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# Sustainability in the Higher Education System: An Opportunity to Improve Quality and Image

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**Abstract:** In view of the increasing importance attributed to social responsibility and stakeholder relationship management, more universities have expanded their research topics and their educational programs through the years. High attention is dedicated to the dominant principles and values of internal and external relations, to the innovation processes designed to ensure an approach to sustainable development. However, less attention is dedicated to the sustainability governance orientation and to the development of a strong institutional culture of sustainability, which is a key success factor to improve the quality and the image. This article observes the sustainability governance orientation, through the analysis of the information on the websites of three fair groups of universities in the international Top 500-ARWU (Academic Ranking of World Universities) 2015 ranking. The aim is to verify if there is a link between the degree of sustainability culture in the management and the positioning of the universities in the international ranking. In addition, the analysis is compared with self-assessment data carried out by the same universities in terms of performance sustainability through the STARS (Sustainability Tracking, Assessment & Rating System) online platform. As principal consideration, we have noted that the best universities in the ranking have a management approach based on a shared vision of sustainability development of their university leaders, who play an essential role affirming and disseminating a sustainability culture. All this opens broader future implications intended to highlight the importance of management sustainability as a quality improvement factor of universities.

**Keywords:** university governance; social responsibility; sustainable development; sustainability culture; quality

## 1. Introduction

Universities play a crucial role in the development of economic systems based on disseminating knowledge and innovation, promoting a more resource-efficient economy, greater environmental friendliness and competitiveness to foster cultural growth and social and territorial cohesion.

The cultural and social growth of a country is associated with the quality of the education system, which finds its most advanced expression in university and post-university education. In this sense, and especially in recent years, universities have assumed a privileged position as key drivers of education for the sustainable development of the new generation [1]. In most countries, universities constitute a fundamental vehicle to explore, test, develop and communicate the necessary conditions for effective and sustainable change [2,3].

The growing interest in promoting the principles of social responsibility and sustainability is evident in observing the evolution of the research topics, scientific contributions and educational programs [4–6]. At the same time, the factors that have contributed to emphasizing the importance of stakeholder engagement in the academic world include the need to improve the links with the labor

market; cultural globalization and competition between universities; controlling the quality of teachers and services; national and international accreditation and evaluation processes; and affirmation of the principles of transparency and accountability [7].

However, until universities are able to effectively promote sustainable development on a global level while also activating the continuous adaptation/anticipation of changes in stakeholder expectations, it is essential that the principles of social responsibility and the related sustainability goals inspire the governance culture and organizational behaviors of each university [8].

University governance with a limited propensity towards social responsibility and sustainability primarily focused on environmental issues or the simple introduction of sustainability issues into existing programs [9,10] cannot be considered an efficient and exhaustive condition to promote change and above all to ensure the optimization of value creation (economic, social and environmental) for stakeholders.

Indeed, stakeholder value creation assumes particular importance in universities as a factor qualifying their image, acquiring consensus, trust and resources. Such behavior presupposes embracing policies aimed at emphasizing the principles of social responsibility, the internal dissemination of the culture of such responsibility and a clear focus on economic and social-environmental performance.

Governance policy relates to the vision, mission, purpose and main objectives of a university. Transforming the policy into actual results entails disseminating all the behaviors of a sustainability culture and implementing appropriate systems of direct accountability to both internal and external stakeholders [11].

The institutionalization of the principle of sustainability is only achieved when accepted and integrated in the university governance culture and progressively becomes part of the activities implemented [12,13]. In other words, the governance approach of universities oriented to social responsibility is aimed at enhancing the close interdependence between economic and social efficiency, optimizing performance along the triple bottom line and involving all the management processes: from research and teaching to administrative and service activities, from the top management to the entire organization. This approach is implemented in both behaviors and internal communications, in external relationships and accountability [14,15]. A partial vision of the theme does not lead to real change and a holistic approach to sustainable development.

Based on the above considerations, this paper analyzes the links between sustainability orientation, the quality of relations with stakeholders over time and the international qualification of universities. The starting point is the consideration that the success of a university is primarily associated with the degree of satisfying the expectations of key stakeholders (students, businesses, non-profit organizations, government, community, etc.) through conducting its core business.

A socially responsible university assumes behaviors that seek to involve stakeholders to better understand their expectations and priorities and transfer these into defining the strategy and goals, into monitoring the objectives in view of promoting the activities and accountability, to enhance a community-university engagement. Consequently, social responsibility and sustainability are associated with transparency, reputation, consensus and effective monitoring of results, ensuring continuous quality improvements in the university's core business (Figure 1).

Thus, sustainability is a condition that defines the quality of the relationships between stakeholders and universities. The quality of relations is reflected in the ability to duly and adequately meet educational expectations and scientific advancement, to guarantee employment, contribute to the economic and social wellbeing of a country.

Based on the above considerations, this study first develops reflections on the relationship between the positioning of universities in international rankings in relation to governance quality and sustainability orientation. The intention is to verify the extent to which the propensity to achieve sustainable performance is actually considered an opportunity to improve quality and to qualify the university's image.

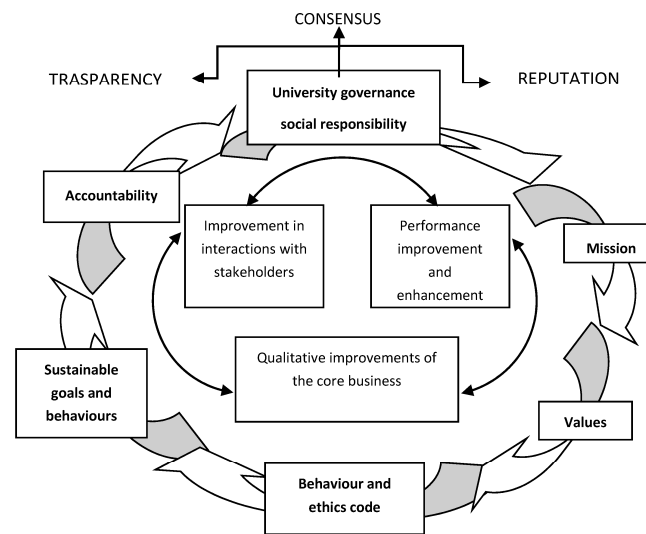


Figure 1. The virtuous cycle of sustainable development in universities.

## 2. Theoretical Framework

Governments are increasingly pursuing international exchanges and agreements to enhance educational opportunities, develop policies to improve the social and economic prospects of individuals, provide incentives for educational efficiency and help mobilize resources to meet growing demands. An example is the International Sustainable Campus Network (ISCN), which is a non-profit association of globally leading colleges and universities representing over 30 countries and to cooperate toward an holistically integrate sustainability into campus activities, research projects and methods teaching.

The current situation is the result of a historical process that led to the transition from universities for the elite to universities for the masses. This process, which began in the 1970s, has imposed and continues to impose major changes to university governance mainly due to three factors:

1. Globalization, namely, the removal of barriers to the movement of people and information also in relation to cultural and economic phenomena. In this regard, over the past twenty years, the OECD surveys (Organization for Economic Co-operation and Development) show a progressive increase in the international mobility of students, which has fuelled the competitive mechanism and thus competition between universities. International migration also affects university professors and researchers, thus intensifying the selection of the most qualified resources for the development of educational projects for the benefit of universities with a better reputation.
2. Higher education liberalism, namely, the renowned phenomenon of education massification. In OECD countries, the phenomenon is particularly evident, for example, "Between 1995 and 2011, university entry rates rose by more than 20 percentage points on average across OECD countries, from 39% to 60%" [16].
3. Development of the knowledge economy. Knowledge has increasingly assumed the status as a driver of economic development. Universities are the most important promoters of the knowledge economy, not only because they produce brainworkers, but also because they make their structures and the results of their activities available to the community: from laboratories to networks, from libraries to outcomes.

To enable a better understanding of the subsequent analysis, a brief outline is provided of the characteristics of the different university systems in the world as well as a reflection on the particular management processes and related results. In addition, it is important to briefly recall the historical origins and evolution of university systems. History acknowledges Bologna (Italy, year 1088) and Paris

(France, year 1170) followed immediately by Oxford and Cambridge (historical British universities created in the Middle Ages) as the biggest promoters of the medieval university tradition. Academic expansion, especially between the 13th and 19th centuries, also manifested intensively aside from in Italy, France and England [17–20] in all other nations marked by cultural, historical and economic conditions promoting the launch of a new university center [21–24]. Albeit much more recently (from the 16th century onwards), universities also developed in non-European countries. In Japan, the main historical universities are in Tokyo (1867) and Kyoto (1897), both of which grew on the foundations of existing institutions.

In China, although maintaining a strong link with the ancient tradition, the European mind-set and organizational techniques have recently greatly influenced the university system, thus becoming very attractive to students from Europe.

Universities in former British Empire territories are influenced by the British rule. For example, in India, the oldest universities in Bombay, Calcutta and Madras date back to 1857. These were followed by two new universities in the 19th century and around fifteen in the 20th century (of historical note is the International University Institute commissioned by Rabindranath Tagore). Universities created in other dominion territories (Canada, Australia, New Zealand, and South Africa) before the 19th century are particularly numerous and very diverse in terms of organization and management as some follow the English tradition, others the French tradition and others still are more aligned to the US example.

