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# The Confluence of Sustainability and Governance at the Universidade da Coruña (Spain): A Case Study

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## ABSTRACT

*Universities are experiencing a transition to sustainable universities, as addressing environmental concerns has become a cornerstone for the governance of higher education institutions. As responsible for the formation of decision-makers and because of its duty with the society, these institutions must be in line with the current society. This chapter deals with the implementation of sustainable procedures and initiatives in a concrete university: the Universidade da Coruña in Spain. Great efforts have been done regarding raising awareness on environmental issues and the implementation of sustainable procedures, even with limited economic resources. As a result, this university is very well positioned in international rankings and has great potential in the field of sustainable development.*

## INTRODUCTION

Higher Education institutions (HEIs) are responsible for fostering and building critical thinking of citizens and future decision-makers (Henchen et al., 2019). Therefore, these institutions have the vision, the knowledge required and the power to lead the transition towards sustainable development, promoting the necessary changes (Ramísio, 2019). Hence, it is necessary to include academic activities and projects that promote social and environmental education in their study programmes. Nevertheless, HEIs must also put these initiatives into practice, so their internal management must become a successful benchmark of sustainability for the population (Henchen et al., 2019). Therefore, they must carry out both internal and external activities, which may include awareness campaigns, selection of relevant bibliography, socio-environmental training courses, energy eco-efficiency, responsible consumption, promotion of sustainable means of transport, financial transparency, and treatment of waste, among others.

The in-depth study of the different activities and its implementation process in this type of institution acquires a special relevance given that these activities can become an important reference for other organizations. The objective of this chapter is to carry out this analysis through a case study: The Universidade da Coruña (UDC), a Spanish Higher Education institution.

The UDC's transition towards a sustainable university begins to take shape with the 2013-2020 Strategic Plan, which clearly expresses the university's commitment to sustainable development. Since February 2014, this institution is implementing ecological management procedures under the Green Campus programme. Moreover, the commitment to sustainability is reflected in the UDC Sustainability Campus created in 2018. Other fundamental reference for sustainability is the Office of Environmental Planning, responsible for environmental management, awareness, and participation of the university community in the related issues. Another key objective of the Strategic Plan is the promotion of a quality, innovative and specialized teaching, as well as positioning the UDC as a leading institution in training for sustainability. Apart from the above-mentioned issues, the financial aspect of implementing these measures and the promotion of an efficient use of resources is also taken into account in the analysis. Addressing the sustainability actions from different perspectives and areas ensures that all the main objectives are considered, and this makes the analysis more complete.

Firstly, this study begins with a review on the relevance of sustainable development in today's society. Secondly, the attention turns to education and its role on developing sustainable goals; in particular, the focus is Higher Education (HE) and its transition to sustainability at all levels. At this respect, we depart from a general framework to a particular one, deepening in the specific case of the Universidade da Coruña. This central section is a case study that goes from the institutional framework to the sustainability strategies adopted. From this analysis, the principles behind the implementation of the sustainability strategy of this university are introduced. Due to its importance, a separate section is devoted to the economic and financial implication that the transition to sustainability in HE involves. Finally, a discussion, as well as the most important conclusions, are presented.

## **BACKGROUND**

Sustainability has been gaining importance in recent years. Through sustainability management policies and actions, organizations show their commitment to society and the environment. HEIs should show themselves as an example to follow, given their important role in the society. The Brundtland Report, prepared by different nations in 1987 for the UN, develops this concept based on three essential pillars: social, environmental, and economic. The social part includes aspects such as respect for employees and their families, establishing good relationships with different stakeholders, creating and maintaining jobs, or investing in community activities. The environmental protection part includes the rational use of natural resources, the reduction of consumption, the reduction of waste and its proper management, the control of pollution, or the choice of suppliers through sustainable criteria. Regarding the economic field, actions aimed at economic growth must be matched with social and environmental concerns, giving special relevance to the sustainability of the business. Sustainable management helps to generate value and competitive advantage since consumers increasingly demand efficient use of natural resources by organizations. The rationalization of resources can lead to a decrease in production costs for the organization, so it would be generating economic benefits while improving its image (Henchen et al., 2019). The inclusion of sustainability in universities has a number of positive consequences from a social and environmental point of view. Universities prepare future decision-makers so that they can face future environmental, social and economic problems from a sustainable point of view (Missiacos Cárdenas, 2016). In this way, the mission of sustainable universities goes beyond concrete actions on campus. Given that students are going to inherit serious problems like climate change, this mission focuses on helping them find solutions. Therefore, the sustainable actions carried out within the universities contribute to making the whole community aware of the problem and learn the different ways of facing it (Atherton, 2011).

The literature also addresses the role of the university as a social actor and its efforts to reach the community more effectively. Nowadays, the activities with which universities can contribute to a broader social transition to sustainability are commonly grouped into four interrelated functions: education, research, operations, and community participation. To these four functions can be added the complementary field of governance (Fischer, 2015). A sustainable university is one that manages its resources to implement these functions to help society make a correct transition towards sustainable lifestyles (Turan, 2016). Through education people are empowered for sustainability. Research provides new solutions to socio-economic and environmental problems. The operations involve the implementation of measures at the university, such as achieving a zero footprint. Through community participation, students and staff are empowered to make sustainable decisions. Governance in this area makes sustainability a priority (Green Office Movement, 2019). Therefore, it is necessary to highlight the importance of universities taking advantage of their potential to implement action strategies at the local level, which allow addressing global problems; by doing this, they become examples for all types of organizations to follow (M'Gonigle, 2006).

