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Disclosures Economic and Environmental: A case study about Suzano

Divulgación de indicadores medioambientales: estudio de caso sobre Suzano

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Abstract: The objective of this article was to highlight through a literature review the evolution of corporate sustainability. To this end, a case study of the Suzano Company was conducted through a descriptive, bibliographic and documental research, with a qualitative-quantitative problem approach. The study was built from the analysis of the Sustainability Report (2021) drawing a parallel between the indicators of the Global Reporting Initiative - GRI, specifically in the Environmental Dimension (GRI300) and Economic Dimension (GRI200). The best result obtained by the environmental dimension, after the company intensified the governance of water management in 2021, has achieved an important evolution in relation to the goal set for 2030 of reducing by 15% the water captured in the industrial operations. It is possible to conclude, that the objectives of the sustainability assessment to evaluate the growth of organizations towards sustainability and expose to those involved the results of these efforts, in addition to GRI's efforts to develop a quality guide for sustainability reporting, the Company analyzed, demonstrates that it meets the indicators and guidelines, making information available through the disclosure of sustainability practices, becoming more transparent, achieving success in its processes, through the evaluation of its consumers, employees and stakeholders, from a more comprehensive, standardized, transparent and less transversal report, in this case, mitigating the compliance risk.
Keywords: *Corporate Sustainability; Global Reporting Initiative; Sustainable Report; Suzano.*

Resumen: El objetivo de este artículo fue destacar, por medio de una revisión bibliográfica, la evolución de la sostenibilidad empresarial. Para ello, se realizó un estudio de caso de la empresa Suzano a través de una investigación descriptiva, bibliográfica y documental, con abordaje cualitativo-cuantitativo de problemas. El estudio se construyó a partir del análisis del Informe de Sostenibilidad (2021) trazando un paralelo entre los indicadores de la Global Reporting Initiative - GRI, específicamente en la Dimensión Ambiental (GRI300) y Dimensión Económica (GRI200). El mejor resultado obtenido por la dimensión ambiental, después de que la empresa intensificara la gobernanza de la gestión del agua en 2021, ha conseguido una importante evolución en relación al objetivo establecido para 2030 de reducir en un 15% el agua captada en las operaciones industriales. Es posible concluir, que los objetivos de la evaluación de la sostenibilidad para evaluar el crecimiento de las organizaciones hacia la sostenibilidad y exponer a los interesados los resultados de estos esfuerzos, además de los esfuerzos de GRI en el desarrollo de una guía de calidad para la elaboración de memorias de sostenibilidad, la Compañía analizada, demuestra que cumple con los indicadores y directrices, haciendo disponible la información a través de la divulgación de las prácticas de sostenibilidad, siendo más transparente, logrando el éxito en sus procesos, a través de la evaluación de sus consumidores, empleados y partes interesadas, a partir de un informe más completo, estandarizado, transparente y menos transversal, en este caso, mitigando el riesgo de cumplimiento.
Palabras clave: *Sostenibilidad Corporativa; Global Reporting Initiative, Informe Sostenible; Suzano.*

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INTRODUCTION

The contemporary world employs fewer and fewer materials to produce the same unit of wealth. However, the pressure on resources continues to increase in absolute terms due to the magnitude of production growth, mainly related to overconsumption and overuse of natural resources. Modern societies have not yet managed to generalize sustainability-driven innovation systems capable of reconciling the size of the economic system with the limits of ecosystems. It is essential to establish a governance that considers the limits of ecosystems and the reduction of inequalities as central factors in public and private economic decisions (ABRAMOVAY, 2012).

In the view of Andrade et al. (2013), companies facing this reality should begin to reflect on the social and environmental context for moral and ethical reasons or even for strategic business issues, in which they focus on corporate sustainability as one of their main objectives today, however, for organizations the faster they adapt to the idea of being more sustainable companies, the more durable and profitable they will be in the market.

Corporate sustainability contemplates related divergent aspects, such as the aspects of pollution, the depletion of non-renewable resources, population growth, the influence of technology, sustainable development, demands by stakeholders, as well as a pressure for greater transparency in the activities of companies (SCHRIPPE, 2018).

Thus, it is necessary to understand corporate sustainability with a focus on the economic and environmental spheres, in a systemic perspective, as well as a deeper understanding of which socio-environmental aspects are important for its construction, with the development of research that can generate more appropriate ways for its effectiveness. Ecological and environmental actions, social responsibility and eco-efficiency practices in organizations should be linked to corporate sustainability (SCHRIPPE, 2018).

From the adherence to sustainable development, and its indicators, companies avail themselves of a permanent commitment integrated to the environment, as well as, to the principles of social responsibility (SCHRIPPE, 2018). In this sense, large companies already know the need to measure how sustainable they are, considering that what cannot be measured will hardly be managed (KAPLAN; NORTON, 1996).

The relevance of the corporate sustainability theme derives, in a practical way, from organizational strategies considering sustainability for business competitiveness with the evidencing of threats involving its various aspects and denoting how people should collaborate systematically and strategically, for the acceleration of sustainable societies (BROMAN et al., 2017; VILDASEN et al., 2017; WIJETHILAKE, 2017).

Sustainability has significant contribution in the market and plays an important role in the economic development of the country. However, there are many challenges to be faced so that sustainability is adopted and implemented in organizations and it is necessary to evaluate actions towards sustainability and the respective measurement of its results from strategies, perfectly delimited (ARAÚJO, 2012).

The sustainable actions for the implementation of development, is based on the preservation of the environment, with the awareness of managers and the urgent imposition of the sustainable market, can generate benefits arising as: Acceptance by society of products and/or services, customer satisfaction, the conquests of new markets, facilities in obtaining financing, cost reduction and government incentives (SCHRIPPE, 2018).

