Payment for environmental service, fair value and market value: a typological study of paper segment industry

Pagamento por serviço ambiental, valor justo e valor de mercado: um estudo tipológico da indústria do segmento de papel

DOI:10.34117/bjdv8n2-292

Recebimento dos originais: 07/01/2022
Aceitação para publicação: 18/02/2022

Janayna Rodrigues de Morais Luz
Universidade Federal de Campina Grande, Brasil
ORCID: https://orcid.org/0000-0002-0859-6297
E-mail: janarodrigluz@gmail.com

Isabel Lausanne Fontgalland
Universidade Federal de Campina Grande, Brasil
ORCID: https://orcid.org/0000-0002-0087-2840
E-mail: isabelfontgalland@gmail.com

ABSTRACT
Payment for Environmental Services became law in Brazil in 2021 (14,119/21). Thus, a milestone is installed in the treatment of relevant environmental aspects. In this context, the quality of environmental information must be seen as a business language at the international level. Therefore, this research seeks to investigate it seeks to understand the typological alignment applied in the texts of Law 14.119/21 in relation to the theoretical framework on the IFRS standard that deals with fair value: Fair value CPC 46 - Fair Value Measurements (financial instruments); IFRS 13 Fair Value Measurement and Biological Assets (Plants and Animals) CPC 29 - IAS 41. For methodology, case studies were used with Klabin SA as the object and an analysis of the document type was also carried out in the text of the Payment Law environmental services (PSA) and the quarterly report of a potentially polluting company in the pulp and paper segment. Through the discussions and the results, it was possible to verify that some aspects related to financial information (fair value and market value) were not taken into account in the wording of the aforementioned Law. It was also observed that the PES Law outlines more environmental issues than those observed by the company in question.

Keywords: Fair value, Market value, Biological assets, Law 14.119/21.

RESUMO
O pagamento por Serviços Ambientais tornou-se lei no Brasil em 2021 (14.119/21). Assim, um marco é instalado no tratamento de aspectos ambientais relevantes. Neste contexto, a qualidade das informações ambientais deve ser vista como uma linguagem de negócios em nível internacional. Portanto, esta pesquisa procura investigar o alinhamento tipológico aplicado nos textos da Lei 14.119/21 em relação ao marco teórico da norma IFRS que trata do valor justo: Valor justo CPC 46 - Fair Value Measurements

(instrumentos financeiros); IFRS 13 Fair Value Measurement and Biological Assets (Plants and Animals) CPC 29 - IAS 41. Para a metodologia, foram utilizados estudos de caso com a Klabin SA como objeto e uma análise do tipo de documento também foi realizada no texto do PSA (Payment Law Environmental Services) e no relatório trimestral de uma empresa potencialmente poluidora no segmento de celulose e papel. Através das discussões e dos resultados, foi possível verificar que alguns aspectos relacionados às informações financeiras (valor justo e valor de mercado) não foram levados em consideração na redação da referida Lei. Observou-se também que a Lei de PSA delineia mais questões ambientais do que aquelas observadas pela empresa em questão.

Palavras-chave: Valor justo, Valor de mercado, Ativos biológicos, Lei 14.119/21.

1 INTRODUCTION

The Brazilian Environmental Services Payment Plan (PSA) aims to outline the subject economic instrument for environmental protection, as well as the systematic view of environmental management described in the Federal Constitution that establishes the shared responsibility between the government and the collectivity for the maintenance of the environment ecologically assigned to the Public Ministry.

Among the economic instruments, the PSA offers positive incentives for recovery practices, maintenance and improvement in systemic services described in the Brazilian Forest Code and the regulation of the National Policy on Solid Waste - PNRS.

The new environmental policy aims to elaborate the manual (PPSA) in the following perspectives: ecosystem services and economic instruments and PES. First, the elaboration of the classification of relevant ecosystem services is observed to delineate the main categories: provisioning services (wood, water, food), regulating services (climate, disease control), supporting services (water cycle and soil formation) and cultural services (spiritual and receptive activities).

The manual (PPSA) presents the ecosystem services related to existing environments: wastewater treatment, food production, carbon sequestration, climate regulation, and tourism and recreation (Marine). Highlights include forests, grasslands, wetlands, lakes and rivers.

It is important to note that PSA has recently establish practices of operating companies in the country and have also boost the incremental investments in licenses and accreditations. Nevertheless, the pricing issue, must be observed in the market perspective, creating the need for research in the field of typology on market value and PSA. Correlating these concepts, becomes environmental impact assessment criteria a

relevant tool in the decision-making process. In this perspective the charging for water use, the use of green roof, carbon credit market emphasizes the application of PES, establishing the limits of emissions. Thus, the aspects raised by the economic instruments are effective in situations that offer benefits to increase the ecosystems: water, soil to protect native species, through reforestation, recovery, water treatment.

Accounting standards, rules and laws, change the costs and benefits of various courses of action. Voluntary and mandatory labels are frequent accounting choices. The standards of accounting policies evidenced by accounting history for investment tax credit, depreciation, inventories, oil and gas exploration expenditures, and stock-based employee compensation (Sander, 2004).

According to Paulo & Leme (2007) discretionary accruals (are proxies for managers' opportunistic behaviors) and the results obtained verified that publicly traded companies that obtained losses and/or large variability in results postponed the publication of financial statements and disclosed after the deadline established by the relevant accounting regulation.

It is worth pointing out that the PSA is a voluntary policy of the company, showing a predisposition of the company to change behavior, change of attitude, and the mentality of the managers towards less polluting actions. However, the great fragility concerns the public management as to the origin of the resources destined for mitigating actions regarding the Environmental damage. Thus the problem of this research is born: What are the typologies used in Law 14.119/21 and in the Quarterly Report (ITR August 2021) on PES, fair value and market value of a company in the pulp and paper segment in Brazil? Therefore, the objective of the study was to understand the typological alignment applied in the texts of Law 14,119/21 in relation to the theoretical framework on the IFRS standard that deals with fair value: CPC 46 Fair Value Measurements (financial instruments); IFRS 13 Fair Value Measurement and Biological Assets (plants and animals) CPC 29 - IAS 41.

