

## Bibliometric Analysis of Climate Change, Tourism, and Destination Marketing

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### Abstract

Climate change, tourism, and green tourism destination marketing are fields that practically seem connected but were not fully explored as connected by academics globally, and that gap deserves more research attention. Global warming concerns all tourism stakeholders because it negatively affects destination marketing and tourism activities. The study aims to take stock of global climate change, tourism, and destination marketing debates to identify progress and gaps. The study explores studies that are Scopus-indexed. VOSviewer was utilized to analyze the data. The study also found that there is heavy academic dependency syndrome by the global South on the global North due to information dissemination trends from developed to underdeveloped countries. Also evident is the suppression of the South's minds by the North not accepting ideas from the South and publishing them in European journals. The study implies that academic collaboration and publishing are encouraged between the North and South academics to tackle the three dimensions and bring solutions to the global warming and tourism time bomb crisis. No study has been done similarly covering these three constructs filling a gap in the literature.

**Keywords:** Climate change; destination marketing; marketing; sustainability; tourism

### Introduction

There have been concerns in recent years about climate change, tourism, and destination marketing by academics and stakeholders who deal with these matters (Hanna et al., 2018). The concern regarding climate change, tourism, and destination marketing is still a current and topical matter (Morrison et al., 2022). The three constructs deserve attention to avoid an inhabitable society due to global warming. Global warming can be avoided only if there are concerted efforts by academics and relevant stakeholders to avert the situation through various means (Klimek et al., 2019). There is a close relationship between climate expectation disconfirmation and tourists' behavioural intentions in purchasing tourism climate insurance, with destination loyalty as the outcome (Olya et al., 2019). The expectation-disconfirmation of tourists about climate is positively associated with their intentions to purchase insurance and negatively affects loyalty revisit intentions to their preferred destinations (Olya et al., 2019).

There is no global consensus on who should be responsible for eradicating greenhouse gas emissions (Filho et al., 2023). The problem is exacerbated since tourism has been of significance to society and on the other side its potential threat also the ozone layer causing climate change (Filho et al., 2023; Desens et al., 2016; Johnstone, 2021). Governments and companies are still battling with how best they can tackle climate change matters with more progress being made by the companies than the governments (Gunfaus & Waisman, 2021). Destinations appeal, cost of doing business, and the destination brand may be affected by the possible effects of climate change because if the destination was previously appealing due to

its climate and it loses that appeal, the destinations and all tourism business inside it will no longer be financially viable (Dodds, 2010). Climate change challenges researchers to investigate potential negative effects if not curtailed at an earlier stage, practically.

There is still debate on climate change affecting the tourism industry coupled with rising energy prices, which have a huge impact on tourists' travel expenses. Erratic winter weather changes, high fuel prices, and hotels using diesel to cater for load-shedding in some places make destination affordability and marketing difficult (Scott et al., 2012). The unpredictable weather and climatic changes and rising energy prices provoke the tourism industry's interest in investigating adaptation and mitigation measures under the circumstances (Scott et al., 2012). Whilst global warming has been a fear for many for years, COVID-19 reduced global greenhouse emissions considerably (Le Quéré et al., 2021) due to the ban on international travel (Chihwai et al., 2023) and fewer tourists' mobility globally (Chihwai & Dube 2023). Companies are now duty-bound to ensure that stability is maintained and drivers for such sustainability can be market-based, legislature formulation and policies and nominally based (Kara et al., 2014; Santa-Maria et al., 2021; Liang & Renneboog, 2019).

Climate change is singled out as the greatest factor influencing tourist destination choices, among other variables such as attractions, safety, health, and affordability (Ngxongo, 2021). Climate change was found to be a key influence on tourists' decision-making, behaviour, and spending habits at tourist destinations like the Central Drakensberg Area (Ngxongo, 2021). The changing climatic conditions globally have led to tourists changing their decisions from the nearby resorts that used to have favourable climatic conditions to travel long distances in the emerging tourism trend. The decision to travel longer distances contributes to emitting more carbon in the process to see the animals which are now going extinct or natural features, and systems now going extinct in what is termed last-chance tourism (Dawson et al., 2011). Global environmental change is altering natural and built systems in many world regions. Such changes play a significant role in an emerging travel trend labelled 'last chance tourism' (LCT).

Few studies have been done on climate change, tourism, and destination marketing due to the few studies adjoining all three concepts together in academic databases, with only sixty-four documents on Scopus on the constructs for two decades from 2004 to mid-July 2023. The study posits that the Science departments at universities are not doing enough research, especially in collaboration with the business and management or environment departments, so conclusive and triangulation studies regarding the three dimensions could be published. The study further asserts that few studies that adjoin the three constructs have gaps that need to be filled, for example, studies in Africa and Asia that address climate change by academics and practitioners thereof.

There is no consensus on climate and climate change definition by climatologists (Werndl, 2016). Climate is a kind of constant natural state to which the weather would converge if it were averaged over a long enough period (Lovejoy, 2013). Climate change can be defined as long-term changes in temperatures and weather patterns, and such changes can be natural such as volcanoes erupting or the sun's activities, but that shifted due to human interferences as now the main change agents of climate change, for example, burning of gas, oil coal fossil fuels (United Nations, 2020). An example of destinations that were affected by climate change includes Ethiopia or the whole of the Horn of Africa, which is facing a severe drought following the worst performing rains in seventy-three years and five successive failed rainy seasons (United Nations Development Programme, UNDP 2023).

Tourism is defined as a social, cultural, and economic phenomenon that entails the movement of people to countries or places outside their usual environment for personal business or professional purposes (UNWTO, 2008). These people are called visitors (who may

be either tourists or excursionists, residents, or non-residents), and tourism has to do with their activities, some of which involve tourism expenditure (UNWTO, 2008).

Destination marketing is primarily conceptualised as a proactive, visitor-centered approach to the economic and cultural development of a destination, balancing and integrating the interests of visitors, service providers, and the community (Wang, 2011). There has been an indirect acknowledgment of a market-oriented approach to destination marketing (Fyall & Garrod, 2005; Line & Runyan, 2014; Medlik & Middleton, 1973; Pike, 2004; Otto & Ritchie, 1996), but there is a secret absence account of tourism literature (Line & Wang 2017).