In this perspective a support tool would be in the preparation of sustainability reports, with the possible identification of problems and opportunities in relation to communities, society, non-governmental organizations and supply chains, as well as, could minimize production costs. Sustainability reports can assist managers in achieving sustainable development by increasing the transparency of the information disclosed, which is based on the dimensions of sustainability. Reports in these dimensions can evaluate sustainability performance according to regulations (REZENDE, 2018).

Given the above, the following question that guides this research arises: how the Global Reporting Initiative - GRI indicators are related to the evolution of corporate sustainability?

Understanding the contribution of corporate sustainability to the achievement of sustainable development ((REZENDE, 2018), as well as the contribution of sustainability practices to organizational performance (SCHRIPPE, 2018), the overall objective of this research was to highlight through a literature review, together with a case study of the Suzano Company, the evolution of corporate sustainability, from the analysis of the Sustainability Report (2021) drawing a parallel between the indicators of the Global Reporting Initiative - GRI, specifically in the Environmental Dimension (GRI300) and Economic Dimension (GRI200).

THEORETICAL FOUNDATION

Corporate Sustainability

The concept of corporate sustainability emerged to consolidate the paradigm of sustainable development in the business scenario and achieve, in the same way, economic, social and environmental organizational results (RAHDARI; ROSTAMY, 2015). For these authors, the difficulty of the interrelation between these principles is specific and relative to the distinct preferences of stakeholders. Corporate sustainability, seeks to meet these three principles: Environmental integrity through

environmental management; Social equity through corporate social responsibility and economic development through value creation (SCHNEIDER, 2015). Therefore, corporate sustainability is a source of competitive advantage and providing value to stakeholders in results, becoming a challenge to address environmental and social issues, producing strategies to achieve long-term value (CLARO; CLARO, 2014).

The demand to develop strategies that provide assistance to society in the search for sustainability, is a discussion that is prevalent in planning, in the research of business practices, which has been found to be promising to improve the practice of this planning, to identify the link between planning, implementation efforts and the sustainability of the results (SCHNEIDER, 2015). Therefore, companies need to adjust the responsibility of the impact of their operations with society and the environment, as well as apply the principles of corporate sustainability in the management of their business. Sustainability principles are commonly voluntary and cover social and environmental concerns in operations and interactions with users (SCHNEIDER, 2015).

Companies prefer good sustainable practices, in relation to the development of their sustainability programs, seeking to increase profits more effectively, thus creating value for the business, improving revenues and reducing operating costs. The expenses with sustainable actions are reverted into process improvements, energy reduction, and less waste generation. The role of organizations that offer sustainable solutions is paramount to economic development, as it reveals that they have financial resources, technological knowledge, and the institutional capacity to implement these solutions (REZENDE, 2018).

By adopting in practice the management of sustainable parameters, organizations must aim to profit, so they must evaluate and mitigate the impact of their activities on the environment efficiently, with social actions, both internal for their employees and external for the community. Thus, improvements directed to the environment become a "stimulus for technological innovation" and "also became a stimulus for the improvement of image management techniques and a source of competitive advantage" (SEHNEM; LUKAS, 2015, p. 24). In order to monitor / track the progress of the various principles and practices of corporate sustainability, performance measurement systems with the classification and criteria of sustainability are indispensable, to cover the various business levels and indicate for the assessment of sustainability, collaborating for its measurement (SEARCY, 2012).

Sustainability Assessment

Sustainability assessment is defined by Rezende (2018), as a process whose purpose is to generate information to support decision-making for sustainability and to cooperate for better policy judgment and organizational performance.

The authors Pollesch and Dale (2015) explain that to ensure long-term survival in international markets, organizations seek sustainability as a strategic objective and, a condition for this search, is followed by the ability to perform a sustainability assessment of their processes and products. This assessment comprises sustainability accounting, which covers measurements of all activities, as well as an impact analysis, assessing the environment, the economy and the well-being of society (LEE & LEE, 2014).

The goals of sustainability assessment are to evaluate the growth of organizations toward sustainability and expose to stakeholders the results of these efforts in the economic, environmental, and social dimensions. Thus, with the disclosure of sustainability practices, organizations become more transparent and can achieve success in their processes, through the evaluation of their consumers, employees and stakeholders (LOZANO, 2013).

The assessment of sustainability through a single metric, may be insufficient to deal with the diversity of issues that relate to it (GASPARATOS et al., 2008). Therefore, evaluating methodological diversity in conjunction with stakeholder participation is an option with the best result in a combination in the physical environments, social and economic well-being in the decision-making of organizations (POLLESCH; DALE, 2015; REZENDE, 2018).

From the implementation of sustainable development practices and principles, the methodologies applied for sustainability assessment must be understandable and accessible to the users of this information, with their involvement and participation. Although some initiatives embrace public involvement, participatory approaches are usually restricted to consultations with groups that are important to the process within the organization, starting with employees (RAMOS, et al., 2015).

The introduction of sustainability measures at all organizational levels, when examined in a set of indicators, subsidizes decision making, allowing managers to evaluate performance, identify trends, confront information and understand sustainable development (DELAI; TAKAHASHI, 2008).

Sustainable Indicators

Sustainable indicators are defined by Van Bellen (2004, p. 64), as "presentations of measures, they are units of information that summarize the characteristics of a system or highlight some points of this system". The sustainability indicators encompass the information, actions and social, economic and environmental practices, thus allowing the verification of the effectiveness of sustainable development,

characterized by the economy, preserved natural systems and the satisfaction of the needs of communities (MALHEIROS, 2012).

In the understanding of Botelho et. al (2015) the indicators are parameters/variables, and among these, one is chosen and considered isolated or combined with others to obtain the conditions of the system under analysis. These authors explain that from data, the indexes are established by joining a set of indicators and/or variables, being an informative tool for decision making and forecasting and with this the data institute indexes that are linked to an indicator.

