What does the Business Model tell us about Natural Capital? Insights from African Integrated Reports

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Abstract

The economics of ecosystems and biodiversity (TEEB, 2010) has emphasized the importance of business sectors involved in ecology, biodiversity, and the environment's entire conservation and protection process. Corporate sustainability raises the question of how environmental and social management can be better integrated into economic business goals. The latter is important in order to trace the actual impact of firms' actions on the environment by means of disclosure reports and in order to identify and promote business organizations' virtuous behaviour.
We investigate the type of information provided on natural capital and its positioning within the integrated report (IR) body (the locus). This element is critical in order to understand whether the information provided is effective and, if so, whether it is likely to be translated into actions that impact the environment tangibly.
We undertook an empirical analysis of the IR corpus's disclosure of natural capital in order to trace whether and, if so, how natural capital information is embodied in business activities, notably in IR's business model (BM) section. We did so by investigating South African IR a very promising research domain, due to the environmental wealth and the Johannesburg Stock Exchange regulation that mandates listed companies to provide an IR.
Our study sheds lights on real commitment to sustainability, discussing the type of information that the companies provide and its link to strategy implementation.

Keywords: natural capital, Integrated Report, Business Model, sustainability, Africa

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1. Introduction

Many scholars (Boons & Lüdeke-Freund, 2013; Hansen et al., 2009; Schaltegger et al., 2012; Stubbs & Cocklin, 2008) emphasize that business organizations can help develop integrative and competitive solutions by either radically reducing the negative effects and/or creating positive external ones for the natural environment and society. Nevertheless, the difficulties encountered when moving toward corporate sustainability raise the question of how environmental and social management can be better integrated into economic business goals. (Schaltegger & Wagner, 2011).

Buhr (2007) and Livesey (2002) highlight that the act of corporate reporting on sustainability has the potential to influence and transform corporate behavior. Further research is required to assess the actions that business organizations undertake in terms of the environment to prevent commitment to sustainability remaining more general than tangible. It is important to trace firm actions' actual impact on the environment through disclosure reports, in order to identify and promote business organizations' virtuous behaviour.

Disclosures of the environment (including the natural capital) should not just be considered a means of serving impression management but also as a lever to induce behavior that will have an impact on environmental issues.

Considering the critical role of disclosure, in our study we investigate whether and how companies report about natural capital and information positioning within the integrated report (IR) body (the "locus"); more specifically, we trace if disclosure of natural capital is embodied in business activities, notably in the IR's business model (BM) section.

This element is critical in order to understand if information provided is effective and therefore likely to be translated into actions with a tangible impact on the environment.

The reasons why we regard integrated reporting as a particularly promising domain of research on natural capital lies in the presence and relevance of the business model in the framework of the International Integrated Reporting Council (IIRC). According to the IIRC, the IR should include the organization's business model, which explains how a business organization uses multiple capitals, including natural capital, to create value.

We investigated South African IRs: This region represents a very promising research domain due to the environmental wealth and the Johannesburg Stock Exchange regulation that mandates listed companies to provide an IR.

Accounting scholars consider the business model and the value creation process as a communication device that can improve a company's attempts at disclosure, offering insight into the value creation process (Bini et al., 2018).

The analysis of this section (i.e., business model and value creation process) of the IR can help understand whether and how companies implement sustainability strategies.

Following Gibbins et al. (1990), we argue that the locus of information (where it is disclosed) is crucial for evaluating the relevance of the information itself; under our framework, all the elements included in the business model and the value creation process pertain to the implementation of strategy in the day-to-day operation (Bini et al., 2018).

A stream of literature (Osterwalder et al., 2005) considers the BM as "a conceptual model that explicitly states how the business functions." A BM can be useful in assessing a company's engagement in sustainability practices because the BM itself should reveal how sustainability is actually implemented.

When information is not embodied in the BM, the BM risks becoming disconnected from practices that the company undertakes effectively; in this context, justifications instead of actions regarding environmental concerns arise, setting the scene for the use of impression management tools (Milne et al., 2009; Milne & Gray, 2013).

In our analysis we want to trace the nature of the information that is provided in the IR's BM and value creation process section, In doing that, we define information in terms of volume (number of information items) – visuals or narratives; type (quantitative or qualitative); time orientation (forward/non-forward looking); role (input/output/outcomes).