2 FRAMEWORK AND CONTEMPORARY STATE OF ART

The fundamental concepts of accounting can be interpreted in the language of social sciences such as entity, monetary valuation, competence and uniformity, greatly reducing the confusion of categories such as postulates, principles, doctrines and characteristics of accounting into a simpler classification of economic conventions and

characteristics. The concepts such as uniformity and comparability should be observed for accounting information (Sunder, 2014).

The application of fair value and studies on its application are not recent, especially in the United States, through the IASB (International Accounting Standards Boards). In Brazil this criterion was introduced in financial institutions in 20012002 by the central bank for operations with derivatives and securities. In 2007 with the alteration of the Corporations Law they started to adopt the fair value standard similar to what happened in Europe in 2005. (Marques, Schultz, Dandolini & Petri, 2012).

For Braga, Sousa and Alves Filho (2015) the discussions of the concepts of assets and their measurement are treated by Martins (2000) and Hendriksen and Van Breda (2012); that the market measurement criterion is not a current issue based on SFAS 133 (Accounting for derivative Instruments and hedging Activities) that deals with derivative accounting and other financial instruments, measurement, judgment, subjectivity (Lopes & Martins, 2012; Iudicibus & Martins, 2007).

Braga and Souza (2012) address the concern regarding the conceptual understanding and practical foundations of fair value. Note that there are criticisms of fair value in specific economic contexts, such as those of financial crisis, and the use of judgment and subjectivism, which are not common in the Brazilian accounting context, and may lead to improper practices. Therefore, the need for further debate in the scientific sphere and not to abruptly break with methods based on historical cost.

Accordingly with David Procházka (2014) fair value is a limited but also is a closest economic measurement of sustainable companies. “Measurement of accounting elements is one of the crucial factors in the process of preparing fi nancial statements, which fairly present economic activity of an accounting entity. Elements of fi nancial statements can be measured by various attributes, corresponding to the nature of an element and the purpose for which the element has been incurred by entity. The reliability and relevance of the attribute measured are the key points of measuring assets, liabilities, equity and other elements (Procházka, 2014. p71)”

Likewise Procházka (2014) emphasized “The mutual relation between capital and income was firstly scrutinized by the economist Irving Fisher (1906 and 1930) who asserted that value of capital is equal to discounted (capitalized) value of future incomes. Interest rate fulfils ls a function of the bridge connecting income and capital. Modern economic theories define income (profit) in terms of capitalized value of a company net asset (or capital). If the value of capital at the end of the period is higher than it was at the

beginning of the period, entity has experienced profit. Economic profit t represents the increase in wealth of an entity. Accounting theory tries to offer an income concept, which respects economic characteristics of business on the one hand and which is operational in practice on the other hand. The first major attempts in this fi eld were introduced by Edwards and Bell (in year 1961) and Chambers (in year 1966). Chambers (1974, pp. 220-227) operates with current cash equivalents in his income theory. Chambers calls for the use of one single measurement attribute. For the reason of evaluating the entity´s ability to engage in relations with other market participants, Chambers favors current cash equivalents, i.e. realizable price. …extend his theory to whichever measurement basis and thus derive a general definition of accounting income (Prochaska, p.75)".

With regard to PSA, the study by Garrido et. al., (2021) deals with the current conjecture of the ICMS-E as a tool for environmental management demonstrating the efficiency of policies need for a legal device that regulates the sustainable development of the state of Paraiba. In this sense, the study reinforces that stimulating and adopting postures of protection of ecosystem services is relevant to minimize the market failure in not rewarding the providers of environmental services.

Nevertheless, awareness of the nature of the threat is still very limited. This is the age of experts: each of them sees his own problem and is either unaware of the bigger picture into which it fits or refuses to appreciate it. Also, an era dominated by industry, where winning at any cost. It is up to the population to take the risks and need to decide if they wish to continue on the current path (Carson, 2010).

Therefore, in 2021, the approval of Law 14.119/21 comes to settle the absence of environmental regulation, as well as create tax mechanism of environmental management to encourage the conservation and preservation of the environment. In this sense a typological study was composed in regard to observe if the theoretical framework of fair value and market value were aligned with the text of the PSA Law. Table 1 deals with scientific research on the segment studied.

Table 1.

Studies related to the case study

Related studies to the case study at the International and National levels			
Study	**Authors/Year**	**Objectives**	**Main Results**
Power Alliances for Biodiversity: Results of an international study on community forestry.	Stanzel, krott and Schusserb (2020).	Identify the key actors that influence the decision-making process of community forest biodiversity. Definitions of social and political actors. Based on stakeholder theory.	Factors such as size, participation and potential of forests are related to the power of powerful actors in protecting biodiversity in community forestry. A power interest interrelationship analysis called the Powerful Interest Desired Outcome (PIDO) was conducted: the high outcome (+1); the intermediate outcome (1); the low outcome (-1) and the specific outcome (0).
Biological Assets	Amaral et al. (2015).	Scope of CPC 29, definitions and requirements of biological assets.	Price variation, fair value, hierarchy level, judgment assumptions and profit reserve, market price fluctuations and associated factors period 2009 to 2012.
Disclosure of Biological Assets - Renar Maças S.A., Suzano Papel e Celulose S.A. and Duratex S.A.	Lemes et. al. (2014).	Evidence of valuation assumptions.	Disclosure: the calculation of the fair value of biological assets; critical accounting estimates and judgments (market reference, forecast of future events, contingency forecast, and discounted cash flow assumptions, pricing, differentiation, volumes, and periodicity).
The Enchanted Forest that Transforms Realities: The Case of Klabin S/A	Barankievicz, Maria Sobrinho, & Fernandes (2016).	Teaching Notes, Teaching Objectives, Discussion Questions, and Suggested teaching plan	It can reinforce Klabin's image as a company committed to sustainable development in its environmental and social aspects, as well as economically.
Evidence of publicly traded wood, paper and pulp companies in Brazil in 2017.	Melo, Neves & Luz. (2019).	Analyze the environmental information in the accounting reports of publicly traded companies of the wood, paper and pulp sector in Brazil in compliance with NBC T15, in the year 2017.	The most evidenced variables of the NBC T15 were: Investments related to the environment, Investments related to education, Investments related to environmental projects, Environmental liabilities and contingencies, Environmental policies and Other environmental information. Irani, Klabin, Fibria and Duratex were the companies that most evidenced in their reports the subcategories studied.

