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University Sustainability Reporting: A review of the literature and development of a model.

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Abstract

Many universities have made a commitment to improving the sustainability of their campuses however only a small number report to stakeholders on their sustainability performance to allow accountability and the quality of the reports issued varies widely. This Chapter reviews studies of sustainability reporting by universities and identifies the factors that have been associated with the decision to report on sustainability and the quality of those reports. Most of the existing empirical work on sustainability reporting by universities is case-based. We critique this literature and identify areas in need of conceptual and empirical clarification. We provide a model, hypotheses, constructs and proxies to support large sample research on sustainability reporting by Universities.

Keywords: sustainability, higher education, sustainability reporting, model of sustainability reporting, large sample research in sustainability, sustainability strategy, sustainability reporting quality.
This Chapter reviews the existing, mostly case-based, literature on sustainability reporting by universities in order to develop a grounded model of the decision to release a sustainability report and the quality of the information released. This model is intended to guide large-scale empirical work on sustainability reporting. Such studies can improve our understanding of the factors that encourage universities to create accountability for sustainability and to identify pressure points where stakeholder groups can improve the transparency of universities as universities fulfil their duty to be role models and sources of innovation in society. The model developed addresses the links between the existence and quality of sustainability reporting and organizational strategy, organizational capabilities, stakeholder demands and the university’s sustainability performance.

The link between reporting to stakeholders and corporate compliance with social values is long-standing. Louis Brandeis (1914) recommended “publicity” – what we might now call transparency or accountability – as the means to prevent organizations from acting in violation of social norms: “Publicity is justly commended as a remedy for social and industrial diseases. Sunlight is said to be the best of disinfectants; electric light the most efficient policeman” (Brandeis, 1914: 92). This approach has become the mainstay of corporate governance and the regulation of public corporations in many jurisdictions (Stiglitz, 2000; Rock, 2001). For example, the annual report and financial statements issued by public companies are closely scrutinized by stakeholders and regulators, and failure to disclose material events can result in lawsuits or regulatory intervention. As the expectations of corporate performance expanded to include social and environmental dimensions, companies expanded their reporting to stakeholders to include documents such as corporate philanthropy reports, corporate social responsibility reports and, most recently, sustainability reports (Kolk, 2003). In most jurisdictions, reporting on performance beyond basic financial indicators is voluntary but growing in frequency and sophistication. Although the analogy between financial reporting and sustainability reporting must be used carefully (Etzion & Ferraro, 2010), the concept of information disclosure to allow stakeholder oversight remains the dominant model in this domain too (Brown et al., 2009; Ceulemans et al., 2014).

The demand for sustainability reporting extends well beyond public corporations. Public sector bodies and non-profits are also experiencing demands for more sustainable performance and stakeholders are pressing for the information to monitor this type of performance (Farneti & Guthrie, 2009). This reflects a general social acceptance of planetary limitations and the need to develop sustainable models of economic development (Rockstrom et al., 2009). Universities, in particular, are seen as playing a key role in this movement. Universities are an important “institutional carrier” (Scott, 2003) of sustainability. They are regarded as role models in society, as sources of new knowledge and institutional entrepreneurship, and are intimately involved in training professionals who will become institutional carriers in their own right (Boyer, 1998; Sedlacek, 2013; Bekessy and Burgman, 2008; Karatzoglou, 2013). In spite of the pivotal role of universities in the creation of a sustainable society, their own sustainability performance has been questioned and the disclosure of their performance in achieving
sustainability is spotty (Fonseca et al., 2011, p.23; Lozano, 2011; Alonso-Almeida et al., 2014; Amaral et al., 2015; Hinson et al., 2015; León-Fernández and Domínguez-Vilches, 2015).

Given this combination of growing social expectations and variable levels of sustainability performance and reporting by universities, there is beginning to develop a literature that explores the factors that affect the decision by universities to report their performance and the quality of those reports (Hahn and Kahnen, 2013; Nelson et al., 2003). This work will enable administrators and stakeholders to understand the obstacles that must be overcome for universities to achieve sustainability and to identify the pressure points to use to encourage greater disclosure of their progress. For the most part the existing literature is exploratory – based on single cases or small samples – but important factors explaining variation across universities are emerging. In this Chapter we use the existing literature on sustainability reporting by universities, supplemented with the literature on voluntary financial disclosure by companies, to develop a model of the decision by universities to report their sustainability performance and the quality of the reports that they release. Our hypotheses are summarized in Table 1.

[Table 1]

Our model is intended to guide large sample empirical work. We use the existing literature to identify the measurement and conceptual issues that need to be resolved to facilitate further research and suggest ways forward. Table 2 provides a list of concepts, proxies and examples of literature on sustainability in universities that have used these proxies (where available).

[Table 2]

Sustainability Performance

Organizations and their stakeholders have long been concerned with more than just economic performance (Sahlin-Andersson, 2006). Historically the literature has used a variety of terms to refer to organizations acting beyond a narrow economic self-interest including corporate philanthropy, corporate citizenship and corporate social responsibility. The most recent term to capture organizations’ embeddedness in a broader life world is sustainability. The most common definition of sustainability as applied to organizations relies on two sources of inspiration. From the Brundtland (1987) report we have adopted the idea that sustainability involves “meeting the needs of the present without sacrificing the needs of future generations”. From Elkington (1998) we have focused on the “triple bottom line” of business: i.e. economic, social and environmental performance¹. Combining these sources, we define

¹ In some cases this has been expanded to a quadruple bottom line by adding “governance” to the mix (another dimension added by some is “spirituality”).
sustainability as achieving economic, environmental and social objectives to meet the needs of the present while not sacrificing the needs of future generations.