The paper is organized as follows. After a section describing the theoretical framework of the research – which is based on the legitimacy theory – we present the research design (methodology and sample selected). The next section outlines the main results about natural capital disclosure in the selected IRs, discussing the evidence and the contribution to the literature. Lastly, the study's limitations and opportunities for further research are outlined.

2. Theoretical framework

Recent developments in corporate governance and reporting show a more integrated approach to business management and corporate reporting, with a strong emphasis on the relevance of non-financial capital in generating companies' sustainable returns (Mio et al., 2020; Atkins & Maroun, 2015; De Villiers et al., 2014, IIRC, 2013a).

In recent few years, sustainability reporting has become a more common routine (Higgings et al., 2015), mainly due to the adoption of certain reporting frameworks, such as the IR proposed by the IIRC, and the Global Reporting Initiative (GRI) standards.

Even though the number of sustainability reports increases rapidly (KPMG, 2017), it is important to emphasize that their quality is still under observation and that the literature on this subject is on the rise (Cho et al., 2012; Milne et al., 2006, 2009; Bowen & Aragon-Correa, 2014; Merkl-Davies & Koller, 2012).

Without a reference to both tangible impacts on the environment and business activities that the organization had undertaken, environmental accounting runs the risk of appearing just like a convenient tool for impression management, enhancing corporate image through the release of general information.

Business organizations, therefore, need to face the great challenge of sustainability by translating environmental issues into their business activities: This implementation throughout the organization is necessary in order to manage sustainability risks and opportunities effectively (Haugh & Talward, 2010).

Legitimacy theory and environmental disclosure

The legitimacy theory explains why companies decide to disclose information. According to the theory, organizational survival depends on the organization's ability to preserve the social contract with the community, thereby ensuring financial results.

Du and Viera (2012) state that the "*community license to operate*" represents the main pillar of the legitimacy theory.

Woodward et al. (1996) suggest that "companies have to do certain things if they are to maintain their mandate from society to continue existing."

Organizations need to continually assure societal consensus: Particularly, they have to create "a general perception […] that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definition" (Suchman, 1995).

Companies continually exploit disclosure to induce the belief that they operate within the common societal norms and bounds. Certain authors (Sonpar et al., 2010) argue that an organization manages legitimacy in a strategic, instrumental, and active way; moreover, Suchman (1995) states that the legitimacy theory provides evidence for "ways in which organizations instrumentally manipulate and deploy evocative symbols in order to garner societal support."

The debate around the legitimacy theory concerns the manner in which organizations manage, maintain, and repair legitimacy (Samkin & Schneider, 2010).

Considering that societal norms and bounds constantly change over time, organizations need to be responsive to the environment in which they operate (Hristov et al., 2020).

In the accounting literature (Siddiqui, 2013), the legitimacy theory is used to explain why companies decide to propose environmental disclosure. Generally, when a company notices fading legitimacy, its management reacts by implementing countermeasures, including the use of such impression management behaviors as making positive, self-initiated disclosures about the organization (Milne & Patten, 2002; Mobus, 2005). The disclosure of environmental performance contributes to secure moral legitimacy (Matejek & Gössling, 2014; Suchman, 1995).

Matejek and Gössling (2014) state that organizations make corporate environmental disclosures for the purpose of building and maintaining environmental/moral legitimacy.

Authors have largely explored environmental reporting practices (Deegan & Gordon, 1996; Hardy & Frost, 2001; Tilt, 2001; Deegan, 2002; Burritt, 2002; Cowan & Gadenne, 2005; Baughn et al., 2007; Frost, 2007; Clarkson et al., 2008; Cho & Patten, 2008).

If it is true that reporting should enable stakeholders to make informed decisions (Dingwerth & Eichinger, 2010), it is also true that it represents another tool forcorporate's public relations.

Talbot and Boiral (2015) emphasize companies' tendency to present an idealized image of reality; when organizations present corporate reporting information in order to take advantage of information asymmetries, they adopt impression management strategies (Merkl-Davies et al., 2011). These strategies relate to any designed action with a positive impact on corporate image and reputation, aimed to protect companies against potential risks to their legitimacy; the latter is achieved by a declared consistency between organizations' practices and society's values. In this manner, companies tend to influence stakeholder perceptions (Bolino et ali, 2008; Talbot & Boiral, 2015).

