



Sustainability literacy in the Romanian Universities

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Abstract. *Sustainable university refers to the active involvement of higher education institutions in elaborating policies to protect the natural environment. The sustainable university is the one that, besides the governmental involvement, contributes to the safety of the environment by adapting the curriculum to the ecological needs and through the progress of the scientific knowledge, as a result of the didactic and research activities.*

As a vector of society's development, the primary role of the university consists of educating future decision-makers. From the point of view of sustainable education, the concept of sustainable literacy has been shaped. Sustainable literacy involves educating future generations for sustainable development, considering the social, environmental, and cultural aspects specific to each country.

In our opinion, "Sustainability literacy" in the academic environment is the formation and transmission of knowledge, skills, values, and attitudes that will allow students/graduates to engage deeply in building a sustainable future and improve their decision-making towards sustainability. The purpose of this research paper is to identify the context of ensuring and promoting sustainability in Romanian tertiary education.

For this purpose, data obtained from the Romanian Agency for Quality Assurance in Higher Education were used regarding the number of students (as an element of the university demand) who follow a study program related to sustainable development, as well as data on the number of study programs in sustainability (as an element of the university offer). The results show that the number of students decreases, mainly due to demographic reasons, and the low graduation rates following the baccalaureate examination. Nevertheless, the number of programs in the sphere of sustainable development was higher in 2018 than the previous year. This fact demonstrates the importance given and the serious concerns regarding sustainability literacy in Romanian universities.

Keywords: sustainability, university, literacy, sustainable literacy, academic

Introduction

The way the current society works, by expanding the production and consumption of goods and services, is not viable and will have negative consequences in the long run. In our opinion, this aspect has now determined an intense concern in the academic world, but also at the

level of the decision-makers regarding the sustainable development, also known as sustainability.

The concept of sustainable development refers to all the forms and methods of socio-economic development, whose primary foundation is to ensure a balance between the socio-economic systems and the elements of natural capital (ARDLD).

The concept of sustainability refers to sustainable development and can be viewed as a set of three main components (economic, environmental, and social) that interact with each other, namely economic security, ecological balance and social equity. Defining sustainability is a complicated process, as the term is still highly debated, since it involves several arguments regarding what is ethically right (Deneş and Radu, 2011). However, the best-known definition of sustainability was given by the World Commission of the United Nations Environment and Development: " sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs " (United Nations General Assembly, 1987, p. 43).

Major changes related to demographics, globalization, environmental concerns, social relations, social stability and technology, representing a mix of opportunities and threats, will most probably affect governments, demanding individualized responses and measures for each state, region or municipality. These impulse factors have become almost universal and require permanent collaboration, starting with multi-directional communications, as well as with the sharing of operational and technical standards (Mureşan et al, 2010).

In this context, the connectivity of the regions to the global space increases. Regions become integrated at national level (regional and national strategies are articulated to ensure a holistic perspective), at European level (regional strategies become components of European policies), but also at global level (regional strategies take into account international agreements on environment, security, digital economy etc.), as illustrated in Figure 1.

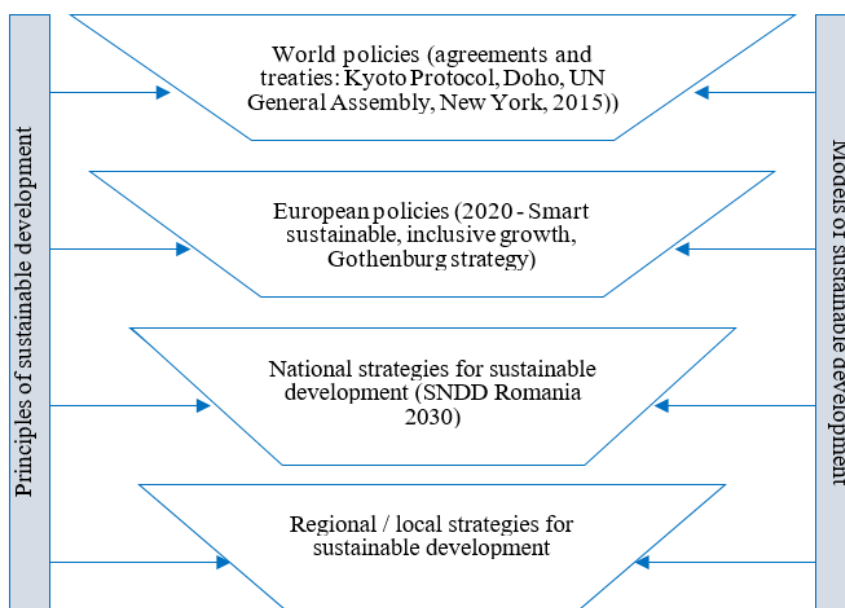


Figure no. 1: Connectivity of regional policies and strategies on sustainable development in the global space

Source: adaptation after Mureşan M, Gogu E., Irimia R. (2010)

Faced with these challenges, higher education institutions need to develop general but also country-specific strategic solutions to ensure a positive evolution of society, under conditions of competitiveness and sustainability. In what concerns education, sustainability can be regarded as a cornerstone in shaping future generations, so as to create members of society capable of understanding and making decisions without affecting future generations, thus pursuing their activity in the idea of sustainable development.