The debate on tourism destinations and climate and tourist choices is less yet further exacerbating the problem because no consensus amongst researchers exists on integrating the three constructs. The issue of no consensus on the three constructs is exemplified in the study of Alps Mountain where additional sunshine days did not significantly affect tourists to stay longer (Line & Wang 2017). In the same study, tourists interested in the Alpine during summer depended less on weather conditions than their sun and beach tourists' counterparts (Line & Wang 2017). The study of destinations remains an area of active research interest, with many challenges such as viable, sustainable, and competitive places for tourists to visit (Fyall & Garrod, 2020), including climate change (Hall, 2021).

The objectives of this study are to (i) analyse which authors have published on climate change, tourism, and destination marketing (ii) analyse which years contain peer-reviewed documents related to climate change, tourism, and destination marketing (iii) analyse which documents were published per year by source (iv) analyse which documents were published by affiliation (v) analyse the number of documents published by country (vi) analyse which documents were published by type (vii) analyse documents published by subject area (viii) explore the connectedness of keywords climate change, tourism, and destination marketing for the published articles with other related themes on a VOSviewer network visualisation map (ix) analyse the citations of documents published (x) to provide recommendations on future studies.

## Materials and methods

The study is a bibliometrics analysis of documents with studies on climate change, tourism, and destination marketing. The three keywords aforesaid are typed on the Scopus database. The range of the number of years is also typed from 2005 to July 2023. All section boxes are ticked except the funding box. The documents are then searched. A total of sixty-four documents came out. The analyse results icon was then pressed. Results came out with different categories as input. Documents analysed could be categorised as follows: documents per year, documents per year by source, documents by affiliation, documents by country, documents by author, documents by subject area, and documents by type and citations per document. Further analysis is done by exporting the data on VOSviewer, which produces network, overlay, and density visualisation. The study then concentrated on network visualisation, which shows the interconnectedness of the three themes under scrutiny, among other related themes attached to them. The study analysed the interconnectedness by checking which keywords had the largest balls and the biggest letters on the network visualisation map and checking arrows connected to them when the keywords were clicked. Those with lines connected with the keyword are regarded as positive. Those words appear too faint and unreadable without lines joining the keyword and are regarded as not connected to the keyword in question at the time. Further analysis is done to ascertain why those with joining lines exist. The analysis is also done to establish possible assumptions as to why some do not adjoin the keyword and recommendations made for future studies if that is justified. Due to the few documents found with the three embedded constructs, amounting to 64, all of them were included in the study.

## Findings, discussion, and implications

### *Published documents by the author*

Figure 1 shows that Hall wrote 4 documents, Bausch 3, Gossling 3, Haider 3, Lemieux 3, Dawson 2, Dodds 2, Gartner 2, Graci 2, Probstl 2, Scott 2, Steward 2, Abbott 1, Arsene 1, Ashton 1, Basarin 1. These authors are from different countries and different academic institutions.

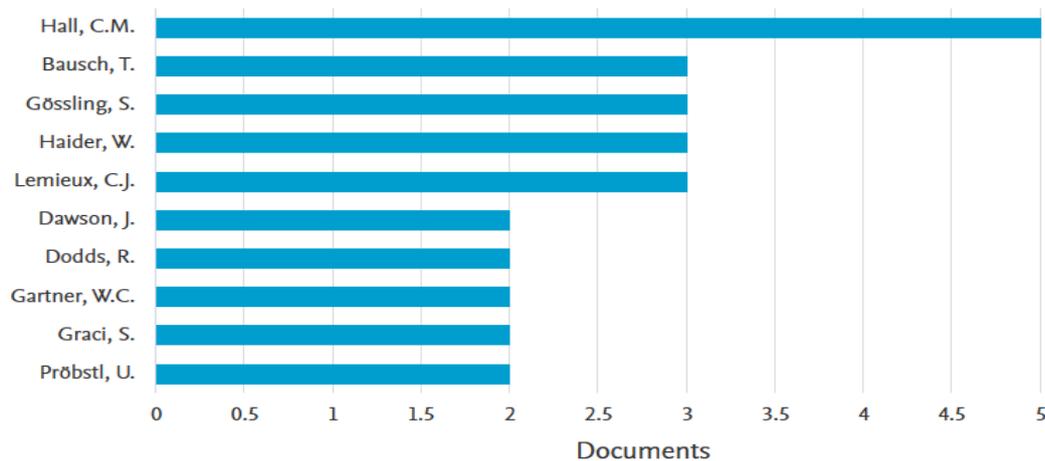


Figure 1. Documents written by authors on climate change, tourism, and destination marketing.  
Source: Author data based on Scopus

The author Hall et al. (2014) wrote a book with themes on climate change, tourism, and marketing and found that marketing could be fused with climate change and tourism to bring the desired tourists to lakes in the promotion of lake tourism whilst at the same time the lake is to meet the demands of the water and land. The author admits climate change may affect lakes' existence, which may threaten lake tourism, yet marketing must continue to attract tourists. The article had eighteen citations. Seven years later, Hall et al. (2013) wrote another article on Christmas tourists' perceptions of Rovaniemi in Finland, which had fifty-six citations. In the article, Hall et al. (2013), lamented the incessant warm winters, which is now a worrying matter to Christmas tourists who no longer see snow. It has become a worrying matter to destination managers in terms of marketing the Rovaniemi area because it no longer meets the tourists' expectations, which demands rebranding the area. Hall et al. (2014) wrote an article in 2014 that has been cited thirty-two times. Hall et al. (2014) wrote an article on Santa location imagination due to climate change, in which article concluded the need for tourism stakeholders to attend to climate change effects as much as they put effort into promoting the area as a perfect Christmas destination place with reindeer, pine, and snow. Gossling et al. (2015) wrote an article (Hall contributed) with one hundred and sixteen citations with keywords climate change, tourism, and destination marketing. The article linked climate change with air travel greenhouse emissions and tourist destinations, calling for reducing greenhouse emissions and fostering specific markets. Oklevic et al. (2019) wrote an article (Hall contributed), in which they concluded that destination managers and resort authorities need to understand how long the tourists would stay, how much they will spend, and their activity schedules in a bid to understand and account for over-tourism matters and sustain the tourism destination in an environmentally resilient, economic and social manner.

Another author in the second category of those who published most in Gossling published three articles. The author wrote the three articles with other authors. Gossling et al. (2014) wrote a book chapter that was cited three times. The book chapters explore climate

change as a worrying development to tourism and destinations, tourists' behaviour in the face of climatic changes, which may not change suddenly, and destinations' vulnerability to climate change. Gossling et al. (2015) wrote an article that was cited one hundred and sixteen times. In the article, they found that tourism contributed negatively to greenhouse carbon emissions and recommended measures for destination stakeholders and tourists to reduce gas emissions contributing to climate change. Gossling et al. (2019) wrote an article in which they lamented over tourism, which is promoted by destination marketing organisations, which creates conflict with residents and resources from which optimisation strategies should be formulated to moderate the situation to avoid further causes of climate change due to the air transport emission involved in travelling.