Source: authors.

Correspondingly, the table 1 demonstrates the relevance of the theme recognition and measurement of fair value, as well as the standard that deals with biological assets and forestry segment in the national and international scope. In this sense, studying the premises of the theoretical framework of fair value and the PES law (recently approved 2021) highlights the justification of the case study considering the potentially polluting segment the pulp and paper industry.

3 METHODOLOGY

This research is configured as descriptive as to the objectives. According to the specifications of the research plan used in descriptive studies according to Richardson (2009) were the characteristics of a phenomenon are planning typologically. In this sense, this study aims to describe the typology of PSA, fair value and market value of the sustainability report ITR, July 2021 in the perspective of answering the research problem in the company Klabin S.A.

The choice of the company Klabin S.A. was because it fits the criteria of potentially polluting company according to the Brazilian Institute of Environment and Renewable Natural Resources - IBAMA (2015), described in the category of Natural Resources as forestry activity and agricultural products (Table of potentially polluting activities and users of environmental resources). The case studies according to Yin (2010), means to treat its results and findings to the closure regardless of the form of the report. Some similar steps underlie the composition of the case study: the identification of the audience for the report, the development of its compositional structure (appendices), and the review of drafts by others (previous studies in Table 1).

The company was created in 1899, the Klabin and Lafer families founded the company Klabin Irmão e Cia. In the 1940's Klabin started the planted forest project and introduced the integrated production of paper (Kraftliner, cartonboard and recycled paper), corrugated board and industrial sacks to the national scenario. It is also active in the forestry sector with the production and sale of wood. In Latin America it is the largest producer and exporter of packaging paper (Salotti, Murcia, Carvalho & Flores, 2015).

Table 2
Keywords related to typologies from the market valuation literature

Level (1, 2 and 3) are proxies for the opportunistic behavior of managers.	Judgment (ethics)	Assumptions Accounting (discount rate)	*Test de imparment* Effectiveness Test	Sensibility Analysis
Fair Value	Historic Cost (objective)	Observable Data	Market Market Marking Market Price Marking Active market	Conservatism
(subjective)	Trust	Risk	Opinion of the auditor	Biological Actives
Responsible Subjectivism	Floral Activity	Agricultural Products	PES / Payment for Environmental Services	Law 14.119/21

Source: Adaptation from the studies of Menezes et. al., (2018); Marques et. al., (2012).

In relation to the fair value and market value, the literature follows words which identifies the relational search with quarterly report of the company subject of study in the period August 2021 (table 2) and the text of Law 14. 19/21: Ecosystem, Maintenance, Recovery, Environmental goods and Products, Waste decomposition, Carbon sequestration, Cultural services, Payment for environmental services, Environmental conditions of ecosystems, Certificate of emission reductions from deforestation and degradation, Green bonds or green bonds, Commodate, Environmental reserve quota, Native vegetation, Sustainable development, Quality of life, Biomes, Environmental legislation, Socioeconomic inclusion and environmental regularization of rural populations in vulnerable situations, Formation of biodiversity corridors, Conservation of water resources, Communities, indigenous peoples, family farmers and rural entrepreneurs, Financing and bilateral and multilateral agencies, Conservation of urban and peri-urban areas and air quality.

The criterion for the choice of the ITR - Klabin concerns the financial information relevant to external users, believing that the variables of this research are more present, not disregarding here the informational quality of the sustainability report.

To carry out the typological study, the textual description of the financial information (quarterly information August 2021) of the company object of study was analyzed with the search for words that permeate the object of study of this research.

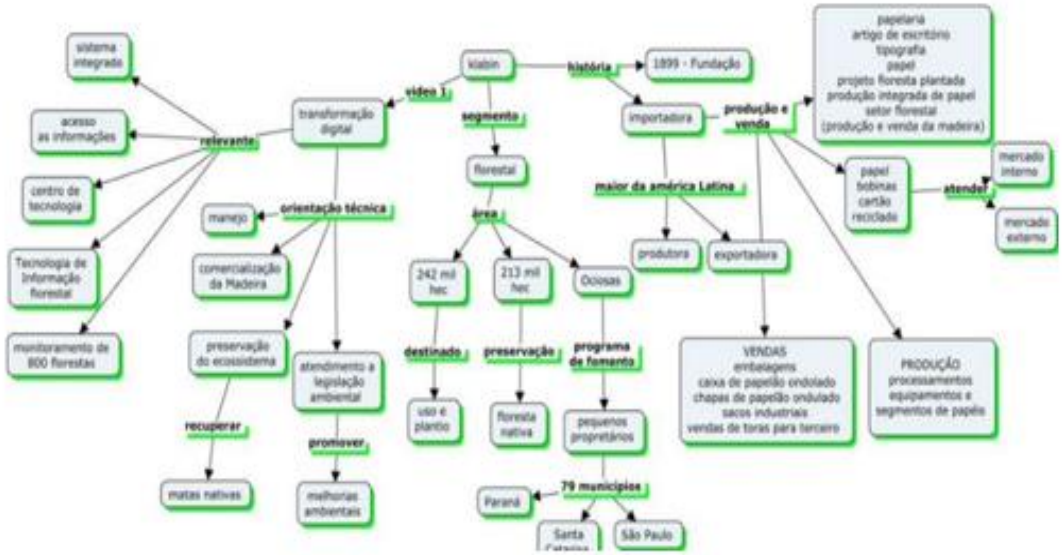
For Richardson (2009) the document analysis aims to study and analyze one or more documents to discover the social and economic circumstances to which they may be related.