“Traditional” universities transitioning to sustainable universities should try to create meaning or "make sense" of the conception of sustainability in order to integrate it within the organization. In this area, academic leaders must face challenges related to the methodology for training students, the manner of doing research, the contribution of the institution to society, or the appropriate way of governance in the context of sustainability. To do this, the generation of a shared vision of change in the organization is an essential requirement. While the defenders of sustainability in HEIs try to make their discourse prevail based on social responsibility and regulations, those who feel threatened by this discourse will try to discredit it based on the traditional academic values of scientific freedom, self-government and objectivity. This resistance to the transition towards sustainability is usually activated when the different reference persons in the institution perceive that autonomy, quality, resources, visibility or influence will be reduced (Bien & Sassen, 2020).

Efficiency in the development of environmental management can only be achieved if all the hierarchical levels of the entity agree on its relevance, integrating and engaging each stakeholder (Henchen et al., 2019). To face the transition towards environmental sustainability, as in industry and in small businesses, the university can also implement environmental management systems (EMSs). These systems consist of a series of activities aimed at reducing harmful impact on the environment. The key aspects of this management focus on guaranteeing the safety and quality of activities and services. EMSs help meet the interests of those stakeholders who are aware of the importance of environmental responsibility; therefore, they can become a powerful tool to improve the public image of the university. The operations that these systems entail are basically focused on identifying and classifying the environmental impacts of each department, and then trying to prevent, reduce or eliminate them. One of the schemes used to launch EMSs in universities is “Eco Campus”. It consists of obtaining recognition stage by stage, obtaining bronze, silver, gold and platinum awards. Manchester Metropolitan University has implemented its EMSs through this scheme, becoming awarded with the platinum ecological campus (only 28% of those registered in Eco Campus have this recognition). The 2014–2020 Environmental Sustainability Strategy of the Manchester Metropolitan University establishes its objectives in order to become a sustainable university. These include establishing a link between environmental sustainability and the employability of graduates, the use of sustainable means of transport, reducing carbon emissions by 50%, reusing and recycling 85% of waste or reducing the consumption of water by 25%. To achieve these objectives, it is essential that staff and students show interest and enthusiasm in participating in the design and implementation of the policies, strategies and management plans of their university (Kralikova & Sobotova, 2019).

The concern for economic efficiency in universities has resulted in the design of different sustainability models aimed at reducing costs while increasing the quantity and quality of service. These institutions are thinking of new educational models designed to modify and better adapt services according to the type of student, increasing student success, improving quality, and providing services at economically sustainable costs. For doing this, alternative models to traditional face-to-face teaching are being introduced in a complementary way (Jones & Johnstone, 2016). In addition, salaries of university members make up the largest item of expenses, so efforts are directed toward making their work as efficient as possible. So as to

achieve this, a series of obstacles must be overcome. For example, collective bargaining agreements that associate different types of activities to a single employee, who can be responsible for the design of a course, the selection of learning resources, the evaluation, the establishment of the necessary technology, and probably many more (Jones & Johnstone, 2016). This situation is related to the fact that some regulations specify the staffing of the centres by establishing that a certain number of credits must be taught by full-time teaching staff. But there are other options that use university teaching staff in activities that allow greater efficiency in the service they provide. One example is the model created by the National Centre for Higher Education Management Systems (NCHEMS) of the United States. Its usefulness depends on the freedom institutions have to organize and use their resources in providing learning experiences. The model consists of a matrix in which the activities whose combination results in a teaching-learning experience are represented in columns and the necessary resources to carry out those activities in rows (see Table 1).

*Table 1. Structure of the model.*

Resource Options	Activities		
	Course/Program Development	Delivery	Program Support
Faculty			
Other Professionals			
Students			
Non-Staff Costs/Resources			

*Source: Jones and Johnstone (2016).*

Taking into account the different types of resources that can be used to carry out each activity, the model helps to determine the costs of creating and delivering the programme in different ways, so that the most efficient and sustainable can be selected.

Green initiatives at universities are typically bottom-up. Proposals are made by students or staff from different departments, which usually require a significant investment. The acceptance of the proposals and the allocation of the necessary resources would take place at a higher level (Brown, 2010). But mixed bottom-up and top-down approaches are considered more suitable for achieving success in changing organizational culture (Ramisio, 2019). Sustainability policies must be implemented in all areas that make up the mission of the organization. Continuous communication and monitoring of both its implementation and its development are key aspects for success. Among the ways of approaching sustainability in universities, two models predominate: campus operations and institutional initiatives (Leal Filho et al., 2019). The term “Campus Greening” often refers to technical aspects including environmental management, sustainable buildings, renewable energy or carbon footprint. It is sometimes seen as a first step towards a sustainable university, but it is something more complex. To be effective, all activities must be integrated within an institutional framework. The Green Office model and the Sustainability Office model can be distinguished. The Sustainability Office coordinates all activities related to this concept, both campus operations, research and teaching, but it often presents difficulties to involve students, teachers and researchers in the implementation of sustainable actions. Instead, the Green Office is typically student-led in order to integrate sustainability into the curriculum, operations, community, and governance. These initiatives are often limited, as they lack funding and institutional access (Leal Filho et al., 2019).

Once the idea of transition from “traditional” to sustainable universities has been presented, the next section deals with the concrete experience carried out at the Universidade da Coruña (UDC).

