SWOT ANALYSIS OF ESG PRACTICES AMONG RURAL SUGARCANE PRODUCERS IN THE STATE OF SÃO PAULO

ANÁLISE SWOT DE PRÁTICAS ESG ENTRE PRODUTORES RURAIS DE CANA-DE-AÇÚCAR NO ESTADO DE SÃO PAULO

ANÁLISIS FODA DE LAS PRÁCTICAS ESG ENTRE LOS AGRICULTORES DE CAÑA DE AZÚCAR EN EL ESTADO DE SÃO PAULO

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ABSTRACT

This article aimed to analyze Environmental, Social, and Corporate Governance (ESG) practices among sugarcane producers in the state of São Paulo, seeking to identify their potential impacts and challenges. Specifically, the SWOT methodology was applied to assess the relevance of ESG adoption, as well as to characterize the organizational environment, considering variables from both the general and task environment, in order to understand internal and external factors that influence its implementation. The research was based on bibliographic and documentary review, with emphasis on sustainability reports from companies in the sugar-energy sector, integrating discussions on agribusiness and corporate governance. The results indicated that, in the environmental dimension, strengths such as circular economy and the use of clean technologies prevail, while weaknesses remain related to the use of fossil fuels and waste management. In the social dimension, progress was observed in inclusion and community projects, although gaps persist in equity and the participation of small producers. In the governance dimension, certifications and compliance structures stand out, contrasting with limitations in cybersecurity and the difficulties of independent producers to adhere. It is concluded that the effective incorporation of ESG strengthens the sustainability and competitiveness of the sector, provided it is accompanied by innovation, capacity building, and integrated management strategies. It should be noted as a limitation the dependence on secondary sources, especially reports from mills, which may reduce the representativeness of small and medium-sized producers.

Keywords: Sustainability. Corporate Governance. Competitiveness. Agribusiness. Circular Economy.

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RESUMO
Este artigo teve como objetivo analisar as práticas de Governança Ambiental, Social e Corporativa (ESG) entre produtores rurais de cana-de-açúcar no estado de São Paulo, buscando identificar seus potenciais impactos e desafios. Especificamente, pretendeu-se aplicar a metodologia SWOT para avaliar a relevância da adoção do ESG, bem como caracterizar o ambiente organizacional, considerando variáveis do ambiente geral e de tarefa, a fim de compreender fatores internos e externos que influenciam sua implementação. A pesquisa fundamentou-se em revisão bibliográfica e documental, com ênfase em relatórios de sustentabilidade de usinas do setor sucroenergético, integrando discussões sobre agronegócio e governança corporativa. Os resultados indicaram que, no eixo ambiental, predominam forças como a economia circular e o uso de tecnologias limpas, enquanto persistem fragilidades ligadas ao uso de combustíveis fósseis e à gestão de resíduos. No eixo social, evidenciam-se avanços em inclusão e projetos comunitários, embora haja lacunas em equidade e na participação de pequenos produtores. Já no eixo governança, destacam-se certificações e estruturas de compliance, contrastando com limitações em cibersegurança e dificuldades de adesão de produtores independentes. Conclui-se que a incorporação efetiva do ESG fortalece a sustentabilidade e a competitividade do setor, desde que acompanhada de inovação, capacitação e estratégias integradas de gestão. Cabe destacar como limitação a dependência de fontes secundárias, especialmente relatórios de usinas, o que pode reduzir a representatividade de pequenos e médios produtores.

Palavras-chave: Sustentabilidade. Governança Corporativa. Competitividade. Agronegócio. Economia Circular.

RESUMEN
Este artículo tuvo como objetivo analizar las prácticas ambientales, sociales y de gobernanza corporativa (ASG) entre los productores de caña de azúcar en el estado de São Paulo, buscando identificar sus potenciales impactos y desafíos. Específicamente, se buscó aplicar la metodología FODA para evaluar la relevancia de la adopción de ASG, así como caracterizar el entorno organizacional, considerando variables del entorno general y de la tarea, con el fin de comprender los factores internos y externos que influyen en su implementación. La investigación se basó en una revisión bibliográfica y documental, con énfasis en informes de sostenibilidad de ingenios del sector azucarero-energético, integrando discusiones sobre agronegocios y gobernanza corporativa. Los resultados indicaron que, en el eje ambiental, predominan fortalezas como la economía circular y el uso de tecnologías limpias, mientras que persisten debilidades relacionadas con el uso de combustibles fósiles y la gestión de residuos. En el eje social, se evidencian avances en inclusión y proyectos comunitarios, aunque existen brechas en equidad y en la participación de pequeños productores. En el ámbito de la gobernanza, destacan las certificaciones y las estructuras de cumplimiento, en contraste con las limitaciones en ciberseguridad y las dificultades en la adopción de los principios ESG (Ambientales, Sociales y de Gobernanza) por parte de los productores independientes. Se concluye que la incorporación efectiva de los criterios ESG fortalece la sostenibilidad y la competitividad del sector, siempre que se acompañe de innovación, capacitación y estrategias de gestión integradas. Una limitación a destacar es la dependencia de fuentes secundarias, especialmente informes de ingenios azucareros, lo que puede reducir la representación de los pequeños y medianos productores.