Over time, the problem of sustainable development has often been addressed, especially looking for solutions so that activities leading to sustainable development are known by the population. In this regard, higher education institutions play an extremely important role in terms of the formation of highly qualified workforce and which can become decision makers at social and administrative level.

The concept of university sustainability was first debated at the Talloires conference in 1990. Thus, it is clear that the role of universities in sustainability education is to help students acquire knowledge, skills, values and attitudes about how environment, economy and society interact or should interact in terms of sustainability.

Currently, there are numerous institutions and organizations that cooperate with universities for education on sustainable development, such as Association of University Leaders for a Sustainable Future, United Nations Educational, Scientific and Cultural Organization, Higher Education Sustainability Initiative, Copernicus Alliance – European Network on Higher Education for Sustainable Development. This confirms a particularly high international interest in sustainable universities and, more recently, sustainable literacy as a necessary phenomenon in the academic environment.

"Sustainability literacy" is a concept that includes specific elements of education such as knowledge, skills and activities that lead to a sustainable development of society (Stibbe, 2008).

In order to identify the Romanian university context in ensuring and promoting sustainability, the research has as its main objective the analysis of the existing situation, respectively on the way of carrying out the educational process in this direction. In this regard, the analysis focused on following two relevant analysis directions:

- Analysis of the normative and legislative framework, as the main mobilizing factor regarding the implementation of the university sustainability;
- Analysis of the educational context at the university level.

This article explores the concept of sustainability literacy in Romania from the following points:

- University offer presented by: List of undergraduate and master's degree programs and Number of undergraduate and master's degree programs per university centers;
The university application through the Number of students enrolled in the bachelor's and master's degrees on university centers.

Thus, the article responds to the need of decision makers in the field of education to know the sustainable dimension of the academic activity in Romania, in order to answer as much as possible, the need to increase literacy in the field of sustainability and to ensure a balanced distribution at regional level and by fields of study.

The structure of the paper is as follows: Section 1 deals with the specialized literature in the field from two perspectives: university sustainability and literacy regarding sustainability; Section 2 presents the legislative framework and the specialized literature on

university sustainability in Romania; Section 3 presents the methodology and data used in this research; Section 4 addresses the research results regarding the university supply and the university demand.

Literature review

Sustainable University

The foundations of university sustainability were set in 1990 by the declaration from Talloires, in France, where 31 university leaders and environmental experts, who were representatives for 15 countries in the southern and northern hemisphere of the globe, developed an action plan in ten points on a sustainable (sustainable) future. The purpose of this plan was to introduce literacy regarding sustainability in the activities of universities by including the notion and concept of sustainability (sustainability) in the teaching and research process.

According to AUSLF (Association of University Leaders for a Sustainable Future) this declaration is currently signed by more than 500 university leaders, university presidents and rectors from over 50 countries.

Starting from the ten directions¹ of action of the Talloires declaration, a definition of the sustainable university can be outlined:

The sustainable university is that higher education institution actively involved in the elaboration of environmental policies and which contributes to environmental protection by adapting the curriculum to the social-ecological needs and through the progress of scientific knowledge, as a result of the didactic and research activities. The implementation of this process involves a global effort involving not only teachers and students, but also the broad network of individuals and partner institutions of the universities, of which they belong, the pre-university education institutions, social communities and non-governmental organizations, both at national as well as international level.

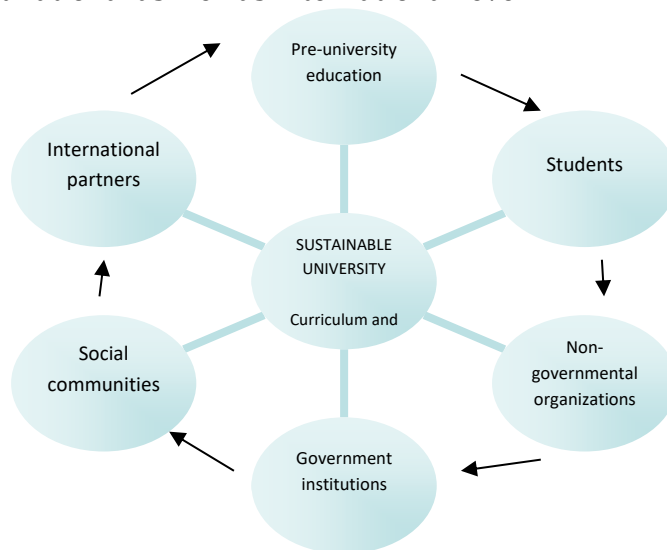


Figure no. 2: The connection between the academia and the stakeholders

Source: own representation

¹ <http://ulsf.org/wp-content/uploads/2015/06/TD.pdf>

University sustainability involves skills of coordination and leadership, participation, involvement and commitment in all social fields, but also through the involvement of stakeholders (Blewitt and Cullingford, 2013).

