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Legal Amazon Biome and Amazon Fund: Economic-Financial Sustainability and Socio-Environmental Responsibility of Civil Society Organizations

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Abstract

This research evaluates the economic-financial sustainability and adherence to compliance and accountability practices in civil society organizations (CSOs) with projects in the “Legal Amazon Biome”, supported with resources from the Amazon Fund, in the protection of environmental thematic areas. The object of each project is social and environmental responsibility and the primary data submitted for evaluation are recovered from the financial statements of the CSOs in the time horizon from 2015 to 2017. The Fund manager is the National Bank for Economic and Social Development (NBESD) and the governance , until then exercised by the Guiding Committee of the Amazon Fund (CAF) and Technical Committee of the Amazon Fund (TCAF), was discontinued in 2019, unilaterally by the Government of Brazil, resulting in an increase in the environmental degradation of the Biome by around 30% in 2019, compared to the previous year, in addition to the interruption of contributions from donors and support for projects. The research results, using positivist methodology, provide evidence that adherence to compliance and accountability practices is partial, contributing to fund management and to the literature in subsequent investigations, but CSOs are not self-sustainable and the available information does not allow evaluate the fulfillment of the object and of the UN's ESG agenda.

Keywords: Amazon Fund, Compliance and Accountability in the third sector, CSOs' economic-financial sustainability, Social and environmental responsibility

1. Introduction

This article presents research results, produced by a positivist, theoretical-empirical model, which evaluates economic-financial sustainability and adherence to compliance and accountability practices, as requirements for fulfilling the socio-environmental responsibility of civil society organizations (CSOs) that operate in the *Legal Amazon Biome*, in projects supported with resources from the Amazon Fund, in the protection of environmental thematic areas.

The economic-financial sustainability, introduced in this article, is evaluated by the *quantum* of the Activity Financing Ratio (AFR) obtained by the quotient of the division of the *quantum* of the Financing Ratio with Own Generation (FROG) by the *quantum* of the Partnership Project Financing Ratio (PPFR).

The FROG and PPFR *quanta* are observed from the primary data recovered from the standardized financial statements for external users, from a sample of 18 CSOs of the 42 CSOs supported with financial resources from the Amazon Fund, from which the economic-financial balance is evaluated. Adherence to compliance and accountability practices is verified by fulfillment of the guidelines issued by the Federal Accounting Council (FAC, 2002) and by guidelines from the National Bank for Economic and Social Development (NBESD) as the fund's institutional manager.

The Amazon Fund, established by the Federal Act of the Government of Brazil Nr. 6.527/2008, has the purpose of attracting donations from the public and private sectors and carrying out the necessary procedures for investments in projects that work in the "Legal Amazon Biome", in the protection of areas environmental

thematic and fulfillment of the social and environmental responsibility, which is the object of the fund. The success of each project in this Biome signals the fulfillment of the objective (social and environmental responsibility) and of the Sustainable Development Goals (SDGs) from 13 to 15 (Action against global climate change, life in water and life on land), of the 17 proposed by the United Nations (UN, 2015), in the Paris agreement, related to the Environmental, Social and Governance (ESG) agenda. The management of the Fund's resources is the responsibility of the NBESD, which is responsible for evaluating, by CSO, the effective and efficient fulfillment of the goals with the resources allocated to each project.

The resources donated to the Amazon Fund, until 2019, totalize R$ 3.4 billion (equivalent to US$ 1.29 billion), predominantly donated by the Government of Norway (over 93%), by the Government of Germany (over 5%) and by the Government of Brazil, through Petrobras, around 0.5%. The resources allocated to projects, in the same time period, are around R$ 1.9 billion, distributed in 103 projects in the 42 CSOs supported with resources from the fund, but due to a unilateral decision of the government of Brazil, Federal Act Nr. 10,144 of 2019 (excluding members of organized civil society from the governance of the Amazon Fund), fundraising has stopped (NBESD, 2019).

In spite of the contributions of the Amazon Fund to reduce environmental degradation, the government of Brazil, through Federal Act 9,759, of June 2019, discontinued the Governance of the aforementioned Fund, which until then was exercised by an Amazon Fund Advisory Committee (AFAC) and by a Technical Committee of the Amazon Fund (TCAF). The two discontinued Committees were composed of representatives of the federal government, the governments of the States of the Legal Amazon, Organized Civil Society and the Scientific Community. The immediate consequence of the extinction of the Governance of the Fund was the interruption of the contributions of financial resources by the donors, suspension of support for new projects and the increase in deforestation that grew, in a preliminary way, around 30% in relation to the previous year. (NBESD, 2019, p.13).

The performance evaluation of each supported CSO is the responsibility of the Fund Manager, which establishes metrics for the performance of the thematic areas to ensure the fulfillment of social and environmental responsibility as the object. In this article, the analysis is based on data from the financial statements disclosed by the Governance of each CSO, from which the economic-financial balance and adherence to compliance and accountability processes are evaluated, observing the contributions of research available in the literature and normative guidelines from the Federal Accounting Council (FAC) for transparent management disclosure.

Investigations on the transparency of CSO Governance are reported in the literature, such as the one that evaluated the performance of compliance and accountability by private foundations, veiled by the Public Ministry of the Federal District and Territories (De França, Pereira, Vieira, Mendes, Cruz and Forster, 2019), by demonstrating evidence that the required requirements by the FAC (ITG 2022, 2012) are only partially fulfilled.

Given the relevance of the theme, this article has as its main motivation and objective, to evaluate the economic-financial sustainability and adherence to compliance and accountability practices in CSOs that work in projects supported with resources from the Amazon Fund, in the time horizon from 2015 to 2017. The assessment is carried out through the analysis of data and information disclosed in the standardized financial statements that can signal fulfillment of the social and environmental responsibility object, in the environmental thematic areas proposed by the fund, as well as whether SDGs from 13 to 15 of the UN`s ESG agenda have been met.

