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SUSTAINABLE DEVELOPMENT GOALS - SDG: AN ANALYSIS OF THE MAIN CHARACTERISTICS OF PUBLICATIONS

Objetivos de desenvolvimento sustentável - ODS: uma análise das principais características das publicações

Valéria Garlet[1], Fernando Vieira Cezar [1], Thiago Antônio Beuron[2], Lucas Veiga Ávila[1], Lúcia Rejane da Rosa Gama Madruga[1]
1 Federal University of Santa Maria, Brazil
2 Federal University of Pampa, Brazil
E-mail: valeriagarlet@yahoo.co.br, fernandovcezar@gmail.com, tbeuron@gmail.com, lucas.avila@ufsm.br, luciagama827@gmail.com

ABSTRACT

This study analyzes the publications from the last five years (2015-2019) on the SDGs in the Web of Science (WOS) database in order to identify the state of the art of the theme and emerging topics that may be the strategic drivers of the production and application of science in different fields of knowledge. Our approach was both qualitative and quantitative and aimed at qualifying and quantifying certain variables related to the scientific literature on the broad subject the sustainable development goals - SDGs. The number of published pieces in the WOS focusing in SDGs issues during the period from 2015 to 2019 was 10.725. The main results of our survey highlight the ecology of environmental sciences, science and technology, engineering, business economics, fuel energy, agriculture, social sciences, educational research, computer science and chemistry areas as including the greatest number of publications. The results of the hot topics are encouraging for the subject studied. 13 areas are considered to be very important, which have indicators higher than m> 2, being considered top topics (areas of international recognition and with a consolidated field of study) which are cited: development studies, environmental sciences, business, urban studies, water resources, energy fuels, environmental studies, ecology, economics, engineering environmental, education educational research, and international relations. There are some measures that can be implemented by Universities about SDGs, in order to address the current theme in teaching, projects, research and actions, in order to allow motivation and interest. With that, countries are allowed to improve their rankings.

Keywords: Sustainable Development Goals, Sustainability, Publications.

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OBJETIVOS DE DESENVOLVIMENTO SUSTENTÁVEL - ODS: UMA ANÁLISE DAS PRINCIPAIS CARACTERÍSTICAS DAS PUBLICAÇÕES

Sustainable development goals - SDG: *an analysis of the main characteristics of publications*

Valéria Garlet[1], Fernando Vieira Cezar[1], Thiago Antônio Beuron[2], Lucas Veiga Ávila[1], Lúcia Rejane da Rosa Gama Madruga [1]
1 Federal University of Santa Maria, Brazil,
2 Federal University of Pampa, Brazil
E-mail: valeriagarlet@yahoo.co.br, fernandovcezar@gmail.com, tbeuron@gmail.com, lucas.avila@ufsm.br, luciagama827@gmail.com

RESUMO

Este estudo analisa as publicações dos últimos cinco anos (2015-2019) sobre a base de dados ODS na Web of Science (WOS) a fim de identificar o estado da arte do tema e tópicos emergentes que podem ser os direcionadores estratégicos da produção e aplicação da ciência nas diferentes áreas do conhecimento. Nossa abordagem foi qualitativa e quantitativa e teve como objetivo qualificar e quantificar certas variáveis relacionadas à literatura científica sobre o amplo tema dos objetivos de desenvolvimento sustentável - ODS. O número de artigos publicados na WOS com foco em questões de ODS durante o período de 2015 a 2019 foi de 10,725. Os principais resultados de nossa pesquisa destacam a ecologia das ciências ambientais, ciência e tecnologia, engenharia, economia empresarial, energia de combustível, agricultura, ciências sociais, pesquisa educacional, ciência da computação e áreas de química como incluindo o maior número de publicações. Os resultados dos temas quentes são animadores para o assunto estudado. São consideradas muito importantes 13 áreas, as quais apresentam indicadores superiores a m> 2, sendo considerados tópicos prioritários (áreas de reconhecimento internacional e com um campo de estudo consolidado) que são citados: estudos de desenvolvimento, ciências ambientais, negócios, estudos urbanos, recursos hídricos, combustíveis energéticos, estudos ambientais, ecologia, economia, engenharia ambiental, educação, pesquisa educacional e relações internacionais. Existem algumas medidas que podem ser implementadas pelas Universidades sobre os ODS, de forma a abordar a temática atual no ensino, projetos, investigação e ações, de forma a permitir motivação e interesse. Com isso, os países podem melhorar suas classificações.

Palavras-chave: Objetivos de Desenvolvimento Sustentável, Sustentabilidade, Publicações.

INTRODUCTION

The need to seek sustainability and sustainable development is increasingly clear: "a fair environmental balance needs to be thought and developed in favor of human life with dignity and for the benefit of the entire community, which longs for better environmental conditions" (Gomes; Ferreira, 2018, p. 157). In 1968 was considered a milestone in debates on the environment due to the birth of the Club of Rome with the aim of discussing problems and seeking solutions in the social, economic, political and natural spheres; the decision of the United Nations (UN) to hold a conference on the environment; and because UNESCO has promoted a conference on conservation and rational use of Biosphere resources (Dias; Cassar; Zavaglia, 2003).