The Association of University Leaders for a Sustainable Future² identified a set of directions and activities. Given the complexity of the concept of sustainability we propose to complete the set with the following two directions and actions: The university offer developed in the area of sustainability (point 2) and the formation of attitudes (point 5) (Figure no. 3).

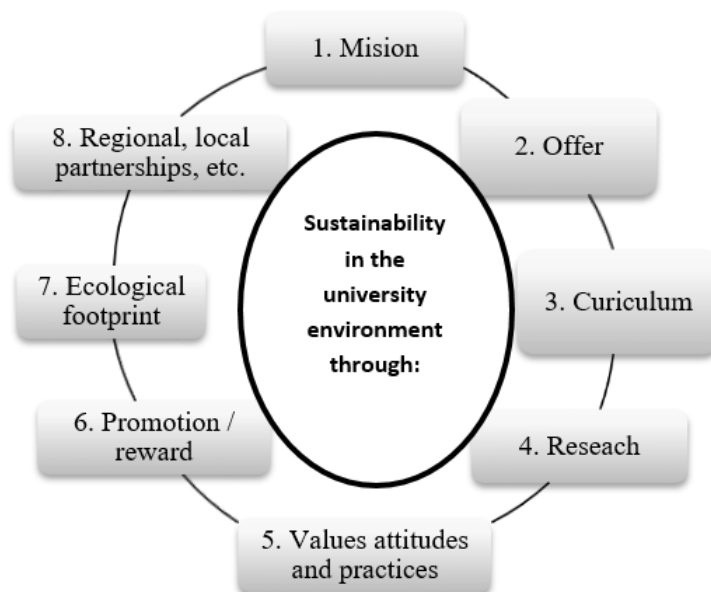


Figure no. 3: The directions and activities of sustainability in the university environment

Source: own representation

In the current context, many institutions of higher education have assumed the role of disseminating knowledge, values, attitudes and behaviours that promote sustainability. A key objective in such activities is to inform the university teachers in order to apply the sustainability criteria to their respective disciplines (Minguet et al, 2008).

The industry / university forum organized by Macquarie University (Australia) identified the need to integrate sustainability ideas into university programs in all disciplines in order to prepare students for their professional roles. At the global level, participants at the 2002 Johannesburg Earth Summit decided that sustainability must be an integral component of all levels of education. Environmental organizations have always focused on developing materials to support sustainable development within specific environmental disciplines. But sustainability issues should cover the whole range of topics and extend to developing the appropriate curriculum. A real change in thinking about sustainability requires a creative pedagogy that recognizes the different ways people think about sustainability and provides spaces where their ideas can be developed. University sustainability implies understanding of the concept of sustainability in the context of

² <https://ulsf.org>

teaching and a number of ways in which it suggests that sustainability could be integrated into their teaching (Reid and Petocz, 2006).

In 2010, the University of Indonesia (IU), developed an indicator on the classification of universities globally in terms of sustainable conditions and policies (Suwartha and Sari, 2013). This indicator is called the GreenMetric UI and evaluates the university sustainability from a qualitative and quantitative point of view using a composite indicator that contains the following criteria:

- University infrastructure and positioning - this criterion contains six key indicators that value 15% of the final score
- Energy and climate change - contains eight key indicators and is worth 21% of the final score
- Waste - contains six key indicators and is worth 18% of the final score
- Water - contains four key indicators and is worth 10% of the final score
- Transportation - contains eight key indicators and is worth 18% of the final score
- Education and research - contains seven key indicators and is worth 18% of the final score

The GreenMetrics UI score results are published annually. The data for its calculation are transmitted by the universities wishing to provide information on the criteria mentioned during the period May-October, the results to be published in December of each year. According to the UI Green Metric, the number of universities included in the ranking had an upward trend from year to year, as can be seen in the table no. 1, currently including 780 universities around the world.

Table no. 1: Number of Universities included in the UI Green Metrics

Year	Number of Universities included in the UI Green Metrics
2019	780
2018	719
2017	619
2016	516
2015	407
2014	361
2013	215
2012	215
2011	178
2010	95

Source: authors' processing according to datelor UI GreenMetrics

Within this top there were a total of 9 universities in Romania. Babes Bolyai University has entered the top since 2011, then from 2014 the University of Medicine and Pharmacy was added "Gr.T. Popa "from Iași, Polytechnic University of Bucharest, University of Agricultural Sciences and Veterinary Medicine from Cluj-Napoca, West University of Timisoara, Valahia University from Târgoviște, " Petru Maior "University from Târgu Mureș, University of Medicine, Pharmacy, Sciences and Sciences "George Emil Palade" from Târgu Mureș (in 2019). In 2019, the first place in the ranking is occupied by the Wageningen

University & Research University in the Netherlands. Regarding the universities in Romania, the first in the ranking is the "George Emil Palade" University of Science and Technology of Târgu Mureş, which occupies the position 79, followed by Babeş Bolyai from Cluj on position 316 and on position 375 is the Polytechnic University of Bucharest.

