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**Trends in scientific publishing on sustainability in higher education**

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## Trends in Scientific Publishing on Sustainability in Higher Education

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## Trends in Scientific Publishing on Sustainability in Higher Education

### Abstract

It is widely acknowledged that research and publications in peer reviewed journals offer important metrics in describing the academic outputs of higher education institutions on one hand, and their societal impacts on the other. Peer review is a well-tested method for quality control and has been successfully deployed over many decades in academic journals worldwide. But despite the fact that publications on matters related to sustainable development offer solid evidence of academic activity and excellence, there is a dearth of literature in this field. In order to address this need, the European School of Sustainability Science and Research (ESSSR) and the Inter-University Sustainable Development Research Programme (IUSDRP) have undertaken the World Survey on Sustainability Publishing and Research in Higher Education (WSSSP-HEI). The paper has two main aims. The first is to document and showcase trends in scientific publishing on matters related to sustainable development. The second aim is to contribute to a greater understanding of this rapidly growing field, by describing the latest developments and the role played by some of the journals active in this area. Consistent with these aims, this paper focuses on publications on sustainability in higher education, describes the methods used in the study and some of its results. It can be seen that despite the intrinsic value of research on sustainable development in higher education as a whole, and of publications in this field in particular, such practices are not as widely developed as one could expect. This paper discusses the possible reasons and also outlines some measures via which higher education institutions may be able to take more advantage of the many opportunities that publishing on sustainability offers to them.

Keywords: publications; publish or perish; sustainability articles; sustainability books; higher education

### 1 Introduction: Scientific publications on Sustainability in Higher Education

The engagement of higher education institutions (HEIs) worldwide in sustainable development (SD) was highlighted for the first time in the 1972 Stockholm Declaration on the Human Environment. Ever since, HEIs have engaged in several global initiatives and expressed their commitment to SD in a variety of national and international declarations, agreements and conventions (Lozano et al. 2013). The related actions and results have been increasing and reflect the growing number of publications on the topic of sustainability in higher education.

At the outset, it is relevant to outline some of the work definitions to the main terms deployed in the study. The first term to be defined, namely "sustainability in higher education", refers to matters related to sustainable development in a higher

1 education context. In other words, this terms describes sustainability-related  
2 components of relevance to tertiary education. The second term which should be  
3 defined is "sustainability". Here is it used to describe socio-ecological process via which  
4 a holistic view of nature and a balanced use of natural resouces is advocated, so as to  
5 achieve societal gains.  
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10 Finally, the term "sustainability publishing" is herewith used, in order to focus on  
11 publications whose main subject and focus is on sustainable development. Therefore,  
12 the very specific nature of this paper means that the focus is not on publications on  
13 general issues or matters of wider interest, but quite focused on sustainable  
14 development.  
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19 Sustainability in higher education has a potential influence on the exchange of  
20 information between various aspects of sustainability (Davin 2015). In this sense, the  
21 publications on sustainability in higher education have been deeply involved in themes  
22 related to the role of HEIs: education, campus operations, community  
23 engagement/outreach, and governance (Kapitulcinová et al. 2017).  
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28 Most publications show reports and case studies regarding the initiatives and  
29 activities for sustainability. These initiatives take different applications and cover  
30 multiple areas. Beringer and Adombent (2008) emphasize that sustainability research in  
31 the higher education spectrum is broad, with scientific inquiry taking many different  
32 forms and pathways regarding research paradigms, designs, methodology practical  
33 goals and aspirations. In another study, Caniglia et al. (2017) analyze the transnational  
34 collaboration for sustainability in higher education, identifying the main research  
35 activities as virtual research, single projects multiple projects, and visiting scholars  
36 projects. The authors' research found a low frequency of these activities, and they argue  
37 that it may be due to the low research rate in international partnerships, or because  
38 individual researchers are preferred to institutional partnerships.  
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48 An increasing number of studies point out sustainability in higher education in  
49 general, including discussions about the barriers and challenges for implementing  
50 sustainability in HEIs (Aleixo et al. 2019; Ávila et al. 2017). Some publications cover  
51 conceptual descriptions, practical experiences and parallels among the variety of  
52 sustainability assessment tools (Shriberg 2002; Caeiro et al. 2013), and other  
53 publications address university rankings (Torabian 2019).  
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1           There are several specific research areas within sustainability in HEIs which have  
2 experienced significant growth in the last few years. Three of these areas include the  
3 Living Labs methodology, Climate Change Education, and SDGs implementation.  
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5           A growing focus of research in the field of sustainability in higher education is the  
6 utilization of ‘Living Labs’ which aid HEIs in conducting research that has relevance to  
7 society and which addresses real-world sustainability issues (Leal Filho et al. 2019a).  
8 Research on living labs and sustainability indicates that technological innovation needs  
9 to be interwoven with social and cultural aspects over a long time period in order to  
10 achieve the required outcomes (Von Geibler 2014). The research work is usually  
11 published as case studies. It includes wide-ranging domains in sustainability, such as the  
12 implementation of solar-powered schools (REGSA 2016), the formation and evolution  
13 of university degrees (Mifsud 2014) and the utilization of open and distance learning  
14 (Nicolau et al. 2018).  
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16           Research on the role of HEIs and climate change has increased during the last  
17 decade due to the scientific, social, environmental and political challenges that the  
18 phenomenon has created on the entire biosphere. The most common approach utilized  
19 by HEIs in this area appears to be the embedding of climate change education in their  
20 curricula and the research framework employed to achieve this (Leal Filho et al. 2019b).  
21 A further area of enquiry focuses on students and universities that specialize in climate  
22 change adaptation expertise and mitigation tools (Hill et al. 2019).  
23

24           A relatively new area which is seeing a lot of growth and publications is the study  
25 of the relevance, relationships and possible implementation strategies to achieve the UN  
26 Sustainable Development Goals (SDGs) within HEIs. (Leal Filho 2019c). HEIs are  
27 working to incorporate the ambitious 17 goals into their agendas and policies and to  
28 achieve the SDGs. Due to the multi-stakeholder platform and the participation from  
29 numerous institutions, there are multifaceted opportunities for research and publications  
30 both in work evaluation and in capacity building (Shiel et al. 2015).  
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32           Several HEIs have developed a wide range of initiatives in order to embed  
33 sustainability within their organization. These can be broadly categorized under  
34 education, outreach, research, operations, and governance (Lozano et al. 2015). All  
35 these possibilities are the reasons why publications on sustainability in higher education  
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1 in the databases have increased, both in terms of the scope of the subject and their  
2 geographical range during the last decade.