4 RESULTS AND DISCUSSION

The business model of the Klabin Company is divided into three segments: forestry, paper and converting. The harvesting of pine and eucalyptus, 14 years and 7 years respectively, supplying the paper mills and sale of timber (logs) to third parties on the domestic market. The recognition and measurement of biological assets in Klabin by historical cost (pine up to seven years eucalyptus up to three years) and fair value refers to the projection of future cash flow (Salotti et. al., 2015).

According to figure 1 observes the main practices of environmental management, description of Klabin's institutional video, use of monitoring technology, technology center and integrated management system and production and sales.

Figure 1. Integrated Monitoring and Management at Cia.



Source: Adapted from Salotti et al., (2015).

The theory of actors within community forestry according to Stanzel, krott and Schusserb (2020) covers the individual person, the owner of a sawmill, a collective actor, a government institution, as long as it has influence over a community forest. Klabin S.A. according to the conceptual map (Figure 1) presents the technical orientation, forest coverage area, use and planting, preservation and fostering program (considered idle areas) covering 79 municipalities in Parana, Santa Catarina and Sao Paulo. It is evident in this context, the conflict of interests between social, political and economic actors.

Table 2.

Fair Value Measurement

CPC 46 - Fair Value Measurements (IFRS 13 Fair Value Measurement)	
Sensitivity analysis	**Calculation at level 3 of the quality of disclosure of the fair value measurement.**
Assumptions used and discount rates	The price sensitivity used in the valuation and the discount rate applied is the discounted cash flow considering the average cost of capital taking into account the Selic rate and inflation levels.
Tests effectiveness of redge accounting (derivative).	Effectiveness tests within the criteria established in the mentioned accounting pronouncements, comparing the changes in the fair value of the hedge instrument with the changes in the fair value of the hedged item in relation to the hedged risk. If the hedge relationship does not prove to be effective within the limits established in relation to the desired protection, the ineffective portion of the effects of exchange variation on loans and financing are reclassified to the statement of income under "Financial Result".
Test de impairment or impairment test	4 words: In applying the requirements of CPC 01(R1) - Reduction to the recoverable value of assets (IAS 36 Impairment of Assets), it performed the applicable analyses and did not identify indicators that the book value exceeds the recoverable value of its assets as of June
	30, 2021 and December 31, 2020. The test applied to the company's property, plant and equipment. No impairment provision needs occurred in the six-month period (June 30, 2021 and the year ended December 31, 2020).

Market value = acquisition of the total shares of Embacorp and Embacorp Amazônia. (IFRS 3 Business Combinations)	Relative to the business combination process: market value and adjusted fair value, whose market values were below market value.
Level (1, 2 and 3) are proxies for the opportunistic behavior of managers.	The securities fall into Level 1 of the fair value measurement hierarchy, in accordance with CPC 46- Fair Value Measurements (IFRS 13 Fair Value Measurement), because they are assets with quoted market prices.
Judgment See explanatory note 28	CVM's Management analyzed possible impacts from increases in expected losses or significant changes in the risks the Company is exposed to in relation to its estimates, judgments and assumptions that could affect the recoverability of its assets and the measurement of the provisions presented in this quarterly information. This review considered subsequent events that had occurred up to the date of issuance of this quarterly information and no significant effects were identified that should be reflected in the quarterly information for the three and six-month periods ended June 30, 2021.
Fair value (subjective)	The evaluation of biological assets at fair value considers certain estimates, such as: timber price, discount rate, forest harvesting plan and productivity, whose variations generate noncash effects on the Company's results. (relevant information because it impacts the Company's cash).
Responsible Subjectivism	No information provided
Historic Cost (objective)	Biological Assets Opening Balance Additions and subtractions 1. Wood plantation 2. Sale of biological assets Depletion 1. Historical cost fair value adjustment Fair value variation Price Growth Constitution of subsidiary
Observable Data	Other assumptions, such as the maturity schedule of liabilities and interest rates used in the calculation are disclosed in other items of this same explanatory note, as well as the inflation rates are observable in the market, so that the nominal flows can be elaborated by the users of the quarterly information.
Conservatism, Relevance, Trust.	No information provided.
Risk	*Hedge Accounting (protection of the company's cash flow);* *Fixed Income: two Green Bonds issues, whose bonds must necessarily have their resources allocated to eligible green projects.*
Opinion of the auditor: Audit: ERNST & YOUNG Auditores Independentes S.S. CRC-2SP034519/O-6.	Editorial text of the unqualified auditors' report, Only the DVA was submitted to review in order to ascertain whether they reconcile with the quarterly information. Auditors' comments: "Based on our review, nothing has come to our attention that causes us to believe that these statements of value added have not been prepared, in all material respects, in accordance with the criteria defined in this standard and consistently with the individual and consolidated interim financial information taken as a whole. (KLABIN, 2021)
Biological Actives	Described in the historical cost
Floral Segment	This involves the planting and cultivation of pine and eucalyptus forests to supply the company's pulp and paper mills and the sale of wood (logs) to third parties on the domestic market.
Floral Activity	On January 21, 2020 the necessary agreements were signed for the association with a Timber Investment Management Organization ("TIMO") for the constitution of a Special Purpose Company ("SPE"), whose main objective is the exploration of the forestry activity in the center south of the State of Paraná, allowing access to new land to increase its forestry base.
Agricultural Products	No information Provided
Ethics/morals Labor lawsuit	Claims are related to overtime, moral damages, health hazard premiums and risk premiums, as well as indemnities and third-party liability. No individual action is material enough to have a material adverse impact on the Company's results.

