# Integration of Education for Sustainable Development in Nigerian Universities: Empirical Evidence from Universities in South-East Zone, Nigeria

**[1]Chukwu E. Udensi, PhD; [2]Kalu O. Okwuagwu, PhD; and [3]Magnus M. Ofondu, PhD**
[1,2,3]Dept of Management, Abia State University, Uturu, Nigeria
Corresponding author: Dr. C. E. Udensi – ce.udensi@abiastateuniversity.edu.ng
DOI: 10.56201/ijssmr.vol.11no6.2025.pg248.268

***Abstract***
*Globally, Higher Education Institutions (HEIs) have continued to grapple with the sustainability challenge facing mankind. Through a number of initiatives HEIs have shown commitment to the actualization of the United Nation's SDGs and Agenda 2030. However, discernible differences exist in the level of success by HEIs generally. Based on cross-sectional survey and content analysis of websites materials, this study focused on: the identification of the sustainability maturity stage of universities in South-East zone, Nigeria; the instrumentality of ESD declaration/charter and membership of university associations to ESD adoption; Equally whether there are staff perceptual differences of ESD barriers among the universities. The hypotheses were tested with Pearson correlation and independent t-test statistical tools. The study revealed that the universities are predominantly at the initial stage of Sari et al's sustainability model; there is no significant difference in staff perception of ESD barriers among the universities; ESD declaration/charter has significant influence on a university's ESD performance; and membership of a university association correlates with commitment to sustainable development goals. The study concludes that the ESD institutional framework of universities in the zone is weak and therefore recommends that in recognition of the fact that the responsibility for the achievement of the UN 2030 Agenda and the SDGs lie squarely with the Government, universities need targeted support and incentives to build a strong institutional framework and strengthen their commitment to the SDGs. In addition, regulatory agencies like the NUC should develop and incorporate sustainability performance criteria into accreditation and university ranking protocols.*

***Keywords:*** *Education for sustainable development; Sustainability; Sustainable development goals; Declarations/charters; Higher education institutions.*

## 1.0 INTRODUCTION

The strategic role of the education sector, particularly higher education institutions, in addressing the sustainability challenge is not in doubt. Researchers such as Gamage et al, (2022), Sáez de Cámara et al (2021), Lozano (2011), Vogt and Weber (2020), Cortese (2003), and Tilbury et al (2005), Elton (2003) have shown that whether based on history, mandate, moral burden or activities, Higher Education Institutions (HEIs) have an abounding duty to contribute to the resolution of the sustainability challenge facing mankind. As a matter of fact, the United Nation's Agenda 21 clearly states that education is critical for promoting sustainable development and improving the capacity of the people to address environmental and development issues (United Nations Division for Sustainable Development 1992: Chapter 36.3). This has been followed by various engagements by the United Nations such as the UN World Decade of Education for Sustainable Development (2005-2014), the post-Global Action

Programme, GAP (2015-2019), and the 2030 Agenda and the SDGs which continue to galvanize countries and HEIs to remain focused on the sustainable development agenda. No wonder HEIs all over the world are not just assuming a leading role in the development and implementation of sustainable practices and initiatives (Hancock & Nuttman, 2014; Lozano et al., 2015), but are also building on their potential to accelerate this progress toward sustainable development (Katilinţė et al, 2014; SDSN Australia/Pacific, 2017).

Understandably, the luminous trajectory achieved by HEIs in the pursuit of a sustainable society has been facilitated by a plethora of initiatives – introduction of incentives, declarations/charters, partnerships/networks and awards for sustainability performance. In addition, a number of mechanisms, viz, environmental management systems, certification (Avila et al, 2017), quality assessment (Ryan & Tilbury, 2013) and sustainability maturity models (Okongwu et al, 2013; McGrail et al's 2013 Terouhid & Ries, 2018, and Sari et al, 2020) geared towards assisting HEIs to measure and monitor their progress in the sustainability endeavor have been developed.

But even with these tools and initiatives, the actualization of ESD has remained quite challenging for HEIs in developing countries. Perhaps, this is traceable to the Calder & Clugston's (2002) observation that sustainability poses a challenge to the existing paradigms, structure, as well as entrenched practices of environmental, economic, and social sectors of which higher education is a constituent. Consequently, it leads to a situation where the HEIs that have adopted it are struggling to cope (Su & Chang, 2010, Lozano et al, 2010) and this is particularly so in developing countries. In fact, Tilbury (2011) notes that driving sustainability change is complex, confusing, time consuming and difficult to implement. This is possibly due to the barriers both internal and external (Brandli et al, 2015) that confront sustainability change agents.

Interestingly, the ESD experiences of Nigerian HEIs have not been different; though they have a global outlook they are often laggards in the adoption of global trends even in ESD. It is against the foregoing that it became imperative to ascertain in real terms how Nigerian universities, particularly, public universities in the South-East zone of the country have grappled with the education for sustainable development challenge. The significance of the regional focus lies in the recognition of the imperatives of political, cultural and economic elements to the embrace of ESD.

## 2.0 LITERATURE REVIEW

Shepad (2015) notes that Higher Education for Sustainable Development (HEfSD) is an approach to education that focuses on responding to the expectations of society for higher education institutions to address unsustainable environmental, social, cultural and economic activities. As a matter of fact, Bucea-Manea-Tonis et al, (2024) note that the adoption of ESD is fundamental to the creation of a sustainable future through the cultivation of environmental stewardship, social responsibility and future-ready skills which will ultimately empower young people to confront global challenges and seize emerging opportunities. Lozano et al. (2013) identified seven dimensions to HEfSD thus: education which covers curriculum and pedagogy; research; outreach/engagement; campus operations/design of facilities; assessment & reporting; and institutional framework which covers the policies, structure or administrative unit, and control mechanisms that undergird sustainability initiatives, culture, staff involvement, signed ESD declaration/charter and the leadership that drive the sustainability change of an institution. Avila et al (2017) describe the elements of institutional framework as internal political instruments which are crucial to achieving and maintaining needed focus. The elements of institutional framework contribute to the creation of a sense of institutional identity which serves as a hedge against sustainability challenges (Clarke & Kouri, 2009).

The performance of HEIs based on the ESD dimensions undergirds the sustainability maturity stages or models such as McGrail et al's (2013), Edgerman & Williams (2014), Terouhid & Ries (2018) and Sari et al (2020). However, based on simplicity and ease of application, Sari et al's three-stage model was adopted. The key features of the three stages as identified by Sari et al (2020) are: The initial stage or level one is characterized by undefined processes that are applied on an ad hoc basis and though regulations exist, compliance with such regulations by the institution is reactive. The managed stage or level two is characterized by well spelt-out processes and standards in terms of policies and regulations. In addition, this stage is marked by improved knowledge and acquaintance with sustainability issues coupled with the existence of some resources and efforts geared towards resolving incidental sustainability challenges. The optimized stage or level three is marked by active involvement of the institution in the formulation of regulations and policies. Also, the institution integrates sustainability into its strategies and at the same time deploy more resources to the sustainability programs.

