

Impression management strategies and water disclosures – the case of CDP A-list

Ana Fialho

Department of Business and CEFAGE, Universidade de Évora, Évora, Portugal

Ana Morais

Advance/CSG, ISEG, Universidade de Lisboa, Lisboa, Portugal, and

Rosalina Pisco Costa

*Department of Sociology and CICS.NOVA.UÉvora,
Universidade de Évora, Évora, Portugal*

Abstract

Purpose – The purpose of this paper is to investigate whether the introduction of water security, in 2015, as a category in the Carbon Disclosure Project (CDP) Climate A-List, increases the use of impression management (IM) strategies. The purpose is to analyze how companies reacted to programmes of voluntary disclosure of environmental information.

Design/methodology/approach – Mixed-methods research was developed, combining a qualitative and quantitative approach. This study first used a qualitative content analysis of 15 companies' reports, from the materials sector, which was scored in the CDP Climate A-List, in 2017, to identify the IM strategies adopted. Next, this study conducted a quantitative analysis to test the mean differences of water references between years, industry and region.

Findings – Three types of IM strategies are identified (justification and commitment, self-promotion and authorization). The references identified as self-promotion strategy increased in 2016. This indicates companies reacted to the programmes for voluntary disclosure of environmental information by increasing strategies of legitimization and image promotion.

Research limitations/implications – Further research can be developed, focusing only on sustainability reports and extending the number of companies, the period and sectors under analysis.

Originality/value – This paper shows how the inclusion of a topic such as water security in an environmental ranking of companies, namely, CDP A-List, affects the use of IM strategies in voluntary disclosures.

Keywords Voluntary reporting, CDP A-List, Impression management strategies, Voluntary programmes, Water disclosures

Paper type Research paper



1. Introduction

In 2016, the twenty-second session of the Conference of the Parties (COP 22) considered water security as part of the implementation of the Paris Climate Change Agreement as this issue was receiving increased attention from stakeholders, governments and companies.

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Because companies play an important role in water resource management (Christ and Burritt, 2017a; Burritt *et al.*, 2016), governments are calling on them to improve this management and to disclose reliable and comparable information about it (Christ and Burritt, 2017b).

Water is generally an input in the manufacture, delivery and use of products and services. Water scarcity and supply interruptions can have a significant impact on companies' profitability (Ding *et al.*, 2011). In this context, information about water plays an important role in its management (Hazelton, 2015). To increase transparency and accountability, this information should be made available to the public. As Hazelton (2013) argues, access to water disclosures may constitute a human right, as those disclosures can facilitate political participation.

In response to those challenges, several entities have been working to improve the reporting practices related to water (Hazelton, 2015). One of them is the Carbon Disclosure Project (CDP) that was created in 2000. The CDP is an organization that aims to make environmental reporting and risk management the business standards that drive disclosures, insights and actions towards a sustainable economy. Since 2010, CDP has included the issue of water security in its programme through a specific questionnaire. The recognition of best practices in this field began in 2015 with the creation of the water security category in the CDP A-List.

Moreover, impression management (IM) is one of the ways to manage companies' image and stakeholders' perceptions of companies' performance in certain areas. IM strategies can have different objectives: to hide or camouflage negative performances or to emphasize positive aspects or actions taken (Bryman Mohamed *et al.*, 1999; Hooghiemstra, 2000; Ogden and Clarke, 2005; Merkl-Davies and Brennan, 2007; Hahn and Lülfs, 2014; Cooper and Slack, 2015; Talbot and Boiral, 2018). Additionally, the literature shows that there is a gap between a company's public image and its true commitment to water protection (Adams, 2004; Diouf and Boiral, 2017; Dingwerth and Eichinger, 2010).

In this paper, we investigate how the introduction of water security to the CDP A-List affects the way companies communicate their commitment to water-related environmental action, that is, whether the CDP A-List is an incentive for improving companies' sustainable trajectories (Kates *et al.*, 2001) or is it used for self-promotion by adopting IM strategies in reporting.

To achieve this objective, we analyzed water disclosures on reports available on the companies' websites from 2014 (the year before the creation of the CDP Water A-List) to 2016 (the year after). We used a sequentially qualitative-quantitative approach to examine the data. Qualitative analysis was conducted through an NVivo project. Based on an inductive strategy, we found four categories, one relating to concrete actions for water security and three types of IM strategies, namely, justification and commitment, self-promotion, authorization. To test the mean difference of the average number to water references and IM strategies between years, industries and regions, we used *t*-tests, ANOVA and nonparametric tests. Results show an increase in water references, but this difference is not statistically significant. The difference between the average number of self-promotion references in 2016 and 2014 is positive and statistically significant. Chemical companies present a smaller number of references to water, in 2016 and adopt less justification and commitment and authorization strategies and African companies disclose more references to water, in 2016 and adopt more authorization strategies.

This paper contributes to the literature in three different ways. Firstly, the paper contributes to the water disclosure research by showing there was an increase in the level of water disclosures from 2014 to 2016. It is important to develop research on water reporting,

as few studies have analyzed water information disclosed by companies (Ben-Amar and Chelli, 2018; Bebbington and Unerman, 2018; Christ and Burritt, 2018; Burritt *et al.*, 2016; Hazelton, 2015).