Academics have recently addressed impression management in natural capital (Boiral, 2016; Boiral & Heras-Sizarbitoria, 2017), stating that "as stressed by theories of neo-institutionalism, external pressures and the search for corporate legitimacy are two of the main reasons for implementing new practices, especially in the area of environmental management, natural capital and biodiversity."

Graphs (Cho et al., 2012) and photographs (Davison, 2007) can be used in financial reports as tools of impression management: In fact, visuals are generally characterized by high communicative power because they are very direct and immediate.

Sometimes the links between visual impression management and investor decision-making are indirect, but sometimes the impacts are arguably more direct as examined through experimental psychology (Beattie & Jones, 2002).

Lambooy et al.'s (2018) study confirm that investors are only interested in natural capital when it is clearly and directly linked to (reduced) financial risks.

The sincerity of corporate environmental reporting has been widely discussed in literature.

Cho et al. (2015) describe the organized hypocrisy model, in which a company's rhetoric and disclosure, on the one hand, and its corresponding actions, on the other hand, are decoupled, often even inversely related.

The complexity of the contemporary competitive arena and the level of external pressures, together with a lack of complete access to information, make it difficult to verify the validity of declared statements.

Christensen et al. (2013) state that a temporary gap between corporate talk and actions can motivate a transformation toward the aspirations conveyed in the talk, pushing the corporation to implement better social responsibility (reporting) practices.

Maroun and Atkins (2018), proposing their extinction accounting framework, emphasize accountancy's emancipatory potential; reporting practices encourage changes in mindsets and bring about social change.

The authors conceptualize integrated reporting as a rational myth and the exploration of the ramifications of myth itself; this approach enables Maroun and Atkins to introduce the role of myth as a relevant lens for studying non-financial reporting, suggesting that myths can play a productive role in transforming business and reporting practices.

The revolutionary and emancipatory power, which is implicit in the extinction theory, is also consonant with a recent study that explores the myth as a founding element of integrated reporting (Gibassier et al., 2018).

Integrated Reporting and Natural Capital

As is widely known, sustainability reporting has a long history (De Villiers & Maroun, 2017). For example, evidence is cited of an early form of financial accounting to employees dating to 1917. There are also examples of basic forms of corporate social responsibility (CSR) reporting by an American steel and an Australian mining company in their corporate reports issued in the late 1890s and early 1900s (De Villiers & Maroun, 2017).

Although the GRI is the most popular framework for sustainability and although the GRI has a specific standard on biodiversity (namely, GRI 304), we thought that it is more appropriate to explore the issue of integrated reporting from a managerial and organizational perspective in the light of various considerations that follow.

First of all, GRI 304 contains elements of a highly technical nature, which, although of great relevance for corporate matters too, are perhaps more immediately intelligible to an industry technician. Instead, the integrated reporting as proposed by IIRC (2013 a) – in keeping with its purpose ("… explain to providers of financial capital how an organization creates value over time") and its content elements (notably the presence of a business model) – appears to us to be, in this case, something more and something else than sustainability reporting.

The core elements of integrated reporting are represented by the capitals (natural capital included) that an organization uses and affects, as well as the process of creating value over time (Vitolla et al., 2020).

The assessment of an organization's ability to create value depends on an understanding of the connectivity between all the internal and external factors in its business model.

Moreover, there are other reasons why integrated reporting appears to be a particularly promising research domain for biodiversity disclosure, as it follows:

(a) a key element of the integrated reporting system lies in the business model, which makes it strongly different from the sustainability-only approach;
(b) by its very definition, integrated reporting complements the standard components of financial and sustainability reporting within a broader design that involves, inter alia, internal control systems and stakeholder engagement; and
(c) by its very nature, integrated reporting should be proactive, dynamic, and have a strategic and economic impact on the company's decisions; and in this sense, the business model (see the following subsection) is deemed to have a key relevance.