# THE TRANSITION TOWARDS A SUSTAINABLE UNIVERSITY: MAIN ISSUES

## Challenges to face

Addressing sustainable issues has become a cornerstone for the governance of HEIs. This chapter focuses on how the UDC deals with the sustainability objective by addressing the opportune key actions. After the analysis of the general panorama carried out, a series of questions are raised that must be resolved in order to verify the sustainable transition of this university. Given that the university is taken as a point of reference when implementing sustainable actions, one of the first questions to address is what type of actions this institution has initiated and how it is implementing them (Q1). It is also necessary to contextualize these actions, comparing them with those that are being carried out in other institutions to verify their scope (Q2). Regarding the management for the implementation of sustainable initiatives, both the bottom-up approach and the top-down approach have their drawbacks, as mentioned. The mixed approach is the one that manages to achieve both the necessary resources and structure, as well as the involvement of the different groups of the university community. For this reason, it is necessary to know whether the approach used in this university is top-down or bottom-up (Q3). In order to carry out these initiatives, in addition to motivated human resources, it is also necessary to have the necessary financial resources. Many of these programs and activities require considerable funding. So finally, how the obstacle of the scarcity of financial resources has been overcome to carry out the different sustainable initiatives is an important aspect to consider (Q4).

## Sustainability in Higher Education Institutions: General Framework

Sustainability is an internationally agreed goal and, as such, requires strategic lines of work and cooperation in diverse areas. United Nations Sustainable Development Goals advocates for Quality Education to “ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development” (SDSN, 2020, p. 55).

The main mission of universities is to work for society, so they must try to protect it against serious threats such as environmental degradation. The 1972 Stockholm Conference formally recognizes the importance of promoting the protection and care of the environment through education (Henchen et al., 2019). This conference is followed by a series of declarations and agreements that aim to promote sustainable development in academic programmes and to provide advice on how to incorporate sustainable models in institutions (Ramísio, 2019): Declarations of Talloires (1990), Halifax (1991), Swansea (1993), Kyoto (1993), Global Higher Education for Sustainability Partnership (2001) and Abuja (2009).

The United Nations has declared the period 2005-2014 as the Decade of Education for Sustainable Development, establishing an international mandate for the integration of sustainability in all aspects of the educational processes (education, research, operations and evaluation) (UNESCO, 2005). In response, HEIs began to incorporate sustainability in their missions and practices (Ramísio, 2019).

In the Spanish context, education for sustainable development is also included in the Sustainable Economy Law, which has a specific section (3<sup>rd</sup>) for the university system. According to article 60, universities must facilitate the acquisition of the skills demanded by the jobs market and the capacity to address the longer-term challenges (Boletín Oficial del Estado, 2011).

Spanish universities have gradually taken on board social responsibility contents in the academic process (Ruiz-Corbella & Bautista-Cerro, 2016). The faculties of economics and business were the first to incorporate these contents in their degrees and masters. In the survey conducted by the CRUE<sup>1</sup> (Conferencia de Rectores de las Universidades Españolas) in 2011, the universities point out the presence of subjects about professional ethics, human rights, development cooperation, environmental education, sustainable development and sustainability in their programmes (Ministerio de Educación, 2011). There is also an increase in the chairs of collaboration between companies and universities dedicated to social responsibility

and sustainability. In this way, the commitment to social responsibility and sustainable development are a relevant part of the so called *Third Mission* of HE.

### **Galician University System: Specific framework**

Galicia is a Spanish region located in the country northwest. The university system of this region is made up of three universities: Universidade de Santiago de Compostela (USC), Universidade de Vigo (UVigo), and Universidade da Coruña (UDC). These three institutions have assumed the challenge of sustainability management, although by means of different approaches.

The USC approved a sustainable development plan in 2003. As administrative support of this plan, the Office for Sustainable Development was created in 2011, depending on Vice-Rector's Office for Equality, Culture, and Services. Through this plan, this university intends to include sustainability in university management, research, training, and extension. USC is a pioneer university at the European level in the introduction of environmental subjects in the programmes. Specifically, these subjects were introduced in 1982 in the degree in Pedagogy. It has also been one of the first universities to incorporate an efficient energy management system. It also has a hazardous waste management unit and has carried out a mobility study, among other actions. The plan consists of three main axes (Universidade de Santiago de Compostela, n.d.a):

- Generation of knowledge and environmental education
- Planning, management, and environmental assessment
- Environmental awareness and participation

The USC also participates together with the UVigo and the UDC in the International Chair CSR Santander Galicia-North of Portugal, whose objective is the development of teaching, research, training, and documentation activities in the field of corporate social responsibility (Universidade de Santiago de Compostela, n.d.b).

On the other hand, UVigo expresses its commitment to sustainable development through its Environmental Office (Universidade de Vigo, n.d.d). In 2007, UVigo launches the SuMA plan, its sustainability and environment plan, including seven action programmes:

- Energetic efficiency and sustainability
- Singular R&D facilities
- Recycling and reuse of waste
- Natural and patrimonial contour
- Transportation
- Collaboration and social commitment
- Dissemination and awareness

UVigo specifically monitors energy and environmental sustainability programmes through its Vice-Rector's Office for Planning and Sustainability. The section dedicated to Social Responsibility and the 2030 Agenda shows the role of this university in achieving more sustainable development through its adherence to the Global Compact (Universidade de Vigo, n.d.c). In addition, the Pontevedra Campus of this university has the international "Green Campus" certification, which represents recognition of the environmental education activities carried out (Universidade de Vigo, n.d.b). This university, together with the UDC, are the first in Spain to receive this recognition. UVigo also has chairs for collaboration with companies in the

sustainability field, among which are the Unesco Chair for sustainable management of coastal areas, and the Unión Fenosa Chair for studies and activities in the energy economics, environment and sustainable development fields (Universidade de Vigo, n.d.a).

As with the other two universities, the UDC also has an action plan to promote sustainable actions. The Strategic Plan 2013-2020 includes sustainability as a priority area in the field of social responsibility (Universidade da Coruña, 2013). Nevertheless, compared with the other two Galician institutions, UDC has a clearly differentiating feature: its Sustainability Campus. Besides this, the UDC shares some issues with the other two universities, like the existence of an Office of Environmental Planning and several institutional chairs devoted to sustainable actions. These aspects of the sustainable management of the UDC are discussed in more depth in the next section.