In summary, the following were also important: establishment of the concept of sustainable development in the 1980 (WCED, 1991), in 1992, which sought protection of the environment, social justice and economic efficiency, the Kyoto Protocol in 2005 that sought to reduce the emission of gases that increase the greenhouse effect, and, more recently, the 2030 Agenda of 2015 that Protocol 17 Sustainable Development Goals (SDGs) to the world (UN, 2015).

Stafford-Smith et al. (2017) highlight the need for interconnections in order to promote synergy in pursuit of achieving the SDG. There must be a connection between sectors (finance, agriculture, energy, transport, trade, politics), social actors (authorities, government, agencies, private sector, civil society), and low, middle and high income countries. The authors point out that, in the area of finance, investments are necessary for the development of markets; in the area of technology, innovations are important for the generation of knowledge and for sustainable development; it is essential to train and qualify all sectors of society in search of sustainability; in the area of trade, it is important to ensure that products and services suitable for sustainable development are marketed and consumed; it is essential to have policies consistent with sustainable development; and partnerships between sectors and actors in the search for the SDGs, based on data, indicators and monitoring of variables between countries, sectors and actors.

Ávila et al. (2018) highlight that the world of organizations has been transformed by globalization, information technology and the requirement to incorporate sustainability in the three dimensions (economic, environmental and social) in their management, considering that people, armed with an awareness pro-sustainability, will prioritize the use of services and products that are only from organizations concerned with the future of generations.

Roma (2019) highlights that the biggest challenge is that the SDGs are internalized and internalized in order to ensure that they are potential drivers of sustainable development and that they materialize effectively, bringing the expected benefits to society as suggested by the 2030 Agenda: "to achieve sustainability, it is necessary to seek a development model based on adequate bases, paying attention to social, political and economic demands, in a balanced way and without violating human rights "(Silva; Adolfo; Carvalho; 2015, p. 5) and to for this model to be realized, it is necessary that the public authorities define policies and programs based on sustainability, and that they count on the commitment of all social actors in the search for the SDGs.

It is perceived that it is time to understand that "the future is a construction that exists primarily in the agents and that is the cause and consequence of their relationships. It doesn't just happen at any given time. The year 2030 has already begun. The future is conceived in reflection, and to reflect is to act" (Okado; Quinelli, 2016, p. 125). Wandelli et al. (2018) highlight that the sustainable development that is aimed at must be promoted through policies that encompass the tripod of sustainability (social, economic and environmental).

The search for sustainability is a challenge for society, it needs to be discussed and reflected by all segments of life, as it is based on sustainability that goals and bases for development are proposed in all areas: "sustainability includes environmental requirements, economic, social and cultural in which the human being is the center, as this is the foundation of any and all sustainability" (Pinto, et al., 2018, p. 245).

As a challenge, Correa and Ashley (2018) highlight that the search for sustainable development is not yet felt, taught and learned in everyday actions, even though it is present in agreements, projects, curricula and laws; the challenge of sustainable development is still composed of advances and returns, agreements and challenges, and that plans and projects point to practices that are often at odds with what it really is to be sustainable. Sustainable energy is often addressed, but local energy sources are not sustainable; urban mobility is commented on, but there are no effective policies for urban and sustainable accessibility; few higher education courses bring sustainability to

the agenda, and, with this deficit, there is no progress on the theme in a transversal way as is necessary for there to be an understanding of the SDGs and sustainability and that these objectives are really implemented in society.

Kumar, Kumar and Vivekadhish (2016) emphasize four main challenges that need to be faced in order to achieve the SDGs: high cost of achieving some SDGs; the maintenance of international peace and stability is essential for development; measure progress using indicators; and responsibility for the SDGs at all levels.

Leal Filho et al. (2017) mention that the SDG proposal portrays an opportunity to reformulate sustainability research, since the principles and actions of sustainable development are the basis not only taking into account the political approach, but the well-being of communities and businesses around the world. For the authors, sustainable development is a long-term demand, involving the preservation of the physical environment, economic efficiency and social equity. When rethinking sustainability research, it also seeks to integrate it with existing policies, contributing to the fulfillment of the SDGs.

Still, the authors propose to increase the interdisciplinary and transdisciplinary character of sustainability research to seek solutions for the needs of society; the development of research at the local level on sustainability to understand and decide on the impacts of local decisions at a broader level; the approach of research on sustainability to society, so that it can better direct the research agenda on the subject; intensifying the communication of research results to stakeholders and stakeholders; the promotion of governance and means that link scientific advances to policy formulation; collaboration between educational organizations to promote research on sustainability and innovation; career incentives for scientists and stakeholders to be actively involved in all phases of research.

The SDGs consist of a theme that cuts across all areas of human life, from water, garbage, technology, human rights, the performance of organizations (mainly organizations and institutions linked to the context of formal and informal education as drivers of the knowledge), science, politics, economics, health, environment, the planet, climate change, interpersonal relationships, governments, freedoms, responsibilities, cities, mobility, partnerships and cooperation. Taking into account the highlight of the SDG theme in the current context, five years ago from the 2030 Agenda proposal, and considering that humanity has ten years to reach the objectives and goals of this Agenda, this paper sought to analyze the publications of articles from the last five years on the SDGs in the Web Of Science (WOS) database in order to identify the state of the art of the theme and emerging topics that may be the strategic drivers of the production and application of science in different fields of knowledge. The following were identified: the total number of publications, the number of publications per year, the number of publications countries, by language and thematic areas. In addition, hot topics were analyzed.

