DOI: 10.5902/ 19834659 15944

ANALYSIS OF DISCLOSURE OF ENVIRONMENTAL INDICATORS OF THE BIGGEST COMPANIES IN THE PULP AND PAPER SECTOR

Received on: 20/10/2014
Approved on: 29/12/2016

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ABSTRACT

This study aims to compare the evidence level of environmental indicators that follow the GRI guidelines, related to the three leading companies in 2012, within the Brazilian pulp and paper industry, Suzano, Klabin and Fibria. To achieve this goal, an analysis of annual sustainability reports and websites of the companies was conducted. The companies primarily reported those aspects related to materials, water, biodiversity and others, while products and services, compliance, and energy were less emphasized. The results show that the three companies presented a low evidence level, with missing or incomplete indicators. Finally, despite the reports presented and classified as A+ and B+, it is possible to conclude that the companies did not include key indicators and presented unorganized information and a lack of standardization.

Keywords: Environmental Indicators. Sustainability Report. Environmental Impact

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1 INTRODUCTION

The pulp and paper sector is a prominent scene in the Brazilian economy, with an annual average growth of 7.1% (cellulose) and 5.4% (paper). Globally, pulp and paper production ranks 9th and 4th respectively. The sector is responsible for 128,000 direct jobs and 640,000 indirect ones, with 220 companies operating in 540 municipalities located in 18 states. Brazil has 2.2 million hectares of forests planted for industrial purposes, particularly within the states of Bahia and São Paulo, which together account for more than 850,000 hectares (BRACELPA, 2014). The planted forests contribute to mitigate the emission of gases from the production stages, absorbing three times more gases than what is generated during the production process. Companies in the sector have been replacing renewable fossil energy, such as biomass, by reducing energy consumption in production processes. To minimize environmental impacts, the industry seeks to reduce and reuse inputs, as well as the reuse of waste for soil protection and recycling of materials. In 2010, 45% of the paper that entered the Brazilian market was recycled (BRACELPA, 2010).

Water is one of the main inputs of the sector, functioning within virtually the entire production process, from the planting of pine and eucalyptus to industrial production. According to BRACELPA (2010), 96.20% of the water used by the companies comes from the rivers. With high water consumption, pulp and paper companies seek to reuse water, reduce production costs, reduce the effluent load to be treated and maximize the availability of water resources for other activities.

Concern with environmental responsibility is growing in the sector due to the appearance of several laws that impose the requirement to protect the environment due to environmental accidents within the country. One of the biggest environmental disasters in Brazil occurred in March 2003, in Cataguases, MG, by Cataguases de Papel. One of the company's dams broke off and released around 1 billion and 400 million liters of black liquor into the tortoise stream and the Pomba River. The accident left three states without water, impacting 600,000 people. There also was a large death toll of animal and vegetable species of the region. The slowness of the analysis of those responsible intensified the impact of the disaster, as it delayed the necessary measures to contain the damage. The company was ordered to pay a fine of 170 million reais (GONÇALVES, 2006).

Given the significant environmental impact of this sector, the research question this study proposes is: what is the quality of the evidence of environmental practices of leading companies in the pulp and paper industry? Sustainability reports consist of providing information that describes an organization's impact in the economic, social, and environmental context. Companies that adhere to the proposed Global Reporting Initiative (GRI) model add credibility to their reports due to the comprehensiveness of the required evaluation indicators, transparency, complying with legislation, and positioning the brand in order to value sustainability in the management of the company (GRI, 2014).

The three companies chosen for the study, Suzano, Klabin and Fibria, are leaders in sales in Brazil in the pulp and paper sector according to Exame online magazine (2012), and are listed in the ISE / BM & FBOVESPA Index and environmental practices through websites and GRI sustainability reports. The main raw material for this sector comes from natural resources and, consequently, environmental degradation is more pronounced. The pulp and paper industry is a sector considered potentially polluting by Federal Law 10.165 / 2000 (BRAZIL, 2000) and as a high risk category A by the Equator Principles (2013).

The objective of this research is to analyze the indicators' evidence through the verifi-

cation of environmental practices of companies operating in Brazil that lead the pulp and paper industry. Three questions must be considered: who is the information intended for, what is the purpose of revealing it and to what extent does it reveal it (TAINO, KRAMER, 2011). The sustainability reports analyzed are from GRI version 3.0, released in 2006; termed "G3."

Through documentary research on sustainability reports and official website of companies studied in the pulp and paper sector in Brazil, the degree of disclosure of environmental indicators and adherence to compliance with the GRI guidelines will be reported.

2 THEORETICAL FRAMEWORK

According to Calixto's (2013) survey, conducted between 2004 and 2009, companies established in Brazil, among Latin American countries, are the most prominent in disclosing information on environmental performance in their annual reports. However, information related to initiatives to reduce natural resources, and energy and water consumption are still insignificant. There is important information concerning the environmental, economic and social dimensions that are no longer divulged by the big companies in their reports and this is due in part to the fact that the information is not mandatory, resulting in a lack of transparency for stakeholders.

Mota, Mazza and Oliveira (2013), conducted a survey of Brazilian companies from various sectors that published a sustainability report in 2009, following GRI guidelines. The companies omitted unfavorable information and emphasized the positive results and there was a lack of mandatory data in the environmental indicators that are essential. The disclosure of the data in tables and graphs left the information confusing. They also affirm that Brazilian companies are in the initial stage of disclosure.

Leite Filho, Prates and Guimarães (2009), carried out a study to analyze the levels of disclosure of the sustainability reports of six Brazilian A+ companies, according to the GRI in 2007. The authors realized that A+ companies did not fully comply with the level of disclosure according to the GRI, and that in many ways, the organizations did not follow the recommendations. From a statistical test that measured the degree of disclosure of the reports with GRI guidelines, it was possible to conclude that the company with the highest level of information has 49% of the ideals proposed by the guidelines. The lack of standardization in the presentation of company reports causes a difficulty in locating the information. The study showed that even though it is an analysis of only six companies considered to be A+, the highest level of disclosure, there are still a number of improvements to be made to excellence in reporting.