Source: Case Study Klabin: ITR - Informações Trimestrais - 30/06/2021 – Klabin S.A. (emphasis added).

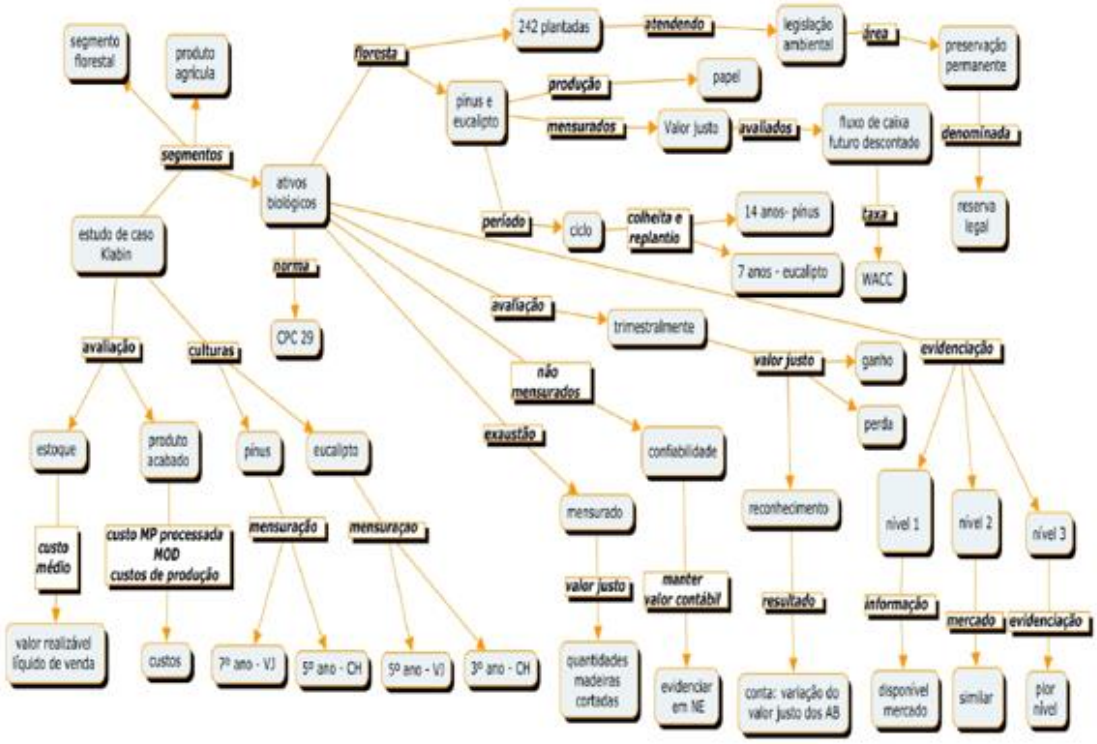
The variation in the fair value of biological assets resulted in revenue of R$ 199 million in the second quarter of 2021, mainly due to the impact of the increase in the price of biological assets (standing timber) obtained through market price surveys, disclosed by specialized companies. The effect of the depletion of the fair value of biological assets (table 2) on the cost of goods sold was R$256 million in the same period. Thus, the non-cash effect of the fair value of biological assets on operating income (EBIT) in 2Q21 was negative by R$ 57 million (Klabin, 2021).

It is important to note that the forestry segment Klabin S.A has other segments: Paper Segment: substantially involves the production and sales operations of reels of paperboard, kraftliner and recycled paper in the domestic and foreign markets. Converting segment: involves the production and sales operations of corrugated cardboard boxes, corrugated cardboard sheets and industrial sacks, in the domestic and foreign markets. Pulp segment: involves the production and sale of hardwood, softwood, and fluff pulp for the domestic and overseas markets (Klabin, 2021).

Other processes of a civil and environmental nature: Public Civil Lawsuit filed, in 2009, by the Environmental Fishermen's Association of Parana - APAP, in view of alleged damage to the River Tibagi (PR), by the disposal of waste from burnt mineral coal used by the Company until 1998. Although there is no proof of environmental damage, in December 2015 a sentence was handed down against the Company, ordering it to remove the burnt coal deposited in the riverbed. Currently, the process is suspended, as agreed between the parties. Only with the end of the liquidation phase will it be possible to stipulate the amount to be considered (Klabin, 2021 p.96 - 97).

In relation to risk management note: market risk, application of funds risk, credit risk, liquidity risk, sensitivity analysis among others (Klabin, 2021 p.63). Information introduced by the company in the explanatory notes.

Figure 2. Biological Actives by the Company Klabin S.A



Source: Adapted from Salotti et al., (2015).

For the systematized documentary analysis of payment for environmental services, the words in the text of the Law (14.119/21) were identified for possible content analysis of the written document. The following words were highlighted in accordance with the concepts of environment, environmental issues, environmental damage and social projects: "Ecosystem", "maintenance" (deals with prevention), "recovery" (mitigating action), environmental goods and products, decomposition of waste (treatment), carbon sequestration, cultural services and payment for environmental services among others (table 4). In the case of environmental legislation, it deals with the legal reserve.

Table 4.

