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SOCIO-ENVIRONMENTAL DRIVERS OF BUSINESS COMBINATIONS: A COMPARATIVE STUDY OF EVIDENCE FROM POLLUTING COMPANIES LISTED ON THE STOCK MARKETS OF BRAZIL AND CHINA

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ABSTRACT

The aim of this investigation was to compare evidence on the disclosure of socio-environmental drivers of business combinations among publicly traded Brazilian companies with polluting potential to findings from studies on the disclosure of socio-environmental drivers by publicly listed Chinese companies operating in polluting sectors. For this purpose, a qualitative approach based on documentary content analysis of corporate disclosures was employed. The study examined 100 business combinations over a ten-year period (2010–2019), involving 150 companies—50 acquirers and 100 targets. It analyzed 15 industrial sectors in Brazil with polluting potential, as defined by Law No. 10.165 (2000). The findings indicate that Chinese publicly traded companies with polluting characteristics demonstrated a higher level of disclosure regarding socio-environmental practices in their business combinations compared to Brazilian companies. Additional results suggest that business combinations driven by socio-environmental motives among Chinese companies were more likely to occur in contexts involving highly polluting factors and products than those undertaken by Brazilian firms. Brazil is gradually moving toward the adoption of practices and discussions surrounding socio-environmentally motivated business combinations in publicly traded companies operating in potentially polluting sectors. However, China shows a more advanced integration of socio-environmental motives into the business combination strategies of its publicly listed polluting-sector companies. The primary contribution of this research lies in its discussion of how socio-environmental (sustainable) business combinations can play a fundamental role in minimizing environmental degradation and conserving planetary resources, while potentially raising corporate awareness of

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social responsibility. The study offers a comparative perspective on the contexts of Brazil and China. Furthermore, it fosters contemporary reflections on the disclosure of financial, accounting, environmental, and social information, highlighting the interaction between Social and Environmental Accounting and Financial Accounting for external users in both countries.

Keywords: Socio-environmental drivers. Business combinations. Stock market.

1 INTRODUCTION

On October 29. 2024. the Brazilian Sustainability Pronouncements Committee (CBPS) published Standard CBPS 01 (2024) – General Requirements for the Disclosure of Sustainability-related Financial Information, which addresses the disclosure of useful financial information in general-purpose financial reports that relate to sustainability practices.

According to CBPS 01 (2024) – General Requirements for the Disclosure of Sustainability-related Financial Information, corporations must disclose useful information in general-purpose financial reports regarding the firm's sustainability practices, enabling users of accounting information to make decisions about the company's resources in the short, medium, and long term.

Thus, CBPS 01 (2024) – General Requirements for the Disclosure of Sustainability-Related Financial Information requires publicly traded companies to disclose sustainability information in their general purpose financial reports regarding the opportunities and risks that may affect the company's cash flows, as well as with respect to the cost of capital or the financing of the entity over time.

In this regard, CBPS 01 (2024) – General Requirements for the Disclosure of Sustainability-Related Financial Information states that entities must disclose in their financial statements qualitative information about the strategies and practices of the business model in relation to the topic of sustainability.

CBPS 01 (2024) – General Requirements for the Disclosure of Sustainability-Related Financial Information emphasizes that entities must disclose, in their general-purpose financial reports, information about the corporation's strategic objectives concerning sustainability activities, including the full description of the names of such management practices.

Accordingly, the standard requires companies to provide information in their general-purpose financial reports about potential risks that may affect users' perceptions of the firm, by disclosing verifiable and reasonable topics concerning past, present, and future sustainability information.

In light of this, CBPS 01 (2024) states that companies must disclose material information in their general-purpose financial reports regarding the allocation of resources through decisions involving the sale, purchase, or retention of capital instrument interests (such as business acquisitions/combinations), based on the corporation's sustainability practices underlying such decisions.

Thus, companies listed on the Brazilian stock exchange that engage in business combinations are required to disclose useful and material socio-environmental information (such as the motives behind the combination), arising from transactions involving capital instrument interests, through acquisitions that incorporate sustainability practices over the short, medium, and long term.

Accordingly, Chen et al. (2025) point out that, in pursuit of environmental and social sustainability, highly polluting publicly traded companies have been adopting business combination strategies to produce and acquire ecological resources, aiming to mitigate the environmental and social impacts of their business activities.

In support of this view, Lu (2022) emphasizes that socio-environmental business combinations represent strategic innovation tools adopted by publicly listed companies operating in polluting industries. Likewise, He et al. (2024) stress that this type of transaction constitutes a pathway to corporate green transformation among polluting firms, fostering the adoption of sustainable practices that do not harm the environment or society. For instance, Hu and Huang (2025) found that business combinations motivated by socio-environmental factors contribute to the reduction of carbon dioxide emissions globally, particularly by companies operating in polluting sectors.

Researchers He et al. (2024), as well as Hu and Huang (2025), indicate that the transparency of the motivations behind socio-environmental business combinations positively affects the quality of corporate disclosure.

However, He et al. (2024) emphasize that previous studies have shown possible omissions in the disclosure of socio-environmental motivations for business combinations, due to the quality of information presented by publicly traded companies in their general-purpose financial reports.

In this context, further studies are needed on the drivers behind socio-environmental business combinations, given the lack of consistent conclusions on the topic (He et al., 2024; Hu & Huang, 2025).

In an effort to build a research framework on the disclosure of socio-environmental motivations for business combinations involving polluting companies listed on the stock market, a wave of studies conducted in China was identified, including: (1) Liu and Wang (2025); (2) Liu et al. (2025); (3) Chen et al. (2025); (4) Wang et al. (2025); (5) Hu and Huang (2025); (6) Xu et al. (2024); (7) He et al. (2024); (8) Sun et al. (2023); (9) Hu et al. (2023); (10) Lu (2022); and (11) Lu (2021).

Moreover, searches for other studies addressing the socio-environmental motivations of business combinations involving polluting publicly traded companies from other countries yielded few results, and those located were not aligned with the narrative of disclosing the socio-environmental motives of publicly listed polluting firms.

In this regard, Lu (2021) examined 1.582 business combinations carried out by publicly traded acquiring companies in China with polluting operations between 2008 and 2018.