The implications of the author Gossling et al.'s documents above show the interconnectedness of climate change, tourism, and destination marketing and the serious issues of climate change that need to be addressed by the tourism stakeholders. However, the published documents by respectable authors seem to be few and far between, considering only three articles from the year 2005 up to 2023. The study suggests that due to the increasing debate on climate change in social media and news channels, summits by heads of state, there must be many academic documents from the author every year. Yet, it seems to be the exact opposite in terms of publishing. The study calls for academics to fill the knowledge gap by dwelling on empirical and secondary studies and bringing solutions that can harmonise the co-existence of tourism and destination marketing without affecting climate change. Another author, Dawson wrote two articles about climate change, tourism, and destination marketing. In 2011, Dawson wrote an article that attracted seventy-four citations. The article was on ethical last-chance tourism, where tourists visit near-extinct animals and systems due to the ever-changing global environment before such species become extinct. The argument in the article is that tourists travel for long distances to see such diminishing species before they are off the planet, forgetting the contribution per capita on greenhouse emissions in those long air travel journeys and destinations being visited, which ironically are getting extinct due to the very same greenhouse emissions tourists are negatively causing (Dawson et al., 2011). Another article published by Dawson et al. (2018) recommended the preservation and promotion of last-chance tourism sites in protected areas and the use of management devising ways of promoting the glacier and other last-chance tourism destinations through outreach programmes (Lemieux et al., 2018)

### ***Documents published by year***

In 2005, only one document was written, and in 2006 regarding climate change, tourism, and destination marketing. There were no documents written in 2007 and 2008 regarding the aforesaid keywords. The trajectory peaked from 2009 to 2011 from 1 to five, respectively, whilst 2012 and 2013 maintained four documents, each with an upward trend registering the following two years. The year 2016 recorded zero documents, while an upward trend was recorded in the following 2 years and the year 2021 recorded the highest number of documents, over thirteen in total, before seeing a plunge of two documents each in 2022 and mid-2023. The implication of the documents published over the years reveals that very few documents are being published regarding the interconnectedness of climate change, tourism, and destinations because only a total of sixty documents came out for the whole period from the year 2005 to the year July 2023. The statistics show scholars' lack of research interest in the themes under scrutiny. Ironically, climate change is a topical subject that should receive much attention from scholars and publishers, especially connecting it to tourism and destination marketing.

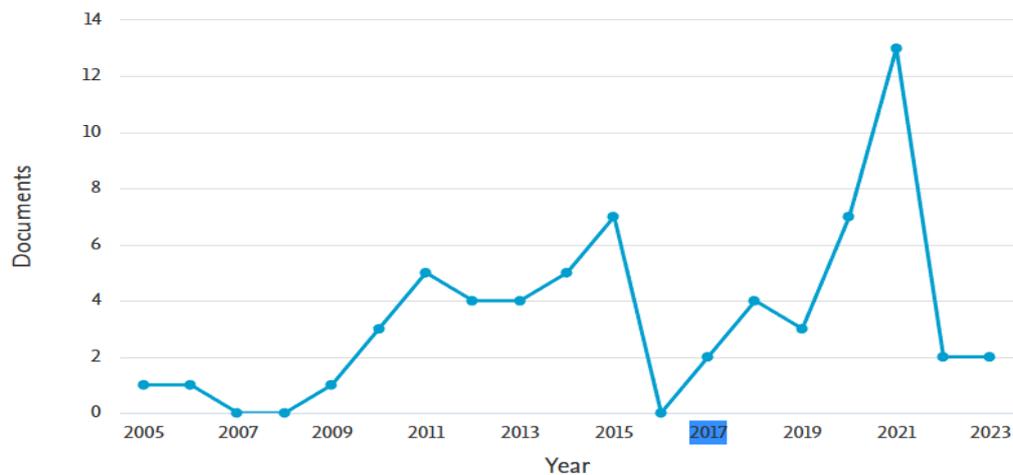


Figure 2. Documents written by year.  
 Source: Author data based on Scopus

### ***Documents published per year by source***

Figure 3 shows documents published per year by source. A total of 6 documents have been published by the Journal of Sustainable Tourism, which links the keywords climate change tourism and destination marketing from 2011 until mid-2023 in July. In the year 2011, the Journal of Sustainable Tourism published one document. The Journal has a cite score of 18.9. The following year, the same journal produced 2 documents. In the year 2017, the same journal published one document. The document written in 2011 had thirty-nine citations, whilst the one written in 2012 had forty-two citations. The other document written in the same year (Scot et al., 2012) had 146 citations. The document published in 2014 had twenty-five citations, whilst the one published in 2017 had forty-one citations. The highest cited document was published in 2021 with one hundred and sixty-two citations.

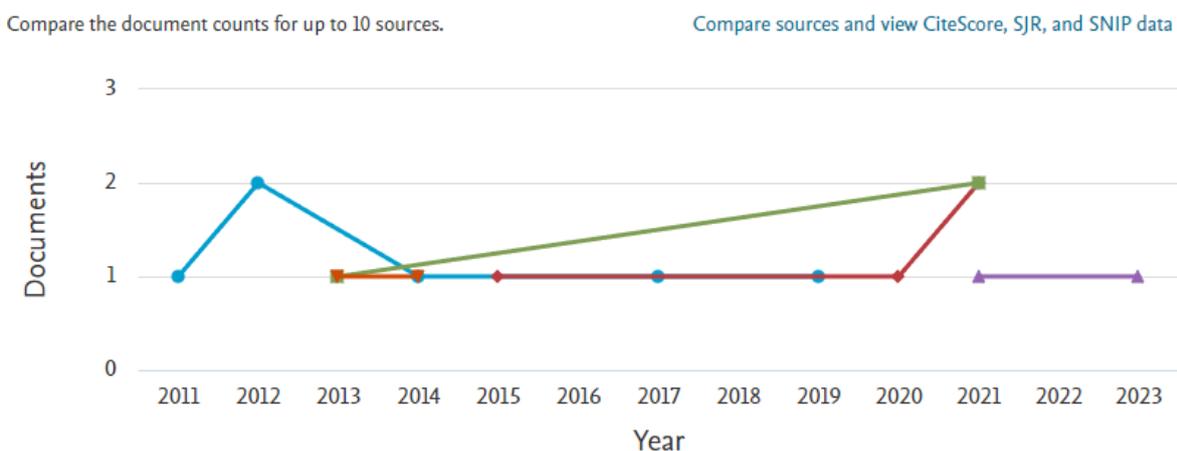


Figure 3. Documents published per year by source  
 Source: Author data based on Scopus