1 SUSTAINABLE DEVELOPMENT GOALS (SDG)

The 2030 Agenda presents a commitment to the pursuit of sustainable development in the world, also encompassing sustainability. This Agenda was devised by heads of state and government and high representatives, was based on the Universal Declaration of Human Rights, and was proposed by the UN. In the 2030 Agenda, the 17 SDGs cover crucial areas such as People, Planet, Prosperity, Peace and Global Partnership for Sustainable Development.

Figure 1: Sustainable Development Goals

Source: UN (2015).

The 17 SDGs represented in figure 1 demonstrate mainly a commitment to the search for a better environment for people, without hunger, poverty and inequality; protection of the environment, responsible consumption, sustainable management and production; economic, social and technological prosperity, respect for nature; the promotion of peace, justice and inclusion in society; the participation of all, countries and people, in implementing the 2030 Agenda. The SDGs involve the set of aspects of human life and development: health, education, environment, peace, justice, security and equality (Brundtland, 2019). The construction of a sustainable society depends on the action of all: government with strict laws, adequate supervision of institutions to preserve natural resources and the commitment of all citizens (Zarif; Karam; Caproni, 2018).

Actions focused on sustainability may seem, at first, a high investment. However, it is necessary to change the thinking and understand that the return can occur in the medium and long term, and that the planned and implemented actions will be rooted in the brand and the business, with a high probability of having a lasting effect, generating visibility and reducing the impact. leaving a positive legacy for the next generations (Claro; Claro, 2014). According to Silva, Adolfo and Carvalho (2015, p. 6), there is an urgent need to rethink "the process of exploiting and using natural resources as a basic condition for maintaining one's own life and housing on Earth. In this sense, it is no longer a question of choices, but of necessity regarding the form of use and access to sources of natural resources". Science and technology are fundamental for development based on sustainability, and that "science and its constant evolution has become a fundamental resource for the generation of wealth, for the reduction of social inequalities and for the improvement of the quality of life in all its dimensions" (Costa et al., 2018, p. 18).

As the SDGs span many areas, there are several thematic studies that use this cross-cutting theme. Gomes and Ferreira (2018) analyze the SDGs from the perspective of Law, of how the implementation of public policies in Brazil contemplates the SDGs in order to achieve intergenerational and socio-environmental justice, highlighting the social, economic, environmental, ethical and legal-political dimensions of sustainability. Buss et al. (2012) address health and environment governance in favor of sustainable development, including health issues, food security, access to adequate water and sanitation services, in addition to fiscal policies, the search for income equity, energy efficiency, among others, in hope that the health area will be articulated with sustainability as part of the social dimension, and that policies and actions will be defined and implemented at the local and global level. Monteiro (2020) addresses SDG 3, on health and well-being, in Portugal, and highlights that health promotion is essential for the entire 2030 Agenda to be fulfilled.

Sena et al. (2016) analyze the relationship between health and drought in the semiarid region of Brazil, and show that the influences of climate and environmental changes on health are diverse and that they are often not even recognized, which prevents effective action on health of people. Drought is also related to minimal social and economic conditions, which also hinders health promotion, directly affecting the lives of populations, especially

with regard to adequate access to drinking water. The authors suggest that there should be an appropriate management in the context of drought in order to reach the SDGs reach, and that management can be implemented through public policy alliances that plan and prioritize these inequalities and difficulties of people vulnerable to this context. .

Starbird, Norton and Marcus (2016) point out the relationship between family planning and the SDGs. According to the authors, family planning brings benefits to women, families, communities and countries, making a relationship with human rights, gender equality and empowerment, with the impact on the health of the mother, newborn, child and adolescents, and with the training process in the economic, political and environmental context. Family planning can help progress in the five areas of the SDGs:

- People (promotion of human rights, poverty reduction, better nutritional outcomes, prevention of SIDA transmission, education of women and girls, empowerment, gender equality);
- Planet (family planning reduces the effects of population growth on access to water and sanitation, and the effects of deforestation and pathogenic interaction between humans, domestic and wild animals, contributes to the construction of resilient infrastructure, safe cities and sustainable, to reduce the effects of food waste and the production of chemical waste, helps protect marine resources and tackle climate change, and projects that integrate people, health and the environment can help expand access to clean energy and renewable);
- Prosperity (family planning contributes to economic growth);
- Peace (promotion of inclusive societies, meeting the needs of the least favored, family planning contributes to peace and stability);
- Global partnerships (family planning partnerships can help achieve the SDGs).

Menezes and Minillo (2017) emphasize the role of the university in the implementation of the SDGs through research and extension, showing that "the University has enormous potential to contribute and guarantee conditions for the appropriation of the agenda, formulation of policies and development of social technologies for the implementation of the SDGs" (Menezes; Minillo, 2017, p. 1). According to the authors, universities exercise a power of transformation under three aspects: i) by transforming society through knowledge, education and the skills that are developed in people; ii) promoting sustainable development through science, technology and innovation; iii) monitoring and evaluating the progress of the search for the SDGs.