The author analyzed corporate social responsibility reports, sustainable development reports, and environmental reports issued by the corporations. The results revealed a growing trend of socio-environmental business combinations compared to general-purpose business combinations over the 11-year period analyzed. Therefore, the investigation focused on Chinese studies in comparison to the present research conducted in Brazil, as there remains a significant gap in Brazilian academic literature regarding the disclosure of motivations behind business combinations from a socio-environmental perspective among publicly traded firms with polluting potential. In this sense, international comparative disclosure studies represent an opportunity to contribute to academic literature.

Consequently, this research raises the following question: *what are the disclosure practices regarding the motivations behind business combinations related to socio-environmental aspects among publicly traded Brazilian companies with polluting potential, in comparison with the transparency of socio-environmental motivations disclosed by polluting firms operating in China's stock market?*

In this context, the objective of the present research is to compare the evidence regarding the disclosure of socio-environmental motivations behind business combinations undertaken by publicly traded Brazilian companies with polluting potential, with the findings of studies that examine the disclosure of socio-environmental motivations by publicly listed Chinese companies operating in pollution-intensive sectors.

This research is broadly justified by its focus on socio-environmental motivations for business combinations in light of environmental concerns, climate change, and global warming, as well as the corporate social responsibility of publicly held companies in Brazil to disclose the nature of their activities.

Accordingly, this manuscript proves to be both necessary and justified from practical, theoretical, and social perspectives. The study analyzes the transparency of sustainability-related information disclosed in general-purpose financial reports, focusing on business combinations conducted by Brazilian publicly traded companies over a ten-year period (2010–2019). This is especially relevant in light of the issuance of CBPS 01 (2024) – *General Requirements for the Disclosure of Sustainability-related Financial Information* by the Brazilian Committee for Sustainability Pronouncements (CBPS).

Thus, the research aligns with the scope of the aforementioned standard (CBPS 01 – 2024), as it fosters modern discussions, interactions, and reflections on the disclosure of financial, accounting, environmental, and social information, by bridging Socio-environmental Accounting and Financial Accounting for External Users in Brazil.

Practically, the study contributes to market professionals; theoretically, it serves the academic field of accounting; and socially, it benefits regulators such as CBPS who examine the context of sustainability-related financial disclosure, as well as society at large.

Socially, the study is significant as it informs Brazilian citizens about the transparency of socio-environmental motivations behind business combinations carried out by publicly traded companies operating in polluting sectors, as defined by Law No. 10.165 (2000), acknowledging that such corporate actions can affect both the environment and society due to the corporate responsibility these firms bear regarding the planet's or a nation's resources.

The research also contributes both theoretically (to academic literature) and practically (to professionals, external users, and regulators) in the fields of Environmental Accounting, Social Accounting, Financial Accounting, Finance, and Capital Markets. It stands out as one of the pioneering studies in Brazil to examine business combinations through the lens of socio-environmental motivations, based on the disclosure of corporate information in general-purpose financial reports by publicly traded companies operating in pollution-intensive sectors. The study also offers a comparative analysis with prior research conducted in China, including studies by Liu and Wang (2025), Liu et al. (2025), Chen et al. (2025), Wang et al. (2025), Hu and Huang (2025), Xu et al. (2024), He et al. (2024), Sun et al. (2023), Hu et al. (2023), Lu (2022), and Lu (2021).

The structure of the study is organized into four chapters following this introduction: (1) the second section presents the theoretical framework; (2) the third outlines the methodological strategy; (3) the fourth discusses the results and findings; and (4) the final section presents the conclusions and references.

2 DRIVERS OF SOCIO-ENVIRONMENTAL BUSINESS COMBINATIONS AND ASPECTS OF SOCIO-ENVIRONMENTAL INFORMATION

Business combinations are long-established transactions in the corporate market, as the practice of buying and selling companies has been common since the onset of the Industrial Revolution, a period marked by waves of business combinations and asset restructurings (Costa & Amorim Júnior, 2020). The literature exemplifies them as acquisition, incorporation, or merger operations (Janowicz, 2022; Souza et al., 2016), involving the acquisition of control over one or more businesses (CPC 15 R1. 2011). These arrangements occur when two or more companies come together

through acquisition, incorporation, or merger with the aim of improving their operations (Fasolin et al., 2020).

For instance, in Brazil, the motivations behind such transactions are often not disclosed in the financial statements of the companies, despite being a topic required by regulatory and accounting standards. It is observed that, in Brazil, the reasons for business combinations are more frequently disclosed in Business Combination Protocols (PCNs) than in the financial statements of the acquiring companies. In this regard, Janowicz (2022) reports that business combination transactions can take various forms, and for this reason, understanding the rationale behind the operation (why did it occur?) may influence the performance strategies of the acquiring firm.

In light of this gap, some researchers have identified key motivations behind business combinations: (1) competitiveness (Fikru & Gautier, 2021); (2) technology (Christofi et al., 2019); (3) geography (Xie et al., 2017); (4) strategy (Shen et al., 2021); (5) regulation (D'Alauro, 2020); (6) taxation (Xie et al., 2017); (7) market factors (Hossain, 2021); (8) culture (Xie et al., 2017); (9) cooperation (Somaiya & Savani, 2019); and (10) organizational performance (Christofi et al. 2019; Hossain, 2021).

In this regard, Barros et al. (2022) investigated the impact of mergers and acquisitions (M&A) on corporate performance concerning the three ESG pillars environmental, social, and governance. The findings indicated that although ESG performance improves following an M&A transaction, such improvement is not immediate and becomes more evident in the year after the transaction. The study suggests that M&A activities contribute to making sustainability issues more salient, highlighting the connection between M&A operations and corporate social responsibility (CSR), with an emphasis on the environmental and social aspects, while results regarding the governance pillar remained inconclusive.

Islam (2017) argues that societal concerns regarding corporate economic practices prompt firms to adopt responsible behaviors, as this is the primary motivation for disclosing information about their social and environmental impacts. In this sense, the practice of corporate accountability to society has become the subject of significant debate, given the diverse conceptions of what is considered ethical and socially appropriate, as well as what constitutes transparent disclosur (Gray, 1992).

Therefore, accounting and the disclosure of information to society must not operate in isolation, as corporate transparency aims to encourage companies to report their management data (Gray, 1994). In this context, social and environmental disclosure is generally understood as the presentation of information related to corporate activities involving social and environmental issues, employees, and the community connected to the entity (Gray et al., 2001). Accordingly, socio-environmental disclosure can be beneficial to the company, potentially improving its corporate image in the eyes of society and attracting more investment to the firm (Rover et al., 2015).

