Disclosure Ranking of Environmental Impacts of Brazilian Companies: Analysis Using Methods Multicriteria

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Introduction

The disclosure of social and environmental data by businesses is considered a dialogue between such businesses and their stakeholders, as the latter demonstrate interest in social and environmental activities developed by the former, which are evidence of businesses' commitment to satisfying their corporate social responsibility (Lu & Abeysekera, 2014).

Therefore, social and environmental disclosure by companies is expected to function as an effective management strategy for developing and maintaining good relations among stakeholders.

Research question

Based on the use of the multi-criteria methodologies T-ODA and TOPSIS, what is the ranking of disclosure of environmental impacts of Brazilian companies?

Objective

Analyzing the ranking of disclosure of environmental impacts by Brazilian companies through the multi-criteria methodologies T-ODA and TOPSIS.

ENVIRONMENTAL DISCLOSURE

The corporate environmental disclosure has considerable economic potential, given the scarcity of alternative sources of information. However, the environmental disclosure by companies is only partially regulated (Ane, 2012), and it tends to vary considerably from company to company (Rosa et al, 2015).

The growing challenges pertaining to environmental preservation have forced businesses to change their operational structures, thus improving the disclosure of their policies, as well as their actions towards the environment (Trierweiller, Severo Peixe, Bornia & Campos, 2012).

MATERIAL AND METHODS

✓ Population: companies belonging to the Brazilian Index 100 (IBr-X100) listed on the BM&FBovespa, constituting a total of 100 enterprises.

✓ IBr-X100 index which measures the return on a theoretical portfolio composed by 100 stocks selected among the most traded at BOVESPA, in terms of number of businesses and financial volume (BM&FBovespa, 2014).

Sample: made up of 97 companies listed on the BM&FBovespa belonging to the IBr-X100.

May it be noted that the following enterprises have been listed twice: Bradesco, Klabin, and Oi.

✓ All the data used in this research are secondary, having the Sustainability Reporting and Annual Reporting ER been downloaded directly from the websites of the companies belonging to the IBr-X100.

✓ In these reports, it was verified that the companies disclousure information on the following environmental aspects.

✓ The period of analysis was from 2010 to 2013.
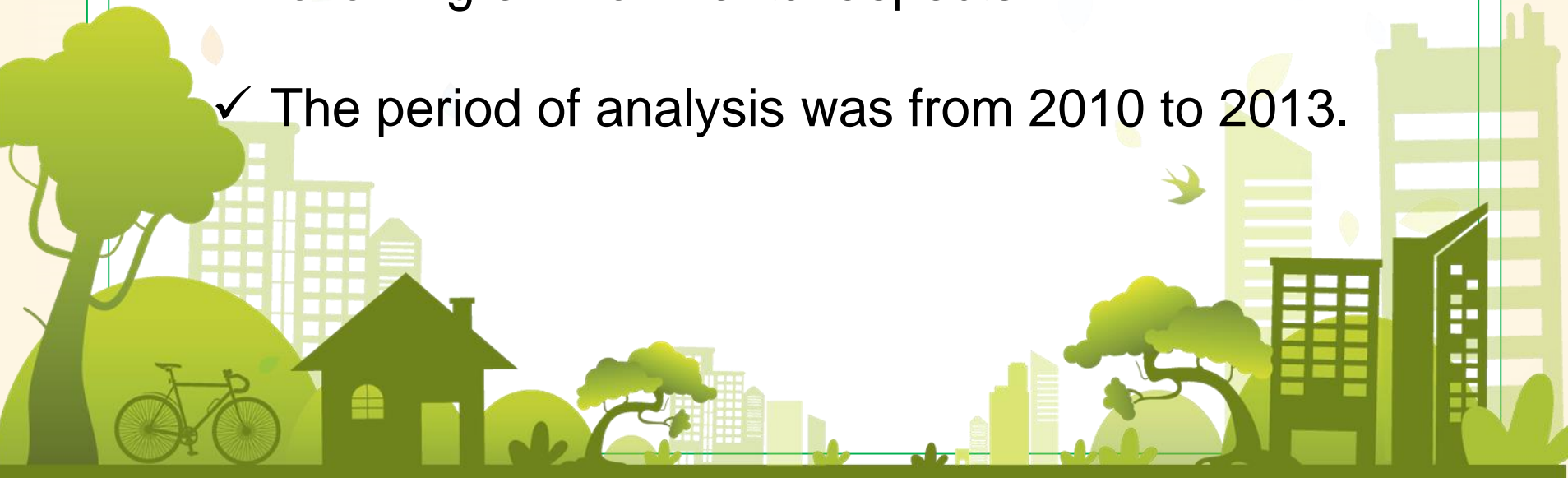
✓ Since this study divides the aspects into criteria and sub-criteria, according to the GRI (2013) guidelines, it is necessary to make this assessment and assign values to all of the criteria and sub-criteria to be analysed.