Therefore, an indicator must be linked to a specific objective, be able to indicate success or failure in achieving it, and be sensitive and consistent in its construction (MUGA; MIHELCIC, 2008). Indicators are effective tools for measurement and analysis, and are useful for communicating ideas, thoughts, and values that can lead to better decisions and more effective actions by simplifying, clarifying, and making information available (ROSCH et. al, 2017).

The relevance of indicators within organizations consists of the information that the decision maker can get by assessing the expectations of stakeholders. In this way, the proof that the results have been achieved, according to the strategies determined in advance for obtaining results, reduces the risks inherent in the weak aspects of management, corrects the flaws in the processes in a timely manner, and serves the main stakeholders. In addition to adopting the indicators, and measuring results, one should present them periodically and conduct a comparison with previous results, as well as in relation to those that the market presents to obtain foundation and the maintenance, or change of strategy, according to the need (SCUCUGLIA, 2015).

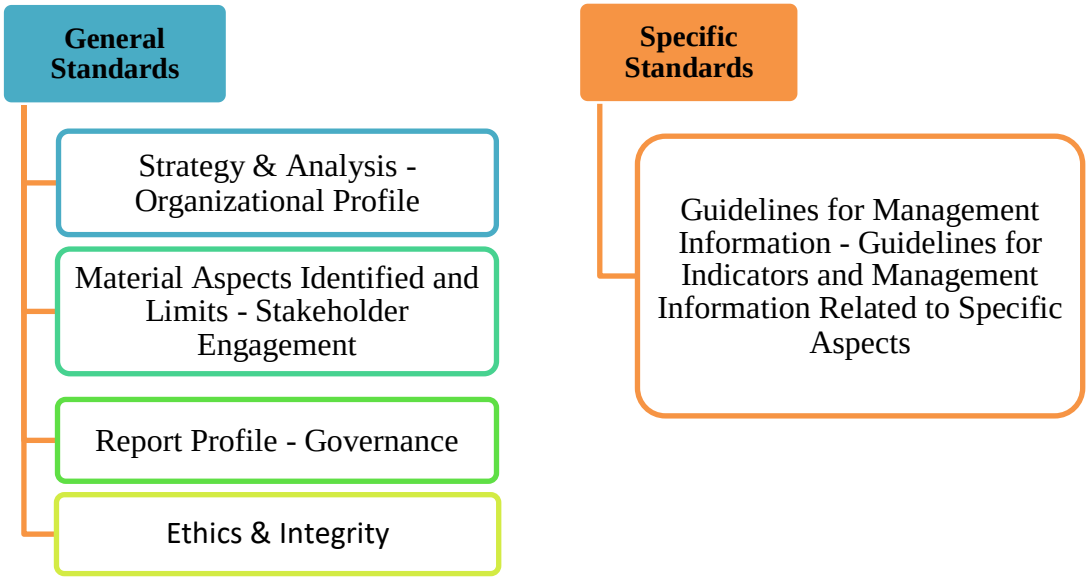
The sustainability indicators aggregate the information, actions, and social, economic, and environmental practices, offering each of them the importance they have, allowing the effectiveness of sustainable development, which should be characterized by a vigorous economy, preserved natural systems, and a community with its needs satisfied (IMPERADOR; SILVA, 2018).

Global Reporting Initiative - GRI Indicators

The Global Reporting Initiative - GRI, as a pioneer in the development of guidelines for sustainability reports, according to Carvalho and Kassai (2013), establishes a set of principles and indicators used by organizations to voluntarily measure and report their performance in the economic, social, environmental and governance dimensions. These indicators aim to balance diverse expectations and views of the involvement of people, companies, civil society organizations or government agencies, effectively putting into practice the engagement of stakeholders who participate in sustainable processes (GLOBAL REPORTING INITIATIVE, 2018).

Created in 1997, the GRI developed guidelines for sustainability reporting starting in 2000. From the growing demand for sustainability reporting after these generations, in 2016 GRI released an updated version of sustainability indicators in the global standards for sustainability reporting, the GRI Standards. With the release of this version, updated global standards for sustainability reporting, the GRI Standards is the latest of the versions to be adopted in all reports published as of July 1, 2018 (GLOBAL REPORTING INITIATIVE, 2018). The GRI Standards for a sustainability report are structured as a set of interrelated standards developed for use by organizations demonstrating their impacts on the economy, the environment, and society (GLOBAL REPORTING INITIATIVE, 2018).

FIGURE 01: GRI Contents for Sustainability Report.



SOURCE: Adapted by the authors from the GRI Guidelines - Sustainability Reporting (2015).

According to the Global Reporting Initiative (2018), there are three universal standards that apply to any organization for sustainability reporting: i) GRI 101: Fundamentals; ii) GRI 102: General Contents and; iii) GRI 103: Management Approach. In addition to these universal standards, there are also specific standards, which are organized into three series: i) GRI 200: Economic Topics; ii) GRI 300: Environmental Topics; and iii) GRI 400: Social Topics.

Environmental Dimension

The environmental dimension of sustainability seeks the preservation of the environment, not under an individualistic conception, but in a transindividual way (ANJOS; UBALDO, 2015). It is considered, therefore, in environmental dimension, the numerous interventions of society in the

construction of space in which prudence in the use of natural resources, such as soil, water, among others, signals the importance of guarding the forms of occupation in certain areas susceptible to changes causing various risks to the environment and life in a broad sense (SILVA; SOUZA; LEAL, 2012).

For the environmental dimension to be part of the reality of the entire population, it is necessary that the preservation of natural resources in the production of renewable resources and limiting the use of non-renewable resources; Limitation of consumption of fossil fuels and other exhaustible or environmentally harmful resources, replacing them with renewable and harmless resources; Reduction of the volume of waste and pollution, through conservation and recycling; Self-limitation of material consumption; use of clean technologies; Definition of rules for environmental protection (MENDES, 2009).