From an environmental perspective, Helfaya and Moussa (2017) report that environmental events arising from corporate activities have heightened companies' awareness of sustainability, leading them to adopt strategies aimed at disclosing information about their environmental impacts. Minutolo et al. (2019) explain that, from the consumer's viewpoint, companies produce goods and services that contribute to environmental preservation. For investors, the authors emphasize that green practices are adopted by companies as a means of reducing market risk. Thus, environmental accounting serves the purpose of recording, in financial and social reports, corporate practices that affect the environment as a result of profit-driven activities (Correa et al., 2015).

Regarding social perspectives, Gray et al. (1995) assert that corporate social responsibility has emerged as a useful decision-making tool within the context of accounting information. Through

social accounting, it is possible to assess the fulfillment of social contracts, aiming at the systematization of corporate practices and actions (Gray, 2001). Patten (1991) argues that the disclosure of social information is intended to present corporate practices that relate to society, although Gray (2001) notes that explaining social matters in practice is a highly complex task.

Therefore, due to social and governmental pressures, society has become aware that companies exert significant impacts on the environment, to the extent that firms have been virtually compelled to change their behavior regarding environmental preservation practices (Monteiro & Aibar-Guzmán, 2010; Correa et al., 2015).

Therefore, in light of the growing societal concern regarding the impact of corporate actions on society and the environment, this study assumes that the motivations behind business combinations involving Brazilian publicly traded companies with polluting potential are related to socio-environmental factors.

In the context of China, publicly traded companies identified as polluting have carried out business combinations driven by socio-environmental topics in pursuit of sustainability (Lu, 2021). For example, in 2014. Chifeng Jilong Gold Mining Co., Ltd. acquired Xiongfeng Environmental Protection Technology Co., Ltd. with the goal of leveraging the acquired company's technology to improve waste treatment in its production processes (Lu, 2021).

As such, Chinese listed corporations with polluting characteristics have engaged in corporate transactions with other companies to gain greater expertise in conducting business activities aligned with the green market's development (Lu, 2021). Thus, some business combinations in China have disclosed both environmental and social aspects as motivating factor.

Accordingly, between 2022 and 2025. several studies in China have focused on the socio-environmental motivations behind business combinations among listed companies operating in pollution-intensive sectors.

Lu (2022) quantitatively identified 946 socio-environmental business combinations involving Chinese listed acquiring companies from 15 pollution-intensive sectors between 2001 and 2018. By examining corporate documents, the author found that 176 of these combinations (18.60%) took place in the Chinese energy production and supply industry. In second place, the Chinese industrial sector for manufacturing raw materials and chemical products accounted for 156 operations (16.49%). The third most active sector was petroleum and nuclear fuel, with 111 transactions (11.73%) driven by socio-environmental motivations.

Hu et al. (2023) analyzed 26.583 business combinations (2014–2021) involving polluting Chinese companies listed on either the Shenzhen Stock Exchange or the Shanghai Stock Exchange. The data was extracted from the China Stock Market & Accounting Research (CSMAR) database. The researchers found that 14.90% of the combinations were justified by socio-environmental motivations.

Sun et al. (2023) examined 929 business combinations that occurred between 2011 and 2021 among acquiring companies with polluting potential listed on the Chinese stock market. Data was also sourced from the CSMAR database. The results showed that 28.60% of these combinations were motivated by socio-environmental factors.

He et al. (2024) verificaram 908 combinações de negócios de empresas listadas e altamente poluentes, do mercado de ações da China, no período de 2010 até 2019. Depois de estudarem anúncios, relatórios anuais e relatórios financeiros para fins gerais das firmas adquirentes, os autores apuraram que 52.50% das combinações de negócios foram realizadas por motivos socioambientais.

Using data extracted from the China Stock Market & Accounting Research (CSMAR), Xu et al. (2024) investigated business combinations involving 141 firms listed on the Shanghai and Shenzhen stock exchanges between 2010 and 2022. The authors concluded that 8% of these combinations occurred due to socio-environmental reasons.

Hu and Huang (2025) examined 27.863 business combinations carried out by companies listed on China's stock exchanges between 2006 and 2022. Through the analysis of corporate documents, the authors found that 47.90% of these business combinations were motivated by socio-environmental factors.

Wang et al. (2025) investigated 569 business combinations (2014–2020) conducted by publicly traded Chinese acquiring companies with a pollution factor. The firm data were obtained from the China Stock Market & Accounting Research (CSMAR) database. The researchers identified that 33% of these business combinations were motivated by socio-environmental factors.

Chen et al. (2025) analyzed 1.536 business combinations involving publicly traded companies in China operating in highly polluting industries, during the period from 2001 to 2020. After examining the general-purpose financial reports of the acquiring companies, the authors found that 34.04% of the business combinations were driven by socio-environmental motives.

Liu et al. (2025) studied 1.011 business combinations carried out by companies listed on the Chinese stock exchange (2010–2019) that operate in industries considered to be pollution-intensive. The company data were obtained from the China Stock Market & Accounting Research (CSMAR) database. According to the researchers, 30.60% of the business combinations were motivated by socio-environmental factors.

Liu and Wang (2025) identified 22.482 business combinations involving 2.382 publicly traded companies in China's manufacturing sector (2009–2022). The corporate data were retrieved from the China Stock Market & Accounting Research (CSMAR) database. The results show that 3.16% of the business combinations were carried out for socio-environmental reasons.

Thus, after analyzing the research conducted by Chinese authors, it is evident that listed companies in China operating in sectors that may impact the planet's ecosystem have shown considerable concern regarding the disclosure of the motivations behind socio-environmental business combinations, thereby highlighting the role of sustainability in Chinese business combination practices.

3 METHODOLOGICAL STRATEGIES

To meet the objective of the research, the study was based on qualitative strategies aimed at revealing the development and interpretation of data related to the object of the study through a documentary approach (Marconi & Lakatos, 2019; Nascimento & Sousa, 2015).

Thus, the study collected business combinations involving publicly traded companies that occurred between 2010 and 2019 (a decade of analysis). The year 2010 was chosen as the starting point due to the requirement to disclose financial information on business combinations following the adoption of international accounting standards in Brazil. The research cutoff year (2019) was established in light of the onset of the COVID-19 pandemic in 2020 (as declared by the World Health Organization), which could have influenced the number of business combinations due to the global crisis. The selection of these companies was based on the level of disclosure requirements imposed on firms operating in the Brazilian stock market.

