Abstract
Since the 1972 Stockholm Conference, many Sustainable Development declarations, charters, and partnerships have been developed, both in the overall societal context and within higher education frameworks. This paper addresses two issues: (1) a comparison of the development of sustainable development initiatives in society and in universities and (2) an analysis of how those initiatives are influencing educational institutions’ SD activities.

The analysis indicates that SD needs to be incorporated in a transdisciplinary manner throughout: curricula, research, operations, outreach and engagement with stakeholders, collaboration with other universities, assessment and reporting, institutional framework, on-campus life experiences, and educate the educators programmes. These key elements must be integrated systemically in the HEIs in order to provide learning and career value to those participating in the SD transition.

One of the key observations is that the concept of ‘meme’ diffusion/transfer from the diverse declarations, charters and partnerships is slow and inefficient. The question is why is it so slow and ineffective and what can be done to speed it up throughout society? The authors propose the following ways to speed up the transfer, and implementation of the SD in higher
education ‘meme’: universities and their leaders should become more proactive in engaging with SD, SD should be made the ‘Golden Thread’ throughout the university system, and recognise those engaged with SD and foster multiplier effects.

Keywords
Sustainable Development, higher education, declarations, charters, partnerships

1. Introduction
For centuries, universities have been at the forefront in creating and breaking paradigms, and educating the future decision-makers, entrepreneurs, and leaders (Cortese, 2003c, Elton, 2003, Lozano-Ros, 2003, Lozano, 2006b). However, universities have remained traditional (Elton, 2003) where modern education has relied on Newtonian and Cartesian mental models, which relegate things to mechanistic interpretation and reductionist\(^1\) thinking (Lovelock, 2007, Nonaka and Takeuchi, 2001). Such mental models and scientific positions have led to the conquest of nature through competition (Cortese, 2003b), industrialisation (Orr, 1992, Carley and Christie, 2000, Reid, 1995, WCED, 1987), overspecialisation and disciplinary isolation (Cortese, 2003b, Costanza, 1991), reductionism, and testing by repetition (Burke, 2000, Lozano, 2010), and to individualistic behaviours, greed, and self-interest (Lozano, 2007, Stead and Stead, 1994). Complementing this, it is important to take the following statement from the Barcelona Declaration (EESD, 2004) “Today’s engineers must be able to work in multidisciplinary teams…” and that social sciences and humanities should be incorporated into the education of engineers; at this point it is relevant to quote J.D. Bernal’s point of view regarding the latter “In the great creative periods of science the artists and the scientists worked very closely together and were in many cases the same people…Leonardo da Vinci,… The result of this separation [i.e. science and art] has been the most incredible mutual ignorance." (Brown, 2005).

\(^{1}\) According to Lovelock (2007) reductionism refers to the analytical dissection of a thing into its ultimate component parts, followed by regeneration through the reassembly of the parts. In contrast, the holistic view analyses a thing from the outside and asks it questions about how it works.
Even though each university is unique, all of them present the same characteristic system. This system, according to Cortese (2003a), has four dimensions: a. Education (referring to courses and curricula), b. Research, both basic and applied, c. Campus operations, and d. Community outreach. Lozano (2006b) added a fifth dimension: e. Assessment and reporting. These dimensions are interlinked and interdependent. In spite of a number of initiatives by HEIs (Boks and Diehl, 2006, Wemmenhove and de Groot, 2001), SD is still considered as an innovative idea in most universities (Lozano, 2006b), and has not yet permeated all disciplines, scholars, and university leaders (Fien, 2002).

This paper presents two ideas: First, a review of the initiatives (including declarations, charters, partnerships and conferences) to foster SD in society, in education, and in higher education, and how the idea of SD has been transferred from society to universities. Secondly, the paper provides an overview of the most relevant eleven initiatives for SD in higher education institutions. It also analyses how the initiatives relate to the university system, which is then complemented with collaboration with other universities, transdisciplinarity, institutional framework, on-campus experiences, and educate the educators’ activities.

2 Evolution of the declarations, charters, and partnerships for SD
At the Stockholm Conference in 1972 (UNEP, 1972) education was formally recognised on an international level to play an important role in fostering environmental protection and conservation. Since then many academic initiatives, under the terms declarations, charters and partnerships, to foster the environment and Sustainable Development (SD) have been developed and adopted by an increasing number of universities (Calder and Clugston, 2003, Wright, 2004, Lozano-Ros, 2003), as shown in Table 1.

Error! Reference source not found. shows the evolution of these initiatives, divided into three levels: society, education, and higher education. It can be seen that between 1978 and 1986 there were no new initiatives, whilst since 1987 there has been a large increase number of them.

