

SUSTAINABLE UNIVERSITIES: NEW KNOWLEDGE AND INNOVATIVE ACTIONS

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Abstract

Growing concern to promote sustainable development requires an effective response from the education sector. In this context, universities have a special responsibility considering the additional multiplication effect of the emerging contents in the training of new generations of professionals and the need to transfer actions into the practice of sustainability. The UNSUS Programme (Programa de Universidades Sustentables) was recently developed within Latin-American Universities in order to respond to these requirements, both on innovative academic contents and practices related to sustainability. The Programme aims to establish links between a network of universities from different countries in the region, from Mexico in the north to Argentina in the far south of the continent.

The specific contents and modalities aim to facilitate the implementation from three different convergent perspectives:

1. from the promotion of university campuses responding to different lines of sustainable development while demonstrating feasible actions towards sustainability in the built environment.
2. from the introduction of concepts, knowledge and practice on sustainable development in all disciplines within the curricula of each university, as an essential component of university education, social concern and academic responsibility.
3. from the knowledge implementation and management within the three basic areas of university life: research, teaching and transfer to society.

The UNSUS Programme advocates an interdisciplinary view to take full advantage of the specific support and knowledge that each discipline can provide to build a new body of knowledge and links between fields. The Programme also aims to the promotion of an integral view between universities in Latin-American countries, with common fields of interests through convergent strategies for transfer and implementation.

The set of actions to be carried out in the UNSUS Programme allows a progressive integration of sustainable development as an emerging field of professional responsibility within each discipline and are of education.

The impact of these actions will influence:

- Academic innovation: generating a paradigmatic field of studies focused in Sustainable Development.
- Repositioning of Latin-American universities: with specific regional contents encouraging cooperation and joint activities.
- Research, Development and Implementation: to demonstrate strategies and achievements in each related field and own university campus to be shared with the others and transferred to society.

For this purpose, the UNSUS Programme envisages different types of activities, from attended courses to distant learning by networks, teachers training and tutorials together with demonstration projects relevant to specific regional and local conditions and experts exchange.

1. Introduction.

This paper is based on the premise that promotion of sustainable development necessarily implies a series of proactive actions from the academic field and education sector, particularly from universities considered as institutions where knowledge is produced and a social and critical conscience is created with competence to influence the orientation of development in society. The University, recognised as the 'society based on knowledge', can operate as a potential promoter of transformations in the neo-liberal globalised world, both in the field of alternative thinking to single-minded concepts, in relation to territorial interventions supporting the sustainable development process. It can be stated that sustainable development implies both an enrichment and complexity of human experience in terms of creating alternative values and ideas, approaches and ways of living, as well as new means of production and satisfying needs. In short, promoting different approaches to face the dominant tendencies to homogenise experiences, knowledge and practices.

Following this premise, four key issues are considered in the following sections of this paper:

- Sustainability as a paradigm.
- The present situation of the universities.
- The UNSUS Program (Programa de Universidades Sustentables), characteristics and background.
- City and University Campus.

Although these issues could be considered in isolation, from a methodological point of view, the aim of this paper is to develop links between them in order to promote a conceptual unit that enrich the university knowledge base from a new epistemological and methodological approach. As a result, a new way of understanding the University's spatial materialization can be proposed as a consequence of the basic concepts of sustainability. This approach takes into account, within the forms of present day university management, the feasibility to propose a new model of Sustainable University, able to articulate knowledge while managing sustainable campuses and buildings.

2. Sustainability as a paradigm.

To approach the theme of sustainable universities a definition of Sustainable Development (SD) is required to establish the way in which it is conceived in the academic field, as a centre of knowledge, considering the principal economical, social and environmental issues. At the same time, it should be established the way in which university knowledge leads this new type of development and makes it possible from different levels of knowledge and University management.

In spite of the variety of interpretations of this concept in theoretical and political discussions, most of the conceptions about SD truly represent variations of the definition recommended by the world-wide Commission on Environment and Sustainable Development, headed by the Norwegian Prime Minister, Gro Brundtland (1987) when stating that 'Sustainable Development should satisfy the needs of present generations, without jeopardising the capacity of future generations to satisfy their own needs'.