Ambient Service Payment

PSA – Text Law 14.119/21	Description of the company studied
Ecosystem	No information provided
Maintanence	16 words: related to maintenance stoppages, maintenance of sold volume (R$1,705/t in 2Q2); Investments in the Company's operational maintenance (R$185million); special projects as a
	result of the pandemic (R$18 million); Investments in: forestry, operational continuity, maintenance Capex, special projects and the Puma II project.
Recovery	3 words: Fiberlines. Klabin, the only Brazilian Company to produce three types of pulp (short fiber, long fiber and fluff), once again benefits from its diversified portfolio. Term also related to the expansion Project - "Puma II".
Goods and ambient products	21 words: Advances in the trend towards consumption of packaging produced with recyclable raw materials, biodegradable and from renewable sources for products such as flour, sugar, coffee and animal feed. Investments made in reforestation activities, restoration of native forests, investments in renewable energy, efficient logistics using rail transportation, recycling of solid residues and development of eco-efficient products, among other sustainability practices.
Residue Decomposition	2 words: The resource (Green Boom) is intended for reforestation activities, restoration of native forests, investments in renewable energy, efficient logistics using rail transport, recycling of solid waste and development of eco-efficient products, among other sustainability practices. During 2020 the repurchase of USD 9.5 million was carried out, in line with the Company's debt management strategy. Public Civil Lawsuit (2009) by the Environmental Fishermen's Association of Paraná - APAP, on damage to the Tibagi River (PR), for the disposal of waste from burning coal, used by the Company until 1998. Note: no word on decomposition.
Carbon Sequestration Cultural Services Payment for Environmental Services	No text provided No text provided No text provided
Environmental conditions of ecosystems	No information presented. The conditions dealt with in the text are market-related.
Certificate of emission reductions from deforestation and degradation	In the second quarter Klabin had its targets for reduction of greenhouse gas emissions (GHG) approved by the Science Based Targets initiative (SBTi). In the last 15 years the Company has reduced its GHG emissions by 60% and the commitment made with SBTi, based on scientific criteria, represents an even more ambitious contribution to mitigating the effects of climate change, establishing the reduction of GHG emissions per ton of pulp, paper and packaging by 25% by 2025, and by 49% by 2035, with 2019 as the base year. (see the sustainability report for more details).
Green Bonds	Two words: "green" referring to verde vivo investimentos florestais LTDA representing equity interests in common shares. Green bonds: The Company has five active issues in the international market (Notes or Bonds). Among these, there are two Green Bonds, whose bonds must be allocated to eligible green projects. Besides these, there are two conventional debt issues. And finally, a Sustainability Linked Bond (SLB), whose coupon is linked to performance indicators in Sustainability
Commodate	No text provided
Environmental reserve quota	On June 30, 2021 the Company has 271 thousand hectares (267 thousand hectares at December 31, 2020) of planted forests, disregarding the permanent preservation areas and legal reserves that must be maintained to comply with Brazilian environmental legislation.
Native vegetation	In September 2017 the Company issued Green Bonds in the amount of USD 500 million, with a 10-year maturity in 2027, with a semi-annual coupon of 4.88%. The resources are earmarked for reforestation activities, restoration of native forests, investments in renewable energy, efficient logistics using rail transport, recycling of solid waste and development of eco-efficient products, among other sustainability practices. During 2020 a repurchase of USD 9.5 million was carried out, aligned with the Company's debt management strategy.
Sustainable Development	Development of eco-efficient products.

Life Quality	No information presented. The problems we found are related to the quality of the information.
Biomes	No text provided
Environment Legislation	Quote regarding the legal reserve.
Socioeconomic inclusion and environmental regularization of rural populations in vulnerable situations.	Term inclusion related to assets. Environmental regularization = no text submitted. Rural populations = no text shown. Vulnerability = no text presented.
Formation of biodiversity corridors Conservation of water resources Communities, indigenous peoples, family farmers and rural entrepreneurs.	No text provided. No text provided. No text provided.
Bilateral and multilateral financing and agencies	Financing linked to the execution of the Puma II Project, contracted, and partially disbursed in the following amounts to be drawn down: (i) IDB Invest, IFC and JICA, US$ 700 million; Finnvera, US$ 178 million; (iii) BNDES, R$ 2 billion. These financings may be drawn, totally or partially, according to the progress of the Puma II Project and/or the Company's cash requirements. Risk-related agencies.
Conservation of urban, peri-urban and periurban areas Air Quality	No text provided. No text provided.

Source: Adapted from Klabin - ITR, August (2021).

The puma II [1] Project is a milestone in Klabin's expansion cycle, which reinforces its capacity for sustainable growth allied to technology, investments in research, innovation, and technology in all stages: clean energy, intelligent waste management, effluent treatment, atmospheric emissions and sulfuric acid.

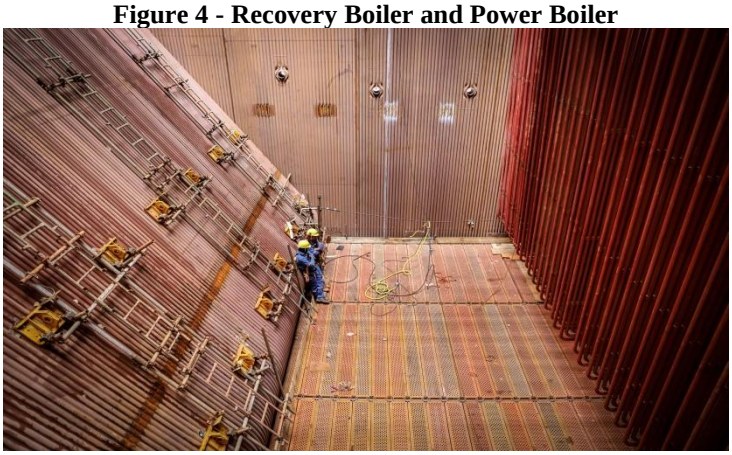
Figure 3- Project Puma II– Rio De Janeiro.

Source: klabin.com.br/negocios-e-produtos/celulose

[1] The Company Klabin S.A. created the Puma Project, and the name is an analogy to the Puma, which is the feline with the widest geographic distribution in the Western Hemisphere. Similar to the animal that bears its name, the Puma II Project is characterized by the greatness of its presence. In the company's view this is the largest investment in Klabin's history. The industrial complex located in Ortigueira, in Paraná, will have two stages of expansion until 2023, counting with the construction of two innovative paper machines. The project will make Klabin the first company in the world to produce Eukaliner paper, for which it already holds a patent. Together with Eukaliner White, the papers require less energy expenditure to be produced and have results up to 20% superior than the current products on the market. Puma II Project. Retrieved from https://projetopuma.klabin.com.br/#conheca.

