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# **Assurance Process for Sustainability Reporting: Towards A Conceptual Framework**

## **Abstract**

This paper seeks to provide insights into the sustainability report assurance process by exploring how reporting firms and assurance providers work together to produce high-quality and credible assurance outcomes. In this literature review, the assurance process is conceptualised as a systematic procedure that incorporates the detail of assurance work along with associated barriers and ethical issues. Based on a review of 87 identified papers on this topic covering 2003–2021, this paper develops a conceptual framework of the assurance process by dividing it into five steps—assurance provider selection, identification, screening, validation and evaluation—and then explains the logic underlying these steps by synthesising the findings from the identified papers. Furthermore, barriers that impede the adoption of and issues that constrain the benefits of sustainability assurance are also identified, such as the absence of stakeholder engagement or independence of the assurance provider. Overall, this paper focuses on the assurance process for sustainability reports, contributing to the conceptual development of sustainability reporting and providing a comprehensive framework for future study in this emerging field. In addition, this paper also provides both assurance providers and reporting firms with a detailed roadmap for decision-making regarding sustainability assurance.

**Keywords:** corporate social responsibility, conceptual framework, sustainability assurance, literature review

## **1. Introduction**

Sustainability-disclosure-related activities emerged as early as the 1930s, and have increasingly received attention over the last 40 years (Fuhrmann et al., 2017; Jia et al., 2020; Maroun, 2019, 2020). Adverse effects of global economic growth, climate change, and the widening wealth gap have forced a reconsideration of the role of the firm in human development. Large firms have begun to engage in sustainability activities and report their performance more actively through releasing sustainability reports (Jia et al., 2020; Maas et al., 2014; Maroun, 2020). Sustainability reporting, also called CSR reporting, enables organisations to communicate their

performance and impacts on a wide range of sustainability topics. In 2017, over 70% of the top 250 global organisations released sustainability reports, a substantial increase from 29% in 2002 (KPMG, 2015, 2017). Such surge in sustainability reporting can be interpreted as pressure from the public to eliminate information asymmetry and enhance the accountability of companies (Boiral, Heras-Saizarbitoria, & Brotherton, 2019; Fuhrmann et al., 2017). Investors and stakeholders increasingly perceive sustainability reports as a vital signal in evaluating firms' social and environmental efforts (Braam & Peeters, 2018; Morioka & Carvalho, 2016; Peters & Romi, 2015). However, unlike the mandatory nature of financial reporting, sustainability information is reported voluntarily, leaving room for social performance indicators contained in these reports to vary in terms of statistical approach and degree of disclosure, thus rendering them less verifiable and raising concerns regarding credibility (Archel et al., 2008; Dando & Swift, 2003; Gillet, 2012).

To improve credibility, reduce information risk, and gain legitimacy, an increasing number of organisations have begun to include an assurance statement in their sustainability report (Fernandez-Feijoo et al., 2015; Maroun, 2020). This research focuses on the sustainability report assurance process and explores how reporting firms and assurers work together to produce credible assurance. According to the International Auditing and Assurance Standard Board (IAASB, 2013), “an assurance engagement is an engagement in which a practitioner aims to obtain sufficient and appropriate evidence in order to express a conclusion designed to enhance the degree of confidence of the intended users other than the responsible party about the outcome of the measurement or evaluation of an underlying subject matter against criteria” (p. 7). Based on this, assurance of sustainability reporting is further defined as an engagement in which a third-party assurance provider undertakes assurance over a sustainability report issued by an organisation (Farooq & De Villiers, 2019). By referring to the assurance report, readers of a sustainability report know whether or not the report has been prepared according to agreed criteria. As noted in previous studies, independent assurance significantly influences users' perceptions of disclosure quality and credibility (Karagiannis et al., 2021; Maroun, 2020).

Although demand for sustainability assurance is rapidly growing, it remains a challenging task, both for assurance providers and reporting firms. One major issue facing assurance providers is infrastructure deficiencies in sustainability assurance, which inhibit the quality of assurance and affect the function of a sustainability report (Arena et al., 2015; Gillet, 2012; Park & Brorson, 2005; Traxler et al., 2020). Specifically, deficiencies in infrastructure refer to the absence of infrastructure at both firm and national levels (information system, cost vs. benefit, legal environment, and enforcement mechanism), a lack of unified standards, ambiguity in guidelines, and lack of norms in terms of social conduct. Therefore, compared with financial assurance, which is guided and restricted by explicit rules and laws, producing a high-quality and reliable assurance statement for sustainability reports is much more difficult and subject to dispute (Boiral & Gendron, 2011; Boiral et al., 2019; Cho et al., 2014; Junior et al., 2014).

In addition, many reporting firms lack sufficient knowledge on how to choose proper assurance services. Essentially, sustainability assurance is a voluntary initiative in most jurisdictions, and the market is open to different types of assurance providers competing for market share (Farooq & De Villiers, 2019). Scholars and professionals often categorise sustainability assurance providers into two types: accounting firms and non-accounting firms (i.e., consultancies) (Edgley et al. 2015; Farooq & De Villiers, 2019). Some argue that accounting firms (e.g., Big 4 auditing firms) have a relative advantage over consulting firms in terms of expertise in assurance, while others suggest that consultancies (e.g., environmentalists, biologists, ethicists) have an advantage in the field of sustainability knowledge (Edgley et al., 2015; Farooq & De Villiers, 2019; Gillet, 2012). Thus, there is little agreement on whom reporting firms should recruit to undertake assurance services and the scope of assurance. In addition, according to Farooq and De Villiers (2019), in the engagement between reporting firms and assurance providers, client pressure (i.e., managerial capture) and assurance practitioners' purpose of growing income (i.e., professional capture) may also affect the quality and reliability of an assurance statement.

While an increasing number of organisations require sustainability report assurance services, research on the topic has lagged. Maroun (2020) represents the first attempt to provide an

overview of the body of sustainability report assurance by applying a conceptual development approach. This attempt explicitly explains the infrastructure and features needed to successfully execute the assurance process. However, it primarily focuses on the determinants, fragmented practices, and outcomes of assurance, ignoring the specific assurance process. Thus, there is a need to further explore the assurance process undertaken, which is critical to better understand how reporting firms and assurance providers work together to produce high-quality and credible assurance outcomes in the assurance process.

