance to go through the whole process. This brings the final number of cases investigated to 129. The respective secretariats determined that: 45 did not meet the minimum requirements to proceed (stage 1 in Figure 1), 13 did not merit a response from the implicated government or dealt with a matter subject to a pending proceeding (stage 2), and a factual record was not warranted for 30 of them considering the government’s response (stage 3). The respective councils of parties did not instruct the preparation of a factual record for 7 submissions (stage 4). The remaining 34 submissions resulted in the publication of a factual record

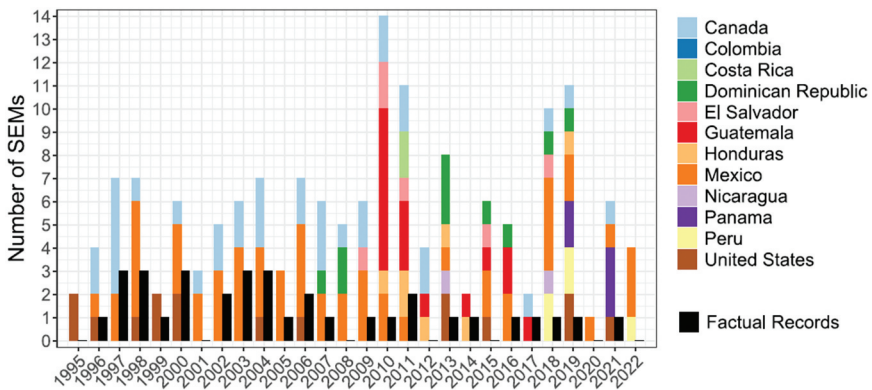


Figure 2. Numbers of SEMs and factual records (1995–2022).

(stage 5), indicating that, to date, councils have never prevented the publication of a report.

Because of the causal complexity assumption, I consider QCA<sup>28</sup> to be the most appropriate methodological option. QCA allows the identification of conditions that are individually or jointly necessary or sufficient for the outcome to occur. A (combination of) condition(s) is necessary if whenever the outcome is present, the (combination of) condition(s) is also present. A (combination of) condition(s) is sufficient if whenever it is present, the outcome is also present. These set relationships do not need to be perfect. Two parameters of fit, ranging between 0 (worst) and 1 (perfect), allow researchers to assess the degree to which a necessity or sufficiency claim is in line with the data. *Consistency* assesses the degree to which the cases sharing a given combination of conditions display the outcome, i.e. how closely a perfect subset relation is approximated (Ragin 2008, p. 44). The conventional minimum consistency score is 0.75 for sufficiency (Ragin 2008, p. 46, Schneider and Wagemann 2012, p. 129) and 0.9 for necessity (Schneider and Wagemann 2012, p. 143). *Coverage*, for its part, assesses the degree to which a combination of conditions accounts for instances of an outcome, i.e. the empirical relevance or importance of the said causal combination. There is no minimum threshold for coverage. As Ragin explains (2008, p. 45): ‘just as it is possible in correlational analysis to have a significant but weak correlation, it is possible in set-theoretic analysis to have a set relation that is highly consistent but low in coverage.’

The outcome of interest, success (*SUC*), indicates whether a given submission resulted in the publication of a factual record. Given the binary nature of the outcome and the conditions, I employ the crisp-set variant of QCA (Rihoux and De Meur 2009).

The first condition examined is the existence of a previous submission (*PRE*). 21 submissions in the data deal with the same alleged facts as one previous submission<sup>29</sup> and four submissions deal with the same alleged facts as two previous submissions.<sup>30</sup> The second QCA condition indicates whether the submission concerns an alleged environmental law violation by the US or Canadian governments (*USC*). The third condition, *NGO*, indicates whether at least one NGO features among the submitters.

Regarding the environmental issue concerned, I consider three conditions: *BIO* indicates whether the submission deals with the protection of natural habitats or biodiversity; *POL* indicates whether the submission concerns air, water, soil, or hazardous product pollution; and *AUT* indicates whether the submission concerns the environmental authorization or impact assessment of a project. Two main reasons explain this choice of conditions regarding environmental issues. First, while other subjects exist, such as environmental justice and food contamination, 94% of the cases deal with at least one of these three environmental issues. Second, QCA performs

**Table 1.** Frequency table.

Outcome	PRE	USC	NGO	BIO	POL	AUT
SUC ( $N=34$ ; 26.36%)	10 (7.75%)	11 (8.53%)	27 (20.93%)	24 (18.60%)	19 (14.73%)	9 (6.98%)
~ SUC ( $N=95$ ; 73.64%)	11 (8.53%)	34 (26.36%)	58 (44.96%)	49 (37.98%)	47 (36.43%)	13 (10.08%)
All cases ( $N=129$ )	21 (16.28%)	45 (34.88%)	85 (65.89%)	73 (56.59%)	66 (51.16%)	22 (17.05%)

Note: ~ denotes the absence of the outcome.

better with a limited set of conditions (Marx and Duşa 2011). The method analyzes all possible combinations of conditions, which means that each additional condition increases the number of potential combinations exponentially. As the number of conditions increases, the combinations not matched by empirical cases – called logical remainders – become more numerous, which is problematic for the explanatory power of the method (Mross *et al.* 2022, p. 4). Table 1 presents the frequency of each causal condition for the occurrence (SUC) and non-occurrence (~ SUC) of the outcome.