The Implication of the Journal of Sustainable Tourism and its publications is that the journal is a hub of knowledge relating to keywords climate change, tourism, and destination marketing, with a very high cite score, which every researcher should strive to publish. Though the number 6 publications from 2011 to mid-July 2023 may look big comparatively, it remains an under-researched area for a decade of publications timespan consideration. This may also imply a

high rejection rate of the journal requiring high-quality papers, which puts the journal in good standing. The Journal of Outdoor Recreation and Tourism published four documents from 2011 until 2023. The distribution of publications was as follows: one in 2015 and one in 2020. The Journal citescore is recorded at 5.2. The document written in 2015 had fifty-eight citations. The following document was published in 2020 with seventeen citations. The document published in 2021 had thirteen citations, whilst the other document published the same year had eight citations written by Salim and others. The implication of the publications and the journal exhibited by the statistics revealed that few scholars are publishing articles related to climate change, tourism, and destination marketing. Taking five years from 2015 to 2020 without publishing an article relating to the three constructs should concern both the publisher and the authors. Publishing four articles in a decade related to these themes showcases the reluctance of researchers on the subjects. This study calls for more research researchers because these themes interlink.

The Journal of Tourism Geographies published three documents from 2011 to mid-2023 in July. One document was written in 2013 with fifty-six citations. The other document was written in 2021 by Kelman and had 14 citations. The third document was written by Bangwayo-Skeete and Skeete in 2021 and has a record of 20 citations. It took eight years for this journal to publish articles between the first and second, with themes under discussion between 2011 and 2023. The implications of having only three documents on these keywords in over a decade reveal that authors are probably not interested in the themes. It could also mean that the journal does not cover the research themes' scope. Authors may be unwilling to publish in such a journal for reasons best known to authors. Be that as it may, the themes are under-researched. The study advocates for more authors' interest in exploring this knowledge gap.

The International Journal of Environmental Research and Public Health published two documents on climate change, tourism, and destination marketing. The Journal has a cite score of 5.4. The first published related document was in the year with three citations. The last publication was in the year 2023, with zero citations. Two documents published only in thirteen years are of concern for both stakeholders. Assumptions could be that few scholars are willing to delve into the three visibly connected keywords that call for a research agenda for academics to fill the gap. The other implication of the study could be scholars' lack of interest in publishing these diverse themes in a journal with a cites core of 5.4 and prefer those with higher cite scores. The other implication could be that journal management needs to adjust its scope to receive broader themes.

### ***Documents by affiliation***

Figure 4 shows documents published by the affiliation. Universitat fur Bodenkultur Wien contributed the most on keywords climate change, tourism, and destination marketing, recording 6 documents in total. In the top ten Universities on the related constructs, the University of Johannesburg and Wilfrid Laurier University are tied at two each, whilst Hochschule Munchen, Simon Fraser University, and the University of Minnesota Twin Cities are tied at 3. Implications from Figure 4 are that scholars from European and American universities are the ones more concerned with climate change, tourism, and destination marketing fused together. European and American universities are leading in terms of publications. However, other continents' Universities are not doing enough to warrant recognition in the top ten Universities globally on the issue in discussion. Africa is represented by one University, which is a sign of concern. Still, a lot more needs to be done by Africa, especially considering the abundant tourism resources needed by tourists from overseas and the air transportation involved, which all contribute to greenhouse gas emissions. Asia is silent

on the publications among other continents. However, tourism, climate change, and destination marketing are global concerns requiring academics to influence policymaking and better manage the three constructs. More research agendas in various universities should be set to tackle the three constructs meaningfully and successfully.

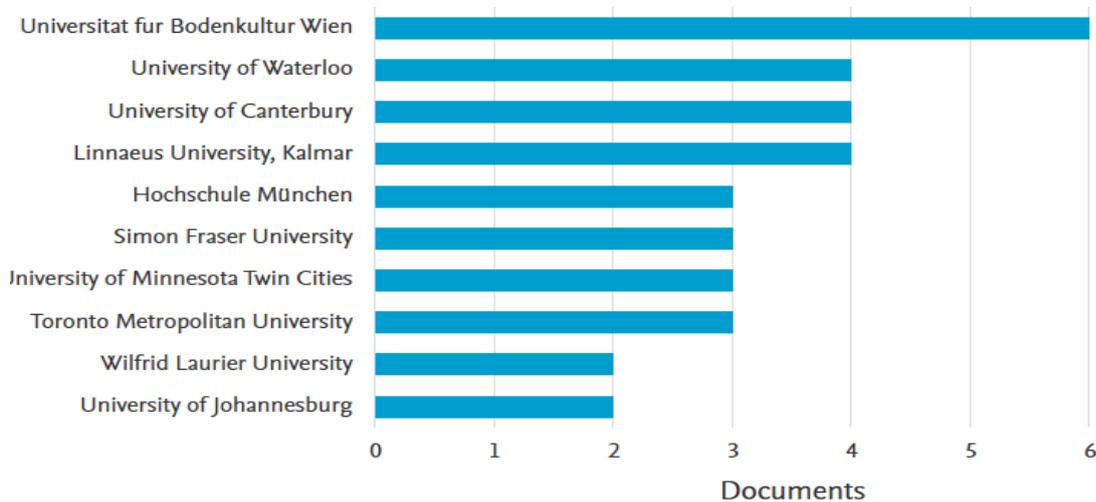


Figure 4 Documents published by affiliation.  
 Source: Author data based on Scopus

***Documents by territory or country***

Regarding climate change, tourism, and destination marketing, most documents were published from Canada with thirteen, whilst in the top ten list, Norway, South Africa, and Sweden contributed four documents each for the period under review from 2005 to mid-2023 in July. The United Kingdom and the United States of America are tied at ten each. Austria, New Zealand, Australia, and Germany contributed from 8 to 5 in descending order.