Initially, the research selected all economic sectors in Brazil using the database of the country's Stock Exchange – the Brazilian Securities and Exchange Commission (CVM). A total of 75 sectors

were identified. Subsequently, 38 sectors were excluded because they consisted exclusively of investment management companies. Another 12 sectors were also removed from the sample, as they showed no business combinations during the period under analysis. The next step involved classifying the economic sectors as polluting, in accordance with the guidelines established by Law No. 10.165 (2000).

After this stage, 15 sectors of Brazil's economic industry were selected. Table 1 presents the classification of industrial sectors according to the CVM and Law No. 10.165/2000. as well as the pollution potential by segment. Law No. 10.165 (2000) includes an annex listing the sectors corresponding to activities that are potentially polluting and that make use of environmental resources; therefore, this table was prepared as a reference for the study. Furthermore, Chinese researchers also classified companies based on their pollution factor, according to their corresponding industrial activity and the criteria established by Chinese legislatio (He et al., 2024; Lu, 2022; Sun et al., 2023 e Wang et al., 2025).

Table 1

Classification of Polluting Sectors of Publicly Traded Companies in Brazil

N.	CVM Sector Classification	Category According to Law No. 10.165/2000	Potential
1	Agriculture	Food and Beverage Industry	*Medium*
2	Food Products	Food and Beverage Industry	*Medium*
3	Communication and Information Technology	Electrical, Electronic, and Communications Equipment Industry	*Medium*
4	Civil Construction, Materials and Decoration	Miscellaneous Industries	*Low*
5	Packaging	Rubber Industry	*Low*
6	Electric Power	Utility Services	*Medium*
7	Pharmaceuticals and Hygiene	Chemical Industry	*High*
8	Hospitality and Tourism	Tourism	*Low*
9	Machinery and Equipment	Mechanical Industry	*Medium*
10	Metallurgy and Steel Industry	Metallurgical Industry	*High*
11	Pulp and Paper	Pulp and Paper Industry	*High*
12	Oil and Gas	Transportation, Terminals, Warehousing, and Trade	*High*
13	Petrochemicals and Rubber	Rubber Industry	*Low*
14	Transportation and Logistics Services	Transportation, Terminals, Warehousing, and Trade	*High*
15	Textiles and Apparel	Textile, Apparel, Footwear, and Fabric Goods Industry	*Medium*

Source: Research data.

The contractual arrangements of the business combinations were extracted from CVM documents titled EGMs (Extraordinary General Meetings). A total of 670 such documents were evaluated, comprising: a) 222 Justifications for Merger, Spin-off, or Incorporation; b) 164 Protocols and Justifications for Merger, Incorporation, or Spin-off; and c) 284 Protocols for Merger, Incorporation, or Spin-off. The data were analyzed over eight months (from June 2022 to March 2023). After this stage, 247 documents were excluded as they did not concern business combinations, despite being titled as such. Thus, the study comprised 423 Business Combination Protocols (BCPs).

In a second stage, the study applied the criteria set forth by the technical statements of the Brazilian Accounting Pronouncements Committee (CPC) 15 – Business Combinations and CPC 36 – Consolidated Financial Statements to select the business combination transactions, aiming to determine whether the transactions were corporate reorganizations or actual business combinations

(CPC 15 R1. 2011; CPC 36 R3. 2012). This level of rigor was adopted because some business combinations are indicated in the BCPs but are not ultimately executed. From the beginning of October 2022 to the end of March 2023. the study selected only mergers and acquisitions over the decade, as no fusions were identified during the period based on the adopted analysis criteria. Therefore, the operations were selected considering the criteria of international accounting standards, the indication of the business combination in the BCPs, and confirmation of the transaction in the Notes to the Standardized Financial Statements – DFPs (also retrieved from the CVM website).

Thus, after analyzing the 423 Business Combination Protocols, the study identified 100 business combinations involving acquiring companies operating in 15 sectors classified as polluting, according to Law No. 10.165 (2000). Additionally, the business combinations were carried out by 50 acquiring companies and involved 100 acquired firms, as a single acquirer may have completed multiple mergers or acquisitions during the period. Table 2 presents the number of acquiring companies and the total number of business combinations per sector between 2010 and 2019. Content analysis was used as the data examination method, similarly to the approach adopted by the Chinese authors He et al., 2024; Lu, 2022; Sun et al., 2023; and Wang et al., 2025.

Table 2

Number of Companies and Business Combinations per Sector from 2010 to 2019

Segments	**No. of Acquiring Companies**	**No. of Business Combinations**
1. Agriculture, Sugar, and Cane	6	15
2. Food	2	6
3. Communication and Information Technology	3	11
4. Civil Construction and Building Materials	6	10
5. Packaging	1	1
6. Electric Power	2	2
7. Pharmaceutical and Hygiene	3	8
8. Hospitality and Tourism	1	3
9. Machinery and Equipment	5	8
10. Metallurgy and Steel	1	2
11. Pulp and Paper	3	6
12. Oil and Gas	2	5
13. Petrochemicals and Rubber	4	7
14. Transportation and Logistics Services	7	11
15. Textile and Apparel	4	5
Totals	**50 acquiring companies**	**100 business combinations**

Source: Research data.

After studying the PCNs and the DPSs of the acquiring companies, the research found that the business combinations of companies with polluting potential were carried out for 781 reasons. It is expected that business combinations are primarily motivated by socio-environmental factors, since these corporations are defined under Brazilian law as companies with the potential to pollute the Earth.

4 PRESENTATION AND DISCUSSION OF RESULTS

Based on the analysis of corporate documents from publicly traded companies with a polluting factor, Table 3 presents the annual distribution of the 100 business combinations by sector over a ten-year periods (2010-2019).