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5 The analysis of publications shows that the journals which most commonly  
6 published on this subject are the *International Journal of Sustainability in Higher*  
7 *Education*, the *Journal of Cleaner Production*, *Sustainability*, *Environmental Education*  
8 *Research and Quality Management in Higher Education*. Besides those, more than 98  
9 other journals include publications on the subject.

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12 The selection of journals for publication is linked to many factors. Authors are  
13 increasingly publishing in open access journals and are responsive to library funding  
14 initiatives. However, the prestigious closed access journals still range high on the wish-  
15 list of the authors. Another aspect is the Impact Factor of the journal, which indicates  
16 the most extensive exposure and reach of the peer community (Nariani and Fernandez  
17 2012).

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20 Even though publications on issues related to sustainable development offer  
21 substantial evidence of academic activity and excellence, there is a dearth of literature  
22 related to this topic and a lack of studies which give a broad view of worldwide  
23 publications over time. In order to address this need, the European School of  
24 Sustainability Science and Research (ESSSR) and the Inter-University Sustainable  
25 Development Research Program (IUSDRP) have undertaken the World Survey on  
26 Sustainability Publishing in Higher Education (WSSSP-HEI). The objective of this  
27 study was to shed some light on the nature of publications on sustainability, with  
28 information which may enhance both the current and future potentials in this field.

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31 There are three main factors which outline the relevance of this research. The first,  
32 is that the complexity of sustainability publishing makes it sometimes difficult to  
33 understand its true nature and usefulness. Secondly, sustainability publishing entails  
34 environmental, social and economic elements which are broad and difficult to precisely  
35 define. Finally, it encompasses various fields of academic research that aim to address  
36 various issues, from the natural environment and ecosystems, to human behaviour,  
37 financial elements and technical issues, among others.

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40 This paper takes all these items into account. It has two main aims. The first is to  
41 document and showcase trends in scientific publishing on matters related to sustainable  
42 development. The second aim is to contribute to a greater understanding of this rapidly  
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1 growing field, by describing the latest developments and the role played by some of the  
2 journals active in this area. Apart from showcasing some of the trends in scientific  
3 publishing on sustainability in higher education, this paper also presents an overview of  
4 measures via which higher education institutions may be able to take more advantage of  
5 the many opportunities that publishing on sustainability offers to them.  
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## 10 11 **2 The role of peer review in quality assurance in higher education and its** 12 **links with sustainable development** 13 14

15 Peer review requires a collegiate approach between editors, reviewers and authors  
16 that, in the advancement of disciplines and professions, necessitates due courtesy,  
17 empathy and diligence from all (Desselle et al. 2019). The importance of publishing for  
18 tenure, promotion and entry-level positions is recognized by authors (Teele and Thelen  
19 2017), and they regard the contribution of peer reviewers beneficial for developmental  
20 feedback (Atjonen 2019), constructive comments (Roll 2019), and improvements to  
21 manuscript quality, readability and accuracy (Rowley and Sbaffi 2018). Editors across  
22 disciplines agree that the peer review process should critically assess manuscripts for  
23 clarity of thought, objectivity and knowledge (Pollock 2019), quality and  
24 methodological rigor (Roll 2019), novelty and significance (Alexandratos et al. 2017),  
25 and it should demonstrate clear links to the aims and scope of the journal (Pollock 2019;  
26 Alexandratos et al. 2017; Roll 2019). Furthermore, as a measure of performance, editors  
27 see the “publication of peer-reviewed evaluations as the gold standard in reporting  
28 impact” (Font et al. 2019 p. 7).  
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41 However, authors, reviewers and editors are part of a system that protects  
42 opinions, methods and innovations by promoting an ‘in-crowd’ (Frijters and Torgler  
43 2019 p. 1286). Authors have been accused of assessing publication value by impact  
44 factors or prestige, rather than the rigor and quality of each peer reviewed submission  
45 (Schimanski and Alperin 2018). Reviewer expertise and experience are also open to  
46 criticism, being blamed for the exercise of power, gatekeeping, paradigm contradiction  
47 and insufficient expertise (Atjonen 2019), as well as for providing descriptive praise or  
48 criticism, instead of practical guidance for improvement of manuscripts (del Fierro et al.  
49 2018). Even though peer reviewers are impartial experts (Roll 2019), there is  
50 recognition by editors that the peer review process is not without bias (Pollock 2019).  
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1 With single-blind, double-blind, triple-blind, quadruple-blind and open peer review  
2 approaches in use, there is a need for improvement in transparency, accountability,  
3 quality and further research on the peer review process (Haffar et al. 2019).  
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6 Editors rely on reviewer efficacy and effectiveness, but with peer reviewed  
7 scientific outputs continuing to increase, this impacts experienced reviewers (Curtain et  
8 al. 2019). Increasingly multi-tasking, these reviewers are becoming time-challenged,  
9 which leads to delays (Sonne and Alstrup 2019), demotivated, due to repeated rejection  
10 of the same paper (Drvenica et al. 2019), and concerned that quality cannot be  
11 guaranteed as the process is not functioning well (Curtain et al. 2018). Editors are clear  
12 as to the reasons for rejection under peer review, these being factors of poor journal fit,  
13 lack of insight, fatal flaws, or lack of development (Pollock 2019), or factors of error,  
14 language, or lack of explanation or mechanisms (Alexandratos 2017). However, with  
15 the pressure for authors to publish and the high levels of rejection from legitimate  
16 scholarly journals, there is motivation to publish in predatory journals (Alrawadieh  
17 2018), cite rejected papers (Sonne and Alstrup 2019), trade authorship and fake peer  
18 review (FPR) (Rivera 2019).  
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30 The legitimacy and credibility of scientific knowledge is dependent on the quality  
31 process of peer review. If the speed of spurious news delivery via mass and digital  
32 communications impacts negatively on societal knowledge, then this will influence  
33 public health, environmental and medical science (Sonne and Alstrup 2019). A key  
34 strategy of climate science denialism is the creation of fake controversies (Hansson  
35 2017). Therefore, a healthy peer reviewed debate is required not only to advance  
36 knowledge but to highlight errors, inaccuracies and misinformation (Hall et al. 2015a).  
37 This is clearly demonstrated in a debate over several papers on climate change  
38 scepticism: “Climate change and tourism: Time for environmental scepticism” (Shani  
39 and Arad 2014); “No time for smokescreen scepticism: A rejoinder to Shani and Arad”  
40 (Hall et al. 2015a); “There is always time for rational scepticism: Reply to Hall et al”  
41 (Shani and Arad 2015); and “Denying bogus scepticism in climate change and tourism  
42 research” (Hall et al. 2015b). The final response suggests that the “obfuscation of  
43 scientific research” can have long-term negative consequences for policy and action in  
44 relation to climate change (Hall et al. 2015b p. 352). This has a direct impact on the  
45 achievement of the Sustainable Development Goals.  
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1 In consideration of the impact of Higher Education Institutions (HEIs) on  
2 sustainable development, there was a noted increase in publishing between 2005-2017  
3 (Findler et al. 2018). Over half of the 113 peer reviewed journal articles representing the  
4 'state of knowledge' were submitted in the final four years (Findler et al. 2018).  
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6 Furthermore, a fragmented discourse was identified across a wide journal base, although  
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8 the 'Journal of Cleaner Production' and 'International Journal of Sustainability in HE'  
9 had the highest contributions (Findler et al. 2018). Special issues might account for  
10 some of the fragmented discourse: "Evidence for upscaling existing SDGs policies and  
11 programmes in African countries" (Okonofua 2016); "Work-based and vocational  
12 education as catalysts for sustainable development" (Wall and Hindley 2018). However,  
13 movement beyond peer reviewed special issues is needed. The Journal of Sustainable  
14 Tourism's editorial team reflected on how their publication could help authors achieve  
15 more impact with their research, resulting in a decision to "ask all authors to frame their  
16 submitted articles against the Sustainable Development Goals" (Font et al. 2019 p. 9).  
17 Nevertheless, there is overall a lack of strategies that promote international research  
18 (Caniglia et al. 2017) and publication. This paper seeks to contribute to this discussion.  
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### 31 **3 Methodology**