In Latin America, the oldest universities are predominantly Spanish-inspired. The main universities include the University of Lima (Peru) in the 16th century, the Institute of Córdoba in Argentina (1613) and the University of Santiago of Chile (1743). The foundation of the main South American universities in Rio de Janeiro and Buenos Aires date back to the 1920s.

At present, almost all universities of economically advanced countries adopt the American model of three different levels of study (undergraduate, graduate and Ph.D.). The first level of university education consists in undergraduate courses resulting in the “Bachelor” (Bachelor of Arts for the humanities, Bachelor of Science for the sciences or Bachelor’s degree for management, architecture, jurisprudence, pedagogy and so forth). The second level (graduate), which after two years usually results in the “Master’s degree”, is a requisite qualification to access many professions (such as surgeon, dentist, lawyer, architect, and engineer) and teaching positions. The third level, which results in awarding the title Doctor of Philosophy (Ph.D.) entails at least three years dedicated to research and fulltime study.

Even if relatively similar in terms of education path, differences prevail in terms of the main sources of funding, governance approaches and ability to adapt to changes. Specifically, university governance is influenced by its status—public or private—in relation to obtaining funds and operational constraints. These differences are particularly evident when comparing Anglo-Saxon with continental European countries.

The Anglo-Saxon university system derives its main source of funding from businesses and private citizens who make donations, legacies and/or fund research projects and educational initiatives. The relationship between private and public funding to sustain the US and English university systems has certain differences. In particular, in England, the State intervenes only secondarily in the structural process leading to the emergence of new colleges and universities. Specifically, the State intervenes only in relation to the ranking of individual institutions through the Royal Charter, namely, the expression of the Sovereign in Council’s will as required by the British constitutional tradition and consequently the possibility of issuing academic degrees. Consistently, universities that are totally autonomous and independent from the Board of Education enjoy state subsidies based on assessments made from time to time and wide discretionary powers from the University Grant Committee constituted in 1919.

The US saw rather different and successive situations: in the 17th and 18th centuries, the oldest colleges and the most renowned universities were founded based essentially on a private offer. In the 19th century, government-funded state universities were established. Subsequently, in the period of maximum economic expansion, the patron model was established based on a private supporter of a

specific university usually named after him/her or a recognized lender of existing universities. Dating back to the first period are the most famous universities: Harvard University (Cambridge-Boston, 1636), Yale (New Haven, 1701), Princeton (Princeton, 1746) and Columbia (New York, 1754). Dating back to the second period (birth of state universities), for example, is the Ann Arbor University (1841). Examples of major universities backed by patrons are Cornell University (commissioned by Ezra Cornell in 1865), the University of Chicago (with the support of John D. Rockefeller in 1850) and the J. Hopkins University (commissioned by J. Hopkins in 1876).

This characteristic has enabled, especially in the US, the rapid expansion of university campuses as centers of student life with school buildings, study structures and hospitality areas.

In continental Europe, however, the establishment and development of universities is often promoted and financed by the public system, which for a long time resulted in detailed bureaucratic regulations of the management processes. European university systems have undergone a profound transformation only since the 1990s, aimed at affirming a new approach of the role of universities in society [25–27] also to reduce the quality gap compared to Anglo-Saxon universities. In particular, a number of regulatory measures and recommendations to improve the effectiveness of university systems ensued in different countries including Scotland in 1993 and 1997, the Netherlands in 1997, Austria in 2002, Denmark in 2003, Switzerland in 1991 and 2003, Germany in 2003 and 2009, Italy in 2004 and 2010, France in 2007, Spain in 2007, Portugal in 2007 and Finland in 2010.

The differences in countries with common university systems relate to university governance, with evident implications in terms of performance. Consider that in the US, expenditure per student is twice the average of OECD countries [28].

Most European countries adopt an approach focusing primarily on teaching where public status determines the various constraints in relation to university management decisions and policies. The American model, in contrast, entails the limited involvement of the federal government and universities do not endure the effects of centralized planning of activities and programs. The patrons of the universities are the governments of the confederacy States, religious bodies, students through the payment of taxes and generous benefactors such as C. Vanderbilt and J.D. Rockefeller.

As a result, the characteristics of the Anglo-Saxon university system have facilitated the formation of a stakeholder approach with high attention to the development of a management approach able to readily incorporate stakeholder expectations for the benefit of the quality offered.

In addition, American universities are also strongly oriented to a competitive approach based on qualifying their image to attract consensus and resources. Any qualifying assets become a competitive mechanism: from students to professors, from researchers to sports stars. This has engendered competition between universities. For example, professors compete for research funding and students for scholarships at colleges, which stimulates reciprocally overcoming their limitations and leading to higher levels of excellence. In the European system, the development of competitive capabilities is often linked to the recently introduced evaluation and incentive systems and frequently counting on independent public funding irrespective of the results achieved.

Another key feature concerns management flexibility primarily associated with stakeholder engagement, understanding their expectations and priorities and obtaining consensus. Management is more flexible in systems where the universities are able to effectively manage stakeholder consensus, obtaining the necessary resources to ensure optimizing the ability to adapt to their expectations.

Assuming the stakeholder view, the quality of established relationships and the proven ability to meet expectations undoubtedly contribute to increasing the ability to duly adapt the objectives, processes and results to the contiguous changes.

Thus, for example, consensus from private lenders enables obtaining the resources to recruit teachers based on their reputation and scientific skills, to change the educational offer and promptly undertake research projects on emerging issues.

The university system has become increasingly dynamic and must meet composite demands and social expectations. The main concern of universities is the inability to link the multiple functions and



expectations with high-quality scientific production and teaching [29,30]. In this sense, stakeholder engagement has become crucial, which has significantly developed in most US universities and, albeit in a different way, in some British universities, and is also assuming increasing importance in all other countries (e.g., the creation of joint teacher/student commissions, increasing meetings with social partners, placement services, the creation of university campuses, encounters between students and the labor market, the development of research centers with the participation of financing companies, etc.). Social responsibility and associated sustainability have assumed growing importance for the development of quality universities, able to successfully combine economic and social-environmental performance. This situation confers a decisively central role to the governance organs in charge of management, and at the same time, should foresee the involvement of new management roles (preferably with an external vision) to allow opening the university environment to a series of managerial values and principles [31–35].

An example is the recent global debate on the integration of sustainable development in the quality management approaches of higher education institutions and universities that have the potential to bring about profound change, starting from education. This debate is still wide and open [36–38].

Of note among the most recent and significant international efforts on the theme is the “Rio+20 People’s Sustainability Treaty on Higher Education” jointly developed by over 30 higher education networks and institutions under the guidance of the International Association of Universities and the United Nations University—Institute of Advanced Studies of Sustainability. Emphasizing a holistic and transformative perspective for sustainable higher education, the Treaty promotes the following eight principles ([www.sustainabilitytreaties.org](http://www.sustainabilitytreaties.org)):

- (1) To be transformative, higher education must transform itself.
- (2) Efforts across the higher education system must be aligned.
- (3) Partnership underpins progress.
- (4) Sustainable development is an institutional and sector-wide learning process.
- (5) Facilitating access to the underprivileged.
- (6) Inter and trans-disciplinary learning and action.
- (7) Redefining the notion of quality higher education.
- (8) Sustainable development as a whole-of-institution commitment.

The proliferation of cases of mismanagement, the frequent conflicts of interest, the dominant opacity of responsibilities and the lack of clarity in the allocation of tasks and roles among the organs, as well as the need to rationalize decision-making and recovering the requisite requirements of effectiveness, efficiency and transparency are all phenomena that prompted the change in university governance [39]. These phenomena are accompanied by the emergence of new concepts of sustainable development and stakeholder relations’ management.

In particular, the affirmation of the concepts of accountability and transparency in the relationships established between universities and the surrounding environment result in the progressive and selective extension of institutional communications disseminated to all stakeholders. Specifically, there is a need to make a set of homogeneous and complete information available to relevant stakeholders able to communicate the manner of exercising responsibilities and the related results (economic, social, environmental). The concept of accountability is one of the basic principles of the university change process and studies on the subject in turn emphasize the aspects of “transparency”, “responsibility” and “accountability” [40].

The effectiveness of interactions between universities and stakeholders is affected by the dissemination of the culture of transparency. Transparency is in fact an ethical condition that on a communication level implies first a clear orientation to the correspondence between facts and information associated with:

- The intention to disseminate all the information useful to meeting the evaluation and cognitive needs expressed by stakeholders while respecting the necessary condition of confidentiality.

- The selection of information diffusion procedures able to ensure its timely and equitable use by all concerned.

The content and methods of transmitting information tend to constitute the primary factors of effectiveness or elements that are able to define the potential of easily satisfying the cognitive and evaluation expectations that stakeholder engagement entails. Important to note in this regard is that, in relation to the principle of transparency, this study considers the effectiveness of communications where these are deemed expressed, albeit in different forms, or according to reporting choices that are not immediately user-friendly (reports with different names but with similar content, information not organized in specific links but scattered on the website or in institutional documents). However, an efficiency and transparency improvement would also require greater engagement in terms of the usability and intelligibility of the information.