## Results and discussion

A standard QCA practice is to first test whether individual conditions are necessary for the outcome. Table 2 presents the results of the necessity analysis. As expected, none of the conditions (or their absence) reaches the minimum consistency threshold of 0.9 (columns 2 and 5). The condition that comes closest to the threshold is the absence of a previous submission (~PRE), which is almost necessary for the absence of the outcome (~SUC). In other

**Table 2.** Necessity analysis for the (non-)occurrence of the outcome.

(1)	SUC		(4)	~SUC	
	(2)	(3)		(5)	(6)
Condition	Consistency	Coverage	Condition	Consistency	Coverage
PRE	0.28	0.50	PRE	0.12	0.50
USC	0.35	0.29	USC	0.35	0.71
NGO	0.80	0.35	NGO	0.60	0.65
BIO	0.71	0.36	BIO	0.51	0.64
POL	0.55	0.31	POL	0.50	0.69
AUT	0.28	0.48	AUT	0.13	0.52
~PRE	0.72	0.25	~PRE	0.88	0.75
~USC	0.65	0.29	~USC	0.65	0.71
~NGO	0.20	0.17	~NGO	0.40	0.83
~BIO	0.29	0.20	~BIO	0.49	0.80
~POL	0.45	0.27	~POL	0.50	0.73
~AUT	0.72	0.25	~AUT	0.87	0.75

Note: ~ denotes the absence of the outcome or the condition. The first three columns present the necessity analysis for the outcome and the last three columns present the necessity analysis for the absence of the outcome.

words, in 88% of the cases where the submission failed to lead to a factual record, no previous case on the same facts had been examined by the secretariat.

I then turn to the sufficiency analysis, which first consists in the creation of a truth table (see [Table 3](#)). Each truth table row represents one of the logically possible combinations between the conditions (Schneider and Wagemann 2012, p. 92). The frequency cutoff is 1, meaning that a possible combination of conditions appears in the truth table if at least one of the 129 cases matches this configuration. The consistency cutoff is set at the conventional 0.75 level, which signifies that only configurations with a consistency score ('Incl') higher than 0.75 are considered sufficient for the outcome and have a score of 1 in the column 'OUT.' Three configurations have a consistency score of 0.86 or higher. This result indicates that at least 86% of cases with the respective configuration are also members of the outcome. [Table A1](#) in the [Appendix](#) presents the truth table for the non-occurrence of the outcome. 12 configurations are found sufficient for the latter, which suggests that the causal configurations explaining the absence of a factual record are much more numerous and varied than those that contribute to the presence of a factual record. One plausible explanation is the high number of criteria submissions need to meet to lead to a factual record, i.e. a low threshold for process failure (see [Figure 1](#)).

The second step of the sufficiency analysis is the logical minimization of the truth table. Minimization relies on Boolean algebra to remove logically redundant conditions from the truth table and obtain a simpler sufficient configuration of conditions (Schneider and Wagemann 2012, p. 105). Here I report and discuss the parsimonious solution, which includes all logical remainders and is considered to be the most robust solution (Tobin 2017, p. 37, Baumgartner and Thiem 2020, Ide *et al.* 2021, p. 575).<sup>31</sup> The solution presented in [Table 4](#) provides two pathways for the success of a submission.

The first pathway is the simultaneous presence of a previous case and a concern for both biodiversity and pollution ( $PRE^*BIO^*POL \rightarrow SUC$ ). This pathway has a perfect consistency of 1, which indicates that every time this pathway was present, the submission resulted in the publication of a factual record. However, the coverage of this pathway is 9%, denoting that only 3 submissions that led to a factual record are explained by this configuration. Among these are the *Lake Chapala*<sup>32</sup> and *Sumidero Canyon*<sup>33</sup> cases. Both cases deal with pollution and the protection of biodiversity in Mexico. In the *Lake Chapala* case, submitters described serious water imbalance, water pollution, and risks for the habitat the lake provides for migratory birds. In the *Sumidero Canyon* case, the submitters asserted that the operations of a quarry were located within a designated protected natural area and that the Canyon had been "severely damaged with cracks." They also claimed that the