As it can be observed from the Table 1 and Error! Reference source not found., in general the educational initiatives (overall and higher education) have appeared after the societal ones. For example the Belgrade charter and Tbilisi declaration followed the Stockholm
conference, and the Talloires and Halifax declarations followed the Brundtland report. This shows a tendency where the initiatives in higher education come after those in society. It could be argued that the SD meme, which is defined by Dawkins (1978) as “...a noun which conveys the idea of a unit of cultural transmission, or a unit of imitation”, is being transferred, or ‘jumping’, from society to universities. These reactive approaches reinforce Lozano’s (2006b) argument that universities still consider SD as an innovation. Even though universities have been places where paradigms have been created and broken (Cortese, 2003c, Elton, 2003, Lozano-Ros, 2003, Lozano, 2006b), it could be argued also that, currently, most higher education institutions\(^2\) are not at the forefront of SD knowledge.

Table 1 History of the initiatives taken in society, education, and higher education to foster sustainable development

<table>
<thead>
<tr>
<th>Year</th>
<th>Event/Declaration</th>
<th>Level or focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>The Belgrade Charter, Belgrade Conference on Environmental Education, Yugoslavia</td>
<td>Education</td>
</tr>
<tr>
<td>1977</td>
<td>Tbilisi Declaration, Intergovernmental Conference on Environmental Education, Georgia</td>
<td>Education</td>
</tr>
<tr>
<td>1990</td>
<td>Talloires Declaration, Presidents Conference, France</td>
<td>Higher education</td>
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<tr>
<td>1991</td>
<td>Halifax Declaration, Conference on University Action for Sustainable Development, Canada</td>
<td>Higher education</td>
</tr>
<tr>
<td>1992</td>
<td>Association of University Leaders for a Sustainable Future founded, USA</td>
<td>Higher education</td>
</tr>
<tr>
<td>1993</td>
<td>Kyoto Declaration, International Association of Universities Ninth Round Table, Japan</td>
<td>Higher education</td>
</tr>
<tr>
<td>1993</td>
<td>Swansea Declaration, Association of Commonwealth Universities’ Fifteenth Quinquennial Conference, Wales</td>
<td>Higher education</td>
</tr>
<tr>
<td>1993</td>
<td>COPERNICUS University Charter, Conference of European Rectors (CRE)</td>
<td>Higher education</td>
</tr>
<tr>
<td>1996</td>
<td>Ball State University Greening of the Campus conferences were in 1997, 1999, 2001, 2003,</td>
<td>Higher education</td>
</tr>
</tbody>
</table>

\(^2\) In the last years there have been a number of universities engaging with SD (Wemmenhove & De Groot, 2001; Boks & Diehl, 2006; Lozano, 2006b, 2010), however their numbers are still small compared to the total number of universities in the world.

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The 14th European Roundtable on Sustainable Production and Consumption (ERSCP)
The 6th Environmental Management for Sustainable Universities (EMSU)
Table 1: Major Milestones in Higher Education for Sustainable Development

<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
<th>Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>Thessaloniki Declaration, International Conference on Environment and Society: Education and Public Awareness for Sustainability, Greece</td>
<td>Education</td>
</tr>
<tr>
<td>1999</td>
<td>Environmental Management for Sustainable Universities conference first held in Sweden. Following conferences in 2002 (South Africa), 2004 (Mexico), 2006 (U.S.A.), 2008 (Barcelona) and in 2010 in Delft.</td>
<td>Higher education</td>
</tr>
<tr>
<td>2000</td>
<td>Millennium Development Goals</td>
<td>Society</td>
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<td>2000</td>
<td>The Earth Charter</td>
<td>Society</td>
</tr>
<tr>
<td>2000</td>
<td>Global Higher Education for Sustainability Partnership (GHESP)</td>
<td>Higher education</td>
</tr>
<tr>
<td>2001</td>
<td>Lüneburg Declaration on Higher Education for Sustainable Development, Germany</td>
<td>Higher education</td>
</tr>
<tr>
<td>2002</td>
<td>World Summit on Sustainable Development in Johannesburg, South Africa (Type 1 outcome: decade of education for sustainable development; Civil Society outcome: the Ubuntu Declaration)</td>
<td>Society</td>
</tr>
<tr>
<td>2004</td>
<td>Declaration of Barcelona</td>
<td>Higher education</td>
</tr>
<tr>
<td>2005</td>
<td>Start of the UN Decade of Education for Sustainable Development (DESD)</td>
<td>Education</td>
</tr>
<tr>
<td>2005</td>
<td>Graz Declaration on Committing Universities to Sustainable Development, Austria</td>
<td>Higher Education</td>
</tr>
<tr>
<td>2009</td>
<td>Abuja Declaration on Sustainable Development in Africa: The role of higher education, Nigeria</td>
<td>Higher Education</td>
</tr>
<tr>
<td>2009</td>
<td>Torino (Turin) Declaration on Education and Research for Sustainable and Responsible Development, Italy</td>
<td>Higher Education</td>
</tr>
</tbody>
</table>

Source: Adapted and updated from Calder & Clugston (2003), Lozano-Ros (2003), and Wright (2004).