It has been widely recognized by researchers (Leal Filho et al, 2022, Grinsted, 2011) that declarations/charters play a critical role in the embrace of ESD by HEIs. ESD declarations/charters for sustainability refer to a set of guiding principles which facilitates the incorporation of the concept of sustainability into the various dimensions of HEIs (Sylvestre et al, 2013). Categorized into macro and ESD-specific genre (Leal Filho et al, 2022), declarations/charters emphasize the moral burden of HEIs to contribute to the emergence of sustainable societies, focusing on environmental degradation, threats to society and sustainable production and consumption for present and future generations (Lozano et al, 2011). Grinsted (2011) observes that although the HEfSD declarations are often seen as declarations of intent, it is generally agreed that they are the most tangible document that has unified HEIs, their leaders and government agencies in the sustainability match. Perhaps, this explains why between 1975 when the first declaration was introduced and 2021, there are over twenty-five declarations/charters on not just higher education but also the other aspects of sustainability (see appendix 1). Interestingly, only one, the Abuja Declaration of 2009 which was initiated by the Association of African Universities (AAU) focuses squarely, both in intent and scope, on African universities. Though a number of researchers have identified the usefulness of HEfSD declarations/charters in focusing HEIs on the sustainability pathway, some others have expressed doubts about their effectiveness in energizing the commitment of HEIs (Grinsted, 2011, Leal Filho et al, 2022, Clarke & Kouri, 2009, Bekessy et al, 2007, Dlouhá et al. 2018).

Partnerships/networks represent another measure under institutional framework, that has been leveraged by HEIs in improving their sustainability practices. Berchin et al. (2018) note that international networks of universities facilitate the implementation of SDGs by increasing communication and collaboration among institutions. Similarly, Leal Filho et al (2022c) point out that international networks covering both local and regional associations stimulate cooperations among different stakeholders across sectors and focus on addressing inequality and limitations in the sustainability efforts. Michelsen (2015) note that networks are useful in strengthening the political process that support sustainability efforts in universities and that strong networks are needed for HEfSD members to not only share experiences and learn from each other, but also to achieve the underlying interests with as much consensus as possible. Networks exist at the global, regional, national and institutional levels. Though networks/partnerships, particularly institution-based ones, continue to emerge every day, examples of the dominant global and regional networks include SDSN (Sustainable Development Solutions Network), GHESP (Global Higher Education for Sustainability Partnership), GUPES (Global Universities Partnership on Environment and Sustainability),

GUNI (Global University Network for Innovation), ISCN (International Sustainable Campus Network), HESI (Higher Education Sustainability Initiative), RCE (Regional Centre for Expertise), MESA (Mainstreaming Education and Sustainability in Africa), COPERNICUS ALLIANCE, etc. Perhaps the most influential of the networks is the UNITWIN/UNESCO Chairs Programme, which promotes inter-university cooperation and networking to enhance institutional capacities through knowledge sharing and collaboration (Michelsen, 2015).

Another important driver of collaborative sustainability efforts of HEIs is university associations which serve as the voice of higher education (IAU, 2020) at their respective levels of operation and influence which may be national, sub-regional, regional and international. These associations, such as International Association of Universities (IAU), Association of Commonwealth Universities (ACU), Association of African Universities (AAU) and Association of West African Universities (AWAU), play crucial roles in advocacy and mobilizing support for ESD in HEIs. Beyond serving as the mouthpiece of HEIs and key drivers of sustainability engagement by HEIs, some of them are the harbingers of ESD declarations and networks. In fact, Berchin et al (2018) observe that international networks of universities facilitate the implementation of SDGs by fostering communication and collaboration among HEIs.

The Sustainable Development Goals (SDGs) represent a set of universal objectives aimed at ending extreme poverty, protecting the planet and ensuring prosperity for all by 2030 (UN, 2015). The 17 Goals with 169 targets were formally adopted by the 193 member States of the United Nations in September 2015 (Morton et al, 2017). Set within a fifteen-year horizon (2016-2030) and appropriately tagged '2030 Agenda for sustainable development', the goals provide a well consulted framework that is sufficiently and scientifically robust, politically acceptable, and publicly intuitive (Morton et al, 2017). In contrast to their predecessor, the Millenium Development Goals (MDGs), the SDGs are wider in scope and cover such issues as climate change, sustainable production and consumption, innovation, peace and justice, and require all countries, their level of development notwithstanding, to get involved (Annan-Diab & Molinari, 2017). In fact, the seventeen goals as shown in figure 1, on p.5 have been grouped into five areas of 'critical importance' identified as 5Ps, viz People (goals 1, 2, 3, 4, 5, 6), Prosperity (7, 8, 9, 10, 11, 12), Planet (13, 14, 15), Peace (16) and Partnership (17). Though SDG 4 appears as the only goal on education, Vladimirova and Le Blanc (2016) have shown that a number of the SDGs have links with education; no wonder the heightened optimism shared by a number of researchers concerning the transformative potentials of SDGs (Hajer et al, 2015) in the higher education sector. For instance, while Leal Filho et al (2018) note that the SDGs offer a good opportunity to reinvigorate sustainable development research, SDSN Australia/Pacific, (2017) point out that commitment to the realization of the SDGs is considered a critical obligation of HEIs to society. However, even with the strides made by HEIs globally in the development and implementation of sustainable practices and initiatives, Kanapathy et al (2019) note that the awareness about the SDGs in many HEIs is low and this is possibly due to the limited support that is available to universities for the implementation of SDGs (Leal Filho et al et al, 2021). Aside the issue of support, Tafese and Kopp (2024) note that there is the need to balance education for sustainable development with the objectives of higher education in order to achieve sustainable development goals. The lack of necessary support by the government is even more critical in universities in developing countries.

Beyond the issue of guidelines, the slow progress shown generally in the integration of sustainability by particularly African HEIs is traceable to a number of barriers. Some of these barriers are:

- Lack of clear understanding of the term sustainability (Leal Filho, 2011, Shriberg & Harris, 2012, Wright & Horst, 2013, Owens & Legere, 2015, and Aleixo et al, 2016).
- Budgetary constraints (Figueredo & Tsarenko, 2013, Shriberg & Harris, 2012, Waas et al., 2012, Udensi, 2023).
- Resistance to change (Ferrer-Balas et al., 2008, Weber & Dudarstadt, 2012, Waas et al., 2012, Adams, 2013, Blanco-Portela et al, 2018, Ferrer-Balas et al., 2010, Verhulst & Lambrechts, 2015).


Fig 1: Rectangular box of the SDGs and their iconic symbols

- Predominance of conservative, traditional and conventional structures which hinder transdisciplinary and multidisciplinary orientation – (Verhulst and Lambrechts, 2015 and Weber & Dudarstadt, 2012).
- Lack of commitment on the part of HEI leadership (Verhulst & Lambrechts, 2015, Weber & Dudarstadt, 2012, Waas et al., 2012, Jorge, et al., 2015, and Milutinovic & Nikoli, 2014).
- Lack of training and specialization in sustainability on the part of the staff – (Jorge et al., 2015, Aleixo et al, 2016, and Velaquez et al, 2005).
- Lack of appropriate technology for driving sustainability initiatives (Dahle & Neumayer, 2001, Leal Filho, 1999).
- Lack of environmental awareness (Dahle & Neumayer, 2001, Cebrián et al, 2015a, and Thomas, 2012).

Verhulst and Lambrechts, (2014) categorized the barriers into three groups, viz, awareness-based (lack of awareness on the part of staff), structural (relating to the structure of HEIs) and resource-based (arising from lack of relevant resources).