Secondly, we have attempted to overcome the lack of research on the importance of rankings of voluntary environmental initiatives and their impact on companies' reporting and accountability. Callery (2019) shows that CDP rankings motivate top performers in high-impact industries to maintain a company's inclusion. However, little is known about whether and how those rankings affect the use of IM strategies in water reporting.

Finally, as IM is an important area in accounting research (Brennan and Merkl-Davies, 2013), this paper contributes to the literature on IM by identifying the strategies adopted for corporate water disclosures. As far as we know the only paper on IM strategies in water reporting is by Cooper and Slack (2015). Our study differs from theirs because it investigates whether IM strategies, adopted by a sample of companies from different industries, depending on the introduction of water in a ranking (CDP A-List), while Cooper and Slack (2015) analyze whether those strategies change depending on the company's performance regarding water leakage in the water industry.

The paper is organized as follows: In Section 2, the relevant literature is presented. In Section 3, we describe the methodology. Section 4 addresses the results of each research question. Section 6 includes the conclusions, limitations and suggestions for future research.

2. Literature review and research questions

2.1 Water disclosures and inclusion of a company in the Carbon Disclosure Project A-List

Our intention in this paper is to analyze how companies reacted to the inclusion of water in the CDP A-List in 2015. Thus, we aim to evaluate the extent to which voluntary environmental programmes contribute to water disclosures by reviewing the research on water reporting. We have found empirical studies that investigate the drivers of water reporting practices (Morikawa *et al.*, 2007; Morrison and Schulte, 2009; Burritt *et al.*, 2016; Ben-Amar and Chelli, 2018; Yu *et al.*, 2020) and that analyze water reporting by sector or country (Ahmad *et al.*, 2010; Leong *et al.*, 2014; Botha and Middelberg, 2016).

Yu *et al.* (2020) conclude that the level of water disclosure is driven by firm-specific factors such as the creditor (e.g. debt ratio), blockholder (e.g. degree of ownership concentration), market viability (e.g. inclusion in S&P500) and industry characteristic (e.g. water sensitivity). Companies with more concentrated ownership and with greater foreign and institutional ownership (Ho and Tower, 2011; Cotter and Najah, 2012) have higher levels of voluntary disclosures.

As in the research, the determinants of the level of voluntary disclosure and the consequences of companies' adoption of voluntary initiatives, such as the CDP programme, can be related to regulatory and social factors (Reid and Toffel, 2009; Guenther *et al.*, 2016), country-level factors (Ben-Amar and Chelli, 2018), industry factors (Hassan *et al.*, 2013; King *et al.*, 2005; Guenther *et al.*, 2016; Morikawa *et al.*, 2007; Morrison and Schulte, 2009), firm-specific factors (Yu *et al.*, 2020; Ben-Amar and Chelli, 2018; Burritt *et al.*, 2016; Luo *et al.*, 2012; Daniel and Sojamo, 2012; Reid and Toffel, 2009; Callery, 2019) and as a way for companies to give a credible sign to external stakeholders of their environmental stewardship (Prakash and Potoski, 2007).

Guenther *et al.* (2016) conclude that in countries with strong governmental policies, there is a strong relation between carbon disclosure and carbon performance. Additionally, they find that in high-impact industries, company transparency is a powerful device in driving sustained participation in CDP and that evaluative ratings of the quality of participation motivate top performers (Callery, 2019).

Some authors argue that companies on the CDP A-List are more likely to provide more information about environmental topics. [Luo and Wu \(2019\)](#) find that carbon transparency complements financial transparency rather than substituting for it. This complementary relation between carbon transparency and financial transparency is dependent on the orientation of a country's stakeholders, collectivism in the national culture, the presence of an emissions trading and regulatory governance. Moreover, a company's inclusion in the CDP A-List induces lower marginal costs in terms of disclosure. Further, companies on the CDP A-List experience a higher increase in shareholder value than companies that do not participate in the CDP ([Kim and Lyon, 2011](#)).

Therefore, we can assume that a company's inclusion in the CDP A-List may increase the information disclosed in reports. However, some authors, such as [Depoers et al. \(2014\)](#), find that greenhouse gas amounts are significantly lower in the corporate report than in the CDP that indicates companies adapt their reporting to the target readership. Other papers conclude that companies that do not disclose their carbon emission information in CDP questionnaires face a reduction in their value. They also find that voluntary carbon disclosure is associated with a lower overall cost of capital (and equity) and observe a positive relationship between environmental performance and a company's response to CDP ([Matsumura et al., 2014](#)). Other evidence shows that companies with a higher carbon risk provide better quality carbon disclosures and signal the possibility of a high carbon risk to avoid negative market reactions that result from concealing carbon information ([Lemma et al., 2018](#)).

As these studies do not analyze the effect of introducing the topic of water to the CDP A-List, our first research question is:

RQ1. Did the average number of references to water in reporting increase after the addition of the water to the CDP A-List? Industry and companies' region differentiate results?