Palabras clave: Sostenibilidad. Gobierno Corporativo. Competitividad. Agroindustria. Economía Circular.

1 INTRODUCTION

Sustainable practices play an important role in all organizational sectors, including agriculture. From 2004 onwards, such practices began to receive greater attention on the international scene, driven by the "*Who Cares Wins*" report, the result of an initiative of the United Nations (UN) in partnership with the financial market. This discussion focused on investment security, highlighting the need for organizations and products to incorporate environmental, social, and governance criteria into their operations, in order to promote positive impacts and foster more sustainable investments (Global Compact, 2025).

In this context, the concept of ESG (Environmental, Social and Governance), although still often interpreted as a market trend, establishes a direct relationship with the Sustainable Development Goals (SDGs), configuring itself as a strategic instrument for the incorporation of sustainability into corporate and sectoral practices (Global Compact, 2025). The adoption of sustainable practices is intrinsically linked to well-structured governance models that are appropriate to the reality in which the organization operates, enabling greater integration between stakeholders and favoring expanded attention to the environmental and social dimensions (Caetano, 2023).

The implementation of ESG in the rural context requires a comprehensive assessment of existing processes, interactions with *stakeholders,* and the potential positive or negative impacts resulting from this adoption. The integration of ESG principles can occur in different dimensions of agricultural property: in the environmental pillar, through the management and conservation of water and soil resources; in the social pillar, through the guarantee of human and labor rights; and in the governance pillar, with a focus on risk management and alignment among stakeholders (Brazilian Institute of Sustainability, 2021). In the case of sugarcane, a prominent crop in Brazil and particularly in the state of São Paulo, its development is favored by factors such as logistical infrastructure, proximity to educational and research institutions, and the presence of cooperatives and associations that bring together a large number of producers (Government of the State of São Paulo, 2023b).

Thus, the objective of this research was to analyze the practices of Environmental, Social and Corporate Governance (ESG) for rural producers in the context of the State of São Paulo, in order to identify their potential environmental and social impacts.

Specific Objectives:

a. Conduct an analysis using the SWOT Methodology to assess the relevance and challenges of ESG for rural producers.

b. To characterize the organizational environment of rural sugarcane producers in the state of São Paulo, in order to understand the factors that influence the adoption of ESG practices

2 LITERATURE REVIEW

The implementation of ESG practices in agribusiness has gained increasing relevance, especially in a sector where several areas interact and the balance between them is essential to avoid excessive exploitation in search of economic results. The issue of deforestation for the opening of new agricultural areas, in contrast to the exponential increase in demand for food production in Brazil, exemplifies the challenges faced by agribusiness. Such situations have intensified the pressure on the sector to adapt to ESG parameters, seeking to harmonize environmental sustainability with production needs (Senar, 2023).

According to data from the Department of Agriculture and Supply, the state of São Paulo has approximately 350 thousand rural producers working in various niches. This contingent plays a significant role in the Brazilian context, standing out not only for the extension of the harvested area in hectares and the high average yield, but also for its relevance in exports, crop diversification, job creation, and contribution to the state's Gross Domestic Product (GDP). These factors highlight the importance of the rural sector compared to large urban centers, not only in food production, but also in its indirect impacts on the economy and society (Government of the State of São Paulo, 2023a).

Sugarcane production can be greatly benefited by the adoption of sustainable practices based on ESG principles. Measures such as reducing greenhouse gas (GHG) emissions, private social investment, and improving working conditions in rural areas and in companies contribute to obtaining and regulating sustainable certifications and titles. These actions not only generate positive impacts on the environment and society, but also promote financial returns, strengthening the competitiveness and reputation of the sector (Melo, 2025).