In a study conducted by Gasparino and Ribeiro (2007), sustainability reports of the three largest pulp and paper companies in the United States and Brazil in 2004, were compared. The study found that the level of disclosure of the American companies studied is greater than that of the Brazilian companies, although they did not comply with all GRI determinations. Many of the reports from the companies studied in the two countries are subjective and non-standard, making it difficult to understand and compare companies. Also, according to the study, US companies more clearly disclose information regarding the emission of ozone and all hazardous waste therefore, presenting them as more responsible than the Brazilian companies from the socio-environmental point of view.

Freitas et al. (2013), conducted a quantitative approach research with the objective of reporting differences as to how the total disclosure of environmental indicators is presented in companies in Brazil and Spain. The choice of Spain is justified because it is the European country that has the most sustainability reports that follow the GRI standard. The sample consisted of

reports from 280 companies, of which 124 were Brazilian and 156 were Spanish, who published in their respective websites indicators for the year 2009. It was found that the most evidenced indicators consisted of: material groups (EN1 and EN2), energy (EN3 and EN4), water (EN8), emissions, effluents and wastes (EN16, EN18 and EN22), products and services (EN26), compliance (EN28), and more than 60% of the companies studied showed results of these indicators. The indicators most evidenced by Brazilian companies were EN8 (81.4%), EN3 (79%) and EN22 (78.2%), while in Spain the most reported were EN3 (86.5%), EN1 (84%), EN8 (85.3%), EN4 (82%) and EN16 (82%). The results indicate that, although Brazil is an emerging country, Brazilian and Spanish companies presented similarities of the total of environmental indicators evidenced

In the study carried out by Silva, Siqueira and Fernandes (2009), data from sustainability reports were analyzed for six Brazilian companies operating in various sectors: Natura, Samarco, Petrobrás, CPFL, ABN AMRO Real and Souza Cruz. The objective of the study was to list the degree of disclosure of the essential GRI indicators present in the reports, referring to the social, environmental and economic aspects. The degree of full adherence and the degree of effective disclosure are ways of quantitatively measuring information based on GRI indicators, longitudinal analyzes of the same company or to compare with others. The study shows the percentage of essential indicators with full compliance by companies in their reports and also the percentage of effective disclosure. Between 2003 and 2005 Natura achieved a percentage equal to or greater than 88%. Petrobras had indexes between 82% and 88%, and CPFL in the last two years of research presented a 94% index. Alternatively, we highlight Souza Cruz, who in its annual reports did not present information on the economic and social aspects, and therefore ranged from 4% to 6%. The other companies presented indexes ranging from 70% to 85% (Samarco), and a 56% index that remained stable (ABN AMRO Real). Finally, the authors concluded that companies make use of GRI's name for valuing their reports, but in practice they fail to publish essential and additional indicators as proposed in the report methodology.

In 2009, Alazzani and Wan-Hussin (2013), researched sustainability reports from gas and oil companies operating in various countries and established a formal commitment to environmental preservation. The sustainability reports of Chevron, Nexen, Omv, Osl, Oxy, Petronas, Sk Energy, and Total follow the GRI guidelines. Subsequently, a scoring scale was created and the level of disclosure ranged from 2 to 28 points. Chevron reported 28 environmental indicators out of 30 possible in its report. In contrast, OSL registered only two indicators. The other companies, Nexen, Omv, Oxy, Petronas, Sk Energy, and Total reported respectively 7, 18, 14, 16, 24 and 18 indicators. It was observed that the indicators biodiversity (EN13), GHG emissions (EN18), and waste (EN23) were the most evidenced, and that the only indicator not reported by any company was mitigation of impact of products and services (EN27). These companies disclosed their performances in compliance with the GRI, though the scoring system created may be fallible, since data can be reported in full or not, thus making it difficult to score.

Hedberg and Von Malmborg (2003), conducted interviews with all Swedish companies that use the GRI guidelines and concluded that companies disclose corporate social responsibility practices primarily to seek organizational legitimacy, and that the main reason for using the guidelines is the expectation of credibility.

Ahmad, Hassan, and Mohammad (2003), empirically examined incentives that encourage listed companies in Malaysia to disclose environmental information in their annual reports. The results revealed that the voluntary disclosure of environmental information in annual reports is proportionally inversed to the financial performance of companies.

Jose and Lee (2007), conducted a survey of what information companies disclose on

their sites regarding environmental performance. To do so, they searched sites of the 200 largest companies in the world listed in Fortune and analyzed the content of the companies' sustainability reports in seven specific areas: environmental planning, management support for the institutionalization of environmental concerns, specificities of environmental and organizational structures, leadership in environmental activities, environmental control, external validations or environmental program certificates, and forms of corporate environmental disclosures. To address stakeholders and legislation, many of the companies surveyed have incorporated environmental concerns into their environmental management policies, procedures, and systems. There is a long way to go, however, companies are more environmentally sensitive today than in the past.

Cho and Patten (2007), conducted a study on environmental performance in the industry, based on data from KLD Research and Analytics, Inc., to test for differences in monetary and non-monetary litigation related to environmental disclosure. The results indicate that there is variation between groups and, in general, the results provide additional support for the argument that firms use disclosure as a legitimating tool.

Liu and Anbumozhi (2009), conducted a study on the environmental disclosure of Chinese companies based on stakeholder theory and concluded that the higher the economic performance of companies, the more information is reported on environmental investment and pollution control costs. They also concluded that the information related to environmental legislation is the most publicized.

Hossain and Hammami (2009), empirically analyzed the determinants of voluntary disclosure in the annual reports of 25 listed companies in Doha from the Stock Market - DSM in Qatar. They concluded that the age, size, complexity and assets on the site explain the level of voluntary disclosure. Middle Eastern companies that provide voluntary business information build greater confidence in relation to investors in general, particularly in Qatar.

Alvarez and Garayar (2011), carried out a survey on the number of publications of GRI sustainability reports at the international level, and concluded that European companies are the ones that disseminate the most information. Spanish companies are the world leaders in reporting publications in compliance with the GRI. These actions converge with initiatives in the area of social responsibility, ISO 14000 certification, as well as adherence to practices of corporate sustainability.