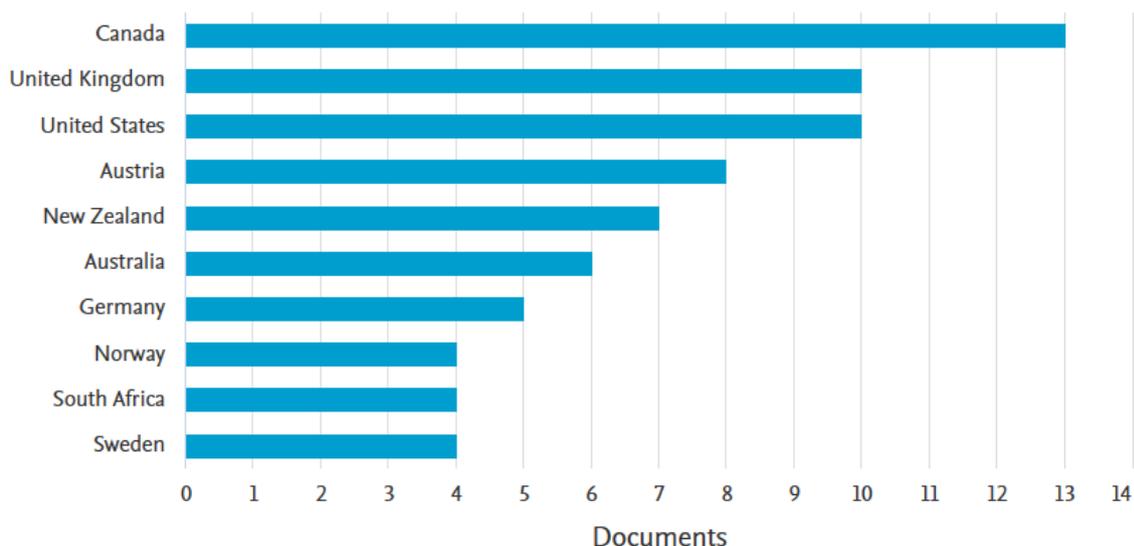


Figure 5 Documents published by territory or country.  
 Source: Author data based on Scopus

The implication of the statistical analysis in Figure 5 analysis is that scholars from Europe and America seem to be the countries more concerned with climate change, tourism, and

destination marketing. This could be because that is where tourists' glaciers and snow activities could occur. It is also evident from the statistics that Africa only has one country, South Africa, showing interest in the three constructs out of the whole continent. It is further evident that scholars from Asia are silent on the three constructs, which is of concern because China is one of the countries that contributes to most tourists around the globe, and air transport is heavily involved, which are key tourism greenhouse gas emission pathways. Climate change affects not only Europe and America but the whole world which demands that scholars from all continents contribute substantially to climate change, tourism, and destinations for optimisation sake and promotion of an inhabitable earth. The study finds that this knowledge gap in all countries needs to be filled.

### *Documents by type*

The published documents with keywords climate change, tourism, and destination marketing were a total of sixty-four from the year 2005 up to the year 2023. The bulk of the publications comprised fifty articles, constituting 78.1 per cent of total publications. Book chapters were a total of six, which constituted 9.4 percent of total publications. There were two books in total, contributing to 3.1 percent of the total publications. Two conference papers contributed 3.1 percent of the total publications. There were also two conference reviews contributing 3.1 percent. Two reviews also contributed 3.1 per cent of the total publications.

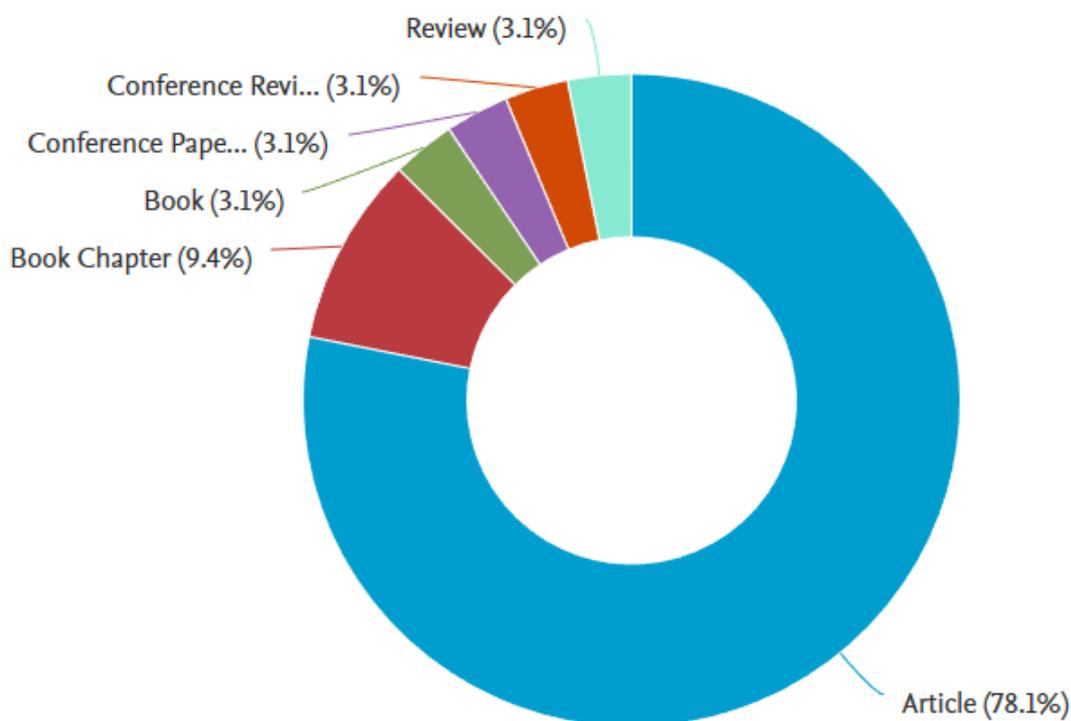


Figure 6 Documents published by type  
Source: Author data based on Scopus

The implications of the statistics on document by type shown in Figure 6 show that sixty- four documents published in two decades are few documents. The articles are the most published and preferred mode of publication by most authors. It may also show that books and book chapters are difficult and take time to publish; thus, few are published. The number of book chapters and books published may also bring the assumption that they are by far more

rigorously reviewed in so many stages, resulting in few publications. Very few conferences and reviews have taken place following the statistics shown, which brings to the fore the fact that climate change, tourism, and destination marketing, fused together, have not been taken seriously by academics, and more needs to be done. The reason could be that these are borrowed fields and constructs all coming together yet are very necessary gaps to explore and avoid or mitigate climate change, tourism, overtourism, and destination marketing.

**Documents by subject area**

Figure 7 shows documents by subject area about climate change, tourism, and destination marketing. The Business and management department has the most publications, with thirty-seven documents contributing 32.9 per cent. The Social Sciences department has thirty-one documents, contributing 27.4 percent, whilst environmental studies published sixteen documents, contributing 14.2 percent. Earth and planetary sciences departments have seven documents contributing 6.2 percent. Economics, Econometrics, and Finance have six documents in Scopus, while Energy has two with a 1.8 percent contribution.