In the same sense, Alves, (2019) studied how the Federal University of Paraíba implements the SDGs in its extension projects, and declared that universities have a commitment to achieving the SDGs, since they are "spaces for the creation and dissemination of qualified knowledge and useful, drivers of technological innovation and development" (ALVES, 2019, p. 95) and can suggest creative and effective resources to help face the challenges and create opportunities and actions to carry out the 2030 Agenda.

Taking into account another aspect, now the economic and the mining area, Cunha and Guedes (2017) relate the SDGs to mining in Itabira (Minas Gerais) and initially consider that it is difficult to think about mineral exploration aimed at sustainable development, and There are four SDGs that permeate this process: SDG 1 (Poverty eradication), SDG 8 (Decent work and economic growth), SDG 9 (Industry, Innovation and Infrastructure) and SDG 17 (Partnerships and means of implementation). The question that remains is: if mineral reserves are depleted, how will the city guarantee its socioeconomic development? To achieve solutions, a local, regional and national effort is required, and economic diversification is a strategy for sustainable development.

Buse and Hawkes (2015) analyze the SDGs from the perspective of health and could see that global health is everyone's concern, and the SDGs propose a universal and equitable approach, which should focus on disease prevention and not only treatment, which one must be concerned with the health of the marginalized, one must promote well-being, one must seek the collaboration of all sectors in the context of health, one must invest in health. The authors also emphasize that the search for the SDGs is an opportunity to connect global health to sustainable development, and that it is necessary to move towards human dignity, equity and sustained well-being, and that, for that, there must be a change in the health paradigm in the world.

Another example of the scope of the SDGs is the work of Santos, Pereira and Fonseca (2017) who dealt with management for emerging and sustainable cities and reinforce that, in order to promote sustainable development, there must be sources of financing for projects and that small and medium-sized cities are contemplated, with the possibility of a union through public consortia.

Deere (2018) addresses gender equality and land distribution in Latin America relating to the SDGs. The author stresses the need for policies aimed at achieving the SDG goals related to gender equality and land distribution, and that indicators of legal rights to land and female land ownership and consistent information about these rights are needed.

Albareda-Tiana, Vidal-Raméntol and Fernández-Morilla (2018) analyzed the principles and practices of sustainable development linked to the SDGs in a university curriculum at the Universidad Internacional da Cataluña, emphasizing challenges and opportunities for the future of students and the university community in what refers to the SDGs. The authors point out that the university is an institution committed to respecting human beings and defending human rights. Thus, in order to promote a culture for sustainability and integral human development, the SDGs must be incorporated into university curricula. The implementation of curricula that encompass the SDGs is important to generate synergy between the sectors of the university and between society and the university.

In general, it is clear that the SDGs are a cross-cutting theme, covering all areas of expertise and knowledge, from health, safety, mobility, urban planning, concern for the environment, people, the economy, with the future, and for the SDGs to be really implemented, it is necessary to involve everyone: nations, countries, governments, through partnerships and the creation and implementation of public policies that really think about how to achieve sustainability in the world. In addition to these actors and pro-sustainability agents, it cannot be forgotten that the scope of the SDGs does not exist only at the macro and collective level; it begins with each individual, because change begins with each one, in the context of the home, work and context of each one, and the commitment to the Planet cannot be expected to be required through laws, regulations or through institution of goals such as the SDGs. It is necessary to develop individual awareness, whether through education, the renewal of cultures or the proposition of effective policies, as there can only be collective collaboration and cooperation for the SDGs if there are individuals capable of acting responsibly in their context.

From the theoretical framework presented, it is understood the need to promote and spread knowledge of studies, ideas, reflections and actions on the SDGs to the scientific community and to the population in general. Thus, the next sections present a global overview of the scientific productions on the SDGs through the search engines of the Web of Science database.

2 METHODOLOGY

To achieve the objective of this article, searches were made in the Web of Science database with the expression “sustainable development goals” in the topic of articles. The following were identified: the total number of publications, the number of publications per year, the number of publications countries, by language and thematic areas. The period analyzed was from 2015 to 2019, covering the year in which the discussion on the SDGs begins and the year before the current one, totaling a period of five years of analysis.

In the Web of Science database, 10,725 articles with this characteristic were found. The data generated by the database were analyzed, and graphs were constructed to exemplify each variable that served as a filter.

In addition, the hot topics of the WOS database were analyzed. After the initial research with the expression sustainable development goals, for which the expression was cross-referenced with 20 thematic sub-areas. After technical analysis of the crossings, between sustainable development goals x 20 sub-areas, the indicators of “h index and the coefficient m” were arrived at, which is calculated by the “h index” divided by the period of time analyzed (5 years), as proposed by Banks (2006). The classification for hot topics occurs through the interpretation of table 1 and defines the topics emerging from this study.