The lack of understanding of the assurance process inspired this research. To fill this gap, our research aims to obtain insights into the sustainability assurance process by developing a conceptual model, leading to a better understanding of how a high-quality and reliable assurance statement can be produced via interactions between reporting firms and assurance providers. For example, it may help us to understand how reporting firms make a choice on assurance provider, and how the selection of an assurance provider further affects the work undertaken during the assurance process (i.e., identification of assurance principle, selection of assurance method). In addition, our framework is used to explore the possible issues (e.g., challenges) brought by this cooperation; for example, whether the close relationship between reporting organisation and assurance provider established during cooperation affects the quality of assurance. As all these issues originate from the cooperation between the reporting organisation and the assurance provider, we aim to address the following questions:

*RQ 1. What is the assurance process for sustainability reports?*

*RQ 2. What challenges or issues are encountered in the assurance process by reporting firms?*

To address these questions, we apply the systematic literature review method. A total of 87 papers are identified that contribute to our understanding of the assurance process for sustainability reports. We then develop a conceptual framework by categorising the findings into five sequential stages or themes (assurance provider selection, identification, screening, validation, and evaluation). In addition, we also summarise the determinants of assurance (both

internal and external) and barriers reporting firms may face, such as time constraints, costs, and an under-developed information system. The findings may be helpful for both practitioners and academics interested in understanding the construction of the assurance process.

The rest of the paper is structured as follows. A description of the methodology is provided in Section 2. Section 3 categorises and presents the findings into the above-mentioned five themes. The conceptual framework is further advanced by integrating the thematic conclusions and discussions in Section 4. Section 5 concludes the paper with the current state of assurance practice, research limitations, and directions for future research.

## **2. Methodology**

### *2.1 Search strategy*

According to Carter and Rogers (2008), a systematic review is the most appropriate method for drawing an integral picture to obtain a better understanding of a research question. Systematically reviewing the existing literature enables authors to synchronise theoretical and empirical studies in the targeted field and its subfields (Jia et al., 2018; Tranfield et al., 2003). The first step of the systematic review process is a wide search. This is followed by a descriptive analysis of the thematic findings. In detail, the descriptive analysis is guided by a coding scheme, where the collected studies are categorised by publication information, key theme, and issue addressed, hence enabling the collection of trends and research issues related to information. The synchronisation of theoretical and empirical studies aims to make logical deductions, utilised for the construction of conceptual framework propositions (Wacker, 1998, p. 368).

The prime databases utilised in this paper are SCOPUS and EBSCO, which both contain an enormous number of peer-reviewed published materials on SSCM (Jia et al., 2018). According to Rowley and Slack (2004), the collection process in a systematic review comprises four steps.

First, we created a search string that combined all possible terminological words used for the selection of articles; these belonged to two categories: sustainability report and assurance. In

addition, the keywords in the search string were mainly collected through discussions between co-authors, who are experts on the topic and have rich experience in conducting literature reviews. English was agreed on as the only language for article collection, and the type of document was confirmed as “articles” (Figure 1). After the first screening, a total of 4,494 articles were collected (including duplicates).

-----Insert Figure 1 here -----

Second, we briefly screened these articles by examining the relevance of their titles, to remove any unrelated to sustainability report assurance. This step resulted in 231 articles relating to the subjects of sustainability and auditing.

Third, as the abstract is an important criterion for further screening, we used the inclusion and exclusion criteria in the screening step revealed in Figure 1. The inclusion and exclusion criteria were discussed at a group meeting, where the breadth and depth of the article questions and related topics were exhaustively discussed. At the end of the group discussion, a consensus was reached regarding all details regarding screening, and both inclusion and exclusion criteria were established separately. During this process, three researchers/co-authors went through the process independently and then reached agreement on all items based on the inclusion/exclusion criteria. We carried out this review from the assurance of nonfinancial information rather than financial information perspective, which informed our exclusion criteria. For example, we excluded those that lightly touched on sustainability report assurance focusing on the economic effects of assurance. We also excluded those that focused merely on the antecedents or consequences rather the assurance process (i.e., assurance provider selection, identification, screening, validation, and evaluation). In summary, we sought research containing empirical data and best practice for assurance of sustainability reports. This step left 135 articles for the last round of selection.

Finally, we examined all 135 articles by reading their full text. In particular, to further check the relevance of these papers to our research, we carried out content analysis of their findings,

research gaps, and future research directions. Ultimately, some 87 articles were selected for descriptive analysis.

## 2.2. Descriptive analysis

A descriptive analysis aims to draw an integral map that contains all the different notions and ideas in a certain field, which can shed light on an emerging research aspect and help to “dive deeper” into the current state of research. This section contains two subsections, each of which illustrates the distribution of publications regarding the assurance of sustainability reports from different aspects.

The 87 articles were collected from various disciplines, including management, auditing, assurance, sustainable development, and corporate social responsibility, and thus offered sufficient diversity of perspectives to form a holistic understanding of the topic. In terms of the distribution of publications across time, the study period runs from 2003 to 2021 (Figure 2). However, there were few papers between 2003 and 2009, and a dramatic increase is observed in 2009, with eight papers emerging. A possible reason for this is that the financial crisis in 2008 greatly provoked the demand for nonfinancial information disclosure, which in turn required more reliable assurance for both financial and nonfinancial information. Our search was completed at the end of December 2021, for a total of 87 papers contributing to the field of sustainability assurance released between 2003 and 2021.

-----Insert Figure 2 here -----

These 87 papers were distributed across 50 journals, as illustrated in Figure 3. In terms of number of papers, the top five journals contributing to the field of sustainability reporting assurance are *Journal of Business Ethics* (10 papers), *Journal of Cleaner Production* (8 papers), *Corporate Social Responsibility and Environmental Management* (5 papers), *Business Strategy and the Environment* (5 papers), *Managerial Auditing Journal* (3 papers) and *Accounting Auditing and Accountability Journal* (3 papers).

-----Insert Figure 3 here -----

### *2.3 Coding*

After recording essential descriptive data for each article (e.g., source, publication year and methodology), we classified and coded articles based on the broad themes and linked subthemes identified. Since the literature on sustainability assurance is still developing, there was no well-defined framework to guide our coding. We, therefore, adopted an inductive approach that allows themes to emerge from the reviewed papers. Three researchers/co-authors were involved in this coding process.

We found that the papers could be coded based on the assurance process, which comprises all the elements needed for sustainability assurance. Repeated concepts about the assurance process were identified as falling into five themes: assurance provider selection, identification of the basic assurance principle, screening of disclosed content, validation of the method, and evaluation of the assurance process. Empirical papers were generally conducted around evidence that provides a better understanding of sustainability-assurance-related phenomena. Theoretical papers usually applied theories (e.g., institutional theory, stakeholder theory, signalling theory, and legitimacy theory) to explain companies' initiatives towards sustainability. The extant literature thus predominantly focuses on the subdivisions of sustainability assurance, such as stakeholder engagement, the determination and screening of assurance scope, and assessing the quality of the assurance method, while a macro perspective on an integral assurance model has been less of a concern.

