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Sustainability approaches used by the most cited authors in the web of science

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Abstract

Sustainability has permeated political, organizational and social debates for a long time. This concept has evolved and for more than thirty years has included the debate on the balance between the social, economic and environmental dimensions. Given this context, we sought to find out which approach is given to the term "sustainability" in the Web of Science in the period from 2020 to 2023. For this purpose, a systematic review of the literature was carried out using the Methodi Ordinatio. For data analysis, Vosviewer® software was used for network analysis and Nvivo® for content analysis. As a result, it was observed that the articles indicate an imbalance of concern between the three dimensions, with the prevalence of the environmental dimension. This can be explained by the countries of origin of the main authors. It is concluded that, paradoxically, more environmental results can be obtained if the debate is balanced between the dimensions and the needs of the most different territories.

Keywords: Sustainability, Sustainable Development, Economic, Social and Environmental.

Abordagens de sustentabilidade usadas pelos autores mais citados na *web of science*

Resumo

A sustentabilidade permeia debates políticos, organizacionais e sociais desde muito tempo. Este conceito foi evoluindo e há mais de trinta anos inclui o debate do equilíbrio entre as dimensões social, econômica e ambiental. Dado este contexto, buscou-se averiguar qual a abordagem que é dada para o termo "*sustainability*" na Web of Science no período de 2020 a 2023. Para tanto foi feita uma revisão sistemática da literatura utilizando o *Methodi Ordinatio*. Para a análise dos dados foram usados os softwares Vosviewer®, para a análise de redes e Nvivo® para a análise de conteúdo. Como resultado observou-se que os artigos indicam um desequilíbrio de preocupação entre as três dimensões, com a prevalência da dimensão ambiental. Isso pode ser explicado pelos países de origem dos principais autores. Conclui-se que paradoxalmente poderá obter-se mais resultados ambientais, se o debate estiver balanceado entre as dimensões e as necessidades dos mais diferentes territórios.

Palavras-Chave: Sustentabilidade, Desenvolvimento Sustentável, Econômico, Social e Ambiental.

1 Introduction

Sustainability has permeated political, organizational and social debates for a long time. According to Veiga (2005), the discussion about sustainability emerged from environmental engineering and entered other spaces. Today it is present as a watchword in every organization that seeks to act in a more socially responsible way, mitigating the impacts of its production on society. It is also present in political speeches that seek to speak more responsibly about

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development. In other words, these themes are linked today.

Since the advent of underdevelopment, the search for development has become the new gold rush, however, the problems arising from disordered production and consumption soon revealed the resulting environmental problems (ESTEVA, 2010). During environmental issues, questions about social development also emerged, since the equation given between economic growth and development was insufficient, as social problems such as hunger, unemployment and diseases were increasing even in developed economies (VEIGA, 2015).

Development is not the same as economic growth. Economic development is also not enough to guarantee social development and excludes environmental issues from its discussion. From the 1970s onwards, with pressure from environmentalists on the indiscriminate use of limited resources on the planet, sustainable development became a consensus among everyone, so that the concept encompasses economic, environmental, and social issues (ESTEVA, 2010; SEN, 2010; VEIGA, 2015).

The Brundtland Report brings the most widespread concept of sustainable development: "it is the one that meets the needs of the present without compromising the possibility of future generations meeting their own needs". (WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, 1991, p. 2). However, this debate unfolds across different agendas, depending on the social, environmental and economic indicators presented in a given territory. Sustainable development cannot be reduced to just one dimension. This concept summarily refers to development that, according to Veiga (2015, p. 82), "has to do, first and foremost, with the possibility of people living the type of life they choose, and with the provision of instruments and opportunities to make their choices."

People can only in fact choose how to live based on minimum conditions of guaranteed substantive freedoms (SEN, 2010). These are, in other words, minimum conditions of income, education, health, leisure, civil and political rights, right to the environment, etc.. Such guarantees enable individuals to make choices above the subsistence level that allow each subject to take a leading role in the direction of their life, their individual and collective choices.

In this way, sustainable development involves issues that encompass the multiple dimensions of the organization of life in society, including the debate on sustainability. In short, the notion of sustainability went from the "idea of reasonable or responsible use" of resources to the notion of "sustainable income", referring to the idea of the desired sustainable development (VEIGA, 2015).