The environmental dimension for Freitas (2012, p. 64-65), can be summarized as follows: "One wants to allude, with the environmental dimension of sustainability, to the right of current generations, without prejudice to future ones, to a clean environment, in all aspects (ecologically balanced environment, as stated in art. 225 of the CF)". Therefore, through the environmental dimension, it is understood that the existence of the human species depends on the preservation and care of the environment, so that minimum conditions of survival and well-being are guaranteed for both the present and future generations (BOFF, 2012).

Economic Dimension

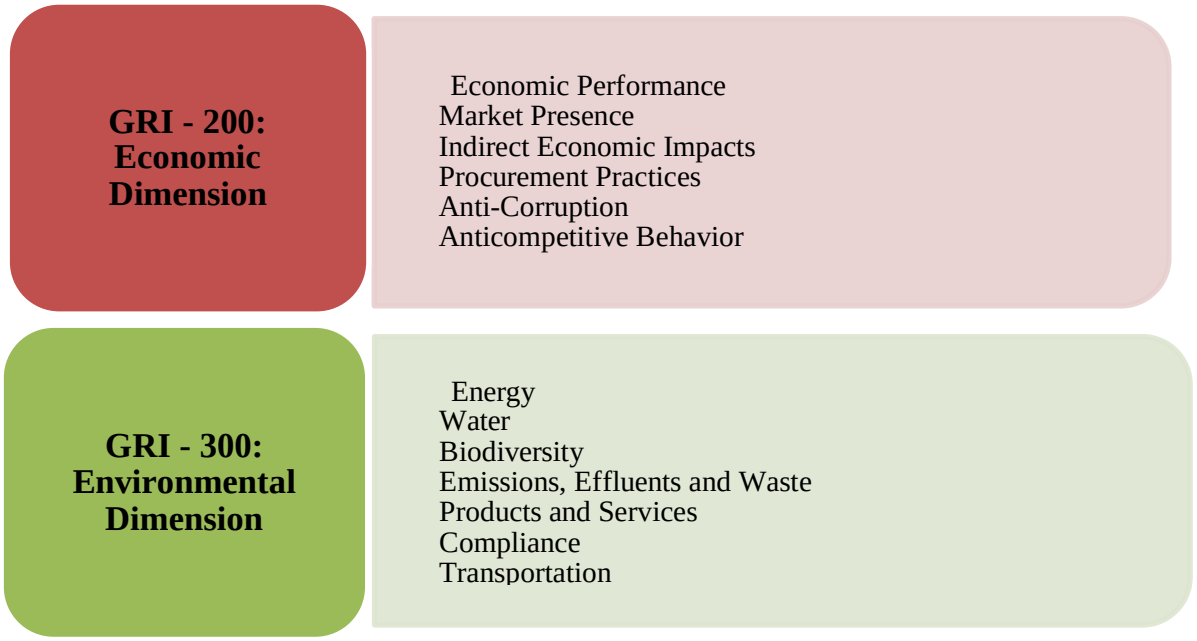
The economic dimension, in which, basically, a real balance is sought between the continuous production of goods and services and the fair distribution of wealth (PÓVOAS, 2015). The economic dimension of sustainability establishes the appropriate trade-off between efficiency and equity, that is, the balance based, in all undertakings (public and private), of benefits and direct and indirect costs (externalities). Economicality, then, cannot be separated from the measurement of long-term consequences. From this perspective, consumption and production need to be completely restructured, in an inescapable change of lifestyle (FREITAS, 2012).

Thus, for the aforementioned author, sustainability has the power to create a new economy, restructuring categories and behaviors, enabling the emergence of opportunities with long-term planning and a competent system of incentives for efficiency, so the essential relationship between economics and sustainability cannot be ignored, because otherwise it would mean failing to see the principle in one of its vital dimensions.

Economic sustainability goes beyond the accumulation of wealth, as well as economic growth, and encompasses the generation of decent work, enabling income distribution, promoting the development of

local potentialities and the diversification of sectors. It is made possible by more effective allocation and management of resources and by a regular flow of public and private investment in which economic efficiency must be evaluated in order to reduce the dichotomy between microeconomic and macroeconomic criteria (MENDES, 2009).

FIGURE 02: Specified Standards of the Global Reporting Initiative - GRI.



SOURCE: Self-authored (2022).

METHODOLOGY

For this research we sought to consider sustainability based on the balance of relations between economic and environmental needs for the future development of this organization. The initial proposal of this research is based on the analysis of corporate sustainability indicators that motivate the use of good sustainable practices.

The company chosen to be the object of this study was Suzano S.A., a publicly traded corporation in Brazil. It has shares traded on the B3 S.A. (Brasil, Bolsa, Balcão - B3), listed on the Novo Mercado segment under the ticker SUZB3, and American Depositary Receipts (ADRs) in the proportion of one (1) common share, Level II, traded on the New York Stock Exchange (NYSE) under the ticker SUZ. The Company is controlled by Suzano Holding S.A. through a voting agreement in which it holds 45.72% of the common shares. The Company has 12 (twelve) industrial units, 5 (five) technology centers, 21 (twenty-one) distribution centers and 3 (three) ports, all located in Brazil. These units produce eucalyptus

hardwood pulp, paper (coated paper, paperboard, uncoated paper, and cut-size paper), paper rolls, and paper for sanitary purposes (consumer goods - tissue), to supply the domestic and foreign markets.

According to nature, this research is characterized as applied research aimed at the acquisition of knowledge with a view to application in a specific situation (GIL, 2010). Added to this, this research is characterized as exploratory, and aims to collect data with the intention of providing the researcher with greater knowledge about the topic or research problem. As for the purposes, this is a descriptive research, of bibliographical and documental nature. The descriptive research aims to describe the characteristics of a given population or phenomenon and can also be prepared with the purpose of identifying possible relationships between variables (GIL, 2010).