## **3. Thematic Findings**

### *3.1 Sustainability assurance and assurance process*

Compared with financial information assurance, sustainability assurance remains unregulated and there is little by way of actual assurance mechanism (Junior et al., 2014). According to the IAASB (2013), the assurance process may be described as the practice of collecting evidence to deliver a conclusive statement that aims to enhance stakeholder confidence. Assurors provide assurance statements through the assurance process, implying that the reliability of disclosed information can be assured to some extent (Manetti & Toccafondi, 2012; O'Dwyer

et al., 2011). While the extent of this reliability is unknown, and the definition of assurance quality is not fully settled (Cohen & Simnett, 2015), the assurance process is still regarded as a crucial factor in controlling the quality of sustainability assurance (Casey & Grenier, 2015; Cho et al., 2014; Hummel et al., 2017; Kolk & Perego, 2010; Ruiz-Barbadillo & Martínez-Ferrero, 2020; Simnett et al., 2009).

Although ISAE 3000 and AA1000 AS have generally defined the roles and responsibilities of various parties, there is little systematically categorising the assurance process into sub-steps due to its confidential and complex nature. From the 87 identified papers, we attempted to construct an assurance process that contains activities such as assurance provider selection (Channuntapipat et al., 2019; Junior et al., 2014), the identification of basic assurance principles (Aboelmaged, 2012; Manetti & Becatti 2009), the screening of verification content (Dando & Swift, 2003; Gürtürk & Hahn, 2016; Hummel et al., 2017; O'Dwyer, 2003), the validation of verification method (Accountability, 2011; Ackers, 2015; Chen et al., 2016; Furhmann, 2017), and evaluation of sustainability assurance (Gürtürk & Hahn, 2016; Moore et al., 2006).

### *3.2 Determinants of assurance*

As studies on sustainability report assurance evolve, the impacts of determinants of assurance decisions have also attracted increasing attention. Overall, the determinants of assurance can be discussed from both internal and external aspects.

In terms of the internal aspect, studies have identified several drivers of the demand for sustainability report assurance, including CSR commitment, extensiveness of sustainability reporting, corporate governance and potential benefits. First, reporting firms with greater CSR commitment are more willing to seek assurance services and consider a greater assurance scope (Clarkson et al., 2019). Second, Cho et al. (2014) argued that reporting firms with more extensive disclosure ranges are more likely to pay for assurance services. Third, some studies have investigated the role of a shareholder or stakeholder-oriented governance system in securing sustainability assurance, arguing that stakeholder-oriented governance has positive

impacts on the use of sustainability assurance while shareholder-oriented governance has negative impacts (Herda et al., 2014; Kolk & Perego, 2010; Simnett, 2009). Finally, the potential benefits of assurance are also important drivers leading firms to make assurance decisions. For example, the demand for improved credibility drives firms to get their sustainability statements assured (Cho et al., 2014). Financial indicators also have significant but mixed impacts on assurance initiatives. Specifically, some scholars argue that profitability, financial risk and leverage have no significant effects on the decision to acquire assurance (Simnett et al., 2009), but Serra et al. (2013) found a negative relationship between leverage and the engagement of assurance. Regarding the added value (either perceived or real) of report assurance, the reduction of legal risks, useful guidance generated by assurers, and enhanced reputation have been identified as the key internal drivers (Darnall et al., 2009; Gillet et al., 2012; O'Dwyer et al., 2011; Sawani et al., 2010).

As for external determinants, Farooq and De Villiers (2017) may be the first to aggregate this body of knowledge and conduct a systematic literature review. They have identified four external drivers: stakeholders' perceptions of credibility, organisational and industrial characteristics (e.g., size, industry membership and listing status), media pressure and characteristics of country-of-origin level drivers. Specifically, reporting firms are more likely to seek assurance if it attracts external stakeholders with a higher level of perceived credibility of sustainability reports (Hodge et al., 2009; Romero et al., 2014; Wong & Millington, 2014). The impacts of organisational size and industrial characteristics on assurance engagement have also been investigated; for example, the increasing demand for assurance is primarily emerging from the larger listed firms (KPMG, 2015; Simnett, 2009; Zorio et al., 2013) and firms operating in environmentally sensitive industries (Zorio et al., 2013). Moreover, according to Simnett et al. (2009), firms engaging in more highly visible industrial activity and with a larger "social footprint" are also more likely to seek assurance. Also, Gillet-Monjarret (2015) proposed that higher levels of media pressure positively influence the demand for assurance services. Finally, the mixed influences of country-of-origin in assurance engagement have been examined. Some scholars argue that reporting firms operating in weaker legal environments are more likely to get their sustainability reports assured (Perego, 2009; Perego & Kolk, 2012),

while others believe that reporting firms based in stronger legal environments are more likely to engage assurance services (Simnett et al., 2009). Based on Farooq and De Villiers (2017), Maroun (2020) further considered the role played by the investor protection system, arguing that engagement of assurance is negatively related to investor protection, since investor protection is regarded as a broad commitment to the rule of law while assurance can be understood as a substitute for the lost confidence provided by the legal system (Kolk & Perego, 2010; Maroun, 2020; Simnett, 2009).

### *3.3 Selection of assurance provider*

The extant research on assurance provider selection is mixed. The current debate about assurance provider selection is mainly categorised into two themes: 1) selection criteria and 2) differences among types of assurance providers (Casey & Grenier, 2015; Channuntapipat et al., 2019; Cho et al. 2014; Hummel et al., 2017; Kolk & Perego, 2010). Reporting firms usually make choices based on the degree of harmony between their own selection criteria and characteristics of assurance providers (Moroney et al., 2012), with the selection criteria for assurance providers influenced by both external and internal considerations. Thus, final choice of an assurance provider can be seen as the joint effect of external and internal considerations (Baraibar & Sotorrio, 2018; Edgley et al., 2010).

First, based on the 87 identified papers, we categorise external considerations as qualifications of assurers, legal environment, enforcement mechanism, norms, and peer firm influences. Qualifications refer to whether practitioners exhibit sufficient professionalism (e.g., necessary expertise, experience, values, methods and practices) to perform the assurance (see Table 1; Boiral, Heras-Saizarbitoria, & Brotherton, 2019, 2020). As mentioned above, scholars and experts often categorise assurers into two groups: accounting firms and consulting firms. It is noted that reporting firms' perceptions of assurance providers regarding the professionalism of their activity will affect their choice (Boiral, 2013; Diouf & Boiral, 2017; O'Dwyer et al., 2011). Overall, the professional identity of both accounting and consulting firms is reflected in their knowledge of assurance procedures, reporting firms' businesses and operations, and sustainability (Adams & Evans, 2004; Boiral et al., 2020; Diouf & Boiral, 2017; IAASB, 2013).