Considering this history, the objective of this article is to investigate the approach given

to the term “sustainability” in the Web of Science in the period from 2020 to 2023. To achieve this objective, a systematic review of the literature was carried out using the Methodi Ordinatio. For data analysis, Vosviewer® software was used for network analysis and Nvivo® for content analysis. The results demonstrate a strong prevalence of the words “energy”, “emissions”, “environmentally”, “renewables” and “CO^2”, and these aspects are related to the environmental dimension. An average occurrence of the words “economics”, “consumptions”, “models”, “technology”, “industry” and “products” was observed, these words being more linked to the economic dimension. And the low prevalence of the social dimension was notable, with only two words among the twenty most cited, namely “sustained” and “developments”.

This suggests that the debate on the studied platform, in the selected time frame, is not balanced between the Environmental, Economic and Social dimensions. Thus, the article is organized into five sections. The first section is made up of this introduction; section two presents the research methodology; section three presents the articles selected by the Methodi Ordinatio; section four presents the analysis of the articles and their approaches and section five present the final considerations.

2 Methodology

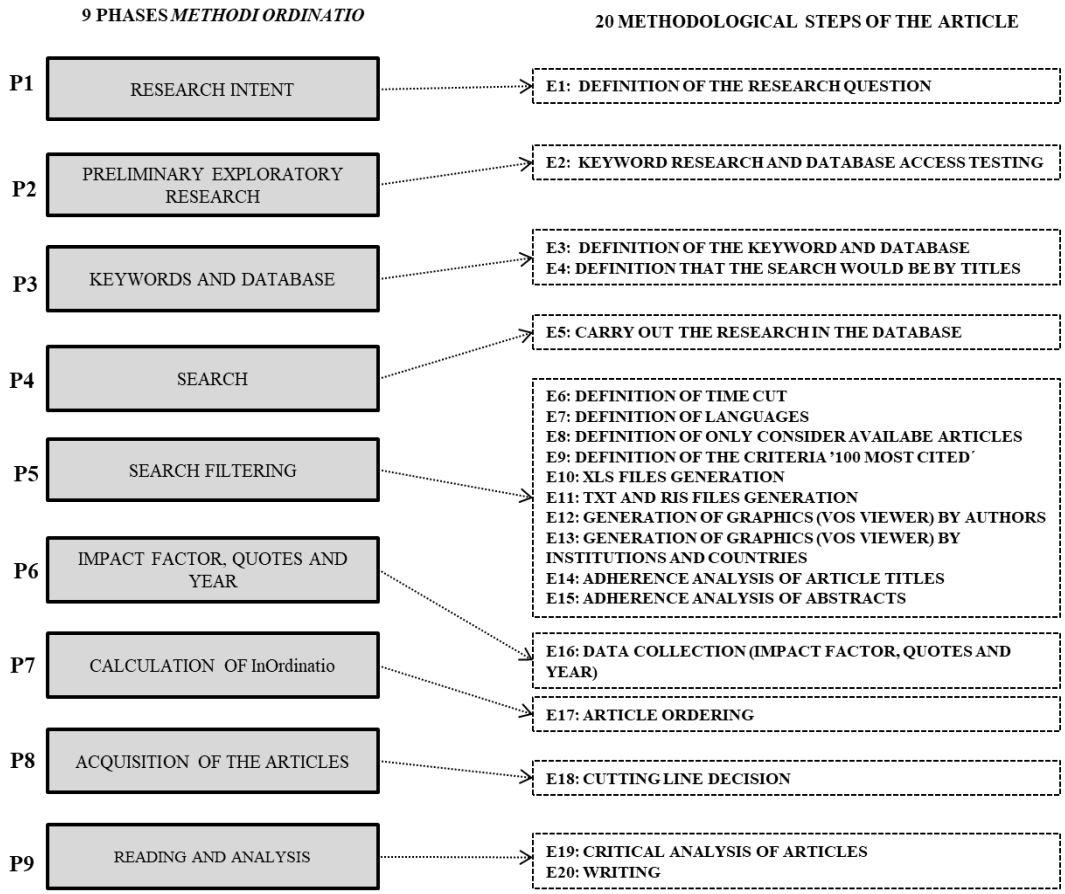
The methodology used to construct this article was a Systematic Literature Review based on the Methodi Ordinatio, which has nine phases (P1 to P9). To execute this article, 20 steps were completed (E1 to E20), as indicated in figure 1.

Literature review is a broad term, it means covering published studies that provide an assessment of literature related to specific subjects (GALVÃO; RICARTE, 2019). It is possible to find a variety of literature analysis articles that present different approaches to the different phases of the development of these studies. There are 14 different types of literature analysis, ranging from an overview to systematic analyzes and meta-analyses (GRANT; BOOTH, 2009). This research is characterized as a systematic review of literature.