32 In order to assess the trends of scientific publishing on sustainability in Higher  
33 Education, the World Survey on Sustainability Publishing in Higher Education  
34 (WSSSP-HEI) was undertaken. It was divided into two parts: research (I) and  
35 publishing (II). The part on research will be the subject of another paper. Regarding part  
36 (II), the methodological steps included the survey development (definition of questions,  
37 pre-test and preparation of final version), survey dissemination, and data analysis. Each  
38 step is detailed as follows.  
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47 The questionnaire had an initial section on demographic details, enquiring  
48 respondents for details of their universities (name, department, and country) and their  
49 age group, gender and background (Education, Social Sciences, Natural Sciences,  
50 Engineering & Technology and Other). In the sequence, the questions related to the:  
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- 54 a) Number of book chapters on matters related to sustainable development (SD) in  
55 higher education (HE) published by the respondent over the past five years;  
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- 1 b) Number of books on matters related to SD in HE edited or co-edited and  
2 published by the respondent over the past five years;  
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4 c) Number of articles on matters related to SD in HE published by the respondent  
5 in journals which are peer-reviewed and have an impact factor over the past five  
6 years;  
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8 d) Journals in which the respondents usually publish their research (e.g. Journal of  
9 Cleaner Production; Int. J. of Sustainability in Higher Education; Int. J. of  
10 Sustainable Development and World Ecology, among other options);  
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12 e) Areas on SD in HE the papers usually focus on (i.e. Sustainability in higher  
13 education in general, campus greening, teaching issues, research issues);  
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15 f) Main reasons for choosing a journal/book to publish their research.  
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21 The questions were initially prepared by the authors and pre-tested by  
22 researchers and professors working the social and environmental sciences, and with  
23 expertise in sustainability in higher education, hence catering for a wide range of  
24 perspectives. The final survey (Appendix A) was then disseminated online (through  
25 Google Forms) to all members of the Inter-University Sustainable Development  
26 Research Programme (IUSDRP, [https://www.haw-hamburg.de/en/ftz-  
27 nk/programmes/iusdrp.html](https://www.haw-hamburg.de/en/ftz-nk/programmes/iusdrp.html)), a network of universities committed to sustainability. The  
28 Programme has over 140 member universities, and the participants who receive the  
29 communications are members of administrative sectors or researchers/professors  
30 actively involved in matters related to SD in their organizations, thereby ensuring the  
31 reliability and validity of this methodological approach.  
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41 The online survey remained active from June to October, 2019 and collected 103  
42 responses from 43 different countries. Simple descriptive statistics to summarize and  
43 discuss the collected data was used for the analysis. The results will be presented  
44 following each survey section.  
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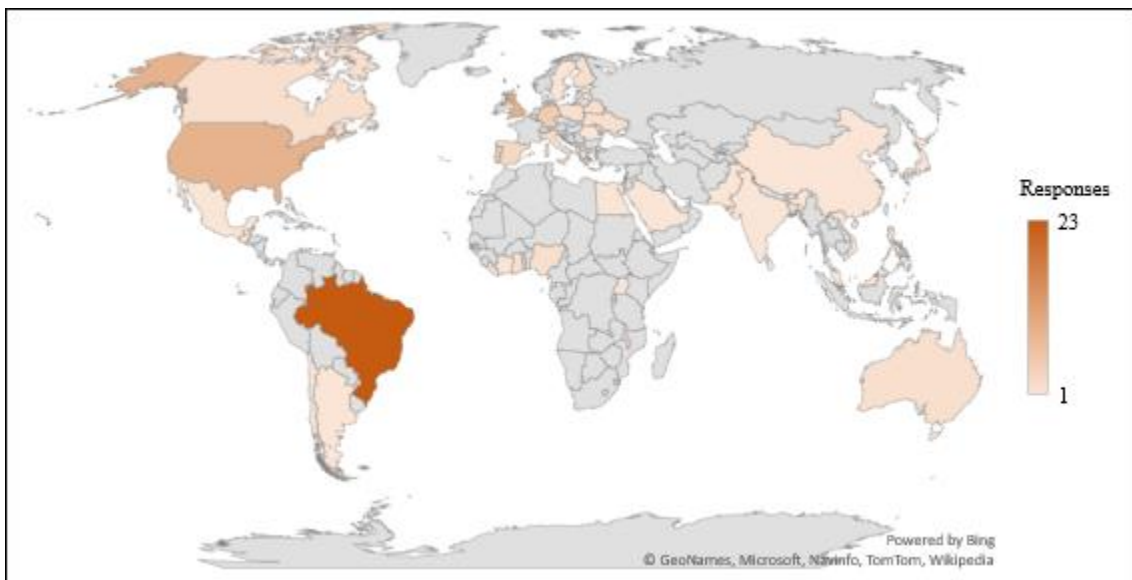
#### 50 **4 Results and Discussion**