Table 3
Annual distribution of business combinations by sector over the decade (2010-2019)

Period	%	Business combinations of companies in polluting sectors
2010	20%	Agriculture (2), Communication and Information Technology (4), Civil Construction (2), Pharmaceuticals and Hygiene (3), Machinery and Equipment (3), Metallurgy and Steel Industry (2), Oil and Gas (1), Petrochemicals and Rubber (2), and Transportation and Logistics Services (1).
2011	11%	Agriculture (3), Civil Construction (2), Pharmaceuticals and Hygiene (2), Oil and Gas (1), and Transportation and Logistics Services (3).
2012	11%	Agriculture (1), Civil Construction (2), Pharmaceuticals and Hygiene (2), Machinery and Equipment (1), Petrochemicals and Rubber (1), Transportation and Logistics Services (1), and Textiles and Apparel (3).
2013	10%	Communication and Information Technology (2), Civil Construction (3), Machinery and Equipment (1), Pulp and Paper (2), Petrochemicals and Rubber (1), and Textiles and Apparel (1).
2014	9%	Agriculture (2), Communication and Information Technology (1), Civil Construction (1), Packaging (1), Machinery and Equipment (1), Pulp and Paper (1), Petrochemicals and Rubber (1), and Textiles and Apparel (1).
2015	5%	Agriculture (1), Communication and Information Technology (3), and Transportation and Logistics Services (1).
2016	5%	Agriculture (1), Food (2), Machinery and Equipment (1), and Petrochemicals and Rubber (1).
2017	7%	Agriculture (1), Communication and Information Technology (1), Hospitality and Tourism (2), Pulp and Paper (1), Petrochemicals and Rubber (1), and Transportation and Logistics Services (1).
2018	7%	Food (3), Pulp and Paper (1), Oil and Gas (2), and Transportation and Logistics Services (1).
2019	15%	Agriculture (4), Food (1), Electric Power (2), Pharmaceuticals and Hygiene (1), Hospitality and Tourism (1), Machinery and Equipment (1), Pulp and Paper (1), Oil and Gas (1), and Transportation and Logistics Services (3).
Totals	**100%**	**100 transactions**

Source: Research data.

From the analysis of Table 3. it is evident that most business combinations involving publicly traded companies with polluting potential occurred in 2010 (20 transactions; 20%). The Communication and Information Technology sector led in the number of acquisitions (4 transactions) that year, followed by the Pharmaceutical and Hygiene sector (3 deals) and the Machinery and Equipment sector (3 transactions).

The high volume of transactions in this period may be associated with the adoption of international accounting standards in Brazil, which altered corporate structures and financial reporting practices, possibly encouraging increased disclosure of business combinations in that year.

The second highest number of business combinations occurred in 2019 (15 corporate transactions; 15%). During that year, the Agriculture sector stood out with the most acquisitions (4 deals), followed by the Transportation and Logistics Services sector (3 deals) and the Electric Energy sector (2 transactions).

The years 2015 and 2016 registered the lowest number of business combination transactions (5 deals in each period; 5%). In 2015. the Communication and Information Technology sector had the highest number of acquisitions (3 incorporation contracts), while in 2016. the Food sector recorded the most business combinations (2 corporate transactions).

Therefore, over the analyzed period, the majority of business combinations were concentrated in the following sectors: Communication and Information Technology (Medium), Pharmaceutical and Hygiene (High), Machinery and Equipment (Medium-High), Agriculture (Medium), Transportation and Logistics Services (High), and Electric Energy (Medium). According to Law No. 10.165 (2000),

the data suggest that when business combinations are concentrated in a particular period, they tend to occur in sectors that present at least a medium level of pollution potential.

For comparison with the Chinese context, Table 4 summarizes the number of business combinations motivated by socio-environmental factors involving publicly traded companies in polluting sectors of China's industry, based on the study by Lu (2022):

Table 4

Business combinations motivated by socio-environmental factors involving publicly traded Chinese companies in industrial sectors with polluting potential

N.	Sectors with Polluting Potential in Chinese Industry	No. of Business Combinations	% of Business Combinations
1	Coal Mining and Washing Industry	33	3.49%
2	Oil and Gas Extraction Industry	36	3.81%
3	Ferrous Metal Mining and Processing Industry	27	2.85%
4	Non-Ferrous Metal Mining and Processing Industry	19	2.01%
5	Textile Industry	57	6.03%
6	Leather, Fur, and Footwear Industry	79	8.35%
7	Paper Products Manufacturing Industry	13	1.37%
8	Petroleum Processing and Nuclear Fuel Industry	111	11.73%
9	Chemical Raw Materials and Chemical Products Manufacturing Industry	156	16.49%
10	Chemical Fiber Manufacturing Industry	63	6.66%
11	Rubber and Plastic Products Industry	62	6.55%
12	Non-Metallic Mineral Products Industry	49	5.18%
13	Ferrous Metal Smelting and Processing Industry	39	4.12%
14	Non-Ferrous Metal Smelting and Processing Industry	26	2.75%
15	Power and Heat Production and Supply Industry	176	18.60%
Totais		**946**	**100.00%**

Source: Table developed based on the study by Lu (2022).

Likewise, Table 5 summarizes the number of business combinations motivated by socio-environmental factors among publicly traded companies in sectors with polluting potential in Brazil's industry, based on data from the present study:

Table 5

Business combinations motivated by socio-environmental factors among publicly traded Brazilian companies in sectors with polluting potential in Brazilian industry

N.	Sectors with Polluting Potential in Brazilian Industry	No. of Business Combinations	% of Business Combinations
1	Agriculture	7	41.18%
2	Food	1	5.88%
3	Communication and Information Technology	2	11.76%
4	Civil Construction, Materials and Decoration	0	0.00%

5	Packaging	0	0.00%
6	Electric Power	0	0.00%
7	Pharmaceuticals and Hygiene	0	0.00%
8	Hospitality and Tourism	1	5.88%
9	Machinery and Equipment	1	5.88%
10	Metallurgy and Steel Industry	0	0.00%
11	Pulp and Paper	2	11.76%
12	Oil and Gas	0	0.00%
13	Petrochemicals and Rubber	1	5.88%
14	Transport and Logistics Services	2	11.76%
15	Textiles and Apparel	0	0.00%
Totals		**17**	**100.00%**

Source: Research data.

In comparative terms between China and Brazil, business combinations motivated by socio-environmental factors among Chinese companies with polluting potential occurred more frequently in the following sector: 1) Production and supply of energy and heat industry (18.60%); 2) Raw material and chemical products manufacturing industry (16.49%); and 3) Petroleum processing and nuclear fuel industry (11.73%).

In Brazil, business combinations motivated by socio-environmental factors among companies with polluting potential occurred most frequently in the following sectors:: 1) Agriculture (41.18%); 2) Communication And Information Technology (11.76%); 3) Pulp And Paper (11.76%); and 4) Transportation And Logistics Services (11.76%).

