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Adaptive Sustainable Academic Management Practices

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Abstract

The unpredictable evolution at global level, in all aspects of society, as a whole, requires close attention from all socio-economic and even political entities, as well as from human decision-makers at various levels, in order to find viable solutions for what a robust and harmonious development of the whole society means. From this perspective, an essential role must be taken by academics and universities. Universities can be considered the true engines of society in terms of promoting, spreading and acquiring the elements that are defining sustainable development. University decision-makers have an obligation to resort to practices adapted to the evolution of the concept of sustainable development in relation to what is happening in the economic, social, political, demographic, ecological or technological spheres. A state of acceptance and awareness has to be created by all of what the society needs to prepare for future generations.

Keywords: sustainable university, strategic sustainability, entrepreneurial university, academic decision-makers, adaptive change

1. Introduction

Each generation has the same goals, which aim at growth and technological, economic and social development, which means a better life. The perseverance for achieving these goals has enabled mankind to reach its current state of development. Undesirable and avoidable side effects are added to those that are favorable. More and more resources are becoming insufficient as the climate is changing in a negative way and the deterioration of the environment is increasing. Society is increasingly unbalanced, the rich become richer and the poor are getting poorer, many countries have serious difficulties in securing enough food, money and other resources as stated in Ref. [1]. The future and the sustainability of this planet, Terra, are constantly being jeopardized by the lethal actions of mankind, and it is almost exclusively our responsibility to adopt long-term strategies to mitigate the consequences we have been experiencing for a long time. On a planet that currently has 7.7 billion people, each action or lack of action generates a labyrinth of consequences, both in society and the environment both globally and locally. Mankind began to understand, under the effect of several constraints, that if it continues to consume unwarranted, dispel and ignore the signals of this lifestyle, it will self-destruct. The crisis from 2007 to 2008, as well as the forthcoming likely financial crisis, is nothing more than a concrete proof of the negative effects caused by unhealthy habits and over-reliance.

Prolonged prosperity in the last 30 years has fueled these habits and over-reliance, and they mean that promises of modern economics can create the conditions of their own failure, according to Ref. [2].

Low inflation, high employment rates, rising stock prices and the housing market have led to the conviction that economics and economic growth would be less risky. Trust has become unjustifiably optimistic and the population has taken increasing risks (see [1]). Over the course of time, theories on the causes of the crisis have been proposed, but we can agree with Ref. [3], which declares that the deep explanations of the global crisis are found in the following three hypotheses, which are the hypothesis of government failure, the market failure and rising prosperity. Discussing these hypotheses leads to the conclusion that the crisis is the result of unwanted effects of unsustainable lifestyles and underlines the need for a new development model. In this respect, this new development model is related to the sustainable education approach. According to the UNESCO approach, Education for Sustainable Development aspires to *"empower learners to take informed decisions and responsible actions"* [4]. Sustainable development in education is increasingly focusing on the role of the formal education sector in partnership with the community as a key player in facilitating the education of society that is needed to meet the growing challenges posed by the environmental and social components of sustainable development.

Therefore, the main objectives of this study are to describe the role and the involvement of the universities in the future society and, also, explain what type of solutions use these universities in terms of sustainable management practices. This concept of sustainable education is related to a full and active academic community involvement that has to use adequate managerial practices, in order to design complex study programs, through the three well known pillars of sustainability, by having as major goals creation of adaptive knowledge abilities and improvement of the quality of life. Universities' role has changed in the last years, from teaching and basic research to the transfer of knowledge and skills in applied research that has to have a commercial and sustainable purpose, so that the universities are now connected to the economic, social and environmental evolution. On the other hand, many educational systems from all over the world have launched programs aiming to increase academic standards and to reconcile concerns for excellence with concerns for equity. Some of these programs have failed to reach their ambitious goals. Meanwhile, the rapid changes taking place in the globalizing world call for major educational reform in which the needs of all students are taken into account, the natural resources of the educational environment are not depleted, and the young generation is optimally prepared to meet the demands of the future world [5]. In order to produce sustainable outputs, there are required important actions starting with adequate curriculum design, teaching methodologies, teacher trainings and equity-enhancing programs. Another requirement in terms of Education for Sustainable Development is to include in the teaching, learning and research processes critical issues such as climate change, biodiversity, sustainable consumption, identifying and replacing conventional energy resources, etc. Since these issues are vital to the entire society, it is necessary to create a number of competencies such as critical thinking or imagining future scenarios that help solve the problems that human society will face in the near or far future. By doing all of these, every human being will get the knowledge, skills and attitudes required for a proper behavior that seeks a sustainable future for next generations. In line with the above mentioned things, an important work contains the top five pedagogical approaches required in the education for sustainable development such as critical reflection, systemic thinking and analysis, participatory learning, thinking creatively for future scenarios and collaborative learning [6].