## 3.0 AIMS OF THE STUDY

It can be argued that Nigeria, like other signatories to the UN's 2030 Agenda has demonstrated discernible commitment to the SDGs and has made some progress in the pursuit of the goals. The progress made could not have been possible without the involvement of the country's HEIs (GUNI et al, 2011, Eheazu, 2019, Abdul-Azeez 2018 and Udensi, 2023). But in line with the observation by Behjati & Othman (2014) that sustainability is a journey and not a destination,

it is expected that overtime an institution should move from one stage to another of the sustainability maturity model. Focusing on the perception of ESD barriers by university staff, the instrumentality of ESD declarations/charter and membership of university associations to the embrace of ESD, this work focused on the sustainability practices of public universities in South-east, Nigeria. The first objective of the study sought to identify if there are differences between lecturers in federal and state universities in the perception of ESD barriers. While the second objective sought to ascertain if differences exist between signatories and non-signatories to ESD declarations/charters in their sustainability practices, the third objective focused on the relationship between membership of a university association and university commitment to SDGs. In line with the objectives, the hypotheses of the study are:

1. There is no significant difference between lecturers of Federal and State universities in their perception of ESD barriers.
2. Signatories to ESD declaration/charter do not significantly differ from non-signatories in their adoption of sustainability.
3. Membership of a university association has no significant relationship with university commitment to SDGs.

Given that the study focused on the practice of ESD by HEIs, the study utilized Roger's (1995) theory of innovation diffusion as the theoretical basis for explaining the embrace of sustainability by the universities.

## 4.0 METHOD

This study adopted cross-sectional survey and content analysis methods. Cross-sectional design focused on identifying the state of sustainability activities, experiences and initiatives of the focus universities. Survey design was adopted because it is descriptive in nature and enables the researcher to identify causal relationships and to make inferences from the statistical test outcomes. It should be pointed out that while the explanatory survey focused on the antecedent factors that predict and control the phenomenon under investigation, the cross-sectional study measured the opinions of key officers and staff of the universities.

Given that sustainability is contextual in terms of conditions and participants, this study adopted the indicator-based and narrative assessment approaches to sustainability reporting. Consequently, a self-reporting questionnaire containing both structured and open-ended questions was used in the collection of data. The structured questions ranged from 3-point to 5-point Likert scales. The reliability and validity of the instrument were established at two levels. Firstly, some of the scales were adopted from extant theories, sustainability assessment tools such as the Unit-based sustainability assessment tool (USAT) (Togo & Lotz-Sisitka, 2009) and past research works that utilized well developed measures and scales. This is in line with Moser and Kalton's (1997) observation that the usefulness of construct validity lies in its dependence on theory and that the examination of the observed associations is as much a test of the theory as of the scale's validity. Another factor that re-inforced the validity of the instrument is the fact that the relevant variables have general applicability and the validity of some of them had been verified in the past. Secondly, the instrument was further subjected to pre-test in a pilot study that involved respondents selected from two of the universities. Based on the pilot study data, split-half method was used in confirming the reliability of the instrument and a Cronbach alpha value of 0.75 further confirmed the reliability of the instrument.

Secondary data were mined from the universities' websites. The utilization of website data was informed by the recognition that websites represent a dependable means of communication between organizations and their stakeholders. In this sense, universities often take advantage of the visibility offered by websites to inform their numerous stakeholders of their

activities/programs including sustainability initiatives. This is understandable given the implications of their websites for webometric ranking (Udensi 2023). It should be pointed out that the search for relevant data relating to environmental management, center of excellence, sustainable development, sustainability, SDGs, etc, through the search engines of the universities' websites was done severally by each of the authors at weekly intervals. Taking cognizance of the fact that Nigerian universities are not under any legal or statutory obligation to publish sustainability reports, the interval searches ensured that loose and unorganized information was captured. Some of the website materials were further analyzed for significant information. Krippendorff (2004) describes content analysis as a research technique that enables the researcher to make replicable and accurate inferences from contextual data. It consists of methodical steps for reviewing, evaluating and extracting text information from the contents of written media for numerical analysis and comparison (Wolfe, 1991). As a research technique, content analysis is used to focus on actual contents (Miles & Huberman 1994) and to capture data from reports or any other document with a view to ascertaining the presence or absence of the required information (Gray et al, 1995; Kothari et al, 2009) and it is widely applied in sustainability and CSR studies (Pistoni et al 2018; Landrum & Ohsowski 2018).

**4.1 MEASURES:** There are several methodological frameworks used in the assessment of a university's sustainability efforts (Findler et al, 2018, and Shrieberg, 2002). Taking cognizance of the differences in focus, purpose and coverage of the frameworks, some of the measures of the tools were adapted to generate appropriate measures for the study. The measures provided a quantitative tool called sustainability integration index (SUITINDEX) which was adopted in the assessment of the sustainability practices of the institutions. The coding of the measures which was done independently by the authors was based on unweighted dichotomous approach which eliminates possible biases that may arise from assigning subjective weights to one or more items (Jorge et al., 2019; Raimo et al., 2022). Consequently, a score of 1 indicating presence or 0 showing absence was given as the analysis revealed. The independent coding and subsequent joint review of the measures by the authors was a way of guaranteeing the reliability of the coding. Equally, the website data were cross checked by the authors as a means of improving the reliability of the content analysis method. Another critical step that improved the reliability of the website data was the adoption of meaning-oriented approach instead of mere counting of single instances of words or terms reported on the websites (Steenkamp and Northcott, 2007, Raimo et al., 2022).

**4.2 SAMPLE SIZE DETERMINATION:** As at October 30, 2022, Nigeria had 227 universities that could be classified based on ownership, faith-orientation and specialty. However, we adopted the ownership criterion that grouped them into three strategic groups of Federal (n=53), State (n=63) and private (n=111) (National Universities Commission, 2022). However, the study focused on public universities in the South-East zone which forms the geographical scope of the study. Out of the eleven public universities (Federal = 6 and State = 5) in the zone as at 2022, the study focused on ten. The eleventh university was excluded on grounds of age having been established in 2022. This selection was informed by the finding of GUNI et al (2011) to the effect that such factors as age, size and type of institution affect the embrace of sustainability by an institution. The age factor recognizes the fact that, over the years, these universities have achieved well established traditions, community engagements and other collaborative initiatives. From the ten universities, 103 respondents made up of Deputy-Vice Chancellors, Dean (student affairs), Directors of SD-based institutes/centers, Director (Research & Publication), Director (Works & Services) and Heads of Department

were judgmentally selected. The choice of these positions was informed by the recognition of the privileged exposure of their occupants to ESD matters.

**4.3 STATISTICAL TECHNIQUE**: The questionnaire items were analyzed with descriptive statistics including weighted average index. Each of the three hypotheses addressed a different dimension of the phenomenon; however, we utilized t-test and Pearson's correlation coefficient in testing the hypotheses.

## 5.0 RESULT

An analysis of the returned copies of the questionnaire which achieved 51% response rate revealed certain key information about the ESD rating of the universities. For instance, with regard to SD declaration, only seven (70%) of the universities are signatories to between one and three declarations – Abuja, Kyoto and Swansea. While Nnamdi Azikiwe University (NAU) is a signatory to the three declarations, University of Nigeria (UNN) and Ebonyi State University (EBSU) signed Abuja and Swansea. The Abuja declaration is the most popular as it was signed by seven universities. Related to the declarations is membership of university association. Four university associations, viz, Association of African Universities (AAU); Association of Commonwealth Universities (ACU); International Association of Universities (IAU); and Association of West African Universities (AWAU) are identified with the focus universities. Expectedly, AAU is the most popular as its membership is shared by six (60%) of the universities. It is followed by ACU that has two members. IAU and AWAU have one member each. Both NAU and UNN belong to three, though, not the same associations. It should be pointed out that one of the ways that the National Universities Commission, the university regulatory body, has tried to drive research in Nigerian universities, is by designating and supporting universities as centers of excellence. Interestingly, the areas of excellence fall within sustainable development. However, only four (40%) of the universities, viz NAU, UNN, Federal University of Technology, Owerri (FUTO) and Michael Okpara University of Agriculture, Umudike (MOUAU) have NUC certified centers of excellence. In addition, NAU and FUTO have Africa Centers of Excellence.

