

# Are distance higher education institutions sustainable enough? – A comparison between two distance learning universities

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## Abstract

**Purpose** – Universities are continually transforming its structure and governance in response to the new social, environmental and economic challenges. Particularly, there has recently been a growing academic interest for measuring sustainable practices of higher education institutions (HEI) aiming to monitor and reduce their carbon emissions, as well as transform them into more sustainable organizations. More recent studies began to focus also on the sustainable performance of distance education Universities. So it became crucial to evaluate their sustainability practices through sustainability assessment tools with the aim of improving their sustainability performance and boosting their role as agents of academic, social and economic change. The purpose of this study is to assess and compare holistically sustainability implementation in two similar distance learning universities and to evaluate their advantages and disadvantages.

**Design/methodology/approach** – One of the most rigorous and internationally used sustainability assessment tools was used – the Sustainability Tracking, Assessment and Rating System, to evaluate and compare sustainability implementation in two distance universities, one from Spain and another from Portugal: the Madrid Open University and Universidade Aberta. Indicators of both universities were compared and ways of improvement in both universities were widely discussed.

**Findings** – The results of this research show that there is a similar pattern in both universities. Both have low performance in campus operations and low levels of community participation but good performance in sustainability courses and programmes offer. The results of both institutions were compared and allowed a learning process for improvement.



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**Originality/value** – This research hopes to contribute to the continuous research about the usefulness of sustainability assessment tools in particular when applied to distance universities at the time that offers new paths to carry out improved sustainable practices in crucial areas of interest such as research, administration, education and resource-saving. This research also highlights the value of distance learning universities and their ability to be more sustainable after the advent of COVID-19.

**Keywords** Sustainability, Distance higher education institutions, Sustainability assessment tool, Case study, Online universities, Sustainability, Case study, Online universities, Sustainability assessment tool

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**Paper type** Research paper

## 1. Introduction

Education is nowadays a response tool for different issues that affect all types of societies. From softening gender inequalities to providing access to high-tech health solutions, from supplying simple day to day tools to fight poverty to the improvement of high-end multinational company staff, from giving examples and techniques to follow in disadvantaged communities of urban waste management to training highly specialized staff in protected and endangered areas all over the world, education tackles basic needs of information and training and allows for non-skilled individuals to be useful and productive in their live/working communities (Buchmann *et al.*, 2008; Martuzzi *et al.*, 2010; Sanz *et al.*, 2017).

Education is a major global goal regarding the United Nations Sustainable Development Goals (SDG). The main objectives of the education SDG are focused on accessibility, skills improvement and knowledge spreading [United Nations (UN), 2015; United Nations Educational, Scientific and Cultural Organization (UNESCO), 2016]. These topics are also very relevant in distance learning main objectives because they are meant to improve education accessibility to layers of the population that:

- are no longer in traditional learning ages;
- are far away from knowledge centres such as high school facilities or university campus;
- are in fulltime jobs with low chances of spending time and resources in presential classes;
- have disabilities that prevent them to move forward in lifelong learning (Burgstahler, 2006; Lee, 2017).

They are also skill improvement focused because they act at different levels of knowledge and education with different formal and non-formal, extent and short learning programmes that have high adaptive capabilities to suite learning needs. Higher education distance learning institutions and learning programmes have added to focus on knowledge spreading because they are one of the main high-end knowledge producers either due to national and international scientific research activities or due to societal partnerships for the design of applied solutions.

Besides the obvious connections between distance learning and the education SDG, there are links that one can establish to the rest of the sustainable development goals and, therefore, it can be assumed that stakeholders and institutions must be strategically aligned to sustainability in the broad sense of the concept but also in specific metrics. These sustainability metrics and measurement tools are particularly useful for internal institutional evaluation and comparison but also for educational programmes sustainability validation as they provide detailed data for sustainability monitoring (Findler *et al.*, 2018;

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Stough *et al.*, 2018). Nevertheless, there is a dearth of research on the assessment and monitoring of sustainability implementation in distance learning higher education institutions (HEIs) and how the use of these assessment tools can help the real performance improvement of sustainable development in those type of institutions.

The aim of this paper is to evaluate and compare sustainable sustainability performance between two distance HEIs in two neighbours countries in terms of its academics, engagement, operations, planning and administration and innovation and leadership main topics. The sustainability assessment was conducted using the Sustainability Tracking, Assessment and Rating System (STARS) benchmarking tool. Two Universities in Southern Europe, with headquarters in the capitals of Portugal and Spain: Universidade Aberta (UAb), Portugal and Madrid Open University (MOU) were selected as a case study. These distance learning universities have similar characteristics, namely in terms of students and staff numbers.

## 2. Literature review

### 2.1 Distance education

Distance teaching is considered a type of non-formal education and includes the use of newspapers, magazines, books, radio, television, etc (Tahir, 2001), as well as information and communication technologies (ICT) as sources of teaching. Following the recent definition by Sewart *et al.* (2020), distance learning is a:

Form of education which brings together the physically-distant learner(s) and the facilitator(s) of the learning activity around planned and structured learning experiences via various two or multi-way mediated media channels that allow interactions between/among learners, facilitators, as well as between learners and educational resources.

Thus, according to Azeiteiro *et al.* (2015, p. 308):

e-learning is a teaching and learning process, according to an appropriate distance learning pedagogical model, that allows flexible learner-centred education, as it is based on ICT.

It comprises a wide range of applied software and educational methods, including computer-based education, web-based education and virtual classrooms (Akbarilakeh *et al.*, 2019). These technologies are implemented in virtual learning environments, usually known as digital/learning platforms, allowing the communication between the professor and the student and between students, which is designated by Garrison (2000), as multidirectional communication.

Distance education is also a way to deliver a product (education) in a more sustainable way. To this idea, Bell *et al.* (2017, p. 96) add that “sustainability necessarily includes the qualities and availability of higher education in a global set of educational need, this set includes the challenges of globalization”.