3 METHODOLOGY

3.1 DATABASE

The study will be developed through a literature review, including academic papers, institutional publications and sustainability reports, including ABNT PR 2030, a recommendation of the Brazilian Association of Technical Standards for the implementation of ESG (*Environmental, Social and Governance*) in Brazil. The qualitative analysis will follow an explanatory approach (Gil, 2008), seeking to identify factors that

influence the adoption of sustainable practices in rural areas. According to Manzo (1971), this methodology allows exploring and deepening areas of knowledge that have not yet been consolidated. Based on the characterization of the standards, the SWOT methodology will be applied to assess strengths, opportunities, weaknesses and threats of the rural sector in the Brazilian context.

3.2 SWOT ANALYSIS

SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis, or FOFA, is a widely used methodology to assess an organization's internal and external environments, allowing the identification of competitive advantages, weaknesses, growth opportunities, and risks (Hofrichter, 2021; Fischmann, 1991). An example is the study by the Muza Brasil Cooperative, focused on the commercialization of handicrafts from banana by-products, which presented strengths such as government support and export incentives, and weaknesses such as income limitations and high technological costs (Appio et al., 2009).

The strengths correspond to internal factors that confer competitive advantages, such as resources, product quality and organizational skills. In the study by Amorim (2015) on the dairy industry in Pará, the low barrier to entry of new companies and government incentives stand out, even in the face of consolidated competition.

Opportunities are external factors that favor growth, such as access to resources or favorable market conditions. Galvão (2008), when diagnosing tourism in Itabaiana (PB), identified opportunities such as strategic location, logistics infrastructure and cultural appreciation.

Weaknesses refer to internal limitations that compromise competitiveness, such as high costs and low qualification of the workforce. Dourado (2020) identified, in beef cattle farming, weaknesses such as lack of standardization, low sensory quality, and absence of regulation due to deficiency in inspection.

Threats are external factors that pose risks, such as regulatory, economic, or climate changes. Gonçalves (2024) pointed out, in a private environmental reserve, threats such as climate change, user negligence, and industrial pollution, which compromise sustainability and alignment with the SDGs.

3.3 GENERAL ENVIRONMENT AND TASK ENVIRONMENT

The general environment comprises the entire ecosystem in which the organization is inserted, including agents, conditions and variables that directly or indirectly influence its

operations (Chiavenato, 2007). Given the complexity and dynamics of the market, it is essential to map these variables in order to develop an efficient strategic plan, capable of adapting the organization to changes and supporting decision-making (Matos, 2007). Among these variables, the technological ones stand out, which refer to the constant advancement of innovations, whether developed internally or acquired externally, playing a fundamental role in the optimization of processes and operations.

Legal variables are also relevant, as they involve laws and regulations that structure society, and can be presented as impositions or incentives, while establishing limits and obligations for organizations. Political variables, on the other hand, encompass the political context that influences operations, strategies, and workforce, including public policies and specific regulations. Economic variables, in turn, directly affect business performance, reflecting on profitability, purchasing power, investment capacity, and the dynamics of supply and demand. In addition, demographic factors, such as culture, religion, gender, and age group, shape market and communication strategies, while ecological variables are related to physical and natural aspects that impact the sustainability of operations and socio-environmental responsibility. Finally, cultural variables, which encompass values, beliefs, and practices, influence the behavior of stakeholders and the way the organization relates to its stakeholders (Matos, 2007).

The task environment refers to the context directly linked to the organization, composed of variables that impact goals, objectives and results, significantly influencing the strategic and operational direction. In this environment, the suppliers of inputs stand out, responsible for guaranteeing raw materials and resources indispensable for the functioning of organizational activities, as well as customers or users, who represent the final consumers of the products or services and whose satisfaction is decisive for the success of the organization (Daft, 2003).

Another essential factor is the competitors, which are part of the same sector and compete for consumer preference, in addition to influencing the dynamics of the market and the company's position in relation to other actors. Regulatory entities are also included, responsible for supervising and standardizing activities, ensuring compliance with applicable laws, policies and regulations. These elements, together, make up a scenario that requires constant attention and strategic adaptation on the part of organizations (Daft, 2003).