In other words, a university oriented to sustainable development is clearly aware of its responsibilities and therefore adopts governance methods and tools to improve its relations with the various stakeholders [41,42]. This approach is based on a broad understanding of responsibility, a modern interpretation of the existing links between the enduring success of the university, the fair balance of interests of all relevant stakeholders and the efficient management of limited financial resources [43].

There are currently no international guidelines and best practices on sustainability in universities and even government studies and frameworks in the field are somewhat lacking. However, the importance of the quality of university education and the apparent link with the dissemination of the principles of social responsibility and sustainability with stakeholder engagement also lead to articulating certain principles and methodologies developed in the managerial field for university governance.

The study propose a first and original analysis aimed at investigating whether sustainability is effectively an opportunity to improve the quality of the higher education, translated into an improvement of the image of the same.

In this regard, the theoretical framework of this study is based on the consideration that the level of cultural integration of sustainability can be considered adequately developed in the presence of sustainability planning, performance evaluations and reporting choices, governance organs and operational offices for sustainability, integration of sustainability policies in relations with stakeholders, the community and the environment, advanced sustainability networks characterizing academic life.

This analysis is based on determining whether certain basic requirements of university sustainability management exist in relation to activating change that involves the entire organization. The effective integration of economic, social and environmental goals requires developing specific managerial skills, the orientation of governance policies and organizational behaviors towards social responsibility, the dissemination of principles, ethical values and common rules of conduct to university networks, the measurement of results, effective control systems, transparency and accountability [44].

Accountability, as a significant component of disseminating knowledge on governance orientation, is an essential condition for sustainable change and a significant source of information to first assess all the requirements and the operational tools.

Assessing the sustainability of a university first requires clarifying what is meant by sustainable development in higher education. Although the definitions of this concept are well known and widely used in the literature [45–47], there are still interpretations of sustainable development that overlook the aspect of integrating and incorporating in management the various dimensions that characterize the socio-economic and ecological system [48].

The UN, OECD and EU [49–51] interventions led to a general convergence of the concept of sustainable development to ensure intergenerational equity, participation and regulatory compliance, and justice [52,53]. In this sense, the university environment is the best place to reflect on education for sustainable development.

A dissertation in progress on the subject emphasizes the concept of “sustainable universities” and their general role of promoting a culture of social responsibility and sustainability.

Among the many definitions of sustainable universities is that of Velazquez, Munguia, Platt, and Taddei [54]:

*“A sustainable university as a higher education institution, as a whole or as a part, that addresses, involves and promotes, on regional or global level, the minimization of environmental, economics, societal, and health negative effects in the use of their resources in order to fulfill its main functions of teaching, research, outreach & partnership, and stewardship among other as a way to helping society make the transition to sustainable life styles”.*

Transforming a sustainability orientation into actual results entails adopting the management tools and processes that guarantee continued implementation.

Sustainability in university is not only what it should be avoided or to reduce to the least one (in terms of risk), on the contrary are also (and above all) the actions and processes to be undertaken for improving the conditions of life of the people and the countries, or the way of teaching that fosters sustainable education. For instance, thinking about the scientific research in medical field and at the accords between university and local institutions for the support of the projects finalized to the improvement of meaningful social and economic value. Furthermore, the guidelines are expressed by the international community of the UNECE (2005) and UNESCO in the framework of the Decade for Sustainable Development (2005–2014). In achieving this aim would wish active methods and educational strategies able to engage responsible students, the presentation of tasks of reality on which converge internal and external resources to the school, the use of the teaching workshop and methodologies that support the work of the group and the cooperative learning.

Global responsibility values evidently constitute the essential factors of integrating governance bodies, organization and activities [55–57]. In general, the evaluation process is based on the possibility of measuring sustainability to intervene and improve the mechanisms that determine performance.

### 3. Research Methodology

Based on the above considerations, the present study explores the relationship between disseminating a sustainability culture and the affirmation of the universities to verify if enacting socially responsible behaviors—beyond an indispensable ethical condition—is an opportunity to improve the image.

In particular, among the numerous mechanisms to measure and evaluate the results of universities, the subsequent analysis considers the annual international ARWU ranking to critically reflect on the following question:

*Is there a link between universities in the international qualitative evaluation rankings and the level of inclusion of sustainable development in the institutional culture and management?*

It should be pointed out that the calculation parameters of the ARWU ranking consider bibliometric indicators pertaining to:

- The number of Nobel prizes and Fields medals obtained by students (10%).
- The number of Nobel prizes and Fields medals obtained by faculty members (20%).
- The number of citations, divided into 21 thematic categories (20%).
- The number of articles published in academic, nature and science journals (20%).
- The so-called Science Citation Index (an index used in scientometrics regarding the citations contained in around 600 of the most influential journals in the scientific field) and the Social Sciences Citation Index (20%).
- Per capita output of the institution compared to the previous indicators (10%).



Therefore, the international ARWU ranking, used as the basis for the selection of the universities subject to investigation, is determined based on bibliometric indicators and scientific parameters not improvable immediately (at least in the short and medium term). That is, ARWU places too much emphasis on Nobel prizes and does not consider the efforts made in aspects of school performance related to sustainability (e.g., it neglects teaching efforts). However, the present research aims precisely to investigate how such universities (the best in the world for some of the most prestigious characteristics) have parallel developed the sustainability culture in their management.

Then the basic premise of this research is to investigate whether the most prestigious universities in the world are also those who hold a greater culture of sustainability expressed through the presence of specific items.

The investigation specifically focuses on the level of institutionalization of the sustainability principle in university governance through analyzing the following four elements:

- Sustainability planning activities and/or exclusive reporting.
- Presence of sustainability organs in university governance.
- Integrating sustainability policies in relations with stakeholders, the community and the environment.
- Networks with external sustainability partners.

In fact, recalling the previous paragraphs, universities oriented towards social responsibility follow a governance approach inspired by the close interdependence between economic efficiency and sociality. Performance optimization along the triple bottom line entails all management processes: from planning and reporting to integrating sustainability policies in relations with stakeholders, the community and the environment, from institutionalizing the principle of sustainability in the top organs and affirming it in the network of connections with specific external partners.

Consistent with the proposed theoretical framework, the analysis therefore aims to investigate whether more sustainable institutions are also the best placed in international rankings and thus consider it an opportunity to improve quality and image.

To this end, we implement a qualitative content analysis based on the comparison of data [58,59] indicating the level of integration of sustainability in the governance and culture of the university collected in a structured grid for each survey section. Table 1 presents the survey items.

**Table 1.** Data collection.

Sustainability Planning and Reporting	Sustainability Organs in University Governance	Integrating Sustainability Policies in Stakeholder Relations	Networks with External Sustainability Partners
Sustainability Documents	Sustainability Governance	Sustainability Topics	Sustainability Network
Availability of a sustainability plan	Sustainability and management council	Road map to sustainable community	Sustainable campus network
Reference to sustainability activities in the action plan	Sustainability leadership group	Stakeholder engagement	Network intra universities or institutes
Presence of a sustainability report	Sustainability committee	Growth, development, principles of sustainability into all operational functions	Network and partnership with associations and or organizations
Unorganized, outdated or incomplete information	Sustainability office/team	Environmental	Collaborations with strategic partner, centers, client, entrepreneurs
	Advisory committee on sustainability	Energy and climate	
	Council of student sustainability	Waste and recycling	
	Environmental sustainability strategy committee	Food	
		Water	
		Green building, biodiversity and EcoCampus	
		Learning, sustainability, research, teaching and student initiatives	

In view of the still limited diffusion of sustainability principles in university management, the analysis considers universities identified in the ARWU 2015 (Academic Ranking of World Universities) Top 500 rankings. Among the Top 500 universities, we have selected three groups of universities far apart in the list to observe the behavior of the universities in the strategic positions of the ranking.

We have considered: the first twenty best positions in the Top 500; an intermediate group formed by the last twenty universities classified among the Top 100 (forming part of course of the Top 500); the last twenty positions in the Top 500 of ARWU 2015 as the extremes of the analysis. In other words, we have considered the first twenty best positions in the Top 500 and the last twenty positions in the Top 500 of ARWU 2015 as the extremes of the analysis. In addition, we have also observed the behavior of an intermediate group of the universities classified. We have chosen the last twenty universities classified among the Top 100 (forming part of course of the Top 500) because they represent the best behaviors, but in final position of the major ranking in the world.

Although the measurement and evaluation of universities for the international ranking largely entails academic type bibliometric indicators predominantly in relation to research production, a study investigating the possible link between the recognized image of the university and the dissemination of a sustainability orientation in the university's management offers a significant contribution.

Based on the increasing sensitivity to the issues under analysis, collecting the relevant information—through consulting the information that the universities shall decide to publish in their institutional websites—took place during November 2016–February 2017. The analysis took into account only the accounting documents on institutional websites for two reasons: this information facilitates an objective comparison between the behaviors of different universities and relates to an essential element of the virtuous circle of sustainable development, thus in itself representative of sustainability choices.