51 This section starts by describing the trends in scientific publishing on  
52 sustainability in higher education collected from the worldwide survey. By the end, it  
53 presents an overview of measures that universities and researchers can adopt to improve  
54 their publishing opportunities.  
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3 *4.1 Demographic details*  
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5 Figure 1 shows the 43 countries represented in the study, and the intensity in the  
6 number of responses. From the Americas, the participant countries were Argentina,  
7 Bahamas, Belize, Brazil, Canada, Chile, Guatemala, Mexico and USA; from Africa:  
8 Cote d'Ivoire, Egypt, Ghana, Liberia, Malawi, Nigeria and Uganda; from Asia/Oceania:  
9 Australia, Bangladesh, China, Hong Kong, India, Japan, Malaysia, Pakistan,  
10 Philippines, Saudi Arabia, Sri Lanka and Vietnam; and from Europe the participant  
11 countries were Belarus, Estonia, Finland, Germany, Greece, Italy, Latvia, Malta,  
12 Poland, Portugal, Romania, Spain, Sweden, Ukraine and the UK.  
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20 Figure 1. Countries which participated in the survey (and intensity of the number of  
21 responses)  
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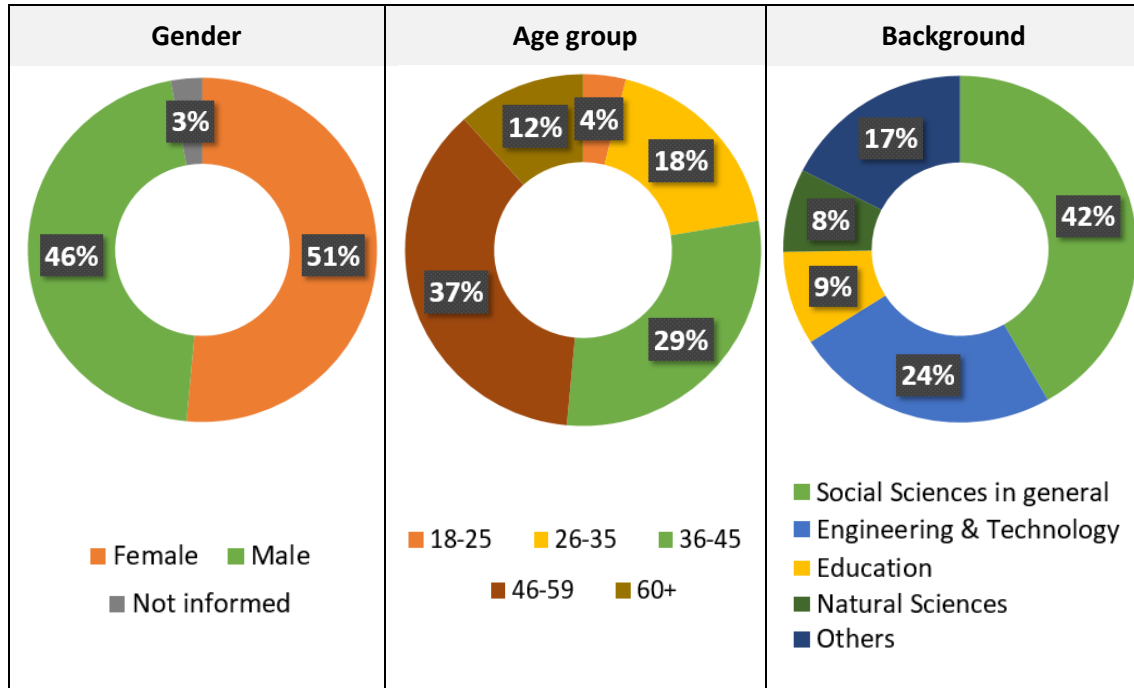


44 Source: Prepared by the Authors  
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48 Figure 2 summarizes the sample demographic details: when it comes to gender,  
49 51% of the respondents are female, 46% are male, and 3% preferred not to state.  
50 Regarding the age group, the survey received responses from all levels: 4% in the age  
51 group of 18-25, 18% between 26-35 years of age, 29% between 36-45 years of age.  
52 The majority of the sample, 37%, is between 46-59 years of age; only 12% are 60 years  
53 of age or more. Regarding background, more than 40% are from the social sciences,  
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and more than 20% from engineering and technology. Other areas, such as education and natural sciences, are represented by a lesser proportion.

Figure 2. Sample demographic details (gender, age group and background)