On the other hand, today, from all the sustainable development dimensions, the economic sustainability is probably the most important one for the universities, since the future in academia is linked to entrepreneurial university, university spin-offs and start-up initiatives within universities. But, in order to gain economic sustainability, an ecological economy is needed. This type of economy must create renewable resources if necessary, use non-renewable resources when the renewable ones fall down and supervise the level of emissions with negative impact on the environment, as is stated in [7]. At the same time, according to [8], economic sustainability depends on the ability of natural ecosystems to obtain and store enough energy to sustain human life on Earth.

In the same time, universities set-up "academic programs related to the environmental dimension of sustainability that have grown exponentially across the physical, natural, and social sciences, as well as the humanities and the professions, but the attention to on-campus sustainability has grown even faster" [9].

2. The concept of "sustainable university"

Universities are seen as critical entities in the future. In this regard, "higher education institutions have a critical role to play in implementing and driving sustainable development initiatives through their institutional policies and practices" [10].

A sustainable university represents an educational institution that trains properly all the willing and interested persons for sustainable development, provides new insights into urgent social challenges and decreases the environmental and social footprints of its campus operations. One important role of a sustainable university is to empower students to learn about sustainability in an inter-disciplinary and learner-centered way.

The sustainability challenges universities around the world to rethink their mission and to restructure university curricula, research programs and campus life. Graduates are increasingly exposed to concepts of sustainability that are emotionally, politically, ethically and scientifically loaded. They must be able to cope with conflicting norms and values, with uncertain results and ideas, as well as changing general knowledge (e.g. see [11]).

The sustainable university is considering running programs to generate expertise on sustainability issues, in the idea of being an example to society as a whole, through resource conservation programs, waste recycling and waste management and, of course, by focusing on education, research and policy formulation to create a sustainable future. The objectives of sustainable education are to develop students' awareness of their own responsibilities and develop their capacity to contribute to solving sustainability issues. It is also possible to propose the development of trans-disciplinary skills to equip prospective graduates with knowledge, skills and competencies to identify and solve the problems that humanity will face in the near or more distant future.

Universities must devote resources intelligently to become sustainable and to provide students with a living experience in a sustainable environment. At the level of university education, sustainable development refers to the management of specific processes and activities, always taking into account the fundamental and sustainable objective of increasing the quality of services provided by representative institutions. The greatest contribution that higher education can have in sustainable development is to determine students to acquire the skills and knowledge that enable them to make a lasting difference and to make them more responsible in economic, social and environmental terms. What it learns and what is learned is, therefore, critical. The vision is supported by the United Nations, which set the

period 2005–2014 as the decade of education for sustainable development. The aim is to integrate the principles, values and practices of sustainable development into all aspects of education and learning.

Sustainable development requires to universities around the world to rethink their mission and restructure their university curricula, research programs and campus life.

The curriculum of a higher education institution consists of everything that promotes the development of learners, intellectual, personal, social and physical development. A well designed curriculum is set to reach its targets. For sustainable development of the entire society, higher education institutions must place sustainable development at the heart of the curriculum. Current plans are constantly adapting to the need to incorporate knowledge related to sustainable development. In this sense, various disciplines are proposed in the curricula such as developmental studies, ecological economy, energy and environment engineering, environmental change and management, environmental geology, environmental pollution control, environmental studies, ethics and accountability sustainable development, sustainable management of resources, intercultural communication, culture, society and people, lack of equality and opportunity, social diversity in education, sustainable development, sustainable development, governance and sustainable development, international rural development, international education, training for informal education, social change, sociology and ecology of the community, organizational behavior, natural resources economy, chemicals and the environment, global change of environment environmental impact, culture and community, eco-transport or smart cities, aimed at familiarizing students with the complex and extensive problem of sustainable development, as well as improving the level of awareness of the challenges and dangers to which it is and will be subjected to human society.