Braga, Sampaio, Santos and Silva (2011), conducted a survey of 60 companies in the electricity sector that published GRI sustainability reports from 2006 to 2009. The authors developed a Stakeholder Theory model with four variables of control: sustainability report, economic performance, foreign shareholder control and economic group. They concluded that the disclosure of indicators of the National Electric Energy Agency (Agência Nacional de Energia Elétrica - ANEEL) positively influenced the level of disclosure of environmental information in the period. The most appropriate model is random effects, and the variables regulator pressure, sustainability report and performance were significant in this model.

Grecco et al. (2013), analyzed the influence of some factors on the dissemination of information on corporate social responsibility among companies in Brazil and Spain, such as the size of companies, profitability and growth opportunities and found significant differences between companies. This reinforced the role played by public visibility in the development of high-quality information.

Lugoboni, Zittei, Pereira and Rodrigues (2013), conducted a study on the disclosure of sustainable practices of the five largest companies in the paper and pulp segment, from 2008 to

2011. The authors found that there was a significant evolution in the disclosure of the GRI Indicators, while still needing to evolve in relation to social indicators and human rights.

Studies on the evidence of sustainability indicators, particularly those dealing with environmental indicators, point to the lack of information or the partial disclosure of information in these reports. These surveys have pointed out that companies with an A+ application level do not report information in a clear and transparent way to stakeholders.

3 METHOD

The research is qualitative descriptive and characterized as a documentary that, according to Bardin (2010), makes use of varied sources, such as: tables, statistics, reports, newspapers, magazines, films, official documents, letters, reports of companies, among others.

Sustainability reports released by companies and their websites were the main sources of data collection with public information for consultation. An analysis was performed on the reports of the first three in sales of the pulp and paper sector listed in the ISE / BM & FBOVESPA, among the largest companies in Brazil in 2012. According to Bardin (2009), in documentary analysis, the information in the original text allows the creation of common categories to treat the content within identified patterns and infer about the context differently from the original information base.

Table 1 - Higher collections with sales of paper and pulp companies in Brazil in 2012

Major companies in Brazil in 2012	
Company	**Sales**
Suzano	**$2,516,600**
Klabin	$2,038,800
Fibria	$1,931,400
Cenibra	$662,000
Grupo Orsa	$555,900

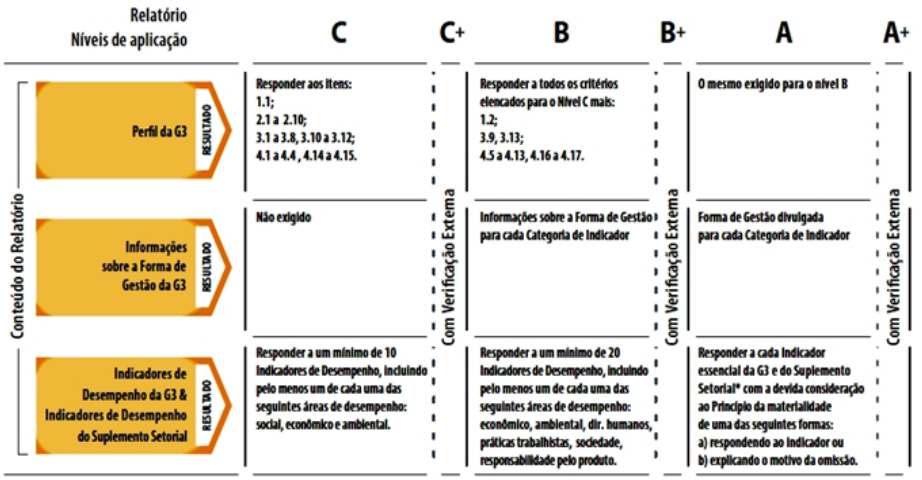
Source: adapted from Exame Magazine (online), 2012

The main source of data was the sustainability report of 2012. As a second option for consultation, in the absence of information in the reports, the websites of the companies studied were searched. The method used in this work for data processing was content analysis (BARDIN, 2010). The analyzed categories seek to establish comparisons between the three companies studied through the analysis of performance aspects of the environmental dimensions: material, energy, water, biodiversity, emissions, effluents and waste, products and services, conformity, transport and general.

4 RESULTS

Companies that use the GRI methodology follow the criteria of the Application Levels for self-declaration, indicating which elements of the GRI reporting framework and guidelines have been addressed. Companies that use the GRI methodology must self-declare, according to the criteria of the Application Levels, which indicate what elements of the GRI reporting structure and guidelines have been applied. The system has three levels: C, B, and A, which correspond to beginner, intermediate, and advanced reports. The company can only include one more point (+) if it uses the report's external verification mechanism, as shown in Figure 1.

Figure 1: Levels of application of a sustainability report (GRI, 2006)



The environmental dimension proposes 30 indicators to be analyzed and refers to an organization's impacts on living and non-living natural systems, including ecosystems, land, air and water. Environmental indicators cover performance related to inputs (such as material, energy, water) and production (emissions, effluents, waste), as well as biodiversity, environmental compliance, environmental expenditures and impacts of products and services (GRI, 2014).

Table 2 presents GRI's environmental performance indicators highlighting the main aspects, relevance and items to be analyzed.

Table 2 - GRI environmental performance indicators

Aspects	Relevance	Code	Items to be analyzed
Materials	Essential	EN1	Materials used, by weight or by volume.
	Essential	EN2	Percentage of materials used that come from recycling.
Energy	Essential	EN3	Direct energy consumption, broken down by primary sources.
	Essential	EN4	Indirect energy consumption, broken down by primary sources
	Additional	EN5	Total energy savings due to improvements in conservation and efficiency.
	Additional	EN6	Initiatives to provide products and services based on energy efficiency or renewable energies and reductions in energy consumption as a result of these initiatives.
	Additional	EN7	Initiatives to reduce indirect energy consumption and reductions achieved
Water	Essential	EN8	Total consumption of water by type.
	Additional	EN9	Water resources significantly affected by water consumption.
	Additional	EN10	Percentage and total volume of water recycled and reused.
Biodiversity	Essential	EN11	Location and area of land owned, leased or managed by the organization within or adjacent to protected areas and in areas of high biodiversity value outside protected areas.
	Essential	EN12	Description of significant impacts of activities, products and services on the biodiversity of areas with a high biodiversity index outside protected areas.
	Additional	EN13	Protected or recovered habitats.
	Additional	EN14	Current and future strategies and programs for managing impacts on biodiversity.
	Additional	EN15	Number of species, in the IUCN red list and in the national list of species conservation, with habitats in areas affected by operations, broken down by extinction risk level.