Taking into account the definition of SD and the aims of the University bearing in mind the creation of knowledge benefiting society, it is possible to infer the strong proximity between the statement of SD paradigm and what the university should focus, analyse and discuss today in the frame of the following three fundamental fields of action:

- **Research:** understood as critical and methodological reflection on topics and methods linked to different sources of knowledge.
- **Education and training:** conceived as a process of searching knowledge and methods in different levels, interests and learning fields.
- **Extension and dissemination:** perceived as the transfer of Research and Education to multiple sectors of the community.

Therefore, the need to establish links between this three axes of Research, Education and Dissemination, drives attention towards the dimensions characterised by Guimaraes as 'the new style of development' proposed by the SD paradigm, following the condition of:

1. environmentally sustainable in the access and use of natural resources, while protecting the biodiversity of the planet.
2. socially sustainable by reducing poverty and social inequalities to promote justice and equality.
3. culturally sustainable by preserving value systems, practices and symbols of identity.

4. politically sustainable by deepening democracy to guarantee overall participation in public decision making.

If starting from an adequate orientation of research programs, education and dissemination, new patterns of articulation between Society and University can be achieved and, following Guimaraes 'new style of development', advocate 'a new ethic of development in which the economical aims are subordinated to natural systems, criteria of respect to human dignity and improvement of the quality of life'.

Sharing Coraggio's view (2003) that the inclusion of University in the general process of development cannot be isolated from the problems confronting countries, states, nations and mankind as a whole, it can be quoted 'the legitimate response would not be the corporative response of the traditional University, it requires strong and continuous transformations regarding the sense of integration from the institution, its functions and source of legitimacy'. In this context, it's pertinent to recall in programs like this one to show the resolute and express vocation of those heading University Institutions, as well as all actors involved, in searching a stronger agreement with local development issues and, at the same time, with the international situation which are increasingly influencing decision making and the economical, social and environmental tendencies within the region.

In relation to this framework, Guimaraes points out that the potential space opened for an eco-political approach to development, is closely linked to the evolution of the situation at regional level, the agenda and the environmental challenges in Latin America and the Caribbean posed during the last decades and the deep changes particularly experienced as a result of current globalisation processes (CEPAL, 2003).

For the countries and Universities within the region, this approach represents the challenge of promoting new development strategies as an alternative to globalisation processes, in the light of the following reflections:

'Globalisation has been considered inevitable by many. Even though recognising technology as the principal motor, together with the expansion and market integration, it is also true that globalisation is not a force of Nature, but the result of processes caused by human activity. In this sense, adjustments should be made in the service of humanity. To achieve it, careful management is required both nationally and internationally, through cooperation'. However, 'this decision and this call summon the globalised world to lay the foundations of the destiny of mankind and to build a sustainable future on a new conception and new ethics of development based on the formation of new visions, new mentalities, new abilities and new sensibilities' (Guimaraes, 2003).

3. The present situation of the universities.

In this framework, the following questions can be postulated: What do universities represent in the context presented by the countries of the region, and in which way are they influencing present and future development? How is it possible to modify the present situation and re-think outdated knowledge unchanged over time, no longer responding to the requirements and demands of the contemporary world? The response to these questions requires recognition and revision of inherent situations of the universities functional structures, as well as approaches and visions that university institutions have proposed as instances of permanence or of change to achieve a better link with the real world in which they function.

Situations of deep fragmentation of knowledge are detected at present resulting from the multiplicity and diversity of knowledge produced by centres, faculties, schools, departments, combined with the scarce capacity or determination for associative to undertake actions and solve problems often requiring methods and approaches shared among different sources of knowledge. The present university structure shows both asymmetries and divert development of knowledge and results. Instead, a realistic adjustment and genuine involvement is required from the University to the social, technological and cultural milieu to successfully respond to Society in order to promote and achieve truly sustainable development, able to overcome the conflict between local development and globalisation.

On the other hand, judgements related to the University are normally restricted to an analysis pointing towards its own internalism and performance, as the University seen from inside, more than connected to realities that are or should strongly condition its existence as institution.

Sectorial interests are then revealed, generally opposed among different types of knowledge, neglecting other relevant issues, such as the new epistemological and methodological approaches to knowledge that exceed the limits of conventional practice.