Nowadays, distance education is no longer seen as a way of filling some educational gaps but is a useful tool used in the educational system, aiming to target all individuals in a society and not only the “marginal” groups. Further, it can assume central functions within the education system. According to Tahir (2001), the role of distance education can be faced as:

- a kind of “second chance” to up-grading (after leaving the educational system);
- a source of information and education campaigns for larger audiences;
- a way to speed efficient training of key target groups;
- a way to provide education to some neglected target groups;

- an expansion of the education to new areas of knowledge;
- an expansion to geographical areas of difficult access to education; and
- a way of combining education with work and family life.

Bell *et al.* (2017) add the advantage to address a large population of students. Given its flexibility, the acquisition of multiple competencies helps individuals to meet new challenges in their jobs (Tahir, 2001).

In terms of disadvantages, Rabiee *et al.* (2013) point to the low motivation of the students and teachers to online classes, lack of staff knowledge of the technology and inadequate management of the resources, mostly when we talk in developing countries.

Directly related to distance education is online education. Shanley *et al.* (2004) defend that this type of education provides individuals with an educational option to the conventional face-to-face courses, allowing students to continue, at their own rhythm and availability (Rabiee *et al.*, 2013), while they are working or assuming other roles (e.g. taking care of their children). Usually, the participants in this education system report as major advantages the flexibility, interaction and they feel they really belong to a community (Azeiteiro *et al.*, 2015). Thus, some traditional universities are investing in the development of campus e-learning environments as a supplementary method to face-to-face courses (Kim *et al.*, 2019), which also has been enhancing with the recent COVID 2019 worldwide pandemic.

### *2.2 Efficient use of resources and distance universities*

When analysing the structure and functioning of distance universities it can be guessed that these can be much more sustainable than the conventional ones regarding the use of resources, saving more energy and water, reducing waste and preventing pollution.

Conventional campus usually has a large number of buildings (libraries, laboratories, classrooms, offices, accommodation, catering facilities, sports, etc) able to accommodate a great number of students, academics and staff which have serious implications in terms of energy demand, as stated by Wadud *et al.* (2019). This significant use of energy is a challenge for universities that are now trying to give the example by monitoring, reducing their carbon emissions and being economically more sustainable.

The main use of energy in universities is due to lighting, heating/cooling, transportation and equipment functioning and maintenance. This reality is being reported in universities all around Europa and the USA. For instance, according to the UK-based Carbon Trust, more than 50% of the total energy used by colleges and universities is made up of fossil fuels and in the USA, heating accounts for the main part of natural gas use (Leal Filho *et al.*, 2019).

However, the pattern of energy is variable and can change according to the specificities of the universities, the type of construction and the energetic efficiency of the equipment. The seasonality is of great influence existing a significant difference between the summer and winter seasons for heating and electricity use (Rewthong *et al.*, 2015). Some evidence points to the fact that student activities are one of the main contributors to the electricity demand in HEIs. Energy demand tends to be lower during a vacation period when there are few staff and students on the campus and increases during class times (Leal Filho *et al.*, 2019; Tang, 2012).

Roy *et al.*'s (2008, p. 2) results seem to agree with the stated above, this is, conventional universities consume a large number of resources. Thus, the authors comparing these universities with distance universities, concluded that: "distance learning courses involve 87% less energy and 85% lower CO<sub>2</sub> emissions than the full-time campus-based courses". The authors consider that the lower impact of distance courses, compared to face to face

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courses, is mostly explained by the reduction in both students traveling and consumption of energy in the campus buildings. A lower expenditure of energy and emissions is associated with e-learning because, even so, this requires more energy for computing and paper for printing.

Given this, [Roy et al. \(2008\)](#) defend that the best way of diminishing the environmental impacts of HEI could be by promoting home-based open and distance learning, comprising online courses. The advantages pointed are related to the reduction in the number of physical buildings and the decrease in the number of travels. Additionally, the authors support the idea that would it be better, at the educational and social level, if universities could bet and invest more in educating foreign students by developing partnerships with other HEI, rather than bring them to the country. A final call for attention is the balancing between the campus infrastructure and the other features of the system, as is the case of student travel and housing, whose impacts are sometimes ignored on sustainability reports.

### *2.3 Assessment of sustainability implementation in higher education institution: the case of sustainability tracking, assessment and rating system*

To be possible to evaluate how well or not are Distance Learning Universities profile in terms of sustainability implementation in its different dimension according to a whole school approach assessment tools are needed, namely based on the use of performance indicators ([Findler et al., 2018](#)). In the literature, it can be seen that several tools have been specifically developed and used to assess sustainability implementation in HEI ([Caeiro et al., 2020](#)). Specifically, some of the most remarkable sustainability assessment tools in Higher Education are (based on [Caeiro et al., 2020](#)):

- the GM – Green Metrics University Ranking ([Lauder et al., 2015](#)), based on a ranking point system allowing benchmarking and comparison of six dimensions (scenario and infrastructure, Energy and climate change, waste, water, transport, education and research);
- the PSIR – Penn State Indicator Report ([Yarime and Tanaka, 2012](#)), which is based on 33 indicators, covering the environmental dimensions of the campus, transport, decision support, research and community;
- the SAQ – Sustainability Assessment Questionnaire ([ULSF, 2018](#)), consisting of 35 indicators: 35 indicators corresponding to 8 dimensions, namely curriculum, research and scholarship, operations, faculty and staff, extension and services, student opportunities, administration, mission and planning;
- the USAT – Unit-Based Sustainability Assessment Tool ([Togo and Lotz-Sisitka, 2009](#)), which includes 75 indicators referred to 4 domains: teaching, research and community services, operation and management, student involvement and written policy; and
- STARS- Sustainability Tracking, Assessment and Rating System Reporting Tool (AASHE, 2017), which constitutes one of the most used tools internationally.

It includes 74 indicators of 5 dimensions: academic, involvement of key actors, operations, planning and administration, innovation and leadership.

Particularly, the Association for the Advancement of Sustainability in Higher Education (AASHE), aiming to help the universities comparing their sustainability performance, created in 2009 the STARS, a kind of benchmarking tool, initially designed to be used in the USA and Canada. Afterwards, in 2013, AASHE opened it to the HEIs around the world ([AASHE, 2013](#)). The last two technical manuals were launched in 2017 (STARS 2.1) and

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2019 (STARS 2.2), but from a version to another the system of credits and its categories/subcategories remained unchanged. However, the version STARS 2.2 highlights the connection to the U.N. Sustainable Development Goals (AASHE, 2019).