In order to assess companies' commitment to sustainability, we propose to investigate companies' disclosure of natural capital in the integrated report

(IR) – particularly in the section devoted to the value creation process and the business model (BM).

The analysis of the BM disclosure section, i.e. the section devoted to the value creation process and the business model, can help understand whether and how companies implement sustainability strategies in their day-to-day operations.

A company’s commitment to sustainability should not only be about “the programmes to reduce emissions or to invest in a local school” (Baker, 2011, p. xvii) but should also permeate the company's day-to-day operations (Engert et al., 2016).

Following this view of CSR in action (De Bakker, 2016), a real commitment to sustainability demands a strategic approach that integrates sustainability issues into the company’s BM (Schaltegger et al., 2012).

Although it is quite difficult to identify a unique definition of BM (Magretta, 2002), the concept has increasingly been discussed in debates both in accounting and management studies.

Accounting scholars consider the BM as a communication device that can improve a company’s attempts at disclosure, offering insight into the value creation process (Bini et al., 2018).

Bukh (2003) affirms that investors need to examine a company’s BM to fully appreciate information about non-financial indicators. BM disclosure is, therefore, considered useful in assessing any piece of non-financial information, including sustainability information (Nielsen, 2010), that is difficult to understand if it is not related to the context.

Beattie and Smith (2013), Page (2014), and Singleton-Green (2014), among others, have discussed the BM concept and the potential pros and cons deriving from adopting this concept as a basis for measurement standards or as a basis for requirements for narrative reporting.

Investors consider BM reporting critical to understand firms’ performance, as it provides an integrated description of how a firm generates its revenues (Greiner & Ang, 2012).

Management literature has developed a diverse set of BM concepts and frameworks; the main contributions pertain to business model innovation (Chesbrough, 2007; Massa & Tucci, 2013); open business models (Chesbrough, 2010); network-based business models (Lindgren et al., 2010); business model performance mapping (Nielsen, 2010; Montemari & Nielsen, 2013); business model patterns (Johnson, 2010; Gassmann et al., 2014); business model innovation typologies (Taran & Boer, 2013); and sustainable entrepreneurship (Schaltegger et al., 2016).

A stream of literature (Osterwalder et al., 2005) considers the BM as "a conceptual model that explicitly states how the business functions." A BM can be useful in assessing a company's engagement in sustainability practices because the BM should reveal how sustainability is actually implemented.

The recent debate on BM leads to different attempts at redesigning the old BM, with the objective to integrate financial information with other valuable information about the company's strategy and its intellectual, environmental, and social capital (Battie et al., 2013). In this literature stream, Tweedie et al. (2018) demonstrate that the BM concept proposed in the IR only partially reconciles prior concepts and presents a distinctive audience, time horizon, scope, and structure.

Following Gibbins et al. (1990), we argue that the locus of information (where it is disclosed) is crucial to evaluate the relevance of the information itself; under our framework, all the elements included in the business model and value creation process pertain to the implementation of strategy in the day-to-day operation (Bini et al., 2018).

When information is not embodied in the BM, the BM runs the risk of becoming disconnected from practices that the companies had undertaken effectively; in this sense, justifications instead of actions regarding environmental concerns arise, setting the scene for the use of impression management tools (Milne et al., 2009; Milne & Gray, 2013).

On the basis of the previous considerations, we propose the following research hypothesis:

The natural capital information is more likely to be effective if it is:

a) provided in the BM section;
b) also forward-looking;
c) also quantitative; and
d) classified in the business cycle as input/output/outcomes.

3. Research Methodology

To analyse the data in this exploratory study, we undertook a content analysis, which is an appropriate method (Mansoor & Maroun, 2016), given the limited research on natural capital and the need to process information that cannot be objectively measured on a relative scale.

Regarding the sample, Merkl-Davies et al. (2011) assert that a relatively small sample size does not compromise the validity and reliability of exploratory studies.

Following Talbot and Boiral (2015), we then proceeded to systematically classify the collected data.

Specifically, and in line with Samkin et al. (2014) as well as Mansoor and Maroun (2016), sentences constitute our counting factor since sentences offer greater insights than single word counts or lexical periods.