Additionally, it is observed that the main conceptual and methodological axes of discussion concerning the complexity of Sustainable Development within the University agenda is still not sufficiently considered or successfully introduced, weakening the potentially active and efficient protagonism.

The frequently negative diagnoses relating University performance to social demands reveal a generalised crisis when searching for effective response in the last decades, indeed relevant seen from the perspective of universities in Latin American countries re-emerging to or consolidating democracy over the last years, as is the case of many countries in the region.

Identifying the current situation, Canavese (2004) expressed 'lacking projects, the present university crisis seems to respond to the failure of the institution, during the last twenty years, in re-establishing links with the surrounding world. The university of democracy is, paradoxically, that of ostracism. At present, at least two divergent interpretations coexist about the social role of the University. The first one postulates the desertion of its role, which allowed other forces to occupy the vacant space, particularly the market oriented ones. On the other hand, there are those who sustain that the idea of academic isolation is still formulated from a centralised university approach. The University is an institution that should be inserted in the context of society committed to its specific role: form able and conscious professionals. Thinking about society, offering opportunities to graduates, this is a task of society, where the university is just another actor. However, even from this perspective, the production of able and environmentally conscious professionals does not appear to be achieved'.

Another issue affecting the actual insertion of the University is related to the update of concepts such as Extension – Dissemination, now recognised by Romero (2004), as a valuable line of action to be more strongly integrated to the other two axes: Research and Education. In this way, the University would be able to implement and articulate these three lines in the framework of Sustainable Development Programs with greater social impact. This, according to Romero, will facilitate a better interaction between Society and State, 'specially because education, in all levels, acquires a fundamental role in development'. This is in addition to the recognition that 'although in practice, universal and shared values for this type of development already exist, there is no systematic educational approach available to effectively achieve it, nor a permanent attitude is observed in our universities'.

4. The UNSUS Program.

4.1. Character of Program.

Within the framework of above reflections, the formulation of the UNSUS Program has been developed to satisfy the increasing need of incorporating these new approaches in order to consolidate the Development and Management of Sustainable Universities in the context of the different aspects intervening in the Sustainable Development approach. At the same time, innovative contents concerning sustainability of the built environment within the Universities are proposed, both in the academic activity and the practice of demonstrative actions, to be experienced, tested, evaluated and transferred to the university community and by extension to the productive system and society.

To this aim, the essential contents and the operational modes are formulated to facilitate instrumentation of Program with the following scope to:

- **Provide** spaces within the university, such as programmes for 'Sustainable Campus', performing as demonstration project according to SD, which allow the development of suitable links between University and City.
- **Introduce** the epistemological concept of SD in the spectrum of University knowledge.
- **Instrument** transfer mechanisms and management of SD into the three basic axes of University activities: Research, Education and Extension.
- **Create** new channels for training and initiatives to support social integration between the University and the market through the production of sustainable materials and innovative building systems.
- **Promote** the incentives to actively participate in international cooperation networks involved in the redefinition of sustainable Universities and the implementation of effective actions towards SD.

Through this Program, it is expected to have a high impact concerning to:

- Academic innovation both in the addition and generation of new knowledge as well as the steps to be taken for the development of Sustainable Universities.
- Sustainable Development in action, by new lines of knowledge and interdisciplinary practices contributing to experimental work and implement strategies to improve university buildings and campus to achieve a multiplication effect.

4.2 Background of the Program.

Local, national and international experiences were taken into account for the UNSUS Program, some are already developed and others in the process of implementation. In further stages of the Program, contacts and links with similar initiatives will be established in order to develop work within international networks.

In the case of National Universities within Argentina, the University Network of Academic Exchange and Cooperation for Sustainable Development, from the National Secretary of Environmental and Sustainable Development, is the focal point of the Environmental Education Network for Latin America and the Caribbean in the framework of UNEP, the United Nations Environmental Programme.

In the Latin American context, the International Conference on Environmental Management for Sustainable Universities, EMSU, which took place in the Monterrey Technical University, Mexico, June 2004, is taken into account as well as the pre-conference on Latin American Online Toolkit, held in the same University. UNEP encourages the creation of Masters and Post-graduate courses in Latin America, through the head office in Mexico. In that sense, several events and seminars have taken place to promote environmental education in the universities of the region.