Accounting firms are believed to have deeper knowledge on assurance procedures and clients' industries and operations, while consulting firms are expected to have the edge in understanding the subject of assurance (i.e., sustainability) (Farooq & De Villiers, 2019; Jones & Solomon, 2010). Interestingly, although accounting and consulting firms question each other's professionalism, it appears that neither technically ticks all three boxes. Therefore, to improve the qualifications of assurers, scholars have suggested using a multi-disciplinary teams of accountants and non-accountants on sustainability assurance engagements (Farooq & De Villiers, 2019; Wallage, 2000), which would allow the two groups to fill any professionalism gap and better fulfil the requirements of the sustainability assurance engagement (Jones & Solomon, 2010). Furthermore, it is also argued that the absence of training significantly undermines the professionalism of assurance providers (Boiral et al., 2013; Maroun, 2020; Sharma & Sidhu, 2001).

-----Insert Table 1 here -----

The legal environment is constituted by the laws and regulations with which an organisation must comply for operation; this can vary from one country to another due to the different legal systems (Kolk & Perego, 2010; Yan, 2019). Simnett et al. (2009) found that companies in jurisdictions with a less strict legal environment have lower intention to adopt accounting-oriented assurance (O'Dwyer et al., 2011). By contrast, companies in jurisdictions with a strong legal environment are more likely to choose accounting auditors as their assurance provider (Moroney et al., 2012; Simnett et al., 2009).

In contrast to the legal environment, an enforcement mechanism emphasises the impact of methods and activities initiated by country-level institutions to force companies' legal compliance through supervising, educating, assessing, and sanctioning (Ball et al., 2000; Brown & Kohlbeck, 2017; Brown-Liburd & Zamora, 2015; Kondra & Hinings, 1998; Kılıç et al., 2021; Kolk & Perego, 2010; Pasko et al., 2021; Zeng et al., 2010). Evidence proves that companies in countries with weaker legal enforcement mechanisms are more likely to employ accounting auditors rather than consultancies (Choi & Wong, 2007; Fonseca, 2010; Kolk & Perego, 2010). By contrast, companies in countries with strong legal enforcement mechanisms

do not have a distinct preference regarding choice of assurance provider (Kend, 2015; Pflugrath et al., 2011).

However, Kend (2015) suggested type of assurance provider may be less important; instead, whether norms are shareholder-oriented or stakeholder-oriented may be more influential to the selection. Norms refer to the public environment that shapes business behaviour and decision-making on sustainability assurance (Kolk & Perego, 2010; Jia et al., 2018; DiMaggio & Powell, 1983). Companies usually take into account public expectations when they make choices on assurance providers for enhancing their legitimacy and social acceptance (Channuntapipat et al., 2019; Gillet, 2012; Cubilla-Montilla et al., 2020).

Finally, peer pressure might also have an impact on the selection process. Successful experiences from peer firms would not only help companies to understand how the quality of assurance is perceived by the public but also reduce costs incurred during the trial-and-error process (Ackers, 2015; Emtairah & Mont, 2008).

When it comes to internal considerations, the perception of management, industry characteristics, governance mechanisms and concerns of stakeholders regarding assurance services can be categorised as factors that affect choice of assurance provider. It is argued that top management's perception of sustainability assurance may affect the decision on type of assessor. Peters and Romi (2015) considered the role of environmental committees and Chief Sustainability Officer (CSO) characteristics in selecting assurance services, arguing that environmental committees with deeper professional knowledge are more likely to choose accounting rather than consulting firms as their assessors. Management perceptions are also established on the differences in assurance quality between accounting auditors and professional consultancies. Large accounting firms are generally associated with high-quality assurance, including in the auditing procedure and statement format (Ackers, 2015; Greenwood & Suddaby, 2006; Perego, 2009; Scott, 2013). An empirical study based on Australian and UK companies finds no differences in report credibility and assurance quality by selecting different types of assurance provider (Pflugrath et al., 2011).

Industry characteristics may also affect selection of assurance providers. Sustainability issues in various industries are complex and different. For example, according to Green et al. (2017), companies in the energy sector tend to place more weight on industry-specific knowledge, objectivity and experience than whether the provider is an accounting or consulting firm. Similarly, in countries where environmental performance is highly scrutinised by stakeholders, consulting firms with in-depth business knowledge are favoured as assurance providers (Boiral, Heras-Saizarbitoria, Brotherton, & Bernard, 2019). Compared with those consultancies, accounting firms focus more on compliance with standards and report frameworks than sustainability performance combined with industry characteristics (Mock et al., 2007). Moreover, companies that desire positive wording in the statement of a high sustainability performance are more likely to employ consultancies as assurance providers because accounting firms are less likely to provide moderate/high-level assurance (associated with positive opinions in the statement) due to litigation risks (Gürtürk & Hahn, 2016).

Other scholars have investigated the impacts of stakeholder concerns on assurance provider selection (Boiral, Heras-Saizarbitoria, & Brotherton, 2019; Dogui et al., 2013; Gillet, 2012). Objectivity and independence of assurance providers are ranked as the primary concerns for stakeholders in choosing assurance providers (Boiral et al., 2018; Kolk & Perego, 2010; Manetti & Toccafondi, 2012). This view is supported by Wong and Millington (2014), who stated that the independence of assurance providers significantly affects the extent of credibility of assurance and stakeholders' confidence. In the absence of independent sustainability assurance, assurance services may be manipulated, implying information distortion. As stakeholders are vulnerable to managerial unaccountability and opportunistic behaviour (Arena et al., 2015; Hodge et al., 2009; Kolk & Perego, 2010; Smith et al., 2011), third-party assurance is adopted to relieve information asymmetry by increasing the transparency and objectivity of reports, thereby increasing the confidence of stakeholders (Fuhrmann et al., 2017; Tamimi & Sebastianelli, 2017). These findings are consistent with Green's study (2017), which argued that reputation and objectivity of assurance providers are more valuable to stakeholders than type of assurance provider. Besides, institutional investors, as one major stakeholder, also have significant impacts on firms' choice of assurance services. Institutional pressure associated

with the environmental and social impacts of firms' activities leads to a convergence of institutional investors' attitudes towards sustainability reports. Therefore, regardless of their investment horizon (long term or short term), they will continuously encourage corporate boards to seek high-quality and credibility assurance, mainly by exercising their voting rights (García-Sánchez et al., 2021).