✓ For this reason, the value of the criteria does not follow what was proposed by Meireles & Sanches (2009).

✓ They were adapted by calculating the value of the information for each one of the analysed aspects (Emissions, Effluents, Waste, Products and Services, and Transportation).
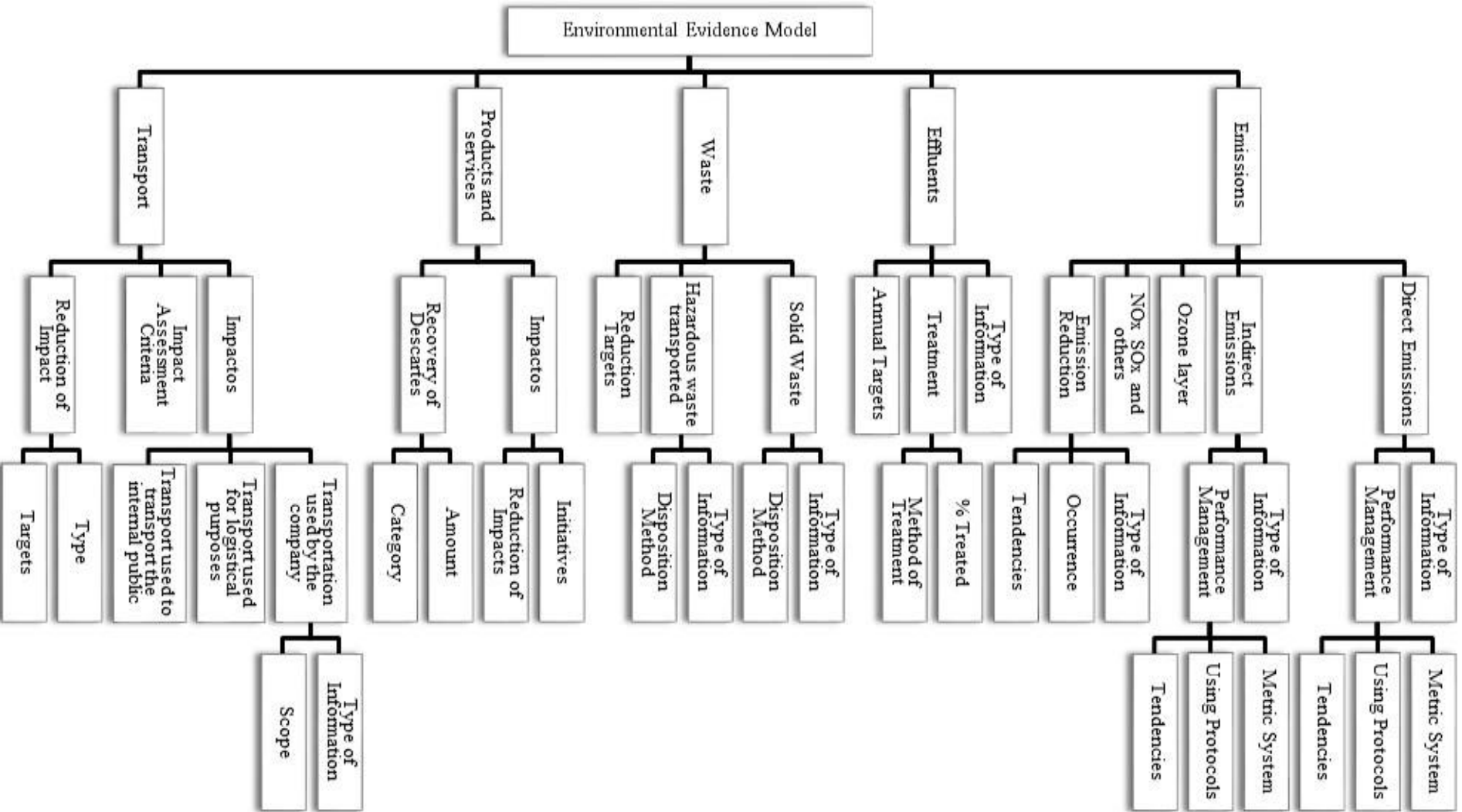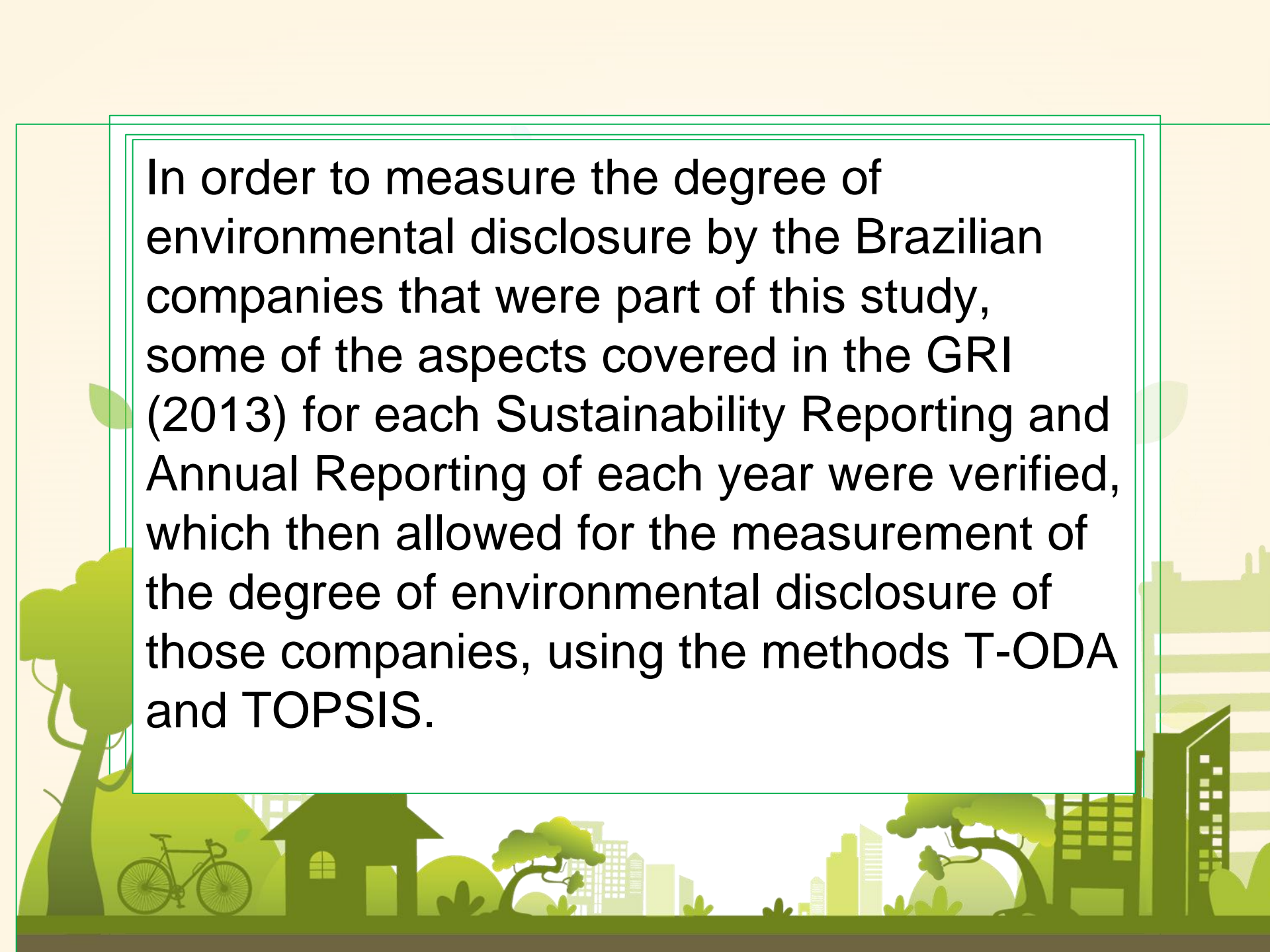
Fig. 1. Environmental disclosure model.
Fonte: Rosa (2015).