In the case of European Universities, the UNESCO related programs are acknowledged, following the Rio Summit Conference in 1992, and the Inventory of Education for Sustainable Development developed bases for the world-wide Johannesburg Summit on 2002. Additionally, the important work carried out by the European Universities Association (EUA) since 1994 promotes the integration of SD within universities of the Copernicus Program 'Cooperation Programme in Europe for Research on Nature and Industry through Coordinated University Studies, the University for Charter Sustainable Development. The aims of this Program, fully coinciding with the objectives of the UNSUS Program, are:

- Implement the sustainability perspective in the entire university system.
- Stimulate and coordinate interdisciplinary research projects.
- Facilitate the results of research to decision-makers in the fields of economics and politics.
- Bring together universities and other sectors of society.

The EU recognised SD as a paradigmatic model for development by signing the Amsterdam Agreement in 1996. In the same year, SD was recognised as a requirement for all education and training establishments of the EU by the Council of Education Ministers. Already in 1994, the European Conference of University Rectors (CRE) made the first attempt to transfer the discussion on sustainability at university level.

Since 1995, the European Commission supports Teaching in Architecture, the energy and environment world network bringing research and architectural training to the floor at the 'Florence International Conference for Teachers of Architecture' in 1995, followed by the Florence Second International Conference in 1997, and the Third International Conference 'Sustainable Buildings for the 21st Century: teaching issues, tools and methodologies for sustainability', Oxford, 2000, with world wide participation and recognition that relevant experiences and innovative teaching actions are taking place towards sustainability of the built environment.

In the USA there an equally important network gathers American Universities around SD issues, while the UNSUS Program is organising the International Conference in Argentina in 2005.

The Kyoto Declaration of 1993 is greatly acknowledged when stating that 'it was the result of 90 international university leaders assembling for the Ninth International Association of Universities Round Table in 1990, closely linked to the Agenda 21 and the United Nations Commission on Environment and Development Conference held in Rio de Janeiro the previous year.

However, the main contribution of the Kyoto Declaration to the current discussion in the creation of frameworks for sustainability was a call for a clearer vision to achieve sustainability in university contexts. The Kyoto Declaration demanded specific plans of action to the international university community in the pursue of sustainability, stressing the ethical obligation of universities to respect the environment and sustainable development principles. A final feature of the declaration was its challenge to universities to not only promote sustainability through environmental education, but also through the physical operations of a university' (Coraggio, 2003).

Finally, Table 1, based on the relationship developed by Tarah Wright (2002), presents the common sustainability principles proposed in declarations and international policies, and provides a framework for mapping development and conditions found and the actions taken.

The original table shows the International Declarations for Environmental Sustainability in Higher Education as well as some University policies considered representatives examples.

Table 1. Policies and declarations on sustainability, related to topics, based on Tarah Wright (2002).

Policy / declaration	Moral obligation	Sustainable physical operations	Encourage sustainable research	Public outreach	Inter-university cooperation	Partnerships: government, NGOs & industry	Develop interdisciplinary curriculum	Ecological literacy
Stockholm Declaration (1972)	X			X				X
Tbilisi Declaration (1977)	X		X	X		X		X
The Talloires Declaration (1990)	X	X	X	X	X	X	X	X
The Halifax Declaration (1991)	X			X	X	X		X
The Kyoto Declaration (1993)	X	X	X	X	X	X		X
Swansea Declaration (1993)	X	X	X	X	X			X
CRE Copernicus Charter (1994)	X		X	X		X		X
Thessaloniki Declaration (1997)	X			X		X	X	X

Through the situation analysed above, referred to different contexts and regions, it could be noticed that the subject of Sustainability in the Universities has been approached with initiatives which bring together university groups in most cases supported by their representative bodies as well as governments. This provides a relevant framework for the universities, allowing reflections on the need to agree and coordinate public and universities policies to update this subject. In this context, the UNSUS Program provides a suitable instrument to achieve these aims.