According to Gillet (2012), the independence of assurance can be considered from two perspectives: the independence of the assurator and the independence of the assurance process. The former is largely determined by the commercialistic nature of the assurator, while the latter depends on the drivers of the reporting firm for assurance engagement (Gillet, 2012; Hodge et al., 2009; Simnett et al., 2009). The commercialistic nature of assurers can exhibit in a variety of forms, such as excessively intimate reporting firm – provider relationships and overlapping roles between auditing and consulting services (Boiler & Gendron, 2011; Boiral et al., 2017; Boiral, Heras-Saizarbitoria, Brotherton, & Bernard, 2019; O'Dwyer & Owen, 2005; Moore et al., 2006). These factors may transform into pressure to influence the selection of assurance providers. Nevertheless, the exact degree to which this pressure influences selection of assurance providers remains unknown.

### *3.4 Identification of basic assurance principle*

In Table 2, we summarise the basic principles for sustainability assurance such as the assurance level (Kolk & Perego, 2010), standards that must be complied with (Accountability, 2011; Boiral et al., 2018), and the objective of the assurance (Boiral et al., 2013).

-----Insert Table 2 here -----

Assurance level can be rated as either limited or reasonable (see descriptions in Table 2) by referring to the scope of the verification undertaken and the tolerable percentage of errors with respect to standards (Gillet, 2012). Sometimes, a reasonable rating may also refer to a high level of assurance, while limited assurance can be regarded as providing only a moderate or 'less than high' level of assurance. The other component of assurance principles is assurance standards. The most common standards that provide guidance for assurance providers are

AA1000 Assurance Standard (AA1000AS) and International Standard on Assurance Engagements 3000 (ISAE 3000). These two standards share a common purpose and are complementary (Alsahali & Malagueño, 2021; Junior et al., 2014; Karaman et al., 2021; Manetti & Becatti, 2009). AA1000AS emphasises assurers' accountability, the definition of assurance requirements for the assurance provider, and stakeholder engagement. Compared with AA1000AS, ISAE 3000 is more focused on the importance of misstatement risk and quantitative analysis. Accordingly, ISAE 3000 is usually applied by accounting auditors and AA1000AS by consultancies (Göbbels & Jonker, 2003; Ball et al., 2000; Safari & Areeb, 2020; Tsalis et al., 2020). Recent studies have shown that reporting firms tend to choose ISAE 3000 over AA1000 (Boiral, Heras-Saizarbitoria, & Brotherton, 2019) because large accounting firms are dominant in the assurance field, especially in countries where sustainability assurance receives less attention (Pfugrath et al., 2011).

Compared with commonly accepted assurance levels and standards, the objective of sustainability assurance is more controversial in this emerging field due to the potential conflict of interest between major stakeholders such as employees, customers, and suppliers on the one hand and top management on the other (Boiral et al., 2018). According to the Global Reporting Initiative (GRI, 2013), external assurance should enhance the confidence of report users in relating to the audited company's sustainability performance and help them to make more informed decisions. However, some suggest that sustainability assurance should be considered an instrument for enhancing internal efficiency and managing legitimacy (Gürtürk & Hahn, 2016; Hummel et al., 2017). Similarly, Romero et al. (2014) argue that the primary objective of assurance practice is to provide guidance on economic activities by enhancing information credibility and accuracy rather than protecting stakeholder interests. Additionally, other scholars argue that sustainability assurance should play a monitoring role to reduce management's opportunistic behaviour (Amir & Serafeim, 2018; De Villiers & Alexander, 2014; Dowling & Pfeffer, 1975; Gomes et al., 2015; Hoang & Trotman, 2021). The divergence on assurance objectives may lead to inappropriate verification scope and failure to meet users' expectations. For example, an accounting auditor may understand the objective of assurance as simply compliance with standardised criteria (i.e., ISO or equivalent standards) and focus on

data verification, while report users may hope to better understand the sustainability performance and areas that need improvement.

There are also criticisms in terms of the gap between theoretical principles and real-world practices. Specifically, existing professional guidelines only develop assurance requirements and the basis for identifying the extent to which the subject matter conforms to these (Boiral, Heras-Saizarbitoria, Brotherton, & Bernard, 2019; Boiral et al., 2020; Farooq and De Villiers, 2017; Maroun, 2020). Therefore, the sustainability assurance process is likely to be conducted based on perfunctory procedures and the reproduction of well-established practices in financial auditing, ignoring the complex realities of sustainability issues (Clarkson et al., 2019; Maroun, 2020). As a result, the assurance statement usually consists of theoretical reflections rather than field research, leading to a lack of substance in sustainability assurance.

### *3.5 Screening of verification content*

Verification scope is closely associated with misstatement risk and confidence of report users on assurance (Simnett et al., 2009). According to GRI (2013), verification scope should be determined based on two key factors: first, whether the disclosed and assured content is significant to stakeholders and organisations, and second, the extent to which this significance is reflected in reporting and assurance. It is argued that stakeholder engagement in determining verification scope can strengthen the credibility of reports and force top management to address crucial sustainability issues of companies and society (Adams & Evans, 2004; Channuntapipat, 2021; Dyck et al., 2019; Gray, 2006; Hummel et al., 2017; Krasodomska et al., 2021; O'Dwyer & Owen, 2005; Owen et al., 2000). However, the verification scope does not always correspond to stakeholder expectations (Duflo et al., 2013; Farooq & De Villiers, 2019). Jones and Solomon (2010) argue that inappropriate assurance scope fails to satisfy expectations of a broad range of stakeholders and may further affect firm value. O'Dwyer and Owen (2007) emphasise that the assurance provider should propose an effective analytical procedure to detect the relevance of disclosed information to stakeholders and reporting firms to reduce the risk of symbolic assurance. Channuntapipat et al. (2019) find that the emergence of pre-assurance service, which aims to provide opinions on information such as data integrity, accuracy,

accessibility, and reliability, for the top management of reporting firms, may mitigate the risk of inappropriate verification scope. Nevertheless, such pre-assurance services are also criticised as being unable to improve information asymmetry and other similar issues (Boiral, Heras-Saizarbitoria, Brotherton, & Bernard, 2019; Gillet, 2012).