**Table 3.** Truth table for the outcome (SUC).

PRE	USC	NGO	BIO	POL	AUT	OUT	Incl	N	Cases
1	0	1	1	1	0	1	1.00	2	NAFTA-03-003; NAFTA-11-002
1	1	1	1	1	0	1	1.00	1	NAFTA-17-001
0	0	1	1	0	1	1	0.86	7	CAFTA-11-004; CAFTA-13-004; CAFTA-14-001; NAFTA-00-006; NAFTA-09-002; NAFTA-13-001; NAFTA-96-001
1	0	1	0	1	0	0	0.67	3	NAFTA-00-005; NAFTA-03-006; NAFTA-05-003
1	1	1	1	0	0	0	0.67	3	NAFTA-04-004; NAFTA-04-006; NAFTA-97-006
0	1	1	1	1	0	0	0.62	8	NAFTA-00-004; NAFTA-02-003; NAFTA-03-001; NAFTA-03-005; NAFTA-04-005; NAFTA-10-002; NAFTA-10-003; NAFTA-98-004
1	0	0	0	1	0	0	0.60	5	CAFTA-10-009; CAFTA-13-005; NAFTA-03-004; NAFTA-06-003; NAFTA-06-004
0	0	1	1	1	1	0	0.50	2	NAFTA-07-001; NAFTA-98-006
0	1	1	1	0	1	0	0.33	3	NAFTA-12-001; NAFTA-97-004; NAFTA-99-002
0	0	1	1	0	0	0	0.21	14	CAFTA-07-001; CAFTA-10-002; CAFTA-10-003; CAFTA-10-004; CAFTA-11-001; CAFTA-11-002; Peru-18-001; Peru-18-002; Panama-19-002; NAFTA-03-002; NAFTA-06-006; NAFTA-09-001; NAFTA-16-002; NAFTA-97-001
0	0	0	1	0	0	0	0.20	5	CAFTA-11-003; CAFTA-16-001; Panama-19-01; Panama-21-001; NAFTA-15-001
0	0	0	0	1	0	0	0.18	11	CAFTA-13-001; CAFTA-13-002; CAFTA-13-003; Peru-19-002; NAFTA-00-001; NAFTA-01-003; NAFTA-02-005; NAFTA-04-001; NAFTA-16-001; NAFTA-18-001; NAFTA-19-001
0	0	1	0	1	0	0	0.18	11	CAFTA-10-005; CAFTA-11-007; CAFTA-18-003; NAFTA-04-002; NAFTA-07-005; NAFTA-08-001; NAFTA-15-002; NAFTA-97-002; NAFTA-97-007; NAFTA-98-005; NAFTA-98-007
0	0	0	1	0	1	0	0.17	6	CAFTA-10-001; CAFTA-11-008; NAFTA-05-001; NAFTA-08-003; NAFTA-10-004; NAFTA-18-004
0	1	1	0	1	0	0	0.11	9	NAFTA-04-007; NAFTA-06-002; NAFTA-07-004; NAFTA-09-004; NAFTA-13-002; NAFTA-13-003; NAFTA-19-003; NAFTA-97-003; NAFTA-98-003
0	1	1	1	0	0	0	0.09	11	NAFTA-00-003; NAFTA-02-001; NAFTA-07-002; NAFTA-07-003; NAFTA-09-005; NAFTA-11-003; NAFTA-19-004; NAFTA-95-001; NAFTA-95-002; NAFTA-96-003; NAFTA-97-005
0	0	0	0	0	0	0	0.00	5	CAFTA-09-001; CAFTA-14-002; CAFTA-18-001; NAFTA-02-002; NAFTA-98-002
0	0	0	1	1	0	0	0.00	1	CAFTA-17-001
0	0	1	0	0	0	0	0.00	2	Peru-2019-001; NAFTA-98-001
0	0	1	1	1	0	0	0.00	3	NAFTA-04-003; NAFTA-10-001; NAFTA-22-001
0	1	0	0	1	0	0	0.00	5	NAFTA-00-002; NAFTA-01-002; NAFTA-08-002; NAFTA-15-003; NAFTA-99-001
0	1	0	0	1	1	0	0.00	3	NAFTA-11-001; NAFTA-18-005; NAFTA-21-001
0	1	0	1	0	0	0	0.00	1	NAFTA-12-002
0	1	0	1	1	0	0	0.00	1	NAFTA-96-002
1	0	0	0	0	0	0	0.00	1	CAFTA-12-002
1	0	1	0	1	1	0	0.00	1	NAFTA-01-001
1	0	1	1	0	0	0	0.00	5	CAFTA-10-008; CAFTA-11-005; CAFTA-11-006; CAFTA-12-001; NAFTA-09-003

Note: "OUT" indicates whether the configuration of conditions (represented by the truth table row) is sufficient for the outcome (1) or not (0). "Incl" indicates the consistency score of the configuration. "N" indicates the number of cases covered by the configuration.

**Table 4.** Parsimonious solution term.

Paths	PRE	USC	NGO	BIO	POL	AUT	Cases	Cons.	Cov.
Path 1	●			●	●		NAFTA-03-003,NAFTA-11-002; NAFTA-17-001	1.00	0.09
Path 2		○	●		○	●	CAFTA-11-004,CAFTA-13-004,CAFTA-14-001,NAFTA-00-006,NAFTA-09-002,NAFTA-13-001,NAFTA-96-001	0.86	0.18
Solution	<b>PRE*BIO*POL + ~USC*NGO*~POL*AUT → SUC</b>							0.90	0.27

Note: Full circles indicate that the condition is a necessary part of the path. Empty circles indicate that the absence of the condition is a necessary part of the path. Empty cells indicate that neither the condition nor its absence is a necessary part of the path. In the solution formula, \* denotes the logical AND (conjunction), + denotes the logical OR (disjunction), ~ denotes the absence of a condition, and → means that the solution is sufficient for the outcome.

quarry operations were impairing the air quality in a neighboring community and generated noise pollution.