According to Pagani, Kovaleski and Resende (2015), Methodi Ordinatio is a type of systematic literature review composed of nine phases: (P1) Establishment of research intention; (P2): Preliminary exploratory research with keywords in the databases; (P3) Definition and combinations of keywords and databases; (P4) Search in databases; (P5) Filtering procedures; (P6) Identification of the Impact Factor, year and number of citations for each article; (P7) Ordering of articles using *InOrdinatio*; (P8) Location of articles in full format; (P9) Reading and systematic

analysis of articles (PAGANI; KOVALESKI; RESENDE, 2015).

Figure 1 - Nine phases of the Methodi Ordinatio in 20 steps in this article



Source: Prepared by the authors.

The formula of the Methodi Ordinatio (PAGANI; KOVALESKI; RESENDE, 2015) is presented here: $InOrdinatio = (Fi / 1000) + \alpha * [10 - (At - Ar)] + (\sum Ci)$

In the formula:
Fi: is the impact factor;
A: is equal to 10;
At is the current year of the systematic review;
Ar: is the year of publication of the article;
Ci: is the number of citations of the article.

With the aforementioned data tabulated in an electronic spreadsheet, the Index Ordinatio (InOrdinatio) is calculated, which in turn makes it possible to order the articles according to their relevance. The figure 1 presents the nine phases (P1 to P9) of the Methodi

Ordinatio that in this study were completed in 20 steps (E1 to E20), as follows:

> (E1) Definition of the research question: 'what approach is given to the term "sustainability" in the Web of Science from 2020 to 2023?'; (E2) Preliminary exploratory research with keywords in the database; (E3) Definition of the keyword: sustainability; (E4) Definition that the search would be by article title; (E5) Carrying out the first search: 16,069 articles found; (E6) Definition of the time cut: 2023, 2022, 2021 and 2020; (E7) Definition of the language sought: English, Spanish and Portuguese; (E8) Definition that only complete articles available in the database would be considered; (E9) Definition of the '100 most cited articles' criterion as a requirement for the search; (E10) Generation of .xls file with 'all available data'; (E11) Generation of .Ris and .txt files; (E12) Generation of graphics by authors in VOSviewer using the Ris file; (E13) Generation of graphs by institution and country in VOSviewer using the txt file; (E14) Analysis of the adherence of article titles to the research question: 66 articles selected; (E15) Analysis of the adherence of article summaries to the research question: 54 articles selected; (E16) With the 54 selected articles available, data were sought for the Methodi Ordinatio: impact factor, year and number of citations for each article; (E17) Ordering of articles using InOrdinatio; (E18) Decision to select articles with an InOrdinatio greater than 220 points, thus identifying 13 articles; (E19) Critical analysis of the 13 selected articles, use of VOSwier® and Nvivo® software for network and content analysis respectively; (E20) Writing of the section presented below where the articles are presented in the sequence indicated by the InOrdinatio ranking.

3 Sustainability in the web of science

Norsrtöm, et al. (2020) are authors of the article that came first in the InOrdinatio ranking entitled "Principles for knowledge co-production in sustainability research", which provides guidance for researchers who intend to work with research co-productions around sustainability. The authors suggest a model with four pillars: i) Context-based: it is important to situate research in context, region and ideas; ii) Pluralism: considering the multiple possibilities for generating knowledge and how to carry out research; iii) Objective orientation: clear and disseminated objectives; iv) Interactivity: having a knowledge creation process based on interaction between the team. The objective of the article is to provide a theoretical and practical framework for the co-production of knowledge in sustainability research, promoting a more participative, inclusive and contextually relevant approach to addressing challenges related to sustainability (NORSTRÖM et al., 2020)

The next authors in the ranking are Bai et al. (2020) with the article "Industry 4.0 technologies assessment: A Sustainability perspective". The publication's central argument is that Industry 4.0, with its diverse and emerging technologies, has a positive impact on sustainability. To this end, the authors present technologies such as: additive manufacturing, artificial intelligence, augmented reality, robotics, big data, blockchain, cloud computing, cybersecurity, drones, mobile technology, nanotechnology, among others. Next, the authors

cross-reference some of these technologies with some of the Sustainable Development Goals (SDGs).

It demonstrates that several technologies are being the basis for new processes and new solutions, which in turn are more structured for sustainability compared to what was available in the classic and traditional model of the 20th century. The authors also demonstrate in graphs the impact of technologies from Economic, Environmental and Social perspectives (BAI et al., 2020).

In third position in In Ordinatio are the authors Freudenreich; Lüdede-Freund and Schaltegger (2019) who present the article entitled “Stakeholder Theory Perspective on Business Models: Value Creation for Sustainability”. The central idea of the article is to discuss Stakeholder Theory as the most appropriate perspective when seeking sustainability.