Finally, the analysis was compared with the results available online on the website of the Association for the Advancement of sustainability in Higher Education (AASHE), which puts at the disposal of the universities a system of ranking called STARS (Sustainability Tracking, Assessment & Rating System—<https://stars.aashe.org>). This self-evaluation system declares to be transparent, self-reporting framework for colleges and universities to measure their sustainability performance. STARS consists in areas of higher education sustainability and concerns performance indicators and criteria regrouped into four categories: academics, engagement, operations, planning and administration. An University may obtain credits with regard to its specific context and get points toward a STARS Bronze, Silver, Gold or Platinum rating or to get recognition as a STARS Reporter. STARS acknowledge favourable recognition and each level of recognition that represents significant sustainability leadership. Universities participating in STARS, which includes gathering extensive data and sharing it publicly, highlights a higher attention to sustainability and stakeholder engagement.

The following section presents and comments on the results recorded in relation to the four elements under analysis. As a conclusion, we have observed the results in relation with the report of AASHE-STARS in the same groups of universities analyzed in the research, to verify if there is coherence with self-assessment of the universities in the same fields of planning and governance.

#### 4. Findings and Discussion

The subsequent analysis investigates the level of inclusion of sustainability in the three groups of universities analyzed: Top 20/Top 500, Last 20/Top 100 and Last 20/we Top 500 universities ARWU 2015 ranking (Figure 2).

Top500 Institutions by ARWU - Academic Ranking of World Universities, anno 2015								
Top20/Top500 Ranked Universities			Last20/Top100 Ranked Universities			Last20/Top500 Ranked Universities		
World Rank	Institution	Country	World Rank	Institution	Country	World Rank	Institution	Country
1	Harvard University	USA	77	The University of Queensland	Australia	401-500	University of Parma	Italy
2	Stanford University	USA	82	Leiden University	Netherlands	401-500	University of Pavia	Italy
3	Massachusetts Ins. of Technology (MIT)	USA	83	University of Florida	USA	401-500	University of Perugia	Italy
4	University of California, Berkeley	USA	84	Rice University	USA	401-500	University of Quebec	Canada
5	University of Cambridge	UK	85	Osaka University	Japan	401-500	University of Regensburg	Germany
6	Princeton University	USA	86	Moscow State University	Russia	401-500	University of Rennes 1	France
7	California Institute of Technology	USA	87	The University of Western Australia	Australia	401-500	University of Rhode Island	USA
8	Columbia University	USA	87	University of Basel	Switzerland	401-500	University of Roma TorVergata	Italy
9	University of Chicago	USA	87	University of Strasbourg	France	401-500	University of Rostock	Germany
10	University of Oxford	UK	90	KU Leuven	Belgium	401-500	University of Santiago di Compostela	Spain
11	Yale University	USA	90	University of Arizona	USA	401-500	University of Science, Malaysia	Malaysia
12	University of California, Los Angeles	USA	92	University of Warwick	UK	401-500	University of Seville	Spain
13	Cornell University	USA	93	Arizona State University	USA	401-500	University of Surrey	UK
14	University of California, San Diego	USA	93	University of California, Santa Cruz	USA	401-500	University of Szeged	Hungary
15	University of Washington	USA	93	University of Utah	USA	401-500	University of the Basque Country	Spain
16	Johns Hopkins University	USA	96	McMaster University	Canada	401-500	University of Trieste	Italy
17	University of Pennsylvania	USA	97	University of Bonn	Germany	401-500	University of Zaragoza	Spain
18	University College London	UK	98	VU University Amsterdam	Netherlands	401-500	Utah State University	USA
18	University of California, San Francisco	USA	99	Michigan State University	USA	401-500	Vienna University of Technology	Austria
20	Swiss Federal Ins. of Technology Zurich	Switzerland	100	Texas A&M University	USA	401-500	Wake Forest University	USA

Figure 2. Institutions under study. Institutions in the same rank range are listed alphabetically.

It is worth noting that the ranking classifies the Top 500 universities worldwide and the so-called Last 20 still fall within the qualitative excellence category. On the other hand, the relatively recent introduction of the concept of sustainable universities and the homogeneity of the comparison criteria led us to select the best universities split into three ranking positions within the same classification.

Observing the location of the universities reported in Table 1 shows a clear concentration of those occupying the best positions in the ranking at the country level:

- In the first group (Top 20/Top 500 positions), American universities occupy 80% and European universities occupy 20%.
- In the second group (Last 20/Top 100 positions), American universities occupy 45%, European universities occupy 35%, Asiatic universities occupy 10% and Oceanian universities occupy 10%.
- In the third group (Last 20/Top 500 positions), American universities occupy 90%, European universities 9% and Asian universities occupy 1%.

This distribution highlights the best quality recognized to Anglo-Saxon universities, which, as noted above, have a larger presence of private lenders and are culturally predisposed to stakeholder engagement (Figure 3).

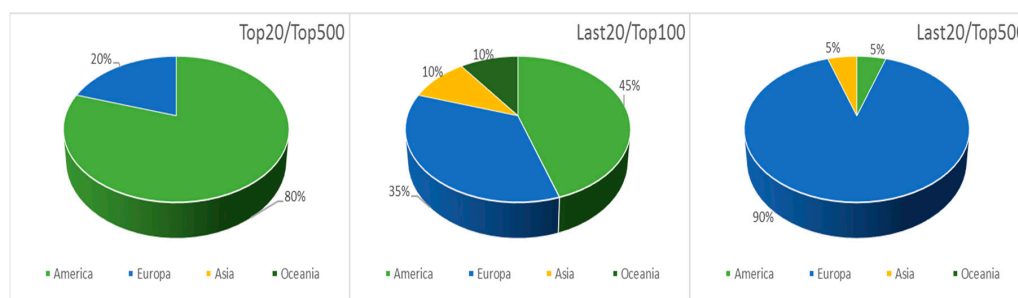


Figure 3. Geographic distribution of the universities under study.

The country distribution of the universities analyzed in terms of the management characteristics of the international university systems reported in the theoretical framework would appear to highlight that the interaction with stakeholders characterizing the development of Anglo-Saxon universities is a factor promoting quality. Precisely the effective involvement of stakeholders is a typical social

responsibility phenomenon, which in isolation does not however enable recognizing the actual governance orientation towards sustainability and the associated dissemination of the sustainability culture in universities.

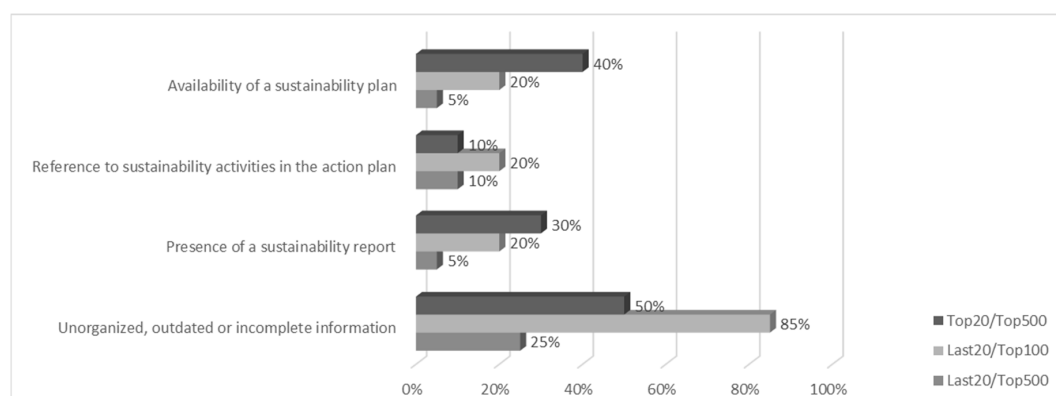
This thus requires an in-depth focus on the specific variables designed to highlight differences in sustainability orientation. The following are the results recorded in relation to the four elements under analysis referred to in the theoretical framework.

#### 4.1. Sustainability Planning Activities and/or Exclusive Reporting

The first element to assess the level of sustainability integration in the governance culture refers to the university's focus on sustainability planning activities as well as on reporting these activities. The analysis considers the presence of a sustainability plan on the website (updated and downloadable) as well as the relative degree of disclosure and completeness or the mere presence of a sustainability report (Table 2 and Figure 4).

**Table 2.** Results on sustainability planning activities, 2015.

Sustainability Documents	Availability of a Sustainability Plan		Reference to Sustainability Activities in the Action Plan		Presence of a Sustainability Report		Unorganized, Outdated or Incomplete Information	
	V.A.	V.%	V.A.	V.%	V.A.	V.%	V.A.	V.%
Top 20/Top 500	8	40%	2	10%	6	30%	10	50%
Last 20/Top 100	4	20%	4	20%	4	20%	17	85%
Last 20/Top 500	1	5%	2	10%	1	5%	5	25%



**Figure 4.** Comparison of sustainability planning activities, 2015.

The data clearly show that the universities in the top positions proactively promote a sustainability plan and develop the related activities with the presence of an updated, downloadable and complete sustainability plan in 40% of cases; an action plan summarizing the environmental and/or social activities planned in 10% of cases; an integrated sustainability report in 30% of cases; and sustainability information scattered on the website but not explicitly linked to planning processes, albeit expressing the intention to proceed in this direction in 45% of cases. Therefore, the Top 20 universities overall enable appraising their propensity to sustainability, although the data highlight different stages of development at the level of individual universities and would seem to indicate the ongoing transition towards better social responsibility in their governance approach and related accountability.