4 RESULTS AND DISCUSSIONS

The SWOT methodology was applied to the three axes of ESG — Environmental, Social and Governance — to assess the relevance, potentialities and challenges of the implementation

of ESG principles by rural producers in the sugar-energy sector, based on sustainability reports from sugarcane producers in different regions of São Paulo. In addition, the organizational environment was analyzed, segmented into general and task (Daft, 2003). In the general environment, technological, legal, political, economic, demographic, ecological and cultural variables are examined, which largely influence the organization's ecosystem. In the task environment, suppliers, customers, competitors and regulatory entities are evaluated, considering factors that directly impact the organizational functioning.

5 ENVIRONMENTAL

Tables 1 and 2 present the application of the SWOT methodology to the environmental axis, with the objective of analyzing the internal (strengths and weaknesses) and external (opportunities and threats) aspects related to rural producers in the sugar-energy sector.

5.1 INTERNAL FACTORS: STRENGTHS AND WEAKNESSES

The analysis of the environmental axis shows advances in the adoption of sustainable practices by rural producers in the sugarcane sector in São Paulo. Strategies such as the use of pre-sprouted seedlings (MPB), raw sugarcane harvesting, green manures and biological pest control contribute to soil conservation and the reduction of greenhouse gas (GHG) emissions.

The diversification of energy sources, with biofuels, solar energy, and biomass, provides greater energy autonomy and reduces the carbon footprint. The reuse of water in industrial processes also reinforces environmental commitment. Environmental recovery projects, including restoration of Permanent Preservation Areas (PPAs), reforestation, and production of native seedlings, demonstrate efforts to preserve local fauna and flora, complemented by conservation partnerships.

The use of sugarcane by-products, such as vinasse, filter cake, soot and biomass, strengthens the circular economy, allowing the production of organic fertilizers, cogeneration of clean energy and reduction of inadequate waste disposal.

Among the weaknesses, the predominant use of fossil fuel-powered machinery and the limitation in the reuse of some by-products, such as soot, stand out, indicating the need for research and innovation. Other weaknesses include treatment of contaminated areas, control of hazardous products, and mitigation of noise pollution, which require greater standardization and monitoring.

In summary, the sector has made significant advances in sustainable practices, but still requires the integration of clean technologies, expansion of waste reuse, and consolidated

environmental remediation strategies to strengthen a sustainable production model aligned with current standards.

Table 1

SWOT of the internal factors of the Environmental axis

	Positive Factors	Negative Factors
	Strengths	**Weaknesses**
Internal Factors	Adoption of no-burn harvesting, MPB, green manures, and precision agriculture (Cocal, 2024; Delta Sucroenergia, 2024; Raízen, 2024; São Martinho, 2024; Ester Agroindustrial Plant, 2022; Lins Plant, 2023; São Manoel Plant, 2023). Use of biomass, ethanol, and solar energy for energy self-sufficiency (Cocal, 2024; Delta Sucroenergia, 2024; Raízen, 2024; São Martinho, 2024; Ester Agroindustrial Plant, 2022; Lins Plant, 2023; São Manoel Plant, 2023). Water reuse and closed effluent treatment systems and little dependence on water resources (Cocal, 2024; Delta Sucroenergia, 2024; Raízen, 2024; São Martinho, 2024; Ester Agroindustrial Plant, 2022; Lins Plant, 2023; São Manoel Plant, 2023). Recovery of APPs and reforestation (Cocal, 2024; Delta Sucroenergia, 2024; Raízen, 2024; São Martinho, 2024; Ester Agroindustrial Plant, 2022; Lins Plant, 2023; São Manoel Plant, 2023). Circular Economy of Sugarcane with good use (filter cake, vinasse, biomass) (Cocal, 2024; Delta Sucroenergia, 2024; São Martinho, 2024; Lins Plant, 2023; São Manoel Plant, 2023). Regulations and best practice standards to support ESG compliance.	Partial dependence on fossil fuels in mechanized operations (Cocal, 2024; Delta Sucroenergia, 2024; Raízen, 2024; São Martinho, 2024; Ester Agroindustrial Plant, 2022; Lins Plant, 2023; São Manoel Plant, 2023). Lack of clear remediation planning for contaminated area situations. Low approach to dangerous products and noise pollution, with occasional exceptions. Circular economy concentrated in vinasse, filter cake and bagasse; little use of other waste.

Source: Prepared by the author.