Along these lines, the authors present a homonymous framework that starts from a common purpose and is divided into five pillars:

> i) Finance; ii) Marketing; iii) R&D and production; iv) Human Resources; and v) Environmental, social and legal issues. For each of these pillars, the authors suggest a kind of balance between the business and the stakeholders involved, which are also five: i) Consumers; ii) Employees; iii) Business partners; iv) Society; and v) Financiers. The authors' idea is that such a framework can serve as a method for conducting business with a view to sustainability (FREUDENREICH; LÜDEKE-FREUND; SCHALTEGGER, 2020).

In fourth place in the ranking, authors Kirikkaleli and Adebayo (2020) appear with the article “Do renewable energy consumption and financial development matter for environmental sustainability? New global evidence”. The article deals with the long-term causal relationship between financial development and the consumption of renewable energy on the issue related to environmental sustainability. The authors perform regression tests and empirically confirm the existence of a relationship between the variables. They suggest that global environmental policy makers enhance the importance and need for investment in renewable energy technologies (KIRIKKALELI; ADEBAYO, 2021).

In fifth position in this systematic review are Bogdanov et al. (2021) who present the article “Low-cost renewable electricity as the key driver of the global energy transition towards sustainability”. In the article, the authors address a series of interesting concepts such as “Exergy”, which according to the authors is the part of energy that can be completely converted into any other form of energy. The argument is that there is an undervaluation of the efficiency and effectiveness of renewable energy sources for the most diverse purposes and that the discourse that fossil energy sources are cheaper can be mitigated if the effectiveness of these

renewable energy sources is considered.

In any case, the proposed debate focuses on the environmental impacts of current non-renewable energy sources and the urgency of changing the energy matrix to mitigate environmental impacts. Thus, they suggest a path, especially for countries in the global south, to replace their current energy matrix, among other approaches (BOGDANOV et al., 2021).

In sixth position are Pe'er, Bonn, Bruelheide, et al. (2020) with the article “Action needed for the EU Common Agricultural Policy to address sustainability challenges”. The discussion is about the European Union's Common Agricultural Policy (CAP). Despite admitting that sustainable agriculture is a major global challenge, they consider that the current CAP is, at times, unambitious and may not fulfill its role in making European agriculture sustainable.

As a way to mitigate this problem, they suggest ten points:

> 1) An empirical analysis of the non-linear impacts of ICT (Information and Communication Technologies) trade openness on renewable energy transition, energy efficiency, access to clean cooking fuel and environmental sustainability in South Asia; 2) Provide sufficient support for effective climate change mitigation; 3) Provide sufficient support for biodiversity protection and restoration; 4) Support innovative approaches to design and implement measures addressing environmental challenges; 5) Enhance spatial planning and collaborative implementation and enforcement of landscape-level measures; 6) Require Member States to establish S.M.A.R.T (specific, measurable, ambitious, realistic and time-bound) Targets in their Strategic Plans; 7) Review the set of indicators; 8) Strengthen environmental monitoring and inspection; 9) Identify and address the global impacts of the CAP, especially in the Global South; 10) Improve CAP governance and its reform in terms of transparency, accountability, participation and knowledge absorption.

It is noteworthy that in addition to suggestions for forwarding internal European Union actions and sanctions, Pe’er, Bonn, Bruelheide, et al. (2020) suggest that the European Union assumes a prosumer position, that is, that it uses its purchasing power to stimulate changes in the way agriculture is carried out in countries in the Global South (point 9) as well as support for the installation of new ICTs to support the energy matrix transition in South Asia (point 1). The authors do not mention actions linked to the development of human capital, only sanctions (PE’ER et al., 2020).

The author in seventh position is Murshed (2020), with the article “An empirical analysis of the non-linear impacts of ICT-trade openness on renewable energy transition, energy efficiency, clean cooking fuel access and environmental sustainability in South Asia”. The theme of the article is the scenario of non-renewable fuel consumption in selected countries in South Asia: a) Bangladesh; b) India; c) Pakistan; d) Sri Lanka; e) Nepal; and f) Maldives.

With a series of econometric calculations, the author builds and strengthens the

argument that the consumption of non-renewable energy impacts the objectives of reducing or reversing the climate change scenario, as well as explaining how the adoption of ICTs could be a way to mitigate this process. However, considering that this solution is unlikely for these selected countries, given that they do not have such technologies, the best path could be to facilitate the import of these equipment (which today have a high import tax burden) in order to contribute to the technological transformation of these countries, thus contributing to the global effort against climate change (MURSHED, 2020).