The unfavourable positions of the Romanian universities, as well as the small number of the universities involved in the sustainable academic programs, suggest the need for awareness of this situation by the decision makers in the field of education, in order to take measures regarding the fastest improvement and increase the degree of sustainable literacy.

Sustainable literacy

Under the current conditions, higher education institutions are aware of the importance they have for a sustainable future. Most universities address the issue of sustainability in a compartmentalized way by field of study, so that sustainability education relates to specific courses, without taking into account research or sustainable campus activities. By adopting a "sustainable whole university" approach, universities can optimize their role as agents of change in sustainability. This approach reflects both research, education, operational and awareness activities, as well as student involvement in all these activities. These activities result in the university's performance in terms of sustainability, raising the profile of the university's sustainability initiatives; providing solutions to sustainability issues; building trust among students, managers and academics and providing meaningful learning experiences for students (Mcmillin and Dyball, 2009).

A number of universities around the world have created new courses and assessment systems or modified the existing ones, in response to the growing interest of companies to hire graduates with knowledge of sustainability. However, many of these courses were developed with an emphasis on "heavy" techno-centric or managerial problems. The studies in the specialized literature are generally descriptive and in a limited number of cases have been based on the theories of learning and learning. Students should be seen as agents of change of sustainability, dealing with the complexities of sustainability and the "soft" problems in the management of organizational changes. The process of university sustainability presents three key elements: (1) learning outcomes; (2) teaching the course; and (3) course evaluation (including feedback). Addressing the university sustainability, in particular the design and teaching of the course implies the complete, systematic, robust and focused approach of education, using the theories of teaching and learning, thus linking the objectives of the course, teaching and evaluation (Lozano et al., 2015).

An important factor for the implementation of the culture of sustainability is the preparation of universities for future professionals, which is why it is necessary to reorient the university studies towards sustainability. An example would be the ACES (Green Acronym in Spanish) model, which started a process of reorienting higher education studies towards sustainability. This model is the result of a project involving a network of 11 European and Latin American universities. The methodology of the project is based on research through participatory actions, defining characteristics, which can guide a diagnosis of the level of greening of the curriculum and the design and application of strategies and actions to facilitate the incorporation of the sustainability dimension in higher education (Junyent and Geli di Ciurana, 2008).

Sherman (2008) studied in the US the connection between university sustainability and the activities of the university campus. The results showed a positive association mainly

with the prescribed practices for individuals and activities on campus. Although this association is positive, this limits the potential of the concept of integrating widely into the curriculum. For sustainability to realize its full transformative potential in higher education and society, it must transcend an association with prescribed practices and even specialized fields of study. Sustainability must become a great pedagogical idea, capable of complementing and connecting the paths of investigation between the academic disciplines that organize and prioritize teaching and learning on campus. If sustainability is used as a method of examining the relationship between environmental boundaries and human values, decisions and actions that shape the future, it will transform both campus activity and thinking and behaviour.

Literacy on sustainable development involves education for sustainable development, which is different from environmental and ecological education. This difference is due in particular to the concept of sustainability, which in addition to the concern for the environment also includes the social-economic and cultural environment (Lukman and Glavič, 2007).

Due to the need to have comparable results, in 2012 at the United Nations Conference on Sustainable Development in Rio) the literacy test for sustainable development called **Sulitest (Sustainability literacy test)** was initiated in the experimental phase. This test was developed in accordance with the Higher Education Sustainability Initiative (HESI) commitments and objectives. Sulitest was recognized in 2016 as a sustainable development objective and in 2017 it was included as a tool in the revision of the 2030 Agenda on sustainable development. Sulitest can be implemented at university level but also in companies as a test tool for literacy on sustainable development.

Sustainable university in Romania

According to the Rio de Janeiro Declaration on Environment and Development of 1992, "sustainable development is that development process that responds to current needs without jeopardizing the ability of future generations to meet their own needs. sustainable to be achieved, environmental protection will be an integral part of the development process and cannot be approached independently of it".

Sustainable development is aimed at the whole society, which means that education plays a very important role. In order to reach a sustainable society, education must become sustainable, represented by sustainable institutions. At the level of educational institutions, sustainable development (sustainability) implies the management of specific processes and activities, aiming to increase the quality of the services offered, represented by well-trained graduates. Due to the technical and technological progress that is manifested in all areas, graduates must meet the real needs of the labour market, needs that are constantly changing. For this reason, both the bachelor's degree programs, as well as the master's and doctoral programs on sustainability, have rethought their mission and have restructured their university program, research programs and campus life, so as to meet the current sustainable development requirements of the company, the current form. being adapted to the requirements of the new legal provisions and the model of sustainable development.

The role of education on sustainable development can be viewed from the perspective of educational institutions that need to be adjusted, but also from the perspective of educational institutions that can generate change. In Agenda 21, education is stipulated to be "essential for promoting sustainability and improving people's ability to tackle

environmental and development issues", so that our research looks at educational institutions as a potential change agent for sustainable development at educational level, especially in the university environment.