The absence of stakeholder groups in determining the verification scope has been criticised by scholars for a long time (Dando & Swift, 2003; Farooq & De Villiers, 2019; Gillet, 2012; O'Dwyer, 2003). Atkins and Maroun (2015) argued that there is a need to engage with various stakeholders to identify relevant information to be verified and ensure that assurance statements provide decision-useful information. However, this can be challenging in practice since the expectations and needs of stakeholders vary from case to case (Atkins & Maroun, 2015; IIRC, 2014). Therefore, it is difficult for sustainability assurors to respond to the concerns of all stakeholders; not to mention the conflicts of interest across different sets of stakeholder groups (Kolk & Perego, 2010). O'Dwyer and Owen (2005) find that stakeholders of companies that have received awards from ESRA (European Sustainability Reporting Awards) rarely engage in the process of preparing and producing sustainability reports or the assurance practices of their companies. In short, whether the verification scope responds to the concerns of stakeholders needs further investigation (see Table 3).

-----Insert Table 3 here -----

### *3.6 Validation of verification method*

The verification aspect has attracted dispute concerning its auditing methods and techniques (Gillet, 2012). Assurance methods comprise the data collection and analysis approach (Albersmeier et al., 2009). Consultancies usually apply a diversified approach, employing methods such as risk assessment, social analysis, interviews, media analysis and control of stakeholder processes (Channuntapipat et al., 2019; Mendes et al., 2019; Ruiz-Barbadillo & Martínez-Ferrero, 2020). In contrast, the assurance approach for an accounting auditor is less diversified, and strives to follow a replicable procedure, drawing on inquiry, observation, inspection, computation, and analysis (Boiral et al., 2018; Channuntapipat et al., 2019), which

lower the risks such as time constraints, detection risks and control risks (Albersmeier et al., 2009; Graham, 1985; Lamberton, 2005; Wallage, 2000). An accounting auditor may use the same assurance procedure for different reporting firms (Boiral, Heras-Saizarbitoria, & Brotherton, 2019; Deegan et al., 2006; Reimsbach et al., 2018). Scholars have pointed out that it would be beneficial to use diverse testing methods to collect and analyse data and support assurance opinions (Maroun, 2017; Prinsloo & Maroun, 2020); for example, while procedure homogeneity allows a focus on data accuracy, it may neglect the significance of the data to stakeholders as well as the environmental complexity of different companies. As a result, the credibility of assurance statements to stakeholders may be reduced (Gürtürk & Hahn, 2016; Park & Brorson, 2005; Wallage, 2000).

However, Fonseca et al. (2014) argue that less-diversified verification methods mitigate the risk of opportunistic behaviour in the assurance field, where there is a lack of unified and compulsive standards for both reporting firms and assurance providers. Different companies usually have their own sustainability indicators and statistical approaches. Consultancies are more adaptive due to their rich experience and ability in terms of multiple verification skills (Ackers, 2015; Cohen & Simnett, 2015). Compared with consultancies, accounting auditors face the challenges of diversified sustainability indicators and statistical approach (Accountability, 2008; Boiral et al., 2018; GRI, 2013).

In practice, consultancies tend to focus more on evaluative approaches and attempt to provide commentary on issues of completeness, fairness and overall balance, rather than merely verifying data collection procedures and accuracy (O'Dwyer & Owen, 2005), while accountants care more about the issue of consistency of information appearing in the organisation's report with underlying data sets, and hence may be accused of reducing the process to a mere data checking exercise (O'Dwyer & Owen, 2005). Overall, consulting firms appear to employ more strategic approaches than accountants to assurance. On the contrary, it is noted that the use of different testing methods or techniques is associated with the adoption of assurance standards; for example, consultancies were at the fore in employing AA1000.

-----Insert Table 4 here -----

### *3.7 Evaluation of the assurance*

Enhanced credibility is commonly considered the key outcome of sustainability assurance (Ackers, 2015; Gomes et al., 2015; Hummel et al., 2017; O'Dwyer & Owen, 2005; Simnett et al., 2009). As summarised by Maroun (2020), assurance outcomes can have both substantive and symbolic purposes. Symbolic effects of high-quality assurance contribute to maintaining and improving company image and satisfying public expectations. High-quality assurance outcomes may help companies to reduce agency costs and legal risks, and also enhance stakeholder confidence (Boiral et al., 2017, 2018; Boiral, Heras-Saizarbitoria, & Brotherton, 2019; Edgley et al. 2010; Gray 2006; O'Dwyer & Owen 2005). However, Ball et al. (2000) argue that the perceived quality of assurance is more likely to be determined by the adoption of assurance practices rather than the quality per se, implying that report users and other stakeholders place more weight on whether a report has adopted assurance rather than the extent to which the information is assured. From assurance providers' perspective, sustainability assurance is more likely to be considered an instrument to build their own reputation and a new type of income (Comyns et al., 2013; O'Dwyer et al., 2011; Orazalin & Mahmood, 2019). For reporting firms, third-party assurance can help a company to neutralise the demand for monitoring and censorship and mitigate heterogeneity risk brought by different sets of stakeholders (O'Dwyer & Owen, 2005).

Depending on their purpose, assurance statements can be used as public statements or private reports to management (Boiral et al., 2019; Elg & Fundin, 2012; O'Dwyer & Owen, 2005). Public statements aim to show the presence of external and independent assurance to the public through the assured information of sustainability reports, while private reports focus on the risks and issues that may occur in the assurance process and highlight those areas that can be improved for better sustainability performance (Channuntapipat et al., 2019; Gürtürk & Hahn, 2016; Hodge et al., 2009; Hummel et al., 2017). In the assurance statement, the opinions are the component of most concern to report users. Based on the assurance level achieved, opinions are worded positively or negatively (Channuntapipat et al., 2019). According to the AA1000 standard, assurance opinions should demonstrate to what extent the three characteristics — that

is, materiality, completeness and reliability — are embodied in an assurance statement (Perego & Kolk, 2012; Schreck & Raithel, 2018; Simnett et al., 2009). However, Ball et al. (2000) claim that the language used for opinions may be manipulated to avoid negative wording in a statement, resulting in the lack of precise opinions (Channuntapipat et al., 2019). Therefore, except for the enhanced credibility brought by the adoption of sustainability assurance, the extent to which quality of assurance may benefit the reporting company has not been investigated (see Table 5).

-----Insert Table 5 here -----

### *3.8 Barriers to the assurance process*

Mismatches between reporting firms regarding the concept of sustainability and the requirements of guidelines (e.g., GRI) may lead to barriers that affect the quality of the assurance process. The major barrier is the assurance cost constraint (Ball et al., 2000; Channuntapipat et al., 2019; Gillet, 2012). From a cost-benefit perspective (Cohen & Simnett, 2015; Hummel et al., 2017; P. Jones et al., 2014), reporting firms may reduce the resources they input if sustainability assurance is more expensive than the value-added it provides (Carey et al., 2021; Freeman & Reed, 1983; Gilbert & Rasche, 2008; Hahn & Lulfs, 2014; Vizcaíno-González, 2021). However, if additional values (social acceptance, stock return, governance efficiency) brought by assurance are disproportionately emphasised, assurance practice may be treated as a managerial tool to enhance the internal efficiency of the company. In that case, the credibility of assurance may be unintentionally eroded due to the risk of some symbolic managerial behaviours (Channuntapipat et al., 2019; Hummel et al., 2017; Perego and Kolk, 2012).