The results displayed by the research contribute to the Governance of the Amazon Fund because the joint assessment of the economic-financial balance and adherence to compliance and accountability practices, as a basis for assessing economic-financial sustainability, are relevant requirements to signal the fulfillment of the contracted object. For the literature, research contributions are also relevant because they provide informational content that allows for subsidizing subsequent studies in support of teachers, researchers and managers.

The contribution of this research also differs from others available in the literature because it is based on a quantitative methodology adequately designed for research of this nature.

In addition to this introductory section, the article is structured in six more sections: Relevant moments of the third sector **(2)** in which the contributions of the literature that support this research are discussed; Methodological preliminary and research variables **(3)** that present a compliance and accountability assessment model available in the literature and specify the variables of interest; Methodology **(4)** that describes and specifies the non-parametric positivist model for assessing the economic-financial balance for CSOs; Analysis of results **(5)** in which the research findings are demonstrated and analyzed with the application of the model to the primary data of each CSO; Conclusions **(6)** which summarize the results, limitations and contributions of the research; and finally the references.

2. Relevant Moments of the Third Sector

In Brazil, the literature on the third sector is diffuse and reveals that the pioneer organizations of civil society were the "*Santas Casas de Misericórdia*", since the colonial period, with the installation of the first establishment in São Paulo, in 1543, as it was a successful initiative in Lisbon, from 1498.

The regulation of the functioning of these organizations in Brazilian territory was only institutionalized by the Civil Code (Law 3071 of 1916, replaced by Law 10406 of 2002). Later, in 1935, Law 91 granted public utility titles and, in 1938, Act-Law 525 created the National Council of Social Service. Finally, Law 13,019 of 2014 institutionalized the Civil Society Organizations (CSOs) taxonomy, which improved the rules for voluntary partnerships and State support with these Organizations.

In the context of a regulatory environment, the FAC, through ***ITG 2002/2012*** (R1 in 2015), established accounting practices, control and disclosure rules for non-profit organizations operating in Brazil, requiring fulfillment of the compliance and accountability practices. In this environment, a CSO must separate from its own activities, partnerships with the State and the Market, in order to maintain the independence of each project and guarantee transparency in the fulfillment of the object.

To investigate fulfillment of the compliance and accountability practices instituted by the FAC, De França, Pereira, Vieira, Mendes, Cruz and Forster (2019) chose 8 basic practices contained in ITG 2002/12 and tested compliance with them, using the content information on the rendering of accounts by private foundations, presented to the Public Ministry of the Federal District and Territories. This informational content reveals that no foundation adhered to the totality of the eight elected practices. This incompleteness prevents the assessment of the fulfillment of the object and, therefore, does not allow observing the adequate application of the resources of society and partnerships.

Regarding the fulfillment of the object, De França (2021) carried out a study to assess the performance and efficiency of CSOs, together with Compliance and accountability practices. In order to achieve the objective of the study, a model for evaluating and analyzing academic data from CSOs that carry out projects financed with their own resources and partnerships was introduced and tested. The evidence obtained is significant because it shows that the model provides answers with a satisfactory level of reliability to assess the fiduciary responsibility of Governance.

Regarding the Amazon Fund, the sources of financing, already mentioned in the previous section, are almost entirely from donations from the Norwegian and German governments (99.5%) and a tiny portion from the Brazilian government, through Petrobras (0 .5%). The funds raised are intended to promote actions to prevent, monitor, combat deforestation, conservation and sustainable use of the Legal Amazon (Federal Act 6,527/2008) and are intended to support projects by CSOs and other organizations in the context of the thematic areas of the "Bioma Legal Amazon" (http://www.fundoamazonia.gov.br/pt/home/).

Governance, as discussed by Renz and Smith (2010), must be exercised by a board that has the authority to exercise power over the other members of the Organization, with respect to the principles of legality and ethics. In this context, board members are fiduciary responsible for the organization's resources and enthusiastic about fulfilling its mission, vision, values, ethos of transparency, compliance and integrity.

As Governance is one of the cornerstones of a CSO's credibility, as it provides monitoring of activities and compliance with the objectives and targets planned in the financial budget, Linzer and Richard (2008) argue that

"Forecasting of cash flow is important because it requires a comprehensive understanding of all the strategic elements confronting a nonprofit institution. Organization... If securing profitability is a classic test for the CEO of a commercial enterprise, then accurately forecasting the cash flow of a nonprofit institution is a comparable skill in the nonprofit world."

Regarding accountability practices, Arvidson (2009) states that he studied the impact of third sector activities in the United Kingdom, in which each entity plays its own role, on different fronts, working for a specific cause with the objective of being the main engine of information to citizens, in the defense of issues of public interest, motivated to influence government policies. The author argues that estimating and evaluating the impact of activities is not only about accountability and appropriate policies, but also about finding evidence to use as a basis for legitimacy.

Dolnicar and Lazarevski (2009) claim to have analyzed marketing in non-profit organizations in the regulatory context of Australia where the rules of the three levels of government (local, state and federal) are applied to non-profit organizations as required by the Charitable Commission of England and Wales which implements accountability standards. In this regulation, non-profit organizations are obliged to adopt practices imposed by

governments or by demands from stakeholders (donors) due to the influence of globalization on economic restructuring practices, accounting practices and standards.

Given the relevance of the accountability process, Schafer (1999) and Candler and Dumont (2010) introduced and evaluated the results of a theoretical matrix structure of accountability for non-profit entities. In this matrix structure, they discuss accountability to whom and accountability for what and categorize the stakeholders interested in the information. They argue that the obligation of managers of non-profit entities to be accountable is important in theory and practice and has increased when non-profit entities are financed by private entities. In this context, they discuss procedural accountability (legal, mission, ethics and legitimacy) and consequential accountability (financial resources, voluntary resources, reputational capital, products and services, social capital and political impact) that allow a better evaluation of the process.