## Sustainability Management at the UDC

The governance of the UDC consists of the Social Council, the Senate, the Rector, the Governing Council, and the University Ombudsman (Universidade da Coruña, n.d.b). The UDC has two campuses: Campus da Coruña and Campus de Ferrol. It has 14 faculties, and 9 university schools. In 2018, the UDC had 17,064 students, of which 13,887 were full-time equivalent. At that year, there were 1,393 teaching staff; most of them are hired full-time. The administrative staff is composed of 799 workers.

The greater concern about sustainability has encouraged universities to accelerate their efforts to develop their own strategies. In the case of the UDC, the Strategic Plan 2013-2020 is the key document that addresses the main environmental and sustainable concerns the institution has to face. This Plan includes the vision for 2020 of “*open up channels of active solidarity, with a strong commitment to environmental protection and sustainable development through innovation*” (Universidade da Coruña, 2013, p. 16). Among others, the Strategic Plan includes the following values and principles (Universidade da Coruña, 2013, p. 17):

- *“Social responsibility and commitment, as a way of contributing actively to the improvement of the socio-economic situation of our community and the creation of greater economic well-being in society as a whole.*
- *Respect for the environment, as a socially responsible university, maximising and managing the resources at our disposal as efficiently as possible, to minimise environmental impact”.*

A comprehensive scorecard is established for each of the three major areas of action: a) teaching and learning, b) research, innovation and transfer, and c) social responsibility. For each area, the strategic objectives, the lines of action, the person in charge, the objective indicators, its initial value and the goals to be achieved are established.

Regarding the strategic objectives in the social responsibility area, the first one is looking for a university that boosts social change. With this objective in mind, an open university model is promoted in which the activities carried out benefit both university community and society. The second seeks for equal opportunities and the promotion of a culture of non-discrimination; the aim is to make equal opportunities effective, guaranteeing everyone's access to quality HE. And the third consists of a university responsible for its environmental impact. This objective responds to the public service function of the university, providing solutions to the environmental crisis and favoring a more sustainable development (Universidade da Coruña, 2013).

Apart from the strategic objectives stated in the Strategic Plan, each centre may add specific objectives, accompanied by their corresponding indicators. The centre may autonomously establish the quantitative goals and the actions necessary to achieve these objectives, in coherence with the strategies of the UDC. The strategic plan of each centre is integrated in its internal quality assurance system to guarantee internal coordination and supervision.

Following the guidelines of the Strategic Plan, the UDC is placing a big bet on the promotion of sustainability among the university community. One clear proof of this fact is the existence of a Vice-

Rectorate exclusively dedicated to Infrastructure and Sustainability matters. In addition, one fact to stand out is the creation of the already mentioned Sustainability Campus. This is a specialisation campus that makes use of the strengths and research capacity of our university in this field. The mission of the Sustainability Campus is that the UDC becomes a knowledge hub that allows for regional, national and international research excellence in those areas more closely related to urbanism, sustainability (economic, social and environmental) and healthy lifestyle. This mission is aligned with the priorities mirrored in the Sustainable Development Goals of the United Nations. By creating this Campus, the UDC pretends to be more attractive from an academic, research and management point of view; moreover, it would also help to develop the so-called “third mission” of the university, by impacting the society and contributing to the economic development.

### **Sustainability Campus**



*Figure 1. Sustainability Campus logo.  
Source: Sustainability Campus webpage (n.d.).*

The Sustainability Campus is organized around four main theme areas: city and territory; circular and sustainable economy; social sustainability and environmental education; and healthy lifestyle. Thus, this campus organises, sponsors and supports the development of many different actions and events. Some examples are seminars on circular economy, promotion of wellness or transition to sustainability in the urban environment. Importantly, some of these events are synchronised with similar initiatives in other countries, in particular when celebrating commemorative Days.

The Sustainability Campus can be seen as an umbrella that fosters and gives support to sustainable initiatives, as well as connects the university with its environment. It also serves as a means of communication between different agents of the university community.

Two theme areas have become particularly relevant in the Universidade da Coruña. First, the creation of the “UDC Saudable”, a service that depends on the Vice-Rectorate of Ferrol and Social Responsibility. In 2014, the UDC joined the “Red Española de Universidades Saludables” (REUS, the Spanish network on healthy universities), a membership that is framed within the UDC Strategic Plan 2013-2020. Its commitment is the promotion of healthy lifestyles in the university culture, institutional policies, organization and syllabuses; “UDC Saudable” has its own technical commission, as well as a support network in different faculties and schools. Its role is to participate in the coordination and development of initiatives on healthy lifestyle in the university community. Some of the most outstanding aims of the “Campus UDC≡Universidade Saudable” programme are the promotion of the university as health promoter of the university members and the society as a whole; to foster research and teaching on health promotion; to promote the joint work between public health organisations, community institutions and HEIs; and to encourage the exchange of experiences within the health promotion framework. To be considered as “healthy”, the university must have a global commitment on health and develop its potential as promoting agent of health, well-being and quality of life.

Second, the area of social sustainability and environmental education is being particularly fostered as it allows for the transition to a society more concerned on nature conservation. In this sense, the University organises several types of events for training and research in environmental issues. Thus, besides the organisation of seminars, workshops, etc. in the research, innovation and transfer fields, sustainable development has been introduced in the regular offer of training courses (that is, joint with those on



teaching-learning methodologies or pedagogical aspects, among others). In this line, an important milestone for the UDC was the first call on MOOCs (Massive Open Online Courses) in 2018. One course from the first edition (launched in its second edition, too) was the one named “Sustainability in the era of Big Data”, designed by a group of teachers from the Faculty of Economics and Business. The course deals with environmental, social and economic sustainability matters in today’s society, which is characterized by the rapid technological growth. Following the data on enrolment, this MOOC has been a success, so that it has contributed to raising awareness and knowledge on sustainable development from different perspectives.