In order to measure the degree of environmental disclosure by the Brazilian companies that were part of this study, some of the aspects covered in the GRI (2013) for each Sustainability Reporting and Annual Reporting of each year were verified, which then allowed for the measurement of the degree of environmental disclosure of those companies, using the methods T-ODA and TOPSIS.

RESULTS

4 RESULTS

Table 1

Sustainability Report and Yearly Report.

Reports	2010	2011	2012	2013
SR	25	27	31	20
ER	32	26	28	17
SR/ER	6	8	14	16
TOTAL	63	61	73	53
TOTAL: Reports containing environmental information	51	51	54	47

Source: Data from study

First, we observed a low use of integrated reporting.

As we continue to research with more recent data from 2014 and 2015 we see a timid increase in the use of integrated reports, but the level of disclosure has not improved.

We observed that the criteria "waste, effluent and emissions" have good levels of information, meeting mandatory (mainly) legal criteria. However, there is a lack of information on waste disposal methods, data on the% of treated effluents, and trends in emissions.
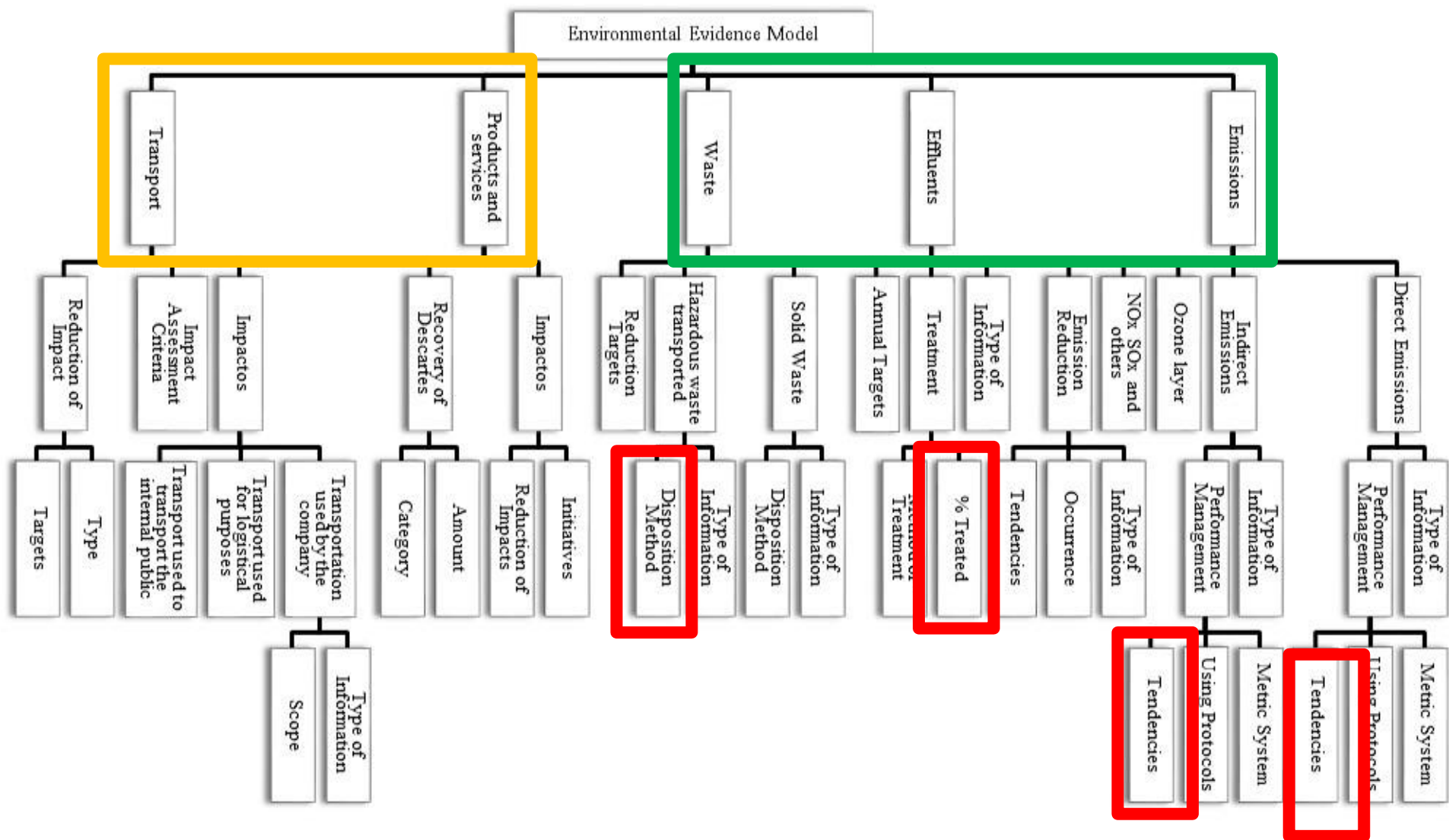