Puma II Project, Rio de Janeiro (figure 3) has a large industrial structure: log storage yard, debarkers and chippers, chip storage, biomass storage, caustification and lime kiln, biomass gasification plant, evaporation cooling towers, ETAC, Evaporation, fiber lines, brown pulp, Power and recovery boiler, pipe rack, ETA, ETE, auxiliary buildings, solid waste plant expansion, external container shipping yard, MP-27 kraftliner machine.

Figure 4 - Recovery Boiler and Power Boiler



Source: klabin.com.br/negocios-e-produtos/celulose

The production stage (figure 4) depicts the recovery boiler that represents the first burning of black liquor (result of cooking the pulp fibers), considered the most important milestone of the plant. The generation of energy from the burning of the liquor generated during the cooking of the wood, reinforces the condition of a sustainably viable and self-sufficient mill.

Figure 5- Side of vibration lines

Source: klabin.com.br/negocios-e-produtos/celulose

The company under study is the only one in Brazil to produce and supply three different types of pulp: short fiber (eucalyptus), long fiber (pine) and fluff, manufactured in a single industrial unit (figure 5). The pulps come from 100% planted forests with globally recognized certifications that cover from wood to the final product, ensuring sustainability and safety from the beginning to the end of the process.

Figure 6- Effluent Treatment Station – ETS

Source: klabin.com.br/negocios-e-produtos/celulose

Effluent Treatment Station - ETS following the feeding of the raw effluent, passing through the grading, primary

clarifier, cooling tower, biological reactor, secondary clarifier, and tertiary treatment (figure 6). With the largest process tank in Latin America, the aeration tank has a volume of 70,000 m³, which is equivalent to approximately three Olympic swimming pools. The ETE will treat 100% of the effluents that will be generated after the start. It is exactly 2700 m³/h of effluents.

Regarding environmental liabilities, there is a Public Civil Suit (2009) by the Environmental Fishermen's Association of Paraná (APAP), for damage to the Tibagi River (PR), due to the disposal of coal waste, used by the Company until 1998.

Although there is no proof of environmental damage, in December 2015 a sentence was handed down against the Company, ordering it to remove the burnt coal deposited in the riverbed. Currently, the process is suspended, as agreed between the parties. Only with the end of the liquidation phase will it be possible to stipulate the value to be considered (Klabin - ITR, 2021).

With regards to the word payment, this refers specifically to interest, loans, financing, debentures, liabilities in leases, payment of dividends, payment of royalties relating to such brands, payment of participation in a company, among others, not

mentioning environmental payment services. It is important to point out that the evaluation of biological assets at fair value considers certain estimates, such as: wood price, discount rate, forest harvest plan and productivity volume, which are subject to uncertainties and may generate effects on future results because of their variations (Klabin - ITR, 2021).

Regarding greenhouse gases (GHG), in the second quarter Klabin had its emission reduction targets approved by the Science Based Targets Initiative (SBTi). In the last 15 years the Company has reduced its GHG emissions by 60% and the commitment made with SBTi, based on scientific criteria, represents a contribution to mitigating the effects of climate change, establishing the reduction of GHG emissions per ton of pulp, paper, and packaging by 25% by 2025, and by 49% by 2035, with 2019 as the base year (Klabin-ITR, 2021).

Up to the present moment the Company's Management has not identified significant impacts on its operations maintaining its forecasts for production, sales, and shipment of its products, which are part of the supply chain of items of primary necessity for the population (Klabin - ITR, 2021).

5 FINAL CONSIDERATIONS

The results of this study present relevant aspects about the quality of financial information in relation to non-financial information (environmental information). The analysis performed presents the textual diversity between the conceptual framework of fair value, market value and Payment for Environmental Service.

In this sense the objective of this research was to understand which typological alignment is applied in the texts of Law 14.119/21 in relation to the theoretical framework on the IFRS standard that deals with fair value: CPC 46 Fair Value Measurements (financial instruments); IFRS 13 Fair Value Measurement and Biological Assets (plants and animals) CPC 29 - IAS 41.

A documentary analysis was carried out on the text of the Law on payment for environmental services and the quarterly report (ITR, 2021) of a potentially polluting company in the pulp and paper segment. With the results of the study, it was possible to analyze those aspects related to financial information (fair value and market value) is not presented in the wording text of the aforementioned Law.

It observes that the Law of Payment for Environmental Services outlines relevant aspects of environmental issues to the detriment of financial information (fair value and

market value). It is believed that this PES information is more present in the sustainability report. It is important to highlight the environmental information regarding the aspects related in the content of the reports analyzed in relation to sustainable development.

For future articles or work, one of the suggestions is to continue researching case studies of environmental disclosures analyzing the premises existing in this research: fair value, market value, biological assets, and Law 14.119/21. Other topics should be considered for future work: environmental liabilities, conservation of water resources, communities, indigenous peoples, family farmers and rural entrepreneurs.

REFERENCES

Barankievicz, V. A., Maria Sobrinho, R. F., & Fernandes, B. H. R. (2016). A Floresta Encantada que Transforma Realidades: O Caso da Klabin S/A . *Tecnologias de Administração e Contabilidade*, 6(2), 111-132.

Braga, R., de Sousa, E. P., & Alves Fº, E. M. (2014). Mensuração a valor justo no Brasil: análise da produção científica de 2006 a 2012. *Revista de Contabilidade da UFBA*, 8(2), 47-63. Recuperado de https://www.researchgate.net/publication/275334705

Caldeira de Recuperação e Caldeira de Força. Recuperado de https://projetopuma.klabin.com.br/group/puma/-/caldeira-de-recupera%C3%A7%C3%A3oest%C3%A1-pronta-para-opera%C3%A7%C3%A3o-
Carson, R. (2010). *Primavera silenciosa*. São Paulo. Editora Gaia.