As for the treatment of the data collected, this will be a mixed study, employed according to the nature of the elements collected, i.e., both qualitative and quantitative, which, according to Creswell and Clark (2013), combines potentialities, since one approach compensates for the weaknesses of the other.

As for the technical procedures used to develop the study, it was a bibliographic and documentary research, in which through the theoretical referential, a survey of data on Corporate Sustainability, Sustainable Indicators and Global Reporting Initiative Indicators - GRI was carried out. The scientific method for the preparation of this article followed the literature review steps and includes: theme identification, bibliographic survey, text selection, preliminary structuring and logical structuring of the study, its analysis and evaluation, interpretation of results and synthesis of the knowledge obtained.

The method of procedure will be a case study; this investigates contemporary and real phenomena, prioritizing the understanding of facts over the analysis of them. The definition of the number of cases to be analyzed depends on the degree of certainty one intends to obtain with the research results (YIN, 2005).

RESULTS AND DISCUSSIONS

Environmental Dimension - GRI300

Water withdrawal by source in industrial operations

TABLE 01: Specific water consumption in industrial operations.

Specific water consumption in industrial operations (m3/ton of saleable or finished product[1])	**2019**	**2020**	**2021**

[1] Water consumption is understood to be the difference between the amount of water withdrawn from the units and the amount of water returned to the environment within the environmental parameters of current legislation (treated effluent) and losses (evaporation and incorporation into the product). In addition, for the calculation of the indicator, finished and saleable products from each unit are considered (in this case, pulp and the different types of paper and consumer goods).

Suzano[2]	8.33	8.74	8.38
Rio Verde[2]	2.40	3.34	3.70
Limeira	7.85	8.30	9.16
Jacareí	3.34	2.70	3.06
Imperatriz	6.19	5.15	4.49
Mucuri[2]	4.70	6.17	4.95
Aracruz	6.51	4.27	7.67
Belém	8.67	4.56	3.38
Maracanaú (Fortaleza)	0.11	0.09	0.07
Cachoeiro[3]	n/d	n/d	0.02
Três Lagoas	2.92	2.68	2.26
Consolidated Total	**4.44**	**4.47**	**3.83**

SOURCE: Sustainability Report (2021).

The indicator presents the specific consumption of water in industrial operations and in this regard, the data indicate that the Imperatriz, Belém, Maracanaú (Fortaleza) and Três Lagoas units are those that make the greatest effort to reduce consumption over the three periods under analysis. Checking the consolidated total, the company points out in 2019 (4.44), 2020 (4.47) and 2022 (3.83), a percentage reduction of 17% in the comparison between 2020 and 2021.

According to the Sustainability Report (2021), the company has intensified management governance emissions of water in 2021, and has achieved an important evolution in relation to the goal set for 2030 of reducing by 15% the water captured in industrial operations. The theme was incorporated into the variable remuneration of the leaders of each industrial plant.

Additionally, a very strong and consolidated routine was implemented in the day to day of the plants, managing to reduce by 8% the specific water withdrawal, now using 26.3 cubic meters for the production of 1 ton of product. Still in this sense, Suzano's total water withdrawal in 2021 is in line with the volume reported in 2020, reaching the value of 26.3 m³/t of water withdrawn for industrial operations, a result that exceeds by 2.3 m³/t the goal of 28.6 m³/t forecast for 2021.

Overall, these figures represent a 77.8% advance in relation to the baseline goal, i.e., a reduction of 3.5 m³/t in water withdrawal in Industrial Units. To this end, actions were implemented in all units aimed at optimizing water use, including the replacement of equipment to generate more water efficiency and the use of reclaimed water in machinery (SUSTAINABILITY REPORT, 2021).

[2] The Suzano and Rio Verde units had the 2019 and 2020 data corrected, and the Mucuri unit had the 2020 data corrected, after reviewing the calculations.

[3] The Cachoeiro unit started its operation in 2021 and, for this reason, has no data to be reported in 2019 and 2020.

Waste sent to Landfill in Industrial Operations

TABLE 02: Waste sent to landfill cell.

Waste sent to landfill cell [kg/ton on a dry basis (kg/t)]	**2019**	**2020**	**2021**
Consolidated Total	**36.10**	**31.70**	**20.80**

Total residues generated by type and operation [metric tons (t)]	**2019**			**2020**			**2021**		
	Non-hazardous waste	**Hazardous Waste**	**Total**	**Non-hazardous waste**	**Hazardous Waste**	**Total**	**Non-hazardous waste**	**Hazardous Waste**	**Total**
Forestry operations	1,513.36	1,373.18	2,886.54	1,028.00	907.00	1,935.00	8,512.55	1,004.66	9,517.21
Industrial operations	1,322,823.45	1,489.19	1,324,312.64	1,417,100.66	1,068.40	1,418,169.06	1,422,529.00	1,325.75	1,423,854.75
Total	**1,324,336.81**	**2,862.37**	**1,327,199.18**	**1,418,128.66**	**1,975.40**	**1,420,104.06**	**1,431,041.55**	**2,330.41**	**1,433,371,96**

SOURCE: Sustainability Report (2021).

Table 2 shows that the indicator referring to waste sent to landfill cells, shows a consolidated total in 2019 (36.10), 2020 (31.70) and 2021 (20.80), a percentage reduction of 52% in the comparison between 2020 and 2021.

As part of its Renew Life commitments, Suzano is also advancing in the one that seeks to reduce by 70% the solid industrial waste sent to its own or third party landfills, transforming it into by-products. Some factors, combined, contribute to the company's advances in this area by 2021. One of them refers to the engagement of the directors and industrial managers, whose variable remuneration is now also linked to the company's commitments for 2025 and 2030. The other, investments in the construction of two waste treatment centers, one in Três Lagoas (MS) - to be implemented in 2020 and worth R$ 40 million - and the second in Imperatriz (MA) - to be implemented in 2021 and worth R$ 32 million. With these investments, the company reduced by 34%, in 2021, the amount of waste sent to landfills compared to the previous year, turning it into agricultural inputs for our eucalyptus forestry and other agricultural crops in the regions where the company operates. Also noteworthy is the pilot project being carried out at the Mucuri Unit, in which waste is sent to a third-party center. Furthermore, in many cases, what is waste for the forestry industry becomes raw material for other sectors. As a way of accelerating the achievement of the target, the Vino (Sale of Non-Operating Items) area was structured, as part of the Supplies team, to commercialize industrial waste generated by the operation (SUSTAINABILITY REPORT, 2021).