Table 1 – Classification of hot topics

Indicator	Description
Coefficient m	Interpretation
0<m≤0,5	It may be of interest to a small community of researchers
0,5<m≤2	It can become a hot topic
m>2	It is considered a hot topic

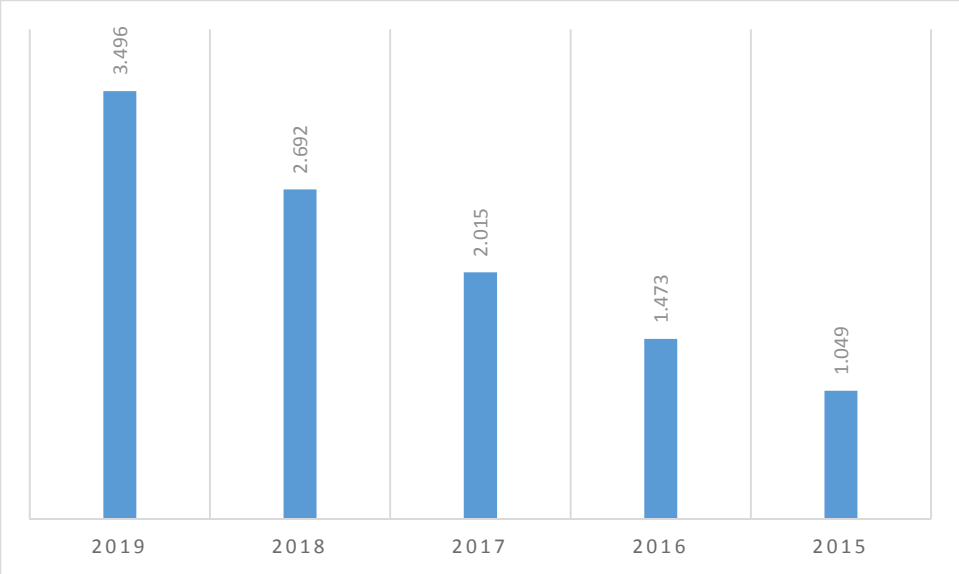
Source: Banks (2006).

The following is an analysis and discussion of the results.

3 RESULTS

In this section, the results of the Web of Science database will be presented. Regarding the number of publications per year, Graph 1 reveals that the year 2015 as the beginning of the publications (preparation of the SDGs by the UN), and 2019 is the year that includes the largest number of publications, followed by the year 2018. It is noticed that there has been a gradual growth, since 2015, in publications on the topic, which may be related to the increase in discussions about the SDGs in the academic environment and/or with proposals related to the fulfillment of the goals established in the 2030 Agenda.

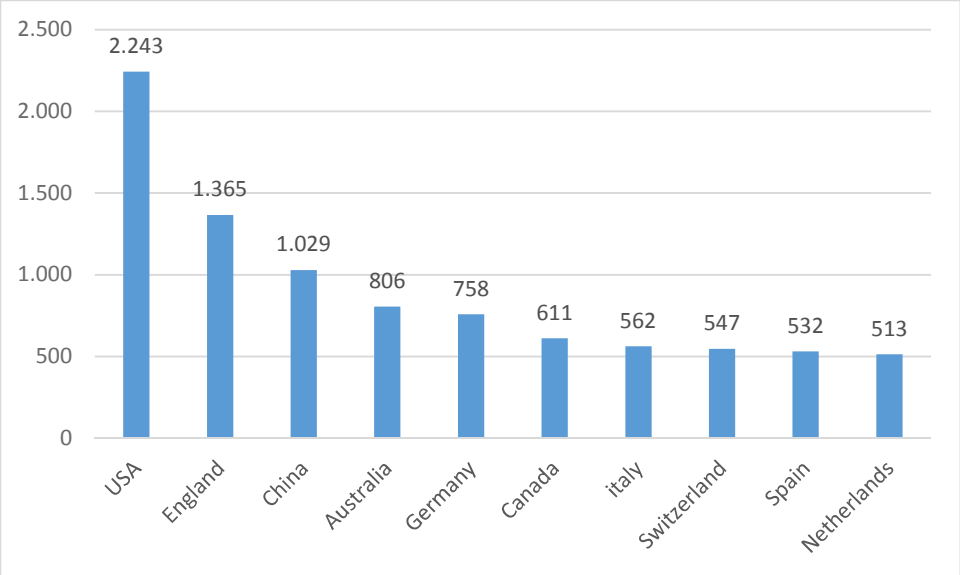
Graph 1 – Publications by year WOS



Source: WOS (2020).

In relation to the countries that publish the most, it can be seen in Graph 2, that the United States is the country that most publishes on the SDGs, followed by England and China. However, in addition to the countries shown in Graph 2, there are several others that publish on the topic, showing that there is concern on all continents in relation to the SDGs.

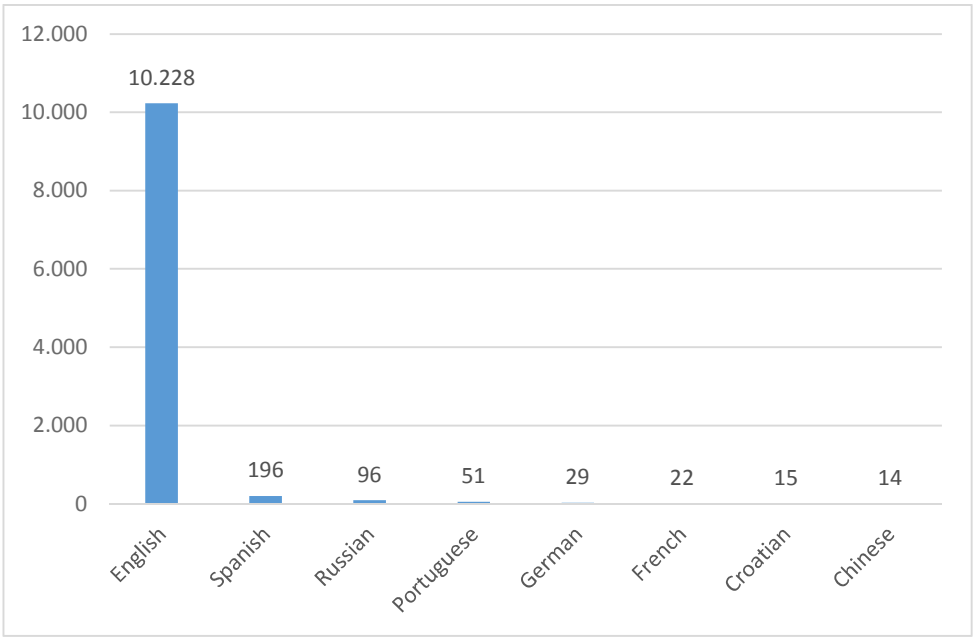
Graph 2 – WOS countries and publications