5.2 EXTERNAL FACTORS: OPPORTUNITIES AND THREATS

The expansion of ESG practices among sugarcane producers in São Paulo is an essential strategy to consolidate competitive advantage, with emphasis on international certifications such as Bonsucro and GRI, which increase credibility, visibility, and access to new markets. Technological innovation emerges as a strategic element, promoting partnerships with

startups, participation in open innovation programs, and collaboration with universities, through initiatives such as Hackathons, in addition to fostering the reuse of industrial waste and the circular economy.

The expansion of the circular economy still presents significant opportunities. Although the reuse of vinasse, filter cake, and biomass is consolidated, other waste, such as recyclable materials and organic waste, can still be used, generating new sources of revenue and reducing environmental impacts. The sale of surplus renewable energy also represents an opportunity, strengthening energy self-sufficiency and encouraging the use of clean matrices in adjacent regions.

On the other hand, the sector faces environmental and regulatory threats. Extreme weather events, intensified by climate change, can compromise biomass production and supply. In addition, the growing demand for transparency exposes potential environmental failures, requiring strict monitoring and agile corrective actions. Non-compliance with environmental legislation can also generate sanctions, financial impacts, and damage to institutional reputation, affecting business continuity.

In summary, the environmental axis shows advances in the adoption of sustainable practices and expansion of the circular economy, but reinforces the need for integrated risk management strategies, technological innovation, and adoption of ESG certifications to strengthen the resilience of the sector and consolidate a sustainable production model.

Table 2

SWOT of external factors of the Environmental axis

	Positive Factors	**Negative Factors**
	Opportunities	**Threats**
External Factors	Expansion of the reuse of various waste (oil, soot, packaging) (São Manoel, 2023). Certifications such as Bonsucro and GRI as a competitive advantage (Cocal, 2024; Delta Sucroenergia, 2024; Raízen, 2024; São Martinho, 2024; Ester Agroindustrial Plant, 2022; Lins Plant, 2023; São Manoel Plant, 2023). Partnerships with startups, open innovation programs, and educational programs (Cocal, 2024; Delta Sucroenergia, 2024; Raízen, 2024; São Martinho, 2024; Lins Plant, 2023; São Manoel Plant, 2023).	Climate change and severe droughts. Pressure for traceability and transparency can expose environmental failures. Risk of environmental sanctions for non-compliance with environmental legislation

	Sale of surplus renewable energy and incentives for the use of renewable energy (solar energy) (Cocal, 2024; Ester, 2022).	

Source: Prepared by the author.

6 SOCIAL

In Tables 3 and 4, the SWOT methodology was applied to the Social axis, in order to analyze internal characteristics (strengths and weaknesses) and external characteristics (opportunities and threats) related to rural producers in the sugar-energy sector.

6.1 INTERNAL FACTORS: STRENGTHS AND WEAKNESSES

The analysis of the social axis in the sugarcane sector in São Paulo shows significant advances in the well-being and development of employees. The formalization of labor relations, consolidated by the CLT, represents an important milestone, although complete adherence to legislation and the creation of environments that promote both worker and organizational growth still present challenges.

Companies with positive results in social sustainability invest in occupational health and safety, including health plans, first aid training, accident prevention, and firefighting, promoting autonomy and a safe and collaborative environment.

The social axis also covers the appreciation of the local community, through social projects such as support for NGOs, professional training, community gardens, and incentives for social organizations. The inclusion of minority groups, such as women, people with disabilities, and the LGBTQIA+ population, contributes to a more equitable corporate environment. Cooperatives and rural associations, such as COPLACANA, play a strategic role by combining economic activities and social actions, showing that structured practices can be adopted by producers of different sizes.

Among the weaknesses identified are gaps in freedom of association and equitable remuneration, as well as in communication with consumers and suppliers. In addition, many independent producers face financial and structural limitations in implementing robust social practices, restricting the reach and impact of actions.

In summary, the sector presents strategies that promote well-being and community development, but still demands greater social inclusion, wage equity, transparency in relation to union freedom and integration of independent producers, strengthening the positive social impact and image of the sector.