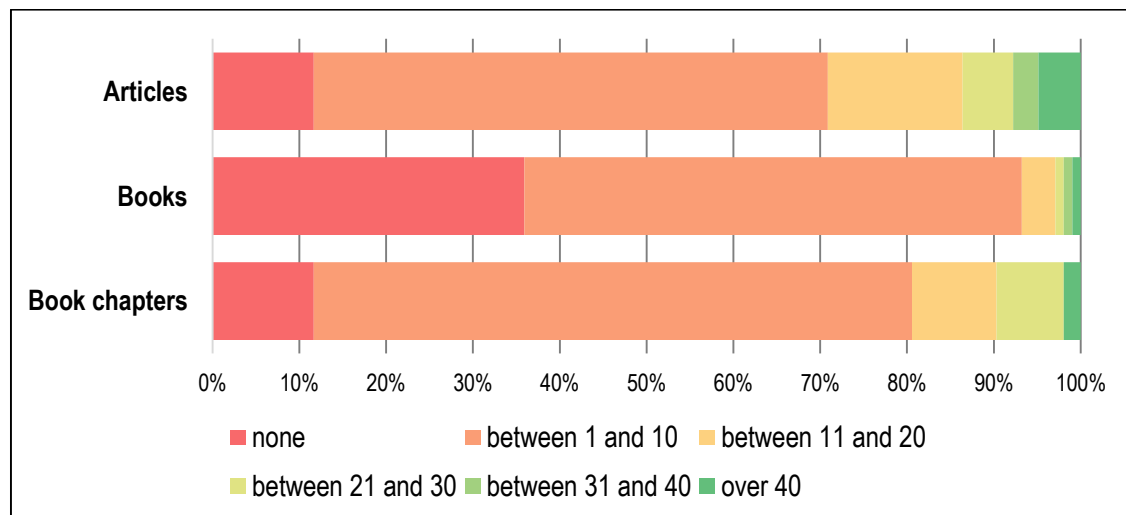
#### 4.2 Number of publications

Publications are relevant for researchers in order to share their studies and get recognition from their peers. From a practical point of view, they are often used when decisions on promotion or tenure are to be taken. The primary modalities include publishing books, book chapters or journal articles. The survey started by asking the respondents to indicate the number of books and book chapters on matters related to sustainable development in higher education that were published by them over the past five years, as well as the number of articles published in peer reviewed journals in the same period. Figure 3 summarizes the responses for the three types of publication, including the percentage of responses according to the number of publications in the last years.

Interestingly, the majority of the respondents in the sample stated to have published less than ten publications or none, regardless of the type of publication, during the last years. For books, however, the percentage of respondents which indicated “none” is higher than the other groups (>35%). For book chapters and articles,

1 this percentage was approximately 10%. On average, among all types of publications,  
 2 journal articles are more commonly published, reaching almost 10% of responses in the  
 3 categories “between 31 and 40” and “over 40,” while the same categories resulted in  
 4 only 2% for books and book chapters. Although the peer review process for books and  
 5 book chapters might be slightly less complicated, authors may prefer publishing journal  
 6 articles for reasons associated with the evaluation of scholarship in general (Arnăutu  
 7 and Panc 2015; Schimanski and Alperin 2018), curriculum scores and demands from  
 8 graduate programs (Dyke 2019; Harris 2015; Rawat and Meena 2014). Additionally,  
 9 books demand coordinated efforts and support from the publisher (Cortada 2017).

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 19 Figure 3. Results on the number of book chapters, books and articles published by the  
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 42 **4.3 Main journals**

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 44 The survey also intended to find out in which journals the respondents usually or  
 45 frequently publish their research. Among the given options, two were the most  
 46 indicated: *International Journal of Sustainability in Higher Education* (indicated by  
 47 39% of the respondents) and *Journal of Cleaner Production* (indicated by 37% of the  
 48 respondents). This is one of the key results from this analysis. It indicates that these  
 49 options as the most preferred ones to publish studies related to sustainability in higher  
 50 education, and virtually dominate the sustainability in higher education conversation.  
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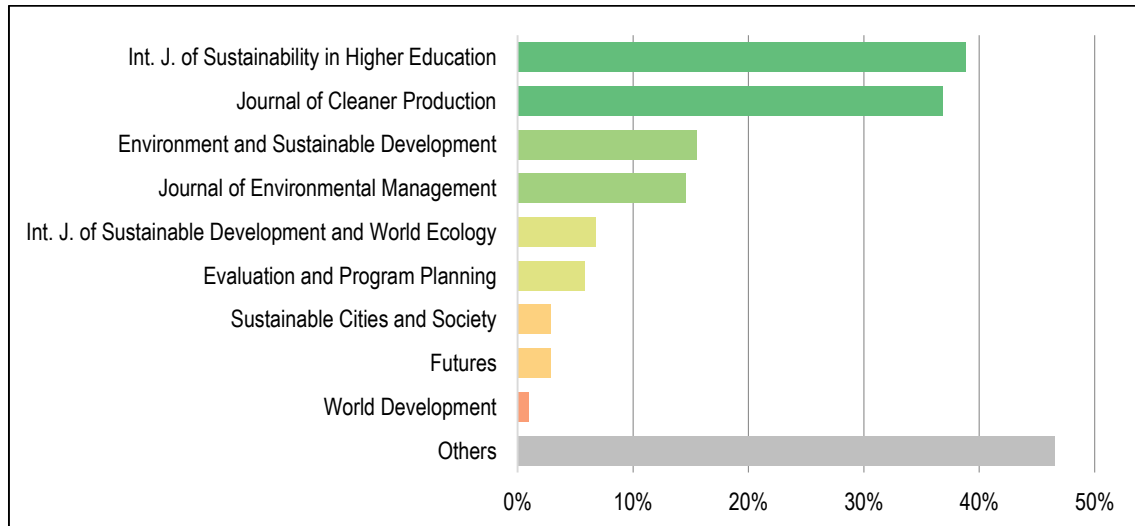
53 Looking into the journals which address environmental management performance  
 54 issues at HEIs, Guenther and Ross (2020) corroborate these results by indicating that  
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1 the majority of publications are published in the *International Journal of Sustainability*  
2 *in Higher Education* (IJSHE) (45%) and *Journal of Cleaner Production* (JCP) (41%),  
3 with only around 14% of literature being published in various other journals (Guenther  
4 and Ross, 2020).  
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7  
8 These include journals such as "Environment and Sustainable Development"  
9 (16%) and "Journal of Environmental Management" (15%). An additional 48 responses  
10 were received in the option "Others," where respondents could mention journal titles  
11 not presented in the offered options. Of these, the most recurring journal was  
12 "Sustainability", with eight mentions. This is also a key result, since these periodicals  
13 account for about a third of the journals mentioned sample.  
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17 Other journals refer to climate change and educational issues, in addition to  
18 energy and sustainability challenges in general. It can also be highlighted the presence  
19 of local/national journals, which publish papers in other languages (such as Spanish and  
20 Portuguese). Figure 4 presents these results.  
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29 Figure 4. Journals preferred by the respondents for publishing  
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#### 4.4 Areas and reasons