Fig. 1. Modelo de divulgação ambiental.
Fonte: Rosa (2015).

The results of TODA and TOPSIS are similar

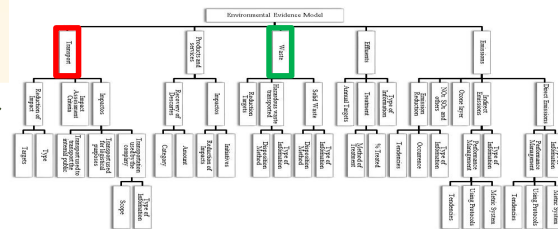**Preferred criteria for businesses is Impacts. The least used criterion is transport.**

Table 2

Ranking of environmental disclosure based on the T-ODA method

Company name	2010		2011		2012		2013		*Final Ranking*
	Score	Position	Score	Position	Score	Position	Score	Position	Position
Duratex	4,011	2	3,6753	1	2,897	7	3,402	5	**1**
Ecorodovias	3,669	3	3,022	5	3,1233	4	3,413	4	**2**
Energias BR	3,6463	4	3,4816	3	2,7618	8	3,0298	9	**3**
P. Açúcar	2,884	7	3,0602	4	2,578	10	3,2265	7	**4**
Copel	3,3301	5	3,5445	2	2,5144	11	2,6049	11	**5**
Cemig	2,113	16	2,0971	18	2,925	6	3,4886	2	**6**
BM&Fbovespa	2,8048	9	2,6021	12	2,4131	12	2,7756	10	**7**
Natura	2,1617	15	2,8144	9	2,9553	5	2,3243	14	**7**
Petrobrás	2,7951	10	2,7532	10	2,1337	20	2,1783	16	**9**
AES Tietê	2,8054	8	2,5774	13	2,1483	19	2,1717	17	**10**
Braskem	1,9786	20	1,7136	29	3,2221	2	3,3818	6	**10**
Eletrobrás	1,2503	41	2,414	15	3,1655	3	3,8811	1	**12**
BRF - Brasil Foods	3,2604	6	3,0056	6	3,3789	1	0	48	**13**
Even	1,8702	24	2,6339	11	2,256	14	2,3051	15	**14**
Copasa	2,3085	14	2,9639	7	2,0736	21	1,1165	42	**15**