In the analysis of the normative and legislative framework were studied: The Law of National Education, a series of University Books, procedures, regulations and university strategies, highlighting the current context regarding the sustainable development at university level in Romania.

The Law of National Education specifies that one of the principles that govern the pre-university and higher education, but also the lifelong learning in Romania is the principle of efficiency, based on which the aim is to obtain maximum educational results, by managing the existing resources (Education Law, 2011). Except for efficiency, the law does not stipulate anything else in relation to sustainable development regarding the educational process, such as the limitation of resources, waste minimization, ecology or sustainability.

Considering the "Alexandru Ioan Cuza" University of Iași, the General Regulation for organization and functioning is provided for the Internal Service of Prevention and Protection, which fulfils duties, tasks and responsibilities in the field of occupational safety and health and in the field of health and environmental protection.

Within the Academy of Economic Studies of Bucharest there is the Tourism and Ecology Club (ECOTUR), a student organization whose mission is to develop responsible, conscious and proactive behaviour among young people in the fields of tourism and ecology through their professional development and their spirit of initiative. Students the members of this organization are passionate about ecology and want to sound an alarm regarding the protection of the environment.

At the level of the University of Bucharest, in its Charter there are provided two component entities of the Universities: The Ecological Research Station Brăila, the county of Brăila and the Center for Environmental Research, and the Conducting of Impact Studies Eșelnița, Mehedinți county, which allowed the development of research projects. which focused on ecology and sustainable development.

The "Babes-Bolyai" University of Cluj aims at sustainable development and policies that reduce the anthropic impact on the environment, by adopting the "UBB for Sustainable Development" (UBB Goes Green) program. At the same time, through the UBB Goes Green, a general reference and development framework for the academic and administrative activities of the UBB has been achieved, which will include various operationalized, detailed and gradually implemented measures, depending on the available financial resources. At the research level, activities related to sustainable development (publications and conferences) are pursued, and at the administrative level, a policy of saving UBB resources is pursued.

Although the concept of sustainable development can no longer be considered new, the sustainable university development in Romania is at the beginning, because there are shortcomings of the legislation in the field of sustainable education or of the internal regulations, and the re-design of the curricula by introducing new disciplines is a difficult activity and bureaucratic, with many managerial, motivational, psychological and other difficulties.

Data and methodological approach of the research

To highlight the literacy regarding sustainable development in the university environment in Romania, data were used regarding the number of students (as an element of the university

application) following a program of studies related to the area of sustainable development and data on the number of study programs. from the area of sustainability (as an element of the university offer. The data were obtained from the Romanian Agency for Quality Assurance in Higher Education (ARACIS).

From the point of view of university supply and demand, a number of relevant indicators from the field of sustainable development, environmental protection, ecology, etc. have been analysed:

- List of undergraduate and master's degree programs;
- Number of undergraduate and master's degree programs in the field of sustainability in university centers;
- Number of students enrolled in the bachelor's degree in the field of sustainability on university centers;
- The number of graduates in the field of sustainability.

From the total of the existing specializations in the Nomenclature of the fields and of the specializations / programs of university studies and of the structure of the higher education institutions for the academic year 2019-2020, we have identified a number of bachelor's degree programs as being part of the area of study of sustainability (Table 2).

In the case of the master studies fields it is more obvious that the subject having specific names for the specialization of sustainable development.

The main limitation in our research was the availability and completeness of the statistical data. Reason why the research was limited to descriptive statistical analysis and data visualization. The data were processed using Tableau software.

Results and discussions

Quantitative analysis regarding the university offer in Romania

Under the current conditions, higher education institutions are aware of the importance they have for a sustainable future. Most universities address sustainability issues in a compartmentalized way, and sustainability education refers to specific courses, regardless of research or sustainable campus operations. By adopting a "sustainable whole university" approach, universities can optimize their role as agents of change in sustainability. This approach reflects both research, education, operational and awareness activities, as well as student involvement in all these activities. These activities result in the university's performance in terms of sustainability, raising the profile of the university's sustainability initiatives; providing solutions to sustainability issues; building trust among students, managers and academics and providing meaningful learning experiences for students (Mcmillan and Dyball, 2009).

A number of universities around the world have created new courses and scoring systems or modified the existing ones, in response to the growing interest of companies to hire graduates with knowledge of sustainability. However, many of these courses were developed with an emphasis on "heavy" technocentric or managerial problems. The studies in the specialized literature are generally descriptive and in a limited number of cases have been based on the theories of learning and learning. Students should be seen as agents of change of sustainability, dealing with the complexities of sustainability and the "soft" problems in the management of organizational changes.

The process of university sustainability presents three key elements: (1) learning outcomes; (2) teaching the course; and (3) course evaluation (including feedback). Addressing the university sustainability, especially the design and teaching of the course implies the complete, systematic, robust and focused approach of education, using the theories of teaching and learning, thus linking the objectives of the course, teaching and evaluation (Lozano et al., 2015).