STARS is a holistic rating system (Parvez and Agrawal, 2019) and a transparent, self-reporting framework for HEIs (Urbanski and Leal Filho, 2015). According to Urbanski and Leal Filho (2015, p. 210):

The 2013 release of STARS Version 2.0 introduced structural revisions to STARS, changes to credit weighting and scoring, new credits and credit revisions, changes in access and new data accuracy measures. Among the most significant changes was a realignment of all credits to better fit within the international context.

Parvez and Agrawal (2019) indicate the existence of four STARS ratings: bronze (25 to 44 credits); silver (45 to 64 credits); gold (65 to 84 credits); and platinum (85 credits). According to the classification obtained, the institution receives a seal/certificate as a way of recognizing the effort made in favour of sustainability on campus (Pacheco *et al.*, 2019).

Some authors (Lidstone *et al.*, 2015; Parvez and Agrawal, 2019) and AASHE (2017, 2019) describe the five categories of STARS as follows:

- (1) Academics (28% weighting): the focus is on formal education programmes, courses and research related to sustainable development. The aim of the HEIs is to provide students with the knowledge to lead society to a sustainable future;
- (2) Engagement (20% weighting): the focus is on activities that afford students with sustainable learning experiences (despite the ones of the formal curriculum) and that contribute to promoting sustainable communities through public engagement and community partnerships;
- (3) Operations (35% weighting): the focus is on evaluating environmental sustainability in daily operations (e.g. greenhouse gas emissions and air pollution; sustainable buildings and transportation systems; waste reducing, reusing, recycling and composting; energy consumption, including conservation and efficiency and renewable sources of energy). It also fosters sustainable food systems and a sustainable economy through purchasing power.
- (4) Planning and administration (15% weighting): the focus is on institutionalizing sustainability by allocating resources to the management of sustainability programmes and on engaging all academic communities in governance. It also fosters sustainable investment and the incorporation of sustainability into HEIs' human resources policies;
- (5) Innovation and leadership (2% weighting): the focus is on innovative solutions to face the challenges of sustainability and on validating sustainability leadership in ways that are not enumerated in STARS.

Synthesizing, according to Urbanski and Leal Filho (2015), STARS is designed to: establish a framework for understanding sustainability in all sectors of higher education; allow significant comparisons over time and across institutions using a common set of dimensions; create incentives for constant improvement towards sustainability; enable information distribution about higher education sustainability practices and performance; and lastly, build a stronger and more diverse campus sustainability community.

According to several authors that revise and compare several tools to evaluate the sustainability implementation at HEIs, this tool has been highlighted as one of the more appropriated and well classified for this purpose. These authors highlight as the one more

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internationally used, that include the different dimensions of sustainability implementation in HEIs and in a holistic way, being efficient and easy to be used for a regular implementation and that also consider the United Nations Development Goals (Sayed *et al.*, 2013; Findler *et al.*, 2018; Stough *et al.*, 2018; Caeiro *et al.*, 2020). Nevertheless, very few distance learning universities applied this or other tools to evaluate their sustainability performance (Caeiro *et al.*, 2020).

### 3. Two case studies: Madrid Open University and Universidade Alberta

The current research evaluates and compares the experience and sustainable actions developed by two distance HEIs, namely MOU (Madrid, Spain) and UAb (Lisbon, Portugal).

MOU is an online private HEI established in 2008, and whose facilities are located in a small mountain village in Madrid, Collado Villalba. MOU has a hot climate zone and includes 7,000 m<sup>2</sup> of grass floor of which 20 m<sup>2</sup> and 15 m<sup>2</sup> are dedicated to laboratory and health-care, respectively. Within its campus and boundaries, however, it does not offer agricultural college facilities, medical schools, museums, satellite campuses nor hospitals. The activity of MOU focuses on research and university teaching. Its methodology is based on distance training and makes use of the latest information and communication technologies. Despite its online nature, MOU intends the student to be accompanied by the teacher along the whole learning process and sees itself as a “warm university”, close to the student’s needs. MOU has developed 88 international university cooperation agreements and 67 international Erasmus + collaborations. In addition, it belongs to 7 international networks and associations, and has an outstanding presence in Latin America, mainly in the Dominican Republic and Colombia but also in Mexico, Panama, Ecuador, Peru, Chile and Brazil. MOU is a young University, celebrating its first 10 years of existence and after this initial maturity evaluation has a great capacity for improvement precisely because of its versatility, scalability and youth.

Established in 1988, UAb is the only institution of public higher education in Portugal of distance learning and is dedicated to research and teaching. UAb is located in Lisbon, a city with a mixed climate zone. Its facilities have 7,680 m<sup>2</sup> of grass floor with a satellite campus but with no space for laboratory or health-care in its boundaries. Due to its purpose, UAb uses all the time, in its teaching activities, the most advanced technologies and methods of distance learning, saving no geographical borders or physical barriers and giving special emphasis to the expansion of Portuguese language and culture within the Lusophony space (migrant communities and Portuguese speaking countries). UAb offers higher education anywhere in the world and Lifelong Learning courses. All pedagogical offers are integrated into the Bologna Process and are taught under e-learning since 2008, the year that UAb became a reference European institution in the area of advanced e-learning and online learning through the recognition of its Virtual Teaching Model, unprecedented in Portugal and developed by this institution.

Academically speaking, MOU and UAb are quite similar universities, as they are divided into 5 academic divisions, count with a similar number of full-time enrollment students (MOU: 7,618; UAb: 5,425) and an analogous number of employees (MOU: 330; UAb: 340).

### 4. Methodology

In this study, STARS was the tool selected to evaluate and compare the two universities, a tool that proved to be efficient and internationally used as explained in the literature review.