In terms of the avenues used by universities in SD propagation, the following avenues were identified by the universities – conference (40%), projects (60%), publications (10%), orientation/workshop (60%), academic programs (100%), collaboration (40%) and SDGs (100%). In recognition of the fact that the SDGs provide the easiest route for the embrace of ESD, we sought to identify the commitment of the universities to the SDGs. For instance, while all the universities made reference to SDGs, particularly SDG 4, only five universities (50%) showed substantial evidence of their commitment to other SDGs such as SDG 1 (end of poverty), 3 (Good Health/well-being), 5 (Gender Equality), 16 (peaceful and inclusive societies) and 17 (partnerships for the goals). The areas of application or implementation of the SDGs include academic programs, community outreaches and social events/programs.

Based on Sari et al's (2020) sustainability maturity model, Table 1 shows an extract of the identified ESD activities and performances of the universities. In line with the parameters of the model, the table shows that the ESD activities reflect a predominance of the characteristics of level 1 or the initial stage on p.9.

**Table 1: STAGE OF SUSTAINABILITY MATURITY OF THE INSTITUTIONS**

| MATURITY DOMAIN | Level 1/ INITIAL STAGE: Features | UNIVERSITY SITUATION |
|---|---|---|
| Corporate sustainability driver: *anticipating external pressure of compliance with govt and institutional regulations | Regulations are not applied; Compliance with regulations is reactive – in anticipation of reprimand. | Regulations (NUC, NESREA, Charters/ Declaration like Abuja and networks like NSDSN) exist but are rarely applied; Compliance with regulations is reactive – in anticipation of agency visitation |
| *Anticipating internal pressure from the management in the direction of sustainability | -Mgt focuses on rhetoric and symbolism and has little-to-no concerns for sustainability issues, knowledge or practice; - there are no dedicated resources for implementing sustainability matters. | University management focuses on rhetoric and symbolism and has little-to-no concerns for sustainability issues. There are no dedicated resources such as administrative units or committees for implementing sustainability matters. None of the universities had an administrative unit for ESD integration. |
| Corporate sustainability actions: *Programmes and Activities | Corporate sustainability activities in the form of symbolic activities such as celebration of World. Environment Day, recognizing environment-based students clubs, environmental clean-up; formation of sustainability thematic research groups. | Symbolic sustainability activities such as celebration of World Environment Day, recognition of environment-based students clubs, tree planting, environmental clean-up exist; |
| Corporate sustainability performance: curriculum, research, campus operations, community engagement, assessment and reporting | Sustainability performance indicators are defined but they only cover curriculum and research dimensions; There is infrequent monitoring with no follow-up actions. | Formation of sustainability thematic research groups and SD-oriented research centers exist. Though there are academic programs in environmental resource management, there is no environmental management system. Campus operations in the areas of energy usage, wastes management and usage of stationery remain unsustainable. The emission of greenhouse gas through |

| | |
|---|---|
| | generators and old office equipment remains high. Sustainability performance indicators as defined by external bodies exist. But such indicators covering curriculum and research dimensions merely exist in the books or are used for image laundering. As a result, there is infrequent monitoring and no follow-up actions. |

It is clear from the indicators in table 1 that the universities of focus are in the initial stage of the three-stage sustainability model.

Equally, the respondents' perception of barriers to the integration of ESD was measured based on a 3-point Likert scale of not applicable, low extent and high extent. Their assessment was analyzed based on a weighted average index and table 1 shows ten out of fifteen barriers with the highest weighted means (with means above 2.0*)*. Based on Verhulst and Lambrechts (2014) classification of awareness-based, resource-based and structural, inadequate finance and government policies/activities which are resource-based barriers are ranked first and second respectively. Equally of significance is that 50% of the top ten barriers are awareness-based (A), 30% are resource-based (R) and 20% are structural (S).

**Table 2: Distribution of weighted mean scores of barriers**

| Barrier | Not applicable | Low extent | High extent | Total | Mean |
|---|---|---|---|---|---|
| *Inadequate finances | 0 | 9 | 48 | 57 | 2.84 R |
| *Government policies/activities | 0 | 28 | 29 | 57 | 2.51 R |
| * Lack of environmental awareness | 3 | 24 | 30 | 57 | 2.47 A |
| * Lack of commitment/support by the university management | 0 | 36 | 21 | 57 | 2.37 A |
| * Resistance on the part of staff | 0 | 36 | 21 | 57 | 2.37 S |
| *Academic culture | 4 | 28 | 25 | 57 | 2.37 S |
| *Lack of staff training on sustainability | 4 | 30 | 23 | 57 | 2.33 A |
| *lack of appropriate technology | 4 | 34 | 19 | 57 | 2.26 R |
| * Lack of common understanding of ESD | 4 | 35 | 18 | 57 | 2.25 A |
| * SD is seen as an 'add-on' to education, not a built-in aspect for HE | 4 | 36 | 17 | 57 | 2.23 A |

In the course of identifying the declarations/charters signed by the universities, it turned out that even with the many obvious benefits of web presence, only two universities (30%) made reference to university associations instead of ESD declaration/charters in their website. It was easier getting information about the universities' endorsement of a declaration/charter from the websites of the initiators than the signatory's website. While it is recognized that institutional affirmation or acceptance of a declaration can be by default as a member or through formal endorsement (Udensi 2023), it is obviously difficult to explain why Nigerian universities find it difficult to publicize their endorsement of a declaration/charter.

The first hypothesis predicted that there is no significant difference in the perception of ESD barriers between academic staff of federal and state universities. The focus of this hypothesis was informed by the finding of GUNI et al (2011) to the effect that age, size and type of institution affect the embrace of sustainability by an institution. The hypothesis was tested with an independent t-test and table 2 shows a lower mean for federal universities (M =3.3500, SD =.44738) to that of State universities (M = 3.4217, SD = .34239).

**Table 3: Group Statistics**

| | Type of university | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Perception of ESD barriers | Federal | 34 | 3.3500 | .44738 | .07673 |
| | State | 23 | 3.4217 | .34239 | .07139 |

The outcome of the independent t-test of t (55) =-.650, p=.518>.05 as contained in table 4 shows that the difference between the two groups is statistically insignificant. Consequently, the null hypothesis which states that there is no significant difference in the perception of ESD barriers between academic staff of federal and state universities is accepted.

**Table 4: Independent Samples Test**

| | | | Perception of ESD barriers | |
|---|---|---|---|---|
| | | | Equal variances assumed | Equal variances not assumed |
| Levene's Test for Equality of Variances | F | | 1.613 | |
| | Sig. | | .209 | |
| t-test for Equality of Means | T | | -.650 | -.685 |
| | Df | | 55 | 54.076 |
| | Sig. (2-tailed) | | .518 | .497 |
| | Mean Difference | | -.07174 | -.07174 |
| | Std. Error Difference | | .11032 | .10480 |
| | 95% Confidence Interval of the Difference | Lower | -.29283 | -.28185 |
| | | Upper | .14936 | .13837 |

Table 5 shows the group statistics (independent t-test) for the second hypothesis which states that signatories to ESD declaration/charters do significantly differ from non-signatories in their adoption of ESD. The output shows a higher mean (SUITINDEX score) for signatories to ESD Declaration (M=30.23, SD=25.34) to that of non-signatories (M=13.60, SD=9.10).