Combined with the commitment to Renew Life to reduce 70% of solid waste sent to landfills by 2030, in 2021 the total volume of industrial solid waste sent to landfills was reduced to 20.8 kg/t, which represents a 75.8% advance in relation to the baseline target (44.3 kg/t -2018). After the release of Suzano's Commitments to Renew Life (CPRVs), which occurred in February 2020, the goal of reducing the specific shipment of non-hazardous and non-inert (class 2A) waste to landfills by 70% by 2030 was broken down for each Industrial Unit, and governance was integrated into Suzano's management routine (SUSTAINABILITY REPORT, 2021).

After this commitment was made public, the company defined governance for managing this issue: annual and monthly targets were established for each industrial unit, and the results are monitored on a monthly basis by the Pulp, Engineering and Energy Board. The company also has an Industrial Environment Working Group (GTMAI), which evaluates the results on a monthly basis. Each industrial operation monitors the waste indicators on a weekly basis with the Board of Directors and Industrial Management and the executives. The results are disclosed in monthly meetings to all employees of the unit, for the engagement of all on the subject (SUSTAINABILITY REPORT, 2021).

Individually, the Limeira (SP), Jacareí (SP) and Rio Verde (SP) Units stand out for not having sent waste to landfills in 2021. In addition, R$ 72 million were invested in the construction of waste treatment centers at the Três Lagoas Unit (MS), which has been operating at full capacity since the end of 2020, and Imperatriz (MA), which went into operation in the first quarter of 2021.

At the Mucuri Unit (BA) a pilot process for the composting of 54% of the waste that used to be sent to landfills started in September 2021.

A highlight of 2021 was the evolution of the VINO (Sale of Non-Operating Items) area. With several fronts, the area managed to increase by 84% the sale of byproducts from the manufacture of pulp and paper that were initially treated as waste, but which have potential for use as raw material for other industries and even in agriculture (with the proper authorizations from the respective Environmental Agencies and Ministry of Agriculture, where required).

It is important to point out that in 2021 the implementation of a new pulp production unit to be installed in Ribas do Rio Pardo (MS) was approved, with a production capacity of 2.55 million tons of pulp per year, which will start operating in the first quarter of 2024. In this project, the concept of ecodesign was adopted as a premise, with the installation of a Soil Corrective Center foreseen along with the construction of the plant and the adoption of energy recycling of organic waste from the process (SUSTAINABILITY REPORT, 2021).

Energy

TABLE 03: Degree of renewability of Suzano's energy matrix.

Degree of renewability of the Suzano energy matrix	**2019**	**2020**	**2021**
Percentage of energy from non-renewable sources	12.69%	12.82%	12.31%
Percentage of energy from renewable sources	87.31%	87.18%	87.69%
Total	**100.00%**	**100.00%**	**100.00%**

SOURCE: Sustainability Report (2021).

The indicator referring to the degree of renewability of Suzano's energy matrix, according to the data in Table 3, shows that the percentage of energy from non-renewable sources has remained stable [2019 (12.69%), 2020 (12.82%) and 2021 (12.31%)]. The percentage of energy from renewable sources in 2019 [(87.31%), 2020 (87.18%) and 2021 (87.69%)], it is seen that the use of renewable sources is higher in 2021.

TABLE 04: Total energy consumed (GJ).

Total energy consumed (GJ)	**2019**	**2020**	**2021**
Fuel from non-renewable sources	28,049,382.05	28,024,857.22	30,956,553.51
Fuel from renewable sources	216,521,617.38	214,386,646.59	220,444,126.07
Energy consumed	3,429,652.68	3,498,800.20	3,872,202.27
Energy sold	5,303,394.46	5,646,273.28	5,711,287.89
Total	**242,697,257.65**	**240,264,030.73**	**249,561,593.96**

SOURCE: Sustainability Report (2021).

The indicator referring to the Total Energy Consumed, according to the data in table 4, verifies the increase in energy consumption through fuels. The total energy consumed represents the sum of the energy generated from renewable sources and the energy acquired from the National Interconnected System, subtracting from this figure the energy sold.

Suzano is constantly investing in projects and initiatives related to the production of renewable energy and the increase of energy exports. A digital tool was implemented, developed internally by our team, that recommends, by means of algorithms and in real time, the best allocation of available steam for each turbine, optimizing the generation of energy. A project was also developed with the objective of

increasing the specific steam generation of the boilers of the industrial units per amount of fuel consumed, enabling higher power generation. Get to know the results of our Greenhouse Gas Inventory - Base 2021 in our Sustainability Center. The company's Commitment to Renewing Life is to increase the exportation of renewable energy to the Brazilian energy matrix. The big step to achieve this goal is the approval of a new project like Cerrado. It will generate an average of 180 average MW of surplus renewable energy, which will be dispatched to the Brazilian grid (SUSTAINABILITY REPORT, 2021).

Suzano's energy matrix is sustained, for the most part, by renewable sources, such as biomass composed of bark, logs and rejects from the wood chipping process; and liquid biomass, known as black liquor, responsible for generating the largest portion of energy. Furthermore, in some units, the energy use of biological sludge in the biomass boilers has already been implemented. In 2021, 87.69% of Suzano's energy matrix came from renewable sources. The increase in fuel consumption, in general, matches the 107% increase in volume produced by Suzano in 2021 (SUSTAINABILITY REPORT, 2021).