Following this analysis, it is evident that business combinations motivated by socio-environmental factors among Chinese companies were likely carried out in contexts involving higher-pollution factors and products than those observed among Brazilian companies. On the other hand, publicly traded Chinese companies with polluting potential demonstrated a higher level of disclosure regarding socio-environmental practices in their business combinations than their Brazilian counterparts.

Regarding the analysis of the motivations behind business combinations, the study identified these reasons and classified each one based on a summarized categorization of the motivation texts. For example, motivations related to asset optimization or scale gains resulting from the combination were classified as efficiency-driven motivations.

Following this classificatory perspective, the study adopted the following categories of motivations:a) Market-driven motivations – reasons related to market factors; b) Efficiency-driven motivations – reasons related to enhancing the economic utility of the company or asset; c) Management-driven motivations – reasons associated with improving the corporation's managerial, financial, accounting, tax, and administrative control; and d) Socio-environmental motivations – justifications that may influence the environment and society.

After analyzing the corporate documents, Table 6 summarizes the 781 motivations behind the business combinations of publicly traded Brazilian companies with pollution potential, broken down by sector, during the period from 2010 to 2019.

Table 6

Motivations for the Business Combinations of Publicly Traded Companies during 2010–2019

Motivations / Sectors	Market Motivators	Efficiency Motivators	Management Motivators	Socioenvironmental Motivators	Totals
1. Agriculture, Sugar, and Cane	32	31	56	22	141
2. Food	4	17	41	3	65
3.Communication and Info Tech	13	22	58	2	95
4. Civil Construction and Construction Materials.	13	18	37	0	68
5. Packaging	0	1	6	0	7
6. Electric Power	1	2	9	0	12
7. Pharmaceutical and Hygiene	0	23	33	0	56
8. Hospitality and Tourism	9	6	18	1	34
9. Machinery and Equipment	4	17	20	1	42
10. Metallurgy and Steel Industry	2	10	4	0	16
11. Pulp and Paper	1	8	21	3	33
12. Oil and Gas	0	8	16	0	24
13.Petrochemical and Rubber	6	7	29	1	43
14. Transp. and Log. Service	14	26	58	2	100
15. Textile and Apparel	1	4	40	0	45
Totals (n)	**100**	**200**	**446**	**35**	**781**
Totals (%)	**12.80 %**	**25.61 %**	**57.11 %**	**4.48%**	**100%**

Source: Research data.

Based on Table 6, it is observed that 12.80% of the motivations for business combinations were driven by market factors. The Agriculture, Sugar, and Cane sector accounted for the highest number of business combinations (32 transactions), followed by the Transportation and Logistics Services sector (14 deals). The Packaging, Pharmaceutical and Hygiene, and Oil and Gas sectors did not engage in business combinations motivated by market-related reasons.

Souza and Borba (2016) report that business combinations are, in some cases, motivated by factors related to the expansion into new markets. Hossain (2021) also identified market-related factors as one of the motivations behind the occurrence of an acquisition.

As an example of such a transaction, on March 29, 2012, Brazil Pharma S.A., a company in the Pharmaceutical and Hygiene sector (pollution factor: High), signed an acquisition agreement (business combination) with Drogaria Guararapes Brasil S.A. The corporate information of the acquiring company states that "the transaction is aligned with the strategy of leadership in the markets in which it operates, through the acquisition of other drugstore chains "(Brazil Pharma, 2012. p. 3).

Regarding efficiency-related drivers, 25.61% of the reasons behind business combinations among publicly traded companies in Brazil classified as polluting were motivated by efficiency. The Agriculture, Sugar, and Cane sector (31 agreements) once again led the ranking of motivations, followed by the Transportation and Logistics Services (26 contracts) and the Pharmaceutical and Hygiene (23 contracts) sectors. The industrial branches of Packaging (1 transaction) and Electric Power (2 transactions) were the least representative in terms of efficiency-driven acquisition motivations.

According to Beuren et al. (2016), business combinations may be carried out to improve and enhance efficiency within the company. For example, on October 21, 2019, Eletropaulo Metropolitana Eletricidade de São Paulo S.A., a company in the electric power sector (pollution factor: Medium),

signed a merger agreement with Enel Brasil Investimentos Sudeste S.A. The business combination was motivated by the optimization of Enel Group's corporate and business structures in Brazil, as well as by the aim of making the company's management more efficient (Eletropaulo Metropolitana Eletricidade de São Paulo S.A., 2019).

Another portion of the business combination drivers was concentrated in the area of management (57.11%). For this category, there was a tie in the highest number of occurrences: the Communication and Information Technology sector and the Transportation and Logistics Services sector each carried out 58 corporate agreements during the decade. The third position was held by the Agriculture, Sugar, and Cane sector, with 56 transactions. The industrial sectors of Packaging (6 transactions) and Metallurgy and Steelmaking (4 agreements) were the least significant in terms of management-related motives.

The management-related driver has been cited by several scholars as a justification for business combinations. Costa and Amorim Júnior (2020) state that corporate acquisitions may be driven by factors such as tax planning, corporate strategy, and accounting considerations. Fikru and Gautier (2021) point out that these transactions can be motivated by the goal of reducing business costs.

As an illustration, on January 26, 2011, the company João Fortes Engenharia S.A., operating in the Civil Construction and Construction Materials sector (pollution factor: Low), carried out a business combination (acquisition) with Incorporadora Pinheiro Pereira S.A., with the stated purpose of "reducing operational, administrative, and corporate costs for both companies." (João Fortes Engenharia S.A., 2012. p. 2).

Lastly, 4.48% (35 transactions) of the business combinations carried out by publicly traded companies operating on the Brazilian Stock Exchange with pollution potential were driven by socio-environmental motivators. For comparison purposes, Table 7 presents the number and percentage identified in Chinese research regarding the socio-environmental motivations for business combinations:

Table 7

Results of studies on business combinations motivated by socio-environmental factors among publicly traded Chinese firms in high-pollution potential sectors

N.	Author/Year	Number of Business Combinations	Percentage of Socio-Environmental Motives in Operations in China
1	Lu (2022)	946	18.60%
2	Hu, Fang and Wu (2023)	26.583	14.90%
3	Sun et al. (2023)	929	28.60%
4	He et al. (2024)	908	52.50%
5	Hu e Huang (2025)	27.863	47.90%
6	Wang et al. (2025)	569	33%
7	Chen et al. (2025)	1.536	34.04%
8	Liu et al. (2025)	1.011	30.60%
9	Liu and Wang (2025)	22.482	3.16%

Source: Table developed based on the studies by Lu (2022); Hu, Fang, and Wu (2023); Sun et al. (2023); He et al. (2024); Hu and Huang (2025); Wang et al. (2025); Chen et al. (2025); Liu et al. (2025); and Liu and Wang (2025).