### *Green Campus programme*

Related to the UDC initiatives carried out to promote sustainable development, one of the most well-known is the Green Campus programme. This programme involves the introduction of environmental management procedures under a green flag (“Green Campus”). In 2014, the UDC signed an agreement with the “Asociación de Educación Ambiental y del Consumidor” (ADEAC, as member of the international Foundation for Environmental Education, FEE), that is in charge of this international initiative. The Green Campus programme applies the methodology, philosophy and experience of the “Ecoescolas” (“Eco-schools”) developed by the FEE to the HE context. Green Campus is widespread among European countries, with dozens of HEIs taking part on it.

Regarding its trajectory in the UDC, the different faculties and schools voluntarily adhere to this programme, although there is a rising participation and interest each year. The different faculties and schools must set up an environmental committee (composed of professors, students and administrative staff, and even ex-students or external members) that analyses the situation of the centre regarding the implementation of sustainable and environmentally friendly initiatives. From this starting point, the faculty or school prepares an Action Plan with the main objectives, resources and deadlines. Moreover, a Declaration of Environmental Commitment is also developed.

The Green Campus programme is thus carried out from each faculty or school, but different areas of the Rectorate (in particular, the Office of Environmental Planning) give support, information and advise to the centres. From the faculty or school, the environmental committee develops the different tasks designed in the Action Plan during the time stipulated until the final completion. In order to certify that the centre has fulfilled all the stated goals and commitments, an external examiner visits the faculty or school and proceeds with the evaluation. In case of positive result, the centre receives the Green Flag recognition of meeting the environmental and sustainable criteria. As of September 2020, seven faculties and schools of the UDC were awarded with this Flag. It is important to highlight that this programme helps to giving visibility and rising concern on environmental and sustainable matters. It can be appreciated how people is now more aware of the importance of a sustainable development within the immediate boundaries of the university and beyond it than before.

### *Office of Environmental Planning*

In the aforementioned works to implant environmental procedures, the Office of Environmental Planning plays a key role. This service is dependent on the Vice-Rectorate of Infrastructures and Sustainability and is in charge of participating in the coordinating and development of actions and initiatives in the environmental field. The main objectives of this Office are to deal with, on the one hand, the environmental governance, and, on the other hand, to raise awareness and participation on environmental issues among the university community. The scope of these goals are: environmental evaluation and dissemination in the different campuses of the UDC; participation and environmental co-responsibility; and sectoral projects related to environmental management and sustainability.

Besides the integration in the different initiatives, the members of the university community can take part in the so-called “environmental volunteering”. There are two ways of participation; on the one hand, by taking part in specific volunteer sessions that are published on the Office of Environmental Planning website and, on the other hand, by enrolling in voluntary stable actions throughout the course. The university makes great efforts in the dissemination of these initiatives of participation by means of notices published in the main website, e-mail delivery or social media. Furthermore, notice boards and informative

posters were placed to publicize the measures adopted and to raise awareness in the university community in the responsible use of resources. Some examples are: posters on common printers with measures that promote the saving of paper and toner; signage with stickers indicating measures to save water and the flow of the billboards; posters on the elevators and floor encouraging you to climb the stairs, etc. The objective is to encourage centres to develop initiatives and purchases with ecological and responsible criteria and to raise awareness, and encourage students to be an active part of the initiatives.

At this respect, it is important to highlight the existence of the “Cooperation and Volunteerism Office”. This office serves for channelling demands for participation and solidarity from the university community and regarding the local and global common good in the area of influence of the UDC. The actions carried out are based on three main pillars: Volunteerism, training and development cooperation.

### *Institutional Chairs*

Other interesting instruments that the UDC employs so as to develop and promote sustainable actions are the institutional chairs. Their main objective is the development of a sort of non-profit activities like training, outreach, research, transfer and knowledge ones in focus areas where companies and universities meet. Two examples are introduced. The first is the “EMALCSA Chair”, which focuses on the sustainable management of water resources. EMALCSA is the company that supplies water to the city of A Coruña. Then, a key factor in the collaboration between this company and the UDC is the design of methodologies as well as strategies to apply the integrated water resource management principles in the urban water system to different geographical, social and economic contexts. More in depth, some of the main objectives are to enhance transfer and research activities by supporting joint research lines, achievement of research projects, or the development of doctoral, master and bachelor thesis, among others. In summary, this chair means an opportunity to put into practice and to deliver the scientific and technology advances obtained in the UDC to the citizenship.

The second example is the chair “Hijos de Rivera de Desarrollo Sostenible”. “Hijos de Rivera S. A.” is a Galician company from the food sector and producer of beer and water. The main aim of this chair has to do with exploring new innovative and disruptive models that guarantee the equilibrium between economic competitiveness, environmental respect and social advances. In order to achieve these objectives, different initiatives will be carried out in the field of sustainable development; for example, research, transfer and training activities, seminars on experiences and models of socioeconomic transformation, or meetings between major actors.

Besides the institutional chairs just pointed out, the UDC has several others, some of them related to corporate and social responsibility. Importantly, the completion of the actions proposed by all the existing chairs in the UDC would allow the transfer of knowledge between the university and the society.