The sustainable university is defined in many ways. For instance, "is a notion and concept that has been deliberated in specialized literature on Sustainable Development for about a decade, positioning the institution of the University as a vital driver toward a more sustainable society" [12]. Another point of view identified types of responses to sustainability within universities such as *accommodative*, *reformative* and *transformative* [13]. These types are declared as stages of progress, while the last one is seen as a mean of describing practices at the sustainable university.

Inevitably universities need to adapt to the society evolution in relation with sustainable development approach, and in order to have a successful implementation of the changes toward the future is required a holistic vision [14]. So, for this, it should be taken into account the '4C' model [15], which suggests that "Curriculum, Campus, Community and Culture should be seen as mutually enfolded and complementary foci of the sustainable university".

On the other hand, scientific research carried out in universities should focus largely, and themes defining sustainable development such as renewable energy, design sustainable buildings, green economy, population and development, the legal environment, waste management and so on.

In the next 30–50 years, the society needs to adopt new strategies to meet the needs of a growing population in a sustainable and equitable environment. Higher education has played, play and will play a critical role in determining our success or failure as a whole. The fundamental recommendation is to mobilize a critical mass of internal and external exponents to develop the model of the sustainable university in a variety of locations and communities of higher education. The specific recommendations below are proposed to highlight the internal and external changes to be made to ensure a commitment to the sustainable development of higher education.

Educational institutions operate in an environment characterized by ever more heterogeneous regulations and funding. For each activity, there is a range of interest groups (businesses, public institutions, NGOs, government agencies, local government, media and students), each one with their own responsibilities, interests and influences, as well as their own visions on sustainable development. Any move that universities do in sustainable development needs to be developed through dialog with all stakeholders.

University administrators and decision-makers have a vital role to play in supporting the transition to sustainable development, guiding the strategic planning of these institutions, coordinating major core programs and managing the interactions of institutions with external stakeholders. The leaders of these universities also have a symbolic role in influencing the views of staff and students on sustainable development.

The evolution of society as a whole makes the main change necessary to consider the attempt to become more flexible in thinking and more connected to the present and future reality in economic and social terms, according to [16]. This can be synthesized through some ideas, approaches and solutions:

- Education plans must be tailored to the needs of the moment, to the requirements of the goods and services market;

- Trying to think beyond purely economic constraints and in terms of cost (paradigm shift);

- Introducing and developing sustainability education, including targeting prospective students to prioritize careers or jobs that are in areas that support sustainable development;

- Close links with the business community, local and regional community;

- Voluntary education activities in the spirit of sustainable development;

- The need to promote change, by applying the principle of value, to everything that an academic community defines;

- Treating the subject as a priority in all disciplines in the curriculum;

- Obligation of clear provisions in the procurement process (type of materials, minimum quantities, limited in the case of toxic or dangerous materials, etc.);

- Accepting only investments that comply with the principle of sustainable development (e.g. unconventional, non-polluting, renewable, "green", ecological, etc.);

- Making partnerships with business organizations for projects in the field of sustainable development;

- Linking study programs to the realities of the labor market, with the needs of the business environment;

- Introduction and awareness of the concept of sustainable development;

- Initiating large-scale projects in the field of resource management and sustainability;

- Particular partnerships with local, national and international companies on sustainability issues;

- Partnerships with other universities on sustainability issues and

- Collaborating universities with local and regional firms to influence the curriculum so that there are mutual benefits.

Starting from one of the important missions of the university, the academic education, we can design medium- and long-term educational activities oriented toward the knowledge and development of the concept of sustainable development. Formal educational activities refer to specific courses on sustainable development and its incorporation into existing courses and specific subjects. These include a variety of themes and are valid for a range of qualifications from undergraduate studies to doctoral studies. Informal educational activities aim at raising awareness of volunteering that individuals can take to support sustainable development. They are also useful for changing attitudes and behavior on better practices in sustainable household management, energy and water saving, waste reduction and disposal, selective collection, sustainable consumption and environmentally friendly transport options. Examples of activities specific to informal education include sustainable development or environmental pages on institutional sites; sustainable development groups within student associations; guides for students and staff for a sustainable lifestyle; institutional events; competitions; charity activities, etc.