Emissions, effluents and waste	Essential	EN16	Total direct and indirect emissions of greenhouse gases, by weight.
	Essential	EN17	Other relevant indirect emissions of greenhouse gases, by weight.
	Additional	EN18	Initiatives to reduce greenhouse gas emissions, as well as reductions achieved.
	Essential	EN19	Emissions of substances that destroy the ozone layer by weight.
	Essential	EN20	NOx, SOx and other significant atmospheric emissions by type and weight.
	Essential	EN21	Total water discharge by quality and destination.
	Essential	EN22	Total amount of waste, by type and method of disposal.
	Essential	EN23	Total number and volume of significant spills.
	Additional	EN24	Weight of transported, imported, exported or treated waste considered to be hazardous under the Basel Convention and the percentage of waste transported by ship at international level.
	Additional	EN25	Identity, size, protection status and biodiversity value of water resources and their habitats, significantly affected by water discharges and runoff.
Products and services	Essential	EN26	Initiatives to mitigate environmental impacts of products and services and degree of impact reduction.
	Essential	EN27	Percentage recovered of products sold and respective packaging, by category.
Comformities	Essential	EN28	Amounts involved in the payment of significant fines and the total number of non-monetary sanctions for non-compliance with environmental laws and regulations
Transportation	Additional	EN29	Significant environmental impacts resulting from the transportation of products and other goods or raw materials used in the operations of the organization, as well as the transportation of employees.
General	Additional	EN30	Total costs and investments with environmental protection, by type.

Source: Adapted from Global Reporting Initiative (2013)

The results are compared between the indicators of the companies studied and with research on the disclosure of environmental information in sustainability reports. Table 3 analyzes the level of disclosure of GRI indicators related to environmental aspects, the percentage evidenced in a total way, by research source and by environmental aspect.

Table 3 - Evidence of environmental aspects of pulp and paper companies.
Source: The Authors.

Aspect	Relevance	Indicator	SUZANO	KLABIN	FIBRIA	TOTAL	% report	%website	% Total	
Materials	Essential	EN1 *	2	2	2	6	33%	67%	100%	75%
	Essential	EN2*	1	1	1	3	25%	25%	50%	
Energy	Essential	EN3*	2	1	1	4	50%	17%	67%	37%
	Essential	EN4*	2	1	1	4	33%	33%	67%	
	Additional	EN5	----	1	----	1	0%	17%	17%	
	Additional	EN6	----	----	----	0	0%	0%	0%	
	Additional	EN7	----	1	1	2	0%	33%	33%	
Water	Essential	EN8*	----	2	2	4	67%	0%	67%	67%
	Additional	EN9	2	1	2	5	33%	50%	83%	
	Additional	EN10	----	1	2	3	50%	0%	50%	
Biodiversity	Essential	EN11*	2	2	----	4	33%	33%	67%	63%
	Essential	EN12*	----	2	2	4	67%	0%	67%	
	Additional	EN13	2	2	1	5	50%	33%	83%	
	Additional	EN14	2	1	1	4	42%	25%	67%	
	Additional	EN15	----	1	1	2	33%	0%	33%	
Emissions, Effluents and waste	Essential	EN16*	----	----	1	1	17%	0%	17%	52%
	Essential	EN17*	----	2	----	2	0%	33%	33%	
	Additional	EN18	1	1	1	3	50%	0%	50%	
	Essential	EN19*	----	----	2	2	0%	33%	33%	
	Essential	EN20*	----	----	1	1	0%	17%	17%	
	Essential	EN21*	1	2	----	3	17%	33%	50%	
	Essential	EN22*	1	2	2	5	17%	67%	83%	
	Essential	EN23*	2	2	2	6	33%	67%	100%	
	Additional	EN24	2	----	2	4	33%	33%	67%	
	Additional	EN25	1	1	2	4	50%	17%	67%	
Products and services	Essential	EN26*	1	1	1	3	50%	0%	50%	25%
	Essential	EN27*	----	----	----	0	0%	0%	0%	
Conformities	Essential	EN28*	----	1	1	2	0%	33%	33%	33%
Transportation	Additional	EN29	2	----	1	3	50%	0%	50%	50%
General		EN30	2	2	2	6	67%	33%	100%	100%
		TOTAL	28	33	35		30%	23%	53%	
		%	47%	55%	58%					

*	Essential Indicators
	Sustainability report
	Company Website
	Report and website

----	Not evidenced
1	Partially evidenced
2	Totally evidenced

The indicator EN1, materials used, by weight or by volume, was fully evidenced by the companies. However, only Suzano provided all the information on this indicator in the sustainability report while Klabin and Fibria provided this information through their websites. Suzano reports that 8,150,941tons of renewable materials were consumed for two groups analyzed. The first composed of wood and the second composed of items such as starch, post-consumer shavings, pre-consumer shavings, primary sludge and cellulose. The consumption of non-renewable materials corresponded to 665,379.2t, which involved the following items: caustic soda, sodium sulfate, lime virgin, calcium carbonate, optical bleach, chlorine dioxide, chlorate and sulfuric acid. Klabin reported consumption of 6,522,850t of renewable and non-renewable materials; this group was composed of wood, chips, pulp, sulfuric acid, caustic soda, sodium sulfate, aluminum sulfate, lime and kaolin. Fibria reported that 16 million square meters of wood, 6,541 m^3 of substrate, 379,812t of fertilizers and formicides and 873,765 kg of pesticides and lubricants were consumed. The indicator EN1, although evidenced by the companies, does not have a standard of presentation of results. Suzano discloses the consumption of materials by means of two groups (renewable and non-renewable), Klabin and Fibria divulge the total unifying the two

groups, and Fibria refers to consumption not disclosed by other companies, such as substrates, fertilizers, formicides, pesticides and lubricants.