Some would claim that we have never achieved sustainability in corporate performance (Gray and Milne, 2002; Gray, 2010; Cho et al., 2015). Rather sustainability has been used to refer to efforts to minimize the negative impacts of organizational activities on society and the environment but this is far from the ideal of leaving the options of future generations intact. This weak use of the concept of sustainability has found its way into the literature on sustainability in universities through Velazquez et al., (2006, p. 812) who define a sustainable university as: “A higher educational institution, as a whole or as a part, that addresses, involves and promotes, on a regional or a global level, the minimization of negative environmental, economic, societal, and health effects generated in the use of their resources in order to fulfil its functions of teaching, research, outreach and partnership, and stewardship in ways to help society make the transition to sustainable lifestyles.” Regardless of the reality of corporate and university sustainability, there is an undeniable momentum towards providing stakeholders with information about corporate performance across a range of dimensions. If Brandeis (1914) was right, making this performance visible may, at least, be a first step to accountability and ultimately to achieving the ideal of sustainability.

**Sustainability Performance of Universities**

The concept of sustainability has different action implications depending on the context in which this goal is pursued. Many measurement systems or checklists for assessing sustainable performance by Universities have been developed (Posner and Stuart, 2013; Disterheft et al., 2012; Gomez et al., 2014; Wright, 2002). The Campus Sustainability Assessment Framework, for example, grew out of an initiative by the Sierra Club to encourage universities to improve on-campus sustainability (Cole and Wright, 2003). This framework has been used by several universities to structure their sustainability programs and reports. The framework provided 175 indicators of sustainability focusing on people and the ecosystem (Beringer, 2006). This framework however has been abandoned by the Sierra Club in favour of the Global Reporting Initiative (GRI) standards for reporting even though the GRI standards may not be completely appropriate for this sector (Dumay et al., 2010).

The Association for the Advancement of Sustainability in Higher Education (AASHE) created the STARS system (Sustainability Tracking, Assessment & Rating System™) to facilitate self-reports of sustainability performance by universities and to identify areas for performance improvement (see [http://www.aashe.org/about](http://www.aashe.org/about)). The STARS system has been adopted by 525 universities across the world (as of March 2015) (although the majority are in North America). The AASHE maintains a database of self-report sustainability performance measures that are intended to allow universities to benchmark their performance against their peers but, as of March 2015, only 369 had submitted data. Appendix A provides a summary of the dimensions used in the STARS system. This system captures the broad role of universities within the sustainability movement and hence includes measures of educational and research
contributions to sustainability in addition to indicators capturing the “triple bottom line” performance of universities.

The STARS system provides the best currently available data on sustainability performance by universities. This system uses expert advice to weight the importance of different activities and then provides a score on each dimension and on an aggregate basis that reflects actual performance. The decision to participate in STARS demonstrates a university’s commitment to sustainability as the process involves collecting extensive data accompanied by an affirmation attesting to the accuracy of the information (Wigmore and Ruiz, 2010). The weakness is that the data are self-report but if they are included in an audited sustainability report, then, presumably, the reliability of the data would be subject to tests and reported in the assurance statement. This issue will be discussed again below in connection to the quality of sustainability reports.

As we will argue below, sustainability performance and sustainability reporting are independent and care must be taken to separate these dimensions. For example, many universities participate in the STARS system as a way of benchmarking their performance without intending to release equivalent information publicly.

**Sustainability Reporting**

In generic terms we define a sustainability report as the communication of information regarding the sustainability performance of an organization to its stakeholders by any media. This may take the form of a print media standalone report, an online presentation of sustainability information or the inclusion of sustainability information as a clearly defined subsection\(^2\) of another report to stakeholders (for example as part of an annual report). The purpose of a sustainability report is to provide stakeholders with sufficient information to hold the organization accountable for its sustainability performance.

Theoretically, as diagrammed in Figure 1, a high quality sustainability report would reflect the underlying state of sustainability in an organization in an unbiased manner consistent with stakeholder demands for information. It is possible to have poor sustainability performance but provide complete disclosure of this state in a high quality report (Honest Laggards in Figure 1). Conversely it is also possible that a company with high quality sustainability performance could fail to convey this information to stakeholders in a poor quality (or absent) sustainability report (Hidden Gems in Figure 1). The most likely situation, however, is that sustainability performance is positively correlated with reporting quality: firms with high sustainability performance are likely to also invest in high quality reporting while poor sustainability performance information includes economic performance, any financial report to stakeholders includes a subset of sustainability performance information but we regard sustainability reporting as a self-conscious attempt to communicate this information to stakeholders rather than the incidental release of a subset of information for other purposes.
performers are less likely to want to publicize their failings (Sustainability Leaders and Sustainability Lemons, respectively, in Figure 1). The idea of sustainability “lemons” is taken from the signalling literature (Akerlof, 1970). A “lemon” in the used car market is a car with reliability issues that an owner attempts to sell to someone else without disclosing what they know about the car. The existence of such information asymmetry about sustainability also raises the problem that poor sustainability performers may attempt to convince stakeholders that their performance is better than it really is through public relations documents pretending to be accurate sustainability reports (Adams, 2004) and there is a tendency for sustainability reports to have a good news bias (Velazquez et al., 2005). In other words, we do anticipate a positive correlation between sustainability performance and the decision to release a sustainability report.). This is why the quality of reporting is so important (and often difficult to determine).