Both the *Lake Chapala* and *Sumidero Canyon* cases also followed a preceding submission. In the *Lake Chapala* case, the Mexican government's response explained that the governmental environmental agency Profepa had issued a response to a popular complaint pointing out that Lake Chapala was not in a situation warranting declaring an emergency. Since the secretariat was unable to confirm with the submitters whether their assertions remained in light of this new information from the Mexican government, it could not proceed further with the submission and determined not to recommend the preparation of a factual record. Three years later, a broader group of citizens and NGOs denounced the pollution of Lake Chapala again. This time, the secretariat considered that 'the information in Mexico's response explaining the actions it [had] taken to protect the environmental integrity of the watershed [left] open central questions regarding its enforcement of the relevant environmental law.'<sup>34</sup> It thus recommended the preparation of a factual record to the council.

In the *Sumidero Canyon* case, the first submission of the Comité Pro-Mejoras de la Ribera Cahuaré, an NGO based in the Chiapas region, was found ineligible by the secretariat for it failed to identify the allegedly violated environmental laws.<sup>35</sup> A year later, the NGO submitted a second submission. This time, the secretariat found that some provisions cited in the submission did not conform to the NAAEC's definition of 'environmental law' and that the assertion regarding their lack of effective application deserved clarification by the petitioner.<sup>36</sup> The NGO then submitted a revised version of the second submission within the delay of 60 working days prescribed by article 6.2 of the Guidelines for Submissions on Enforcement Matters.<sup>37</sup> The secretariat found this revised version admissible and, in light of Mexico's subsequent response, recommended the preparation of a factual record.<sup>38</sup>

The second pathway is the combination of the absence of the US or Canada as the targeted government, the presence of at least one NGO as a submitter, and facts about the authorization of a construction project without an emphasis on pollution ( $\sim\text{USC}*\text{NGO}*\sim\text{POL}*\text{AUT} \rightarrow \text{SUC}$ ). This second pathway has a high consistency score (0.86) and a low coverage score (0.18). Cases covered by this pathway of the QCA solution include the *West Bay Roatán*<sup>39</sup> and *Dixon Cove Bay*<sup>40</sup> cases, which both deal with the legality of the authorizations of construction projects in Honduras: a hotel complex and a cruise terminal port. The main concern of submitters was that the Honduran government did not request environmental impact assessments for these projects despite potential or reported harm to fragile and sensitive ecosystems. Both cases were also defended by the Instituto de Derecho Ambiental de Honduras, which, at the time, was one of the few NGOs in Latin America and the Caribbean with the capacity to regularly finance lawyers in defense of citizen rights (Bonine *et al.* 2007, p. 427).

Overall, the results confirm the expectations that the existence of previous submissions on the same facts, submissions against developing countries, and the presence of at least one NGO as a submitter contribute to a submission's success, but only in conjunction with other conditions and for a limited number of cases. Submissions against developing countries represent 70% of the cases, which may partly explain why this condition is included in the QCA solution. Nevertheless, this condition is only present in one of the two pathways, and the latter has a low coverage of 18% of the cases. Therefore, the effect of unequal power dynamics among signatory countries leading to more SEM success in cases brought against (less powerful) developing countries should not be overstated. Regarding the model's fit, the parsimonious solution term has a very high consistency of 0.90 but a low coverage of 0.27. The low coverage score implies that 63% of the cases are not explained by the solution, which importantly limits the generalizability of the results. In fact, the solution term only covers submissions sent to the secretariats created by NAFTA and CAFTA-DR. This is not surprising given that both PTAs represent 61% and 23% of the cases, respectively. Unlike other PTAs creating a SEM process, NAFTA and CAFTA-DR involve more than two parties, which may influence voting strategies in the council. The findings, therefore, are not generalizable to submissions under bilateral PTAs, which remain unexplained by the QCA solution.

One possible explanation for the number of cases not explained by the solution is that secretariats' assessments of submissions are generally unbiased by the factors examined in this study. In other words, the government targeted and the identity of the submitters only play a minor role in secretariat determinations. The results of the QCA analysis also suggest that, in the majority of cases, the nature of the environmental problem does not influence secretariat decision-making. This indicates that secretariats treat all



failures to enforce domestic environmental laws equally, regardless, for instance, of the saliency of the issue for the general public.

The absence of bias observed in this paper contrasts with the findings of existing literature on environmental treaties. Previous researchers have argued that, behind a ‘veil of legitimacy,’ secretariats actually perform key functions, such as knowledge brokering, negotiation facilitation, and capacity building, which confer them a crucial role in environmental governance (Depledge 2007, Jinnah 2014). Environmental treaties’ secretariats have been described as ‘hardly passive’ and seeking to find the ‘delicate balance’ between activism to influence treaty outcomes and the risk of being castigated as an unruly agent (Bauer 2006, p. 74). The secretariat of the United Nations Convention to Combat Desertification, for instance, has occasionally been accused of clientelism (Bauer 2009, p. 308). By contrast, secretariats on enforcement matters created by PTAs have a much narrower range of functions and powers. Their main function, beyond providing administrative and technical support to the council, is to assess submissions based on strict legal rules, and they seem to do just that. My results thus corroborate the argument put forward in early legal studies about the NAAEC that ‘the Secretariat’s decisions appear to be consistently grounded on carefully reasoned legal interpretations of the [NAAEC] Agreement rather than on fear of adverse reactions by, or the desire to carry favor with, either states or submitters’ (Knox 2001, see also Wold *et al.* 2004, p. 421, Knox and Markell 2012, p. 524).