By way of an example, Harvard's 2015–2020 sustainability plan states, "The Harvard Sustainability Plan is the University's roadmap for building and operating a healthier, more sustainable campus community. The Plan aligns Harvard's decentralized campus around a holistic vision and sets clear University-wide goals and priorities based on the innovations and solutions that have been developed at our individual Schools and departments" [60].

Similarly, the University of Michigan emphasizes the crucial role of an environmental focus on the level of institutional activities, stating in its sustainability plan, *“The pressing challenge of environmental sustainability is a huge global concern. From teaching and research, to hand on engagement, we are going to leverage our many strengths to make significant contributions to an urgent and extraordinarily complex problem”* [61].

Equally decisive and compelling is Cornell University’s statement, *“As a world leader in sustainability, Cornell University is a committed steward of the Earth and its people. From innovation to public engagement, Cornellians are balancing today’s economic, environmental, and social issues with related needs of the future. It is a tremendous interdisciplinary challenge, which Cornell is uniquely positioned to address through research, education, public engagement, and campus operations. Sustainability: Today and Tomorrow is a guiding document to support Cornell University’s efforts in environmentally, socially, and economically sustainable leadership. Updated annually this document is both an annual report and strategic plan for the Ithaca campus and outlines broad strategies; recent accomplishments; governance and current efforts, including goals and targets across 10 focus areas; student initiatives; and opportunities ahead. The appendix catalogs partners and stakeholders in Cornell’s efforts”* [62].

The level of sustainability detail, planning and integration is greatly reduced in the information available on the Last 20 universities’ websites on the Top 100. In this group, 17 universities (85% of cases) do not provide planning documents and/or sustainability reports, even if beginning to highlight the sustainability theme by including unstructured information across the different websites. In addition, the statements on their websites often express a somewhat partial interpretation of sustainability and are generally aimed at introducing the topic in existing networks, research activities and teaching rather than a real articulation of the principle in university governance and planning activities.

For example, the University of Arizona points out, *“The University of Arizona’s Office of Sustainability works to ensure that the UA continues to be a leader in sustainability among its peers. We collaborate with partners across the University of Arizona and throughout the community to coordinate environmental sustainability initiatives and communication. In addition to engaging with Business and Student Affairs units, as well as student groups and clubs, the Office of Sustainability coordinates the activities of the UA Green Fund and works closely with the President’s Advisory Council on Environmental Sustainability”* [63].

Ku Leuven University adopts an environmental policy and states, *“The University shall be one of the most prominent universities in Europe for education and research within sustainable development and the environment”*.

Similarly, the University of Basel states on its site, *“Various activities integrate sustainability as an interdisciplinary topic into all areas of the University of Basel. Alongside making it a topic in teaching and research, it is committed to sustainable action in campus life and makes every effort to constantly improve its own operations”* [64].

The presence of planning activities is further reduced in the last twenty positions of the Top 500. There is indeed a sustainability plan only in 5% of cases, an action plan in 10%, a sustainability report complete in 5%, and, in 25% of cases, there is unorganized, outdated or incomplete information. In particular, we note that, in 75% of cases, there is no information consistent with the purposes of the present research on the subject of sustainability management.

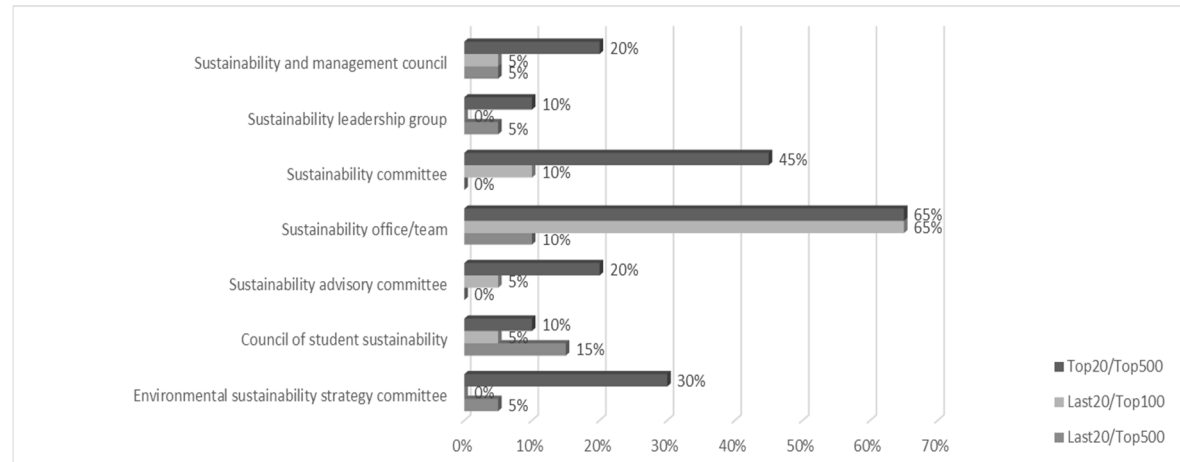
#### 4.2. Presence of Sustainability Organs in University Governance

Subsequently, the analysis considered the attention paid to the sustainability theme with respect to the level of integration in university governance. In other words, we searched for the presence of specifically established institutional organs supporting and planning sustainable policies (sustainability council and/or committee), organs with predominantly operational functions in support of the planned activities (sustainability office and/or advisor), and sustainability organs in support of specific categories of stakeholders (council of student sustainability and/or environmental sustainability strategy committee) (Table 3, Figure 5).



**Table 3.** Results of sustainability governance, 2015.

Sustainability Governance	Sustainability and Management Council		Sustainability Leadership Group		Sustainability Committee		Sustainability Office/Team		Advisory Committee on Sustainability		Council of Student Sustainability		Environmental Sustainability Strategy Committee	
	V.A.	V.%	V.A.	V.%	V.A.	V.%	V.A.	V.%	V.A.	V.%	V.A.	V.%	V.A.	V.%
Top 20/Top 500	4	20%	2	10%	9	45%	13	65%	4	20%	2	10%	6	30%
Last 20/Top 100	1	5%	0	0%	2	10%	13	65%	1	5%	1	5%	0	0%
Last 20/Top 500	1	5%	1	5%	0	0%	2	10%	0	0%	3	15%	1	5%



**Figure 5.** Comparison of sustainability governance, 2015.

In this case, the data show that the internationally top ranking universities have incorporated the theme of sustainability in their governance and have introduced organs dedicated to disseminating the promotion of responsible behavior. Indeed, 15 out of 20 universities envisage the implementation of a sustainability organ with management functions. In particular, the presence of a sustainability and management council in 20% of cases, a sustainability leadership group in 10% of cases and a sustainability committee within the governing bodies in 45% of cases.

Gradually moving away from the Top 10 positions, we find that the presence of sustainability organs in institutional governance decreases to a sustainability office or advisory committee (respectively in 65% and 20% of cases). In some cases, sustainability committees for specific categories of stakeholders are present. For example, a council of student sustainability in 10% of cases and an environmental sustainability strategy committee in 30% of cases.

The data on the Last 20 universities on the Top 100 shows, in line with the previous point, a low propensity to introducing organs dedicated to disseminating the promotion of responsible behavior. Only in one case is a sustainability and management council present, while a sustainability leadership group is not present in any of the cases, and a sustainability committee in the governing bodies is present in only 10% of cases. Instead, a discreet presence emerges of a sustainability office as a governance organ mainly in charge of information and front office tasks, at times also liaising (improperly) with the governance functions (in 65% of cases).

In addition, in this case, there is a considerable reduction of information in the last positions of the overall ranking. In particular, it mentions the considerable drop in the presence of the sustainability office (only in 10% of cases) and the absolute absence of an advisory committee on sustainability.