The EN2 indicator, the percentage of materials used that come from recycling, is presented only partially by companies. Suzano discloses information through its report, Fibria through its website and Klabin through the report and the website. Suzano presents only the index referring to the 1.9% reuse of paper shavings of the Embu unit. Klabin reports that 2.2% of materials are recycled by the company. Fibria reported that it reused 65,150t of waste in plantations, 100% of lime sludge, almost 100% of biomass boiler ash and 25% of dregs and grits. It can be seen that the EN2 indicator is not presented in full by the three companies, as Suzano only discloses the reuse of the Embu unit, Klabin does not inform which materials are considered for quantification, and Fibria does not disclose the total percentage in relation to all the materials considered in the analysis and does not mention the percentage of reutilization of residues in plantations.

The Energy aspect, indicator EN3, direct energy consumption, broken down by primary sources, was fully evidenced by Suzano and partially by Klabin and Fibria, and Suzano and Klabin published via sustainability reports and Fibria via the website. Suzano was the company that reported the highest direct consumption of energy, consuming 3,119,452,318 gigajoules in all its units, Fibria consumed 93,871,049 gigajoules, and Klabin reported a usage of only 36,790,330 gigajoules. The values obtained were summation results from the sources reported by the companies, but it is not possible to know the reason for the large difference in the totals.

In the EN4 indicator, indirect energy consumption, broken down by primary source, information on total indirect energy consumption was made available in full by Suzano and Fibria, while Klabin made partial mention. The information was taken from the Suzano report and the websites of Fibria and Klabin. The company that consumed the most energy was Suzano, totaling 7,817,452 gigajoules, followed by Klabin, which consumed 3,177,000 gigajoules and Fibria, totaled 354,548 gigajoules. Klabin did not provide the sources of indirect energy consumption considered in the reported total value.

The EN5 indicator, total energy saving due to improvements in conservation and efficiency, was not evidenced by the companies Suzano and Fibria, while Klabin mentioned in its sustainability report in a vague way that there was no energy saving.

The EN6 indicator, initiatives to provide products and services based on energy efficiency or renewable energy and reductions in energy consumption in results of these initiatives, was not evidenced by any of the companies studied.

Suzano has not made available data on the EN7 indicator, initiatives to reduce indirect energy consumption and reductions achieved, while Fibria and Klabin informally report in their sustainability reports that it has not planned measures to reduce energy consumption (Fibria) and that it did not have a reduction in energy consumption (Klabin). It can be deduced that indicators EN5, EN6 and EN7 were not analyzed by the three companies because they are complementary, or they were analyzed, but they did not obtain satisfactory results, therefore, they chose not to divulge the data obtained.

Indicator EN8, total water consumption, by source, was not evidenced by Suzano and Klabin and Fibria fully disclosed this data on their websites. Klabin reported all the sources considered in the quantification, which totaled a consumption of 69,089,689 m^3 of water in the year 2012, while Fibria reported a total consumption of 144,850,636 m^3.

The EN9 indicator, water resources significantly affected by water consumption, is reported by the three companies, completely by Suzano and Klabin and partially by Fibria. Suzano released information in its report and Klabin and Fibria on its websites. Suzano reports that it has

totaled 477,632.33 m³ / h of affected water resources, including the Tietê, Mucuri and Piracicaba rivers, Klabin informs that there are no bodies of water significantly affected by the withdrawal of water for use in the production process. Fibria reports that the Aracruz unit does not affect the region's water resources, and the Jacareí and Três Lagoas units have little impact, as evidenced by water samples from the affected rivers. Suzano was the only company that measured the water resources affected, Klabin reports that few bodies were affected, but it does not mention which ones. Fibria specifies the intensity of the affected rivers.

In the EN10 indicator, percentage and total volume of water recycled and reused, Suzano is the only one among the three companies not to disclose information about the item. Klabin and Fibria disclose through their websites, with Klabin reporting in part and Fibria in full. Klabin reports that 22,799,597 m³, which corresponds to 33% of total water consumption, were recycled and reused. Fibria reports that it recycled or reused 141,899,024 m³, which corresponds to 76% of the total water consumed, and that this total is reused 4.2 times before being returned to the river. There is a large difference in reported totals. The reuse in m³ of Fibria corresponds to just over six times that of Klabin. Meanwhile, the total in percentage represents more than double the disclosure by Klabin.

The EN11 indicator, location and area of lands owned, rented or administered by the organization within or adjacent to protected areas and in areas of high biodiversity index outside protected areas was evidenced by both Suzano and Klabin. The information was disclosed in Suzano's sustainability reports and on the website by Klabin. Fibria did not present data on the indicator. Suzano reported that on the adjacent conservation area, the company has 12 units corresponding to 32,194.87 hectares, mainly between parks and reserves present in the states of São Paulo and Bahia. Klabin announced that it has a reserve in Paraná with 3,852 hectares and is registering for the acquisition of another one in Santa Catarina that has 4,920 hectares. The total reported by Suzano is much higher than that of Klabin, since it represents not only more units but also total hectares related to the item.

Indicator EN12, a description of the significant impacts of activities, products and services on the biodiversity of high biodiversity areas outside protected areas, is presented in full by Klabin and Fibria on their respective websites. Klabin said it generated several environmental impacts such as: waste disposal, leaks, emissions of gases and effluents, impact on fauna and flora, noise discomfort, and noise and water flow. Fibria reports that the most common impacts of forest operations are changes in fauna and flora, alteration of the landscape, alteration of aquatic fauna and flora, physical and chemical alteration of the air, intensification of climate change and chemical, physical and microbiological alteration of the soil, although, it was not clear when reporting that these are the impacts generated by the company. Suzano did not present data on this indicator.

The EN13 indicator, protected or recovered habitats, was fully evidenced by Suzano and Klabin and partially by Fibria, with Suzano and Fibria presenting the data in the sustainability report and Klabin on the website. Suzano reports that it has 20 legal reserves distributed in the states of São Paulo, Maranhão and Bahia, and Klabin reports that it has permanent preservation areas in Paraná and Santa Catarina. Fibria only mentions that protected habitats are within the area of its units, reporting that 293,707 hectares of habitats have been protected or recovered. Although Suzano and Klabin have correctly evidenced this item, one can notice a large difference in the amount of habitats protected or recovered from Suzano in relation to Klabin. It is also noted that Fibria vaguely discloses protected habitats, choosing to quantify rather than name habitats.