## Conclusion

While the recent trade-environment politics literature often investigates environmental provisions in PTAs as a package, this paper takes a different approach by zooming in on a specific type of provision: public participation in the enforcement of environmental laws. The SEM process is one of the most advanced civil society participation mechanisms in environmental governance. It is more elaborate and precise than the vast majority of participation provisions included in environmental treaties and PTAs alike. It is also more transparent: all submissions, government responses, secretariat determinations, and factual records are easily accessible online. More than 50 SEMs have been submitted in the last 10 years, suggesting that environmental NGOs and citizens still find a use for the procedure three decades after the conclusion of NAFTA.

The SEM process is not exempt from limitations. For instance, environmental secretariats are not required to state that a government has failed to enforce its domestic environmental laws, nor can they compel a government to undertake enforcement actions. Nevertheless, the process is not costless either, as it requires in-depth

investigation from the secretariat and responses from the parties. SEMs can also ‘cast an international spotlight on a given state’s failure to enforce its environmental laws’ (Kong 2021, p. 283). In addition, some procedural shortcomings of the SEM process frequently deplored by legal scholars have been addressed during the renegotiation of NAFTA. The USMCA now provides shorter timelines for secretariats to review submissions and make decisions.<sup>41</sup> It also creates an Environment Committee,<sup>42</sup> which ‘may provide recommendations to the Council on whether the matter raised in the factual record could benefit from cooperative activities’ and to which the parties shall provide updates on final factual records.<sup>43</sup> These changes suggest that the production of a factual record will now be followed by monitoring activities on environmental law enforcement in North America.<sup>44</sup> Still, some scholars remain pessimistic about the changes made in the USMCA, arguing that they ‘do virtually nothing to address the most serious flaws in the SEM process, the most prominent of which is the built-in conflict of interest that parties face as both targets and (through the Council) active manipulators and overseers of the process’ (Garver 2021, p. 48).

This paper has found that there is no single recipe for SEM success. Helpful ingredients include the existence of previous submissions dealing with the same alleged facts, submissions against developing countries, and the presence of at least one NGO as a submitter. However, these conditions alone do not guarantee the production of a factual record. While the absence of a discernable pattern across cases does not allow the formulation of straightforward recommendations to policymakers and civil society members, this finding sheds light on the absence of bias of secretariats when assessing SEMs. This provides an argument in favor of the diffusion of the SEM process to new or renegotiated PTAs. Nevertheless, two key improvements seem advisable beforehand: 1) removing the structural bias that allows governments to narrow the scope or refuse the production of factual records, and 2) providing better technical assistance to submitters. These improvements would help fill the accountability and procedural justice gaps raised by scholars and submitters (Davidian 2015, p. 38). They could also contribute to appeasing the ‘green backlash’ PTAs have been facing in recent years (Nguyen 2022; Laurens *et al.* 2024).

Several research avenues beyond the scope of the present study will be worth exploring in the future. First, future research should investigate other forms of policy success than *process* success. For instance, although the effects of the SEM process on government decision-making and on the ground are more difficult to capture, these alternative forms of success likely matter more to submitters and researchers (Peña 2023, p. 8). Second, future research could usefully pay more attention to the politics of votes in the

councils and the relative power of each government on the decision to instruct the preparation of a factual record. Third, further data collection efforts should be conducted to assess the extent of monitoring activities of compliance with factual record recommendations. Last, conducting interviews with secretariat officials would allow researchers to delve more into the question of their apparent lack of bias toward the factors examined in this paper.