Seeking to understand the relationship between the third sector and the State, Kendall (2000) researched the pact of the British Labor government of 1988 with the third sector. He states that among the main agreements he found different forms of accountability, such as common values of commitments to integrity, objectivity, openness, honesty and leadership.

In the context of public finances in Brazil Abrucio and Loureiro (2004, p.75-102) approach democratic accountability as a form of political accountability that obliges the governor to be permanently accountable to the ruled. They also highlight the electoral process as the starting point of accountability and emphasize that more democracy implies more accountability. In this context, critics comment on the processes of vertical accountability and horizontal accountability for not being able to fully account for the representatives because the punishments are not implemented as approached by O'donnell (1998).

Haugh and Kitson (2007) analyzed the policies of the Labor government in the United Kingdom that had promised to fight economic inequality and social exclusion by encouraging the third sector to fulfill part of a positive agenda. In order to fulfill this agenda, from 1997 onwards, non-profit entities began to receive government support, as stated by Kendall and Anheier (1999), allowing them to move from the economic margin to the mainstream, as approached by Kendall (2000), Osbourne and McLaughlin (2004) and Cairns et al. (2005), to play an increasing role in the economic, political and social life of the British. From that point forward, the Charity Tax Review created a modern legal framework to support and encourage a strong, diverse and independent voluntary sector, which would promote greater efficiency and effectiveness of charities and would strengthen the accountability of immune or exempt charities.

The Paris Agreement (UN, 2015) defined targets in the Sustainable Development Goals (SDGs) from 13 to 15, of the 17 SDGs proposed by the United Nations, to be observed and fulfilled as part of the Environmental, Social and Governance (ESG). These objectives are included in the environmental thematic areas to fulfill the social and environmental responsibility object of the projects supported by the Amazon Fund.

3. Financial and Socio-Environmental Sustainability

The binomial financial and socio-environmental sustainability (Paris Agreement - UNO, 2015), in the context of civil society organization (CSO), is crucial for the continuity of Non-State Public Service (NSPS) as addressed by De França (2021) and De França, Lima, Pereira, Tadeu, & Dantas (2022). The binomial comes from operational performance, governance strategies and allows business continuity, lending longevity to the organization.

Despite the relevance of the theme, in enabling the State's Supplementary Action (SSA), the literature is still restricted in exploring applied research. Unerman and O'Dwyer (2010) argue that non-governmental organizations (NGOs) have a potentially relevant role to play in promoting social, environmental and economic sustainability, especially in supporting the most vulnerable to deal with disproportionate impacts that economic and environmental unsustainability can exert on them, but that study has a limited contribution because it does not bring an empirical approach.

The discussion introduced by Dart & Hill (2010) considers that since the United Nations Brundtland Commission report (World Commission on Environment and Development, 1987), the concept of sustainable development has become omnipresent by relating discussions on climate change, water loss of biodiversity and social greening that guided some academic and empirical work on the environmental performance of business organizations, producing concepts of eco-efficiency, corporate social responsibility, natural capitalism and resource productivity, according to the sources cited by the authors. The foundations of the discussion of these writers are built on the contribution of Elikington (1997) on the triple bottom line, even though there are not many theoretical and empirical works that address the environmental performance related to non-profit

organizations.

The study by Navarro-Galera, Rodriguez-Bolívar, Alcaide-Muñoz & Lópes-Subires (2016) addresses the issue of financial sustainability, as do De França and Sandoval (2022), but both from a corporate point of view. The study by the first authors presents econometric modeling that is only adequate to assess sustainability from a stochastic point of view, while the approach by the last authors (De França & Sandoval, 2022) presents a robust positivist model for assessing financial sustainability considering the aggregates of the financial statements of economic organizations.

Finally, the literature´s contributions are still limited to assessing the sustainability of civil society organizations, in the economic-financial and socio-environmental contexts. This article makes a significant advance in providing a positivist model whose metrics allow the regulator and the manager of sustainability policies to track and monitor the fulfillment of goals in assessing the performance of civil society organizations/non-profit organizations.

4. Methodological Preliminary and Research Variables

This section presents an available ratios model in the literature used to assess adherence to compliance and accountability requirements, as well as the variables that specify the economic-financial balance performance model in the towards of sustainability. The model and the variables make it possible to infer about the quantitative assessment necessary to ensure fulfilling of the object and the social and environmental responsibility of a CSO that develops projects in the "Legal Amazon Biome".

4.1 Assessment of Compliance and Accountability

The model presented in Table 1 fulfills the function of evaluating adherence to compliance and accountability processes as introduced by De França, Pereira, Vieira, Mendes, Cruz and Forster (2019). In the specification of the model, descriptions were added that allow improvements in the informational content for each of the three ratios: **(a)** Compliance coefficient by foundation ($\boldsymbol{COfr}$); (b) Compliance coefficient by requirement ($\boldsymbol{COrf}$) and (c) Accountability status coefficient (ASC). Ratios **(a)** to **(c)** are renamed to **(a)** organization adherence ratio (OAR); **(b)** requirement adherence ratio (RAR), and **(c)** accountability *status* ratio (ASR).