[Figure 1]

One of the unresolved issues in the literature on sustainability reporting is whether stakeholders can “see through” sustainability reports to the underlying sustainability performance of the organization (Wilmhurst & Frost, 2000). For those who believe in efficient information markets, in the absence of information directly from the organization, stakeholders will believe the worst about an organization’s performance. This creates an incentive for organizations to voluntarily release information and to ensure that the information is credible even if their performance is below expectations (Ronen and Yaari, 2002; Eng and Mak, 2003; Francis et al., 2005). By contrast, much research on sustainability reporting assumes that stakeholders naively rely on sustainability reports to judge the performance of organizations and, hence, organizations have an incentive to bias their reports to emphasize good news and/or to only release a sustainability report if their performance is good (Adams, 2004). This possibility is reflected in the theory that sustainability reports are used to support legitimacy claims. The validity of these two conceptualizations needs to be explored in empirical work.

Factors Affecting the Decision by Universities to Release Sustainability Reports

Our dependent variables are the decision to release a sustainability report and the quality of that report. As we discussed above, measuring the quality of a sustainability report is problematic (we will discuss best practices below) but the existence of a sustainability report is more clear cut. Sustainability reports are typically released as standalone documents on university web sites. For example, Fonseca et al. (2011) outlined a sample of seven standalone sustainability documents released by Canadian universities in 2006-2008, all of which were published as PDF documents ranging from 20 to 305 pages. The documents are typically not released annually but use a longer periodicity (e.g. every three years). In corporate settings there is a movement towards creating “integrated reports” (Eccles & Krzus, 2010; Jensen and Berg, 2012; Richardson, 2015), which combine traditional financial reporting and sustainability reporting. This approach tends to narrow the focus of sustainability reports and to prioritize
financial performance such that discussion of sustainability is limited to those aspects that may help or hinder achievement of the strategic goals of the organization. We are not seeing this trend in university sustainability reporting yet (Fonseca et al., 2011 but see Veltri & Silvestri, 2015), so we can measure the existence of a sustainability report as the web-based release of a standalone document covering the economic, environmental and social aspects of university performance.

We hypothesize that the decision to release a sustainability report will be related to its sustainability performance, stakeholder demands, strategic commitments and organizational capabilities as summarized in Table 1 and discussed further below. We identify key proxies for these constructs that have been used in the literature in Table 2.

**Sustainability Performance**

The relationship between sustainability performance and reporting is complex and contradictory hypotheses may be suggested.

1. **High Performance**: Based on the voluntary disclosure literature, universities with higher levels of sustainability performance are more likely to report on their performance (H1a). There is, in general, a bias in voluntary disclosure where negative information is suppressed and positive information is released particularly if there are no independent information about performance. This relationship will hold if stakeholders do not assume that the lack of information signals poor performance and hence punish organizations that do not report.

2. **Low Performance**: The literature based on legitimacy theory suggests that organizations with performance problems may release sustainability information to reduce the negative reaction of stakeholders to their performance and/or to disguise their poor performance through the release of biased information (H1b). An alternative explanation of the observed negative relationship between sustainability performance and reporting is that industries with potentially significant social and environmental impacts simply have more to report.

The contrary predictions outlined above suggest two empirical possibilities. First, the relationship between sustainability performance and the decision to report may be non-linear (U-shaped) with high and low performers being more likely to report than average performers (H1) although the underlying reasons for releasing a report may be quite different. Second, the relationship may be moderated by the nature of stakeholders or the efficiency of information markets. If stakeholders can read-through sustainability reports then the release of biased information will not have the desired effect. We therefore expect an interaction between stakeholder demands/stakeholder sophistication and sustainability performance on the decision to report (H2).
The complex relationship between sustainability performance and the decision to report is likely to vary over industries because of differences in potential social and environmental impacts due to the technologies used, resources consumed and nature of their products. In cross-sectional work, including industry dummies or normalizing the data by industry can correct for some of these issues. The issue may be less problematic when examining sustainability performance/reporting within a single industry such as higher education.

**Stakeholder Demands**

Stakeholders are a key part of sustainability reporting. The content of a sustainability report should reflect the information needs of stakeholders and stakeholder engagement processes are used to ensure the quality of the report (Brinkhurst and Ackerman, 2011). At a higher level of analysis, stakeholder demands are likely to influence the strategic direction of the university which, in turn, may affect the focus of the university on sustainability and the decision to release a sustainability report. Overall we hypothesize that the decision to release a sustainability report and the quality of that report will be related to the existence of stakeholder demands (H3).