MOU has recently implemented STARS in March 2020 (version 2.2). More particularly, after several meetings with the CEO, teaching, research and staff members of MOU, the heads of the ICT and sustainability departments provided in the STARS Reporting Tool all

the information regarding the sustainable performance and actions of MOU within the past three years. The final ratings enlisted here are taken from the Provisional Report offered by STARS. MOU is now in a process of being formally registered as a member of AASHE to allow an external evaluation and be aware of a STARS label. In April 2020, a group of researchers, teachers and MOU staff developed a focus group that has identified the strengths and main lines for immediate improvement considering the STARS results. Based on such advances, practical actions of improvements are expected to begin by September 2020.

On the other hand, UAb already had earlier implemented STARS in 2018 (version 2.1), corresponding to a 3-year assessment analysis (2015–2017). Raw data was collected based on document analysis and interviews. After a process of internal and external analysis by AASHE a final rating was awarded a Bronze label. In 2018, focus groups were also organized with the main stakeholders of the University to propose improvements based on the STARS results. All detailed information is available at [Martins, 2019](#) and [Caeiro \*et al.\*, 2020](#). More recently a group of teachers from different departments and ex-students was formed, in straight relations with the rectorate, to put in practice the improvements defined.

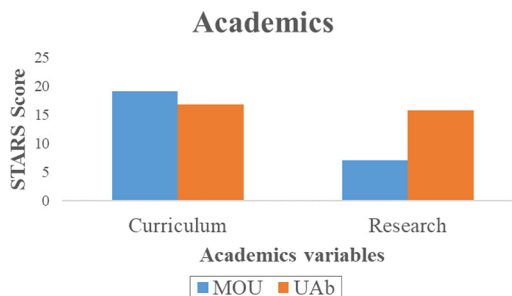
A comparison between UAb, OUM and face to face institutions that also implemented STARS was conducted using the STARS Benchmark Tool available online ([AASHE, 2020](#)). This global perspective on the STARS scores achieved by institutions data was collected for all institutions under 10,000 full-time equivalent enrolment to match the UAb and MOU total students. Institutions classified as Reporters were excluded from the database. The analysis considered 219 institutions that were compared with UAb and MOU regarding the five main categories of Academics, Engagement, Operations, Planning and Administration and Innovation and Leadership.

## 5. Results: comparison of sustainability tracking, assessment and rating system categories between Madrid Open University and Universidade Alberta

### 5.1 Academics

This first category analyses the effort carried out by the academic institutions to develop and implement education programmes and courses (i.e. curriculum), as well as research related to sustainability. As can be seen in [Figure 1](#), both distance learning universities show similar values in terms of formal education programmes and a slight difference in terms of research. Considering the total values to be achieved in STARS in the curriculum, MOU gets 56% of the maximum score and UAb around 50%. As regard research, these values rise to 88% in UAb and reach 32% in MOU.

More particularly, as regard **curriculum**, both distance learning universities are making significant efforts focused on sustainability: about 16% of the training offered by MOU, and



**Figure 1.** Scores obtained in curriculum and research by UAb and MOU



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8.25% of the courses offered by UAb include sustainability content. These courses are taught by university lecturers belonging to 3 departments (out of 5) in UAb and 1 department (out of 5) in MOU. Neither of the two universities, however, offer internships, practicums, special topics independent studies, clinical nor physical education specifically focused on sustainability. As regard learning outcomes related to sustainability, about 12% of the 150 courses offered at the general level by MOU require in their results that the student understands the concept of sustainability. These figures amount to 31% of 741 courses in the case of UAb. These results place them at almost 60% of the total score given by STARS to learning objectives related to sustainability. For instance, UAb offers a master's degree in environmental citizenship and participation, and aims students:

- to get to know the environmental and social problems that affect our society in the present,
- to develop the capability and the motivation to change people's attitudes towards a sustainable society,
- to plan strategies of action with citizens for a more informed, educated and proactive citizenship; and
- to be able to conceive, promote and manage projects aimed at environmental intervention (UAb, 2020a).

The two universities, nevertheless, offer few sustainability-focused undergraduate-level degree programmes. Neither university encourages an immersive experience, assessment of the sustainability literary or incentives for developing courses about sustainability.

Regarding **research in sustainability**, about 10% of the researchers in MOU do research on sustainability. This figure rises to 70% in the case of UAb. In fact, 2 of the 5 divisions in MOU research sustainability and 3 of the 5 do so at UAb. Interestingly, both universities give library support for sustainability research and learning to students and employees. In fact, UAb also encourages interdisciplinary students and staff to research in the environment and count on written policies that give recognition to interdisciplinary sustainability-based research. For example, UAb supports the such transdisciplinary by means of a strategic plan developed for interval 2015–2019 where several goals promote topics such as: promote, within the consortium with the University of Coimbra, collaboration with foreign universities or develop programmes for the exchange of teachers and researchers with renown world universities, especially with regard to distance education universities. Despite any of the two distance universities offers financial incentives to support open access authors, both offer a voluntary or mandatory open access repository. Specifically, MOU has designed *Udimundus* an institutional repository of digital documents generated from the academic, teaching and research activity of its university community. Its main objective is to publicize the scientific production of this community and ensure its preservation and dissemination. In this way, both the institution and its members participate in the “open access” movement to obtain greater visibility and contribute to the dissemination and advancement of science.

### 5.2 Engagement

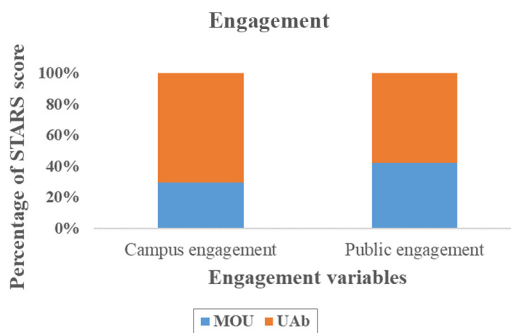
This category of STARS recognizes institutions that provide their students with sustainability learning experiences outside the formal curriculum (campus engagement), as well as those that help catalyse sustainable communities through public engagement, community partnerships and service (public engagement). Both universities carry out

approximately half of the sustainable engagement activities of the maximum to be achieved as established by STARS (Figure 2).