2.2 Impression management strategies

In this subsection, we review the IM strategies in corporate reporting. Different theories are used to justify the adoption of IM strategies ([Merkl-Davies and Brennan, 2007](#)). One of them is the legitimacy theory which states that voluntary disclosures are adopted by companies as a way to react to external pressures and do not necessarily correspond to a true commitment to sustainability ([Talbot and Boiral, 2018](#)). In fact, research ([Elsbach, 1994](#); [Hooghiemstra, 2000](#); [Deegan, 2002](#)) finds that companies have used IM as a tool to disclose information with the intention of managing stakeholders' perceptions.

In response to stakeholder pressure, IM strategies can be used to achieve, maintain, restore or repair legitimacy ([Ogden and Clarke, 2005](#); [Brennan and Merkl-Davies, 2013](#); [Hahn and Lülfs, 2014](#)). Companies can be motivated by the search for social legitimacy to improve their image to influence stakeholders' perceptions ([Diouf and Boiral, 2017](#)) or by the desire to justify poor performance ([Patten, 2002](#); [Cho and Patten, 2007](#); [Cho et al., 2010](#); [Cooper and Slack, 2015](#); [Talbot and Boiral, 2018](#)). Companies can disclose information about water with two different intentions: symbolic attempts to create the desired image for stakeholders ([Bolino et al., 2008](#); [Sandberg and Holmlund, 2015](#)) by IM strategies or to commit to substantive water protection.

Other studies identify many different IM strategies and techniques according to the underlying objectives and motivations. IM can be strategic (long term) or tactical (short term) and can be assertive or defensive ([Tedeschi and Melburg, 1984](#)). To conceal bad news or legitimize negative aspects companies can adopt defensive, protective and reactive by

resorting to justifications, excuses and apologies or by dissociation and omission. Marginalization, abstraction and authorization are strategies with the same purpose (Talbot and Boiral, 2018; Merkl-Davies and Brennan, 2007; Ogden and Clarke, 2005; Arndt and Bigelow, 2000; Tedeschi and Melburg, 1984; Bryman Mohamed *et al.*, 1999; Hooghiemstra, 2000; Hahn and Lülfs, 2014). If motivations are to promote their image or emphasize good news, companies adopt assertive, acquisitive or proactive strategies such as self-promotion by using exemplification, entitlements or enhancement techniques (Hooghiemstra, 2000; Tedeschi and Melburg, 1984; Bryman Mohamed *et al.*, 1999; Ogden and Clarke, 2005; Merkl-Davies and Brennan, 2007).

Table 1 presents the previous studies according to their legitimacy objectives, motivations, strategies, tactics or techniques.

Despite the research on the determinants of voluntary adoption of environmental programmes, it has not yet studied how the addition of water security to the CDP ranking affects the use of IM strategies in water reporting. Talbot and Boiral (2018) analyze the use of IM strategies in reporting greenhouse gases (GHG) in the energy industry. Although we rely on their methodology of analysis, our paper differs from theirs, as we analyze the use of IM strategies in water reporting after the addition of water to the CDP A-List in a sample of companies from different industries whose activity has a high impact on water.

Our purpose is to understand how this change in the CDP scores affected companies' reporting practices on water management issues. Considering studies have found that companies tend to adopt IM strategies in the report, adding water in the CDP A-List should increase the use of these strategies. We also intend to build on our understanding of what motivates companies in the type of IM strategies they adopt after the addition of water to the CDP A-List. Do companies aim to maintain or restore their image and legitimacy, or, on the contrary, do they report more concrete actions related to water security and management?

To fill the gap in the literature we address the following two research questions:

RQ2. What types of IM strategies do companies adopt in their water disclosures?

RQ3. Which references increased the most after the addition of water to the CDP A-List? Those that translate each IM strategy or those related to actions? Industry and companies' region differentiate results?

3. Methodology

The objective of this study is to analyze if the introduction of the water item to the CDP A-List affected companies' reports, increases the use of IM strategies. We use a methodological approach similar to previous research (Merkl-Davies and Brennan, 2007; Talbot and Boiral, 2018; Boiral, 2013; Boiral and Henri, 2017; Diouf and Boiral, 2017). Firstly, we explore the data with a qualitative approach using content analysis. Secondly, to understand the evolution of references that reveal IM strategies, we conduct a quantitative analysis.

3.1 Sample and data collection procedures

Our sample consists of 15 companies listed on the water CDP A-List, in 2017, from the materials sector, which includes different industries with a relevant impact on water. We have companies from four industries, namely, metals and mining (4), chemicals (7), paper and forestry (3) and conglomerates (1). This sector was selected due to its strategic role in managing climate change. Constant public surveillance and strong external pressures on highly polluting companies call for greater environmental responsibility and commitment.