In eighth place in the ranking are the authors Nathaniel, Yalçiner and Bekun (2021) with the article "Assessing the environmental sustainability corridor: Linking natural resources, renewable energy, human capital, and ecological footprint in BRICS". The authors focus their studies on the BRICS – Brazil, Russia, India, China and South Africa (South Africa).

They explain that they chose these countries because they represent 21% of the world's GDP and 41% of the entire population of the planet. They carry out a series of econometric analyzes and correlate: a) ecological footprint; b) natural resources; c) urbanization; d) human capital and other points related to environmental impact and climate change.

The conclusion is that the most significant point for reversing climate change in these countries is investment in the development of human capital and that this can be responsible for implementing public and organizational policies aligned with global standards for reducing and/or reversing climate change in the world. This investment in human capital will enable a "green exploitation" of natural resources, that is, more sustainable (NATHANIEL; YALÇINER; BEKUN, 2021).

The remaining five publications focus on the use of renewable energy and climate change. The publication "A Technical analysis investigating energy sustainability utilizing reliable renewable energy sources to reduce CO2 emissions in a high potential area" by Razmjoo et al. (2021) investigates the potential for using renewable energy in a way that over time guarantees the reduction of air pollution and the supply of sustainable energy to meet future energy needs. It aims to investigate various sustainable hybrid renewable systems for electricity production in Iran.

The research data was collected from the meteorological organization. They carried out a technical-economic evaluation with the HOMER software. The conclusion was that a hybrid energy matrix, consisting of "photovoltaic energy, wind turbine, diesel generator and battery produced the best result with an energy cost of 0.151$/kWh and 15.6% return on investment"

(RAZMJOO et al., 2021, p. 1 - our translation).

In the article “Linking renewable energy, globalization, agriculture, CO2 emissions and ecological footprint in BRIC countries: a sustainability perspective”, Pata (2021) highlights the relationship between agriculture and environmental degradation through causality tests. The results obtained indicate that the generation of renewable energy is directly related to the reduction of environmental degradation. Focusing on the BRIC countries (Brazil, Russia, India and China) the results show that in China and Brazil the use of renewable energy can significantly reduce environmental pollution. However, the same result is not indicated in Russia and India, so these countries must seek differences in their energy generation policies with a view to sustainable development.

According to the article, governments in BRIC countries can reduce environmental pressure by promoting modern agricultural techniques, such as tunnel cultivation and organic production. For the author, “raising farmers’ awareness of environmental issues, rewarding low-carbon agricultural production, preventing forest invasion, encouraging the use of animal fertilizers and providing clean inputs in agricultural activities will help BRIC countries achieve their SDGs” (PATA, 2021, p. 205 - our translation).

Sarkodie et al. (2020), in the article “Mitigating degradation and emissions in China: the role of environmental sustainability, human capital and renewable energy”, present a conceptual tool developed from policies based on the disaggregated use of energy, human capital, trade, income level and exploitation of natural resources. Using statistical analyzes and econometrics, data between 1961 and 2016 were examined. The results show that the consumption of non-renewable energy and human capital are key factors for climate change. The diversification of the energy matrix towards renewable energy is essential for improving environmental quality. (SARKODIE et al., 2020).

The article “Sustainability and development after COVID-19” by Barbier and Burgess (2020) presents possibilities for actions for developing countries to ensure progress towards achieving the 17 SDGs after the COVID-19 pandemic. According to the authors, due to the pandemic, these countries may not obtain financial support from developed countries due to the financial pressure that the period has placed on everyone. However, for the author, it is vitally important that these countries find innovative political mechanisms to achieve the 17 SDGs. They present three possible policies: a fossil fuel subsidy swap to finance clean energy investments and renewable energy dissemination in rural areas; reallocation of irrigation subsidies to improve water supply, sanitation and wastewater infrastructure; and a tropical

carbon tax, which is a tax on fossil fuels that funds natural climate solutions. (BARBIER; BURGESS, 2020, p.1).