Insufficient allocation of resources is another key barrier in sustainability development that can lead to issues such as under-developed information systems and time constraints (Gillet, 2012; Koster et al., 2019). Sustainability-related information should be reported regularly and in a timely manner, with effective information management (Gillet, 2012). According to Gillet (2012), companies with rich experience and well-developed information systems are able to

collect data and process information effectively and in a timely manner. In contrast, companies with ineffective information management may limit their verification scope, affecting data accuracy. As a result, a moderate/high assurance level is hard to achieve, reducing the credibility of assurance (Boiral, Heras-Saizarbitoria, & Brotherton, 2019). Similarly, it is noted that time constraints originate from two requirements in the GRI guidelines – timely collecting and timely reporting – with both being achieved only by having a well-developed information system (Gillet, 2012; GRI, 2016).

In addition, although assurance standards such as ISAE 3000 and AA1000 AS have been applied to a broad range of subject matter, there is a lack of precision in prescriptions to address specific technical challenges in practice (Simnett & Huggins, 2015; Sonnerfeldt & Pontoppidan, 2020). These include the risk and materiality assessment (i.e., how to identify the level of materiality and the level of assurance that can reasonably be provided on aspects of the integrated report) as well as how to assure more discursive and future-oriented information (see Table 6) (Simnett & Huggins, 2015).

-----Insert Table 6 here -----

## **4. Conceptual Framework and Future Research Directions**

### *4.1 Conceptual framework development*

A conceptual model is developed to show the steps of the assurance process. The main process is depicted in the middle of Figure 4, in five key steps: assurance provider selection, identification, screening, validation and evaluation. We present these steps sequentially to better explain the assurance work undertaken via an integral picture of the assurance engagement.

-----Insert Figure 4 here -----

In Figure 4, the left side of the assurance process indicates the details of each step. The selection of assurance providers is seen as the start of sustainability assurance. There are a variety of external and internal considerations for reporting firms in selecting assurance providers (see Table 1). The trade-off between external and internal considerations lead to different choices across different types of assurance providers (i.e., accounting auditors, consultancies and other certification bodies) (Channuntapipat et al., 2019). Notably, basic assurance principles and methods are applied differently by engaging different types of providers (Boiral, Heras-Saizarbitoria, & Brotherton, 2019; Maroun, 2020).

Identification of basic assurance principles (see Table 2), which usually occurs in the first few rounds of negotiations between the reporting firm and assurance provider, is the most frequently re-occurring concept in the identified papers. These principles provide guidance for verification work and a reference for evaluating whether the assurance process has been executed in compliance with the stated criteria (Maroun, 2020). In terms of assurance level, positive wording in assurance statements only appears in circumstances in which important data and information are assured with high levels of assurance (Barlev et al., 2017; Klodnick et al., 2019).

Screening is the third step (see Table 3). The basic assurance principles guide the establishment of the scope of verification by screening what should be verified preferentially and what should be excluded based on the knowledge and experience of the incumbent assurance provider (Ruiz-Barbadillo & Martínez-Ferrero, 2020; Safari & Areeb, 2020; Tsalis et al., 2020). However, for reporting firms who are new to sustainability assurance, pre-assurance services may play a significant role in ensuring the significance and validation of the verification scope by simulating full assurance engagement (Channuntapipat et al., 2019; Gillet, 2012). Furthermore, the pre-assurance is able to test the readability of the information system based on the necessity and integrity principle and further reduce risks that may bring uncertainty to the validation step, such as the risk of missing data and irrelevant verification.

The fourth step, validation, involves the assessment of the feasibility of the verification method and execution of viable methods (see Table 4). Different types of assurance providers have

their own preferences on verification methods (e.g., quantitative or qualitative). At the end of the verification, the degree of verification completeness should be assessed by the assurance provider.

The fifth step, evaluation of the assurance, mainly involves the assurance statement as the outcome of the assurance process (Boiral, Heras-Saizarbitoria, & Brotherton, 2019; Gillet, 2012; Hummel et al., 2017; Perego & Kolk, 2012). Notably, the assurance provider usually produces two types of outcomes: a public statement, which contains assurance opinions (see Table 5) to meet public expectations, and a private report, to reveal the areas that need to be improved (Channuntapipat et al., 2019; Langer, 2006).

In Figure 4, the right side of the assurance process indicates issues that arise in sustainability assurance. In the extant literature, these are mainly concentrated in identification, screening, and evaluation steps due to the potential conflict of interests raised by the profit-oriented nature of assurance providers (Table 7). For example, the independence and professionalism of assurance providers may be threatened by the potential conflict of auditing and consulting activities, particularly if the boundary between the two roles is not clear (Boiral & Gendron, 2011), compromising the credibility of assurance (Boiral, Heras-Saizarbitoria, Brotherton, & Bernard, 2019).

-----Insert Table 7 here -----

Risks of verification (Table 4) are stated on the right side of the validation step, and barriers are displayed at the top of the assurance process (Table 6). Unlike the issues above, which primarily originate from ethical dilemmas, verification risks are inherent and cannot be fully eliminated. A possible mitigation method is intensive interaction between the assurance provider and the internal environment of the reporting firms (Albersmeier et al., 2009; Deegan et al., 2006). However, such interaction may put the assurance provider at risk of ethical issues, such as its independence (Zaman et al., 2021). The self-responsibility of the assurance provider is the key to risk control and success validation (Channuntapipat et al., 2019).

Instead of inherent risks, barriers in the framework (Table 6) reveal resistance that may affect the quality of the assurance process. For example, high-quality sustainability assurance is usually associated with a high cost of corporate resources (Boiral, Heras-Saizarbitoria, & Brotherton, 2019; Hummel et al., 2017). If the reporting firm chooses to avoid such cost by reducing the resources devoted to information management, the resulting under-developed information system may negatively affect data quality (Gillet, 2012; Zorio et al., 2013). Furthermore, the potential of sustainability assurance is also restricted due to an under-developed information system. For example, subjective evaluation should be based on data obtained from quantifiable information, and therefore, a lack of data limits the potential for subjective assessment (O'Dwyer et al., 2011; Türedi & Celayir, 2016).