## Notes

1. To my knowledge, the only exception is Delgado Gutiérrez (2022).
2. Paris Agreement, Article 12, [https://unfccc.int/sites/default/files/english\\_paris\\_agreement.pdf](https://unfccc.int/sites/default/files/english_paris_agreement.pdf).
3. Convention on Persistent Organic Pollutants, Article 10, <http://chm.pops.int/theconvention/overview/textoftheconvention/tabid/2232/default.aspx>.
4. Convention on Environmental Impact Assessment in a Transboundary Context, Article 2.6, [https://unece.org/DAM/env/eia/documents/legaltexts/Espoo\\_Convention\\_authentic\\_ENG.pdf](https://unece.org/DAM/env/eia/documents/legaltexts/Espoo_Convention_authentic_ENG.pdf).
5. United Nations Convention to Combat Desertification, Decision 5/COP9, [https://www.unccd.int/sites/default/files/sessions/documents/2019-08/5COP9\\_0.pdf](https://www.unccd.int/sites/default/files/sessions/documents/2019-08/5COP9_0.pdf).
6. Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, Decision I/7, article VI, <https://unece.org/DAM/env/pp/documents/mop1/ece.mp.pp.2.add.8.e.pdf>.
7. Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, <https://treaties.un.org/doc/Treaties/2018/03/20180312%2003-04%20PM/CTC-XXVII-18.pdf>.
8. EU – Colombia – Ecuador – Peru Trade Agreement, Article 282, [https://eurlex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22012A1221\(01\)&from=EN/](https://eurlex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22012A1221(01)&from=EN/)
9. The TRend and ENvironment Database (Morin *et al.* 2018) contains all references to public participation in the implementation of environmental provisions included in PTAs; Laurens and Morin (2019) have coded all references to public participation in the implementation of international environmental agreements.
10. The council comprises representatives of each party. Under the NAAEC and the US – Mexico – Canada Agreement (USMCA), the council may instruct the preparation of a factual record by a two-thirds vote. Under other US agreements creating a similar process, the vote of any party is sufficient to instruct the preparation of a factual record.
11. Commission for Environmental Cooperation, <http://www.cec.org/submissions-on-enforcement/>.
12. Under the NAAEC, the council made the final factual record publicly available by a two-thirds vote. Under the USMCA, the secretariat now makes the factual record publicly available unless at least two members instruct it not to do so. Under other

- US agreements creating a SEM process, the secretariat makes the factual record publicly available if any member of the council instructs it to do so.
13. As an exception, Gladstone *et al.* (2021) find that NAFTA's institutions increased public participation and engagement in Mexico-US border environmental issues.
  14. SEM-02-005, <http://www.cec.org/submissions-on-enforcement/registry-of-submissions/alca-iztapalapa/>.
  15. A14/SEM/02-005/04/14(1), <http://www.cec.org/wp-content/uploads/wpallimport/files/02-5-det-s.pdf>, p. 4.
  16. A14/SEM/03-004/27/ADV, [http://www.cec.org/wp-content/uploads/wpallimport/files/03-4-adv\\_en.pdf](http://www.cec.org/wp-content/uploads/wpallimport/files/03-4-adv_en.pdf).
  17. A14/SEM/02-005/04/14(1), <http://www.cec.org/wp-content/uploads/wpallimport/files/02-5-det-s.pdf>, p. 8.
  18. The NAAEC states that submitters may be 'any non-governmental organization or person' (article 14.1). NAFTA's successor, the USMCA, now stipulates that 'any person of a Party may file a submission' (article 24.27, 1). This updated wording is in line with older PTAs concluded with Colombia, CAFTA – DR, Peru, and Panama.
  19. NAAEC, article 14, 1(c); CAFTA – DR, article 17.7, 2(c); Colombia – US, article 18.8, 2(c); Peru – US, article 18.8, 2(c); Panama – US, article 17.8, 2(c); USMCA, article 24.7, 2(c).
  20. To be sure, there is important variation across NGOs in terms of financial resources, capacity to hire environmental lawyers, and level of knowledge of environmental laws and the SEM process. This may explain why some NGOs have been more successful than others. However, the lack of reliable data on these factors prevented me from analyzing them in a systematic way.
  21. SEM-97-002, <http://www.cec.org/submissions-on-enforcement/registry-of-submissions/rio-magdalen/>.
  22. CAFTA-10-001, <http://www.saa-sem.org/en/caso/villa-veranda-housing-project-es/>.
  23. CAFTA-11-004, <http://www.saa-sem.org/en/caso/west-bay-roatan-hn-2/>.
  24. CAFTA-13-004, <http://www.saa-sem.org/en/caso/cuyamel-ii-hn-2/>.
  25. CAFTA-14-001, <http://www.saa-sem.org/en/caso/dixon-cove-bay-hn/>.
  26. CAFTA – DR: <http://www.saa-sem.org/en/caso/>; NAFTA: <http://www.cec.org/submissions-on-enforcement/registry-of-submissions/>; Panama – US: <https://sala-seem.org/en-us/submissions-factual-records.html>; Peru – US: <https://www.saca-seem.org/en/review-submissions/>. The 2006 agreement between the US and Colombia also created an SEM process. However, the secretariat had not received any submissions at the end of 2022: <https://uscolombiasalaseem.org/en/solicitudes-presentadas/>.
  27. Cases may be withdrawn or suspended for several reasons. In the *Species at Risk* case (SEM-06-005), the submitter withdrew its submission after the council limited the scope of the factual record. In other cases, withdrawal occurred after the targeted government initiated enforcement activities or after the company stopped its offending practice. The latter scenario, if it can be attributed to a given submission, can be considered as *programmatic* success.
  28. The QCA analysis was performed with the QCA (Duşa 2019) and the SetMethods (Oana and Schneider 2018) R packages.
  29. The official names of these submissions include the Roman numeral 'II', e.g.: Noise Pollution II, Cuyamel II, Sumidero Canyon II.