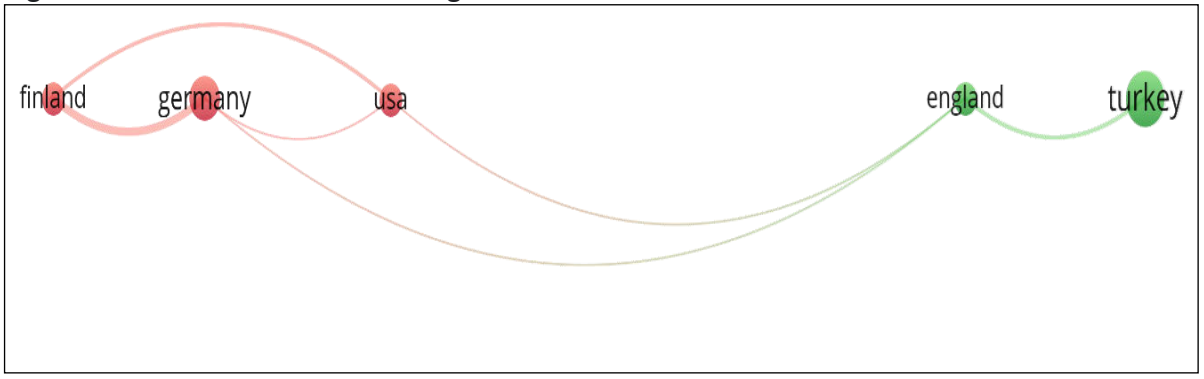
The last publication analyzed, "The criticality of growth, urbanization, electricity and fossil fuel consumption to environmental sustainability in Africa", by Asongu et al. (2020) presents an analysis on the effect of economic growth, the urbanization process, electricity consumption, non-renewable energy consumption and total rent of natural resources on pollutant emissions in Africa during the period 1980–2014. Using statistical methods, the results indicate that there is a positive relationship between these factors and pollutant emissions. The challenge posed to the countries analyzed is finding development policies, urbanization, and energy sources that mitigate environmental impacts and allow for the economic development of these countries (ASONGU et al., 2020).

Given the above, the next section of this article focuses its efforts on analyzing the articles selected by Methodi Ordinatio, using the VOSwier® and Nvivo® software for network and content analysis respectively (phase 9 of the methodology).

4 Discussion and critical analysis

This section presents the analysis of the articles discussed in the previous section. The first analysis expressed in figure 2 relates to the authors' countries of origin, where the prevalence of the Global North (Finland, Germany, USA and England) is perceived, with the participation of Turkey. The generation of the graph in the VOSwier® software was prepared by requesting the permanence of only countries with more than three occurrences.

Figure 2 - Authors' countries of origin



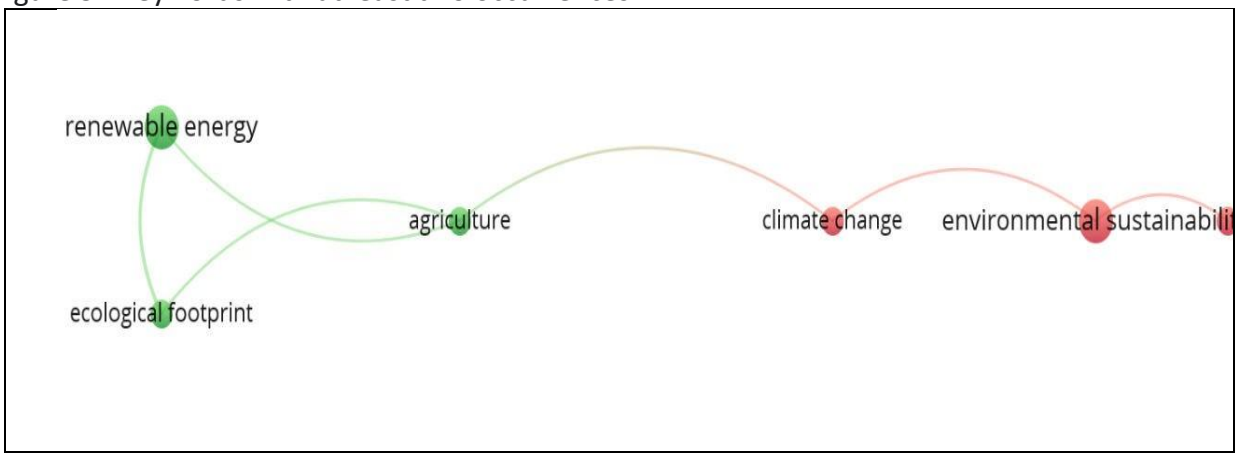
Source: Prepared by the authors using VOSwier® software.

The authors' co-occurrence analysis was carried out using the VOSwier® software. To

this end, it was requested to present authors with at least one occurrence since no author had more than one publication. What was found was that the authors are connected to each other, but there are no authors who position themselves as hubs in the current debate.

All keywords of the 13 articles were also analyzed. To generate this figure, it was decided that the software would present all the keywords mentioned at least once, thus a diversity of words was noticed, which totaled 61 keywords, the most cited being: renewable energy (3), climate change (2), environmental sustainability (3), economic growth (2), sustainability (2), agriculture (2), ecological footprint (2). To refine the analysis, the software was asked to only maintain keywords with at least two occurrences, generating figure 3.