COMITÊ DE PRONUNCIAMENTOS CONTÁBEIS – CPC. Pronunciamento Técnico CPC 29 - Ativo Biológico e Produto Agrícola. Resolução CFC nº.
1.186/09 e alterações posteriores. Recuperado de http://www.cpc.org.br/index.php.
Estação de Tratamento de Efluentes – ETE. Recuperado de https://projetopuma.klabin.com.br/group/puma/-/iniciando-os-trabalhos-da-ete
Hendriksen, E. S., & Van Breda, M. F. (1999). Teoria da contabilidade; tradução de Antonio Zoratto Sanvicente. São Paulo: Atlas, 277-297.

IBAMA (2015). Tabela de atividades potencialmente poluidoras e utilizadoras de recursos ambientais. Recuperado de https://abapa.com.br/wpcontent/uploads/2015/03/tabela.pdf

Iudicibus, S. Martins, E. (2007). Uma investigação e uma proposição sobre o conceito e o uso do valor justo. Revista Contabilidade e Finanças, p. 9-18. Klabin (2021, agosto).

Informações Trimestrais Klabin S.A. Recuperado de https://api.mziq.com/mzfilemanager/v2/d/1c41fa99-efe7-4e72-81dd-5b571f5aa376/a33b5103-da02-d4fe48bf-81e32287edfb?origin=2.

Lateral de linhas de vibras. Recuperado de klabin.com.br/negocios-e-produtos/celulose.
Lei nº 14.119, de 13 de janeiro de 2021 Institui a Política Nacional de Pagamento por Serviços Ambientais; e alteram as Leis n os 8.212, de 24 de julho de 1991, 8.629, de 25 de fevereiro de 1993, e 6.015, de 31 de dezembro de 1973, para adequá-las à nova política. https://www.in.gov.br/en/web/dou/-/lei-n14.119-de-13-de-janeiro-de-2021-298899394.
Lemes, S., Campos, L. C., Alves, R. D. S., & de Almeida, N. S. (2016). *Casos para Ensino em Contabilidade Societária*. (1 ed). São Paulo: Atlas. Lopes, A. B. & Martins, E. (2005). Teoria da contabilidade: uma nova abordagem. Atlas.

Khan, U. (2010), "The Economic Consequences of Relaxing Fair Value Accounting and Impairment Rules on Banks during the Financial Crisis of 2008-2009." Istanbul, 33rd Annual Congress of the European Accounting Association, 18. 5. 2010 – 21. 5. 2010.

Kuhn, T. S. (1962), The Structure of Scientifi c Revolutions. Chicago: University of Chicago Press. Laux, C.,

Leuz, C. (2009a), "The Crisis of Fair Value Accounting: Making Sense of the Recent Debate." University of Chicago: Initiative on Global Markets, Working Paper No. 33, [on-line], http://ssrn.com/abstract=1392645.

Laux, C., Leuz, C. (2009b), "Did Fair-Value Accounting Contribute to the Financial Crisis?" National Bureau of Economic Research: Working Paper No. 15515, [on-line], http://www.nber.org/papers/ w15515.pdf.

MacNeal, K. (1939), Truth in Accounting. Houston, Scholars Books (reprinted 1979), ISBN 0-914348-04-3. Magnan, M. (2009), "Fair Value Accounting and the Financial Crisis: Messenger or Contributor?" CIRANO: Scientifi c Series, Montreal, 2009.

Marques, T. O., Schultz, C. A., Dandolini, G. A., & Petri, S. M. (2012). Valor justo aplicado nos instrumentos financeiros: um estudo nas pesquisas nacionais e internacionais. *Revista Contabilidade e Controladoria*, 4(2).

Martins, E. (2000). Avaliação de empresas: da mensuração contábil à econômica. Caderno de estudos, 13(24), 28-37.

MELO, M. F. S.; NEVES, A. I. P.; LUZ, J. R. M. (2019). Capítulo 5: Evidenciação da companhia abertas de madeira, papel e celulose no Brasil em 2017. In: Pesquisa em contabilidade: enfoque empresarial, social e controle.01 ed.São Paulo: Novas edições acadêmicas. V.01, p. 01-409.

Menezes, B. N. C., Santos, M. F. B., Moreira, F. N. & Szuster, N. (2011)Valor Justo: O Impacto da Lei Nº 11.638/07 na Pesquisa Brasileira em Contabilidade. *Anais do V Congresso da Associação Nacional de Programas de Pós Graduação em Ciências Contábeis - ANPCONT*. Recuperado de https://anpcont.org.br/pdf/2011/EPC269.pdf.
Mises, L. (1966), Human Action: A Treatise on Economics. Chicago: Contemporary Books.

Prochaska, D. (2011) The role of fair value measurement in the recent financial cruch. PRAGUE ECONOMIC PAPERS. DOI: 10.18267/j.pep.388 · Source: RePEc

Projeto Puma II – Rio De Janeiro. Recuperado de https://www.youtube.com/watch?v=kuaeckrue_0
Richardson, R. J. (2009). *Pesquisa social: método e técnicas*. (3º ed). São Paulo: Atlas.

Salotti, B. M., Murcia, F. D.R., Carvalho, N. & Flores, E. (2015). *IFRS no Brasil: Temas avançadas abordados por meio de casos reais*. São Paulo: Atlas.

Stanzel, J., Krott, M., & Schusser, C. (2020). Power alliances for biodiversity—Results of an international study on community forestry. *Land Use Policy*, *97*, 102963.

Sunder, S. (2014). *Teoria da contabilidade e do controle*. São Paulo: Atlas.

Transformação digital na Klabin – Caso de Sucesso. Recuperado de https://www.youtube.com/watch?v=LYMt8lVeYTw.

Yin, R. K. (2010). *Estudo de Caso: Planejamento e Métodos*. (4.ed.) Porto Alegre: Book.