We identify two groups of stakeholders that have been shown to be particularly influential.

1. **Student Activism**: students are a key stakeholder of universities and their actions on campus can sway administrative decisions (Helferty and Clarke, 2009). Wright (2003), for example, credits improved sustainability in many educational institutions to bottom-up pressure from concerned and dedicated students requesting changes in organizational policies and practices. There are many student groups dedicated to promoting sustainability on campus and in society. These may be specific to a given campus or part of a broader network of clubs such as NetImpact and the Sierra Club. The Sierra Club, in particular, was active in creating guidelines for sustainability performance measurement and reporting by Universities. Beringer (2006) presents examples of student-led initiatives, with specific focus on the Sierra Youth Coalition Sustainable Campuses project and its campus sustainability assessment framework which has been used to guide sustainable development and auditing. We hypothesize that if these clubs are active on campus then it is more likely that university administrations will be aware of sustainability issues and to provide data for stakeholders to evaluate their performance (H3a).

2. **Endowment Funds**: university endowment funds have been a target of activists on both social and environmental issues (e.g. activists have advocated disinvestment from stocks linked to weapons, alcohol, gambling, apartheid, etc.). Consistent with this, Stafford (2011) found that larger and wealthier institutions are more likely to implement sustainability practices than smaller, less well-endowed institutions. We

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hypothesize that the larger the university’s endowment fund the more closely activists will monitor University sustainability and the more likely universities are to release sustainability reports (Willis, 2003) (H3b).

**Strategic Commitments**

Assuming that universities are rational actors, the decision to release a sustainability report should be related to the organization’s commitment to sustainability in its overall strategy (H4) (Thompson and Green, 2005). Why the university makes this commitment is beyond the scope of this Chapter but we assume that it is related to stakeholder demands and the university’s market positioning (Tolbert, 1985; Oliver, 1991; Etherington & Richardson, 1994; Suchman, 1995; Larrán et al., 2015).

We identify two signals of a university’s strategic commitment to sustainability.

1. **Convention Signatory:** One approach by activists to encouraging universities to improve sustainability is to encouraging universities to sign a document supporting sustainability on campus (Lozano et al., 2013). For example, the Taillores Declaration⁴, signed by over 400 universities world-wide since 1990, reflects a commitment by those universities to include sustainability in educational programs, developing environmental literacy among students and social outreach to encourage sustainability in society. Signing Conventions such as this would indicate a strategic commitment to sustainability (Grinsted, 2011; Grindsted & Holm, 2012). This expectation has been used in case studies to critique the actions of universities who sign such declarations and do not follow through with specific actions. For example, despite being a leader in signing declarations, RMIT University failed to adequately translate their basic commitments into action (Bekessy et al., 2007). However, success stories also exist. The University of British Columbia was among the first to sign the Taillores Declaration and has since signed various partnerships and commitments, demonstrating improved sustainability (Bilodeau et al., 2014). We hypothesize that universities that sign sustainability declarations are more likely to release sustainability reports (H4a).

2. **Research and Teaching:** A clear commitment to sustainability is the creation of teaching and research programs on sustainability (Gumport, 2000; Adams, 2013; McGibbon & Van Belle, 2015). For example, TERI University in India implemented an educational approach to sustainability through a M.Sc. Environmental Studies and Resource Management program which integrates sustainability issues throughout curriculum, research, and sustainable operations such as building green facilities on campus (Jain et al., 2013). The development and staffing of degree programs and research centers represents a significant commitment of resources by a university and we hypothesize that this would be positively associated with creation of a sustainability report because

⁴http://www.ulsf.org/programs_talloires.html
of the internal pressure from these staff, the capabilities that these staff bring to the university to prepare sustainability reports, and to signal the university’s commitment to sustainability to potential donors and students associated with these programs (H4b).

Organizational Capabilities

Producing a high quality sustainability report requires information systems and staff capable of collecting, analyzing, synthesizing and disclosing sustainability performance data (H5). These resource requirements mean that smaller universities are less likely to be able to produce the data needed particularly if the reporting function is not tied to donors or recruitment.

1. **Size**: the voluntary disclosure literature consistently finds a positive relationship between the size of organizations and the amount of voluntary disclosure (Bujaki and Richardson, 1997). Similarly, a study of Canadian firms found that companies that issue corporate social responsibility reports are significantly larger in terms of assets, sales volume and profit (Thorne et al., 2014). This is most likely a reflection of the resources needed to collect and disclose such information. Paradoxically, however, the literature also finds that the value of the information to stakeholders is inversely related to the size of the organization. This relationship reflects the broader information environment of firms. Large firms are more likely to be followed by journalists and activists, they are more likely to have formal public relations programs and they may have higher statutory disclosure requirements triggered by size thresholds in legislation. In this context a sustainability report is more likely to have incremental information content for smaller universities while some form of the information is likely to be in the public domain through other channels with large universities. We hypothesize that there will be a positive association between the size of a university and the decision to release a sustainability report (H5a).

