

## **The role of higher education institutions in the path to sustainability: analysis of sustainable development goals (SDGs) from a scientific perspective**

**Núria Bautista-Puig<sup>1\*</sup>, Ana Marta Aleixo Figueiras dos Santos<sup>2</sup>, Elías Sanz-Casado<sup>1</sup> e  
Ulisses Azeiteiro<sup>2</sup>**

1: Research Institute for Higher Education and Science (INAECU), University Carlos III of  
Madrid, 28903 Madrid, Spain

e-mail: nbautist@bib.uc3m.es, elias@bib.uc3m.es

2: CESAM Centre for Environmental and Marine Studies, University of Aveiro, 3810-193, Aveiro,  
Portugal

e-mail: marta.aleixo@ua.pt, ulisses@ua.pt

**Palavras-chave:** Sustainable Development Goals, Millennium Development Goals, Higher Education Institutions, Bibliometrics, Scientometrics

### **Resumo**

The sustainable development goals (SDGs) are presented as the promising and critical success to respond to the societal challenges in worldwide. It supposes a change in comparison with the Millennium Development Goals (MDGs): all countries and all stakeholders (e.g. enterprises, organizations, civil society, policy-makers...) need to be involved (lemma 'No one left behind') in the path towards sustainability (Brown, 2006). On this regard, as Salvia (2019) stated success of the SDGs will depend on the strong collaboration between the different actors. In 2017, Walter Leal Filho, Ulisses Miranda Azeiteiro, et al. (2017) refers to the SDGs as an opportunity to encourage sustainability research, reviewing the importance given to the research of the SDGs', which SDGs have already been implemented and in which countries.

One of the central actors is higher education institutions (HEIs) who have the lead to respond to this enormous challenge. In this regard, they should be leaders in the search for solutions and alternatives to current environmental problems and agents of change (Hesselbarth and Schaltegger, 2014). The University within the framework of the 2030 Agenda can collaborate through teaching, research, knowledge transfer and innovation in promoting policies of sustainability and commitment not only to the environment but also to the achievement of all other sustainable goals (e.g. eradication of hunger and poverty extreme, health and well-being, quality education...). On this regard, authors such as Leal (2019) states that it is important to align universities with the research on SDGs. About this pillar, one way to analyze how universities are doing research on this topic is through bibliometric studies. There are different studies that analyze sustainability or sustainable development (Hassan and Zhu, 2014, Olawumi and Chan, 2018) as well as in universities (Bizerril, 2018). However, few studies have analyzed the production specifically on SDGs at Universities. Nakamura (2019) analyzes 2,800 documents related to the SDGs, as well as topic analysis. On the other hand, Bautista-Puig (2019) analyzes the core of scientific production on the MDGs and the SDGs with 4,532

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documents and highlights the growth in the last 4 years, which coincides with the launch of the SDGs, in addition to the interrelations between the different SDGs.

This study analyzes the scientific output of development goals research from 2000-2017 based on Web of Science, with the aim to map the global research of sustainability at HEIs. A total of 25,185 bibliographic records were analyzed. The purpose of this paper is to present a comprehensive review of the literature of HEIs about the research that these institutions are doing related to MDGs and SDGs. This paper also analyzes the topics in which are involved based on keyword co-occurrence classification of the SDGs by creating an ad-hoc glossary. The findings reveal the important participation of HEIs on this research (85.71%) and an increase of participation over time (660 institutions in 2000-2005 to 1771 institutions involved in 2012-2017). In terms of specialization measured by an Activity Index (AI), some institutions present a higher production and a higher specialization on the topic; however, others present less production but higher specialization. Regarding the topics, health (especially in developing countries), women and socio-economic aspects are the most prominent ones. Moreover, it is observed an increase of the topics related to the launch of the SDGs, including topics such as governance or policy denoting the increase of the political interest on those issues. This study provides an overview of how Universities are doing research on SDGs to respond to major societal challenges and could be useful for the policymakers in order to promote the research agenda on this topic.

**Agradecimentos** - This research was supported by the predoctoral contract BES-2015-075461.

#### **Referências –**

- Bautista-Puig N; Mauleón E. Unveiling the path towards sustainability: is there a research interest on sustainable goals? ISSI conference Rome. (In press).
- Bizerril, M., Rosa, M. J., Carvalho, T., & Pedrosa, J. (2018). Sustainability in higher education: A review of contributions from Portuguese Speaking Countries. *Journal of Cleaner Production*, 171, 600-612. doi:<https://doi.org/10.1016/j.jclepro.2017.10.048>
- Brown, L. R. (2006). *Plan B 2.0: Rescuing a Planet Under Stress and a Civilization in Trouble*. W.W. Norton & Company, New York
- Salvia, A. L., Leal Filho, W., Brandli, L. L., & Griebelera, J. S. (2019). Assessing research trends related to Sustainable Development Goals: local and global issues. *Journal Clean Production*, 208, 841-849. doi:<https://doi.org/10.1016/j.jclepro.2018.09.242>
- Hassan, S. U., Haddawy, P., & Zhu, J. (2014). A bibliometric study of the world's research activity in sustainable development and its sub-areas using scientific literature. *Scientometrics*, 99(2), 549-579.
- Hesselbarth, C., & Schaltegger, S. (2014). Educating change agents for sustainability—learnings from the first sustainability management master of business administration. *Journal of Cleaner Production*, 62, 24–36
- Nakamura, M., Pendlebury, D., Schnell, J., & Szomszor, M. (2019). Navigating the Structure of Research on Sustainable Development Goals. *Policy*, 11, 12.
- Olawumi, T. O., & Chan, D. W. (2018). A scientometric review of global research on sustainability and sustainable development. *Journal of Cleaner Production*, 183, 231-250.
- Leal Filho, W., Azeiteiro, U. M., Alves, F., Pace, P., Mifsud, M., Brandli, L., . . . Disterheft, A. (2017). Reinventing the sustainable development research agenda: the role of the sustainable development goals (SDG). *International Journal of Sustainable Development & World Ecology*. doi:10.1080/13504509.2017.1342103