According to the Nomenclature of the fields and specializations of undergraduate studies (GD 326/2019), the number of fields and programs of undergraduate studies in the field of agricultural sustainability and the protection of the natural environment in the academic year 2019/2020 was 178 license (6.99% total university system) totalling 13,215 places - 6.42% total system (Annex 1).

In the analysis of the university offer regarding the sphere of sustainability (specializations related to sustainable development / environment / ecology), according to the Nomenclature of the fields and of the specializations of bachelor's degree studies, the data on the number of programs of the bachelor cycle for the 2015 academic years were analyzed-2016, 2016-2017, 2017-2018. It is observed that the number of programs was higher for Bucharest and Cluj, followed by Iași and Timiș.

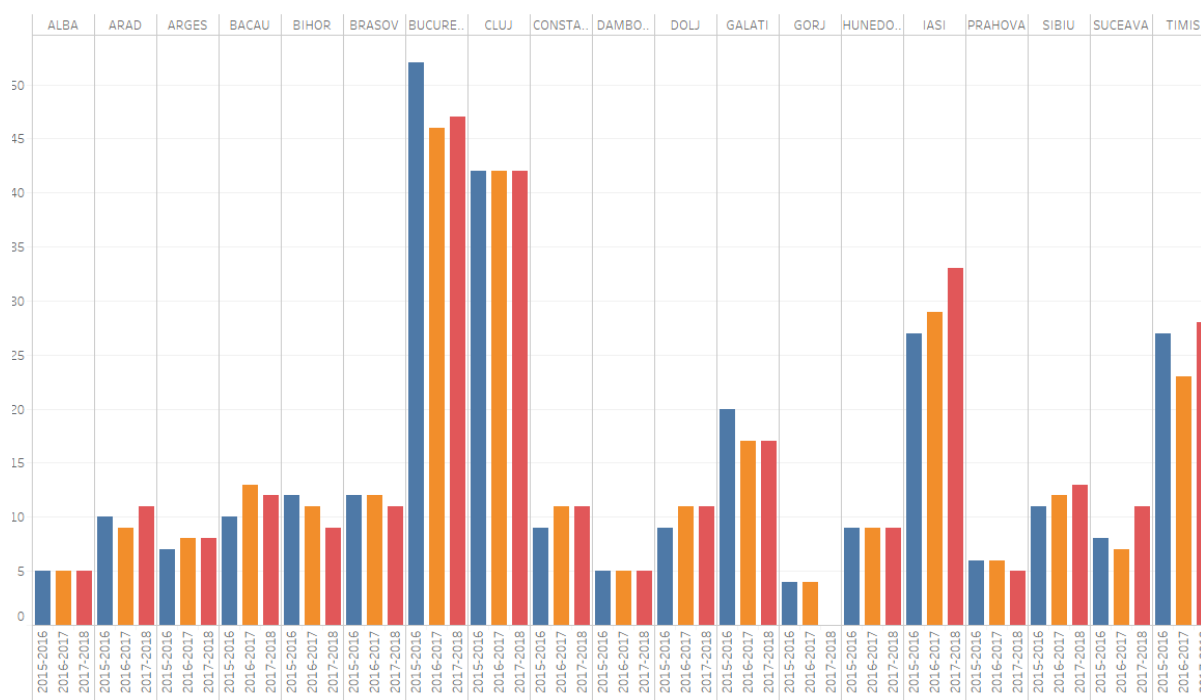


Figure no. 4: The number of degree programs in the field of sustainability at the level of the university centers

Source: authors' processing according to ARACIS data

Regarding the master's program, data available was only for the academic year 2019-2020.

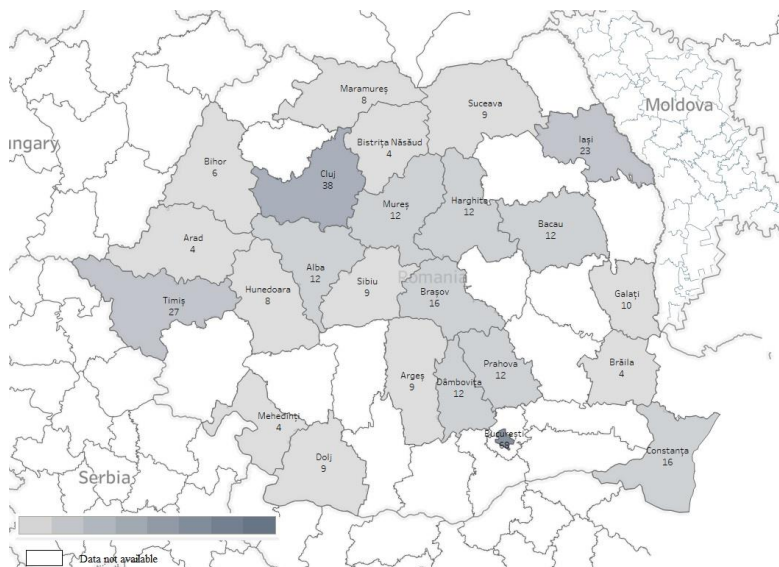


Figure no. 5: The number of masters programs in the field of sustainability at the level of the university centers

Source: authors' processing according to data from the Ministry of Education

At the national level, there are currently 230 master programs that have as their field of study sustainability / sustainable development or which are related to this theme. The university centers of Bucharest, Cluj, Timiş and Iaşi are noticeable, but there is also a tendency towards the regions that have environmental concerns such as Constanţa county.