## **FINANCIAL AND EFFICIENCY IMPLICATIONS FOR A SUSTAINABLE UNIVERSITY**

In addition to social and environmental aspects, it should be remembered that economic aspects must be taken into account, since improving efficiency in resources management will mean not only greater savings but also less harmful impact on environment. Nonetheless, HEIs need funding in order to improve their level of sustainability, and, unfortunately, the lack of financial resources is more common than expected. In particular, this happens in Spain due to the general decline in funding for HE, which represents a great barrier to sustainable development (Aleixo et al., 2018). Thus, financial sources are a relevant issue to address.

In this sense, the Galician university system has the strengths derived from the collaboration, coordination and complementarity between the three universities. Nevertheless, low funding is a weak point, which prevents the real autonomy that allows Galician HEIs to develop their own policies and a stronger and guaranteed financial sustainability.

As a case of study, we are focusing on the Universidade da Coruña. Public universities receive funding from society to carry out its three functions: teaching, research and transfer. The UDC, as a public university that creates value for society, requires public funding for its structural needs. UDC intends to be a university

that manages its resources effectively, efficiently, equitably, transparently, and, furthermore, intends to achieve a sufficient and stable public financing system (Universidade da Coruña, 2013).

The UDC Strategic Plan sets targets and action areas that include financing and efficient use of resources, and focus this strategic area on: the need to diversify income through a proactive capture of resources (income diversification and funding); the efficient, responsible and transparent management of available resources and the implementation of an analytical accounting system, and a system for measuring the use and distribution of resources or for linking their allocation from centres and services to the objectives compliance (efficient management of resources) (Universidade da Coruña, 2013). These aspects are detailed below.

## **Income diversification and funding**

Support access to international research funding and international competitive announcements in public-private consortia constitute at the present time the greatest possibility of attracting funding outside the Financing Plan of the University System of Galicia (SUG). Horizon 2020 programme or the elaboration of the RIS3 (especially at the level of Galicia) are also important elements to advance in this line. The Horizon 2020 funds could provide an important step reinforcing priorities, namely: smart growth, sustainable growth and inclusive growth. It is an important financial instrument for the sustainability of HEIs that could serve for two purposes: to support the implementation of sustainability and to address the constraints identified. The financing for quality improvement in the SUG was endowed with 18,000,000 euros each year of its validity (2011-2015). Although in 2011 the distribution was based on the percentages of participation of each institution in the unconditional fund of the 2005-2010 plan, from 2012 it was linked to compliance with the commitments included in the sustainability plans of each institution in the SUG. Consequently, universities received the amounts resulting from the application of criteria of efficiency and effectiveness in the economic-financial management, of the academic planning and of the measures that had allowed to share resources between the three universities of the SUG, being UDC in the second position (Sistema Universitario de Galicia, 2016).

However, the present context imposes the need for greater attention to fundraising and HEIs needs to generate income and resources that make them less dependent on the State (Aleixo et al., 2018). It is not a question of replacing public funding with private funding, but of complementing structural public funding with income from other sources. The UDC must therefore encourage collaboration with companies and institutions to improve fundraising, value its technology and capital at its disposal, and enhance and exploit its brand. The objective is to maintain the revenues from agreements and contracts with companies until 2015 and subsequent annual increase until 2020. In the case of the UDC, university-company collaborations are relevant, although likely to improve. As an example, moreover the chairs previously mentioned, programmes such as the Edition of the Educating for Sustainability Project have the collaboration of the Alcoa Foundation. Transfer projects are also a source of funding that will allow more research projects to be carried out. These projects are a way of achieving greater development and well-being, as well as it allows moving towards a knowledge-based economy. They become even more relevant in the current adverse economic situation. The spin-offs participated by the UDC, the coordination of the good number of transfer management entities that collaborate with the UDC and the training of the staff in transfer capacities are also strategic lines to account for (Universidade da Coruña, 2013).

## **Efficient management of resources**

The UDC, as a manager of public resources, must ensure its use according to efficiency criteria. In a context of resource scarcity and uncertainty about its future availability, efficient management can alleviate, albeit only in part, declining income. The efficiency in operation implies reductions in the cost of production or services in HEIs (World Voices Nexus, n.d.). Working for efficiency and ethic in resources management would allow that universities generate financial savings, while reducing harmful impacts on environment through a proper utilisation and reduction of existing resources waste.

In this sense, the UDC has implemented appropriate mechanisms to control expenditure and measure the costs associated with each centre and service, in particular an analytical accounting system in 2015 and the design of a set of cost indicators for centres and services in 2016. Data availability and cost analysis are the first steps towards the use and efficient distribution of all available resources, both human and material. Therefore, it is necessary to implement the appropriate mechanisms for the available data to be used for decision-making. At the same time, the UDC streamlines the purchase processes through purchasing centres and resources use measurement, using the available information to distribute resources between centre and services.

Regarding financial sustainability, the UDC objective is to differentiate between non-financial income and expenses and achieves a progressive increase in the ratio of current transfers/current expenses in the liquidated budget (up to 0.9 in 2020) (Universidade da Coruña, 2013). The financial support of the strategic plan is included in a multi-year programming, a useful tool to give robustness to the strategic plan and make it credible, by linking it with economic-financial endowments in its period of validity. In the last three months of each year, annual operational plans will be formulated to implement the different lines of action and will have clear annual budgets according to spending programmes that will refer to each of the objectives.

The UDC also adopts rules for the allocation of available resources in order to encourage coordination between centres and services, always ensuring coverage of structural needs, and these allocation rules must be linked to the fulfillment of the strategic objectives of each centre. The decentralized purchase of some specific supplies means an increase in costs and a loss of efficiency. The UDC, through the analysis of the specific situation of each supply, studies the adoption of rationalized measures, like the potential implementation of purchasing centres, as effective mechanisms to improve resource management and to reduce spending and review the procedures for the control and monitoring of external procurement (Universidade da Coruña, 2013).