In some production units, there is a surplus in the generation of electric energy, which makes it available for the national grid (SIN - Sistema Interligado Nacional (National Interconnected System)), contributing to increase the degree of renewability of the Brazilian electric matrix. Although the smallest portion of the units has the capacity to export energy to the grid, the Suzano Group is self-sufficient in electric energy, energy that is produced through renewable sources. Last year, despite the problem with the turbo generator in Imperatriz (MA), there was an increase of more than 1% in the export of renewable electric energy. With this, the company continues its efforts to achieve its goal of increasing the export of renewable electricity by 50% by 2030 (SUSTAINABILITY REPORT, 2021).

The fuel consumption data - collected by Suzano in a mostly automated way - were converted into energy consumption from the basic density and the lower calorific value of each fuel. In this sense, when available, the data contained in the technical specification sheet of the fuel used were used. When not available, the values presented by the National Energy Balance (MME, 2021) were used.

Economic Dimension - GRI200

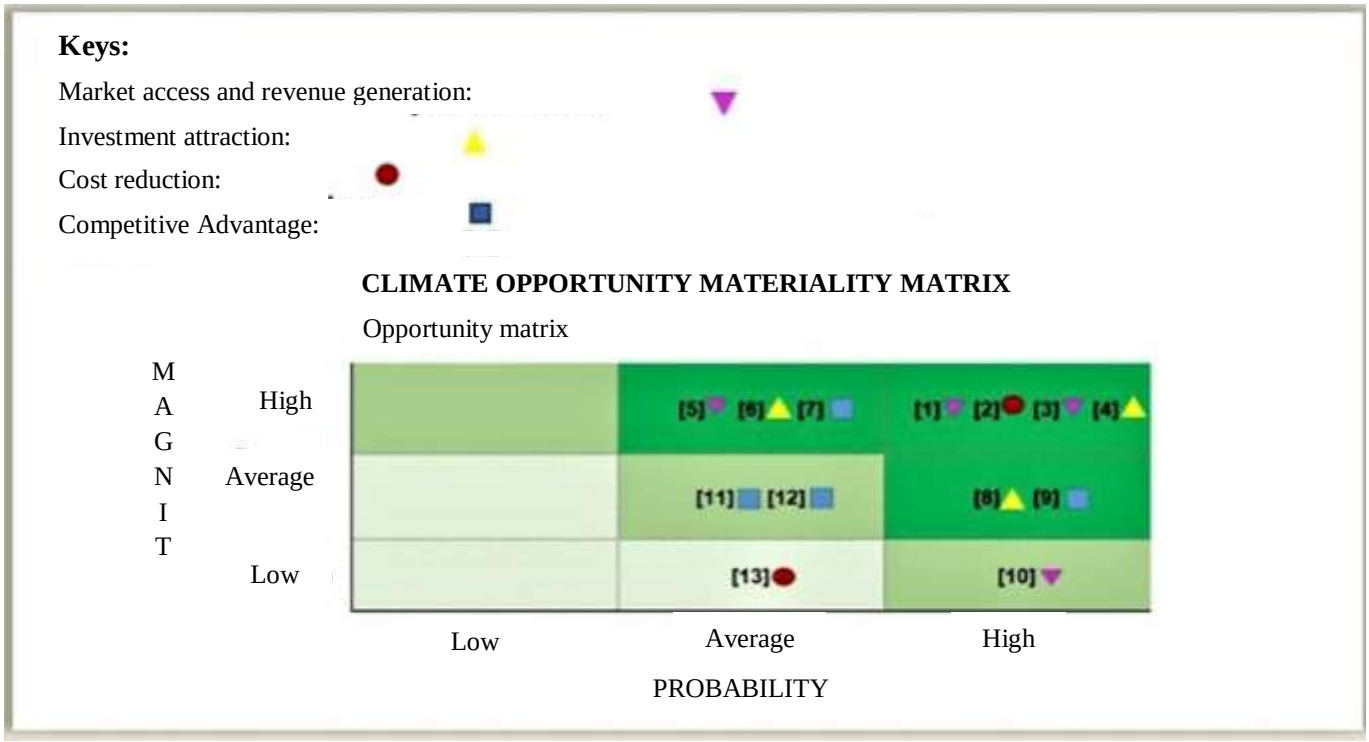
Suzano's Climate Opportunities

The need for products, services and practices that contribute to the reduction of anthropic Greenhouse Gas emissions and society's adaptation to climate change, also represent business opportunities for Suzano. The Company has even positioned itself to convert some potential risks to the sector into business opportunities. One example is carbon pricing, from which Suzano can benefit by capturing CO_2 from its eucalyptus plantations and native forests. In carbon market scenarios, the Company is able to offer credits, generating revenue from this practice. The following matrix shows some

of these opportunities, in different dimensions (SUSTAINABILITY REPORT, 2021).

In the Climate Opportunity Materiality Matrix we can observe that in the Key Market Access and revenue generation, the Company presents an opportunity of high magnitude and probability, considering the generation of revenue from the trade of carbon credits, increased competitiveness of Suzano's products by having one of the lowest emission intensities per ton of product in the market, competitive advantage through the development of seedlings adapted to the effects of climate change, such as temperature variations and less water availability, generation of revenue through the sale of renewable energy self-generated from residues of the industrial process, and increase in the added value of deliveries to clients through the carbon neutralization of part of the products.

FIGURE 03: Climate Opportunity Materiality Matrix.



SOURCE: Sustainability Report (2021).

Regarding the Investment Attraction Key, its opportunity is high in magnitude and probability, evaluating the increase in investment attraction due to Suzano's high classifications and ratings in ESG indexes and ratings, and the increase in the favorable perception of stakeholders by the climate, biodiversity and water targets assumed by Suzano. Cost reduction is on the rise in terms of magnitude and probability, considering the purchase of oil-based energy sources due to the increase in self-generation of renewable energy and the reduction of costs and dependence on water withdrawal through more efficient

practices at the industrial plants (SUSTAINABILITY REPORT, 2021).