2. **Staff**: As a corollary to the idea that a university’s strategic commitment to sustainability increases the likelihood of releasing a sustainability report, this relationship will be mediated by having staff dedicated to implementing sustainability on campus and hence having the ability to document that performance. This organizational capability is demonstrated through case studies which have analyzed the institutionalization of sustainability at The University of British Columbia, The University of Calgary, and Carleton University. Each institution has a dedicated sustainability office with staff members dedicated to the development, coordination, and implementation of sustainability initiatives, including sustainability reports (Rosenbloom, 2010). We

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5 “Size” can be operationalized in many ways such as number of students, total revenue etc. Given the mechanism we hypothesize connecting size and sustainability reporting a measure of staff or financial resources normalized by the size of the student body may be the appropriate measure. The use of a normalized measure would control for other demands on resources.
hypothesize that having an office dedicated to sustainability on campus will increase the likelihood that a university will release a sustainability report (H5b).

**Sustainability Reporting Quality**

We define the quality of a sustainability report as the extent to which the report provides valid and reliable data to meet stakeholder information needs. This definition requires that we specify the decision-model that stakeholders use to evaluate the organization and that the data reported is a reliable and valid indicator of the dimensions of sustainability performance used in that model. In the financial reporting literature, the quality of financial statements has been related to economic models of equity valuation providing clear criteria to judge quality (i.e. reporting quality is evaluated by the extent to which the reports provide information theoretically and empirically related to stock market valuations). The literature on sustainability reporting has not reached consensus on an independent benchmark for sustainability reporting quality.

A common approach to measuring the quality of a sustainability report has been to compare the categories of information disclosed against a standard that mandates certain disclosures. There are multiple standard setting bodies that have produced checklists of sustainability disclosures as reviewed above. The most common standards used in the empirical literature on publicly listed companies are those produced by the Global Reporting Initiative.

The use of the GRI reporting standards and other checklists has created a bias in the literature towards measuring report quality by the quantity of items reported (e.g. Daub, 2007; Skouloudis et al., 2009). The GRI standards (up until the release of the 4th generation standards in 2013) provided a checklist of the information that a generic set of stakeholders might find useful from a generic company. Two issues arose with this approach. First, companies would be scored as having higher quality reports by simply commenting on each of the indicators listed in the GRI standards. In many cases these indicators would have no relevance to the company preparing the report. For example, a bank might note that it does not threatened endangered species in its disclosures even though stakeholders would have no reason to believe that this might be an issue. This “disclosure” would be counted as improving the quality of the report. Second, a company that matches its disclosures to the areas of concern to stakeholders would be scored lower on report quality because of the small number of indicators disclosed.

The fourth generation of standards released by the GRI has shifted to a focus on materiality rather than consistency in disclosures across organizations. While this will make sustainability reports easier for stakeholders to read and understand, it does underscore the error of using the quantity of disclosures as a proxy for the quality of disclosure. One possible approach is to

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6 The existence of such an office would be a minimum indicator; the number of staff involved or the budget of this office would provide a finer indicator of its potential influence.
normalize disclosure quantity based on industry norms but ultimately a more subjective approach may be needed.

The STARS inventory in Appendix A provides a similar checklist to the GRI.3 standards but specifically geared to universities. When work on disclosure quality is limited to a particular industry (ceteris paribus), then a checklist that captures the meaning of sustainability for that industry may be a valid way of capturing disclosure quality. Alternatively, independent indicators of reporting quality may be used. For example, there are several awards for sustainability quality including the CERES/ACCA Sustainability Reporting Awards. This award is adjudicated by a panel of experts using three criteria: completeness, credibility and communication\(^7\). This approach however provides only a categorical indicator of quality (either an organization did or did not win an award) and the probability of winning is very small compared with the potential population. In addition, most awards require the company to self-select as a candidate raising issues with bias in the sample of winning companies. Some organizations have begun preparing independent rankings of sustainability reporting by universities that may be useful in large sample research (e.g. the Green Report Card, http://www.greenreportcard.org/ which unfortunately stopped data collection in 2012).

In addition to content issues, quality is also correlated with credibility. Credibility is added to a report by the process through which the information is assembled and verified. A key process is to have an independent actor audit the report to ensure that the information released reflects the underlying performance of the company. In sociological terms, this constitutes an immanent critique of sustainability reports. In principle, every disclosure in a sustainability report should be a reliable and valid indicator of some dimension of sustainability performance. The quality of the report can thus be assessed by using independent information to verify the disclosures in the report. Adams (2004), for example, undertakes this task for a single company. More generally, in some countries the level of government monitoring of point-sources of pollution provides independent data for assessing environmental disclosures. The audit process is intended to provide a similar check on the procedures used within the company to generate the information reported (Lenzen et al., 2004). Audit processes however tend to focus on the reliability of the information rather than its validity as an indicator of sustainability performance (i.e. whether the information reported is without substantial error but not whether the information is useful to stakeholders).

We hypothesize that sustainability report quality will be related to two aspects of the reporting process.