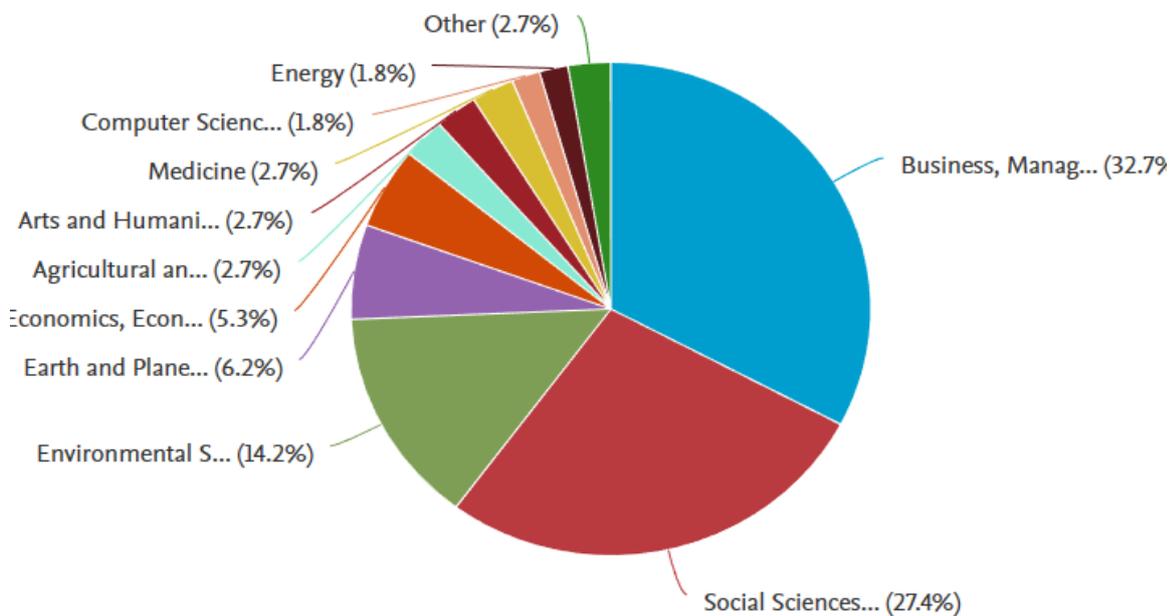


Figure 7. Documents published by subject area  
 Source: Author data based on Scopus

The implications of the statistics in Figure 7 showing documents by subject type is that business management subject matter experts are more concerned with issues of climate change, tourism, and destination marketing than the rest of the other academic experts. The least concerned academics on the three constructs under discussion are the Energy experts. The assumption why business management is the most concerned with the three constructs could be that they view tourism as a huge business that promotes economic growth for every nation substantially, and once affected by climatic change, it may not bring the desired income to the tourism industry's national economies. The lack of interest from the science experts is evident in the statistics provided. It is of great concern because they should be one of the leading contenders in optimizing the three fields. After all, scientists would bring tangible results of where we could be in the next century should tourism, overtourism, and destination marketing continue at the current rate or even increase.



need for a research agenda to be set in that regard to cover the knowledge gap. However, climate change has been researched mostly about tourism and tourism management, which implies more interest. Further implications regarding climate change are that climate change and destination appeal have no link, which brings to the fore the absence of studies in that regard. Further implications show that there must be a research agenda set on destination appeal and climate change because climate change would surely impact how the destination appeals and obviously in terms of tourists' visitations to such destinations. A research gap also exists between climate change and leisure traffic because the absence of a network connection between the two is a cause for concern. Climate change influences leisure traffic. For example, if floods caused by climatic changes destroy beaches and cause pollution to change the landscape of entertainment areas, that surely would reduce tourists' visits to such places. A gap exists that needs to be filled by authors exploring the area.

***Implications and concern over lack of connection between climate change and other keywords***

The lack of a link between destination management and climate change is a cause for concern because surely destination managers would be worried about climate change for the worse. After all, it would deter tourists from visiting their destination. For example, tourists who visit certain destinations to enjoy sun basking and skin tanning will lose interest if such destination suddenly starts being snowy or very cold changing the narrative of destination marketers and managers, it would be detrimental to the destination. A gap exists in this regard, and research needs to be done in this area.

The lack of a link between the keywords climate change and product diversification implies studies that no studies have been done in this area. However, there seems to be a link in real life, and there deserves to be a research gap demanding a research agenda. For example, the link could be in the sense that climate change for a particular destination will alter product offerings, which has further implications that demand altering products, resulting in product diversification. This can be further exemplified by the fact that if suddenly seasons change certain tourist destinations that used to be offered in certain months of the year will change to the new seasons. If snow skiing seasons change, tourist destinations must offer other tourist offerings, such as horse racing, golf, hunting, Sexpo, and wine tourism, depending on the circumstances. As alluded to earlier, a gap exists between climate change and product diversification, deserving a research agenda in this niche area.

The lack of a link between the keywords climate change and behavioural change implies that no articles were written in that regard. There may be a need to explore if there is no link between the two fields. The study suggests that there is a possibility of behavioural change by inhabitants of the tourist destination and tourists should there be climate change. This could be justifiable because the tourists' behaviour may change if the climate changes. Suppose they used to like the destination due to its climate, for example, the Troutbeck area in Nyanga in Zimbabwe. In that case, the tourists may change their behaviour by not visiting the place if it is no longer as cold as it used to be, meaning they may also change their behaviour by not going to the place to play golf, see the mountainous views, stop visiting World view and probably stop fishing Trout fish which is only found in that part of Zimbabwe. The assertion proves that climate change may influence behavioural change both on inhabitants and tourists, therefore deserving attention in the research agenda in the academic arena. Corroborating the study findings and assertions, a similar study found that tourists' behaviour may change even their decision-making and spending patterns if climate changes following a study on a tourist destination Central Drakensberg area, where warm and pleasant summer was the most significant contributor to the tourists' delight (Ngxongo, 2021).