Source: study results

Best

Worse
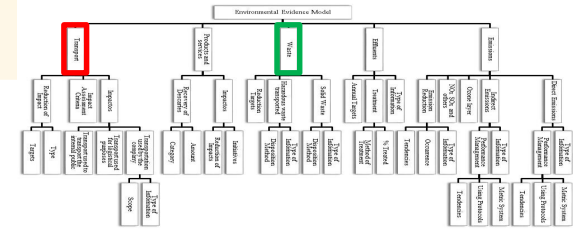
Table 3

Ranking of environmental disclosure based on the TOPSIS method

Company name	2010		2011		2012		2013		*Final*
	Index	**Position**	**Index**	**Position**	**Index**	**Position**	**Index**	**Position**	*Ranking*
Ecorodovias	0,6264	3	0,5346	5	0,6393	1	0,5735	6	**1**
Duratex	0,6506	2	0,6385	2	0,5656	8	0,5595	8	**2**
Energias Br.	0,5825	4	0,6026	3	0,583	6	0,5465	9	**3**
P. Açúcar	0,4621	7	0,5521	4	0,5132	11	0,6067	4	**4**
Copel	0,5204	5	0,6769	1	0,5517	10	0,3928	12	**5**
BM&FBovespa	0,4288	9	0,3885	13	0,5532	9	0,4993	10	**6**
Natura	0,3037	14	0,4788	9	0,6293	2	0,3526	17	**7**
Braskem	0,2991	15	0,2653	23	0,6084	4	0,6604	2	**8**
Cemig	0,2526	21	0,3173	17	0,6222	3	0,6223	3	**8**
Petrobrás	0,4649	6	0,4876	7	0,3817	21	0,365	14	**10**
Even	0,2647	20	0,4744	10	0,4752	12	0,4308	11	**11**
Eletrobrás	0,0513	42	0,386	14	0,5775	7	0,767	1	**12**
Aes Tiete	0,3859	10	0,3804	15	0,3709	22	0,3451	18	**13**
BRF - Brasil Foods	0,4409	8	0,4536	11	0,6076	5	0	48	**14**
Copasa	0,2905	16	0,5032	6	0,4166	16	0,0957	43	**15**

Source: Study Results

DISCUSSION

- Reveals that few companies use unified reports to disclose environmental information.
- There is still a lack of standardization of the environmental disclosures, as these occur on a voluntary basis (as also pointed out in this study) and not in a constant manner.
- The nature of companies, as well as the sector in which they operate is considered one of the factors influencing the disclosure.
- The T-ODA and TOPSIS, these methods can be considered reliable for the development of rankings.

- That companies with greater disclosure of environmental data are more likely to be environmental polluters.

- As well as increased action from stakeholders with regards to environmental issues, must be fostered so as to provide incentives for companies to disclose environmental data in their reports, thus making environmental performance and sustainability as a whole a more proactive affair.

✓ There is a need to expand the dissemination of sustainability reports and increase the level of environmental disclosure of Brazilian companies, since 70% have a sustainability report with incomplete information.

✓ The type of information provided shows that the most polluting companies tend to disclose more environmental information.

✓ The most evidenced criteria are the emissions and waste impacts, which can be explained by global pacts and mandatory aspects.

✓ The TODA and TOPIS methods help to understand in a holistic way the level of environmental disclosure.

Limitations

✓ The selection of the population and the sample size; the environmental aspects that were analyzed (Emissions, Effluents, Waste, Products and Services, and Transportation); and the methods used in the analysis of the data.

Research suggestion

✓ Apply the study to all companies listed on the BM&FBovespa.

✓ Continue research and conduct a longitudinal study to analyze variations over time.

✓ Use of Big Data to identify the level of environmental disclosure in other media than just reports.

✓ Broadly analyze the level of disclosure (reports, company website, news and speeches).

✓ Identify the determinants of these disclosures

✓ Analyze the profile of the speech.

✓ Analyze the influence of this information on investors decisions.

Thanks!

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