In the last years many approaches and models related to the sustainable university are proposed. Among all of these works, it is worth to mention an interesting point of view [14], which proposed a model of sustainable university. In fact, this model proposed three different approaches of a sustainable university: an academic approach, an internal and an external approach of the university. The model has the vision proposed by Asitha Jayawardena as starting point. Therefore, this model has to be detailed in an adequate mode. The university consumes natural resources, produces waste and, of course, affects the environment. These aspects are related to the campus and campus family and require focusing of critical issues like access for disabled people, waste management, energy efficiency, occupational health and safety, etc. Advanced-thinking universities are acting as agents in promoting sustainability principles. How universities could equip their students with knowledge, skills or values? The response is very simple: through their core functions—education and research. The model does not focus on the pedagogies, but declares that the knowledge, skills or values can be delivered through formal, informal and no-formal education. The external approach refers to the idea that universities operate and have impacts in communities and ecosystems that range from local to regional and global. In fact, the model aims to be a useful tool for exploring strategies in order to transform the university into a sustainable one. As a first finding of this model, it can be stated that the model can be easily adapted by different organizations that want to green their infrastructure and production processes. Secondly, the sustainable university is not easy to be achieved, but all the efforts, energy, resources and time invested in many universities show progress [17]. Thirdly, the model can represents a starting point for defining the model of a sustainable business organization and could be an important tool for the managers of future organizations.

Another useful contribution is related to another point of view, namely that of participatory approaches [18]. So, participatory approaches can be declared as a requirement, but also as an advantage to the overall model change toward sustainable development. In this regards, this way of looking at specific issues regarding the sustainable development would contribute toward the integration

of sustainability concept into the university culture. This work described some of the failures and successes experienced within participatory approaches in campus sustainability initiatives, and bring a set of critical success factors that can help to incorporate the dimensions of participation into sustainability assessment. The outcomes offer empirical proof to some of the features related to stakeholder engagement, and connect higher education for sustainable development to empowerment and capacity building. A better integration of the dimensions of participation into sustainability assessment practices can help in defining and establishing participatory approaches on institutional level and promoting a culture of participation in the transition to sustainable universities.

Finally, it will be described a comprehensive study which represent a review regarding the sustainable university [19]. This study, internet based, is split in two components: sustainability implementation methods and assessment tools. This research underlines two sustainability management systems. In fact, two models used to implement the environmental management systems (EMS): the ISO 14001 standard and the environmental management accounting system (EMAS) regulation are presented. For these two models, the similarities found are the advantages of having a systematized management system, either by using an EMS or being the sustainability management systems (SMS) itself; the need to address environmental issues and putting special attention on the use of resources, especially energy, on campus buildings; the university's responsibility of teaching and promoting research activities on sustainability. In conclusion, both models are designed to address a sustainability policy within all four university dimensions—education, research, campus operations and community outreach.

3. Strategic sustainability of the academic environment

In many articles, scientific papers or books is stated a key general question: What can higher education leaders, faculty and students do to implement sustainable development in their institutional vision, mission and values statements, their strategic plans and their organizational culture? [10].

In many countries, sustainable development strategies are not legally established, officially through a legislative (parliament, government, etc.). However, in some countries, there is a legal mandate for sustainable development strategies at the parliamentary level. In the EU, for example, there is a need to integrate sustainability issues into Union policies (Article 6 of the EU Treaty, the decisions of the EU Cardiff meeting). The institutional framework responsible for developing, approving and implementing the strategy varies from one country to another, but anyway, environmental bodies (ministries, government agencies, training centers on specific issues, etc.) have begun to play a role bigger. Sustainable strategic management implies, as is declared in Ref. [16], additionally to establishing long-term objectives that are compatible with those on short and medium term, the application of a set of effective principles and criteria, validated internationally, such as

- Integrated management is the principle that involves the unitary approach of production, processing, transport, distribution, use and storage processes, taking into account the life cycle of products and technologies, stakeholder engagement, inter-institutional coordination, optimization processes for the best use of resources;

- Inter-generational equity is a "sine qua non" requirement that the present generation has the right to use and benefit from land resources with the obligation

to take into account the long-term impact of its activity and to support the resource base and the global environment for the benefit of future generations;

- The life-cycle approach of goods, services and technologies assesses the environmental consequences generated by the economic effects related to the different stages of processing and marketing products;

- Prevention involves reducing the damage to human health and natural capital in relation to the phenomena and economic processes that could be prevented by investments and costs of modernization, repair, treatment or compensation;

- Substitution involves the replacement of inefficient products and services that are highly resource-intensive, with more efficient and less environmentally friendly and less harmful environmental impacts;

- Public participation implies unrestricted access to environmental information, with certain justified exceptions (confidential business information), the public's right to take part in environmental decisions and to take account of their consequences, the ability to react to the parties involved stakeholders) from civil society, the right to know potential environmental risks in time;

- The principle of good governance requires state authorities and institutions to carry out their work transparently, efficiently and honestly, under conditions of preventing and penalizing pollution and promoting environmental protection and

- Public-private partnerships are based on direct, inter-institutional and intra-institutional cooperation between stakeholders represented by public authorities and institutions, NGOs, groups and industrial firms, networks and business people who together can obtain, by aggregating their own expertise and efficiency, a higher added value for the sustainability of economic growth at macro and microeconomic levels.