**Table 5: Group Statistics**

| | Endorsement of ESD declaration | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Suitindex score for endorsement of ESD Declaration | Signatories to ESD declaration | 7 | 30.2286 | 25.34151 | 9.57819 |
| | Non-signatories to ESD declaration | 3 | 13.6000 | 9.10000 | 3.25389 |

However, the outcome of the independent t-test of t (7.985) =1.522, p=.047 as contained in table 6 shows that there is a significant difference between the two groups. As a result, the alternate hypothesis which states that signatories to ESD declarations differ significantly from non-signatories in their adoption of sustainability was adopted.

**Table 6: Independent Samples Test**

| | | | Suitindex score for endorsement of ESD declaration | |
|---|---|---|---|---|
| | | | Equal variances assumed | Equal variances not assumed |
| Levene's Test for Equality of Variances | F | | 9.146 | |
| | Sig. | | .016 | |
| t-test for Equality of Means | T | | 1.075 | 1.522 |
| | Df | | 8 | 7.985 |
| | Sig. (2-tailed) | | .314 | .047 |
| | Mean Difference | | 16.62857 | 16.62857 |
| | Std. Error Difference | | 15.46650 | 10.92452 |
| | 95% Confidence Interval of the Difference | Lower | -19.03725 | -8.57160 |
| | | Upper | 52.29439 | 41.82875 |

The third hypothesis focused on the nature of the relationship between membership of university association committed to ESD and involvement in UN SDGs by public universities.

**Table 7: Correlations of involvement in UN SDG and membership of university association**

| | | Involvement in Un SDGs | Membership of university association |
|---|---|---|---|
| Involvement in UN SDGs | Pearson Correlation | 1 | .655* |
| | Sig. (2-tailed) | | .040 |
| | N | 10 | 10 |
| Membership of university association | Pearson Correlation | .655* | 1 |
| | Sig. (2-tailed) | .040 | |
| | N | 10 | 10 |

*. Correlation is significant at the 0.05 level (2-tailed).

Table 7 shows the correlation output of involvement in United Nation's SDGs and membership of university association. The Pearson's correlation coefficient is .655 which means that a strong and positive relationship exists between the two variables. Given a significant p-value (<.05), the alternate hypothesis to the effect that membership of university association positively and significantly relate with involvement in UN SDGs was accepted.

## 5.1 DISCUSSION OF FINDINGS

The test of the first hypothesis revealed that though Federal universities are older and bigger with stronger financial base, the perception of ESD barriers by their staff did not significantly differ from the perception of the staff of State universities. Interestingly, resource-based barriers topped the ranking of the barriers by respondents from both universities. The pre-dominance of resource-based barriers is corroborated by the GUNI et al (2011) and IAU (2020) report that identified funding as a challenge, globally, to HEIs' sustainability efforts. Equally the dominance of government policies/activities and lack of management support aligns with Leal Filho et al's (2017) study.

The second hypothesis confirmed that there is a significant difference in the embrace of sustainability principles between signatories and non-signatories to ESD declarations/ charters. In other words, on the average, universities that have signed one declaration or the other have better records of ESD performance. This finding aligns with the findings of Lozano et al (2015). However, some other studies such as Leal Filho et al (2020) and Grindsted (2011) argued that signing a declaration does not always translate to better ESD performance.

The outcome of the third hypothesis shows membership of ESD-oriented university association significantly and positively correlate with involvement/engagement of a university with UN SDGs. There is no doubt that university associations like the IAU, ACU and AAU have been in the fore front of mobilizing support for universities towards the actualization of the global goals. Through a number of initiatives, the associations have been able to sustain the interest and involvement of HEIs in the SDGs. For instance, the IAU (2020) reports that the adoption of the UN 2030 Agenda brought about an increase in interest and attention to sustainable development by HEIs worldwide but that not all the SDGs received equal attention from universities.

## 6.0 POLICY IMPLICATIONS

It is quite apparent that Nigerian universities have shown visible commitment to ESD and the UN's SDGs even if it is largely superficial. The integration of ESD principles into their programs may have progressed very slowly, in line with Roger's theory of innovation adoption, due obviously to a number of barriers and challenges. In recognition of this the following policy considerations will further accelerate the ESD initiatives of universities.

i. In recognition of the fact that the responsibility for the achievement of the UN 2030 Agenda and the SDGs lie squarely with the Government, universities as critical stakeholders in the sustainability challenge need targeted support and incentives to strengthen their commitment to the SDGs. Such incentives should cover both financial and non-financial types and should extend to the establishment of SDG administrative offices in universities.

ii. Regulatory agencies like the NUC should develop and incorporate sustainability performance criteria into accreditation and university ranking protocols. In fact, such criteria, particularly on campus operations, should form a good percentage of the protocol for whole institution accreditation.

iii. Nigerian universities should be mandated to carry out annual or bi-annual sustainability assessment with specific focus on the SDGs and upload the reports to their websites. To ensure uniformity, the assessment should be based on a known sustainability tool such as the African-oriented UTAS.

iv. In recognition of the tenuous link between ESD Declarations/charters and the embrace of ESD by HEIs which has been acknowledged globally by a number of researchers, university associations such as AAU need to go beyond voluntary to mandatory compliance with their policies and decisions by their members. This could be achieved through a collaborative arrangement between university associations and HEI regulatory bodies.

**ACKNOWLEDGEMENT**: This work was supported by TETFUND, Nigeria, through Institution-based Research Grant.

## REFERENCES

Adams, C.A., (2013). Sustainability reporting and performance management in universities. *Sustainability Accounting, Management and Policy Journal* 4, 384-392. http://dx.doi.org/10.1108/SAMPJ-12-2012-0044.

Adlong W. 2013. Rethinking the Talloires declaration. *Int J Sustain High Educ*. 14(1):56–70. doi:10.1108/ 14676371311288958.

Aleixo A. M, Leal S, Azeiteiro, U. M.(2016). Conceptualization of sustainable higher education institutions, roles, barriers, and challenges for sustainability: An exploratory study in Portugal, *Journal of Cleaner Production*, doi: 10.1016/j.jclepro.2016.11.010.

Annan-Diab, F. and Molinari, C. (2017). Interdisciplinarity: Practical approach to advancing education for sustainability and for the sustainable development goals. *The International Journal of Management Education.* http://dx.doi.org/10.1016/j.ijme.2017.03.006

Avila, L. V., Filho, W. L., Brandli, L. Macgregor, C., Molthan-Hill, P., Ozuyar, P. G. & Moreira, R. M. (2017). Barriers to innovation and sustainability at universities around the world. *J. of Clean Prod*. *164*, 1268-1278. Doi.org/10.1016/j.jclepro.2017.07.025.

AAU (2009). Abuja declaration on sustainable development in Africa: The role of higher education. Retrieved 15 March, 2020 from http://www.aau.org/announce/docs/Abuja_Declaration_Rev.pdf.

Bekessey, S. A., Samson, K. & Clarkson, R. E. (2007). The failure of non-binding declarations to achieve university sustainability: A need for accountability. *Int. J. Sustain High Education.* http://dx.doi.org.org/10.1108/14676370710817165.