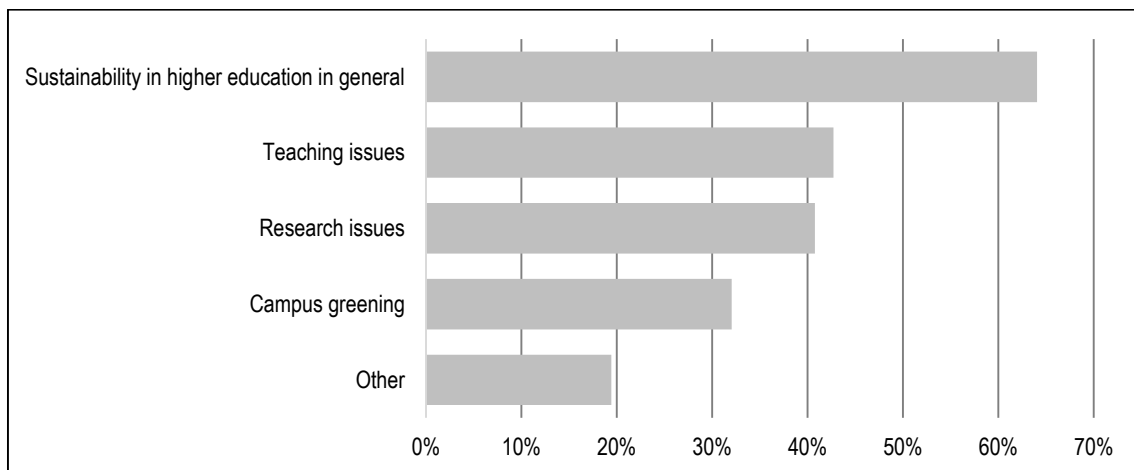
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51 When asked about the areas of sustainable development in higher education that  
52 the published papers usually focus on (Figure 5), the respondents indicate Sustainability  
53 in general as the most common topic (>60% of responses). This was already expected at  
54 a certain point, since several studies may not fall under a specific approach on teaching,  
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1 research or campus operations. With around 40% of the responses, the following most  
 2 common areas are: **teaching and research issues**, which include teaching techniques  
 3 and innovative approaches for teaching education for sustainable development  
 4 (Hermann and Bossle 2020; Lozano and Young 2013) and **challenges and**  
 5 **opportunities** for researching sustainability (Barbosa-Póvoa et al. 2018; Salvia et al.  
 6 2019; Turnheim et al. 2020), among others. Campus greening was indicated by 32% of  
 7 the sample. However, its contribution towards publications on the topic might increase,  
 8 mainly due to recent publications which support this matter [e.g. “Books Universities as  
 9 Living Labs for Sustainable Development - Supporting the Implementation of the  
 10 Sustainable Development Goals” (Leal Filho et al. 2020) and “Towards Green Campus  
 11 Operations - Energy, Climate and Sustainable Development Initiatives at Universities”  
 12 (Leal Filho et al. 2018)].

13  
 14 The option “Other” contained further interesting results. The respondents included  
 15 topics such as the Sustainable Development Goals, climate change efforts, sustainable  
 16 procurement at universities, sustainable consumer behaviour, in addition to others that  
 17 may represent connections with society in general and local communities (capacity  
 18 building, social innovation, global citizenship, urban mobility and poverty, religions and  
 19 sustainability, psychological aspects and sustainable construction projects).

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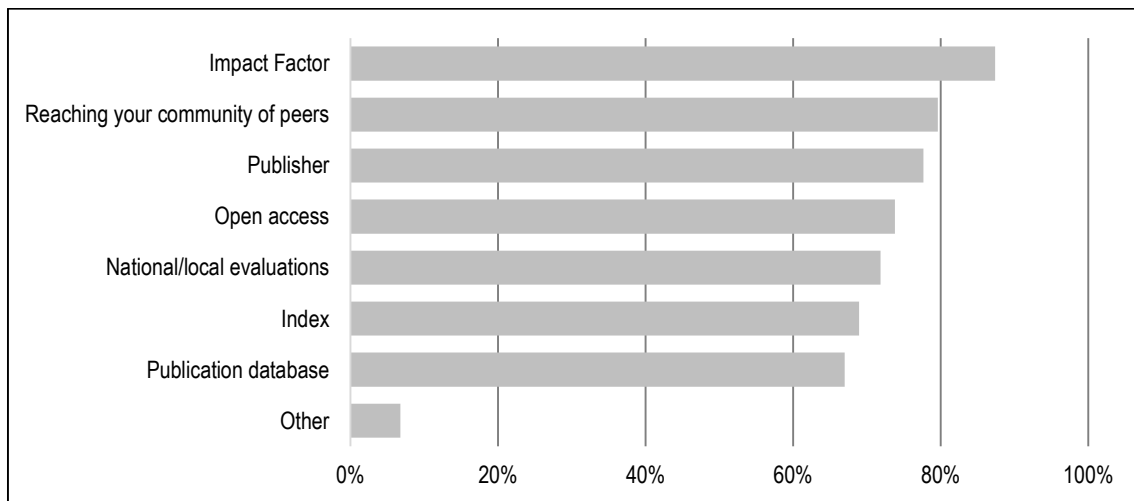
Figure 5. Areas of SD in HE the papers usually focus on



As already touched upon, one may wonder about the reasons for choosing a certain journal/book to publish a study. In this regard, Figure 6 shows the main reasons

1 indicated by the respondents for choosing a publication. Impact factor should be  
2 highlighted as the most mentioned reason (indicated by 87% of the respondents).  
3 Reaching the community of peers (80%) and the publisher (78%) were the next most  
4 indicated reasons, followed closely by the Open Access availability (74%). **This is also**  
5 **a key result.** The least indicated reasons (but still indicated by 67-72% of the sample)  
6 are national/local evaluations, Indexes and publication databases. An additional seven  
7 comments (7%) were included in the space for “Other” responses, and they are related  
8 to the adherence of the paper subject to the scope of the journal/book, the ease in  
9 handling the publication (probably meant by the respondent as the steps of submission  
10 and peer review until getting the study finally published) and the case of being invited  
11 by peers to submit studies to a publication.  
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23 Figure 6. Main reasons for choosing a journal/book to publish research