From this perspective, universities can develop a successful sustainable strategy if they conform to the guidelines presented by T. Ellis' 4C perspective, according to [1, 20]. Sustainability strategy for universities must have a **C**lear goal, which means that those who develop the strategy must select the environmental and social activities that correspond to the environmental and social competences of the university, according to their mission and charter, and which reflect culture, values, its challenges and its overall strategy. Then the university has to engage in strategic **C**hanges. This means that changes need to be made in structures, processes, performance and quantification systems to support the effort to win sustainability, and they must be found in improving communication, employee performance and designing leadership development programs in order to encourage the creation of sustainable value, thinking, skills and practices in this direction. The third feature of the sustainability strategy is **C**reation. Sustainable creation also involves collaborating with outsiders by inviting them to become strategic partners in the innovation process in all aspects. Last but not least, clear **C**ommunication, openness and transparency regarding both successes and failures in relation to people inside and outside the university to build trust and mutual understanding can be considered the fourth feature of the sustainability strategy, this is critical for the university's sustainable success.

The sustainable university needs to be interactive if it wants to collect potential ideas and feedback from people outside it, and make sustainable adjustments to the strategy in line with them and, also, be student-oriented to collect feedback from students which help universities to generate a sustainable strategy for a period as long as possible.

A key strategic component of the continuous process of improving sustainability is represented by innovation. However, this aspect is very well represented in universities because both didactic and research processes are the basis for innovation. The innovation within universities is related to many issues but the challenges of present days are related to innovative tools to quick skills transfers to the students and innovative learning methods to increase and update the knowledge level of the future graduates, because in time, the labor markets are changing the requirements for the jobs and therefore the potential candidates need to demonstrate that they are qualified and prepared to get these jobs.

A pillar of the sustainability strategy in the academic environment is about discovering and promoting entrepreneurship. In the following paragraph, it will be mentioned relevant aspects regarding the promotion of the entrepreneurial concept in universities and the link with the sustainable university.

4. Entrepreneurial education versus entrepreneurial university

In November 2012, the European Commission published the Communication entitled "Rethinking education: investing in skills for better socio-economic results". This policy initiative underlines the fact that "twenty-first century competences" requires efforts to develop transversal skills such as entrepreneurship and highlights "the ability to think critically, take initiative, solve problems and collaborate." These "entrepreneurial skills" should be given particular attention as they not only contribute to concrete entrepreneurial activity but also increase the employability of young people.

Entrepreneurial skills presuppose active methods by which students are determined to give free rein to creativity and the spirit of innovation. Entrepreneurship skills and competences can only be acquired or formed through practical and real-life learning experiences, including the concept of "learning by doing". Entrepreneurial skills can be taught in all subjects as well as in separate subjects. In order to ensure the real pull of entrepreneurial education, it is necessary to achieve learning outcomes related to entrepreneurship; it is also necessary to use assessment methods as well as relevant quality assurance procedures at all levels of education. These should be designed to help students make progress in acquiring knowledge, skills and entrepreneurial attitudes.

A useful method in learning entrepreneurial knowledge is the concept of simulated enterprise. Simulated enterprise represents an innovative and interactive teaching method. Simulated enterprises are created in the same manner as the real companies. In fact, process and activities are simulated in a virtual network, by using the real economic, social and legal rules, applied to each country.

Today, the entrepreneurial university integrates economic development as a function of teaching and research. Creating an entrepreneurial culture will encourage creativity and innovation, using intellectual capital, the most important asset in a university. In this respect, universities need to develop their ability to innovate, recognize and create opportunities, teamwork, risk-taking and respond to challenges. In this respect, it is necessary to encourage and support the creation of collaborative relations with other academic institutions as well as with the business and industry and the initiation of joint projects.

In connection with the academic environment, realities tell us that we are confronted in a competitive arena. Competition is manifested not only to obtain funding sources for the education and research process, but also to attract the best students, create the best faculties, and above all for the best ideas. The direct beneficiaries of the universities are the students. In this respect, their role as well as their involvement in promoting the principles of sustainable development at the level of the whole society has to be emphasized and need to be fully supported by any decision-maker, responsible or manager.