Table 3

SWOT of the internal factors of the Social axis

	Positive Factors	Negative Factors
	Strengths	**Weaknesses**
Internal Factors	Territorial development programs, ensuring education, health, and safety (Cocal, 2024; Delta Sucroenergia, 2024; Raízen, 2024; São Martinho, 2024; Ester Agroindustrial Plant, 2022; Lins Plant, 2023; São Manoel Plant, 2023). Inclusion of PWDs, women, LGBTQIA+ population and campaigns to value diversity (Cocal, 2024; Delta Sucroenergia, 2024; Raízen, 2024; São Martinho, 2024; Lins Plant, 2023; São Manoel Plant, 2023). Strengthening of cooperatives and associativism. Codes of conduct in conjunction with the consolidation of Labor Laws (CLT) for rural workers (Cocal, 2024; Delta Sucroenergia, 2024; Raízen, 2024; São Martinho, 2024; Ester Agroindustrial Plant, 2022; Lins Plant, 2023; São Manoel Plant, 2023).	Few clear data on freedom of association and equitable remuneration. Little exploration of customer relationships (reports more focused on suppliers) Less engagement of independent producers in structured social practices.

Source: Prepared by the author.

6.2 EXTERNAL FACTORS: OPPORTUNITIES AND THREATS

The adaptation of organizations to sustainability practices in the social axis has stood out as a competitive differential, especially in retaining and attracting talent. Among the opportunities are social actions aligned with the Sustainable Development Goals (SDGs), which favor organizational and social development.

Sugarcane producing companies, for example, invest in education and training, offering financial support, training, and digital inclusion, literacy, and accessibility projects, promoting the improvement of employees' working and living conditions. In addition, environmental initiatives, such as self-generation of energy, can generate positive social impacts by allocating surpluses to schools, hospitals, and NGOs.

Among the threats, the lack of proof of ESG actions, especially in inclusion, diversity, and equity, stands out, which can generate perceptions of greenwashing and undermine institutional credibility. Stakeholder engagement is another critical factor, as low participation or misalignment between expectations and planned actions weakens social outcomes.

The inefficient integration of minority groups can also generate internal conflicts, especially in sectors historically dominated by men, such as agribusiness. In this context, strengthening the inclusive culture and structuring support channels become essential to mitigate risks and ensure the effectiveness of social actions.

Table 4

SWOT of external factors of the Social axis

	Positive Factors	Negative Factors
	Opportunities	**Threats**
External Factors	Expansion of training and scholarships (Cocal, 2024) Digital inclusion, literacy and accessibility projects for territorial development. Alignment with the SDGs. Donations of surplus renewable energy to socially focused organizations such as hospitals and NGOs.	Pressure for proof of diversity, equity, and inclusion in practices Resistance to diversity in traditionally male environments in the countryside. Inefficient integration of stakeholders into organizations' codes of conduct and/or ethics.

Source: Prepared by the author.

7 GOVERNANCE

In Tables 5 and 6, the SWOT methodology was applied to the Governance axis, in order to analyze internal characteristics (strengths and weaknesses) and external characteristics (opportunities and threats) related to rural producers in the sugar-energy sector.

7.1 INTERNAL FACTORS: STRENGTHS AND WEAKNESSES

The analysis of the governance axis of sugarcane producers in São Paulo shows initiatives aimed at ethical and responsible management, aligned with ESG guidelines and integrating environmental and social aspects. After Proálcool, the sector gained autonomy and began to adopt sustainable technologies and practices, initially focused on the environmental component, evolving to social and governance aspects due to economic and market pressures.

Currently, there is consolidation of decentralized structures, with committees dedicated to ethics, whistleblowing, and compliance, strengthening transparency and organizational integrity. Sustainability reports, whether internal or externally audited, ensure legal compliance and greater credibility. Certifications such as Bonsucro, GRI guidelines, and ABNT PR 2030 Standard encourage the adoption of ESG practices and provide a competitive advantage in the national and international market.

Among the weaknesses, ineffective stakeholder mappings stand out, which can compromise strategic planning, and gaps in cybersecurity, especially in the face of the General Data Protection Law (LGPD). There are also disparities in the implementation of governance practices between large, medium, and small producers, in addition to the absence of clear guidelines on unfair competition and corruption prevention, aspects that are still little addressed in industry reports.