In relation to **campus engagement** activities, both universities provide students and staff with sustainability outreach material (such as podcasts or videos about sustainability) and offer vehicles to publish and disseminate student and lecturers' research in sustainability. Particularly, UAb offers the following sustainability-based material to its students: conferences, outdoor programmes based on the Leave No Trace principals, sustainable newsletters and even educational tools for bicyclists and pedestrians guide for green living. MOU encourages its lectures to publish in peer-reviewed journals through financial aid for the translation of scientific material. Unlike MOU, UAb assesses sustainability culture and has even carried out training and professional opportunities for their employees in sustainability. However, neither of the two universities features a central sustainability website, brochures that include information about sustainable food systems, employee educators' programme or an employee orientation programme.

As regard **public engagement**, both distance universities offer financial support to sustainable organizations. Particularly, MOU develops short-term activities with sustainability-focused partnerships while UAb supports multi-year partners encouraging social equity and well-being. Of particular interest, MOU considers underrepresented groups as equal partners. Any of the distance learning universities develop an ongoing mentoring relationship with another institution neither do their staff, faculty or students serve as peer reviewers of another institution's sustainability data. Unlike MOU, UAb is a member of an international sustainability network, namely the Inter-University Sustainable Development Research Programme (IUSDRP), coordinated by Manchester Metropolitan University. UAb researchers have also participated in several recent sustainable conferences such as the *Energy for Sustainability International Conference* or the *Annual International Sustainable Development Research Society Conference*. Its ISOLearn project was also recognized as a good practice by the National Erasmus + Agency and on October 16th it received the 2017 Good Practices Award at an event held at the Bissaya Barreto Foundation in Coimbra.

Remarkably, both distance universities offer continuing education courses that are sustainability-focused and sustainability-inclusive. More specifically, MOU offers 28% of its total continuous courses on sustainability, while UAb offers 11.36%. Of particular interest are the online Summer courses of MOU, its sustainability initiatives during the "stay at home" conferences and annual conferences on sustainability held by the MOU departments. UAb also provides incentives for employees to participate in community service and have Open classes available for free in the field of education for sustainable development or climate change (UAb, 2020b). Nonetheless, any of the two institutions advocate for public



**Figure 2.**  
Percentage of total sustainable engagement activities required by STARS implemented by MOU and UAb

policies that support campus sustainability (such as those taking place at the municipal or national level).

### 5.3 Operations

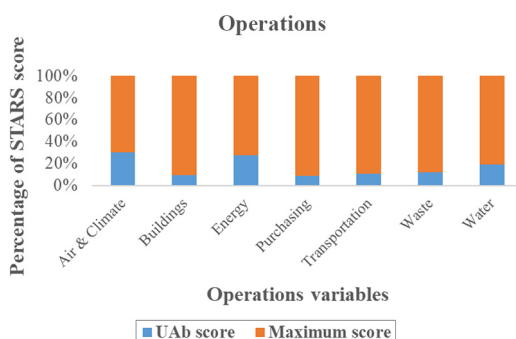
This category of STARS evaluates institutions that:

- are measuring and reducing their greenhouse gas and air pollutant emissions,
- improving the sustainability performance of their buildings and making more efficient building energy, grounds, transportation and
- developing sustainable purchasing and waste minimization.

Note that the nature of distance learning of both UAb and MOU confirms that this dimension of STARS is in which both universities show the greatest compliance deficiencies. While MOU is recently starting to develop slight sustainable activities in its operations, with weak significant outcomes on the STARS scores, UAb has already implemented several strategies for measuring and reducing air pollution, energy, transportation, waste and water. Figure 3 shows the extent to which UAb has developed sustainable strategies in its operations compared to the maximum standards recommended by STARS.

Particularly, UAb has taken steps in reducing its air pollutant emission by means of a greenhouse emission inventory concerning the following items: recycling waste items (paper and plastic), using a carbon calculator; electricity, using the data given by the Galp Power, S. A. company, who sells the electricity to the UAb; and car fleet fuel, using a Portuguese carbon calculator (Oeste Sustentável, 2019). The UAb also has implemented analytical tools to access and evaluate the performance of energy consumption every month in a half of its main buildings. In 2007, UAb undertook the replacement of all lamps in the total area of the campus by LED lighting. It has also conducted an online-course about good environmental work practices to staff in the context of the programme “Programa Fixe” where some topics were focused on energy efficiency.

In terms of sustainable transport, both UAb and MOU offer a condensed work week option that reduces employee commuting. For example, some of the MOU teachers are allowed to attend only 3–4 times a week on campus and in the case of UAb 1–2 times a week. Both universities also choose strategically the location of their infrastructures regarding the city centre and the available public transportation allowing a pro-environmental choice regarding the impact of transportation to the physical infrastructure.



**Figure 3.**  
Percentage of total  
operation activities  
required by STARS  
implemented by UAb

As regard the purchasing policies, part of the expenditures on electronic products (computers, tablets, displays, etc) of UAb are EPEAT Gold registered and half of its expenditures on cleaning and janitorial products are, just recently, the third-party certified to meet recognized sustainability standards. Concerning waste minimization and diversion, UAb diverted almost 20% of materials from the landfill or incinerator by recycling, composting, donating or re-selling, performance year. Such an institution also reduced in 2017, 50.44% in potable water use per unit of floor area when compared to 2013.

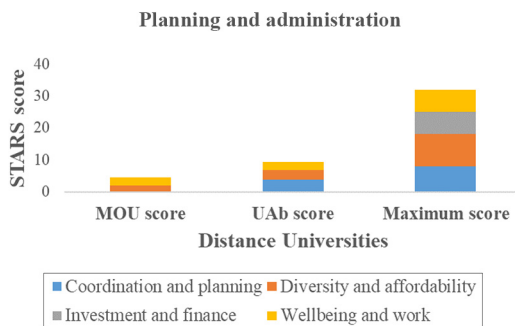
Despite such advances, neither of the two universities has measured air pollution generated by business travel, commuting or capital goods, neither do they record outdoor air quality. They have not implemented yet major sustainability-based renovations in their buildings during the previous 5 years or used sustainable energies in their installations. These distance universities could have made more efforts in this dimension. For example, MOU could offer sustainable food and beverage in their dining and also made use of inorganic fertilizers in their grounds (UAb has no dining or soil grounds). Greater efforts are also needed in offering bio-vehicles or free-CO<sub>2</sub> transport for students or employees. As regard waste minimization, they have neither used specific containers for separating different types of materials nor developed waste audits to assess its materials management.