#### 45 *4.5 Discussion*

46 The results indicate that the reasons behind the choice of where to publish may  
47 vary, and they depend on the relevance that authors give to specific factors. Although  
48 the publishing process used to take a rather long time in the past (depending on the  
49 publisher, type of publication, and peer review process, among others), this is not so  
50 today. Many publishers are able to make an accepted paper available with a DOI and  
51 ensure they can be cited a few weeks after being accepted. The advantages of this new  
52 trend are innumerable.  
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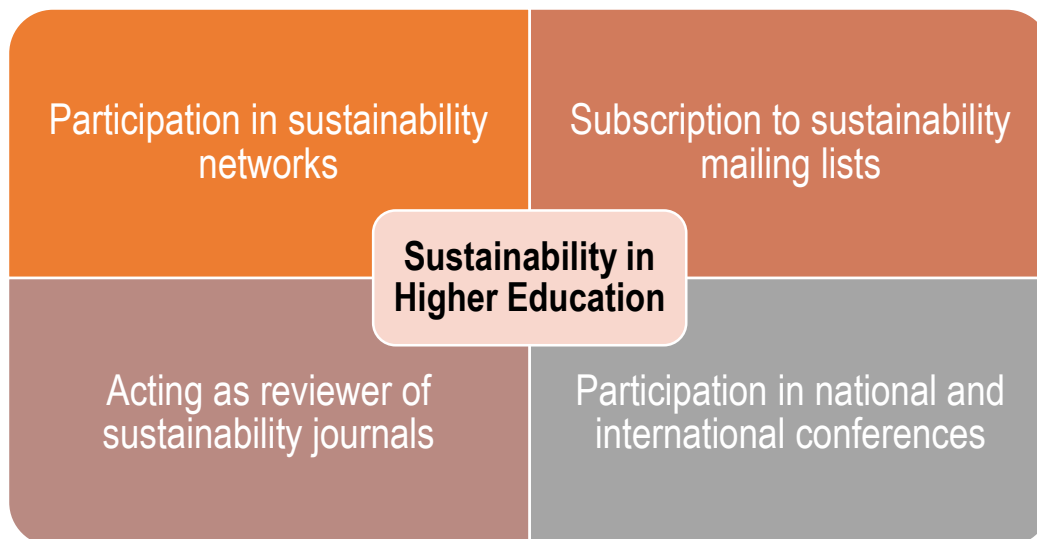
1 All these elements reiterate the advantages academics may have, by being aware  
2 of the publishing opportunities in the topic of sustainability in higher education. The list  
3 below presents some insights on how to take more advantage of these opportunities,  
4 based on the authors' experience:  
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- 7  
8 a) Participate in national and international sustainability networks: these networks  
9 work as complex and integrated spaces for universities and researchers who  
10 share a common goal to support each other. Partnerships for publications and  
11 projects are among their advantages and purposes (Bixler et al. 2019; Keeler et  
12 al. 2016). The IUSDRP, for example, has among its aims to “catalyse and  
13 facilitate the production of high-quality joint publications in indexed journals, as  
14 well as in ground-breaking books and book chapters, in cooperation with well-  
15 established publishers” (IUSDRP n.d.).  
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- 18 b) Subscribe to mailing lists on the topics of interest: through these lists,  
19 researchers can invite other colleagues to work on project proposals,  
20 publications and even partnerships for events, for example. Calls for authors for  
21 diverse publishing opportunities are common and frequent;  
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- 24 c) Contact editors and editorial teams of journals informing them of one's interest  
25 to act as a reviewer: being available to act as a reviewer (given the topic reflects  
26 the researcher expertise area) may increase one's chances to publish more – not  
27 solely for gaining experience on the topic, but also for getting recognition in the  
28 area (Verbeke et al. 2017);  
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- 31 d) Participate in conferences which lead to publications in journals/books: there are  
32 other various reasons to choose conferences to attend and present research  
33 results, but whenever appropriate and suitable, researchers may consider those  
34 that promote high-impact publications.  
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47 These recommendations will assist authors in recognizing diverse publishing  
48 possibilities and choosing the ones that respond to their main reasons for publishing.  
49 These findings corroborate with Caniglia et al. (2017), specifically focusing on  
50 communication strengthening and the collaborative process, which can contribute to  
51 increasing the low research rate in international partnership.  
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55 Based on these contributions, the following framework is suggested to increase  
56 the publication rate in sustainability in higher education (Figure 7).  
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Figure 7 - Framework to increase publications on Sustainability in Higher Education



From the framework, it can be seen that academics have many disadvantages when they work alone. By taking part on sustainability network and being kept informed about progresses in mailing lists, they can be kept abreast of the latest development, and access information they would not normally not become aware of. An example is the IUSDRP mailing list which can be accessed for free at: <https://www.jiscmail.ac.uk/cgi-bin/webadmin?A0=IUSDRP>. It contains information on events, publishing opportunities and project calls, which academic staff may find very useful.

Also, academic staff may wish to act as reviewers in sustainability journals, being able to obtain information on recent research. Moreover, participation in international events, albeit costly, often proves to be a good investment since many are in fact in-service training and offer the opportunity to meet individuals who are otherwise known from the literature. The current restrictions posed by the COVID-19 pandemic do not need to adversely affect communication or networking among academics: even though physical events cannot at present be easily organised or held, on-line events offer a good complement. This is not to say that on-line events could ever replace presence ones. But they do offer an alternative, until it is safe again to organised normal Symposia, Workshops or Congresses.

## 5 Conclusions

As this paper has shown, publications on matters related to sustainable development are good indicators of academic activity and excellence. They provide valuable venues for discussing issues pertaining to sustainable development, showing the plurality of viewpoints and perspectives and documenting experiences.

Before dwelling on the conclusions, it should be reiterated that female participants, (with 51%) had a slightly higher engagement in the study than their male counterparts. Senior researchers, between 36 and 59 years of age, accounted for 65% of the respondents, in the context of which the social sciences were twice as highly represented in the study as engineering and technology.

The survey undertaken has identified a number of trends. The first one is that over half of the 113 peer reviewed journal articles published and representing the 'state of knowledge' were submitted in the last four years. This suggests an intensification of research efforts, coupled with an increased in the willingness to submit this work to peer reviewed journals. Secondly, there is a trend towards a fragmented discourse, i.e. a discourse focusing on specific issues, thanks to the production of special issues. These, however, present one advantage: they may address the concerted coverage of some topics (e.g. sustainability governance, sustainability reporting), which may not otherwise be well covered elsewhere. In addition, articles in journals are seen to be more popular than book chapters. Furthermore, it is clear that two journals seem to dominate the conversation of sustainability in higher education, with over 3/4 of all papers published on this subject matter, namely the *International Journal of Sustainability in Higher Education* and the *Journal of Cleaner Production*.

Whereas "sustainability" as a general term appears to be the most popular theme, the study has shown that papers on teaching, research or campus operations are also popular. Also, themes such as the Sustainable Development Goals, climate change and sustainable procurement at universities, along with sustainable consumer behavior, are increasingly popular topics.