Source: WOS (2020).

The language that stands out most in publications is English, with 10,228 of the 10,725 publications, that is, with 95.36% of the total publications. However, as can be seen in Graph 3, there are publications in Spanish, Russian, and that Portuguese excels in the scenario of languages other than English, which may portray a scenario in which both Brazil and other countries that have Portuguese as official language are committed to discussing issues related to the SDGs. But, in addition to the languages presented, several others appear in the publications, again indicating a worldwide trend in studying sustainability through the SDGs.

Graph 3 – WOS publishing languages



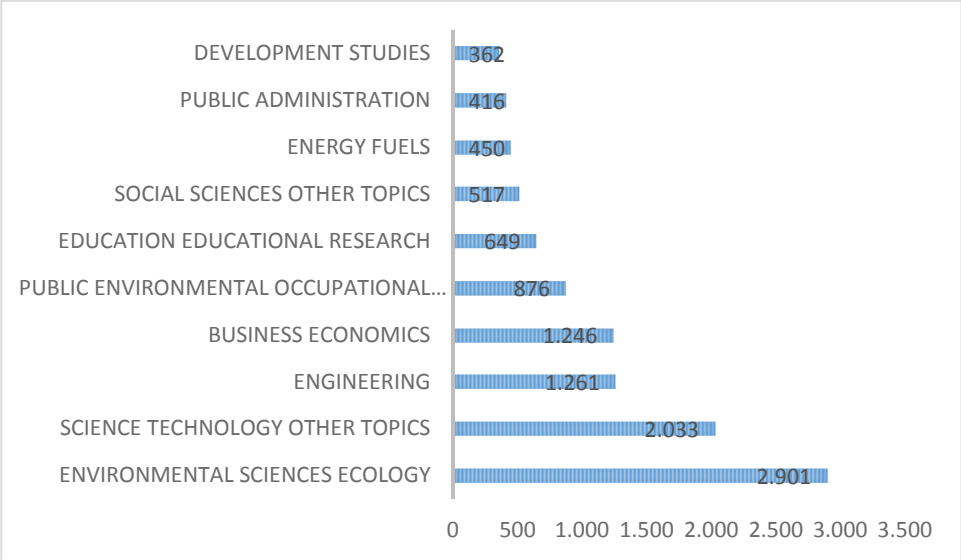
Source: WOS (2020).

Naturally, considering that the United States, England, China and Australia are the countries that most publish about the SDGs, English is the language in which the most articles on the topic are found in the WOS

database, but there is a noticeable effort by other countries, languages and authors to study and present their work in other languages.

In addition to the large number of countries that study and publish about the SDGs in WOS, it is also clear that there are many areas covered by this theme. The areas that most publish, according to Graph 4, are ecology of environmental sciences, science and technology, engineering, business economics, occupational and environmental public health, educational research, social sciences, fuel energy, public administration and development studies. In addition to these, other areas also publish on the SDGs.

Graph 4 – WOS publishing areas



Source: WOS (2020).

When searching the same database with the words "sustainability" or "sustainable development" in the same period from 2015 to 2019, 136,252 published works were found, with 2019 being the year that published the most (35,553 articles). With regard to countries, the United States had the best result (23,750 articles), followed by China (19,621) and England (11,102 articles). However, it is important to note that there are other important countries such as Australia, Germany, Portugal, Sweden that have a large production in growth. We highlight the areas that most publish, are classified: ecology of environmental sciences, science and technology, engineering, business economics, fuel energy, agriculture, social sciences, educational research, computer science, chemistry, etc. However, it is important to note that the theme does not comprise an area of knowledge, but a multidisciplinary field.

In order to understand the level of growth of the thematic areas, as well as the level of importance, an analysis of the hot topics of the publications is presented below. It is an internationally recognized technique, proposed by Banks (2006) that allows to understand the impact, growth and stage of the area in relation to the great theme. Table 2 shows the main characteristics.

Table 2: Emerging topics/Hot topics

Area	Score	H index	Coefficient m
Development studies	362	66	13.2
Management	449	58	11.6
Environmental studies	1435	48	9.6
Business	363	33	6.6
Urban studies	213	33	6.6
Water resources	328	32	6.4
Energy fuels	450	29	5.8
Environmental sciences	2232	27	5.4
Ecology	244	24	4.8
Economics	679	20	4.0
Engineering environmental	502	18	3.6
Education educational research	586	13	2.6
International relations	206	12	2.4
Engineering civil	211	10	2.0
Regional urban planning	323	9	1.8
Green sustainable science technology	1735	8	1.6
Social sciences interdisciplinary	336	6	1.2
Multidisciplinary sciences	286	6	1.2
Public environmental occupational health	836	2	0.4
Medicine general internal	222	0	0

Source: prepared by authors based on WOS.