Table 1. Model for evaluating adherence to compliance and accountability processes

Model specification	Functionality
a) $\mathrm{OAR}_{\mathrm{AR},t} = \frac{1}{n}\sum_{j=1}^{n} \mathrm{AR}_{ij}\,; i \in [0,1]$ Where $\boldsymbol{OAR_{AR,t}}$ is the accumulated frequency *quantum* by CSO in all requirements and time units; $\boldsymbol{i}$ is the level of adherence of the CSO to each requirement and j is the CSO.	Assesses the level of adherence by CSO to requirements in time units, according to ITG 2002/12.
b) $\mathrm{RAR}_{\mathrm{FR},t} = \frac{1}{n}\sum_{j=1}^{n} \mathrm{FR}_{ij}\,; i \in [0,1]$ Where $\boldsymbol{RAR_{FR,t}}$ is the cumulative frequency *quantum* per requirement and time unit across all CSOs; $\boldsymbol{i}$ is the level of adherence to the requirement by each CSO and $\boldsymbol{j}$ is the CSO.	Assesses the level of adherence by requirement in CSOs, according to ITG 2002/12.
c) $ASR_t = \begin{cases} \mathrm{OAR}_{\mathrm{AR}} = 1 \Rightarrow \text{full accountability by CSO} \\ \mathrm{OAR}_{\mathrm{AR}} = 0 \Rightarrow \text{no accountability by CSO} \\ \mathrm{OAR}_{\mathrm{AR}}(0,1) = \text{incomplete accountability by CSO} \\ \mathrm{RAR}_{\mathrm{FR}} = 1 \Rightarrow \text{full accountability by Requirement} \\ \mathrm{RAR}_{\mathrm{FR}} = 0 \Rightarrow \text{no accountability by Requirement} \\ \mathrm{RAR}_{\mathrm{FR}}(0,1) \Rightarrow \text{incomplete accountability by Requirement} \end{cases}$	Signals the *status* of adherence to the accountability process as a result of adherence to the compliance process.

4.2 Variables of the Economic-Financial Balance Evaluation Model

The variables described in Table 2 are used in the equations of the economic-financial equilibrium model specified in section 4 below. Through these variables, the model equations are sufficient to signal the informational content of economic-financial sustainability.

Table 2. Variables of the economic-financial balance evaluation model

Variáveis	Identification	Functionality
AFR	Activity financing ratio	It signals the relationship between the commitment of own generation in fixed assets with the commitment of third-party resources in the total working capital.
FROG	financing ratio with own generation	It represents the commitment of own generation with the investment in fixed, tangible and intangible assets.
FA	Fixed assets	Resources allocated to fixed, tangible and intangible assets
TWC	Total Working Capital	Total resources allocated to current assets (CA) and non-current assets (NCA). Thus TWC = (CA + NCA)
TA	Total Assets	Total assets of the CSO shown on the balance sheet.
ORG	Own Resource Generation	Net assets generated by the business (AT – TPR)
TPR	Third Party Resources	Short-term and long-term debt (CL+NCL) raised for project financing.
CA	Current Assets	Short-term working capital allocated to the turnover of activities.
NCA	Non-Current Assets	Long-term working capital allocated to the turnover of activities.
CL	Current Liabilities	Third party capital contributed for short-term project financing.
NCL	Non-Current Liabilities	Third party capital contributed for long-term project financing.
PPFR	Partnership project financing ratio	It signals the commitment of the total resources contributed by third parties with the total working capital.

5. Methodology

The methodology is positivist and non-parametric, supported by a model of ratios that measure the *quantum* of the activity financing ratio to signal economic-financial sustainability and the fulfillment of social and environmental responsibility as a fiduciary responsibility of Governance.

The model specification is presented in equations 1 to 3 below. The variables used in each equation are those described in the preceding subsection 3.2. For all variables, the subscript j identifies the CSO (j=1,2,…,J) and the subscript t indicates the time unit (t=1,2,…,T).

a) Activity Financing Ratio (AFR).

The AFR assesses the economic-financial balance of a CSO's activities by dividing the quantum of the financing ratio with own generation (FROG) by the quantum of the partnership project financing ratio (PPFR). As the FROG represents the percentage of Own Resource Generation (ORG) invested in fixed assets (AF) and the PPFR shows the percentage of third-party resources (TPR) that finance the total working capital (TWC), the informational content of the AFR signals the commitment of each source of resources to the financing of a CSO's FA and TWC.

$$AFR_{jt} = \frac{FRO_{jt}}{PPFR_{jt}} \quad (1)$$

AFR metrics

$AFR_{jt} =$

$$\begin{cases} < 1 \Rightarrow Insufficient\ own\ generation\ to\ finance\ fixed\ assets\ is\ complemented\ by\ TPR \\ 1 \Rightarrow Own\ generation\ of\ resources\ and\ third\ party\ resources\ are\ equivalent \\ > 1 \Rightarrow Sufficient\ own\ generation\ to\ finance\ FA\ and\ complement\ TWC \end{cases}$$

b) Financing ratio with own generation (FROG)

The FROG identifies the portion of own generation of resources (OGR) applied in the financing of fixed, tangible and intangible assets (FA).

$$FROG_{jt} = \frac{OGR_{jt}}{FA_{jt}} \quad (2)$$

FROG metrics

$$FROG_{jt} = \begin{cases} < 1 \Rightarrow (1 - FROG)\ of\ FA\ is\ financed\ with\ third\ party\ resources \\ 1 \Rightarrow the\ entire\ FA\ is\ financed\ with\ own\ generation\ resources \\ > 1 \Rightarrow OGR\ finances\ all\ fixed\ asset\ and\ part\ of\ the\ total\ working\ capital \end{cases}$$

c) Partnership Project Financing Ratio – PPFR

The PPFR signals the participation of third-party resources (TPR) contributed to finance the total working capital (TWC), both in the short-term and long-term.

$$\text{PPFR}_{jt} = \frac{TPR_{jt}}{TWC_{jt}} \quad (3)$$

PPFR metrics

$$\text{PPFR}_{jt} = \begin{cases} < 1 \Rightarrow (1 - PPFR)\ of\ TWC\ is\ financed\ with\ own\ generationresources \\ 1 \Rightarrow\ total\ working\ capital\ is\ financed\ with\ third\ party\ resources \\ > 1 \Rightarrow \text{third party resources } finances\ all \text{ working capital } and\ part\ of\ fixed\ assets \end{cases}$$

6. Analysis of Results

The results presented in this section refer to the analysis of data from the research conducted in the 18 CSOs of the 42 identified with support from resources from the Amazon Fund (Appendix Table A1), whose standardized financial statements, available, meet the research requirements to assess the economic-financial balance of activities that enable fulfillment of the object of social and environmental responsibility, from 2015 to 2017, as well as assessing adherence to the requirements of compliance and accountability processes, guided by ITG 2002/2012 (Appendix Table A2). The informational content of the website http://www.fundoamazonia.gov.br/pt/home discloses that the total support of the Fund has already financed 103 projects distributed by all 42 CSOs supported, but only 18 of these 42 CSOs meet the research criteria.