Table 5

SWOT of the internal factors of the Governance axis

	Positive Factors	**Negative Factors**
	Strengths	**Weaknesses**
Internal Factors	Greater autonomy of sugarcane producing organizations after the end of PROÁLCOOL. Robust structure with ESG boards, committees, and reports (Cocal, 2024; Delta Sucroenergia, 2024; Raízen, 2024; São Martinho, 2024; Ester Agroindustrial Plant, 2022; Lins Plant, 2023; São Manoel Plant, 2023). Ethics and integrity programs with active reporting channels (Cocal, 2024; Delta Sucroenergia, 2024; Raízen, 2024; São Martinho, 2024; Ester Agroindustrial Plant, 2022; Lins Plant, 2023; São Manoel Plant, 2023). National and international certifications, such as Bonsucro, RenovaBio, GRI. Transparent practices with audits and verified reports (Cocal, 2024; Delta Sucroenergia, 2024; Raízen, 2024; São Martinho, 2024; Ester Agroindustrial Plant, 2022; Lins Plant, 2023; São Manoel Plant, 2023).	Little approach to cybersecurity and IT vulnerabilities, despite initiatives such as the General Data Protection Law. Difficulty in adapting small producers to the requirements of formal governance of the mills. Low approach to unfair competition practices (*antitrust*) and the prevention of corruption. Mapping of *stakeholders* to prepare the sustainability strategy.

Source: Prepared by the author.

7.2 EXTERNAL FACTORS: OPPORTUNITIES AND THREATS

The opportunities in the governance axis of rural sugarcane producers in São Paulo are related to the adoption of sustainable corporate governance practices, which promote transparency, integrity, and alignment with ESG principles. The growing demand for investments in sustainable companies reinforces the need for robust governance structures,

capable of attracting investors and strengthening the institutional image, consolidating the competitive advantage.

The pressure for ESG practices also favors the creation of networks and strategic partnerships, involving innovation hubs, agricultural cooperatives, and universities, which offer training in corporate governance, digital tools, and management methodologies. The integration between rural producers and stakeholders contributes to standardizing sustainable practices, expanding the reach of ESG actions, and strengthening the organizational culture focused on sustainability.

The use of metrics and digital tools allows measuring the impact of governance actions, optimizing monitoring, ensuring transparency in sustainability reports, and strengthening internal control. This approach reduces regulatory risks and increases organizational credibility, which are essential for attracting investments and expanding business.

Among the threats are exposure to operational failures and reputational damage in case of non-compliance with ESG standards, as well as operational and strategic challenges such as legal uncertainty in the adoption of new practices and excessive bureaucracy in sustainability reports, especially for small and medium-sized producers.

Another challenge involves independent producers, who face limitations in training, access to digital technologies, and integrated audits, making it difficult to comply with ESG requirements and obtain certifications.

In summary, the adoption of ESG practices in the governance axis can consolidate competitive advantage, expand markets and attract investments, but requires standardization of processes, continuous training and mitigation of legal and operational risks to ensure the consolidation of corporate governance in the São Paulo sugar and alcohol sector.

Table 6

SWOT of the Governance axis

	Positive Factors	**Negative Factors**
	Opportunities	**Threats**
External Factors	Incentive to the professionalization of rural management with the support of cooperatives and hubs Use of digital tools and strategic management software (Raízen, 2024). Expansion of participatory and integrative governance in the field.	High reputational risk in case of failures in business conduct or ethics Rapid regulatory changes require flexible and up-to-date frameworks. Legal uncertainty or excessive bureaucracy can discourage progress. Independent producers may have difficulty

	Strengthening metrics for integrated reporting and strategic ESG. Attractiveness for investors with strategic planning of sustainable governance. Public access to sustainability and financial transparency reports.	accessing robust audits and certifications.

Source: Prepared by the author.

8 CONCLUSION

The analysis shows that the application of ESG principles in the sugar-energy sector in São Paulo represents not only an instrument of environmental and social sustainability, but also a strategy for competitiveness in agribusiness. The use of the SWOT methodology made it possible to identify relevant forces, such as the advancement of the circular economy, the adoption of clean technologies, and the consolidation of governance structures, while revealing weaknesses, such as dependence on fossil fuels, social inequality, and the limitations faced by small producers. The opportunities associated with alignment with the Sustainable Development Goals, technological innovation, and access to international certifications reinforce the sector's expansion potential, while threats such as climate change, legal uncertainty, and reputational risks require mitigation strategies. It is concluded that the effective incorporation of ESG by sugarcane farmers requires integration between environmental, social, and governance practices, associated with institutional strengthening, innovation, and stakeholder participation, in order to consolidate a sustainable, resilient, and competitive production model in the national and international scenario.

The main limitation of this study is the dependence on secondary sources, especially sustainability reports from large mills, which can restrict the representativeness of small and medium-sized producers and introduce institutional bias. In addition, the absence of primary data and the lack of standardization in social and governance metrics limit the scope of the results.

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