The fact that nearly 90% of the authors indicated that the impact factor (followed by Open Access) is the main criteria in the decision to publish in a particular journal shows that these elements will also guide future decisions. This may be explained by the

1 fact that these indicators are used in decisions related to the tenure and promotion of  
2 academics. Authors may benefit from accessing networks and mailing lists, and by  
3 attending events and venues for accessing journals.  
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6 The research has some limitations. Firstly, the sample is too small to allow for a  
7 broad extrapolation of the results. Secondly, its wide dissemination via various networks  
8 is not a guarantee that it mobilized all concerned sustainability researchers. Nonetheless,  
9 the data obtained offers a rough profile of how academic publishing on sustainable  
10 development is perceived and practiced. Since the paper was not meant to cluster  
11 responses among specific countries but to build a general profile instead, the purpose has  
12 been achieved. It contains no specific geographical focus; rather, it needs to be  
13 considered as a global study.  
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21 The present paper nevertheless provides a welcome addition to the literature since  
22 it addresses the deficiency in studies on published research on matters related to  
23 sustainable development. Its implications are two-fold: it offers a detailed overview of  
24 the state-of-the-art on publications on sustainability in a higher education context,  
25 outlining its main features. Also, it sheds light on the journals most active in the topic and  
26 the level of emphasis they attach to various themes.  
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32 Methodologically, the approach used in this paper can be replicated and used in  
33 similar studies, especially in those where a combination of qualitative and quantitative  
34 data is important in order to allow a broader understanding of trends.  
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37 Looking forward, there are various measures via which higher education  
38 institutions may be able to take more advantage of the many opportunities that publishing  
39 on sustainability offers to them. Some of them are as follows:  
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42 \* the SDGs offer universities good opportunities to document and promote their  
43 works, be it in respect of policies or practical activities;  
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46 \* authors should take more advantage of networks, mailing lists and conferences,  
47 as a means of better engaging with their peers and accessing publishing opportunities;  
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50 \* the specialist journals available and mentioned in this paper offer a solid basis for  
51 scientific publishing, and have many published papers which may be used as reference  
52 points.  
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1 As far as future steps are concerned, there is a perceived need for more research on  
2 publishing trends which are specific to the social and natural sciences, since they adopt  
3 different sustainability philosophies. In addition research is also needed on the extent to  
4 which the SDGs are being taken into account in the context of scientific publishing. These  
5 research gaps will be addressed in forthcoming studies being undertaken as part of the  
6 newly-founded "The SDGs Academic Research and Publications Initiative" (SDG-  
7 ARPI), whose details can be seen at: [https://www.haw-  
8 hamburg.de/en/university/newsroom/news-details/news/news/show/new-research-  
9 initiative-on-the-sdgs/](https://www.haw-hamburg.de/en/university/newsroom/news-details/news/news/show/new-research-initiative-on-the-sdgs/).

10 Overall, academic publications provide a valuable service in that they disseminate  
11 case studies, projects and programs and report on the findings of studies and research on  
12 sustainable development. As such, they are very important tools in fostering information  
13 exchange and serve as a vehicle for the documentation and dissemination of what  
14 government bodies, research agencies, international bodies, universities and aid agencies  
15 are undertaking in the various pathways leading to a more sustainable world.

### 30 **Conflict of Interest**

31 The authors declare that they have no conflict of interest.  
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24 **Appendix A. Summary of the survey questions and response options**

	Questions	Responses
Demographics	<b>Name of your University:</b>	
	<b>Country:</b>	
	<b>Your age group:</b>	<input type="radio"/> 18-25 <input type="radio"/> 26-35 <input type="radio"/> 36-45 <input type="radio"/> 46-59 <input type="radio"/> 60+
	<b>Your gender:</b>	<input type="radio"/> Female <input type="radio"/> Male
	<b>What is your background?</b>	<input type="radio"/> Education <input type="radio"/> Social Sciences in general (including politics, economics, arts, languages) <input type="radio"/> Natural Sciences <input type="radio"/> Engineering & Technology <input type="radio"/> Other
Number of publications	<b>How many book chapters on matters related to sustainable development in higher education have been written and published by yourself/your team at your university over the past 5 years?</b>	<input type="radio"/> none <input type="radio"/> between 1 and 10 <input type="radio"/> between 11 and 20 <input type="radio"/> between 21 and 30 <input type="radio"/> between 31 and 40 <input type="radio"/> over 40
	<b>How many books on matters related to sustainable development in higher education have been edited or co-edited and published by yourself/your team at your university over the past 5 years?</b>	<input type="radio"/> none <input type="radio"/> between 1 and 10 <input type="radio"/> between 11 and 20 <input type="radio"/> between 21 and 30 <input type="radio"/> between 31 and 40 <input type="radio"/> over 40
	<b>How many articles on matters related to sustainable development in higher education have been published by yourself/your team at your university in journals which are peer-reviewed and have an impact factor, over the past 5 years?</b>	<input type="radio"/> none <input type="radio"/> between 1 and 10 <input type="radio"/> between 11 and 20 <input type="radio"/> between 21 and 30 <input type="radio"/> between 31 and 40 <input type="radio"/> over 40

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Main journals	<b>In which journals do you usually publish? (multiple answers possible)</b>	<input type="checkbox"/> Journal of Cleaner Production <input type="checkbox"/> Int. J. of Sustainability in Higher Education <input type="checkbox"/> Futures <input type="checkbox"/> Int. J. of Sustainable Development and World Ecology <input type="checkbox"/> Environment and Sustainable Development <input type="checkbox"/> Evaluation and Program Planning <input type="checkbox"/> World Development <input type="checkbox"/> Journal of Environmental Management <input type="checkbox"/> Sustainable Cities and Society <input type="checkbox"/> Other
	<b>Which areas have the papers focused on in relation to sustainable development in higher education? (multiple answers possible)</b>	<input type="checkbox"/> Sustainability in higher education in general <input type="checkbox"/> Campus greening <input type="checkbox"/> Teaching issues <input type="checkbox"/> Research issues <input type="checkbox"/> Other
Areas and reasons	<b>Which are the main reasons for choosing a journal/book to publish your research? (multiple answers possible)</b>	<input type="checkbox"/> Impact Factor <input type="checkbox"/> National/local evaluations <input type="checkbox"/> Open access <input type="checkbox"/> Publisher <input type="checkbox"/> Index <input type="checkbox"/> Publication database <input type="checkbox"/> Reaching your community of peers <input type="checkbox"/> Other