In the EN14 indicator, current and future strategies and programs for managing impacts

on biodiversity, Suzano and Fibria provided full information, while Klabin made partial disclosure. Suzano provided data through its report and Klabin through its website and Fibria through its website and report. Suzano has an area located in Bofete (SP), which in 2010, was converted into a Private Reserve of Natural Heritage, with the objective of preserving the region's biodiversity. Initiatives were introduced to restore legal reserve areas, to adopt practices such as maintenance of machinery and equipment carried out far from water courses, harvesting of selected trees in order to avoid damages to native vegetation among other practices. Klabin has two Private Reserves of Natural Heritage, located in Monte Alegre (PR) and Lages (SC) and informs that it does not carry out impact activities in areas adjacent to preserved areas. Fibria in 2012, began the strategic plan for biodiversity research that aims to conduct a survey of biodiversity, biological survey, studies of endangered species and evaluation of the impact of management of eucalyptus. It uses ecological corridors contributing to the displacement of the animals, uses trees that have their fruits consumed by the native fauna, as well as maintenance of eucalyptus stands, which are also consumed by the local fauna. Suzano and Fibria report in a comprehensive way the management of impacts, while Klabin reports in an ambiguous way that it does not cause impacts on the adjacent activities to the preserved areas, failing to specify which activities it performs in order to reduce impacts on biodiversity.

Indicator EN15, number of species, in the IUCN red list and in the national list of species conservation, with habitats in areas affected by operations, broken down by level of extinction risk, was partially presented by Klabin and Fibria by means of sustainability reports, while Suzano did not provide information on this indicator. Klabin states that, at the end of 2012, it had 1,432 animal species and 2,073 plant species in its areas of activity, while Fibria registers the presence of 680 species of birds, of which 21 are threatened, 132 species of mammals, and 1,920 species of plants. Both Klabin and Fibria elaborated the count of affected species, but Fibria failed to classify species by extinction risk, and Klabin distinguished only bird species.

EN16, total direct and indirect emissions of greenhouse gases by weight, Fibria informs through its annual report that it directly issued 1,144,096 tons of CO^2 and indirectly 642,534 tons of CO^2. Suzano and Klabin opted not to disclose data on this indicator.

Fibria and Suzano do not report the relevant emissions of greenhouse gases generated in relation to EN17, other relevant indirect emissions of greenhouse gases by weight, Klabin already informs indirect consumption from the transport of products of 80,700 tons of CO^2.

As for indicator EN18, initiatives to reduce greenhouse gas emissions, as well as reductions achieved, the three companies present in their reports initiatives to reduce greenhouse gases, however, they do not report the GHG reductions achieved. Suzano informs that two of its products produced at the Mucuri Unit, and Suzano Pulp and Paper, had more than 30% of waste reused in the generation of energy, contributing to the reduction of GHG. The Report, Symetrique and Alta Alvura papers produced at the Suzano Unit contributed to the reduction of GHG since there was a reduction in the consumption of fossil fuels from the energy unit of the production unit. Klabin informs that it has made increasing use of black liquor, biomass and its own hydropower, thus contributing to GHG reduction. Fibria has Odor Perception Networks in the industrial process that captures odors in factory environments. In addition, the company informs that its energy matrix is based on the use of renewable and non-emitting GHG resources, such as wood and black liquor.

The indicator EN19, emissions of ozone-depleting substances by weight, is partially addressed by Fibria on its website, the company only informs that it does a monthly control of the emission of black smoke, destroying the ozone layer, using the Ringelmann scale. Suzano and

Klabin have chosen either not to control emissions of ozone-depleting substances or to disclose data on the subject. Regarding the item EN20, NOx, SOx and other significant atmospheric emissions by type and weight, only Fibria informs the amount of NOx and SOx emitted. The company issued 3,257,133 kg NOx (NO and NO2) and 1,415,420 kg SOX (SO and SO2) added to the units of Aracruz, Jacareí and Três Lagoas.

Regarding the EN21 indicator, total water discharge, by quality and destination, Suzano and Klabin disclose information in their reports. However, only Klabin presents in full form, informing the total of discarded water and its destination, 55,193,932 m³ of water in its treatment and effluent treatment station. Suzano does not mention the fate of the water and announces a flow of 630,150 m³ liquid effluents discarded, added to its units and disregarding the values that were not disclosed of the Units of Embu and Limeira. It also discloses that between organic loads in the final effluent, chemical oxygen demand in the final effluent and absorbable halogens in the final effluent (data on absorptive halogen-free frame units of the company were not disclosed), 38,270.30 tons were discarded. Fibria does not mention data on the indicator on its website or report.

The EN22 indicator, total amount of waste, by type and method of disposal, is addressed by the three companies, however, only Klabin and Fibria report fully. Suzano reports in part since it reports only the total amount of waste produced by its units, without informing what the waste is and how it is disposed of. Suzano produced 734,081.30 tons of waste. Klabin reports separately the tons of waste and miscellaneous materials produced by the company, stating whether they are recycled, incinerated or disposed of in various types of landfills. Fibria states that 913 tons of non-hazardous waste are taken to landfills and the total in tons of hazardous waste generated by the use of oil, the use of industrial towels and contaminated fuels are respectively refined, reused and incinerated. The company also reports that 937.12 tons of hazardous waste is disposed of in landfills.

On the EN23 indicator, number and total volume of significant spills, all the companies studied stated on their websites that there were no significant spills in the year 2012. As the indicator is not clear about what could be considered a significant spill, this encourages the companies to disclose data on the indicator.

Indicator EN24 refers to the weight of transported, imported, exported or treated waste considered hazardous under the Basel Convention and the percentage of waste transported by ship. Suzano reports the weight of 578,199.55 tons of waste transported, imported, exported or treated in accordance with the Basel Convention plus the units of Mucuri, Suzano, Rio Verde, Embu and Limeira. Klabin and Fibria do not disclose data on the indicator, which indicates that it does not transact waste falling within the Basel Convention.