Panel A: IM strategies to restore or repair legitimacy by the protection of the image and obfuscation of bad news and legitimation of negative aspects

<i>Strategies</i>	Summary	Authors
<i>Defensive, protective, reactive:</i>		
Apologies, excuses, justifications and commitments	Companies try to totally or partially refute the responsibility of a given situation with negative effects and to promise improvements to combat and avoid these effects	Talbot and Boiral (2018), Merkl-Davies and Brennan (2007), Ogden and Clarke (2005), Arndt and Bigelow (2000), Tedeschi and Melburg (1984), Bryman Mohamed et al. (1999), Hooghiemstra (2000), Hahn and Lülfs (2014).
Dissociation	Companies remove any responsibility for a given situation with negative effects	Tedeschi and Melburg (1984), Ogden and Clarke (2005)
Omission	Information with negative effects is intentionally hidden	Cooper and Slack (2015), Talbot and Boiral (2018)
<i>Concealment:</i>	Obfuscation of negative effects by using:	Merkl-Davies and Brennan (2007), Cooper and Slack (2015)
Rhetorical and numerical manipulation (S)	Persuasive discourse with expressions in the narrative to hide certain information with negative effect and too complex and opaque performance information	Merkl-Davies and Brennan (2007), Talbot and Boiral (2018)
Reading ease manipulation (S)	Expressions are used in the narrative that makes it more complex and difficult to read	Merkl-Davies and Brennan (2007)
Marginalization	Information with negative effects is not relevant	Hahn and Lülfs (2014), Talbot and Boiral (2018)
Abstraction	Information with negative effects is vague and ambiguity	
Instrumental and theoretical rationalization	justify negative aspects by emphasizing the benefits and good intentions of the activities	
Authorization	Information about the association with prestigious, recognized institutions such as industry authorities, universities and research centres	
Logos	Persuasive discourse is used with arguments, reasoning and defensive justifications	Higgins and Walker (2012)

Panel B: IM strategies to maintain or gain legitimacy by the promotion of the image and to emphasize and reinforce good news

Assertive; acquisitive; proactive:

Ingratiation	Applaud, praise and share with stakeholders, values, beliefs and achievements	Tedeschi and Melburg (1984), Ogden and Clarke (2005)
<i>Self-promotion or Acclaiming:</i>	Promotion of companies' own competences, qualities, abilities and improvements by using:	Hooghiemstra (2000), Tedeschi and Melburg (1984), Bryman Mohamed et al. (1999), Ogden and Clarke (2005), Merkl-Davies and Brennan (2007)
Exemplification	Present itself as a model of conduct	
Entitlements	Assign the responsibility to the internal elements for the achievements and outcomes obtained	
Enhancements	Bolster and enhance the positive effects of a given action	

(continued)

Table 1.
Impression
management
strategies

<i>Concealment:</i> Thematic manipulation	Emphasis on positive outcomes by using: Positive information is emphasized, and negative information is minimized through keywords and expressions	Merkl-Davies and Brennan (2007)
Visual and structural manipulation	the positioning of information is manipulated so that positive information has more effect	
Performance comparison	Selection of information that benefits the performance of the activity	Higgins and Walker (2012)
Choice of earnings numbers (S)	Selection of financial earnings metrics that benefits the performance of the activity	
Pathos	Persuasive discourse is used to create emotion	
Ethos	Persuasive discourse is used to obtain credibility and trustworthiness	

Table 1.

Our first source is the sustainability reports available on the companies' websites. We examine these reports because of their wide use as a source of information about corporate environmental performance (Unerman, 2000). When these were not available, we analyzed those we found on the sites for the period under review, whether they are integrated, corporate or annual. These reports offer a high degree of content credibility and are often the only source of information for stakeholders (Unerman, 2000).

Given that the introduction of the water security category in the CDP List A occurred in 2015, we chose to analyze the reports of the companies in our sample of the previous year (2014) and the following year (2016). Considering that: in the first year of CDP Water A List, only three companies were in this score; in 2016, five achieved this distinction; and, finally, in 2017 they all reach this ranking, we analyze the evolution of the reports in the period in which these changes occurred.

Table 2 summarizes the information about the company's name, industry, country, report title, year and the number of pages.

For content analysis, the 30 reports were uploaded into NVivo12 (© QSR International). To better understand a large amount of information available in a total of 4,372 document pages, we first conducted "text search queries", in which the criteria comprised the search in "all sources". An initial query was run for the "exact matches" of the word "water". The total number of references was identified with the help of the software (3,371), and the corresponding coverage in each report was saved and added to the NVivo project. We choose to extract the data in a broad context (fragments include the whole paragraph surrounding the word or words queried for analysis) rather than a narrow one (fragments include only the surrounding words or expressions), which allowed for the subsequent coding. Reading the expression in the actual paragraph or section in which it appears in the report significantly reduced the time required for the coding procedures while enabling an easier understanding of the latent meaning behind the words.

3.2 Procedures for data analysis

To answer RQ1, we adopt a quantitative approach and we test the difference on average references to water in 2014 versus 2016 with an independent *t*-test. We reorganize the data on two industry categories, chemical and other and on three regions, Africa, Europe and others. To test the differences in the number of references we use an independent *t*-test, ANOVA and non-parametric tests.