In terms of visuals, we only considered photographs, which constitute a small portion of images in integrated reports, which generally include pictures, photographs, cartoons, charts, maps, diagrams, and financial graphs. This is in line with many accountability scholars' research (Davison, 2007).

The codification method we adopted in our framework is detailed in Table 1.

Table 1 - The procedure of content analysis

Information items	***Content analysis***
Volume of information	Number of sentences
Locus	Capital only Business model/Value creation process only Capital and business model Shareholder letter Other
Time orientation	Historical only Forward-looking only Mixed Unclear
Type	Qualitative only Quantitative only Mixed
Tone	Clearly positive Clearly negative Both Ambiguous
Role	Input Output Outcome
Photographs (visual)	Number of photographs

Volume of information measures the topic's relative weight and importance in the main body of the integrated reports, while the *locus* allows understanding whether the information is likely to be translated into actions with a tangible impact on biodiversity. *Time orientation*, *type*, and *tone* refer to the information's content and significance, while *role* enables understanding whether the company explicitly considers natural capital/biodiversity as an input/output/outcome of the business cycle.

Lastly, *number of photographs* captures the visual dimension, while narratives aim to convey the corporate discourse on natural capital and biodiversity.

The research team extracted the data only from the integrated reports. In fact, where the integrated report included a sustainability report, the sustainability report's data were excluded.

Data collection and sample

From the IIRC database, we extracted all companies incorporated in the Africa region and reviewed their latest available integrated reports, most of them referring to the financial year ending January 31, 2018.

Our initial sample consisted of 57 companies. However, 17 belong to industries with an expected low impact on biodiversity, such as professional and financial services, and we therefore eliminated these in addition to two companies whose data we were unable to retrieve due to them not having published a report.

The final sample therefore comprises 38 companies as shown in Table 2 (see the Appendix for the detailed lis).

Table 2 – The final sample

Industry/country	*South Africa*	*Botswana*	*Swaziland*
Basic materials	10		
Industrials	8		
Telecommunications	4		
Consumer services	3	1	
Public sector	3		
Consumer goods	2		1
Healthcare	2		
Technology	2		
Real estate	1		
Utilities	1		
Total	*36*	*1*	*1*

We specifically focused on the basic materials industry for two main reasons. First, sector-specific characteristics are mitigated and, second, it is a high-impact sector in terms of natural capital.

The impact that different industries may have on the environment is relevant when it comes to the level of disclosure. Owing to biology conservation studies (PBL, 2014) it is possible to determine the general level of impact (low, medium, or high) that sectors determine.

4. Results and discussion

This section presents the results regarding the information disclosure items and Table 3 provides the descriptive statistics for natural capital disclosure.

Through the analysis of the disclosure that the ten selected companies provided, we tracked 245 items of information pertaining to natural capital.

Table 3 – Natural Capital Disclosure in IR sample

Locus				
Capitals, only	BM / Value creation process, only	Capitals and BM	Shareholders letter	Other
44	123	1	5	72
Nature				
Historical, only	Forward-looking, only	Mixed	Not specified	
153	65	24	3	
Type				
Qualitative, only	Quantitative, only	Mixed		
135	39	71		
Tone				
Clearly positive	Clearly negative	Both	Not univocal	
109	33	1	102	
Role of the information				
Input	Output	Outcome		
13	9	41		

In our sample, the natural capital information tends to be historical rather than forward-looking (62% vs 27%), qualitative rather than quantitative (55% vs 16%), and clearly positive rather than clearly negative (44% rather than 13%).

In other words, on average, the disclosure generally covers historical and not prospective data, adopts more qualitative than quantitative tones, and is more discursive than numerical.

The timeframe is also distinct in 89% of the sentences, 10% present both historical and forward-looking information, and 1% is unclear, while 29% include both qualitative and quantitative data within a single sentence.

As for the tone, beyond the factual information, in a significant portion (42%) of cases, readers were unable to interpret the information, determine whether it gave a positive or negative impression, or whether it was intended as merely a sentence to be taken at face value.

Table 4 shows the correlation of the different variables according to the information items' characteristics.