#### 5.4 Planning and administration

This category of STARS seeks to measure to what extent colleges and universities are institutionalizing sustainability by dedicating resources to developing plans to move towards sustainability, advancing diversity and affordability, making investment decisions that promote sustainability, as well as those incorporating sustainability into their human resources programmes and policies.

At a general level, as shown in Figure 4, both universities are just about to make significant efforts in responsible planning and administration and, more specifically, in the development of sustainable work plans and environments. Unlike MOU, UAb has already recently published a strategic plan (2020–2024) that includes objective and general actions to develop at a sustainable level. UAb signed in 2019 a commitment for Sustainable development implementation within the Portuguese campus network of HEIs and Lisbon Green Capital, UAb' students, staff, teaching and research faculty also have an elected representative body through which they can participate in governance. None of the universities, however, measure sustainability objectives or have written policies and procedures to identify and engage external stakeholders.

As regard diversity and affordability, both institutions develop specific actions to support diversity, equity, inclusion and human rights. Both UAb and MOU have carried out



**Figure 4.** Scores achieved by MOU and UAb in comparison with the maximum score recommended by STARS on sustainable planning and administration

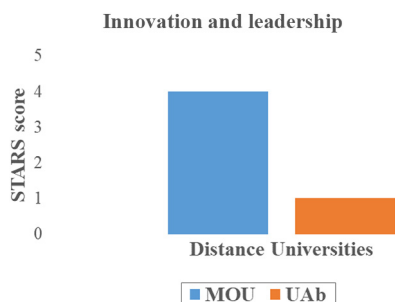
a discrimination response protocol and specific programmes to support students from underrepresented groups on campus such as the disabled. Also, both institutions have policies and programmes to make it accessible and affordable to low-income or non-traditional students (such as elderly professionals). Nevertheless, any of the two organizations develop cultural training activities for human rights, offer the campus for student outcomes related to inclusion or employee outcomes or track accessibility and affordability.

Regarding the variable well-being and work, both universities implement actions that correspond to almost half of the maximum efforts recommended by the STARS index. Particularly, both obtain anonymous feedback to measure employee satisfaction and engagement during the previous three years. For example, the mission of MOU's Technical Unit for Quality is to meet the quality needs of the various interest groups in the university community, to fulfil the mandates of the Management, the Rectorate and the General Secretariat and other institutional agents and to play an active role in the relationship with the various agencies and bodies for quality assessment and accreditation, by means of the quality plans established within the framework of the organization's continuous improvement. Nevertheless, they have not designed a wellness programme that makes counselling, referral and well-being services available to all students, staff and teachers.

According to the STARS index, any of the two distance universities carry out transparent and democratic investment processes to promote accountability and engagement by the campus and community. More particularly, neither UAb nor MOU have formally established and active committee on investor responsibility (CIR) that makes recommendations to fund decision-makers on socially and environmentally responsible. Neither of the two universities wishes to formally pursue positive sustainability investment nor offer a snapshot of its investment holdings available to the public or proxy voting.

### 5.5 Innovation and leadership

This latter category recognizes institutions that are seeking innovative solutions to sustainability challenges and demonstrating sustainability leadership. As shown in Figure 5, the young MOU develops, in a remarkable way, more sustainable actions than UAb. Specifically, MOU is recently implementing initiatives to connect academy and industry, creating diversity and community garden, designing programmes of energy system certification, developing networks for student social innovation, as well as using Single-Use Plastic Bans, among others. For example, MOU works closely with *Todostartups* ([www.todostartups.com/](http://www.todostartups.com/)), an initiative that seeks to connect the academic and professional worlds by providing information on start-ups, creation, search for financing, investors, the social network of entrepreneurs and investors. UAb, in turn, promotes a decentralized



**Figure 5.**  
Scores achieved by  
MOU and UAb in the  
innovation and  
leadership dimension  
of STARS

organizational structure, with local learning centres situated in the interior and small cities, which favours close contact with society in general and with its students and trainees.

In Figure 6 an overall comparison with MOU, UAb and face-to-face HEIs with similar size, allows highlighting that both studied universities have lower performances in terms of operations, engagement and operations. In academics, they are on average of the face to face institutions, in the case of UAb slightly higher and in case of MOU above average in Innovation and leadership.

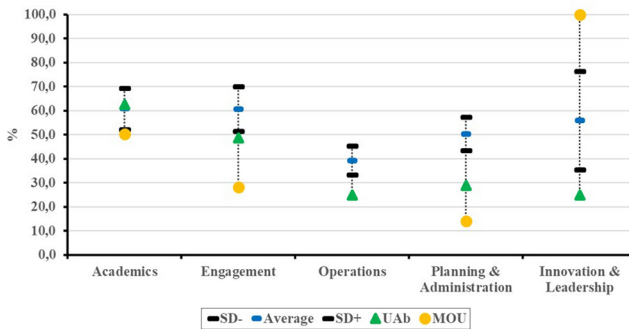
### 6. Discussion

STARTs tool was first worldwide used at distance learning universities, in particular in Europe, Portugal and Spain, in the case studies presented earlier. Its application has identified some points of better adaptation to European reality (in particular related to units of measurement and benchmarks) and distance learning universities as also highlighted earlier by Caeiro *et al.* (2020).

The implementation of the STARS in the two case study universities worked as important drivers for the first diagnosis, allowed to identify their strengths and potential lines of improvement, namely for future changes in organizational management, as already stressed in Caeiro *et al.* (2020), for UAb case. Also, both Universities could learn from each other, due to their similar size and country culture and improvement measures of both can be exchangeable. Table 1 includes the action plans that would be advisable to implement in the future by MOU and UAb with the aim of becoming even more sustainable distance learning universities. Some of the lines of improvement are already in place (outlined with italic) and being motivated by the STARS results.

As these universities do not have a formal campus with students some of the indicators of STARS are not applicable, diminishing the possibilities of earning points on those indicators, in particular in the operation category. As stressed by Wadud *et al.* (2019) and Versteijlen *et al.* (2017), e-learning has a lower impact on greenhouse gas emissions and climate change so in terms of campus operations distance learning universities could have a low ecological footprint, but it is not reflected on the STARS tool.