EN25, identity, size, protection status and value for the biodiversity of water resources and their habitats, significantly affected by water discharges and surface runoff, Suzano fails to inform the bodies of water affected by some units and reports only to the Suzano Unit. In this unit, 2,795 m³ / h were discarded or drained affecting water bodies. Fibria declares the amount of effluents discarded from all its units and their respective receiving water bodies, which include the Atlantic Ocean, the Paraíba do Sul River and the Paraná River. Klabin declares that it does not significantly affect the bodies of water that receive the effluents generated by its factories, not making it clear what the impact of this indicator is.

Indicator EN26, initiatives to mitigate the environmental impacts of products and services and degree of impact reduction, was presented in a partial way by the three companies through their sustainability reports. Suzano reported that it invested more than $19 million in

operational improvements aimed at reducing the environmental impacts caused by the company. Klabin reported several actions aimed at reducing environmental impacts, such as: providing operational and technical recommendations to reduce and contain the pollution generated in its activities, environmental control facilities that reconcile legal requirements, and seeks to make controlled use of chemicals used in the control of hazardous substances. Fibria invested just over $212 million in environmental treatment and biodiversity control projects. The company informs that there were restoration of hectares, reuse of water and reuse of 73.3% of the waste generated. None of the companies cited the degree of impact reduction. Suzano reported on how much was invested and failed to report which initiatives have reduced impacts, while Klabin reported only the initiatives undertaken. Fibria was the company that best detailed and invested more in the reduction of impacts.

The indicator EN27, percentage of products sold and their packaging, by category, was not evidenced by any of the three companies. The companies likely chose not to disclose this indicator due to the difficulty in measuring or because they did not reach satisfactory values.

Indicator EN28, amounts involved in paying significant tax debts and the total number of non-monetary sanctions for non-compliance with environmental laws and regulations was partially presented by Klabin and Fibria on its websites, while Suzano did not disclose information about the indicator. Klabin reported that it had a fine of R $20,000.00 for infringing Article 66 of Decree 6,514 / 2008, while Fibria has four administrative proceedings in progress, with a total fine of R$664,221,550.92 and year of 2012, there was no payment of a fine.

EN29, significant environmental impacts resulting from the transportation of products and other goods or raw materials used in the operations of the organization, as well as the transport of employees, is fully evidenced in Suzano's report, partially in the Fibria report, while Klabin does not report information on this indicator. Suzano reports that there were no significant accidents and impacts on timber transport. Fibria presents the index of 0.98,1,16 and 1.33 accidents per million kilometers driven in the transportation of wood in the Jacareí, Três Lagoas and Aracruz units, respectively. Fibria does not report the impacts of accidents and does not disclose employee transportation information.

Overall, the indicator EN30, total costs and investments with environmental protection, by type, all companies have adequately reported costs and investments with environmental protection. Suzano states that it has expenses with production, operation, programs and external projects, such as: energy, water, effluents, emissions, environmental studies and monitoring, recovery and protection of natural areas, environmental management, and environmental education, among others. These investments together total an expense of approximately $90 million reais for the company. Klabin spent approximately R$ 133 million with a variety of sources, including: waste management, treatment of atmospheric emissions, remediation costs, prevention costs, and environmental management expenses. Fibria reports an estimated cost of approximately $30 million reais plus the costs of all its units with monitoring and environmental studies, recovery of degraded areas and protection, environmental management, waste, emissions, and studies, among others.

5 ANALYSIS AND DISCUSSION OF RESULTS

Survey data show that there is no mandatory data that is essential in GRI reporting. Research carried out by Mota, Mazza and Oliveira (2013), on Brazilian companies from various sectors, shows the difficulty in gauging the importance of information for company and society through disclosure in graphs and tables. In the analyzed reports of the three companies, some of the charts and tables used do not provide clear or complete information. Klabin's report, for example, on a bar chart with information on indicators EN3 and EN4 shows consumption in gigajoules of renewable energy generated, non-renewable energy generated and energy purchased. The X-axis marks intervals of 5,000 gigajoules that only give us a notion of the amount of energy consumed, making it impossible to specify values, only allowing for an estimation since this information is also not included in the text of the report. By viewing the company website it was possible to observe the values accurately in a table that could be incorporated into the report to facilitate obtaining the information. Regarding the absence of evidence of essential indicators, also pointed out by Mota, Mazza and Oliveira (2013), of the 17 essential indicators, only indicators EN1 and EN23 were correctly evidenced simultaneously by the three companies. In addition, the EN23 indicator is considered complete by the companies because they did not consider their spills significant.

Research published by Freitas et al. (2013), found that the indicators evidenced in more than 60% of companies were EN1, EN2, EN3, EN4, EN8, EN16, EN18, EN22, EN26 and EN28. The indicators most evidenced by Brazilian companies were EN3, EN8 and EN22 and by the Spanish were EN1, EN3, EN4, EN8 and EN16. Analyzing Table 2, the indicators were divided into three groups that obtained more than 60% of the evidence. The most evidenced group, with 100%, was composed of EN1, EN23 and EN30. The next group, with 83%, includes indicators EN9, EN13 and EN22. The last group, with 67% of evidence, was composed of EN3, EN4, EN8, EN11, EN12, EN14, EN24 and EN25. It is also noticed that indicators EN1 and EN22 were highly evidenced, as in the research conducted by Freitas et al. (2013), but the indicators EN9, EN13, EN23 and EN30 that represent more than 80% of the evidence, differ from the results presented by the research in question. While the research of Freitas et al (2013), studied 280 national and international companies that integrated diverse sectors, the research in question counted only national and specific companies of the sector of pulp and paper.

Table 4 - Indicators more evidenced by the three companies studied.