Table 4 – The correlation among variables

Time orientation vs type

	Historical	%	Not Historical	%
Qualitative, only	68	38%	67	99%
Quantitative, only	38	21%	1	1%
Mixed	71	40%	0	0%
	177	100%	68	100%

Nature vs tone

	Historical	%	Not Historical	%
Clearly positive	87	49%	22	32%
Clearly negative	20	11%	13	19%
Both	1	1%	0	0%
Not univocal	69	39%	33	49%
	177	100%	68	100%

If taking time orientation as our main variable, the quantitative information is mainly historical, which is logical, given that historical data can be more easily measured. At the same time, the future data referring almost entirely to qualitative judgements suggests caution on the part of the report writers, which is similar to not declaring clear numerical objectives for the future but a generic and narrative outline of expected scenarios and objectives.

Interestingly, time orientation leads to a number of differences in the tone of the disclosure: Historical and forward-looking data have different proportions of positive and negative tones, with a greater proportion of positive tones for historical data.

When focusing on the information included in the business model, data are on average 80% historical, 81% qualitative, and 49% positive. When considering all the sections of the report instead, the ratios are 62% historical, 55% qualitative, and 44% positive.

This might suggest that the information in the integrated reports has been given more prominent positioning in the case of information included in the business model, as the report writers, well aware of the business model section's importance, carefully weigh the *locus* of certain data.

The role that information plays is explicitly recognized in 26% of the sentences in terms of input, output, or outcome (21%, 14%, and 65% respectively). In this sense, report writers appear to privilege their role as producers more than their role as users in the business production cycle, so much so that the output/outcome percentage is significantly higher than input percentage.

At the same time, specific and accurate plans for the management of natural capital are scarce, as only 13 sentences refer to exact and timely management strategies.

The ten reports included 17 photographs: two companies featuring five each and four companies featuring the remaining seven (1.75 each).

Almost all the images depict a positive environment and relaxing sceneries (plants in a green, blue, and positive atmosphere; fishing, calm sea, harmony; a center before and after a retrofit, more space, light, and sky; a woman, black, harmony, suits, smiling; exploration field mapping; one hand and later two hands with a reef; solar-powered street lighting in the country; a tray outside, fresh fruit, green palms, sky venues; a skyscraper, people working safely on a platform, white sky; growing green plant; analysis of wood formation, white and serene color; new hedge research tunnel, space, scenery, green; scenery of a peaceful environment in Africa; blonde young girl plants a tree when visiting a camp; hot air ballooning above the annual wildebeest migration; a positive safari journey), while only one introduces a natural capital-driven issue (tree worm and later moth). Overall, the tone of the images can be summarized as overwhelmingly positive.

5. Conclusion, limitations, further research

The first relevant evidence about natural capital disclosure concerns the *locus* of the information: 50% of the information has been disclosed in the capitals/business model and value creation process sections, 19% of the information has been disclosed in the capital section, 2% of the information has been disclosed in the shareholders' letter, and the remaining 29% of the information has been disclosed elsewhere.

The first number is undoubtedly encouraging, as it suggests that the majority of the information has been located in strategic positions in the reports; at the same time, however, that 29% of the information is placed elsewhere, implies that, at least in certain cases, the information is generated in and assigned to less prominent segments.

When it comes to the composition of the information in the most strategic sections, namely capitals/business model and value creation, several useful considerations emerge. First of all, most of the information is allocated in the business model section (50%) and a considerable part is included the capitals section (18%).

On the one hand, the above comment may suggest that the parties who prepared the integrated reports were aware of the information's connectivity and circularity such that the information refers to both connectivity and circularity.

On the other hand, however, the coexistence of sections that simultaneously refer to the capitals and the business model could result in uncertainty and ambiguity for the readers since every specific section in the integrated reports serves a specific and distinct purpose.

In our hypothesis we consider the *locus* of information (where it is disclosed) crucial to evaluate the relevance of the information itself; under our framework, all the elements included in the business model and value creation process pertain to the implementation of strategy in the day-to-day operation.

Whereas only 50% of the information is reported in the business model and value creation section, we can affirm that natural capital disclosure has not been contextualised in an organic framework suitable for the assessment and is not part of a strategic approach.

In this sense, the remaining companies in the sample (the other 50%) not including the information in the business model and value creation section means that natural capital is not embedded in the disclosure of the value creation process.