1. **Assurance of Sustainability Report Quality**: In financial reporting it is well established that the credibility of reports is enhanced by the use of an independent audit. In order to provide assurance, typically the auditor relies on standards that specify the information to be disclosed and the way that information is measured. University

\(^7\) See http://www.ceres.org/awards/reporting-awards/judging-criteria
sustainability reports are increasingly based on disclosure standards set by the Global Reporting Initiative but these may not provide auditable directions (Wallage, 2000).

a) Scope of the audit: audits are based on engagement letters that specify the scope of the audit. It is not uncommon for organizations to limit the auditor’s review to specific locations (e.g. international campuses may be excluded), or to specific indicators (e.g. those that are quantitative), or to a review of the process rather than the substance of disclosure. The broader the scope of an audit, the higher the quality of the report (H6a).

b) Reputation of the Auditor: since sustainability reports are voluntary, audits are also voluntary and a variety of auditors have been used including a stakeholder review panel, in-house experts or independent auditors (from a variety of background but most often engineering or accounting). The greater the independence and competence of the auditor, the more credibility that stakeholders are likely to attribute to the sustainability report (H6b).

2. Stakeholder Engagement: the quality of a sustainability report depends on the extent to which stakeholder concerns are reflected in the data provided (O’Dwyer & Owen, 2005; O’Dwyer et al., 2005). This is usually ensured by having stakeholders involved early in the process to ensure the right indicators are used, the data is regarded by stakeholders as credible and data are presented in a meaningful and understandable way. The use of stakeholder engagement processes signals the higher quality of reporting (H7).

**Factors Affecting the Quality of Sustainability Reporting by Universities**

The quality of a sustainability report is likely to be affected by the same factors discussed above that affect the decision to release a report. However, we can only observe the quality of a report after the report has been released. This means that empirical examination of these relationships will have to be explored with a smaller sample and this sample will be left-censored (i.e. we will not be able to observe sustainability reports where our model predicts a low probability of a report being issued). These issues may limit the extent to which we can empirically explore the quality of sustainability reports.

A key advantage of using report quality as a dependent variable is the ability to differentiate between the competing hypotheses regarding the association between sustainability performance and the decision to release a sustainability report discussed above. We hypothesize that low (high) levels of sustainability performance will be associated with low (high) quality sustainability reports (ceteris paribus) (H2).

**Discussion**
The existing literature on sustainability disclosure has not, for the most part, been theoretically driven. As a result the factors identified as encouraging the production and release of high quality sustainability reports reflect a diverse foundation. First, sustainability is seen as an emerging “product” of universities and sustainability reporting can be used to recruit students and donors interested in that product line (economic signalling). Second, sustainability is recognized as an emerging normative issue within the institutional environment in which universities operate and sustainability reports are used to manage these institutional norms (institutional isomorphism). Third, to the extent that universities are dependent for resources on external bodies that link funding with sustainability, universities will use sustainability reports to manage their legitimacy within this network (resource dependency). It is likely that the decision by a university to release a sustainability report is empirically overdetermined but it is time to begin exploring the relative strength of alternative theories (Platt, 1964; Cooper and Richardson, 1984).

Notwithstanding the theoretical diversity of the factors identified, there is an emerging consensus that the decision to release a sustainability report is related to the strategic commitment of the university to sustainability, its organizational capabilities to produce these reports, and the level of its sustainability performance. Once the decision to release a report has been made, the quality of the report (proxied by external ratings of the disclosures and inventories of industry-specific disclosure adequacy) is also likely to be influenced by these variables. The literature has developed to the point where large sample studies would help to clarify the strength and contingencies of the relationships identified in existing case studies. We have used the existing literature to identify useful proxies for each of the constructs that might be reasonably built into a model to be tested (or recommended proxies where current work is lacking).

One of the notable problems in moving from the predominately case-based work reviewed in this Chapter to large-sample studies is the lack of a well-specified definition of quality in this context. There has been a tendency to proxy the quality of reporting with the quantity of reporting by developing a checklist of potential disclosure items and simply counting how many of these items appear in a sustainability report. This approach has well known limitations most notably it rewards organizations for the release of information that may be irrelevant to stakeholders and fails to distinguish between substantive and trivial disclosures on any item. In the voluntary disclosure literature in accounting, quality can be related to independent outcomes for the organization such as cost-of-capital or bid-ask spreads in equity markets, or tied to models that equate quality with a reduction in managerial discretion over disclosures. This is an area that requires further theoretical development.

Our call for large scale empirical work on sustainability reporting by universities reflects a natural progression from the case-based work that has been undertaken so far to studies that can identify the generalizable factors affecting reporting. These results may help practitioners to better understand the obstacles to high quality sustainability reporting in this sector and help activists to identify the paths that might be used to influence universities to make a
commitment to sustainability and to provide the data needed to hold universities accountable to this commitment.

**Conclusion**

This Chapter is designed to encourage and provide a model for large-sample studies of sustainability reporting by universities. It identifies two key dependent variables – the decision to release a report and the quality of the report – and uses the existing literature on sustainability reporting by universities and on voluntary accounting disclosures by organizations generally to develop a model and identify potential proxies for independent variables that could be used in large sample work. The Chapter identifies methodological, empirical and theoretical issues in the existing literature that need to be resolved in future work. For example, the literature consistently confounds the quantity of sustainability disclosures with the quality of those disclosures; has not reconciled inconsistent predictions about the relationship between sustainability performance and the decision to release a sustainability report; and, has not developed theoretically consistent models to guide empirical work. Our model will help practitioners to identify obstacles to providing high quality sustainability reports and help activists to identify paths of influence to encourage universities to commit to sustainable performance and to providing the data to hold them accountable for those commitments.