The results of the hot topics are encouraging for the subject studied. 13 areas are considered to be very important, which have indicators higher than m> 2, being considered top topics (areas of international recognition and with a consolidated field of study) which are cited: development studies, environmental sciences, business, urban studies, water resources, energy fuels, environmental studies, ecology, economics, engineering environmental, education educational research, and international relations. It is also important to point out that the other areas can become hot topics in the course of time, due to the size and growth of 17 SDGs as research topics around the world.

CONCLUSION

This article presented an analysis of the evolution of the international literature on SDGs in a bibliometric context, presented, through the Web of Science, the characteristics of publications on "sustainable development goals". Among the main conclusions, it can be said that the evolution of the theme over time is reflected in quantitative terms, that is, in the increase in the number of scientific works produced over the five years analyzed - since the elaboration of the SDGs in 2015 - as well as in qualitative terms, in relation to the diversity of topics being addressed. In addition, the development of the theoretical framework was outlined from the main papers authors of individual articles and/or in groups, from different regions of the world and that bring contributions from different areas of knowledge that pervade the SDG theme.

This study revealed the existence of gaps. While some countries and regions are well represented in the literature, such as the United States, England and China, among others, others are still few or not mentioned. It should be noted that documents from Latin America and Africa are not strongly cited in the international literature on SDGs.

Regarding emerging topics, it should be noted that the major areas of management, engineering and environmental studies are those that grow the most in terms of the SDGs theme, especially because they are areas

that allow the connection with the application of science both in the labor market and in solving environmental problems, correlating the stage of science in products, services and R&D, allowing the study, reflection and viability in practice, both in the market and in people's lives, of ideas, solutions and commitments with sustainability.

The work done has some limitations. First, the study involved an analysis from a single database and over a period of 5 years. For further analysis, researchers on the subject should continue to monitor and also analyze individual gaps by specific areas involving the 17 SDGs. Another point, not considered, for example, was the treatment of papers and the sustainability issues that involved each study.

Despite these limitations, research is one of the most comprehensive studies of the 17 SDGs, in the literature in the international context, which can be understood from the characteristics presented. In addition to performing a bibliometric analysis using scientific mapping software tools, visualizing the results means that the links and the relationship are clearly understood. In addition, the study brings with it information that is possible to be grouped and investigated, whether from countries, universities, journals, and this information is the starting point for further studies.

There are some measures that can be implemented by Universities, in order to address the current theme in teaching, projects, research and actions, in order to allow motivation and interest. With that, countries are allowed to improve their rankings.

In general, in addition to the data presented that specify the scenario of publications on the SDGs in the scientific basis WOS, it is clear that the commitment to achieving the goals and SDGs proposed by the UN (2015) is constant, comprehensive and necessary. The published articles reveal the interdisciplinarity and transversality of the theme, both as it was addressed in the literature review of this article, and as verified in the thematic areas in which the SDGs are deepened. In addition, it is clear that the SDGs reflect an important field for research and the search for sustainable development.

REFERENCES

Albareda-Tiana, S.; Vidal-Raméntol, S.; Fernández-Morilla, M. Implementing the sustainable development goals at University level. International Journal of Sustainability in Higher Education. V. 19. Nº. 3, p.473-497, 2018.

Alves, J. S. L. O papel da universidade na implementação dos Objetivos de Desenvolvimento Sustentável das Nações Unidas: uma análise dos projetos de extensão da Universidade Federal da Paraíba. João Pessoa, 2019.

Ávila, L. V., et al. Sustainability and education for sustainability: An analysis of publications from the last decade. Environmental Quality Management,1–12, 2018.

Banks, M. G. An extension of the Hirsch Index: Indexing scientific topics and compounds. Scientometrics, Vol. 69, No. 1, p. 161–168, 2006.

Brundtland, G. H. Prologue. in.: Global Sustainable Development Report 2019: The Future is Now – Science for Achieving Sustainable Development. United Nations, New York, 2019.

Buse, K.; Hawkes, S. Health in the sustainable development goals: ready for a paradigm shift? Globalization and Health. V. 11, nº 13, 2015.

Buss, P. M., et al. Governança em saúde e ambiente para o desenvolvimento sustentável. Ciência & Saúde Coletiva. V. 17, nº 6, p. 1479-1491, 2012.

Claro, P. B. O.; Claro, D. P. Sustentabilidade estratégica: existe retorno no longo prazo? R.Adm., São Paulo, v.49, n.2, p.291-306, 2014.

Comissão Mundial sobre Meio Ambiente e Desenvolvimento (CMMAD). Nosso futuro comum. Rio de Janeiro: FGV, 1991.

Correa, M. M.; Ashley, P. A. Desenvolvimento Sustentável, Sustentabilidade, Educação Ambiental e Educação para o Desenvolvimento Sustentável: Reflexões para ensino de graduação. Rev. Eletrônica Mestr. Educ. Ambient. Rio Grande, v. 35, n. 1, p. 92-111, 2018.