Furthermore, the disclosure of natural capital being present (and not absent), but present in sections that are less sensitive to understanding the value creation process, confirms that companies adopt an impression management tactic – perfectly in line with the legitimacy theory – which, in turn, as mentioned in the literature review provides a foundation for our research.

Moreover, the natural capital information tends to be historical rather than forward-looking (62% vs 27%) and qualitative rather than quantitative (55% vs 16%); only 26% of the information provided (63 out 245) is explicitly classified as input/output/outcome. Furthermore, natural capital information is clearly positive rather than clearly negative (44% against 13%).

In other words, on average, the disclosure generally covers historical and not prospective data, adopts more qualitative than quantitative tones, and is more discursive than numerical.

This evidence shows that natural capital information runs the risk of becoming disconnected from practices that the companies undertook effectively; in this context, justifications instead of actions regarding the environment arise, setting the scene for the use of impression management tools.

Our results are in line with Stacchezzini, Melloni, and Lai (2016): The authors point out how companies provide limited forward-looking and quantitative information regarding their sustainability actions.

A comprehensive interpretation of the information presented above should attempt, in the first instance, to unveil and isolate the purely environmental and presentational content so as to analyze better the economic and managerial consequences of the issue.

In this sense, it is evident that the natural capital information present in the integrated reports is decidedly inadequate and not particularly convincing, even if the issue is certainly declared as significant and important.

Having said this, the managerial perspective is, however, absent almost everywhere: There are no indications of the organizational, technical, and managerial impacts that derive from the awareness of the environmental issues' importance, neither upstream nor downstream of the value chain.

Put differently, the integrated reports only describe the surface of the issue, setting out the issue of environment, but without deeply investigating the technicalities that should be addressed: The surface of the issue has, therefore, certainly been scratched but the information is lacking.

In this context, the clear correlations between the more general theory of impression management and natural capital emerge in the integrated reports; the information, if and when it is presented, does not reveal anything; on the contrary, it camouflages and scrambles the cards, with a shrewd communicational and hypocritical attitude, but without contextualizing and problematizing the issue.

This evidence confirms that streams of studies – among others, Talbot and Boiral's (2015) – emphasize companies' tendency to present an idealized image of reality. Moreover, organizations present corporate reporting information in order to take advantage of information asymmetries, adopting impression management strategies (Boiral, 2016; Boiral & Heras-Sizarbitoria, 2017; Merkl-Davies et al., 2011).

These strategies tend to influence stakeholder perceptions (Bolino et ali, 2008; Talbot & Boiral, 2015).

These reflections appear even more significant considering that the sample examined refers almost exclusively to South Africa, which traditionally amasses report writers who are regarded as among the best qualified in the field of integrated reports.

Finally, and probably opposite to sustainability reports – integrated reports scarcely use visual instruments, preferring narratives by far; a possible explanation is that the latest narratives are more easily exploitable in terms of hypocrisy and rhetoric.

Our research adds to the academic debate on integrated reporting but is by no means comprehensive; the paper calls for further research in order to address the quality of natural capital disclosure. Moreover, additional studies are required – as proposed by the IIRC – to discuss if integrated reporting is able to cover the needs of all stakeholders: Certain authors, such as Flower (2015), doubt it. According to Flower (2015), under the IR framework the interests of certain categories of stakeholders are important only insofar as the stakeholders impact the organization's prosperity.

Companies avoid providing information about social costs and externalities unless they impact value creation capabilities.

From this perspective, the author perceives the development path of integrated reporting as a conversion from a more social-friendly perspective to a perspective more focused on business reporting that has relegated the needs of certain stakeholders to a secondary role.

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Appendix – The sample investigated

Company	*Country*	*Industry*
Anglo American (Platinum)	South Africa	Basic materials
AngloGold Ashanti	South Africa	Basic materials
ArcelorMittal South Africa	South Africa	Basic materials
Exxaro	South Africa	Basic materials
Gold Fields	South Africa	Basic materials
Harmony Gold mining company	South Africa	Basic materials
Implats Platinum	South Africa	Basic materials
Kumba Iron Ore	South Africa	Basic materials
Royal Bafokeng Platinum	South Africa	Basic materials
York Timber Holdings	South Africa	Basic materials