30. The official names of these submissions include the Roman numeral 'III': Cytrar III, Oldman River III, Ex Hacienda El Hospital III, Omoa III.
31. The conservative and intermediate solutions cover the exact same cases. They are presented, respectively, in [Tables A2](#) and [A3](#) in the [Appendix](#). Legewie (2013) describes the three types of solutions as follows: "The complex solution does not allow for any simplifying assumptions to be included in the analysis. As a result, the solution term is often hardly reduced in complexity and barely helps with the data analysis, especially when operating with more than a few causal conditions. The parsimonious solution reduces the causal recipes to the smallest number of conditions possible. The conditions included in it are "prime implicants," i.e. they cannot be left out of any solution to the truth table. [...] Finally, the intermediate solution includes selected simplifying assumptions to reduce complexity, but should not include assumptions that might be inconsistent with theoretical and/or empirical knowledge."
32. SEM-03-003, <http://www.cec.org/submissions-on-enforcement/registry-of-submissions/lake-chapala-ii/>.
33. SEM-11-002, <http://www.cec.org/submissions-on-enforcement/registry-of-submissions/sumidero-canyon-ii/>.
34. A14/SEM/03-003/45/ADV, [http://www.cec.org/wp-content/uploads/wpallimport/files/03-3-adv\\_en.pdf](http://www.cec.org/wp-content/uploads/wpallimport/files/03-3-adv_en.pdf).
35. A14/SEM/10-001/07/DETN\_14(1), [http://www.cec.org/wp-content/uploads/wpallimport/files/10-1-detn\\_14\\_1\\_es.pdf](http://www.cec.org/wp-content/uploads/wpallimport/files/10-1-detn_14_1_es.pdf).
36. A14/SEM/11-002/21/DETN\_14(1), [http://www.cec.org/wp-content/uploads/wpallimport/files/11-2-detn\\_14\\_1\\_es.pdf](http://www.cec.org/wp-content/uploads/wpallimport/files/11-2-detn_14_1_es.pdf), p. 6.
37. Guidelines for Submissions on Enforcement Matters under Articles 14 and 15 of the North American Agreement on Environmental Cooperation, <http://www.cec.org/files/documents/publications/10838-guidelines-submissions-enforcement-matters-under-articles-14-and-15-north-en.pdf>.
38. Although the council voted in favor of the preparation of a factual record, it reduced the scope of investigations to allegations of noise pollution (see Hester 2015, p. 51).
39. CAALA-11-004, <http://www.saa-sem.org/en/caso/west-bay-roatan-hn-2/>.
40. CAALA-14-001, <http://www.saa-sem.org/en/caso/dixon-cove-bay-hn/>.
41. USMCA, articles 24.27 and 24.28, [https://ustr.gov/sites/default/files/files/agreements/umca/24\\_Environment.pdf](https://ustr.gov/sites/default/files/files/agreements/umca/24_Environment.pdf). Compliance with the process deadlines by the secretariat and the parties has been a longstanding issue, which shorter timelines may prove ineffective to solve, as shown by the SEM Compliance Tracker (<http://www.cec.org/submissions/sem-compliance-tracker/>).
42. USMCA, article 24.26.
43. USMCA, article 24.28, paragraphs 7 and 8.
44. The CAFTA – DR (article 17.8, paragraph 8), Colombia – US (article 18.9, paragraph 8), Panama – US (article 17.9, paragraph 8), and Peru – US (article 18.9, paragraph 8) PTAs already provide that "The Council shall, as appropriate, provide recommendations to the Environmental Cooperation Commission related to matters addressed in the factual record, including recommendations related to the further development of the Party's mechanisms for monitoring its environmental enforcement."

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## Appendix

Table A1. Truth table for the non-occurrence of the outcome (~suc).