Behjati, S. and Othman, S. N. (2014). Sustainability is a journey not a destination; instrumental logic in developing corporate sustainability. *MAGNT Research Report*, 2 (6), 211-218.

Berchin, I. I., Sima, S., Lima, M. A., Biesel, S., Santos, L. P., Ferreira, R. V., … Ceci, F. (2018). The importance of international conferences on sustainable development as higher education institutions' strategies to promote sustainability: A case study in Brazil. *Journal of Cleaner Production,* 171, 756–772. https://doi.org/10.1016/j.jclepro.2017.10.042.

Blanco-Portella, N., Benayas, J., Pertierra, L. R. and Lozano, R. (2018). Sustainability Leaders' Perceptions on the Drivers for and the Barriers to the Integration of Sustainability in Latin American Higher Education Institutions. *Journal of Cleaner Production*, doi: 10.1016/j.jclepro.2017.07.252.

Brandli, L. L., Leal Filho, W., Frandoloso, M. A. l., Korf, E. P., & Daris, D. (2015). The environmental sustainability of Brazilian universities: Barriers and pre-conditions. In *Integrating Sustainability Thinking in Science and Engineering Curricula.* Gewerbestrasse: Springer International Publishing, pp. 63-74.

Bucea-Manea-Tonis, R., Paun, D. G., martins, O.M.D., Santos, A. J., & Urdes, L. (2024). Education for sustainable development: what matters? *Sustainability*, 16, 9493.

Calder, W., & Clugston, R. M. (2002). International Efforts to Promote Higher Education for Sustainable Development. *Planning for Higher Education*, *31*, 30-44.

Cerian, G., Grace, M. and Humphris, D. (2015). Academic staff engagement in education for sustainable development. *Journal of Cleaner Production*, 106, 79-86. Doi: 10.1016/j.jclepro.2014.12.010.

Clarke, A. & Kouri, R. (2009). Choosing an appropriate university or college environmental management system. *J. Clean. Prod*. *17*,971-984.

Cortese, A. D. (2003). The critical role of higher education in creating a sustainable future. *Planning Higher Education,* (Mar-May), 15-22.

Dahle, M. and Neumayer, E. (2001). Overcoming barriers to campus greening. *International Journal of Sustainability in Higher Education*, 2(2),139 – 160. http://dx.doi.org/10.1108/14676370110388363.

Dlouhá, J., Henderson, L., Kapitulčinová, D., Mader, C. (2018). Sustainability-oriented higher education networks: characteristics and achievements in the context of the UN DESD. *J Clean Prod*. 172:4263–4276. doi:10.1016/j. jclepro.2017.07.239.

Edgeman, R. and Williams, J.A. (2014). Enterprise self-assessment analytics for sustainability, resilience and robustness. *The TQM Journal*, 26(4), 368-381.

Eheazu, C. L. (2019). Environmental literacy education as a necessary pedestal for domestication of the green campus concept: The challenge for Nigerian universities. International *Journal of Environment and Pollution Research*. *7*(4), 29-45.

Elton, L. (2003). Dissemination of innovations in higher education: a change theory approach. *Tertiary Education and Management* 9, 199e214.

Ferrer-Balas, D., Adachi, J., Banas, S., Davidson, C., Hoshikoshi, A., Mishra, A., Ostwald, M., (2008). An international comparative analysis of sustainability transformation across seven universities. *International Journal of Sustainability in Higher Education*, 9, 295-316. DOI. 10.1108/14676370810885907.

Ferrer-Balas, D., Lozano, R., Huisingh, D., Buckland, H., Ysern, P. and Zilahy, G. (2010), Going beyond the rhetoric: system-wide changes in universities for sustainable societies. *Journal of Cleaner Production*, 18(7), 607-610.

Figueredo, F.R., Tsarenko, Y. (2013). Is 'being green' a determinant of participation in university sustainability initiatives? *International Journal of Sustainability in Higher Education*, 14, 242-253.

Franco, I., Saito, O., Vaughter, P., Whereat, J., Kanie, N. & Takemoto, K. (2018). Higher education for sustainable development: Actioning the global goals in policy, curriculum and practice. *Sustainability Science*.Doi.org/10.1007/s11625-018-0628-4.

Gamage, K.A.A., Ekanayake,Y., Dehideniya, S.C.P.(2022). Embedding sustainability in learning and teaching: Lessons learned and moving forward—approaches in STEM higher education programs. *Educ. Sci*, 12, 225. doi.org/10.3390/educsci12030225.

Gray, R., Kouhy, R., & Lavers, S. (1995). Corporate social and environmental reporting: A review of the literature and longitudinal study of UK disclosure. *Account Audit Account J. 8*(2),47–77.

Grinsted, T. S (2011). Sustainable universities – from declarations on sustainability in higher education to national law. *Environmental Economics*, 2 (2), pp: 29-36

GUNI, IAU and AAU (2011). *The Promotion of Sustainable Development by Higher Education Institutions in Sub-Saharan Africa.* Available at http://www.iau.hesd.net.

Hancock, L., & Nuttman, S. (2014). Engaging higher education institutions in the challenge of sustainability: Sustainable transport as a catalyst for action. *Journal of Cleaner Production*, 62, 62–71. https://doi.org/10. 1016/j.jclepro.2013.07.062.

Hajer, M., Nilson, M., Raworth, K., Bakker, P…Kok, M. (2015). Beyond cockpit-ism: Four insights to enhance the transformative potential of the sustainable development goals. *Sustainability,* 7, 1651-1660. Doi: 10.3390/su7021651.

IAU (2020). *Higher Education and the 2030 Agenda: Moving into the 'Decade of Action and Delivery for the SDGs: IAU 2nd Global Survey Report on Higher Education and Research for Sustainable Development*. Mallow, S, Toman, I., & Land, H. (Eds). Paris: IAU.

Jorge, M.L., Madueno, J.H., Cejas, M.Y.C. and Peña, F., (2015). An approach to the implementation of sustainability practices in Spanish universities. *Journal of Cleaner Production* 106, 34-44. doi:10.1016/j.jclepro.2014.07.035.

Jorge, M. L., Pena, A. F. J. and Madueno, H. J. (2019). An analysis of university sustainability reports from the GRI database: An examination of influential variables. *Journal of Environmental Planning and Management*, 62(6), 1019-1044. https://doi.org/10.1080/09640568.2018.1457952.

Kanapathy, S., Lee, K., Sivapalan, S., Mokhtar, M., Syed Zakaria, S., Mohd Zahidi, A., (2019). Sustainable development concept in the chemistry curriculum. *Int. J. Sustain. High Educ*. 20 (1), 2e22. https://doi.org/10.1108/IJSHE-04-2018-0069.

Katiliņtė, E., Daunorienė, A., & Katkutė, J. (2014). Communicating the sustainability issues in higher education institutions World Wide Webs. *Procedia Social and Behavioral Sciences,* 156, 106–110. https://doi.org/10.1016/j.sbspro.2014.11.129.

Kohl, K., Hopkins, C., Barth, M., Michelsen, G., Dlouhá, J., Razak, D.A., Abidin B. S. Z. and Toman, I. (2022), A whole-institution approach towards sustainability: A crucial aspect of higher education's individual and collective engagement with the SDGs and beyond. *International Journal of Sustainability in Higher Education, 23 (2),* pp. 218–236. https://doi.org/10.1108/IJSHE-10-2020-0398.