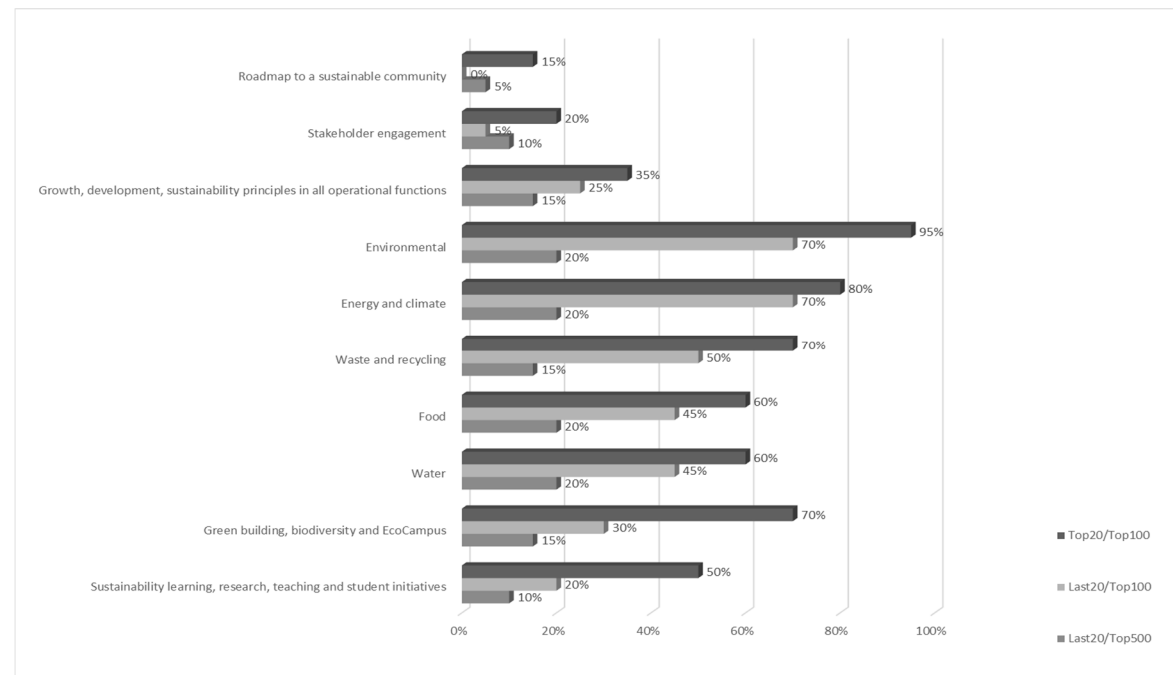
The above confirms the transition under way and the variously widespread use of organs overseeing sustainability. Moreover, it verifies the recent introduction and clear coherence among performance, reporting and internal sustainability governance orientation.

#### *4.3. Integrating Sustainability Policies in Relations with Stakeholders, the Community and the Environment*

After having investigated the level of inclusion of sustainability in university governance organs, we now consider the degree of integration of sustainability policies in relations with stakeholders, with the community and the environment in general. In this regard, we examined the website presence of a roadmap to a sustainable community stating the stakeholder engagement policy, expressing the transversal integration of all dimensions of global responsibility and the sustainability principles in relation to specific topics (Table 4, Figure 6).

**Table 4.** Results of the integration of sustainability topics, 2015.

Sustainability Topics	Road Map to Sustainable Community		Stakeholder Engagement		Growth, Development, Principles of Sustainability into All Operational Functions		Environmental		Energy and Climate		Waste and Recycling		Food		Water		Green Building, Biodiversity and EcoCampus		Sustainability Learning, Research, Teaching and Student Initiatives	
	V.A	V.%	V.A	V.%	V.A	V.%	V.A	V.%	V.A	V.%	V.A	V.%	V.A	V.%	V.A	V.%	V.A	V.%	V.A	V.%
Top 20/Top 100	3	15%	4	20%	7	35%	19	95%	16	80%	14	70%	12	60%	12	60%	14	70%	10	50%
Last 20/Top 100	0	0%	1	5%	5	25%	14	70%	14	70%	10	50%	9	45%	9	45%	6	30%	4	20%
Last 20/Top 500	1	5%	2	10%	3	15%	4	20%	4	20%	3	15%	4	20%	4	20%	3	15%	2	10%



**Figure 6.** Comparison of the integration of sustainability topics, 2015.

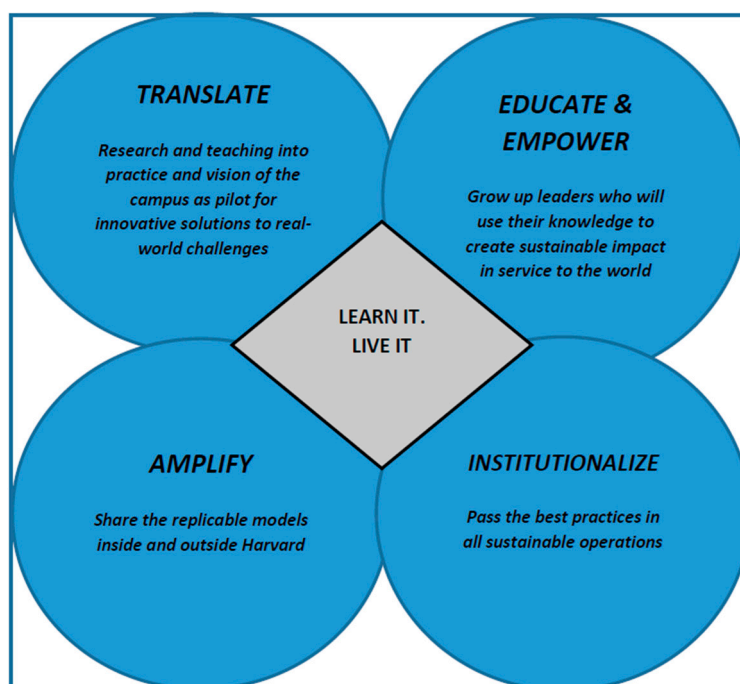
As the data in the table show, only some of the universities amongst the best in the ARWU 2015 ranking demonstrate a propensity to integrating the various areas characterizing the triple bottom line of sustainable development. In fact, only three universities (15% of cases) in the Top 20 publish a roadmap on their website with evidence of the transversal relations among the economic, social and environmental dimensions.

By way of an example, the University of Cambridge states, “Progress on sustainability requires the combined creativity and determination of business, finance and government leaders. No one can do this alone and *Rewiring the Economy* calls on our extensive and diverse network of leaders to collaborate with us, and many others, to explore the tasks, make them their own, and promote them to their stakeholders for serious and consistent impact” [65].

Similarly, the President of Yale University, Prof Peter Salovey, points out in the introduction of the sustainability principles, “At Yale, we believe that sustainability depends on the entire university community: faculty who conduct leading research and teach the next generation; who manage and carry out the operations of our complex organization; and students who inspire and challenge us to even more innovation. We have a responsibility to future generations to ensure that sustainable practices are at the heart of our university” [66].

Particularly significant is the representation of the concept of integrating sustainable development in Harvard University’s sustainability plan.

Universities with a roadmap to a sustainable community (Figure 7) on their websites are also largely those that pay attention to communicating stakeholder engagement policies (20% of cases) and integrate sustainability principles in the operational functions (35% of cases). As the data demonstrate, the best results are still recorded at the level of individual topics mainly in the environmental sphere and some aspects of the social sphere. Explicit reference to environmental sustainability activities are reported in 95% of cases; energy or climate saving activities in 80% of cases; adoption of waste disposal or recycling policies in 70% of cases; declaration of green building, biodiversity and EcoCampus policies in 70% of cases; food and water sustainability activities in 60% of cases; and adoption of sustainability learning research, teaching and student initiatives in 50% of cases.



**Figure 7.** Revision of the Roadmap to a Sustainable Community of Harvard University, 2015; (Source: <https://green.harvard.edu/campaign/our-plan>) [67].

Going down the rankings, the incisiveness of the statements and integration of sustainability activities become less clear. The concept of integration and inclusion of the responsibility approach in all spheres of university governance are replaced by statements aimed more at individual and specific topics in specific areas. The greatest attention is paid to the environmental and energy issue: 14 universities out of 20 (70% of cases) make explicit reference to their commitment to activities related to ecological protection of the environment, followed by waste management (50% of cases) and food safety and water quality (in 45% of cases), and the adoption of sustainability learning research, teaching and student initiatives (in 20% of cases).

The results recorded in relation to the items that explore integration and behaviors aimed at stakeholder engagement are unquestionably improvable.

By way of an example, we report some of the statements that while showing a decidedly attentive attitude to the issue of sustainability do not appear to have developed a unified and integrated vision of the theme. The University of Oxford states, *"The University's commitment to minimising the environmental impacts of its activities includes conducting building energy audits, travel planning, improving facilities for cyclists and developing waste strategies in conjunction with departments"* [68].

Similarly, the University College London states, *"We take our environmental responsibilities very seriously and aim to implement the most sustainable means in our operations"*.

The University of California, San Francisco states, *"For UCSF sustainability is about protecting the health and safety of our people and the communities we impact"* [69].

To note is that the analysis also detected in a number of institutions the presence of an internal eco-system oriented to sustainability; in other words, sustainable development in relation to the university's environment. Indeed, 14 universities in the Top 20 (70% of cases) show the presence of green buildings based on biodiversity and/or an EcoCampus. Ten universities among the Top 20 (50% of cases) report activities oriented to sustainability teaching, research and student initiatives. In this regard, the Johns Hopkins University states, *"Our core belief is that the physical greening of the campuses alone does not make for a "sustainable university"* and Cornell University states, *"Cornell supports research, scholarship, and the practical application of knowledge that address one of humankind's greatest challenges: achieving a sustainable world for all"* [70].