Quantitative analysis regarding the number of students and graduates

The data analysed regarding the number of students were for the academic years 2015-2016, 2016-2017, 2017-2018.

At national level the number of students who have followed a program of study in the field of sustainability has followed a downward trend (as a result of the demographic factors and the low graduation rate of the baccalaureate examination), the main university centers with the most students at national level are noted: Bucharest, Cluj, Iaşi and Timiş.

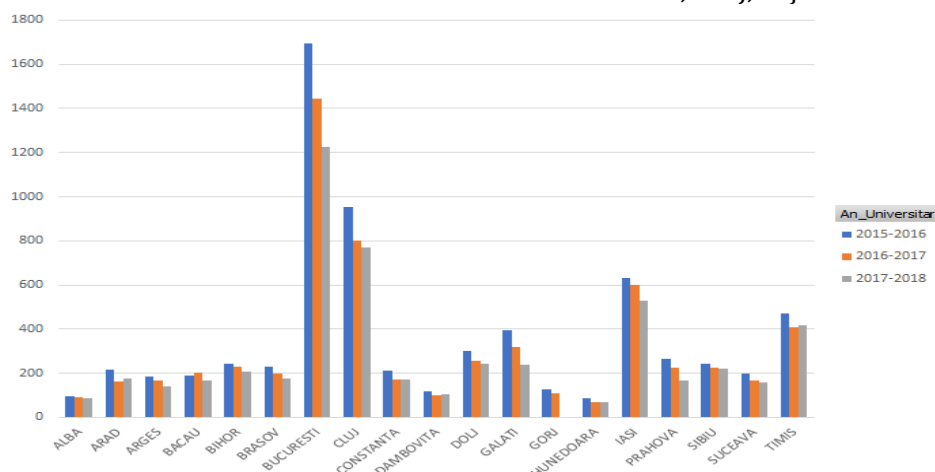


Figure no. 6: Number of undergraduate students who have followed a program in the field of sustainability at the level of university centers

Source: authors' processing according to ARACIS data

Another important aspect is the international dimension of education in Romania, and regarding the number of foreign students who follow a program in the area of sustainability, it can be observed that the trend is especially ascending for Cluj and Timiș counties.

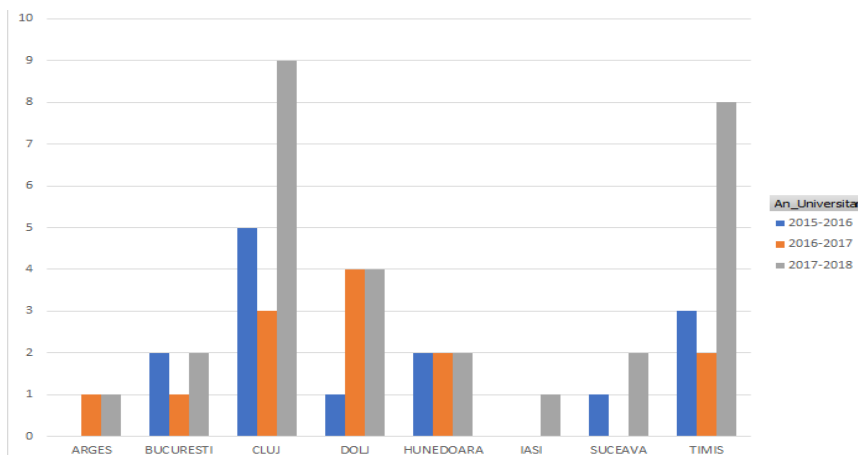


Figure no. 7: Number of foreign undergraduate students who have followed a program in the field of sustainability at university level

Source: authors' processing according to ARACIS data

In Romania the number of students decreased as a result of the reduction of the total population, and of the young one in particular (Mihăescu et al, 2009), which is why the descriptive analysis regarding the evolution of the number of students must also be considered from the perspective of this social aspect.

Table no. 2: Number of students enrolled in the programs of studies in the field of sustainability by specialization in state institutions, in 2018

Specialization	Number of students enrolled					
	2015-2016		2016-2017		2017-2018	
Agri-food and environmental economy	834	10.96%	776	10.20%	728	9.57%
Ecology and Environment protection	751	9.87%	771	10.13%	777	10.21%
Biomaterials engineering	10	0.13%	9	0.12%	8	0.11%
Engineering of sustainable rural development	87	1.14%	84	1.10%	39	0.51%
Environmental Engineering	578	7.59%	588	7.73%	584	7.67%
Environmental Engineering (common curriculum)	113	1.48%	141	1.85%	242	3.18%
Biotechnical and ecological systems engineering	1173	15.41%	1023	13.44%	923	12.13%
Renewable energy systems engineering	96	1.26%	69	0.91%	60	0.79%
Inorganic substances engineering and environmental protection	2180	28.64%	1657	21.77%	1260	16.55%
Engineering and environmental protection in agriculture	506	6.65%	444	5.83%	298	3.92%
Engineering and environmental protection in the chemical and petrochemical industry	136	1.79%	107	1.41%	93	1.22%
Engineering and environmental Protection in industry	91	1.20%	71	0.93%	47	0.62%
Engineering of waste recovery	66	0.87%	61	0.80%	58	0.76%
Sanitary engineering and environmental protection	147	1.93%	120	1.58%	93	1.22%