In comparative terms between the Chinese studies and the present research, it is noteworthy that Brazil is moving toward the adoption of practices and discussions concerning business combinations motivated by socio-environmental factors among publicly traded companies in high-pollution potential sectors of Brazilian industry. However, China demonstrates a more advanced level of reflection regarding business combinations in the context of socio-environmental motivations among publicly listed companies operating in sectors with high pollution potential.

Still referring to Table 6, over the decade, the Agriculture, Sugar, and Cane sector (22 motivations) was the most concerned with the socio-environmental factors of business combinations compared to other economic sectors. The Food and Pulp & Paper sectors each recorded three business combination transactions, tying in terms of frequency of these operations.

Out of the 15 sectors of Brazilian industry, 7 did not take environmental and social causes into account in their corporate merger or acquisition agreements. These sectors were: Civil Construction and Construction Materials (pollution factor: Low), Packaging (pollution factor: Low), Electric Power (pollution factor: Medium), Pharmaceutical and Hygiene (pollution factor: High), Metallurgy and Steel (pollution factor: High), Oil and Gas (pollution factor: High), and Textile and Apparel (pollution factor: Medium).

As an illustration of the socio-environmental driver, on December 23, 2010, the merger of Maeda S.A. Agroindustrial into Brasil Ecodiesel Indústria e Comércio de Biocombustíveis e Óleos Vegetais S.A. was approved. From an environmental standpoint, the business combination was motivated by comparative and competitive advantages related to Brazilian edaphoclimatic conditions, as well as the primary production of Agriculturel goods (Brasil Ecodiesel Indústria e Comércio de Biocombustíveis e Óleos Vegetais S.A., 2010), thereby potentially generating impacts on the environment.

With regard to the social motivations behind the business combination, this acquisition was based on: "(i) the growing demand for food in both domestic and international markets; and (ii) the economic acceleration of developing countries, creating a large consumer market" (Brasil Ecodiesel Indústria e Comércio de Biocombustíveis e Óleos Vegetais S.A., 2010, p. 27). Thus, the operation may influence Brazil's social dynamics, including its Gross Domestic Product.

According to Lu (2021), business combinations may be carried out due to socio-environmental and sustainability-related factors. Gray (1992) argues that the term sustainability refers to a company's ability to use biosphere resources in a way that does not disrupt the global ecology. Accordingly, the research findings indicate that most publicly traded Brazilian companies with pollution potential are not taking socio-environmental motivations or sustainability topics into account when engaging in business combinations.

The research showed that nearly half (46.66%) of companies operating in Brazil's economic sectors with pollution potential ranging from low to very high did not sign business combination agreements based on sustainability pillars or socio-environmental issues during the 2010–2019 period. This finding is concerning, as these companies are identified as having pollution potential in relation to atmospheric impacts.

Furthermore, the research found that business combinations by these companies were primarily driven by management-related reasons (57.11%), followed by efficiency-related justifications (25.61%), and then by market factors (12.80%). Lastly and most importantly in terms of environmental and social sustainability socio-environmental motives accounted for only 4.48% of the reasons behind the business combinations of companies classified as potentially polluting and listed on the Brazilian stock exchange.

Given the context of the research, Table 8 provides a detailed breakdown of the socio-environmental motives behind the business combinations of Brazilian publicly traded companies operating in industrial sectors with pollution potential:

Table 8

Socio-environmental motives for business combinations of Brazilian publicly traded companies in industrial sectors with pollution potential

Business Combination	Industrial Sectors with Pollution Potential in Brazil	Environmental Reasons	Social Reasons
1	Agriculture	entry into agribusiness	economic acceleration of countries
2	Agriculture	competitive advantages of edaphoclimatic conditions	Brazilian and international reference in renewable energy and food
3	Agriculture	primary production of agricultural products	one of the largest publicly traded companies in Brazil in grain and fiber production
4	Agriculture	renewable energy and food	potential for real estate value generation in undeveloped areas
5	Agriculture	biodiesel production	specialized products aimed at the agricultural market
6	Agriculture	expansion of cultivated area	increase in the volume of agricultural exports to other countries
7	Agriculture	production, industrialization, storage, and commercialization of agricultural products	integration of the companies' activities is facilitated by the fact that both operate in the same city
8	Agriculture	development of advanced micronutrient fertilizer technology for improved soil conditions	industrialization and commercialization of sodium salt in the foreign market
9	Agriculture	restructuring of agricultural sector areas	
10	Agriculture	ribonucleic acid production	
11	Agriculture	exploration of agricultural activities: soy, cotton, corn, and rice	
12	Food		will result in a single company in the food service sector; opening of new restaurants; expansion of retail food businesses
13	Communication and Information Technology		channels dedicated to the commercialization, implementation, and support of the former brand in a specific region of Brazil
14	Communication and Information Technology		channels dedicated to the commercialization, implementation, and support of the former brand in a specific region of Brazil
15	Hospitality and Tourism		leadership in the travel sector in Brazil (social development)

16	Machinery and Equipment		consolidation as the largest Brazilian company in the oil and gas services chain
17	Pulp and Paper	use of certain forest assets in a more autonomous and efficient manner	supply of timber to factories located in the regions where the forests are found
18	Pulp and Paper		creation of new industries for cellulose production in various regions of the country
19	Petrochemicals and Rubber		improvement of manufacturing and commercial operations in the southern region of Brazil through a dedicated plant
20	Transportation and Logistics Services		a unified logistics services platform in Brazil, expanding national market leadership and entry into other South American countries
21	Transportation and Logistics Services		increased capacity to serve over 6,000 active clients and potential customers across various economic sectors and regions of Brazil.

Source: Research data.

Thus, according to the data from this research, the socio-environmental motives behind business combinations of publicly traded Brazilian firms in sectors with potential polluting impact are most evident in the Agriculture, Communication and Information Technology, Pulp and Paper, and Transport and Logistics sectors.