The analysis of the degree of integration of the sustainability items in the Last 20 of the Top 100 universities shows a good level of openness to the topic under analysis. However, the statements reflect a vision that is still distant from an integrated concept of including sustainability in management activities. The information is largely aimed at highlighting the institution's commitment to distinct topics (environmental, energy and climate, waste and recycling, food and water) in line with the above.

For example, the Michigan State University generically states, *"Because higher education institutions are intimately linked to societal growth and transformation, they can help create and instill both the basic and applied knowledge that provides opportunities for all peoples and nations to achieve a heightened state of social and economic well-being and sustainable prosperity"* [71].

Similarly, McMaster University states, *"Our mission as McMaster University will apply its immense potential and use its creative and innovative campus community to advance sustainable operations and growth. McMaster is helping to shape the minds and values of new generations of leaders and decision makers by integrating an environmentally, socially and economically sustainable consciousness into all aspects of the university lifecycle through innovation, communication, community engagement and implementation"* [72].

The results of the last twenty universities in the standings denote an insufficient integration of the principle of sustainability in the culture and in the governance of the university. There is, however, some information about the individual topics linked to the more specific actions or investments. The study underlines that, also for these elements, the universities have a linear trend respect their position in the standings. Commitment is therefore very high and appreciable but mainly towards disseminating and studying sustainability principles (sustainability research projects and/or degree programs that include teaching sustainability) rather than their integration in university governance and culture.



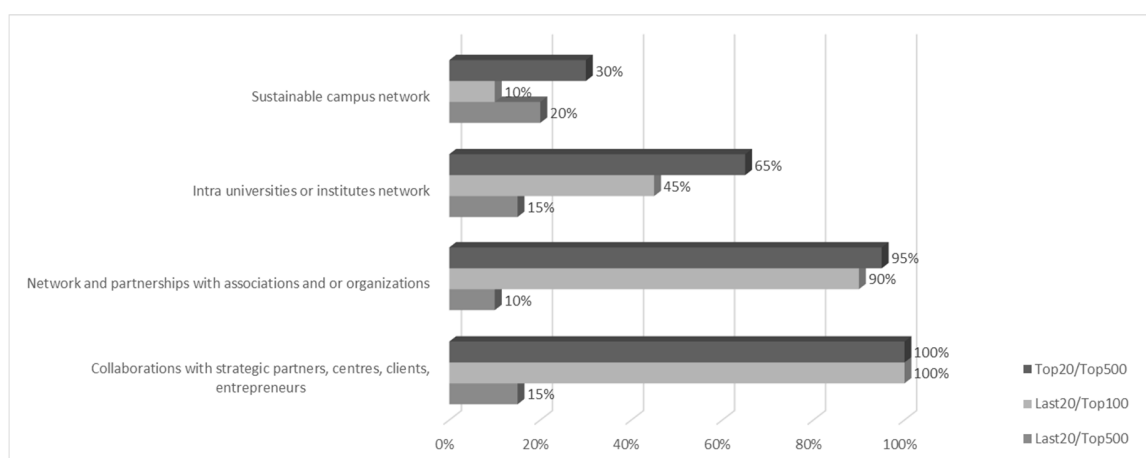
#### 4.4. Networks with External Sustainability Partners

Finally, the analysis considered the institution's level of inclusion of networks of external sustainability partners. In this regard, we considered the presence of an internal sustainable campus network or an intra universities or institutes network, belonging to a network and/or partnership with associations and/or organizations or collaborations with strategic partners, centers, clients, entrepreneurs (Table 5, Figure 8).

The results show ample room for improvement in the construction of an optimal network to support sustainable activities. Only six universities in the Top 20 (30% of cases) participate in an international sustainable campus network and 13 out of 20 (65% of cases) belong to an intra university or institute network or a way for institutions to sustain their leadership role to advance knowledge, technology and tools according to a sustainable and integrated approach. In this regard, the campus sustainability programs are increasingly sophisticated and aimed at sharing experiences, measuring results and ongoing encounters between network partners to optimize the use of resources and exploit synergies between scholars and professionals.

**Table 5.** Results of networks with external sustainability partners, 2015.

Sustainability Network	Sustainable Campus Network		Network intra Universities or Institutes		Network and Partnership with Associations and or Organizations		Collaborations with Strategic Partner, Centers, Client, Entrepreneurs	
	V.A	V.%	V.A	V.%	V.A	V.%	V.A	V.%
Top 20/Top 500	6	30%	13	65%	19	95%	20	100%
Last 20/Top 100	2	10%	9	45%	18	90%	20	100%
Last 20/Top 500	4	20%	3	15%	2	10%	3	15%



**Figure 8.** Comparison of networks with external sustainability partners, 2015.

Declarations of membership in associations or organizations correlated to the scientific and academic world are very frequent, although not always aimed at the construction of a sustainability network. Nineteen of the Top 20 ranking universities (95% of cases) declare partnerships with associations or organizations and in 100% of cases with specific strategic partners, centers, customers and prominent actors.

The analysis performed on the Last 20 on the Top 100 ranking universities again shows very different behaviors from the top ranking universities. Only two out of 20 (10% of cases) provide structured and comprehensive information on their website on the sustainability campus network. Participation in a network of universities and institutions is more common (65% of cases). All universities analyzed have a dense network of external relations through establishing

partnerships with associations and organizations or collaborations with strategic partners, centers, clients and entrepreneurs.

The results of the last positions differ significantly from the results achieved in the first places of the ranking. Basically, there is very different behavior between the universities which have opted for a considerable investment in sustainability (and are the ones that make record positive values) from the other (the majority) which do not communicate on line any reference to sustainability significant for this study.

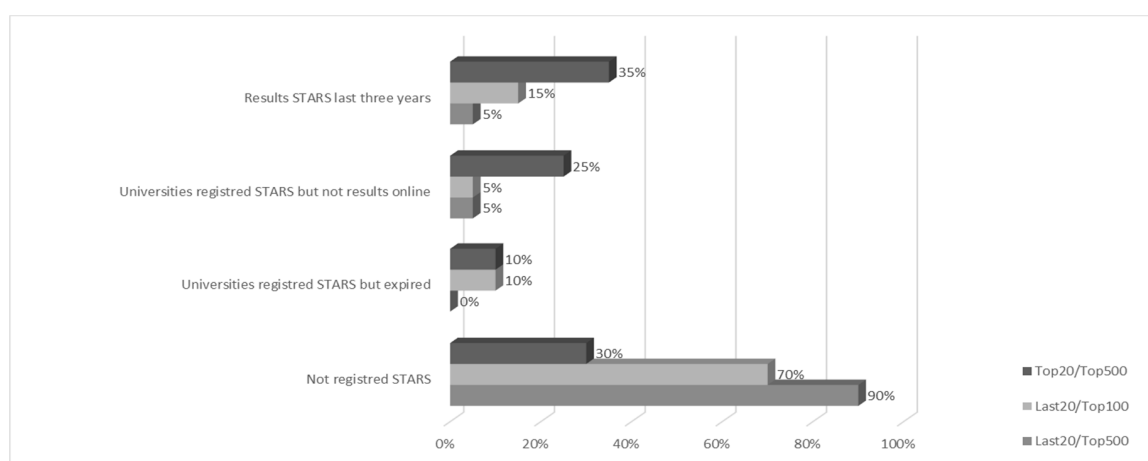
To supplement our research, we have wished to observe, always with reference to the three groups of universities selected for this study and for the same field of research, the degree of self-evaluation of the universities in sustainability and the consistency with the analysis we have accomplished. We report here the results concerning the accession of the universities at the Association for the Advancement of sustainability in Higher Education. This Association has prepared and made available to the universities recorded a platform of self-evaluation in the field of sustainability (STARS, Sustainability Tracking, Assessment & Rating System). The results are downloadable online on the website of the Association.

First, we note coherence between the number of the universities registered on the site of the Association and the positioning of the same in the standings (Table 6, Figure 9). The universities that are located at the first places in ranking have in fact a greater participation to the platform STARS and denote more attention at their self-assessment.

**Table 6.** Results of Sustainability Tracking, Assessment & Rating System (STARS) \*.

Sustainability Tracking, Assessment & Rating System	Results STARS Last Three Years		Universities Registered STARS but Not Results Online		University Registered STARS but Expired		Not Registered STARS	
	V.A	V.%	V.A	V.%	V.A	V.%	V.A	V.%
Top 20/Top 500	7	35%	5	25%	2	10%	6	30%
Last 20/Top 100	3	15%	1	5%	2	10%	14	70%
Last 20/Top 500	1	5%	1	5%	0	0%	18	90%

\* Source: <https://stars.aashe.org/>.



**Figure 9.** Comparison with STARS results

Data show that 35% of universities among the Top 20 of the ranking has decided to start a path of self-evaluation to measure their sustainability performance. In the last positions of the intermediate classification (Last 20 on the Top 100) STARS results are present in 15% of cases, while for the last twenty universities ranking on Top 500 the presence is only 5%.