The UDC is committed to improving the efficiency of the use of resources with the aim of including ecological and responsible criteria in the choice of purchased products and services, as well as to evaluate, adjust and reduce consumption as much as possible. The objectives of the measures adopted in this area are the efficiency, rationalization and containment of expenditure and, through them, the diffusion of a responsibility culture in the use of resources. Within the Green Campus framework, eco-audits were conducted at different centres to assess the need to take actions related to reducing costs and increasing savings.

Furthermore, energy management at the UDC, as in the vast majority of public institutions, is not centralized and is also carried out by Services and Negotiations created for other issues. This warns that these departments have different monitoring protocols, which means that the management of consumption and energy billing is a difficult process to follow jointly and globally. The dispersion and disorganization of energy management made the Campuses, like the Industrial Campus, an ideal environment for a pilot project of energy management; the results drawn from this project can be extrapolated to any other administration or HEI in the community that has been in operation for a few years (Campus de Ferrol, 2017a).

## **Measures for waste, water and energy efficiency**

The approximate qualitative and quantitative characterization of the waste from the different centres was developed by means of analyses. Among the initiatives taken to manage resources and waste are the following: collecting environmental information on the sustainable products and services offered by companies to adjust purchases progressively, to develop indicators of the percentage of responsible consumer purchases over total and to classify the companies according ecological procurement criteria; selective collection of waste, cork collection boxes and reduction of plastic, paper or cardboard consumption; spaces for the collection of Waste Electrical and Electronic Equipment, and composting and recycling areas for the organic waste generated in the cafeterias, to turn them naturally into a stable and quality fertilizer.

In order to save water, the type of faucets in the centres was studied and replaced for more efficient ones, eco-efficient pearlors were installed, faults were repaired, the water flow was adjusted by means of a tap, the water consumption of the cisterns was reduced and labels with water consumption and cisterns were placed. The water saving achieved were about 70-80% for most of the centres (Campus de Ferrol, 2017a; Campus de Ferrol, 2017b; Facultade de Ciencias da Educación, UDC, 2017; Universidade da Coruña, n.d.a). To save energy, a classroom review programme was conducted to avoid the use of unnecessary lighting; a dissemination programme was created on the importance of leaving lights off in bathrooms and other public spaces and computer equipment, and energy efficiency plans were developed in the centres. These plans consisted of the progressive installation of presence detectors in transit areas of buildings, bathrooms or function rooms, and large classrooms, as well as the replacement of lighting with low-consumption LED lamps (some estimations show that energy savings of 2,750 euros / year can be reached in a building, such as the Faculty of Civil Engineering). Furthermore, automatic thermostats for heating were installed and diesel boilers were replaced by natural gas.

Regarding mobility initiatives, the mode of travel on campuses has been analysed through a survey and the ecological footprint of some faculties has been measured. An attempt has been made to improve the bus service in its timetable and price, offering cards with a discount on prices; private car-sharing promotions have been carried out, bicycle parking has been installed on campus and a bicycle loan programme was created.

Some of the initiatives designed for an efficient use of resources are in the development and implementation phase. This is why it is necessary to carry out a rigorous and analytical study of the savings that the measures adopted in several areas and each centre of the UDC involve. However, there may be difficulties in measuring savings, as some electricity consumption meters are not independent (the same device records the overall consumption of several centres). To date, some reductions in the electricity consumption, water and diesel has been detected with the measures taken; nevertheless, they are not significant or enough. The reasons can be: difficulty in extracting isolated consumption data from the centres, as there is a single meter shared with other centres, some of which are not affiliated with the Green Campus programme; more data would be needed for a more conclusive analysis, such as, for example, activity rates (in relation to the number of students, weekend activities at the centre, etc.), existence of possible breakdowns, etc.; not enough time has elapsed for the measures taken to be reflected in the overall consumption data, as some of the most significant were recently installed (for example, the change from lighting to low-consumption lamps or presence sensors).

## **SOLUTIONS AND RECOMMENDATIONS**

The UDC is placing great efforts in its transition to a sustainable university. The first question that the case analysis has tried to answer is to know what type of actions UDC has undertaken and how it has carried them out (Q1). This analysis has shown as remarkable facts, the creation of Sustainability Campus and the Office of Environmental Planning, that contribute to the sustainability goal with activities focused on information and dissemination on UDC campuses, participation and environmental co-responsibility, and sectoral projects related to management and environmental sustainability. At the faculty level, the creation of the Green Campus initiative should be highlighted, as it has fostered the environmental awareness in the university community. As previously mentioned, this project involves the generation of an Environmental Committee, and the conduct of eco-audits and action plans, procedures that contribute to improve the sustainability dedication. The great advances in the work developed has allowed that seven faculties have already achieved the Green Flag, and more than half of the UDC faculties participate in the Green Campus programme.

Another issue raised is to determine the scope of the measures carried out, in comparison with those of other institutions (Q2). In comparison with the two universities in its closest environment, the analysis has shown common ground such as a strategic plan that promotes sustainable actions, the existence of an Environmental Planning Office or the chairs created in order to exchange experiences in the field of teaching, research, and scientific dissemination related to environment and sustainability. But other aspects

differentiate it and show its clear commitment to sustainability, among which its Sustainability Campus stands out. In the area of governance, this commitment is also evident through the creation of a Vice-Rectorate exclusively dedicated to Infrastructure and Sustainability matters. In order to positioning the UDC as a leading institution in training for sustainability, it is important to highlight the great effort made regarding the curriculum greening of HE. For several years now, the sustainable goals are included not only in the syllabuses, but also in the teaching guides of the different subjects. It is also committed to expanding environmental education beyond the university classrooms, with courses such as the MOOC Course “Sustainability in the Era of Big Data”.