Code	Indicator	%
EN1	Materials used, by weight or by volume	100 %
EN23	Total number and volume of significant spills	100%
EN30	Total costs and investments with environmental protection, by type	100%
EN9	Water resources significantly affected by water consumption	83%
EN13	Protected or recovered habitats	83%
EN22	Total amount of waste by type and method of disposal	83%
EN3	Direct energy consumption, broken down by primary sources	67%
EN4	Indirect energy consumption, broken down by primary sources	67%
EN8	Total water consumption by source	67%
EN11	Location and area of land owned, leased or managed by the organization within or adjacent to protected areas and areas of high biodiversity value outside protected areas	67%
EN12	Description of significant impacts of activities, products and services on the biodiversity of areas with a high biodiversity index outside protected areas	67%
EN14	Current and future strategies and programs for managing impacts on biodiversity	67%
EN24	Weight of transported, imported, exported or treated waste considered to be hazardous under the Basel Convention and percentage of waste transported by ship at international level	67%
EN25	Identity, size, protection status and biodiversity value of water resources and their habitats, significantly affected by water discharges and runoff	67%

Source: The Authors.

Results of the survey show that the companies studied, Suzano and Fibria, which have A+ ratings, and Klabin, which has a B+ rating, 53% were evidenced (Table 4), however, if we consider the exclusive disclosure of sustainability reports, we reach the index of only 30% of evidence reported (Table 4). The lack of standardization was also evidenced in the study, since in several cases, the same indicator of the three companies analyzed alternated between several measurement methods and different ways of explaining them, using graphs, tables, figures and running text. The results corroborate the research of Leite Filho, Prates and Guimarães (2009), which showed that even A+ companies did not fully demonstrate the indicators, and the company with the highest degree of disclosure had only 49% of the ideal proposed by the GRI guidelines. There was also a lack of standardization of reports, causing difficulty in locating information.

The research carried out by Silva, Siqueira and Fernandes (2009), observed the three years of study in which Natura obtained an index equal to and greater than 88% of evidence of the essential aspects, CPFL in 2004 and 2005, where it obtained 94% of disclosure, and Petrobras showed rates between 82% and 88%, nevertheless, companies still fail to disclose essential information. In comparison with the study, four of the six companies analyzed had indicators of significantly higher indicators than the results of the survey, in which Suzano, Klabin and Fibria presented the indices of 41%, 62% and 56%, respectively.

In a study conducted by Calixto (2013), Brazilian companies have made efforts to disseminate results on emissions of liquid effluents, certifications and environmental management. Conversely, it points out that there is a lack of information on the reduction of consumption of

natural resources, energy consumption and water. In the study, it was possible to verify more differences than similarities with the conclusions of Calixto (2013). The research highlights the level of evidence of the following aspects: materials, water, biodiversity and general. According to Table 1, all of them have more than 60% of evidence reported, considering the means of summation of the essential and complementary indicators contained in their aspects. As a negative highlight, with less than 40% evidence of its indicators, are the energy, products and services and compliance aspects.

The absence or inclusion of information may be related to negative and positive aspects for the company. Indicator EN30, which refers to the total costs and investments with environmental protection, was evidenced in its totality by the three companies and can be considered a positive indicator for the organization. While EN28, considered a negative factor for the company's image of referring to fines payments and non-monetary sanctions for non-compliance with environmental laws and regulations, was not reported by Suzano and had only partial reports from Klabin and Fibria. This situation is repeated with other indicators, such as EN13 and EN17. The first makes reference to habitats protected or recovered by the company and had 83% of evidence. The second one, which refers to indirect emissions of greenhouse gases and is therefore considered not beneficial to the organization, had a percentage of disclosure of only 33%. In a comparative study between the three largest Brazilian and US companies in the pulp and paper industry, Gasparino and Ribeiro (2007), concluded that US companies more clearly disclose negative information for companies, such as the emission of ozone and all hazardous waste, more than Brazilian companies.

Indicators EN1, EN23 and EN30 were 100% evidenced by the three companies studied, while indicators EN6 and EN27 were not evidenced by any (table 1). In the survey published by Alazzani and Wan-Hussin (2013), carried out with eight multinational oil and gas companies, indicators EN13, EN18, EN23 were more evidenced, while EN27 was not reported by any company. As a conclusion, the authors noted that companies have made only reasonable efforts to disclose their environmental performance, and that the scoring system may be fallible because it considers only two levels of scale, evidenced or not evidenced. The score in Table 1 presents an intermediate level of measurement, seeking to report more specifically the degrees of evidence.

6 FINAL CONSIDERATIONS

The objective of this research was to analyze the degree of disclosure of environmental indicators proposed by GRI of the three main national companies in the paper and pulp sector. For that, analysis of the environmental practices of Suzano, Klabin and Fibria were carried out for the year 2012. There was a need to look for additional information on the companies' websites, since the reports provided only 30% of disclosure. Even with the inclusion of this information, it was verified that several indicators were not disclosed or contained incomplete information, reaching the low rate of 53%. Some of the indicators were not reported or were grouped together, making it difficult to relate the information to the corresponding indicator.

According to the data, GRI A+ and B+ application levels are questionable since, even though they are companies with similar market shares, some information on the indicators presented a discrepancy in results, as well as different methods of measurement for the same indicator. Only Suzano presented the summary of the GRI containing, in addition to the pages where the information was to be found, the level of reporting. Although we did provide the summary, some information was not found. The Klabin and Fibria reports had less volume content, and the

environmental indicators were summarized in only two pages in the case of Klabin and fifteen in the case of Fibria. In this way, the website provided important additional information of the two companies in a more direct and specific way.

As a result of the research, it is noticed that the material aspects: water, biodiversity and general are the most evidenced by the companies, while the aspects products and services: conformities and energy have low levels of disclosure. It was observed that some indicators of the GRI report are described in a way that allows companies to avoid disclosure, in that when using the term "significance" and "derivatives" in their description, interpretation is open since it is at the discretion of the company to decide the level that it considers as significant.

The results of the research point to opportunities for improvement in data disclosure of sustainability reports, since the deficiencies diagnosed in the data contribute to the improvement and standardization of the information evidenced by the companies.

Finally, we suggest for future studies on sustainability indicators, focusing on environmental aspects that carry out multiple case studies to understand the reasons for the absence or partial reporting of information obtained in reports and on websites. These in-depth studies can, for example, point out if information is missing from the reports or if companies do not have programs and results on the indicators analyzed.

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