In particular, we report, relatively to the university for which it was found the value, the results of the self-assessment of the area Coordination (Table 7), Planning (Table 8) and Governance (Table 9), from which it emerges that the trend is coherent with respect to the results emerging from our research.

**Table 7.** Results of Sustainability Tracking, Assessment & Rating System (STARS), Coordination.

<i>Coordination</i>	Top 20/Top 500		Last 20/Top 100		Last 20/Top 500	
	V.A	V.%	V.A	V.%	V.A	V.%
Presence of least one sustainability committee	7	100%	2	67%	1	100%
Presence of least one sustainability office that includes more than one full-time equivalent (FTE) employee	7	100%	3	100%	1	100%
Presence of least one sustainability officer	7	100%	3	100%	1	100%
Presence of a mechanism for broad sustainability coordination for the entire institution (e.g., a campus-wide committee or an officer/office responsible for the entire campus)	6	86%	0	0%	0	0%

**Table 8.** Results of Sustainability Tracking, Assessment & Rating System (STARS), Planning.

<i>Planning</i>	Top 20/Top 500		Last 20/Top 100		Last 20/Top 500	
	V.A	V.%	V.A	V.%	V.A	V.%
Does the institution have a published strategic plan or equivalent guiding document that includes sustainability at a high level?	5	71%	1	33%	1	100%
Does the institution have a published sustainability plan (apart from what is reported above)?	3	43%	0	0%	0	0%
Does the institution have a published climate action plan (apart from what is reported above)?	2	29%	0	0%	0	0%
Taken together, do the plan(s) reported above include measurable sustainability objectives that address:						
Curriculum	5	71%	1	33%	1	100%
Research	5	71%	2	67%	0	0%
Campus Engagement	6	86%	2	67%	1	100%
Public Engagement	5	71%	0	0%	1	100%
Air and Climate	6	86%	3	100%	1	100%
Buildings	6	86%	3	100%	1	100%
Energy	4	57%	3	100%	1	100%
Food and Dining	6	86%	2	67%	1	100%
Grounds	5	71%	3	100%	0	0%
Purchasing	5	71%	1	33%	1	100%
Transportation	6	86%	2	67%	1	100%
Waste	6	86%	2	67%	1	100%
Water	4	57%	2	67%	1	100%
Diversity and Affordability	3	43%	2	67%	1	100%
Investment and Finance	3	43%	0	0%	0	0%
Wellbeing and Work	4	57%	0	0%	1	100%
Other areas (e.g., arts and culture or technology)	2	29%	0	0%	0	0%

**Table 9.** Results of Sustainability Tracking, Assessment & Rating System (STARS), Governance.

Governance	Top 20/Top 500		Last 20/Top 100		Last 20/Top 500	
	V.A	V.%	V.A	V.%	V.A	V.%
Do the institution's students have a representative body through which they can participate in governance (e.g., a student council)?	5	71%	3	100%	0	0%
Do the institution's students have an elected representative on the institution's highest governing body?	4	57%	3	100%	0	0%
Do the institution's staff members have a representative body through which they can participate in governance (e.g., a staff council)?	5	71%	2	67%	1	100%
Do the institution's non-supervisory staff members have an elected representative on the institution's highest governing body?	3	43%	0	0%	0	0%
Do the institution's teaching and research faculty have a representative body through which they can participate in governance (e.g., a faculty senate)?	5	71%	2	67%	0	0%
Do the institution's teaching and research faculty have an elected representative on the institution's highest governing body?	4	57%	2	67%	0	0%
Does the institution have written policies and procedures to identify and engage external stakeholders (i.e., local residents) in land use planning, capital investment projects, and other institutional decisions that affect the community?	3	43%	0	0%	0	0%

The results of this survey, compared with the results of the self-assessment of universities, lead to reflect that globalization has prompted increased attention of universities to their international ranking. Such attention has undoubtedly stimulated a growing interest in the quality and internationalization of research to adapt the educational initiatives to the expectations of the environment, the greater involvement of certain stakeholders in the definition of programs and projects and improving education quality. This has promoted stakeholder engagement and the development of management decisions aimed at qualifying their image and improving the ability to attract consensus and resources [73].

In addition, the increasing attention from international organizations (UN, OECD, EU, etc.) and the governments of several countries on issues of social responsibility and sustainable development has undoubtedly prompted universities to reflect on their role in this sphere as educators of culture and promoters of the advancement of knowledge.

## 5. Conclusions

This qualitative analysis of the information indicating the level of sustainability integration in university governance and culture fills a gap in the literature and promotes the debate on the importance of sustainability in university management. Analyzing three groups of the best universities in the world, the study highlights certain elements of relationship between the recognized quality of universities and their propensity to sustainability governance.

The empirical results provide some useful indications that, albeit limited to globally recognized high-quality universities, allow ascertaining the relationship between image, quality and innovation in university governance. In particular, the comparison between the Top 20 of the Top 500, the Last 20 of the Top 100 and the Last 20 of the Top 500 ranked universities among the ARWU 2015 Top 500 shows a consistent trend between the positioning of the universities in the ranking and their approach to sustainability cultures in their management.

The comparison of the overall results confirms for all areas under study that:

- (1) There is higher integration and inclusion of the sustainability theme in the institutional, managerial, research and teaching activities of universities placed in the Top 5 rankings compared to universities in subsequent positions.
- (2) The behavior of the universities analyzed is linear with respect to the items investigated, confirming the initial hypothesis of this study, namely, that sustainability effectively represents an opportunity for the qualitative improvement of the higher educational system. In other words, the analysis shows a regressive integration of sustainability in university governance and culture with respect to the universities in the overall ranking.

Universities with the highest rankings have a governance culture with a clearer orientation to sustainable development, according to a transversal triple bottom line approach in all spheres of their activities. Conversely, universities ranked in the last positions on the Top 100, while showing a propensity to sustainability, do not achieve the same results with regard to integrating, sharing and including sustainability in the governance and institutional culture to effectively fulfill the role of a sustainable university. Different results are recorded for the last twenty universities in the overall ranking. In fact, in the latter group analyzed, there is a very high percentage of institutes that do not communicate through their websites an integrated approach to sustainability in the culture and university management.

Of note is that the actual achievement of this important objective cannot depend solely on new regulatory and/or scientific stimuli, but is related to the degree of diffusion of an effective culture of responsibility within the university and the ability to legitimize the actions and interpretive paradigms by providing effective tools and solutions for corporate governance issues.

The social and legislative context of reference, and the characteristics of the adopted governance system, considerably influence certain aspects of inclusion at the expense of others. Similarly, the management characteristics, the availability of resources, the structures and culture of the university system affect the governance development level.

The investigation, although a first approximation and deliberately focused on three groups of universities that should present governance excellence, allows observing the growing propensity to sustainability. The frequent fragmentation in the approach found in the available documents and the limited availability of certain important documents in terms of accountability suggest that the opportunities that sustainability offers in terms of quality improvements have not yet been fully grasped.

Indeed, emerging from the analysis is a significant and widespread orientation towards strategic stakeholders, even if it often seemingly linked to selective involvement in the governance of universities, namely, not reflected in a governance approach that is fully oriented towards social responsibility and transparency.

In summary, most of the universities analyzed do not yet seem to fully capitalize on the relationship between economic effectiveness and socio-environmental efficiency as image qualifying conditions and managing consensus to achieve success in the medium to long term. This situation, together with the limited attention that management scholars pay to the issue in question could be a factor in slowing down the diffusion of sustainability principles in university governance. Higher education institutions, as well as the societies in which they operate, are currently undergoing a global transformation process in all contexts, although with specific characteristics in different parts of the world. The role of higher education institutions in society will influence the place of knowledge in facing the challenges the world faces today; and at the same time, this will influence HE (Higher Education) institutions impact and opportunities to contribute to build a better world. Higher education faces the challenge of creating and distributing socially relevant knowledge and of doing it with anticipation to play a proactive and committed role in the transformation and positive change of societies.

Therefore, there is a need to reconsider what the social contribution of higher education should be [74–76].



Indeed, the top ranked universities are examples that often inspire other universities to improve their ranking, while the development of studies would contribute to providing useful elements for reflection and significant indications for improvement.

The management approach depends on the shared vision of university leaders who have a fundamental role in transferring sustainability to university culture [77,78].

Based on the above considerations, we believe this first study on the subject may have broader future implications intended to highlight the importance of management sustainability as a quality improvement factor of universities. This qualitative study could encourage future investigations using a dataset to analyze the relationship between engagement in sustainability and university performance in the long run. Future studies could compare a larger number of universities, selecting for example a significant number of Anglo-Saxon, continental European and emerging economy universities, or focusing on the role of national governments as promoters of sustainability also in this important sphere, or consider all the universities in a single country.

However, our research results may already have practical implications, for example, encouraging policymakers to define best practices for the management of university sustainability through laws and recommendations or stimulate universities pursuing an improvement in their international ranking to pay more attention to the principles of sustainability. This would enable emphasizing the crucial role of universities in the development of economic systems based on knowledge and innovation, promoting a more resource-efficient, more environmentally friendly and more competitive economy to encourage cultural growth and social and territorial cohesion.

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