Management of Risks and Opportunities

The Company is diligent in seeking to understand how climate change affects its industries, eucalyptus productivity and the areas under evaluation for both expansion and demobilization. The risk analysis uses selected climate projections from several schools of meteorology worldwide and latest warming scenarios (CMIP6) released by the IPCC (Intergovernmental Panel on Climate Change). Studies were conducted in the Research and Development (R&D) team to assess risks under four global warming scenarios (SSP1-2.6; SSP2- 4.5; SSP3 - 7.0 and SSP5 - 8.5), in nine global climate models, and the analyses provided projections for four future periods (2021-2040, 2041 - 2060, 2061 - 2080, 2081 - 2100). The productivity impact analysis was performed using the 3-PG model (https://doi.org/10.1016/j.foreco.2020.117989), a scientifically recognized tool calibrated for environmental and forest conditions to understand the effects of climate change on forest productivity. The results of the multi-model analysis reveal that climate change could adversely affect their operations and assets. For this reason, they have invested in innovations from the point of view of the entire value chain, with a focus on adaptation and mitigation to current climate effects, but also to those expected to occur over a long-term horizon, according to the actions described in the following table.

BOX 01: Actions - Risk and Opportunity Management

Action	Description
Open-air laboratories	Network of Meteorological Stations and Network of Eddy-Covariance Flow Towers that provide continuous records of meteorological variables and carbon exchanges between the atmosphere and the eucalyptus plantations. This methodology allowed the daily monitoring of how a plantation grows according to the climate and provided a more agile and efficient decision making process, which reduces the risks of low productivity.
Euclimate Suzano	Customized climate prediction system for forestry operations. This tool is composed of specific forestry algorithms that convert climate data into information for daily decision-making for soil preparation; fertilization; pesticide application and plantation irrigation, which therefore increases the accuracy of programming; improves logistics and reduces climate risks. Considering the scientific

	updates of global carbon emissions across the globe, we chose to use the pessimistic scenario (RCP 8.5) in our decision making.
UTM Project (Management Technical Units Project)	Machine learning techniques are applied to the zoning of areas under climatic risks that allow us to have greater precision in the forestry technical recommendations.
Genetic Improvement	Maintenance of the genetic improvement program with strategies to select plastic and tolerant clones to adverse conditions, as well as to implement risk mitigation strategies.
Tetrys Tool	Optimize the allocation of your clones through the best interaction between genotypes and environments, based on artificial intelligence. It can rank yield risks to rank clones based on their adaptability and resilience to environmental stresses.
PhenomicS	The company is developing a new technology platform that should produce large-scale phenotyping for pests, diseases and abiotic factors that affect forest productivity. Internalize structure and knowledge on phenotyping for pests, diseases and environmental stress, including evaluation of resilience/resistance/tolerance of genetic materials.

SOURCE: Sustainability Report (2021).

The topic of climate change and its potential effects are considered one of the priority risks for Suzano at the corporate level, and in this sense it has its own structured system for evaluation, treatment (risk response), monitoring and reporting, involving in this process not only the Risk Management area but also several other related areas. Within the risk management process, the risk response stage has the objective of implementing actions and controls that aim to mitigate the risks of climate change, whether through procedures, systems, tools or other measures.

In addition to prioritizing climate risk at the corporate level, the risk management process also foresees specific approaches at the operational level of forestry and industrial production. The R&D technical team performs the identification and monitoring of a series of indicators in order to assess the exposure of forestry operations to climate risks (and also of other environmental dimensions). The identification of relevant variables supports the risk management process, especially the identification and assessment stages (definition of probability and impact), since the data obtained through the indicators are compiled and analyzed, and reported to different company managements (SUSTAINABILITY REPORT,

2021).

CONCLUSIONS

The objective of this article was to highlight through a literature review, in conjunction with a case study of the Suzano Company, the evolution of corporate sustainability. The study was based on the analysis of the Sustainability Report (2021), drawing a parallel between the Global Reporting Initiative - GRI indicators, specifically in the Environmental (GRI300) and Economic (GRI200) dimensions.

For the environmental dimension to be part of the reality of the entire population, it is necessary to preserve natural resources in the production of renewable resources and in limiting the use of non-renewable resources, in this dimension, the Company presents the best result, obtained after the intensification of water management governance in 2021, having achieved an important evolution in relation to the goal set for 2030 of reducing by 15% the water captured in industrial operations.

From the perspective of the economic dimension, sustainability has the power to create a new economy, restructuring categories and behaviors, allowing opportunities to emerge with long-term planning and a competent system of efficiency incentives, the Company reveals the best result, achieved by the group of economic performance indicators, climate change and its potential effects considered as one of the priority risks at the corporate level, and in this sense it has its own structured system for assessment, treatment (risk response), monitoring and reporting, involving in this process not only the Risk Management area as several other related areas.

It is possible to conclude, from the methodological sequence presented herein, that the objectives of sustainability evaluation to assess the growth of organizations toward sustainability and expose to those involved the results of these efforts, especially in the economic and environmental dimensions, in addition to the efforts of the Global Reporting Initiative to develop a quality guide for the preparation of sustainability reports, the company analyzed shows that it meets the GRI indicators and guidelines and provides information through the disclosure of sustainability practices, becoming more transparent, achieving success in its processes, through the assessment of its consumers, employees and stakeholders, from a more comprehensive, standardized, transparent and less transversal report.

In this sense, it is important to register that the compliance risk can be characterized by the probability of occurrence and by the consequences of the non-fulfillment of the organization's compliance obligations is mitigated. Therefore, to adopt well defined risk mitigation strategies is essential to mitigate the potentially harmful effects to the company and, consequently, to improve its results.

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