Also, it is important to underline that the model regarding the Entrepreneurial University has been included in many works and all of these described the approach in different terms such as University Technological Transfer, Innovative Universities and Market Universities [21]. On the other hand, some other works include the issues of effectiveness of teaching the entrepreneurship and holding the special trainings in the Entrepreneurial Universities [21, 22].

Another problem concerns a poor connection, in many cases, in terms of cooperation between universities and businesses in the field of education. This confirms the weak final results of the partnership and the issue of an effective mandatory leader in these situations. Thus, the leaders must provide that "both expertise and new perspectives must be available in the work place, both academic and personal diversity must be present in the institution of higher learning, innovative opportunities must be identified and/or put into practice, time must be made available for reflection (incubation period) and creativity must be followed up by convergent thinking through priorities and choice" [21, 23].

5. The role and the involvement of students in a sustainable university

The students have to manifest and act as agents of change within universities. In order for students to become agents of successful change in the sustainable development of universities and society, they must have:

1. the knowledge of environmental, economic and social issues related to sustainable development—understanding;

2. a system of values and its own conception to support and measure the actions of a change agent—motivation and

3. the skills required by the change agent—skills.

On the other hand, opportunities and student campus commitments reflect a deep commitment to sustainability through these institutional practices such as new student guidelines, scholarships, job counseling related to community services, sustainability and/or aspects of justice. Also, higher education institutions need to prepare students for careers that are environmentally oriented and/or sustainable; to prepare those who direct students to increase their education and information efforts in the campuses of universities; to train them adaptively for the new demands on the labor market and for the professions and crafts of the future.

In addition, the campus, as a laboratory for learning sustainability and developing related skills, offers models and opportunities for practicing change in student behavior. The activities carried out in the Campus by and for students should be geared toward reducing the "environmental footprint" of the institution. There are plenty of examples of water and energy conservation, carbon dioxide reduction practices, sustainable building construction and targeted renovation, promoting

clean and healthy food, reducing paper consumption, selective waste collection and so on. Last but not least, students must be the first persons to spread the lessons and the content of the concept of sustainable development, with even the civic and social responsibility of promoters of this concept.

6. Sustainable tools and practices in academic management

Everything that the deciders in the academic area think and propose must relate to the major themes and challenges of this century and of this beginning of the millennium:

- the analysis of the efficiency of the use of depleting mineral resources and the potential of the Romanian extractive industry, regarding Romania's energy independence;

- analyzing sustainable solutions for environmental protection and conservation, using clean fuels and technologies, as well as promoting innovative management measures in community management;

- analyzing and developing innovative management tools useful for sustainable resource management and

- promoting innovative educational tools needed to improve the qualifications, skills and expertise of graduates, which will contribute directly to increasing the level of absorption in the labor market, in the context of a knowledge-based economy and a new type of society, the information society, which generates new challenges for occupations, professions or craftsmanship of the future.

In treating properly and solving adequately all these major themes and challenges, by using classical tools and practices, those means that are defining the rapid acquiring knowledge processes and generating adaptive skills for future jobs can be listed [24]:

- Enterprises' piloting: a set of activities undertaken by the respective company management to achieve the mission of the enterprise activity by using well-defined strategies and objectives to ensure the provision of activities of different beneficiaries in terms of quantity, quality and certain terms stipulated in the contract, activities that take place in competition with the activities of other companies;

- Management simulation IT tools: creates competitive situations of economic and management (strategic management) and contribute substantially to the development of participants' ability to diagnose the economic and managerial nature competitive, to substantiate and implement strategic and tactical decisions to be taken in conditions of risk or uncertainty, which is required in terms of rolling out a new business in the real world and wants to be a successful alternative to initiate business and to prepare students for future successfully trained managers to deal with increasingly fierce competition;

- Simulated enterprise: a learning method, an innovative and interactive tool with great student demand. The proximity of the business environment can be achieved by integrating this innovative method into the education

system with the help of companies that can find a "clone company" within these simulated enterprise laboratories. Thus, in a virtual environment, companies that exist in the real economy can operate. They "borrow" to the simulated enterprise their own identification elements, object of activity, organizational structure, suppliers, customers, market, while the real company's officers can get involved directly in guiding the students alongside the teachers involved in the operation of the virtual company. This learning solution develops skills and abilities for prospective graduates through which they can integrate more easily and quickly into work. In addition, collaboration between academia and business can increase the interest of companies in their involvement in improving the practical training of their future employees and

- Business incubators: an entity that aims at creating a favorable and sustainable environment for start-ups and innovative companies with growth potential. The concept of university incubators is still at the beginning and additional steps need to be added, by generating special, efficient and business-friendly entities that could provide prerequisites for the creation and development of these incubators [25].