Company	Companies' abbreviation	Industry	Country	Report title/year	No. of pages
African Rainbow Minerals	ARM	Metals and mining	South Africa	Sustainability report 2014	170
BASF SE	BASF	Chemical	Germany	Sustainability report 2016	164
Braskem S/A	BRASKEM	Chemical	Brazil	Report economic, environmental and social performance 2014	276
Ecolab Inc.	ECOLAB	Conglomerate	USA	Report economic, environmental and social performance 2016	260
Firmenich SA	FIRMENICH	Chemical	Switzerland	Annual report 2014	204
Harmony Gold Mining Co Ltd	HAR	Metals and mining	South Africa	Annual report 2016	121
Koninklijke DSM	DSM	Chemical	The Netherlands	Corporate sustainability report 2014	81
Kumba Iron Ore	KUMBA	Metals and mining	South Africa	Corporate sustainability report 2016	95
Metsä Board	METSÄ	Paper and forestry	Finland	Sustainability report 2014	64
Mitsubishi Chemical Holdings Corporation	KAITEKI	Chemical	Japan	Performance and sustainability report 2016	52
Mondi PLC	MONDI	Paper and forestry	UK	Integrated annual report 2014	202
OMNIA holdings Ltd	OMNIA	Chemical	South Africa	Integrated annual report 2016	160
Royal Bafokeng Platinum Ltd	ROYAL	Metals and mining	South Africa	Integrated annual report 2014	220
Symrise AG	SYMRISE	Chemical	Germany	Integrated annual report 2016	222
UPM-Kymmene Corporation	UPM	Paper and forestry	Finland	Sustainable development report 2014	125
<i>Total</i>	15	—	—	Sustainability report 2016	92
				Sustainability report 2014	124
				Sustainability report 2016	125
				Integrated report 2014	122
				Integrated report 2016	138
				Sustainable development report 2014	115
				Sustainable development report 2016	112
				Integrated annual report 2014	192
				Sustainable development report 2016	96
				Integrated report 2014	262
				Integrated report 2016	186
				Corporate report 2014	106
				Corporate report 2016	120
				Annual report 2014	76
				Annual report 2016	90
				30	4372

Table 2.
Sample

Aiming to answer to RQ2, a content analysis was conducted. This analysis comprised the development and stabilization of a categorization framework, the systematic categorization of the sustainability reporting and the qualitative interpretation of the data. A categorization framework of raw data in similar and significantly recurring themes can be developed following an inductive, deductive or mixed categorization framework (Krippendorff, 2004). This study developed a mixed categorization framework.

At this stage, the analysis was conducted individually and inductively by the three researchers. After the first analysis of coders working independently on the reports of MONDI (2014 and 2016), the researchers met to compare and discuss the themes found in that exploratory phase. Preliminary themes were subsequently developed further or adapted based on group discussion, the literature, *in-vivo* ideas and memos emerging from the raw data analysis. This strategy was key to avoid major differences in activities and discrepancies between the researchers that, thus, ensured the thoroughness of the analysis. The researchers continued to categorize the segments in four more reports. Continuous discussion and feedback between the researchers and coders who were involved throughout the process were important to clarify and standardize the codification process and to ensure a common understanding of the coding tree.

The 30 reports analyzed were coded and queried in NVivo according to the categorization framework. The categorized data were interpreted to present the results in empirically illustrated categories with references taken from the reports.

To answer RQ3 we use quantitative analysis. To understand the evolution of the number of references about concrete actions and that reveal IM strategies, we test the mean difference in references to water in 2014 versus 2016 with an independent *t*-test. We use an independent *t*-test, ANOVA and non-parametric tests to test the differences in the number of references by industry and region.

4. Results

This section addresses the results of each research question, in turn.

4.1 Water references before and after the creation of Carbon Disclosure Project Water A-List

To answer our first research question, we analyze the number of references to water in the reports and its evolution between 2014 and 2016 (Panel A of Table 3). The results show an increase in the number of references, but this difference is not statistically significant. Although there is, on average, an increase in the number of references to water, the disclosure behaviour is heterogeneous among companies. Some companies reduced the number of references (BASF, BRASKEM, HAR and KAITTEKI) while others increased the number of references (DSM, ECOLAB, FIRMENICH, KUMBA, METSA, MONDI, OMNIA, ROYAL, SYM and UPM).

Results of the *t*-test evidence a significant difference on the average references in 2016 between chemical companies vs others. Being this difference negative, chemical companies present a smaller number of average references to water, in 2016, than companies from other industries (Table 3, Panel B). Results from ANOVA and a non-parametric test on the differences between Africa, Europe and other regions (Table 3, Panel C) show that African companies disclose more references to water, in 2016, although the difference is not statistically significant.

4.2 Impression management strategies in water disclosures

To answer the second research question, we analyze the references (extracted from NVivo), considering the IM strategies identified in the literature review (Table 1). We found the

Table 3.
Text search query
“water”

Companies' abbreviation	References “water”/broad context	
<i>Panel A – References by company and year</i>	2014	2016
ARM	63	63
BASF	58	47
BRASKEM	83	50
DSM	22	36
ECOLAB	56	59
FIRMENICH	28	29
HAR	81	73
KAITEKI	22	19
KUMBA	57	58
METSA	19	20
MONDI	77	95
OMNIA	46	56
ROYAL	48	61
SYM	12	18
UPM	38	47
Total	710	731
Mean	47.333	48.733
SD	23.317	21.615
Difference 2016–2014 (sig)	1.400 (0.581)	
<i>Panel B – Average references by industry and year</i>	References “water” 2014	References “water” 2016
Chemical	38.714	36.429
Others	54.875	59.500
T-test (mean)	–16.161	–23.071
T (sig)	–1.382 (0.190)	–2.383 (0.033)
<i>Panel C – Average references by region and year</i>	References “water” 2014	References “water” 2016
Africa	10.20	11.60
Europe	5.93	5.86
Others	9.17	7.00
Chi-square	2.921	5.006
Asymp. sig.	0.232	0.082

following three IM strategies: justification and commitment (Talbot and Boiral, 2018), self-promotion (Tedeschi and Melburg, 1984; Bryman Mohamed *et al.*, 1999; Ogden and Clarke, 2005) and authorization (Hahn and Lülfs, 2014). We also created a fourth category: actions. We conducted an analysis of the companies' references to specific actions to minimize the effects of their operations on water security. This analysis determines whether concrete actions exist in conjunction with rhetoric that indicates whether the company's concern about sustainability is indeed genuine and is not just a matter of promoting its image or legitimizing those activities that have a negative effect.