6.1 Analysis of the Results of the Research of the Compliance and Accountability Processes of CSOs Supported by the Amazon Fund from 2015 to 2017

The frequencies shown in Table A3 (Appendix) report evidence of adherence to the compliance process that impacts accountability guided by ITG 2002/12 (recognition item), in 9 of the 14 basic requirements required (Appendix: Table A2), calculated in according to the specified model in **a)**, **b)** and **c)** of section 3.1. The lines contain the cumulative adherence frequency by requirement (RAR) and time unit across all CSOs. The columns signal the cumulative frequency of adherence by CSO (OAR) across all requirements and time units. If the adherence is satisfied, a score of 1 is assigned, otherwise the assigned score is zero.

Compliance of adherence by requirement. The last column on the right of Table A3 contains the cumulative frequency of adherence by requirement (RAR), across all CSOs, in each unit of the time horizon. The first four requirements (R1 to R4) were fully met with adherence by all CSOs, in all time units, with frequency 1. From requirements 5 to 9 (R5 to R9) adherence varied between CSOs, with RAR between 0.11 (11%) and 0.89 (89%). The lowest frequency in this interval occurred in adherence to the R5 requirement (11%), with adherence by only one CSO. The highest frequency occurred in adherence to the R8 requirement (89%), also by only one CSO. These results are robust to confirm that the adherence of CSOs to the requirements is only partial.

Compliance of adherence by CSO. The last row of Table A3 displays the cumulative frequency of adherence by CSO (OAR) to the nine requirements, in the set of all units of the sample time horizon. Differently from adherence by requirement, in which four of them are complete (100%), in adherence by CSO there was no completeness, with incompleteness varying between 0.44 (44%) and 0.89 (89%). The lowest frequency (44%) was exercised by CSO12 with adherence to only 4 of the 9 requirements. The highest frequency (89%) occurred in CSO16, which adhered to 8 of the 9 requirements, in the set of time units.

These results are relevant because among the unfulfilled requirements are two that are fundamental as they refer to the complete presentation of the set of required financial statements and explanatory notes with minimal informational content. Without fulfilling these two requirements, the assessment of accountability and the satisfaction of social and environmental responsibility is jeopardized.

Accountability analysis. As in the assessment of compliance, the fulfillment of the accountability is also

observed by the cumulative frequencies shown in the last row and in the last column of Table A3. Accountability by requirement is demonstrated in the last column on the right by the sum of the adherence of all CSOs to a requirement, in each time unit. CSO accountability is demonstrated in the bottom line by the sum of adherence to all requirements by a CSO. According to metrics **c)** of subsection 3.1, completeness of accountability, by request and by CSO, respectively, occurs with coefficients OAR_{AR} and $RAR_{FR} = 1$ equal to 1. In this toward, the assessment of requirements 1 to 4 (R1 to R4) confirms accountability complete because $RAR_{FR} = 1$, but in the other requirements (R5 to R9) accountability is incomplete because $RAR_{FR} < 1$. When the accountability assessment focuses on CSO compliance, the test evidence reports incompleteness because $OAR_{AR} < 1$. These results indicate that none of the CSOs in the sample showed robustness of informal content of accountability, as incompleteness of compliance implies incompleteness of accountability considering that compliance requires integrity of the necessary procedures so that accountability is robust with an indication of fulfillment of the object, in the case, social and environmental responsibility.

6.2 Analysis of the Economic-Financial Balance Ratios by CSOs Supported with Amazon Fund Resources from 2015 to 2017

The ratios shown in Table A4 (Appendix) indicates the relationship between the financing of fixed assets with resources from their own generation and the financing of total working capital with resources provided by third parties, of the sample CSOs supported with resources from the Amazon Fund, in the horizon 2015 to 2017.

The ratios were calculated using equations 1, 2 and 3 in model specified in the Methodology section. Each time horizon unit contains three coefficients AFR, FROG e PPFR.

Assuming that the total working capital (CA+NCA) of a CSO, in the strict sense, has as its main source of funding resources from projects in partnerships, it is expected that the PPFR will orbit around 1.

Analysis of the PPFR. Ratio that identifies the relationship between the balance of resources allocated to finance projects and the resources pending allocation. The flow of third party resources in 7 CSOs in 2015 (CSO1, CSO6, CSO8, CSO9, CSO13, CSO14 and CSO16), in 4 CSOs in 2016 (CSO6, CSO8, CSO9 and CSO16) and in 5 CSOs in 2017 (CSO6, CSO8, CSO9, CSO11 and CSO16), of the 18 CSOs in the sample, is at least equal to the total working capital (CA+NCA) producing PPFR ≥ 1. This situation (PPFR > 1), suggests that the CSO has applied resources from third parties/partnerships in financing fixed assets and either in its own costing or has not yet observed the accounting knowledge rules established by ITG 2002/2012. In these situations, the assessment of the balance of the partnership project cannot be confirmed. The confirmation of this evidence depends on an investigation of the flow of accounting recognition, on the purpose of the financing, which the information disclosed, for an external user, does not allow to do so.

FROG analysis. Ratio that identifies the financing of a CSO's fixed assets with resources from its own generation. Of the CSOs in the sample that financed only part of their fixed assets with resources from their own generation, 6 were identified in 2015 (CSO6, CSO8, CSO9, CSO13, CSO14 and CSO16), 4 in each of the 2016 time units (CSO6, CSO8, CSO9 and CSO16) and 2017 (CSO8, CSO9, CSO11 and CSO16), all with FROG quantum less than 1 (FROG < 1). In this circumstance, the PPFR of each of these CSOs has a quantum greater than 1 (PPFR > 1), a model premise confirmed in the empirical evaluation that indicates that the CSO financed fixed assets with project resources or other sources.