5 FINAL CONSIDERATIONS

CBPS 01 (2024) – *General Requirements for Disclosure of Sustainability-Related Financial Information* emphasizes that entities must disclose information in general purpose financial reports regarding their strategic objectives in relation to sustainability activities, through a complete description of the names of such practices.

Accordingly, the objective of this research was to compare the disclosure of socio-environmental drivers of business combinations by publicly traded Brazilian companies with polluting potential with the evidence from studies on the disclosure of socio-environmental drivers by Chinese publicly traded companies operating in polluting sectors.

The study selected mergers and acquisitions over a ten-year period (2010–2019), analyzed 423 Business Combination Protocols, identified 100 business combinations signed between 50 acquiring companies and 100 acquired companies, and considered 15 sectors with polluting potential according to Law No.10.165 (2000): 1. Agriculture, Sugar, and Cane; 2. Food; 3. Communication and Information Technology; 4. Civil Construction and Construction Materials; 5. Packaging; 6. Electric Power; 7 Pharmaceutical and Hygiene; 8. Hospitality and Tourism; 9. Machinery and Equipment; 10. Metallurgy and Steelmaking; 11. Pulp and Paper; 12. Oil and Gas; 13. Petrochemicals and Rubber; 14. Transportation and Logistics Services; and15. Textiles and Apparel.

During the period under analysis, most business combinations were carried out by the following segments: Communication and Information Technology (Medium), Pharmaceutical and Hygiene (High), Machinery and Equipment (Medium), Agriculture (Medium), Transportation and

Logistics Services (High), and Electric Power (Medium). In light of Law No. 10,165 (2000), the data indicate that the majority of business combinations were established in sectors that, at minimum, present a medium pollution potential.

The research showed that nearly half of the companies from Brazil's economic sectors, which possess pollution potential ranging from low to high, entered into business combinations based on sustainability principles or socio-environmental considerations during the period from 2010 to 2019. This finding may be considered significant, given that these companies are identified as having pollution potential with regard to atmospheric impacts.

In order to contribute to the issues identified by the research findings, the study suggests that corporations assess the following aspects related to business combinations: (1) identifying the main reasons for socio-environmental motivation in the business combinations of Brazilian acquiring companies. This may involve investigating factors such as awareness of the importance of sustainability, short-, medium-, and long-term pressures to generate immediate financial returns, or a lack of regulatory incentives in this regard; (2) proposing initiatives to promote the consideration of socio-environmental aspects in business combinations. For example, suggesting the adoption of sustainability and socio-environmental criteria as part of the evaluation processes of target companies and of the environmental and social due diligence before a transaction is executed; (3) highlighting the importance of involving stakeholders, such as investors, regulators, and civil society, in encouraging the adoption of socio-environmental practices in business combinations, in accordance with the guidelines of the Brazilian Sustainability Reporting Standards Board, as set forth in CBPS 01 (2024) – General Requirements for Disclosure of Sustainability-Related Financial Information; and (4) recommending the development of more sustainable business strategies that may benefit both acquiring and acquired companies. This may include seeking synergies that reduce environmental impact, adopting cleaner technologies, and integrating corporate social responsibility practices.

In comparative terms between China and Brazil, business combinations driven by socio-environmental motives among Chinese companies with polluting potential occurred most frequently in the following areas: (1) the energy and heat production and supply industry (18.60%); (2) the industry of manufacturing raw materials for chemical and chemical products (16.49%); and (3) the petroleum processing and nuclear fuel industry (11.73%). In Brazil, on the other hand, business combinations motivated by socio-environmental factors among companies with polluting potential occurred most often in the following sectors: (1) Agriculture (41.18%); (2) Communication and Information Technology (11.76%); (3) Pulp and Paper (11.76%); and (4) Transportation and Logistics Services (11.76%).

After this analysis, it was found that, possibly, business combinations driven by socio-environmental motives among Chinese companies were more often carried out in contexts involving factors and products with higher pollution levels than those observed in Brazilian companies. On the other hand, publicly traded companies with polluting potential in China showed a higher degree of disclosure of socio-environmental practices in their business combinations compared to their Brazilian counterparts.

In comparative terms between the research conducted in China and the present study, it is noteworthy that Brazil is on the path toward adopting practices and discussions related to business combinations for socio-environmental reasons among publicly traded companies in sectors with polluting potential in the Brazilian industry. However, China demonstrates a more advanced reflection on business combinations in the context of socio-environmental motivations among its publicly traded companies in polluting sectors.

Thus, based on the research data, the socio-environmental motivations behind business combinations of Brazilian publicly traded companies in polluting sectors are most evident in the Agriculture, Communication and Information Technology, Pulp and Paper, and Transportation and Logistics sectors.

Therefore, the findings of this study provide practical and theoretical contributions to publicly traded companies in both Brazil and China, aiming to support the transition of these firms toward an era of environmentally sustainable practices under the lens of corporate social responsibility. The results presented herein may foster new reflections and dialogue within highly polluting companies, encouraging these corporations to adopt socio-environmental practices in Brazil, taking China as an example. This is especially relevant in the context of business combinations, which are transactions that can directly impact society and the environment due to the substantial financial volumes involved and the nature of the activities carried out by companies classified as environmental interveners.

As for limitations, the study highlights the strictness in the sample selection and the use of a specific law to classify sectors with polluting potential. Furthermore, the analysis period could be extended.

Future research directions include: (1) investigating the determinants of the disclosure of socio-environmental motivations in these corporations; (2) verifying whether companies with higher polluting potential are more likely to carry out business combinations based on socio-environmental motivations; (3) conducting a cluster analysis to identify groups of companies with similar patterns regarding socio-environmental drivers in their business combinations; and (4) analyzing the motivations behind socio-environmental business combinations in Brazil after the global crisis period caused by the COVID-19 pandemic, if comparison with the current study is feasible.

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CONFLICT OF INTEREST

The authors declare no conflict of interest regarding this submitted work.

AUTHOR CONTRIBUTIONS

Roles	1st author	2nd author
Conceptualization	♦	♦
Data curation	♦	♦
Formal analysis	♦	♦
Funding acquisition		
Investigation	♦	♦
Conceptualization	♦	♦
Project administration	♦	♦
Resources	♦	♦
Software	♦	♦
Supervision	♦	♦
Validation	♦	♦
Visualization	♦	♦
Writing – original draft	♦	♦
Writing – review & editing	♦	♦