Costa, P. et al. Pobreza e desenvolvimento. In.: Erradicação da pobreza: contribuições da Embrapa. Brasília, DF: Embrapa, 2018.

Cunha, A. M. B. M., Guedes, G. B. Mineração e os Objetivos de Desenvolvimento Sustentável: o desafio da diversificação econômica em Itabira (MG). Série Estudos e Documentos, 94. Rio de Janeiro: CETEM/MCTIC, 2017.
Deere, C. D. Objetivos de desenvolvimento sustentável, igualdade de gênero e a distribuição de terra na América Latina. Cadernos pagu, V. 52, e185206, 2018.
Dias, R.; Cassar, M.; Zavaglia, T. Introdução à administração da competitividade à sustentabilidade. Campinas, São Paulo: Alínea, 2003.
Gomes, M. F.; Ferreira, L. J. Políticas públicas e os objetivos do desenvolvimento sustentável. Direito e Desenvolvimento, João Pessoa, v. 9, n. 2, p. 155178, 2018.
Kumar, S.; Kumar, N.; Vivekadhish, S. Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs): Addressing Unfinished Agenda and Strengthening Sustainable Development and Partnership. Indian Journal of Community Medicine.V. 41, nº. 1, 2016.
Leal Filho, W. et al. Reinvigorating the sustainable development research agenda: the role of the sustainable development goals (SDG). International Journal of Sustainable Development & World Ecology. 2017. http://doi.org/10.1080/13504509.2017.1342103
Menezes, H. Z.; Minillo, X. K. Pesquisa e extensão como contribuição da universidade na implementação dos objetivos de desenvolvimento sustentável (ODS) no Brasil. Meridiano 47, V. 8: e18019, 2017.
Monteiro, B. R. Indicadores de monitorização e desempenho nas unidades de saúde familiar e os Objetivos do Desenvolvimento Sustentável na saúde (ODS 3): uma análise comparada em Portugal no período de 2013-2018. Ciênc. saúde coletiva. V. 25, Nº. 4, 2020.
Pinto, M. D. S., et al. Ações de desenvolvimento sustentável em Santa Catarina: foco nas bibliotecas públicas. Inf. & Soc.:Est., João Pessoa, v.28, n.1, p. 245-256, 2018.
Okado, G. H. C; Quinelli, L. Megatendências mundiais 2030 e os Objetivos de Desenvolvimento Sustentável (ODS): uma reflexão preliminar sobre a "nova agenda" das Nações Unidas. Revista Brasileira de Assuntos Regionais e Urbanos. Goiânia, v. 2, n. 2, p. 111-129, 2016.
Organização das Nações Unidas. Transformando Nosso Mundo: A Agenda 2030 para o Desenvolvimento Sustentável. 2015. Traduzido pelo Centro de Informação das Nações Unidas para o Brasil (UNIC Rio), última edição em 13 de outubro de 2015. Disponível em: https://nacoesunidas.org/wp-content/uploads/2015/10/agenda2030-pt-br.pdf . Acesso em: 06/08/2020.
Roma, J. C. Os Objetivos de Desenvolvimento do Milênio e sua transição para os Objetivos de Desenvolvimento Sustentável. Ciência e Cultura, V..71, nº 1, São Paulo, 2019.
Santos, A. H.; Pereira, D. B.; Fonseca, L. A iniciativa cidades emergentes e sustentáveis e os objetivos de desenvolvimento sustentável: Uma análise sobre as relações conceitual, metodológica e institucional. In.: VI Simpósio Internacional de Gestão de Projetos, Inovação e Sustentabilidade e V Encontro Luso-Brasileiro de Estratégia. Anais do VI SINGEP. São Paulo, SP. 2017.
Sena, A. et al. Medindo o invisível: análise dos Objetivos de Desenvolvimento Sustentável em populações expostas à seca. Ciênc. saúde colet. V. 21, nº. 3, 2016.
Silva, D. F.; Adolfo, L. G. S.; Carvalho, S. A. Direitos humanos, desenvolvimento sustentável e sustentabilidade. Revista Eletrônica do Curso de Direito da UFSM. V. 10, nº. 1, 2015.
Stafford-Smith, M. et al. Integration: the key to implementing the Sustainable Development Goals. Sustain Sci. V. 12, p. 911–919, 2017.
Starbird, E.; Norton, M.; Marcus, R. Investing in Family Planning: Key to Achieving the Sustainable Development Goals. Global Health: Science and Practice. V. 4, nº. 2, 2016.
Wandelli, E. V. et al. Os desafios para um país sem pobreza. In.: Erradicação da pobreza: contribuições da Embrapa. Brasília, DF: Embrapa, 2018.
Web Of Science. Principal coleção do Web Of Science. Disponível em: http://apps.webofknowledge.com/summary.do?product=WOS&search_mode=GeneralSearch&doc=1&qid=3&SID=5BN5LBkT9Dd6x8w1cZj. Acesso em 06/09/2020.
Zarif, C.; Karam, C.; Caproni, G. Governança Ambiental. Boletim de Inovação e Sustentabilidade. Pontifícia Universidade Católica de São Paulo. Programa de Pós-Graduação em Administração e Programa de Pós-Graduação em Economia FEA/PUC-SP, São Paulo, 2018.