AFR analysis. Quantum of the division of the financing ratio with own generation by the Project financing coefficient in partnerships that indicates whether resources from project in partnership financed fixed assets or whether resources from own generation financed a project in partnership or own. In the three units of the time horizon, 2015 to 2017, of the 18 CSOs in the sample, the ratio shows evidence that CSOs financed fixed assets with resources from partnerships or other sources in 2015 (CSO6, CSO8, CSO9, CSO13, CSO14 and CSO16); in 2016 (CSO6, CSO8, CSO9 and CSO16) and in 2017 (CSO6, CSO8, CSO9, CSO11 and CSO16), because these CSOs exhibit AFR *quantum* less than 1 (AFR < 1). However, this evidence, as reported in the PPFR analysis, lacks investigation of the accounting recognition procedures adopted by each CSO, considering that the observations captured from the standardized financial statements, made available to an external user, do not allow it to be done.

In summary, the evidence is robust that most CSOs financed the project with resources from their own generation, considering that AFR > 1, with CSO4 being the one that stands out the most due to the reduced participation of third party in the total working capital.

Conclusion of the analysis. The results presented with the application of the research model are adequate and robust, showing the incompleteness of the adoption of compliance that impacts the accountability process.

Regarding economic-financial sustainability, it was observed that, in the context of financing the total working capital, with resources from their own generation, there are CSOs that execute the "Legal Amazon Biome" project without financial support from the Amazon Fund. The context of financing fixed assets, with partnership resources, requires investigating the work plan of each project, a procedure that could not be confirmed due to insufficient information disclosed in the standardized financial statements, as well as no information was observed that signaled compliance with the object, protection of environmental thematic areas and fulfillment of the social and environmental responsibility, defined by the ESG agenda for the SDGs proposed by the United Nations.

7. Analysis of Descriptive Statistics Estimators

The main estimators of descriptive statistics are shown in Tables 3 and 4 below. Table 3 displays the estimators by requirement in the three units of time, in the 18 CSOs in the sample. Table 4 presents the estimators by CSO in the three units of time, in the 9 requirements of the ITG 2002/12.

7.1 Requirements Estimators

The informational content of Table 3 shows the complying levels of each requirement by the set of 18 CSOs in the sample. For requirements R1 to R4 (Table A3), the complying is integral by all 18 CSOs, indicating adherence to compliance practices that ensure the fulfillment of the accountability, because the average estimator is equal to 1, which is the complying score of the requirements. As of requirement R5, compliance levels are lower than 1, indicating that there are CSOs with difficulty in complying with the requirement. This difficulty is higher in the R5 requirement with an average score of only 11%, but the difficulty is gradually reduced until the R9 requirement with 83%, but still does not ensure the fulfillment of accountability.

It is important to highlight the concentration of compliance levels, shown by the coefficient of variation (CV) equal to zero in all requirements, signaling that there is no dispersion between the average and the scores of each requirement in the time units, which is corroborated by the amplitude between the minimum and maximum limits equal to zero and equivalent mean and median estimators. This shows that for the same requirement the perception of compliance is equivalent for all 18 CSOs.

Table 3. Estimators of statistics (RAR) by application from 2015 to 2017 in the 18 CSOs

Estimadores	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**R7**	**R8**	**R9**
Mean	1	1	1	1	0,11	0,22	0,67	0,89	0,83
Median	1	1	1	1	0,11	0,22	0,67	0,89	0,83
CV	0	0	0	0	0	0	0	0	0
Min	1	1	1	1	0,11	0,22	0,67	0,89	0,83
Max	1	1	1	1	0,11	0,22	0,67	0,89	0,83
Nr of observations	3	3	3	3	3	3	3	3	3

Note. Statistics obtained from data from table A3 (RAR).

7.2 CSO Estimators

Table 4 presents the informational content of the statistical estimators of complying with the set of 9 requirements by each of the 18 CSOs. As the complying *score* is equal 1 and the non-complying *score* is equal zero, the mean estimator signals that none of the 18 CSOs fully complied with the set of 9 requirements because the mean *score* is less than 1. The mean estimator signals that there are CSOs with equal difficulty in fulfilling of the same requirements because they have the same *quanta* as CSOs 1, 2, 7, 9 and 8 with 0.78; CSOs 3 and 4 with 0.89 and others. The interval between the minimum and maximum limits also confirms that no CSO met the set of requirements because in all of them there are zero and 1 *scores* and this occurrence produces a dispersion of 0.38 to 1.19 standard deviations from the mean as indicated by the coefficient of variation (CV) and scores of different mean and median estimators.

Table 4. Estimators of descriptive statistics (OAR) by CSO from 2015 to 2017 in the 9 requirements

Organizations	Mean	Median	CV	Min	Max	Nr.Obs
CSO1	0,78	1	0,57	0	1	9
CSO2	0,78	1	0,57	0	1	9
CSO 3	0,89	1	0,38	0	1	9
CSO 4	0,89	1	0,38	0	1	9
CSO 5	0,67	1	0,83	0	1	9
CSO 6	0,67	1	0,75	0	1	9
CSO7	0,78	1	0,57	0	1	9
CSO8	0,78	1	0,57	0	1	9
OSC9	0,78	1	0,57	0	1	9
CSO10	0,89	1	0,38	0	1	9
CSO11	0,78	1	0,57	0	1	9
CSO12	0,44	0	1,19	0	1	9
CSO13	0,56	1	0,95	0	1	9
CSO14	0,78	1	0,57	0	1	9
CSO15	0,56	1	0,95	0	1	9
CSO16	0,89	1	0,38	0	1	9
CSO17	0,78	1	0,57	0	1	9
CSO18	0,78	1	0,57	0	1	9

Note. Statistics obtained from data from table A3 (OAR).