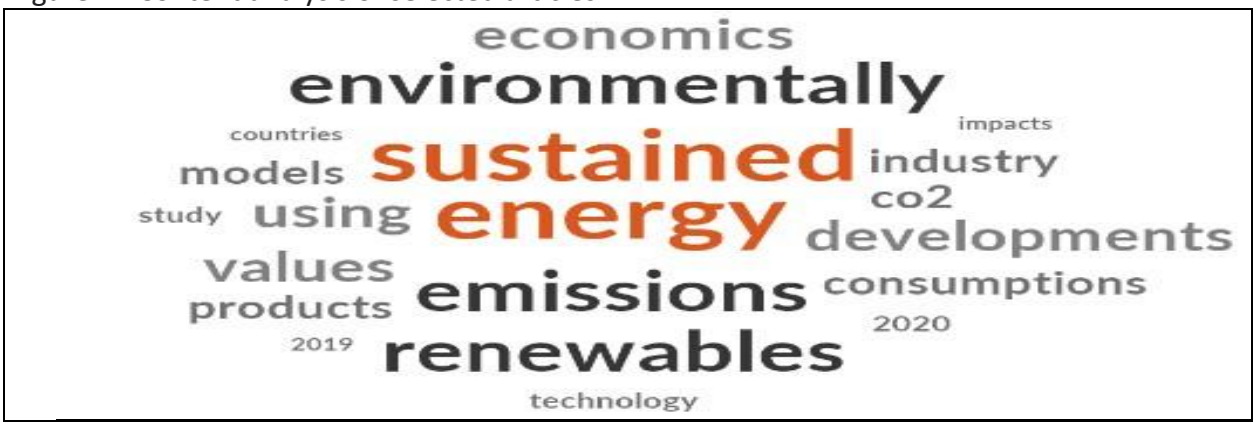
Figure 3 - Keywords with at least two occurrences



Source: Prepared by the authors using VOSwier® software.

Figure 3 shows the prevalence of the terms renewable energy, agriculture and ecological footprint, in addition to the themes climate change and environmental sustainability. To carry out the content analysis of the articles, the NVivo® software was used, in which the entire content of the 13 articles was used, which generated a graph with the 20 most cited words in all articles, as shown in figure 4.

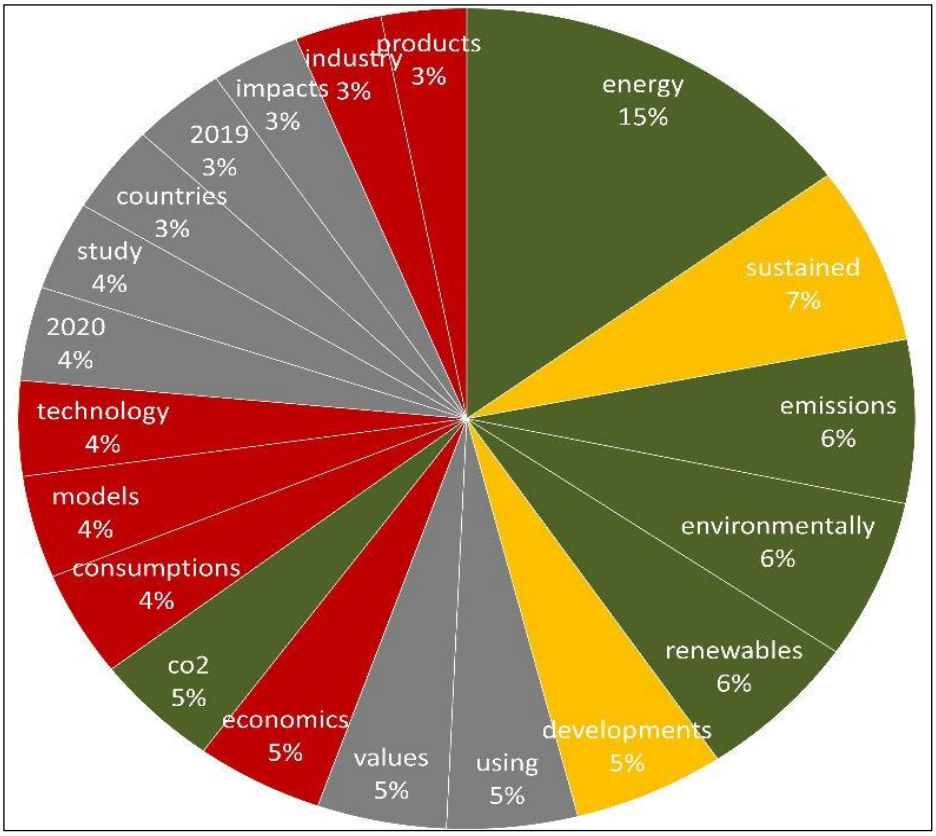
Figure 4 - Content analysis of selected articles



Source: Prepared by the authors using Nvivo® software.