Specialization	Number of students enrolled					
	2015-2016		2016-2017		2017-2018	
Installations and equipment for the protection of the atmosphere	73	0.96%	73	0.96%	58	0.76%
Management of sustainable rural development	11	0.14%	21	0.28%	41	0.54%
Consumer and environmental protection	388	5.10%	383	5.03%	462	6.07%
Plant protection	15	0.20%	24	0.32%	44	0.58%
Environmental science	356	4.68%	302	3.97%	234	3.07%
Total	7611		6724		6049	

Source: Authors' processing according to ARACIS data

Compared to the previous year, the number of programs in the field of sustainable development at national level increased by 9 programs (in 2018 there were 279 programs). Also, Bucharest and Cluj are the university centers with the most study programs in the field of sustainable development with 46, respectively 42 study programs in the academic year 2017-2018, followed by Iasi with 33 study programs and Timiș with 28 study programs.

Analysing the number of students on the study programs that they follow, it was observed that most went to the specializations: Engineering and environmental protection in agriculture and Engineering and environmental protection in industry, followed by the fields: Environmental engineering and Biotechnical systems engineering. and environmentally friendly.

Table no. 3: The number of graduates of bachelor's degree programs in the field of sustainability by specialization in state institutions, in 2018

Specialization	Number of graduates					
	2015-2016		2016-2017		2017-2018	
Ecology and Environment protection	246	77.36%	158	49.69%	168	52.83%
Agro-food economy	3	0.94%	8	2.52%	5	1.57%
Agri-food and environmental economy	128	40.25%	155	48.74%	172	54.09%
Environmental Engineering	64	20.13%	81	25.47%	78	24.53%
Environmental engineering (common curriculum)	0	0.00%	0	0.00%	24	7.55%
Engineering and environmental protection in agriculture	196	61.64%	186	58.49%	111	34.91%
Engineering and environmental Protection in industry	288	90.57%	239	75.16%	134	42.14%
Engineering of biotechnical and ecological systems	66	20.75%	49	15.41%	41	12.89%
Renewable energy systems engineering	18	5.66%	12	3.77%	17	5.35%
Inorganic substances engineering and environmental protection	22	6.92%	19	5.97%	9	2.83%
Waste recovery engineering	9	2.83%	7	2.20%	11	3.46%
Sanitary engineering and environmental protection	17	5.35%	17	5.35%	16	5.03%
Facilities and equipment for the protection of the atmosphere	1	0.31%	10	3.14%	1	0.31%
Consumer and environmental protection	54	16.98%	49	15.41%	61	19.18%
Plant protection	4	1.26%	11	3.46%	4	1.26%
Environmental science	56	17.61%	57	17.92%	33	10.38%
Total	1172		323		363	

Source: Authors' processing according to ANS data

Most graduates are those who have followed the specializations: Agri-food and environmental economics (ASE graduates), Ecology and environmental protection and Engineering and environmental protection in industry and agriculture. Thus, there is a particular interest for the fields related to education for agriculture and environmental protection, these being the well-known national study programs.

Conclusions

The purpose of this paper is to identify the current state of education regarding sustainability in Romania from the point of view of university supply and demand. It is obvious that for a correct approach on sustainability literacy, it is necessary to improve the university's objective and to update the curriculum with the current needs of the society. Education is an action with a long-term and very long-term impact, therefore its effects cannot be observed for a limited period of time.

In this research, data obtained from the Romanian Agency for Quality Assurance in Higher Education were used, considering the following two important perspectives on education: (1) the university application represented by the number of students following a study program related to the development field and (2) the university offer data regarding the number of study programs in the field of sustainability. The results obtained regarding the number of students and graduates who have followed a program of study in the field of sustainable development must be looked at mainly from the perspective of two causes with social aspect: the demographic aging but also the low possibility of the baccalaureate examination. Thus, it is observed that the number of students at the bachelor's level is decreasing, but the number of programs in the sphere of sustainable development was higher in the academic year 2017-2018 compared to the previous year. This fact demonstrates the importance given and the high concerns of the educational institutions as well as of the governmental institutions regarding the "literacy of sustainability" in the university environment in Romania.

Also, we now consider that the social-political environment overestimates the importance of economic growth, ignoring spirituality, human values and the natural environment.

As teachers, we believe that the university, the school as a whole, must be above these temporary and somewhat selfish goals. Therefore, the main purpose of education is to impose and harmonize the role and importance of the university as a promoter of science in making decisions in the development of society, so as to become sustainable for all generations.

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