Justification and commitment

As our sample consists of companies whose activity has a strong impact on water, justification strategies are of importance to check the true commitment of companies in relation to water security. In the justification strategy, companies acknowledge responsibility for the consequences of their activities. However, companies may try, totally or partially, to refute responsibility for a

given event with negative effects and promise improvements to combat and avoid these effects. (Talbot and Boiral, 2018; Merkl-Davies and Brennan, 2007; Ogden and Clarke, 2005; Arndt and Bigelow, 2000; Tedeschi and Melburg, 1984; Bryman Mohamed *et al.*, 1999; Hooghiemstra, 2000; Hahn and Lülfs, 2014).

As an example of this strategy, in 2014, the UPM stated:

Average specific wastewater volume for UPM decreased only slightly due to a higher weight of pulp in the portfolio, despite the fact that UPM Fray Bentos has one of the lowest water use rates in the industry.

And ARM (2014) justified that:

Failure to meet and exceed best practices for monitoring and reporting emissions could have a reputational impact on ARM and affect its ability to operate. A lack of water would affect our ability to expand or continue operations.

By using the commitment strategy, companies potentially tend to generalize their intentions towards water security by promising significant improvements without describing concrete future actions (Talbot and Boiral, 2018). Here, companies use generic phrases that reinforce the importance of water security and that state that companies are doing their best in an attempt to form a positive image. The following extract from MONDI (2014) shows their commitment to water-related topics: “We are committed to operating sustainably and being proactive in the way we deal with the global issues and their local consequences including climate change, energy, water and biodiversity”. In its 2014 report, BASF assumes the commitment:

“To protect the Rhine River, we have committed to the step-by-step reduction of heat input from the Ludwigshafen site when set temperature limits are exceeded, for example, as a result of long heatwaves or low river levels”.

Despite a slight reduction in the references from 2014 (80) to 2016 (70), these strategies, the most studied in the previous research (Table 1), were the most used and were identified in 24 of 30 the analyzed reports (80%). These results can be justified given that our sample consists of companies from industries with a strong impact on water and, despite recognizing the responsibilities of the negative effects of their activities, they seek to refute them and promise improvements in water performance.

Self-promotion

Self-promotion is characterized as companies promoting their own competence (Tedeschi and Melburg, 1984; Ogden and Clarke, 2005), qualities, abilities, experiences and certifications. Companies can adopt this strategy by using different techniques, for example, presenting themselves as models of conduct and entitlements by assigning responsibility to internal elements for the achievements and outcomes obtained that enhances the positive effects of a given action, as described in Table 1.

The desire to be ranked on a list like the CDP A-List can boost the use of this type of strategy. As all the companies in our sample reached the CDP A-List in 2017, we want to check if this voluntary disclosure programme promotes an increase in the adoption of this strategy. Companies can use this achievement to promote themselves such as BASF (2016) in the following extract:

According to CDP, an international non-profit organization, BASF is a world leader in sustainable water management and was included for the first time in CDP's Water A-List. Of the 607 companies evaluated, only 24 of them received the top score of “A” – among them, BASF.

METSA (2016) comments in this reference:

The only forest industry company to be included on the A-List for Water. Only 4% of the 607 companies reporting to the Water programme were included on the A-List.

Although references to the CDP Water A-List are good examples of this strategy, other references can also be classified as self-promotion; for example:

We will take full advantage of the power of science to contribute to the solution of global social issues such as climate change, resources and energy and food and water shortages and also boldly challenge ourselves to create value that will improve the quality of people's lives,

(*KAITEKI, 2014*) and “Our strategic focus on improving operational efficiency supports increased energy efficiency, reduced water use and minimizes waste generated at site level” (*ARM, 2016*).

This strategy increased the most in the period under analysis by doubling the references from 2014 to 2016. Only four of the analyzed reports, three in 2014 and one in 2016, had no self-promotion references; and 67% (10 out of 15) companies increased the number of these references. Based on these results, we can infer that companies, in the post-CDP Water A-List period, engaged in self-promotion either using this recognition or using other tactics that seek to highlight the positive effects of a given action.