As criteria for creating figure 4, the use of derived words was defined, with at least three letters and limited to the 20 most cited words. The figure shows the frequency of words, with the largest being the most cited, with emphasis on “Energy” and “Sustained”. Next, a new word frequency analysis was carried out using the frequency percentage within the sample, as indicated in figure 5.

Figure 5 - Content analysis in percentages



Source: Own preparation using Nvivo® software.

Figure 5 indicates in percentages which words are most cited in the sample of selected articles. To elucidate the themes and biases most frequently presented in the articles, it was defined that the words “energy”, “emissions”, “environmentally”, renewables” and “CO2” are

correlated with the environmental dimension, totaling 38% of occurrences among the 20 most common words cited. It was then defined that the words “economics”, “consumptions”, “models”, “technology”, “industry” and “products” are correlated with the economic dimension, totaling 23% of occurrences among the 20 most cited words. Finally, the words “sustained” and “developments” were considered correlated with the social dimension, totaling only 12% of occurrences among the 20 most cited words.

The results suggest that the international debate on sustainability in the Web of Science, in the period from 2020 to 2023, is strongly correlated with the environmental dimension, somewhat correlated with the economic dimension and weakly correlated with the social dimension. The debate on sustainability presented highlights the emergence of environmental issues such as the use and generation of renewable energy, reduction of CO^2 emissions and climate change. This debate, although present on the planet, is insufficient to address the other issues inherent to the theme of sustainability within the scope of sustainable development.

Such results, through Sen` (2010) and Veiga´s (2015) optics, indicate that there is an emergency in thinking about social, environmental and economic issues together, as they are interdependent. Some texts presented, such as Asongu et al. (2020) and Barbier; Burgess (2020) indicate necessary actions for developing countries to reduce pollutants and encourage the generation of renewable energy. But in general, they do not cover the topic of sustainability in its social and economic dimension. According to Sen (2010), the expansion of substantive freedoms, such as access to quality education, which directly implies an increase in income, allows people to develop. In this sense, the expansion of social and economic freedoms could lead to better actions aimed at environmental issues.

Corroborating this analysis, authors such as Sarkodie et al. (2020) and Nathaniel; Yalçiner; Bekun (2021) relate the development of human capital to the concern and search for climate change, pollutant emissions and the generation of renewable energy. The generation of human capital is linked to access to quality education, leisure, culture, health, substantive freedoms highlighted by Sen (2010).

Finally, attention is drawn to the approach to sustainability evidenced in the results, focused almost exclusively on environmental issues, which, being fundamental to achieving sustainable development, could be added in other research through social and economic approaches, encompassing other demands and interests.

5 Final considerations

This article sets out to investigate how the term sustainability is approached in the Web of Science, from 2020 to 2023. The results found, in general, indicate that this topic is strongly correlated with the environmental dimension, somewhat correlated with the economic and weakly correlated with the social dimension. This is an interesting fact in the view of the authors of this article, given that the international debate on sustainability often correlates at least the same level of importance with the social, economic and environmental dimensions. The Brundtland report (1987) already stated that the debate refers to meeting the needs of the present, without affecting the meeting of future needs, and the approach of the authors of this article understands that the social and economic dimensions are needs of the Global South.

In this sense, the main conclusions of this research rest on the fact that the debate is unbalanced in the three dimensions. Some articles made a strong appeal for nations in the Global South to make commitments to the development of the environmental dimension. However, the authors did not make evident a commitment by the nations of the Global North to the economic and social dimensions of the Global South. In other words, given the analysis of the authors' countries of origin, it is possible that the debate is oriented to the needs of countries in the Global North and not necessarily guided by at least the three basic elements of sustainability, namely: social, economic and environmental.

This work does not claim to be conclusive, but seeks to debate the topic, in light of the concept of balance between social, economic and environmental aspects. In order to delve deeper into the topic, it would be interesting to carry out an analysis including a longer time frame, as well as other databases, to investigate the development of the themes.

It is believed that the article contributes to indicating paths for the debate on the topic of sustainability and sustainable development based on the need for balance between the social, economic and environmental dimensions. This article also contributes to the professional field by remembering that the sustainability debate ends up being insufficient if it is limited to the environmental dimension. It is suggested as a new possibility for study to analyze only articles originating from the Global South, or at least Brazilian, to find out how the topic is treated, and whether there is in fact an analysis bias depending on the origin of the authors.

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