**References:**


Brown, H., M. de Jong, and D. Levy (2009), 'Building institutions based on information disclosure: lessons from GRI's sustainability reporting', *Journal of Cleaner Production*, 17(6), 571-580.


Gray, R. (2010), 'Is accounting for sustainability actually accounting for sustainability... and how would we know? An exploration of narratives of organisations and the planet', *Accounting, Organizations and Society, 35* (1), 47-62.


Lozano, R. (2006), 'Incorporation and institutionalization of SD into universities: Breaking through barriers to change', Journal of Cleaner Production, 14 (9), 787-796.


Foley (2009), 'Planetary boundaries: exploring the safe operating space for humanity', *Ecology and Society*, 14 (2), 32.


Sedlacek, S. (2013), 'The role of universities in fostering sustainable development at the regional level', *Journal of Cleaner Production*, 48 (June), 74-84.


Table 1: Hypotheses regarding factors affecting the existence and quality of university sustainability reporting

<table>
<thead>
<tr>
<th><strong>Sustainability Reporting and sustainability performance</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H1(^8)</td>
<td>there will be a U-shaped relationship between sustainability performance and the existence of sustainability reporting</td>
</tr>
<tr>
<td>H1a</td>
<td>Low sustainability performers use sustainability reporting to manage social perceptions</td>
</tr>
<tr>
<td>H1b</td>
<td>High sustainability performers use sustainability reporting to differentiate themselves</td>
</tr>
<tr>
<td>H2</td>
<td>there will be a positive relationship between sustainability performance and sustainability reporting quality</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Sustainability reporting and stakeholder demands</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H3</td>
<td>there will be a positive relationship between stakeholder demands and the existence of sustainability reporting and report quality</td>
</tr>
<tr>
<td>H3a</td>
<td>There will be a positive relationship between the decision to release a sustainability report and the presence of student sustainability clubs on campus</td>
</tr>
<tr>
<td>H3b</td>
<td>There will be a positive relationship between the decision to release a sustainability report and the size of endowment funds held by the university</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Sustainability reporting and strategic commitments</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H4</td>
<td>there will be a positive relationship between organizational strategy and the existence of sustainability reporting and report quality</td>
</tr>
<tr>
<td>H4a</td>
<td>There will be a positive relationship between the decision to release a sustainability report and the university being a signatory on sustainability conventions</td>
</tr>
<tr>
<td>H4b</td>
<td>There will be a positive relationship between the decision to release a sustainability report and the existence of teaching and research programs on sustainability at a university</td>
</tr>
</tbody>
</table>

\(^8\) All hypotheses are stated in alternative form and are ceteris paribus. For simplicity, where the relationship between factors and both the decision to report and the quality of the report is expected to be in the same direction, these two independent variables have been included in a single hypothesis but should be separated for testing; we are not implying a joint hypothesis. Where the relationship between factors and our two independent variables is expected to differ, they have been included in separate hypotheses.
<table>
<thead>
<tr>
<th><strong>Sustainability reporting and organizational capabilities</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H5</td>
<td>there will be a positive relationship between organizational capabilities and the existence of sustainability reporting and report quality</td>
</tr>
<tr>
<td>H5a</td>
<td>There will be a positive relationship between the decision to release a sustainability report and the size of the university</td>
</tr>
<tr>
<td>H5b</td>
<td>There will be a positive relationship between the decision to release a sustainability report and the existence of a sustainability office on campus</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Sustainability reporting quality</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>H6</td>
<td>The quality of a sustainability report will be positively related to the use of external assurance.</td>
</tr>
<tr>
<td>H6a</td>
<td>The quality of a sustainability report will be positively related to the scope of the audit</td>
</tr>
<tr>
<td>H6b</td>
<td>The quality of a sustainability report will be positively related to the reputation of the auditor</td>
</tr>
<tr>
<td>H7</td>
<td>The quality of a sustainability report will be positively related to the use of stakeholder engagement processes.</td>
</tr>
</tbody>
</table>
Table 2: Constructs and Measures to Explore Sustainability Reporting By Universities

<table>
<thead>
<tr>
<th>Construct</th>
<th>Proxies</th>
<th>Example in Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Release of a Sustainability Report</td>
<td>On-line date of release of a standalone sustainability document (or equivalent content)</td>
<td>Fonseca et al. (2011).</td>
</tr>
<tr>
<td>Quality of a Sustainability Report</td>
<td>External rankings</td>
<td>Greenreportcard.org</td>
</tr>
<tr>
<td></td>
<td>Disclosure completeness (industry specific benchmark)</td>
<td>Recommended</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sustainability Performance</td>
<td>STARS rating</td>
<td>Wigmore and Ruiz (2010)</td>
</tr>
<tr>
<td>Stakeholder Demands</td>
<td>Student sustainability clubs on campus</td>
<td>Beringer (2006).</td>
</tr>
<tr>
<td></td>
<td>Endowment funds</td>
<td>Recommended</td>
</tr>
<tr>
<td>Strategic Commitment</td>
<td>Sustainability Conventions signed</td>
<td>Bilodeau et al. (2014).</td>
</tr>
<tr>
<td></td>
<td>Sustainability research and teaching programs</td>
<td>Jain et al. (2013).</td>
</tr>
<tr>
<td>Organizational Capabilities</td>
<td>Total university budget</td>
<td>Stafford (2011)</td>
</tr>
<tr>
<td>Assurance</td>
<td>Use of external assurance</td>
<td>Recommended</td>
</tr>
<tr>
<td></td>
<td>Scope of the audit</td>
<td>Recommended</td>
</tr>
<tr>
<td></td>
<td>Reputation of the auditor</td>
<td>Recommended</td>
</tr>
<tr>
<td>Stakeholder Engagement</td>
<td>STARS Engagement scores</td>
<td>Wigmore and Ruiz (2010)</td>
</tr>
</tbody>
</table>
Figure 1: Sustainability Performance versus the Quality of Sustainability Reporting