Authorization

Following [Hahn and Lülfs \(2014\)](#), we define the authorization strategy (referencing authorities) as when companies mention their association with prestigious, recognized institutions such as industry authorities, universities and research centres to legitimize their negative effects on water. Some examples illustrating this strategy are: “The turnaround at the Postmasburg WWTP was recognized by the Water Institute of Southern Africa with a second place in the 2014 WISA Wilson Award in May 2014” (*ARM, 2014*); and “Braskem won the Ecomagination Award, awarded by the GE Company to clients who achieved the positive balance between industrial production and sustainability challenges”. (*BRASKEM, 2016*). Given that the companies under analysis are from industries with strong impacts on water, they aim to legitimize the negative effects of their activities with this strategy, and thus to minimize their effects on stakeholders' perceptions. Although some references are repeated in both years without major changes, we observe that this type of strategy decreased slightly between 2014 (22) and 2016 (20). This may result from these companies being more focussed on an assertive strategy and promoting their image.

Actions

Finally, as we want to understand how companies reacted to the introduction of water in the CDP A-List in this subsection, we analyze the references to concrete actions in companies' reports. For example, *METSA (2014)* discloses an action to minimize the effects of their operations on water security: “In Russia, we have invested in a new greenhouse to increase our reforestation capacity and have also modernized our wastewater treatment plant to further reduce emissions”. *DSM (2016)* reports the action programme for water management: “We identify and take action on areas of water scarcity with wastewater efficiency and treatment programmes such as at DSM in Pune (India)”.

If companies introduce more references to concrete actions in their reports, we can move forward with the conclusion that voluntary environmental information programmes have a

positive effect on the management and security of water. From our analysis, there is no great difference between 2014 and 2016 as many references are similar for the same actions that lead us to conclude that no new actions were developed in this period. Only about 50% (7 out of 15) companies increased the number of references to concrete actions. Given the qualitative and exploratory nature of the research and the limited number of companies, we cannot generalize the conclusions.

4.3 Analysis of the evolution of water references: IM Strategies and Actions

To answer the third research question, we analyze the evolution of the number of references regarding concrete actions and the references that reveal IM strategies.

Within the scope of a mixed study, [Table 4](#) presents the number of references by category, company and year.

The analysis shows that the difference between the average number of self-promotion references, in 2016 and 2014, is positive and statistically significant and the mean differences between references classified as justification and commitment, authorization and action are negative, although not statistically significant ([Table 4](#), Panel A).

Self-promotion references increased from 38 in 2014 to 75 in 2016 that represents an increase of about 97.4% and shows the strong commitment of these companies to improve their image. This commitment is evident whether referring to their adherence to the water security CDP programme or through vague references to their concerns about environmental issues and water-related ones.

We find that the numbers of references related to actions in 2014 and 2016 are almost identical (173 references in 2014 and 172 in 2016). In fact, we observe that companies keep the references to concrete actions in their reports without major changes and increase the references that translate into the adoption of IM strategies, in particular the references to the self-promotion strategy. This evidence leads us to consider that companies are not improving their performance in terms of water management, but rather are trying to promote their image and legitimize the negative effects of their activities on the environment and water security.

Results from the *t*-test ([Table 4](#), Panel B) provide evidence that chemical companies disclose fewer references that reveal justification and commitment and authorization strategies than companies from other industries, in both 2014 and 2016. This result can be explained because, in this industry, as negative incidents are more frequent, there is a greater concern with the information in the reports, concerning climate impacts, as [Hahn and Lülfs \(2014\)](#) concluded.

Finally, results from ANOVA and non-parametric tests ([Table 4](#), Panel C) evidence a positive and statistically significant difference between Africa and other regions and show that African companies adopt more authorization strategies than companies from other regions.

5. Conclusions, limitations, contributions and future research

Considering that stakeholders are paying greater attention to water-related issues and that governments and companies are being called on to improve water resource management and to disclose reliable and comparable information, the purpose of our study is to analyze the extent to which the addition of water security as a category in the CDP A-List had an effect on the voluntary disclosure of environmental information.

The qualitative analysis confirms that companies adopt IM strategies for self-promotion of their own competence, qualities, abilities, experiences and certifications. We find that references to water do not increase significantly after the addition of the water category to the CDP A-List.