7.3 Sustainability Ratios Statistics

The estimators of the economic-financial sustainability ratios presented by AFR (Table 5) reveal that, on mean, the resources of own generation of 15 of the 18 CSOs are sufficient to carry out investments in fixed assets and finance part of the working capital because the AFR is greater than 1, in according to the model metrics specified in section 4 (Methodology). Three CSOs (CSO6, CSO9 and CSO16) because they have a AFR quantum lower than 1, indicate that they do not generate their own resources to invest in the maintenance of activities and therefore commit part of the total working capital to investing in fixed assets.

The distance between the observations and the mean in the three time units, by CSO, is relatively small because the coefficient of variation (CV) has a dispersion smaller than 1 in 16 of the 18 CSOs, although the interval between the Minimum and Maximum limits not be reduced but this signaling is due to the number of observations referring to only 3 time units.

The robustness of the mean of the estimators greater than 1, either in absolute terms, indicates that there is economic and financial sustainability in 14 of the 18 CSOs supported by the Amazon Fund.

Table 5. Estimators of descriptive statistics of economic-financial sustainability coefficients (AFR)- CSOs supported by the Amazon Fund - 2015 to 2017

Organization	Mean	CV	Min	Max	Nr.Obs
CSO1	24,53	0,86	1,05	42,06	3
CSO2	2,11	0,34	1,32	2,72	3
CSO3	4,87	0,15	4,22	5,64	3
CSO4	419,18	0,67	167,87	720,94	3
CSO5	3,18	0,49	1,61	4,72	3
CSO6	0,72	0,32	0,56	0,99	3
CSO7	33,87	0,63	9,24	47,99	3
CSO8	-9,26	-1,26	- 22,73	- 2,19	3
CSO9	0,55	0,34	0,35	0,72	3
CSO10	21,95	0,69	7,30	37,55	3
CSO11	2,68	1,31	- 1,36	4,84	3
CSO12	18,84	0,80	6,12	35,51	3
CSO13	1,18	0,43	0,64	1,65	3
CSO14	1,58	0,48	0,88	2,37	3
CSO15	5,15	0,57	3,36	8,54	3
CSO16	0,37	0,71	0,07	0,57	3
CSO17	3,14	0,03	3,03	3,21	3
CSO18	1,49	0,29	1,16	1,97	3

Note. Statistics obtained from data from table A4 (AFR).

8. Conclusions

The research presented in this article evaluated the economic-financial balance, adherence to compliance and accountability processes and fulfillment of the socio-environmental responsibility of CSOs, supported with resources from the Amazon Fund, with activities in the *Legal Amazon Biome*. The analyzed data were limited to the available standardized financial statements, from which the primary observations were extracted, evaluated by the non-parametric positivist model specified with the variables of interest.

The sample size was limited to the available standardized financial statements, from which the primary observations were extracted, evaluated by the non-parametric positivist model specified with the variables of interest.

The results obtained signal that none of the CSOs, in the sample, fully adhered to the compliance guided by the ITG 2002/2012 and that, due to this partial adherence, the fulfillment of accountability was also partial and does not allow assessing the fulfillment of the social and environmental responsibility. Indeed, in more than 2/3, the CSOs are self-sustaining in the economic-financial aspect, but it is not possible to assess the fulfillment of the objective.

Regarding the economic-financial sustainability of the activities, the results provide evidence that a significant part of the CSOs, in more than 2/3, finance fixed assets and part of the total working capital with resources from their own generation, as indicated by the AFR *quantum* greater than 1. The reference to evidence is relevant because no available information was found that would allow assessing the fulfillment of the social and environmental responsibility object. Thus, in this context, in more than 2/3, the CSOs are self-sustainable in the economic-financial aspect, but the fulfillment of the object cannot be guaranteed.

Thus, the answers obtained using the positivist non-parametric model, proved to be adequate to assess compliance, accountability and the economic-financial balance of the activities of CSOs and contribute to the literature to subsidize subsequent studies in support of teachers, researchers and managers.

Conclusively, it is recognized that the non-availability of standardized financial statements, in a greater number of CSOs, limits the generalization of the results to the total of projects supported by the Amazon Fund, but despite this limitation, the results are robust and relevant to assist subsequent research in complementary investigation.

Finally, the information from the Amazon Fund manager is relevant that the environmental degradation recorded in 2019, at least 30% more than that recorded in the previous year, may be a consequence of the dismantling of the Fund's Governance that led to the suspension contributions from donors (Norway and Germany) and support for new projects that could maintain the CSOs' commitment to the social and environmental responsibility of the “Legal Amazon biome” and, consequently, fulfillment of the SDGs 13 to 15 proposed by the United Nations in the ESG agenda. However, it is clarified that the research did not aim to evaluate the fulfillment of the social and environmental responsibility, but to evaluate the requirements that would be the credential for this object fulfillment.

Lastly, it is believed that the research contributions are relevant to help the governance of the Amazon Fund in the management of sustainability and contribute to the literature, because they provide robust positivist modeling to assess financial and socio-environmental sustainability, even though the spatial limitation of the sample has not allowed to explore all the informational content of the model.