Kothari S. P., Li, X. & Short, J. E. (2009). The effect of disclosures by management, analysis, and business press on cost of capital, return volatility, and analyst forecasts: a study using content analysis. *Account Rev*, *84*(5),1639–1670.

Krippendorff, K. (2004). Reliability in content analysis. *Human Communication Research,* 30(3), 411–433.

Lambrechts, W., Liedekerke, L. V. & Petegem, P. V. (2018). Higher education for sustainable development in Flanders: Balancing between normative and transformative approaches. *Environmental Education Research*, 24(9), 1284-1300.

Landrum, N. E., and Ohsowski, B. (2018). Identifying worldviews on corporate sustainability: A content analysis of corporate sustainability reports. *Bus. Strat. Env*., *27*: 128–151. doi: 10.1002/bse.1989.

Leal Filho, W., Claudio R. P., Vasconcelos, M. Alzira, P. D. & Laís, V. T. (2022): Commentary - empty promises: why declarations and international cooperation on sustainable development often fail to deliver. *International Journal of Sustainable Development & World Ecology,* DOI: 10.1080/13504509.2022.2107108.

Leal Filho, W., (2011). About the role of universities and their contribution to sustainable development. *Higher Education Policy,* 24, 427 – 438.

Leal Filho, W., Wu, Y. J., Brandli, L. L, Veiga, L. ... & Madruga, L. R. G. (2017). Identifying and overcoming obstacles to the implementation of sustainable development at universities. *Journal of Integrative Environmental Sciences,* 14:1, 93-108, DOI:10.1080/1943815X.2017.1362007.

Leal Filho, W. (Ed.) (1999), Sustainability and university life. Peter Lang EuropaÈischer Verlag der Wissenschaften, Frankfurt am Main.

Leal Filho, W., Frankenberger, F., Salvia, A. L., Azeiteiro, U., Alves, F. Castro, P., Will, M., Platje, J., Lovren, O. V., Brandli, L., Price, E., Doni, F., Mifsud, M., Avila, L. V. (2021). A framework for the implementation of the Sustainable Development Goals in university programs. *Journal of Clean Production*, 299, 126915. 1 – 12. https://doi.org/10.1016/j.jclepro.2021.126915.

Leal Filho W., Wall T., Barbir J., Alverio G.N., Dinis M.A.P, Ramirez J. (2022c). Relevance of international partnerships in the implementation of the UN sustainable development goals. *Nat Commun.* 13(1). doi:10.1038/s41467-022- 28230-x.

Leal Filho, W., Wolf, F., Salvia, A., Beynaghi, A., Vasconcelos, C. R. P. (2020). Heading towards an unsustainable world: Some of the implications of not achieving the SDGs. *Discover Sustainability* 1(1) 2- Doi.org/10.1007/s43621-020-00002x.

Leal Filho, W., Vidal, D. G., Chen, C., Petrova, M... Neiva, S. (2022). An assessment of requirements in investments, new technologies, and infrastructures to achieve the SDGs. *Environmental Sciences Europe*, 34-58. Doi.org/10.1186/s12302-022-00629-9.

Lozano, R. (2011). The state of sustainability reporting in universities. *Int. J. Sustain Higher Educ 12*(1), 67-78.

Lozano, R., Ceulemans, K., Alonso-Almeida, M., Huisingh, D., Lozano, F. J., Waas, T., … Hugé, J. (2015). A review of commitment and implementation of sustainable development in higher education: Results from a worldwide survey. *Journal of Cleaner Production*, 108, 1–18. https://doi.org/10.1016/j.jclepro.2014.09.048

Lozano, R., Lukman, R., Lozano, F. J., Huisingh, D., & Zilahy, G. (2010). Jumping sustainability meme. SD transfer from society to universities. *Paper presented at the Environmental Management for Sustainable Universities,* Delf, The Netherlands.

Lozano, R., Lukman, R., Lozano, F. J., Huisingh, D. Lambrechts, W. (2011). Declarations for sustainability in higher education: Becoming better leaders through addressing the university system. *J. of Clean Prod*. *48*, 10-19.doi:10.1016/j.jclepro.2011,10.006.

Lozano, R., Ceulemans, K., Alonso-Almeida, M., Huisingh, D., Lozano, F.J., Waas, T., Lambrechts, W., Liedekerke, L. V. & Petegem, P. V. (2013). Higher education for sustainable development in Flanders: Balancing between normative and transformative approaches. *Environmental Education Research*, *24*(9), 1284-1300.

Mandaviya, M. and Dwivedi, V. V. (2016). A critical review on paradigms of sustainable development in higher education: An international Perspective. *International Journal of Applied Research,* 2(7): 312-320.

McGrail, S., Halamish, E., Teh-White, K. and Clark, M. (2013). Diagnosing and anticipating social issue maturation: Introducing a new diagnostic framework. *Futures* 46, 50-61.

Michelsen, G. (2015). Policy, politics and polity in higher education for sustainable development. In Barth, M. et al (Eds). *Routledge Handbook of Higher Education for Sustainable Development.* London: Routledge.

Miles, M. B. and Hubermann, A. M. (1994). *Qualitative Data Analysis: An Expanded Sourcebook*. Thousand Oaks, CA: Sage.

Milutinovi, C.S., and Nikoli, C.V. (2014). Rethinking higher education for sustainable development in Serbia: an assessment of Copernicus charter principles in current higher education practices. *Journal of Cleaner Production* 62, 107-113. doi:10.1016/j.jclepro.2013.05.028.

Morton, S., Pencheon, D. and Squire, N. (2017). Sustainable Development Goals (SDGs), and their implementation. *British Medical Bulletin*, 124:81–90. doi: 10.1093/bmb/ldx031.

Moser, C. A. & Kalton, G. (1997). S*urvey Methods in Social Investigation.* London: Heinemann.

NUC (2022). Nigerian universities. Accessed on 10 July, 2022 from http:/www.nuc.edu.ng.

Okongwu, U., Morimoto, R. and Lauras, M. (2013). The maturity of supply chain sustainability disclosure from a continuous improvement perspective. *International Journal of Productivity and Performance Management*, 62 (8), pp. 827-855.

Owens, K. A., & Legere, S. (2015). What do we say when talk about sustainability? Analyzing faculty, staff and student definitions of sustainability at one American university. *International Journal of Sustainability,* 16(3), 367-384. doi: 10.1108/IJSHE-06-2013-0055

Pistoni, A., Songini, L. & Bavagnoli, F. (2018). Integrated Reporting Quality: An empirical analysis. *Corporate Social Responsibility and Environmental Management 25*(2),

23-41. Doi.10.1002/csr.1474.

Raimo, N., Nicolo, G., Polcini, P. T. and Vitolla, F. (2022). Corporate governance and risk disclosure: Evidence from integrated reporting adopters. *Corporate Governance* 22(3). Doi:10.1108/CG-07-2021-0260.

Rogers, E. M. (1995). *Diffusion of Innovations*. 4th ed. Free Press: New York.

Ryan, A. & Tilbury, D. (2013). Uncharted waters: Voyages for education for sustainable development in the higher education curriculum. *Curriculum J*. 24 (2).272-294.

Sáez de Cámara, E.; Fernández, I.; Castillo-Eguskitza, N. A (2021). Holistic approach to integrate and evaluate sustainable development in higher education. The case study of the University of the Basque Country. *Sustainability*, 13, 392. https://doi.org/10.3390/su13010392.