PRE	USC	NGO	BIO	POL	AUT	OUT	Incl	N	Cases
0	0	0	0	0	0	1	1.00	5	CAFTA-09-001; CAFTA-14-002; CAFTA-18-001; NAFTA-02-002; NAFTA-98-002
0	0	0	1	1	0	?	1.00	1	
0	0	1	0	0	0	?	1.00	2	
0	0	1	1	1	0	1	1.00	3	NAFTA-04-003; NAFTA-10-001; NAFTA-22-001
0	1	0	0	1	0	1	1.00	5	NAFTA-00-002; NAFTA-01-002; NAFTA-08-002; NAFTA-15-003; NAFTA-99-001
0	1	0	0	1	1	1	1.00	3	NAFTA-11-001; NAFTA-18-005; NAFTA-21-001
0	1	0	1	0	0	?	1.00	1	
0	1	0	1	1	0	?	1.00	1	
1	0	0	0	0	0	?	1.00	1	
1	0	1	0	1	1	?	1.00	1	
1	0	1	1	0	0	1	1.00	5	CAFTA-10-008; CAFTA-11-005; CAFTA-11-006; CAFTA-12-001; NAFTA-09-003
0	1	1	1	0	0	1	0.91	11	NAFTA-00-003; NAFTA-02-001; NAFTA-07-002; NAFTA-07-003; NAFTA-09-005; NAFTA-11-003; NAFTA-19-004; NAFTA-95-001; NAFTA-95-002; NAFTA-96-003; NAFTA-97-005
0	1	1	0	1	0	1	0.89	9	NAFTA-04-007; NAFTA-06-002; NAFTA-07-004; NAFTA-09-004; NAFTA-13-002; NAFTA-13-003; NAFTA-19-003; NAFTA-97-003; NAFTA-98-003
0	0	0	1	0	1	1	0.83	6	CAFTA-10-001; CAFTA-11-008; NAFTA-05-001; NAFTA-08-003; NAFTA-10-004; NAFTA-18-004
0	0	0	0	1	0	1	0.82	11	CAFTA-13-001; CAFTA-13-002; CAFTA-13-003; Peru-19-002; NAFTA-00-001; NAFTA-01-003; NAFTA-02-005; NAFTA-04-001; NAFTA-16-001; NAFTA-18-001; NAFTA-19-001
0	0	1	0	1	0	1	0.82	11	CAFTA-10-005; CAFTA-11-007; CAFTA-18-003; NAFTA-04-002; NAFTA-07-005; NAFTA-08-001; NAFTA-15-002; NAFTA-97-002; NAFTA-97-007; NAFTA-98-005; NAFTA-98-007
0	0	0	1	0	0	1	0.80	5	CAFTA-11-003; CAFTA-16-001; Panama-19-01; Panama-21-001; NAFTA-15-001
0	0	1	1	0	0	1	0.79	14	CAFTA-07-001; CAFTA-10-002; CAFTA-10-003; CAFTA-10-004; CAFTA-11-001; CAFTA-11-002; Peru-18-001; Peru-18-002; Panama-19-002; NAFTA-03-002; NAFTA-06-006; NAFTA-09-001; NAFTA-16-002; NAFTA-97-001
0	1	1	1	0	1	0	0.67	3	NAFTA-12-001; NAFTA-97-004; NAFTA-99-002
0	0	1	1	1	1	?	0.50	2	
1	0	0	0	1	0	0	0.40	5	CAFTA-10-009; CAFTA-13-005; NAFTA-03-004; NAFTA-06-003; NAFTA-06-004
0	1	1	1	1	0	0	0.38	8	NAFTA-00-004; NAFTA-02-003; NAFTA-03-001; NAFTA-03-005; NAFTA-04-005; NAFTA-10-002; NAFTA-10-003; NAFTA-98-004
1	0	1	0	1	0	0	0.33	3	NAFTA-00-005; NAFTA-03-006; NAFTA-05-003
1	1	1	1	0	0	0	0.33	3	NAFTA-04-004; NAFTA-04-006; NAFTA-97-006
0	0	1	1	0	1	0	0.14	7	CAFTA-11-004; CAFTA-13-004; CAFTA-14-001; NAFTA-00-006; NAFTA-09-002; NAFTA-13-001; NAFTA-96-001
1	0	1	1	1	0	?	0.00	2	
1	1	1	1	1	0	?	0.00	1	

Note: 'OUT' indicates whether the configuration of conditions (represented by the truth table row) is sufficient for the outcome (1) or not (0). The symbol '?' indicates that the configuration does not exist empirically (logical remainder). 'Incl' indicates the consistency score of the configuration. 'N' indicates the number of cases covered by the configuration.

**Table A2.** Conservative solution term for the outcome.

Paths	PRE	USC	NGO	BIO	POL	AUT	Cases	Cons.	Cov.
Path 1	●		●	●	●	○	NAFTA-03-003,NAFTA-11-002; NAFTA-17-001	1.00	0.09
Path 2	○	○	●	●	○	●	CAFTA-11-004,CAFTA-13-004,CAFTA-14-001,NAFTA-00-006,NAFTA-09-002,NAFTA-13-001,NAFTA-96-001	0.86	0.18
Solution	<b>PRE*NGO*BIO*POL*~AUT + ~PRE*~USC*NGO*BIO*~POL*AUT → SUC</b>							0.90	0.27

Note: Full circles indicate that the condition is a necessary part of the path. Empty circles indicate that the absence of the condition is a necessary part of the path. Empty cells indicate that neither the condition nor its absence is a necessary part of the path. In the solution formula, \* denotes the logical AND (conjunction), + denotes the logical OR (disjunction), ~ denotes the absence of a condition, and → means that the solution is sufficient for the outcome.

**Table A3.** Intermediate solution term for the outcome.

Paths	PRE	USC	NGO	BIO	POL	AUT	Cases	Cons.	Cov.
Path 1	●		●	●	●	○	NAFTA-03-003,NAFTA-11-002; NAFTA-17-001	1.00	0.09
Path 2		○	●	●	○	●	CAFTA-11-004,CAFTA-13-004,CAFTA-14-001,NAFTA-00-006,NAFTA-09-002,NAFTA-13-001,NAFTA-96-001	0.86	0.18
Solution	<b>PRE*NGO*BIO*POL*~AUT + ~USC*NGO*BIO*~POL*AUT → SUC</b>							0.90	0.27

Note: To derive the intermediate solution, the directional expectations were that the presence of a previous case (PRE) and of an NGO were conducive to success whereas the presence of the US or Canada (USC) was not.