<table>
<thead>
<tr>
<th>Sustainability Performance</th>
<th>Quality of Sustainability Reporting (valid disclosure of sustainability performance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi</td>
<td>Hidden Gems</td>
</tr>
<tr>
<td></td>
<td>Sustainability Leaders</td>
</tr>
<tr>
<td>Lo</td>
<td>Sustainability “Lemons”</td>
</tr>
<tr>
<td></td>
<td>Honest Laggards</td>
</tr>
</tbody>
</table>

9 This Figure is based on a standard brand positioning logic. Similar work can be seen in commercial reports, e.g. [http://www.sustainabilityleadershipreport.com/](http://www.sustainabilityleadershipreport.com/) and [http://www.digitalistmag.com/innovation/the-innovation-index-028510](http://www.digitalistmag.com/innovation/the-innovation-index-028510) accessed Oct. 2015.
Appendix A: STARS Performance Dimensions

INSTITUTIONAL CHARACTERISTICS
IC-1: Institutional Boundary
IC-2: Operational Characteristics
IC-3: Academics and Demographics

ACADEMICS
CURRICULUM
AC-1: Academic Courses
AC-2: Learning Outcomes
AC-3: Undergraduate Program
AC-4: Graduate Program
AC-5: Immersive Experience
AC-6: Sustainability Literacy Assessment
AC-7: Incentives for Developing Courses
AC-8: Campus as a Living Laboratory

RESEARCH
AC-9: Academic Research
AC-10: Support for Research
AC-11: Campus as a Living Laboratory

ENGAGEMENT
CAMPUS ENGAGEMENT
EN-1: Student Educators Program
EN-2: Student Orientation
EN-3: Student Life
EN-4: Outreach Materials and Publications
EN-5: Outreach Campaign
EN-6: Employee Educators Program
EN-7: Employee Orientation
EN-8: Staff Professional Development

PUBLIC ENGAGEMENT
EN-9: Community Partnerships
EN-10: Inter-Campus Collaboration
EN-11: Continuing Education
EN-12: Community Service
EN-13: Community Stakeholder Engagement
EN-14: Participation in Public Policy
EN-15: Trademark Licensing
EN-16: Hospital Network

OPERATIONS
AIR & CLIMATE
OP-1: Greenhouse Gas Emissions
OP-2: Outdoor Air Quality

BUILDINGS
OP-3: Building Operations and Maintenance
OP-4: Building Design and Construction
OP-5: Indoor Air Quality

DINING SERVICES
OP-6: Food and Beverage Purchasing
OP-7: Low Impact Dining

ENERGY
OP-8: Building Energy Consumption
OP-9: Clean and Renewable Energy

GROUNDS
OP-10: Landscape Management
OP-11: Biodiversity

PURCHASING
OP-12: Electronics Purchasing
OP-13: Cleaning Products Purchasing
OP-14: Office Paper Purchasing
OP-15: Inclusive and Local Purchasing
OP-16: Life Cycle Cost Analysis
OP-17: Guidelines for Business Partners

TRANSPORTATION
OP-18: Campus Fleet
OP-19: Student Commute Modal Split
OP-20: Employee Commute Modal Split
OP-21: Support for Sustainable Transportation

WASTE
OP-22: Waste Minimization
OP-23: Waste Diversion
OP-24: Construction and Demolition Waste Diversion
OP-25: Hazardous Waste Management

WATER
OP-26: Water Use
OP-27: Rainwater Management
OP-28: Wastewater Management

PLANNING & ADMINISTRATION
COORDINATION, PLANNING & GOVERNANCE
PA-1: Sustainability Coordination
PA-2: Sustainability Planning
PA-3: Governance

DIVERSITY & AFFORDABILITY
PA-4: Diversity and Equity Coordination
PA-5: Assessing Diversity and Equity
PA-6: Support for Underrepresented Groups
PA-7: Support for Future Faculty Diversity
PA-8: Affordability and Access

HEALTH, WELLBEING & WORK
PA-9: Employee Compensation
PA-10: Assessing Employee Satisfaction
PA-11: Wellness Program
PA-12: Workplace Health and Safety

INVESTMENT
PA-13: Committee on Investor Responsibility
PA-14: Sustainable Investment
PA-15: Investment Disclosure

INNOVATION
IN-1: Innovation 1
IN-2: Innovation 2
IN-3: Innovation 3
IN-4: Innovation 4