Sari, Y., Hidayatno, A., Suzianti, A., Hartono, M. and Susanto, H. (2020). A corporate sustainability maturity model for readiness assessment: a three-step development strategy. *International Journal of Productivity and Performance Management*. https://doi.org/10.1108/IJPPM-10-2019-0481.

SDSN Australia/Pacific, (2017). *Getting Started with the SDGs in Universities: A Guide for Universities, Higher Education Institutions, and the Academic Sector. Australia, New Zealand and Pacific Edition.* Sustainable Development Solutions Network-Australia/Pacific: Melbourne.

Shepard, K. (2015). *Higher Education for Sustainable Development*. London: Palgrave Macmillan.

Shriberg, M., Harris, K., (2012). Building sustainability change management and leadership skills in students: lessons learned from 'Sustainability and the Campus' at the University of Michigan. *Journal of Environmental Studies and Sciences* 2(2), 154–164. doi: 10.1007/s13412- 012-0073-0.

Steenkamp, N. and Northcott, D. (2007). Content analysis in accounting research: The practical challenges. *Australian Accounting Review, CPA Australia,* 17 (43), 12-25.

Su, H. J., & Chang, T.C. (2010). Sustainability of higher education institutions in Taiwan. *International Journal of Sustainability in Higher Education*, 11(2), 163-172.

Sylvestre, P., Wright, T., & Sherren, K. (2013). Exploring faculty conceptualizations of sustainability in higher education: Cultural barriers to organizational change and potential resolutions. *Journal of Education for Sustainable Development*, 7(2), 223–244. doi:10.1177/0973408214526491.

Tafese, M. B. & Kopp, E. (2025). Education for sustainable development: Analyzing research trends in higher education for sustainable development goals through bibliometric analysis. *Discover Sustainability*, 6, 51.

Terouhid, S.A. and Ries, R. (2016). Organizational sustainability excellence of construction firms – a framework. *Journal of Modelling in Management*, 11(4), pp. 911-931.

Tilbury, D. (2011). Higher education for sustainability: A global overview of commitment and progress. In T. Wright and H. Elliot (Eds). *Higher education in the world 4, Higher Education's commitment to sustainability: From understanding to action*. Barcelona: GUNI.

Tilbury, D., Keogh, A., Leighton, A. & Kent, L. (2005). *A national review of environmental education and its contribution to sustainability in Australia: Further and higher education*. Canberra: Australian Government Department of the Environment and heritage and Australian Research Institute in Education for sustainability (ARIES).

Togo, M. & Lotz-Sisitka, H. (2009). *Unit Based Sustainability Assessment Tool. A resource book to complement the UNEP Mainstreaming Environment and Sustainability in* African Universities Partnership. Howick, Share-Net.

Udensi, C. E. (2023). Assessment of the sustainability practices of Nigerian universities. *Advance Journal of Management and Social Sciences*, 7(2), 1-17.

UN (2015). Higher Education Sustainability Initiative (HESI). Available online: https://sustainable development.un.org /sdinaction/hesi.

Velazquez, L., Munguia, N., Platt, A. & Taddei, J. (2006). Sustainable university: What can be the matter? *J. Clean Prod*. 14, 810-819.

Velazquez, L., Munguia, N., Sanchez, M., (2005). Deterring sustainability in higher education institutions: An appraisal of the factors which influence sustainability in higher education institutions. *International Journal of Sustainability in Higher Education*, 6, 383-391. http://dx.doi.org/10.1108/14676370510623865.

Verhulst, E. and Lambrechts, W., ( 2015). Fostering the incorporation of sustainable development in higher education: Lessons learned from a change management perspective. *Journal of Cleaner Production* 106, 189-204. doi: 10.1016/j.jclepro. 2014.09.049.

Verhulst, E. and Lambrechts, W. (2014). Fostering the incorporation of sustainable development in higher education. Lessons learned from a change management perspective, *Journal of Cleaner Production*. http://dx.doi.org/10.1016/j.jclepro.2014.09.049.

Vogt, M., and Weber, C. (2020). The role of universities in a sustainable society. Why value-free research is neither possible nor desirable. *Sustainability* 12(2811):1–21.

Wright, T. S. A. (2002). Definitions and frameworks for environmental sustainability in higher education. *Int. J. Sustain. Higher Educ*, *3*(3),203–220.

Waas, T., Hugé, J., Ceulemans, K., Lambrechts, W., Vandenabeele, J., Lozano, R., Wright, T., (2012). *Sustainable Higher Education: Understanding and Moving Forward.* Environment, Nature and Energy Department, Brussels.

Wright, T., Horst, N., 2013. Exploring the ambiguity: what faculty leaders really think of sustainability in higher education. *International Journal of Sustainability in Higher Education,* 14, 209-227. http://dx.doi.org/10.1108/14676371311312905.

Weber, L.E. and Duderstadt, J.J., (2012). *Global Sustainability and the Responsibilities of Universities*. Economica, London.

Wolfe, R. (1991). The use of content analysis to assess corporate social responsibility. In J. Post, (Ed.), *Research in Corporate Social Performance and Policy* (pp. 281–307). Greenwich, CT: JAI Press.

**APPENDIX 1**

List of Declaration, Charters and Partnership on ESD

| Date | Declaration/charter/partnership/event | Focus |
|---|---|---|
| 1972 | Stockholm declaration on the Human Environment | Society |
| 1975 | The Belgrade charter | Education |
| 1977 | The Tbilisi Declaration | Education |
| 1987 | Our common future (The Brundtland report) | Society |
| 1990 | Talloires declaration | Higher Education |
| 1991 | Halifax Declaration | Higher Education |
| 1992 | UN Rio conference report on Environment & Development | Society |
| 1993 | Kyoto Declaration | Higher Education |
| 1993 | Swansea declaration | Higher Education |
| 1993 | COPERNICUS University charter | Higher Education |
| 1997 | Thessaloniki Declaration | Education |
| 1999 | The Bologna Declaration | Higher Education |
| 1999 | Environmental management for sustainable university conference | Education |
| 2000 | Millennium development Goals | Society |
| 2000 | The Earth Charter | Society |
| 2000 | Global Higher Education for Sustainability partnership | Higher Education |
| 2000 | Beijing Declaration | society |
| 2001 | Lünerburg Declaration | Higher Education |
| 2002 | World summit on sustainable development | Society |
| 2002 | Ubuntu Declaration | Society |
| 2004 | Declaration of Barcelona | Society |
| 2005 | Start of UN Decade on Education for sustainable development (DESD) | Education |
| 2005 | Graz Declaration | Higher Education |
| 2006 | Declaration on the responsibility of higher education on democratic culture | Higher Education |
| 2007 | Lucerne Declaration on Geographical Education | Education |
| 2008 | G8 University Summit Sapporo Sustainability Declaration | Society |
| 2008 | ProSPER.net Charter | Higher Education |
| *2009* | *Abuja Declaration* | *Higher Education* |
| 2009 | Torino (Turin) Declaration | Higher Education |
| 2010 | Declaration "Universities for Sustainable Development | Higher Education |
| 2012 | Rio+20 Higher Education Sustainability Initiative, Brazil | Higher education |
| 2014 | Bonn Declaration | Higher Education |
| 2014 | The Nagoya Declaration on Higher Education for Sustainable Development | Higher Education |

Source: Adapted from Lazona et al (2015) and Mandaviya & Dwivedi (2016).