When the case studies are compared with the face-to-face HEIs indeed their performance is lower at this dimension and investment decisions that promote sustainability, as well as low levels of community participation (Figure 6). Nevertheless, distance learning



**Figure 6.** STARS Global scores achieved by MOU and UAb in each of the dimensions of STARS and comparison with face to face universities (>10,000 full-time equivalent enrolment)

**Source:** STARS benchmarking tool (<https://benchmarks.aashe.org/#dashboard>)

| Dimension  | Sub-dimensions | Lines of immediate improvement  |
|------------|----------------|---|
| Academics  | Curriculum     | <p>Offer online internships, practicums, special topics or physical courses to students specifically focused on sustainability (MOU)</p> <p>Increase learning objectives and required skills and knowledge related to sustainability in the curriculum of the subjects and courses (MOU) (<i>this activity will be implemented during the 2020/2021 academic year</i>)</p> <p>Expand the number of departments that offer knowledge on sustainability, so that the concept of sustainability can be fully implemented in various areas of knowledge (MOU and UAb) (<i>at UAb a questionnaire was sent to all the teachers in 2020 to assess if they are teaching sustainability and interdisciplinary pedagogical methods and their link with sustainability competences</i>)</p> <p>Provide incentives for the development of courses, degrees and postgraduate degrees focused on sustainability, as well as develop an official action plan for sustainability assessment in the curriculum (MOU) (<i>the ICT and Sustainability Department is already managing, together with the CEO and teaching staff, an official action plan for sustainability</i>)</p> <p>Institution specific sustainability learning outcomes for all students (UAb) (<i>a questionnaire will be sent to the students in 2020 to evaluate their sustainability literacy</i>)</p> |
|            | Research       | <p>Offer financial incentives to support open access authors (MOU) (<i>MOU is now offering the possibility of covering the costs of translations into English of academic material, and thus favouring open access</i>)</p> <p>Enlarge research on sustainability linking students with the labour market, according to transdisciplinary research approaches (UAb)</p> <p>Encourage interdisciplinary students, staff and lecturers to do research on the environment and sustainable actions (MOU, UAb) (<i>at UAb publications, including students thesis and dissertations uploaded on the university open repository can now indicate in which SDG are working on</i>)</p> <p>Develop written policies that give recognition to interdisciplinary researchers that investigate sustainability (MOU)</p>  |
| Engagement | Campus         | <p>Develop conferences, outdoor programmes or other co-curricular sustainability initiatives (MOU) (<i>some conferences dealing with the 2030 Agenda are already scheduled</i>)</p> <p>Carry out official plans for assessing sustainability culture (MOU)</p> <p>Implement employee orientation and professional development based on sustainable outcomes (MOU)</p> <p>Inclusion within the new employees' welcome programme of a sustainability performance kit (UAb) (<i>already being prepared</i>)</p>  |
|            | Public         | <p>Take part in national or international sustainability networks (MOU)</p> <p>Bolster employee participation in conferences, courses and mentoring covering sustainable actions (MOU) (<i>already being implemented</i>)</p> <p>Develop incentives for employees to participate in community service (MOU)</p> <p>Promote awareness within the academic community for students to work with the local community problems in the realm of Local Learning Centres (UAb) (<i>some projects were already submitted for external financial support</i>)</p>   |
| Operations |                | <p>Create a greenhouse emission inventory as regard recycling waste items, electricity, car fleet fuel and air pollution (MOU)</p> <p>Design analytical tools to usually access and evaluate the performance of energy consumption (MOU)</p>  |

(continued)

**Table 1.**  
Main lines of improvement for MOU and UAb to become a more sustainable HEI, following STARS benchmark

| Dimension                   | Sub-dimensions  | Lines of immediate improvement  |
|-----------------------------|---|---|
| Planning and administration |   | Conduct workshops about good environmental work practices to staff and professors (MOU) ( <i>some projects and internal meetings are already being developed aiming to bolster environmental work practices</i> )   |
|                             |   | Get all the expenses in electronics, cleaning and maintenance to be the third party certified to meet recognized sustainability standards (MOU)   |
|                             |   | Offer sustainable food and beverage in their dining (MOU)   |
|                             |   | Disseminate/monitor the Ecological footprint – CO2 equivalent, water, waste (improvement of the GEE inventory) (UAb) ( <i>these activities will be implemented within an ongoing ERASMUS + project</i> )  |
|                             |   | Separated bins in all facilities to supply the recycling chain (UAb) ( <i>a waste management plan is starting now</i> )   |
|                             |   | Develop a strategic plan that includes objectives and general actions to develop at the sustainable level, (MOU and UAb) such as procedures to identify and engage external stakeholders (UAb) ( <i>UAb has already included a Sustainability Axe on its strategic plan</i> ) |
|                             |   | Develop formal structures to improve diversity, equity and inclusion (MOU)  |
|                             |   | Design cultural training activities for human rights (MOU)  |
|                             |   | Publicly post non-discrimination statement and recruit staff from underrepresented groups (MOU and UAb)   |
|                             |   | Develop a wellness programme that makes counselling, referral and well-being services available to all students, staff and teachers (MOU) ( <i>UAb is going to implement in 2020 a training to staff about well-being in food</i> )   |
| Innovation and leadership   |   | Implement transparent and democratic investment processes to promote accountability and engagement by the campus and community (MOU)  |
|                             |   | Give more emphasis to the sustainability academic offer (UAb)   |
|                             |   | Integrate sustainability practices in the quality office (UAb)  |
|                             |   | Promote a fair trade campus (MOU)   |
|                             |   | Work together with the food bank (MOU) ( <i>the institution is collaborating with food banks during the COVID-19 crisis</i> )   |
|                             |   | Achieve a pest management certification (MOU)   |
|                             | Sustainable procurement practices (also within national policies): e.g. recycle paper, hybrid cars, cleaning material (UAb) |   |
|                             | Engage all university community in an online collaborative platform for sustainable ideas (UAb)                             |   |

Table 1.

universities have a high potential in education and curricula, as shown in the two case studies. E-learning, if conducted with an appropriate pedagogical model allows also the use of pedagogical approaches known to be effective in sustainability education namely problem-based learning, interdisciplinary team teaching and case studies (Azeiteiro *et al.*, 2015). These methodological approaches have a good connection with sustainable development competences (Lozano *et al.*, 2017, 2019).