The lack of a link between climate change and COVID-19 testifies that no studies link the two keywords in the context of tourism and destination marketing. A closer look at the two keywords suggests that there could be linkages between the two keywords. Destinations with a lot of air pollution are more likely to affect the ozone layer and affect the climate in the long term. Inhabitants of such air-polluted destinations from coal and gas emissions are likelier to have poor lungs, which Coronavirus easily targets. Corroborating the study finding, a study found that areas that burn oil and coal increase the chance of inhabitants inhaling such and becoming prone to respiratory diseases like coronavirus; therefore, a need to reduce greenhouse gas emissions by all stakeholders and reduce global warming to 1.5 degrees (Henderson et al., 2020). The study implies that some studies linking climate change and COVID-19 must be carried out for future generations' benefit should the pandemic resurface.

The lack of a link between climate change and the developing world seems to imply that the developing world has not been taken seriously by researchers in terms of climate change. Evident in the network visualisation are countries like Finland, which have been given attention, showing deliberate annihilation of the global southern nations. The study suggests that climate change should be discussed, including in developing countries, because the problem is a global phenomenon that could affect each other, whether it is the global North or the global South. The study postulates that Africa, in its agenda for industrialisation drive, might contribute more than half the greenhouse emissions starting from the year 2030. Corroborating the study findings, climate change affects the developing world and threatens the gains accumulated already (United Nations, 2007). The implication is that more research should be encouraged on the relationship between climate change and the developing world.

The absence of a link between the keywords climate change and attractions depicts a research gap. The study suggests that climate change affects some attractions. For example, suppose climate change results in incessant droughts and leads to the drying of rivers. In that case, that may mean some attractive waterfalls that tourists visit may dry, leaving the falls dry and leading to a behavioural change of tourists not visiting the place anymore. For example, there would be no more Mutarazi falls should rivers dry up in the area due to the absence of rain over time. The change in climate conditions will lead to no repeat visits and negative perceptions of experiences. The finding in this study is corroborated by another study, which states that climate change may, directly and indirectly, influence attractions through being uncertain about the destination's attractiveness, inducing a negative quality of experience with the destination (Chihwai, 2019), and directly leading to zero demand for the destination (Semenza & Kristie, 2019).

The absence of a link between the keywords climate change and natural resources suggests that no studies have been done in this area. Studies should be done in this area because the two link and affect each other. For example, rising temperatures change the ecosystem and existing environmental factors, leading to plant and animal species distribution changes. The study's findings corroborate another study, which stated that deforestation, water scarcity, and land degradation can be caused by climate change (Oeurng et al., 2019). There is, therefore, a need to set a research agenda on climate change and natural resources. There is no link in the keywords climate change and decision support systems. However, the study suggests that there is a missing knowledge gap due to the absence of such links. The study asserts that climate change and decision support stems have connections that need further exploration. Corroborating the study findings, a similar study finding that articulated the relationship between climate change and decision support systems concluded that tools exist that measure or assess climate change impact and adaptation. There are tools such as GIS that can be utilised for data visualisation. Monitoring and evaluation tools can also be utilised for climatic change and cost-benefit analysis. Some tools can be used to assess how to adapt to climate change.

Under the decision support platform, there is a risk management framework for climate change adaptation. This framework works in unison with the decision support tools such as case studies to implement the framework (Palutikof, 2021).

### ***Connectivity between tourist destination and other keywords***

The keyword tourist destination is the second most networked word with twenty-four occurrences. The keyword has three hundred and sixteen links with a total link strength of four hundred and twenty-eight. The tourist destination is mainly linked to climate change tourism, tourism management, and marketing in that descending order because the letters appear bigger in the whole cluster, showcasing the closer relationship and occurrence connectedness. The aforementioned statistics demonstrate the popularity of tourist destinations in the context of climate change relationships and tourism literature. Sustainable communities and destinations are all promoted in tourism marketing endeavours. Corroborating this study finding is another study that found that purposes, challenges, and intrinsic needs create a symbiotic close relationship between tourist destination management and destination marketing (Lei et al., 2014).

Besides the four closely related networked keywords aforesaid, the keyword tourist destination is also linked to keywords like marketing, sustainability, adaptability, coastal tourism, and developing world. Furthermore, England and Finland have beaches, recreational areas, natural resources, air, and human and sea levels. Other keywords connected to tourist destinations are numerical model, ananus comosus, and social media.

The connection of the aforesaid keywords with the keyword tourist destination is justifiable because, for example, tourist destinations need marketing for them to be known. For example, for someone in Europe to know of African tourist destinations, he/ she would have found some information about it on the website of the company, on Google search, or some marketing platform like television, radio, newspaper, internet, WhatsApp, Instagram, LinkedIn, Facebook, or word of mouth. Marketing is therefore important in informing tourists of global tourist destinations (Chihwai, 2019) while promoting sustainable tourism through green marketing and other sustainable development initiatives. The study assertion can be corroborated by another study that lamented that the lack of research on destination marketing organisations' best practices could equate to the disagreement of academics and practitioners on what constitutes the dependent variable of destination marketing organisations' modelling performance. We suggest the paucity of research into DMO best practices are related to the lack of agreement, within academia and in practice, as to the dependent variable in modelling DMO performance.

Another justification of the network between the keywords tourist destination and coastal destination is that a coastal destination is a tourist destination. Coastal destinations are favourite tourist destinations. Attributes of such destinations include beaches around such places and the opportunity to experience cruising in the oceans, watching marine life, and related adventures, including the five-star hotels, chalets, and lodges along such destinations. Examples of such places in South Africa include Durban and Cape Town, found in the developing world (another linking keyword) as the most frequented tourist coastal destinations, giving the desired tourists' gaze experience as propounded by Urry (1990).

Unlike the preceding two paragraphs, tourist destination has no links at all with these keywords: climate change, business adaptation, travel, decision making, business support systems, product diversification, destination appeal, destination management, ethics, behavioural change, and agri-ecotourism communities. The absence of such linkages in the academic world is a cause for concern.

### ***Implications and concern over no connectivity between tourist destinations and other keywords***

The absence of a connection between tourist destinations and travel in the Scopus literature is disturbing. Tourists travel to tourist destinations globally. The survival of tourist destinations is due to domestic and international tourists who travel to tourist destinations of their choice globally. Tourists travel to tourist destinations for different reasons and use different transportation like roads, rails, water, and air. The expectation of literature from Scopus is high, which could have found some connecting dots. Corroborating the study findings is that the tourists' vacation travel experience has a significant relationship with cognitive and affective images (Beerli & Martin, 2004), which implies that tourists need to travel to view, explore, and enjoy the destinations. Implied in this study finding is a gap that needs to be filled in research on articles that deal with tourist destinations and travel.