5. Towards the Sustainable Campus.

The Sustainable Campus, considered a contribution to the materialisation of a new university model in which ideas, approaches and strategies of SD are practiced, allow redefinition of present and future role. The notion of Sustainable Campus, subject to multiple interpretations by different specific fields, may be viewed as a diffuse reality sharing certain ambiguities with the concept of sustainability itself and, therefore, requiring further clarification.

In an architectonic-urban approach, the Anglo-Saxon concept of Sustainable Campus refers to a specialised and perfectly outlined urban type that keeps certain independence of the city in which it is located. Nevertheless, there is an inevitable sharing of urban dynamics due to the superposition of their respective layouts. In this way functional, symbolic, social, cultural and economical linkages between the spaces of university life and the urban sectors where they are inserted.

The Sustainable Campus, considered as a space in which academic activities (education, research, extension) are contained and articulated should then shape the new scenery, actively inserted in the city, where SD paradigms are put into practice and where the new 'styles of development' proposed by Guimaraes are tested and promoted as in a laboratory, considered as concrete sustainable experience.

According to Marc Gosse (2004), 'development is recognised as a voluntary and conscious process of material and immaterial transformations -universal, global and local at the same time- made by societies, communities or individuals. It should be lasting, that is to say 'sustainable', with which they can identify and appropriate to be handed down to future generations, preserving natural and cultural richness, especially the non renewable ones, in all its diversity'.

About the idea of experimentation, which can be related to the Sustainable Campus, the examples of Polytechnic University of Milan and the Las Palmas University, Canary Islands, are of interest as they present the University Campus as a 'communitarian lab' to design and promote sustainable solutions, working as a community where the campus is designed with advanced concepts of sustainability. The Campus is, in fact, a restricted community and forms a demonstration project to study, introduce and test advanced ideas in technological, organisational, cultural and environmental fields.

In the case of Cordoba, Central Argentina, the importance of the relationship between the University Campus and the City is particularly relevant. The National University of Cordoba with 120,000 students, teachers and non teaching staff, may be considered as a medium sized city inserted in a city of 1,300,000 inhabitants. The links between this University community and the City in its spatial and socio-cultural dimension as well as its territorial influence in the region, allows awareness of the influence and potential of development

represented by the UNC in the city, the region and the country as a whole. The aim of the UNSUS Programme is to develop this potential as well as to establish links with other universities with similar plans for sustainable development, Figure 1.

'The presence of an University in the City is certainly a general factor of development, even more if the spatial and architectural relationships between the University and the City optimise the quality of urban life as well as university life' (Gosse, 2004).

6. Conclusions.

Faced with the concept of the university as an enclave, traditionally linked to the idea of the university campus, as if it were a 'city within the city', an alternative is postulated to integrate the physical environment and relate the practices within the campus with the city and region.

The University continues to provide places for human interaction. A Sustainable University, spatially materialised in a Sustainable Campus, represents an innovative opportunity, capable of promoting environmental benefits and a better quality of life, for present and future generations.

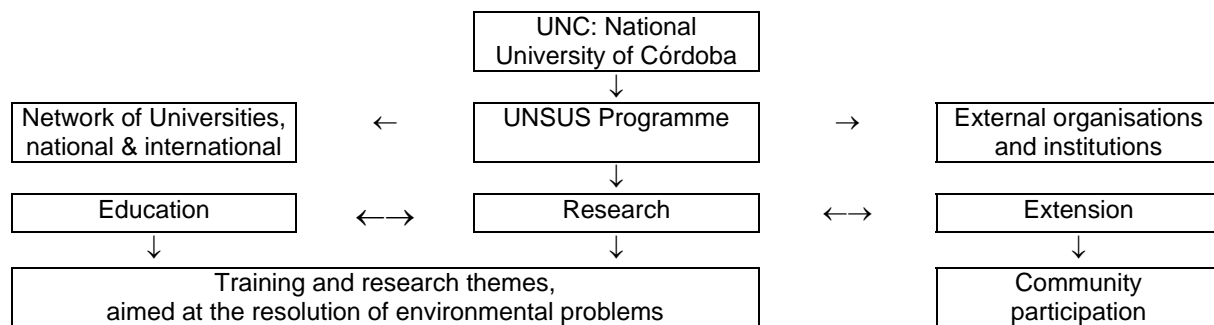


Figure 1. Summary of the UNSUS programme structure

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