Companies' abbreviation	Just.&Commit.		Self-promotion		Authorization		Actions		Total	
	2014	2016	2014	2016	2014	2016	2014	2016	2014	2016
Panel A: Total number of water references by category, company and year (density)										
ARM	7	0	10	13	1	0	24	23	42	36
BASF	2	1	3	2	0	1	9	19	14	23
BRASKEM	3	0	2	4	0	0	20	8	25	12
DSM	2	0	2	3	0	0	4	9	8	12
ECOLAB	0	0	7	6	0	0	17	21	24	27
FIRMENICH	1	0	1	7	1	0	14	3	17	10
HAR	11	12	1	4	3	2	15	12	30	30
KAITEKI	6	6	3	3	0	0	8	1	17	10
KUMBA	10	9	1	0	3	5	15	14	29	28
METSA	2	3	0	6	1	1	4	1	7	11
MONDI	14	21	4	15	7	4	13	18	38	58
OMNIA	7	3	3	0	1	2	5	14	16	19
ROYAL	7	8	0	4	5	4	7	10	19	26
SYM	1	2	0	3	0	0	7	4	8	9
UPM	7	5	1	5	0	1	11	15	19	26
TOTAL	80	70	38	75	22	20	173	172	313	337
Mean	5.333	4.667	2.533	5.000	1.467	1.333	11.533	11.467	20.867	22.467
SD	4.186	5.900	2.774	4.175	2.134	1.718	6.010	7.151	10.514	13.185
Dif 2016–2014 (sig)	-0.667 (-0.843)		2.467 (1.906)**		-0.133 (-0.435)		-0.067 (-0.039)		1.600 (0.775)	
Panel B – The average number of water references by category, industry and year										
Industries	Just.&Commit.		Self-promotion		Authorization		Actions		Total	
	2014	2016	2014	2016	2014	2016	2014	2016	2014	2016
Chemical	3.143	1.714	2.000	3.143	0.286	0.429	9.571	8.286	15.000	13.571
Others	7.250	7.250	3.000	6.625	2.500	2.125	13.250	14.250	26.000	30.250
T-test (mean)	-4.107	-5.536	-1.000	-3.428	-2.214	-1.696	-3.679	-5.964	-11.000	-16.679
T (sig)	-2.119 (0.054)	-2.117 (0.065)	-0.725 (0.488)	-1.721 (0.109)	-2.446 (0.042)	-2.250 (0.050)	-1.2012 (0.251)	-1.721 (0.109)	-2.315 (0.038)	-3.111 (0.008)
Panel C – The average number of water references by category, region and year										
Regions	Just.&Commit.		Self-promotion		Authorization		Actions		Total	
	2014	2016	2014	2016	2014	2016	2014	2016	2014	2016
Africa	11.70	10.10	7.80	6.60	11.60	11.10	9.10	9.80	10.70	11.10
Europe	6.50	7.50	6.79	8.93	7.14	7.50	5.93	7.21	5.57	6.50
Others	5.33	5.67	11.17	8.17	4.00	4.00	11.00	6.83	9.17	6.33
Chi-square	5.422	2.085	2.102	0.810	6.699	5.499	3.171	1.235	4.113	3.626
Asymp. sig.	0.066	0.353	0.350	0.667	0.035	0.064	0.205	0.539	0.128	0.163

Note: **Significance at the 5% level

Table 4.
Impression
management
strategies and
actions (density)

However, we did find an increase in the number of references that show self-promotion strategies, and the number of references to real actions did not increase. Based on these results, we infer that the way companies speak and write (rhetoric) about what they do (self-promotion) has more visibility than what they actually do (actions) as IM strategies exceed what companies actually do (actions). This conclusion shows that the programmes for voluntary disclosure of environmental information do not lead to an increase in companies' environmental responsibility but can result in a rhetorical strategy. Further, it corroborates the conclusions from previous studies, regarding the veracity and reliability of the information disclosed by companies in their reports (Talbot and Boiral, 2018; Cooper and Slack, 2015).

Although the analysis is limited by its qualitative and exploratory nature, our results confirm the findings of other studies that criticize the reliability of reports including qualitative and voluntary information, such as Cooper and Slack (2015), Merkl-Davies and Brennan (2007), Diouf and Boiral (2017), Talbot and Boiral (2018) and Dingwerth and Eichinger (2010).

To our knowledge, this is the first study to analyze IM strategies in water disclosures and to relate the findings to companies scored on the CDP A-List. Therefore, we contribute to the literature in three different ways: water reporting, the effect on the level of voluntary disclosure of environmental initiatives, and on IM strategies. We add to the research on the importance of rankings of voluntary environmental initiatives and their impact on companies' reporting and accountability. As for practical implications, we demonstrate that investors should be cautious in analyzing information to assess companies' effective environmental performance. Understanding the role of voluntary environmental programmes, such as CDP, in the commitment to sustainability is another implication of this study for academics, regulators, governments and other stakeholders that are interested in the information contained in the reports and all those who operate with companies and are concerned about environmental issues and sustainability.

Despite the following limitations of our research: the short analysis period; the small size of the sample and from a single sector; and the diversity of the analyzed reports, we believe that the companies classified in the CDP A-List will be the ones that are most concerned with sustainability issues. We draw our conclusions based on the assumption that the information disclosed by companies in their reports is true. Thus, we do not carry out any procedure that would allow us to verify whether the actions disclosed in the reports were indeed carried out. Future research should deepen the analysis of the actions taken through fieldwork and further analysis of information that is disclosed in other sources, such as the CDP questionnaire and on companies' websites.

In this study, we analyze companies from the material sector, which is one with a major impact on water. In the CDP methodology, this sector includes four industries: metals and mining, chemicals, paper and forestry and conglomerates. We understand that these companies will have more information for analysis which would allow us to draw conclusions. However, the sample can be enlarged and extended in the future to other sectors that allow for comparative analysis.

A complementary analysis could identify visual and structural manipulation, that is, IM strategies through the use of images, as suggested by Merkl-Davies and Brennan (2007). Therefore, future research could make an additional, exploratory content analysis of visual sustainability reporting. Visual analysis, particularly being able to "read the visual" (Shirato and Webb, 2004), is important in qualitative research as it can identify the symbolic messages that are conveyed by images and which escape a quantitative and textual analysis (Denzin and Lincoln, 2000; Rose, 2001). Compared to the analysis of text segments, the images included in sustainability reports can be categorized into recurring and emerging themes from an inductive perspective in the NVivo software environment that, thus contributing to complement and enrich the textual interpretation of data.

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Corresponding author

Ana Fialho can be contacted at: afialho@uevora.pt

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