On the other hand, based on the own expertise and related to the specific projects [26], the main practices in the field of sustainable development at the academic level should focus on:

a. Research on technical and economic optimization in the energy sector.

At this time, each country tries to maximize its chances of accessing energy sources that give them the chance to get as much energy independence as possible. Since, in most cases, no new mineral resources have been found and, in addition, their excessive use has led to a clear deterioration in air, water and soil quality, but has also led to an increase in the greenhouse effect, more and more countries are concerned about minimizing/optimizing energy production costs, energy efficiency, energy intensity reduction, investigation of potential and alternative energy sources. The oil crisis, materialized by a permanent and major drop in crude oil prices in recent years to a historical level of approx. 27USD/barrel of crude oil on January 20, 2016, had influences throughout the world economy. Realities say that the current model of civilization supports energy consumption predominantly from exhausting natural resources. In addition, there are a number of factors that can create or stimulate a crisis in the energy field:

1. there is an unequal distribution of primary energy resources that divides the world into countries rich in natural resources and countries without such resources;

2. the pressure generated by the major transnational corporations operating in the oil and gas industry which, through their financial strength, can have important influences on various resource, commodity and service markets with major effects in the global economy;

3. industrial and economic development strategies of developed countries to access the various primary energy resources of less developed countries and

4. the environmental impact generated by the significant consumption of fossil-based resources, as the energy sector is the transport industry's main agents of pollution of all kinds that can create climate change as well.

At the same time, we need to be aware that the evolution of human society will increase consumption of any kind, including energy, in particular. This must be complemented by other trends that will be highlighted in the future: technical and technological development involving the automation and robotics of processes of any kind, the increase of urbanization, the shift of the preoccupations in the investigation and the use of alternative energy sources on the background of the dramatic exhaustion of conventional energy resources, the need to research and finance energy-efficiency projects.

b. Innovative tools for increasing the competitiveness of companies and entrepreneurial skills training.

Another direction of concern in the field of scientific research is to analyze and propose tools and measures in the field of innovation to help increase the economic competitiveness of firms and to train professionals to promote an entrepreneurial spirit. The training and assessment of entrepreneurial skills can help to develop the business environment, create more small- and medium-sized enterprises, create jobs and, implicitly, improve macroeconomic performance.

c. Effective use of existing IT applications and design of particular IT solutions useful to sustainable development.

In this respect, it is necessary to know and use the particular IT applications that cover various topics in order to generate solutions in the spirit of the principles of sustainable development such as money savings, low energy consumption, minimum specific consumption of material resources, reduction of pollution levels, efficiency increased economic efficiency, improved energy efficiency, etc. These applications are licensed by universities and are used in laboratories specific to the topics addressed, in order to familiarize students with the issues related to some disciplines that incorporate and approaches in the sphere of sustainable development.

d. Building effective project proposals and national and international grants to obtain funding for applied research.

Topics that can be covered by the projects relate to various themes but with a major impact on society:

- the efficiency of the use of depleting mineral resources;

- developing innovative management tools useful for sustainable resource management;

- easy transition from school to active work and a successful career;

- creating and developing specific competencies in certain areas;

- innovation in the SME area;

- innovative management measures in community management and

- promoting sustainable solutions for environmental protection.

The experience gained in these projects is the prerequisite for building new proposals for project applications with a higher quality level and with increased relevance, creating the possibility of obtaining the funds necessary for carrying out the activities proposed in these projects.

All these opportunities should be used in the idea of integrating sustainable development into future project proposals on the three defining components: environment (by protecting the environment and the proper use of natural resources), society (focusing on improving living standards, improving health of the population and raising awareness of the new role that man must have in this information society) and economics (in terms of economic competitiveness in general and increased productivity in particular). The idea of sustainability of any project from the perspective of sustainable development is a necessary issue to treat through which findings and outcomes can help to develop new ideas, solutions and even future projects to support future generations to have a better life.