The efforts have been fruitful, as the UDC is very well positioned in international ranking. Thus, evidence of the UDC’s commitment and the success of the procedures and initiatives introduced is its position in international rankings, like Times Higher Education or GreenMetric. Regarding the GreenMetric World University Ranking in 2019, the UDC is the third university at national level and the 85th out of 780 institutions at world level. The GreenMetric World University Ranking was first conducted in 2010; its main goal is to provide a classification according to the environmental policies undertaken within the universities across the world<sup>2</sup>. This success encourages the institution to continue in this vein, although the future needs must be evaluated as we form part of an alive and changing environment.

Other question to be resolved is how the implementation of the transition has been managed (Q3). The analysis shows a mixed model, top-down and bottom-up, already promoted since the 2013-2020 UDC Strategic Plan. In addition to initiatives promoted “from top” to favor more sustainable development, each university centre has the opportunity to establish its own sustainable objectives “from bottom”. This opportunity, together with the efforts made by teams directly involved have achieved that the entire university community and others important stakeholders, such as companies and government agencies, walk together towards a sustainable university.

Another challenge to face is obtaining the necessary financing to carry out the transition towards sustainability (Q4). As explained in the previous sections, the UDC has used a financing system based on three main pillars: proactive recruitment of resources, efficient management of the resources obtained, and a system of allocation to the different centres in order to achieve their objectives. The UDC has been very effective in the introduction of environmental procedures with a limited amount of resources. It is especially noticeable the development of an important number of initiatives in a short period of time. These actions are intended to have social projection and they are in line with the objective of sustainable development of the university. They will allow UDC for meeting current and future social challenges.

The main recommendations would be focused on keep working hard on the commitment with sustainable development from the University. The commitment of the university’s human capital with sustainable development is undoubtedly essential. The university community is involved in many initiatives and an increasing interest on these topics is clearly observed. Although it is complicated, one way of improvement has to do with the budget devoted to these concerns. The UDC is not a big university, so there are some budgetary constraints, particularly from the economic crisis on. In any case, and as previously stated, the University has done a huge effort with limited budget, so this is a key point to take into account in the next and future challenges.

## **FUTURE RESEARCH DIRECTIONS**

The implementation of the sustainability goal in educational institutions will have a relevant importance in the future, especially considering the role that universities have in the sensibilisation of students and diffusion of knowledge. 2030 is a key date to take conscience about the necessity of making a real change in our way of interacting with our environment if we want to guarantee equality, basic resources access, and sustainable development.

The analysis of sustainability at the UDC will let identify strengths, problems and opportunities that help to improve the ongoing initiatives, reflect about them and consider future actions. The comparison with other institutions provides a more global vision of the problem and helps to assess the UDC trajectory on sustainability. An interesting line of future research bases on evaluating and comparing the optimization of

resources consumption and responsibility. Other areas of research may revolve around improving sustainable mobility; promoting food sovereignty initiatives; creating new activities around awareness and environmental volunteering and incorporating more activities to promote curricular greening of teaching and research.

## CONCLUSION

Sustainable development is a key goal to achieve in today's society. It should be reach at all levels, from individuals to countries. The procedures to be implemented to reach this objective should be well designed, in an effective and efficient way. In any case, this is a long-run project that shows intermediate results in the short and medium rum.

So as to reach the objective of sustainability, education plays a key role. From environmental education to real applications, education must be in the agenda of the different agents, stakeholders and policymakers. In particular, HE, as trainer of future professionals and because of its duties with the society, must be an example in developing sustainable actions. This is already happening. "Traditional" universities are becoming sustainable. In this sense, they are implementing different procedures that can serve as an example for the society. In this chapter, a particular case is posed: the one of the Universidade da Coruña. This university is putting a lot of effort to achieve the sustainable goals and the process is still going on. Nevertheless, this transition needs the commitment of the individuals and university community as a whole. Human resources are needed, as well as funding for implementing the different procedures and initiatives. The latter is limited, so additional sources must be considered. The university community has shown great interest and involvement in the development of the different actions, and this has been fruitful, as this university has reached a very good position in international rankings in a short period of time.

All the initiatives created and procedures implemented may help achieve the goals of sustainability from all perspectives; from the environment consciousness of our staff and the professional life of our students, to reaching the *Third Mission* of the University, through the curricular greening of teaching and research, among many other activities.

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## KEY TERMS AND DEFINITIONS

**Higher Education (HE):** tertiary education leading to award of an academic degree as an optional final stage of formal learning that occurs after completion of secondary education.

**Resource Efficiency:** the management of limited resources in a sustainable manner while minimising environmental impacts.

**Strategic Plan:** document that establishes the direction and objectives of an organization and the actions needed to achieve those objectives.

**Sustainability:** the ability to continue its existence for a long time with activities that do not damage the environment and are in harmony with social and economic concerns.

**Sustainable Development:** the development achieved considering the needs of all type of stakeholders and that goods and services should be produced in ways that do not use resources that cannot be replaced and that do not damage the environment.

**Third mission (of universities):** HEIs must be able to meet the social demands and to link their activity to the one developed in the socioeconomic context that surrounds them.

**Governance:** the art or way of governing to achieve lasting economic, social, and institutional development, promoting a healthy balance between the State, civil society, and the economic market.

## ENDNOTES

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<sup>1</sup> CRUE: association that brings together the majority of Spanish universities (50 public and 26 private), which has been working for decades for the development of this institution and the consolidation of the University's interaction with the productive and social fabric of Spain.

<sup>2</sup> Green Metrics website: <http://greenmetric.ui.ac.id/>.