#### *4.2 Areas for future research*

First, at the level of assurance provider selection, further investigation is needed to better understand the underlying determinants and considerations (Boiral, Heras-Saizarbitoria, Brotherton, & Bernard, 2019). A practical method would be to apply quantitative analysis to examine how each consideration may affect assurance provider selection; for instance, the extent to which the perceptions of the management of the reporting firm, or stakeholder concerns, affect the choice of assurance provider. In addition, scholars should consider how reporting firms make trade-offs on expectations among different sets of stakeholders when selecting assurance providers. The answers to such questions may provide guidance on the selection of assurance providers and help different types of assurance providers to consider their competitive advantages. In addition, in terms of the qualifications of assurance providers, future studies could investigate the perceptions of practitioners in the area of socially responsible investment, extra-financial rating agencies, experts in sustainability reporting, environmental managers in reporting organisations or other potential users/readers of sustainability reports (e.g., regulators, NGOs, trade unions, employees, financial analysts, conscious investors and consumers) about the professionalism of assurance providers. It is important to further clarify the impacts of relationship management between reporting firms and assurance providers on assurance outcomes, as an excessively intimate reporting firm –

assurance provider relationship may compromise the independence of the assurance provider (Boiral, Heras-Saizarbitoria, Brotherton, & Bernard, 2019). Longitudinal studies would be helpful to assess such relationships.

Second, existing research mainly focuses on assurance practice from the management perspective; it is also important to understand sustainability assurance from the stakeholders' perspective. While the quality of assurance, from investors' perspective, mainly depends on data accuracy and compliance with standards (Maroun, 2020), stakeholders may perceive this differently, by taking factors such as culture and legal environment into consideration. However, current literature does not discuss what constitutes the most efficient sustainability assurance practice from stakeholders' perspective, which thus deserves further investigation (Gillet, 2012). We may also have to consider the relevance of CSR information and the relative power of stakeholders. For example, prior research has not considered differences in the perceived importance of CSR disclosures in different jurisdictions and how this explains variations in the extent of CSR assurance. Future studies could also analyse both the statements of assurance providers included in sustainability reports and the perceptions of various interested parties – including assurance providers themselves.

Third, there is a need to further explore the assurance process at the institutional, regulatory and corporate levels. At the institutional and regulatory level, more research is required to study the extent to which the legal environment and enforcement mechanism influences business behaviour regarding sustainability assurance, and the extent to which the legal infrastructure can promote a shift in attitudes towards sustainable development. Accordingly, the relationship between different legal systems and assurance quality may be further investigated. At the corporate governance level, unobservable internal committees or other director or officer characteristics may also be influential determinants of whether to seek assurance services. Therefore, we encourage future research to incorporate alternative and fine-grained measures of sustainability expertise, as it relates to the management, board members and assurance providers. Finally, we also believe that there are additional opportunities for exploring

isomorphic and institutional influences on the relationship between environmental corporate governance mechanisms and sustainability assurance.

Fourth, it is important to further investigate how the diversity of the assurance process affects the quality of assurance. Guidance and standards are required to regulate the process and guide the participation of stakeholders (Cohen & Simnett, 2015; Maroun, 2020). Future research could explore how diversity of assurance processes affects assurance outcomes by applying case studies or other empirical methods (e.g., a survey). The confidential nature of the assurance process makes such exploration more meaningful to practitioners and regulators for the development of the concept of sustainability and its assurance.

Fifth, the conceptual framework provided in this paper does not incorporate assurance providers' key responsibilities. Again, case studies that track ongoing assurance engagements from both reporting firm and assurance provider perspectives may help discover how they reconcile their ambitions, which originate from profit-seeking pressure, with their responsibilities. Research is also needed to investigate to what extent regional, cultural, legal and institutional factors affect assurance providers' independence and the quality of their assurance.

Sixth, the influence of the assurance standard used (e.g., AA1000, ISAE3000) on the verification process could also be further investigated. Current discussion on assurance standards is insufficient, but an absence of practical and unified assurance standards may lead to a crisis of confidence in sustainability assurance. Existing standards have been criticised for representing the benefits of investors' interest of reporting firms rather than stakeholders. There is evidence proving that the increasing trend of adopting ISAE 3000 has led to the stagnation of stakeholder engagement, but the extent to which this trend diminishes stakeholders' influence on sustainability assurance has not been fully explored (Ball et al. 2000; Boiral, Heras-Saizarbitoria, & Brotherton, 2019; Channuntapipat et al., 2019; Cho et al., 2014; Deegan et al., 2006; O'Dwyer & Owen, 2005). This type of investigation would cast light on the determinants of the normative and mimetic isomorphism that permeates the rhetoric of assurance statements (e.g., influence of the educational background of assurance providers,

role of assurance standards, guidelines and templates used by different auditors, transfer of accounting procedures to the assurance of sustainability reports).

Finally, while existing literature on sustainability assurance is mainly based on positivist philosophy (Boiral, 2017; Boiral & Gendron, 2011; Cho et al. 2014; Farooq & De Villiers, 2017; Gillet, 2012; Simnett et al., 2009), reporting firm, assurance provider rotation, variation of assurance method, and quality in terms of industry segmentation could be explored from an interpretivism perspective, which might help to observe the interaction between sustainability assurance and the development of the concept of sustainability.

## **5. Conclusion**

The objective of this paper was to contribute to the understanding of sustainability assurance practice. At the start of this paper, we formulated two research questions: 1) How is an assurance statement produced through the assurance process? 2) What are the challenges and issues encountered in the assurance process by reporting firms? Through findings from the identified literature on sustainability assurance, we have established a conceptual framework consisting of relevant factors that help to understand the conducting of sustainability assurance. The framework is comprised of assurance processes, determinants and barriers. In particular, the assurance process is divided into five sequential steps, each of which demonstrates the assurance work undertaken and related ethical issues and risks. Barriers reveal areas of resistance that may affect the quality of the assurance process. As one of the first articles to explore and discuss the sustainability assurance process by integrating assurance issues into a systematic and sequential procedure, this paper provides directions for future research on the underlying mechanism of sustainability assurance, which will benefit practitioners, academics, and regulators interested in the field of sustainability assurance.

However, this paper also has limitations. First, considering the research method applied, our model was developed by evaluating extant studies and selected practical and theoretical perspectives. Therefore, it was unable to reveal all the complexities of the assurance process. Hence, further empirical investigation is needed to validate and complement the framework.

Moreover, we applied a content-based approach for the literature review, which highlighted the theme and called attention to the key contributions on the topic. Nevertheless, excessive attention on the assurance process may limit the scope of research and hinder the comprehensiveness of exploration of sustainability assurance.

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