Also, in the last two decades, universities adapt their main mission in order to respond adequately to the challenges arise from the society evolution toward the future. In this regards, there are some fashionable approach that aims to fulfill the objectives and the stakeholders' wishes, which define the principles of sustainable development. First of all, universities are being increasingly considered as a source for creation of high-technology firms. Based on the relation between science, technology and university spinoffs, academic entities are moving from teaching, training and basic research to a much active and advanced role by creating spinoffs and develop academic entrepreneurial skills and abilities [27]. In this light, universities decided to invest in labs equipment and applied research by developing and commercially exploit their technic and technological inventions. University spin-offs transform these technic and technological inventions into a successful business venture. The process of establishing the spin-off as a new corporation involves transferring the intellectual property rights to the new corporation or giving the latter a license on this intellectual property [28]. On the other hand, according to [29], universities do not have a proper set of competencies in order to create and support spin-off. Therefore, universities need to set-up specific structures (technology transfer office and business incubators) and use new organizational practices for facilitate academic entrepreneurship. In this regard, the universities' internal processes are critical for the spin-off efficiency. For instance, internal processes could eliminate poor initiatives and also, support promising initiatives by using different services such as financing, support in the patenting process or specific guidance. Universities, even they have rules and regulations, could use different levels of freedom in design internal processes about spin-offs. Of course, each university has its own approach in terms of how it processes its structure. In the same manner, the management practices used by universities are not all alike. In fact, the study explored the relationship between management practices and the performance of academic spin-offs. A first conclusion, based on this study, underlined the fact that by having the control on the effects of management practices over academic spin-offs is a mean of control for the universities' internal processes. Another conclusion is relevant for the policy implications for universities and policy-makers "universities should be more aware of the management practices they adopt and how these practices fit into their internal organization".

A means of maintaining links between the academic environment and the business environment is provided by academic consulting [30]. Academic consulting

is aimed to provide guidance, expertise or professional advice directly to start-ups. Academic consulting allows universities to train properly students out of the curriculum in a focused manner on very well-defined topics. The networks thus created can contribute to the implementation of new sustainable management practices related to academic management (e.g. the realization of internships within the counseling entities).

Another option, considered at the moment, a fashionable practice in sustainable academic management refers to the Student Entrepreneurship Society within the universities administration. Student entrepreneurship society (SES) is considered a mechanism for supporting, developing and encouraging entrepreneurship in the university environment, especially among students and graduates. These SES entities carry out different activities and tasks like stimulating and promoting entrepreneurship approach; organizing training courses for the development of the entrepreneurial skills; supporting the start-ups registration; organizing start-up simulations and set-up business ideas; organizing competitions to attract funding for the best projects; incubate start-ups; coordinating the activities of all business incubators, simulated enterprises, and other entrepreneurial entities; and guidance and support in drawing up business plans.

7. Conclusion

Universities represent the structures that need to promote and enforce the successful implementation of as many sustainable development principles as possible. Academic decision-makers need to adapt the curriculum to study each program; use innovative means and methods in the didactic and research process; identify effective solutions for using natural resources; protect and preserve the environment; promote and implement the concept of energy saving; create intelligent solutions to prevent and manage natural disasters; and rapidly generate skills tailored to the new jobs. The successful combination for the successful universities is adaptive change to the new forthcoming challenges by using proper sustainable academic management practices.

Universities have to educate future leaders of corporations and their employees to convince them that the adoption of responsible business strategies in terms of sustainability is a "win-win-win proposal for companies, environment and the society" [31].

This chapter has also some limitations, since it describes the author point of view. Since the specialized literature on issues such as sustainable development, education in sustainable development, sustainable university, entrepreneurial university and sustainable management practices, has an impressive volume and is rich in many book titles, articles and scientific papers, empirical studies and complex research, it is almost impossible to make a comprehensive review which includes all the professional views and opinions. Therefore, the chapter includes a review with some of these approaches, by mentioning some of the important works and studies, and not necessarily containing all the authors who wrote in this vast and complex field. Also in the paragraphs related to the current study, professional opinions and ideas, based on the author's experience, in using specific tools of sustainable management practices, used in some activities that are defining the academic environment functionality such as specific training courses, training sessions on the topic of entrepreneurship, design and implementation of complex projects, organizing and supervising the internships, academic consulting, support and guidance for the business incubators, using of innovative methods such as the simulated enterprise in teaching and research, cooperation with the business environment, collaborative research and so on are expressed.

Conflict of interest

I declare no 'conflict of interest'.

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