No research linking the keywords tourist destination and decision-making in the Scopus database from 2004 to 2023 is realistic in the real world. The study asserts that tourists travel to different destinations in the real world after making clear decision-making and thoughtful processes. A tourist plans which place he/she wants to visit, when he wants to visit the place, how he/she wishes to get there (transport), days to be spent there, how much he/she wishes to spend, activities he or she wishes to experience or do. The same decision-making is also done by the tourist destination site or place or destination marketing officials who must make decisions to market their destinations, custom offer their products and services, and arrange when which activities will take place, how and justify why they are the best in their marketing activities every day. Decision-making is two-sided from the destination and the tourist side; therefore, this study suggests that scholars should conduct more research on tourist destinations and decision-making. Corroborating the study finding is that a tourist goes through a negotiated process in his wants and needs (Chihwai, 2019) against what the destination offers (Bekk et al., 2016).

The Scopus database has no network visualisation link between the tourist destination and destination appeal from 2005 to 2023. This study asserts that there is a positive and significant link between tourist destinations and destination appeal. Tourists visit destinations that appeal to them. The appeal could be social, emotional, physical, or even economic appeal. Tourists often visit places that appeal to their emotional and physical wants and needs. A destination's appeal depends on what type of traveller you are because what may be appealing to a leisure tourist may not be appealing to a business tourist. Corroborating the study findings is a study in Bario Kelabit Highland in Malaysia, which found that the competitiveness or appeal of a destination is centred around accessibility, resources within the destination, the quality of accessibility, and the unique culture within the rural destination, which in turn influences positively the intention to revisit the destination (Chin et al., 2022). There is a need to set a research agenda to fill this gap that links tourists' destination and destination appeal in literature.

There is no link in the reviewed literature between tourist destinations and ethics. The study suggests that there is some link that exists between tourist destinations and ethics. The suggestion is based on the premise that tourists make conscious and ethical destinations to visit certain places. The destinations also offer conscious and ethical offers in return to their visitors. Ethics also becomes subjective because some tourists intentionally avoid specific destinations for ethical, moral, or religious reasons. For example, in South Africa, there is an event called Sexpo for sex, and some tourists may find it dehumanising and offensive. However, for some, it is an opportunity to achieve soul-soothing happiness. Another example is that some tourists may not visit Muslim pilgrims annually, whereas some tourists who may be Christians may not find it ethical to visit such places. Corroborating the study findings, a study found that

emotionally charged experiences are powerful motivators of consumers' ethical choices (Malone, S. et al., 2014). Further to the aforesaid, hedonism plays a role in carefully considering and reinforcing current and intended ethical revisit intention behaviour. The study calls for further research in connecting the keywords tourist destination and ethics to fill the gap that has been discovered in this study.

### ***Connectivity between tourism and other keywords and implications thereof***

Tourism became the third most common term of what was written between climate change and tourism and destination marketing. The keyword tourism occurs 17 times with a total link strength of two hundred and thirty-eight with two hundred and nineteen links. This proves the popularity of the link between the keyword tourism and the rest of the keywords in the climate change and destination marketing context. The keyword tourism is mainly linked to climate change out of all keywords on the map. It makes logical sense for such links to exist because tourism is highly impacted by climate change and is also vulnerable to it. The study finding is corroborated by a similar study, which stipulated that tourism contributes greatly to greenhouse emissions, and curbing greenhouse gas emissions by tourism sector emissions is highly encouraged (One Planet Sustainable Tourism Programme, 2021).

The keyword tourism is also closely connected with tourist destinations. Research intertwining the two keywords is necessary because the arrival of tourists in the tourist destination is usually accelerated by tourism marketing. Tourism is a process of moving from one place to another destination for different reasons, which could be for leisure, business, religion, sports, meetings, conferences, and events. A similar finding further corroborates the connection between the two keywords: one billion tourists travel to international destinations annually with a significant Gross Domestic Product of 9.8 percent globally (Palutikof, 2021).

In the context of destination marketing and climate change, there is no connection between leisure traffic, destination appeal, product diversification, cluster analysis, and the Baltic region and Bangladesh. Very little connection in terms of occurrence appears between destination marketing, tourism, and destination marketing about aquaculture, behavioral change, COVID-19, and beaches. In order of most occurrences, climate change is the most mentioned, followed by tourism and tourism management. Climate change and destination marketing studies have centred discussions around adaptation, decision-making, economics, sea level, recreational activity, challenges, coping mechanisms, beaches, and environmental stress. Regarding climate and destination marketing, there have been discussions about human elements that have been on females, age, age of 80 and older, over-tourism, and sustainable tourism. Less research has been discussed on the developing world, Africa included, about climate change and destination marketing.

The keyword tourism should be justifiably central between climate change and destination marketing. The reasons are crystal clear because for destination marketing and management to blossom it will be hinged on promoting tourism domestically and internationally. On the other end, climate change directly affects tourism due to tourist attitude changes and shifting motives also of visiting certain destinations. If certain weather conditions are favourable to tourists and such weather conditions change, it will directly affect the revisiting intentions of tourists. Tourists visit destinations due to the marketing efforts by destinations' processes and activities that are peculiar to their destinations, which should be properly coordinated and unique for tourism to flourish.

### **Conclusion**

There is an interconnectedness between climate change, tourism, and destination marketing. Documents on the Scopus database that link the three keywords amount to sixty-four. From

2005 to 2023, documents discussing the three constructs are few and far between on Scopus. Documents published are mainly from Europe, which proves the dependency syndrome of Africans and Asians on Western countries' knowledge and ideas flowing from the North to the South. The same can be proved on documents by affiliation whereby the European Universities dominate the space in publications with only 2 documents from Africa, South Africa, University of Johannesburg, whilst other continents did not contribute anything like Asia and could not make it in the top ten publishing Universities or countries on the three dimensions fused together. The same sentiment of the authors from the North dominating research on the three constructs leaves Africa and other continents as mere consumers of knowledge and not creators of knowledge. Business management and social sciences research experts dominate the research on the three constructs globally, while little comes from the Environment and Sciences experts regarding the three keywords exploration in a single study, which could be of concern because environmentalists and scientists could be leading the trail in this regard because climate change could be their forte. Areas of consensus among the three keywords exhibited by the network visualization on VOSviewer prove the indispensability of the dimensions under discussion. Researchers have given some areas connected little attention. Some keywords not connected at all to each of the three constructs prove that no research has been done on them, yet they are relevant and deserve much research, which proves a huge knowledge gap to be filled. There are several research gaps and research agendas to be set and pursued by academics globally from the study findings, discussions, and implications alluded to in the study.

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