More particularly, the two distance universities achieve almost two-thirds of the required actions by STARS in terms of **sustainability-based research and education** programmes and courses. Both universities are recently taking action to further improve their sustainability curricula, namely sending questionnaires to all the teachers in 2020 to assess if they are teaching sustainability (UAb), following Lozano and Lozano's (2014) approach and managing official action plans for sustainability (MOU). With regard to the sustainability experiences that both universities offer on their **campus** to students and the general public, the two institutions are developing acceptable management and get half



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the score required by STARS. It worth noting, however, that both universities show important points of improvement in promoting sustainable learning experiences outside the formal curriculum. Indeed, they are already working on this line of improvement by developing outdoor programme conferences (MOU) and including within the new employees' welcome programme a sustainability performance kit (UAb) (see [Table 1](#)).

The diagnosis of the categories of STARS achieved by each of the universities also highlights some differences between the two institutions, which could help them improve on each other. For example, UAb focuses its efforts on research related to sustainability to a greater extent than does MOU. Particularly, UAb achieves 88% of the total scores in sustainable research, compared to the 32% managed by MOU. UAb's longer history could be a potential reason by which UAb has developed a stronger academic and planning background ([Pellizzari and Billari, 2012](#)). To improve its research performance, MOU is already working on, for example, offering financial incentives to support open access to authors. Unlike MOU, UAb has been developing remarkable work on sustainability coordination, which includes the publication in 2020 of a strategic plan (with objectives and specific actions related to sustainability), the creation of inclusive and participatory governance and the articulation of a committee in which students and teachers have representatives. Finally, it is worth mentioning that MOU has already implemented edge-cutting solutions to sustainability challenges and demonstrated an undeniable background in sustainability leadership. In contrast to UAb, for example, MOU has created national well-known platforms aiming to connect the academic and professional worlds by providing information on start-ups and social network of entrepreneurs and investors. Despite both universities are part of southern European countries and both develop remarkable sustainability plans and actions ([Caeiro et al., 2020](#)), Portugal's universities have a superior track record in sustainable investment ([Shiel et al., 2016](#)). This greater effort in sustainability could explain UAb's better results in research and planning.

The very digital nature of both universities confirms that their main deficiencies are related to the development and measurement of actions for achieving sustainable and efficient buildings, grounds, transport and purchases (**operation** category of STARS). Besides their low environmental impact due to not having a formal campus with students and classes, most lines of further action are aimed at creating a greenhouse emission inventory as regard recycling waste items or electricity or separating bins in all facilities to supply the recycling chain. Indeed, campus greening is often the first step universities take towards sustainability ([Sonetti et al., 2016](#)). As regard the **planning** category, the two distance learning universities also develop fair management in incorporating sustainability into their human resources policies and carrying out a discrimination response protocol or committee. Nevertheless, both universities are asked to develop further improvements that foster sustainable investment and written policies that help identify and engage external stakeholders. Finally, the two e-learning institutions implement **innovative** solutions to face the challenges of sustainability to an acceptable extent. However, more work is needed in the engaging university community in online collaborative *s* for sustainable ideas or achieving sustainable management certifications. It is also still missing in these case studies a real transformative learning process towards sustainability that goes beyond good practice examples, but that can be applied in the context of distance learning, following, for example, the morphological box for education for sustainable development proposed by [Isenmann et al. \(2020\)](#).

Also, further work should be developed to better understand and measure the direct and in particular indirect sustainability impacts distance learning institutions have, considering

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the e-learning strategic relevance is gaining more recently also as highlighted by other authors (Findler *et al.*, 2018; Stough *et al.*, 2018).

## 7. Conclusion

The unprecedented challenges in the social, environmental and economic spheres are requiring strong and immediate actions on the part of international institutions and firms all over the world. The role of Universities as agents of academic, social and economic change places them as one of the main actors to address such challenges. Along this line, recent research has started to measure the sustainable practices of HEI aiming to monitor and reduce their carbon emissions, as well as transform them into more economically sustainable organizations. Despite the growth of distance universities, it is surprising to discern how most studies omit developing an assessment of sustainable actions carried out by open HEI. This is the first study that makes use of the international assessment tool STARS to compare sustainability implementation in two similar distance learning universities, namely MOU and UAb, evaluate their advantages and disadvantages and then discuss further lines of improvement.

The results of the current research make it possible to develop a characterization of distance universities in relation to their sustainable profile: on the one hand, they offer low performance in campus operations and investment decisions that promote sustainability as well as low levels of community participation; on the other hand: open universities achieve good performance in sustainability courses and programmes offer, as well as high levels of research on sustainability. These features, so specific to distance learning universities, call for the development of adaptations in sustainability measurement scales, namely modifying the weight of some items or factors of the STARS measurement scale when it comes to distance universities. Otherwise, it will not be possible to implement fair comparisons between universities of diverse nature, namely face-to-face and distance learning.

These findings are not only useful to clear up the current sustainable practices developed by distance learning universities but also to give insight into the competitive advantage that these institutions offer over the traditional, face-to-face HEIs. Future work should be conducted to better measure sustainability implementation in these types of institutions considering their specificities and differences compared to more traditional ones.

In a pandemic context, like the one we are facing, maybe HEI could take some advantages by making some benchmarking of distance universities practices. Research has already stated that COVID-19 has made learning institutions to go from offline mode to online mode of pedagogy, even when universities were reluctant to accept modern technology (Dhawan, 2020). Distance, sustainability and personalized teaching and learning are the three biggest challenges for online teaching. Innovative solutions by institutions can only help us deal with this pandemic (Liguori and Winkler, 2020). In this research, we show that there is an opportunity to evaluate the campus operations processes and high costs, investing in a real sustainability policy. Improving the performance of online education could be done by studying the good practices of distance universities.

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