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Appendix A

Table A1. Civil Society Organizations supported with resources from the Amazon Fund sample components

ID	Civil Society Organizations	Home page
CSO1	Fundo Brasileiro para a Biodiversidade (Funbio)	https://www.funbio.org.br/
CSO2	Instituto do Homem e Meio Ambiente da Amazônia (Imazon)	https://imazon.org.br/
CSO3	WWF-Brasil	https://www.wwf.org.br/
CSO4	Fundação Amazonas Sustentável (FAS)	http://fas-amazonas.org/
CSO5	Instituto Internacional de Educação do Brasil (IEB)	https://iieb.org.br/
CSO6	Pacto das Águas - Elaboração e Desenvolvimento de Projetos Socioambientais	https://www.pactodasaguas.org.br/
CSO7	Instituto de Pesquisas Ecológicas (IPÊ)	https://www.ipe.org.br/
CSO8	Instituto Floresta Tropical (IFT)	http://www.ift.org.br/
CSO9	Instituto Ouro Verde (IOV)	http://www.ouroverde.org.br/
CSO10	Conservation International do Brasil (CI-Brasil)	https://www.conservation.org/brasil
CSO11	Instituto de Pesquisa Ambiental da Amazônia (IPAM)	https://ipam.org.br/pt/
CSO12	Associação SOS Amazônia	https://www.sosamazonia.org.br/conteudo/
CSO13	Centro de Estudos da Cultura e do Meio Ambiente da Amazônia (Rioterra)	http://rioterra.org.br/
CSO14	Instituto Centro de Vida (ICV)	https://www.icv.org.br/
CSO15	Instituto Brasileiro de Administração Municipal (Ibam)	http://www.ibam.org.br/
CSO16	Instituto de Desenvolvimento Sustentável Mamirauá (IDSM)	https://www.mamiraua.org.br/
CSO17	Instituto Socioambiental (ISA)	https://www.socioambiental.org/pt-br
CSO18	Centro de Estudos Avançados de Promoção Social e Ambiental – CEAPS (Projeto Saúde e Alegria)	https://saudeealegria.org.br/institucional/

Table A2. Requirements (R) required by ITG 2002/12 for compliance and accountability practices

R	Identification of the request
R1	Revenue and Expense by accrual
R2	Donations/Grants in the result after applied
R3	Donations/Grants on liabilities while not applied
R4	Revenue and Expense segregated by activity and project
R5	Free benefits - revenue waiver
R6	Estimated loss on receipt of credits
R7	Impairment in the recoverable value of assets
R8	Basic financial statements
R9	Complete Explanatory Notes

Table A3. Frequencies of fulfillment of the compliance by requirement and by CSO from 2015 to 2017

R/Ano		Frequencies of adherence to compliance by CSOs																		RAR
		CSO 1	CSO 2	CSO 3	CSO 4	CSO 5	CSO 6	CSO 7	CSO 8	CSO 9	CSO 10	CSO 11	CSO 12	CSO 13	CSO 14	CSO 15	CSO 16	CSO 17	CSO 18	
R1	2015	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	2016	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	2017	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
R2	2015	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	2016	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	2017	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
R3	2015	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	2016	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	2017	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
R4	2015	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	2016	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

		Frequencies of adherence to compliance by CSOs																		RAR
R/Ano		CSO 1	CSO 2	CSO 3	CSO 4	CSO 5	CSO 6	CSO 7	CSO 8	CSO 9	CSO 10	CSO 11	CSO 12	CSO 13	CSO 14	CSO 15	CSO 16	CSO 17	CSO 18	
	2017	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	2015	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0,11
R5	2016	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0,11
	2017	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0,11
	2015	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0,22
R6	2016	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0,22
	2017	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0,22
	2015	1	1	1	1	0	0	1	1	1	1	1	0	0	1	0	1	1	0	0,67
R7	2016	1	1	1	1	0	0	1	1	1	1	1	0	0	1	0	1	1	0	0,67
	2017	1	1	1	1	0	0	1	1	1	1	1	0	0	1	0	1	1	0	0,67
	2015	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	0,89
R8	2016	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	0,89
	2017	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	0,89
	2015	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	0,83
R9	2016	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	0,83
	2017	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	0,83
OAR		0,78	0,78	0,89	0,89	0,67	0,67	0,78	0,78	0,78	0,89	0,78	0,44	0,56	0,78	0,56	0,89	0,78	0,78	

Note. R=requirement.

Source. the authors based on observations released by each CSO.

Table A4: Economic-financial balance ratios of 18 CSOs supported by the Amazon Fund from 2015 to 2017

CSO	Ratios2015			Ratios2016			Ratios2017		
	PPFR	FROG	AFR	PPFR	FROG	AFR	PPFR	FROG	AFR
CSO1	1,00	1,05	1,05	0,97	29,56	30,47	0,97	40,63	42,06
CSO2	0,90	2,45	2,72	0,97	1,29	1,32	0,94	2,16	2,29
CSO3	0,87	3,66	4,22	0,81	4,57	5,64	0,75	3,56	4,75
CSO4	0,06	22,52	368,73	0,04	27,25	720,94	0,09	15,62	167,87
CSO5	0,84	3,94	4,72	0,88	2,80	3,20	0,98	1,58	1,61
CSO6	1,20	0,68	0,56	1,15	0,70	0,61	1,01	1,00	0,99
CSO7	0,37	16,25	44,39	0,34	16,27	47,99	0,66	6,08	9,24
CSO8	1,50	-3,29	-2,19	1,93	-5,52	-2,87	1,43	-32,55	-22,73
CSO9	1,05	0,62	0,59	1,02	0,73	0,72	1,07	0,37	0,35
CSO10	0,76	16,04	20,98	0,70	26,42	37,55	0,91	6,62	7,30
CSO11	0,93	4,24	4,56	0,92	4,47	4,84	1,03	-1,41	-1,36
CSO12	0,25	1,52	6,12	0,13	1,95	14,88	0,05	1,80	35,51
CSO13	1,25	0,80	0,64	0,90	1,10	1,23	0,76	1,26	1,65
CSO14	1,01	0,89	0,88	0,90	1,34	1,48	0,92	2,18	2,37
CSO15	0,32	2,70	8,54	0,56	1,87	3,36	0,54	1,92	3,55
CSO16	2,60	0,18	0,07	1,26	0,61	0,48	1,17	0,67	0,57
CSO17	0,86	2,75	3,21	0,92	2,93	3,19	0,92	2,80	3,03
CSO18	0,97	1,13	1,16	0,97	1,28	1,32	0,92	1,81	1,97

Source. the authors.