The increasing importance of such declarations, charters and partnerships, to foster SD is evidenced by the large number of university leaders, more than 1,000 in 2003, who had ratified their commitment to work to advance SD education and research by signing the Talloires Declaration, the Kyoto Declaration, and the Copernicus University Charter. From these signatories, approximately, one-third were from the global South, and one-fifth from countries in the former Soviet Union and Warsaw Pact nations (Calder and Clugston, 2003). That is quite different from your earlier statement about the majority being from Europe.

However, as it can be observed in Table 1 a large majority of the declarations were developed in Europe. This suggests that SD initiatives were/are more openly discussed in European universities. Table 2 shows the number of signatories of some of the higher education initiatives. As it can be observed, there is information only about Talloires...
Declaration and the COPERNICUS Charter. These two issues would require further exploration.

Figure 1 Evolution of the declarations, charters, and partnerships for sustainable development
Table 2 Number of signatories of some of the Higher Education SD initiatives

<table>
<thead>
<tr>
<th>Year</th>
<th>Declaration</th>
<th>Country of Signatory Universities</th>
<th>Number of Signatories (as of June 2002)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>Talloires Declaration</td>
<td>International</td>
<td>275</td>
</tr>
<tr>
<td>1991</td>
<td>Halifax Declaration</td>
<td>Canada</td>
<td>20</td>
</tr>
<tr>
<td>1992</td>
<td>Kyoto Declaration</td>
<td>International</td>
<td>n/a(^1)</td>
</tr>
<tr>
<td>1993</td>
<td>Swansea Declaration</td>
<td>International</td>
<td>n/a(^2)</td>
</tr>
<tr>
<td>1994</td>
<td>CRE COPERNICUS Charter</td>
<td>Europe</td>
<td>291</td>
</tr>
<tr>
<td>1997</td>
<td>Declaration of Thessaloniki</td>
<td>International</td>
<td>n/a(^3)</td>
</tr>
<tr>
<td>2000</td>
<td>Lüneburg Declaration</td>
<td>International</td>
<td>n/a(^4)</td>
</tr>
</tbody>
</table>

1. Adopted at the Ninth International Association of Universities Round Table, however there are no individual signatories.
2. Adopted at the Association of Commonwealth Universities Conference, however there are no individual signatories.
3. Adopted at the UNESCO Conference on Environment and society: Education and Public Awareness For Sustainability, however there are no individual signatories.
4. Adopted at the Higher Education for Sustainability - Towards the World Summit on Sustainable Development Conference, but no individual signatories.

3 Overview of the most frequently used higher educational declarations, charters, and partnerships for SD

This section presents a brief overview of eleven of the most widely accepted SD initiatives in higher education: the Talloires Declaration, the Halifax Declaration, the Swansea Declaration, the Kyoto Declaration, the GHESP, the COPERNICUS Charter, the Lüneburg Declaration, the Declaration of Barcelona, the Graz Declaration, the Turin Declaration, and the Abuja Declaration.

3.1 The Talloires Declaration

The Talloires Declaration was signed in October 1990 by twenty university rectors, presidents, and vice chancellors from different parts of the world. They were concerned about the environmental degradation, pollution and the depletion of natural resources, and about the threat that they present to human and biodiversity survival. Since 1990, the number of signatures has increased to 356 (ULSF, 2007).
The Talloires Declaration addresses environmental changes, considered to be caused by inequitable and unsustainable production and consumption patterns, through 10 action points:

1. Increase Awareness of Environmentally Sustainable Development;
2. Create an Institutional Culture of Sustainability;
3. Educate for Environmentally Responsible Citizenship;
4. Foster Environmental Literacy For All;
5. Practice Institutional Ecology;
6. Involve All Stakeholders;
7. Collaborate for Interdisciplinary Approaches;
8. Enhance Capacity of Primary and Secondary Schools;
9. Broaden Service and Outreach Nationally and Internationally; and
10. Maintain the Movement. (ULSF, 1990)

3.2 The Halifax Declaration
The Halifax Declaration was launched in December 1991 at Halifax, Canada. The declaration underscores the roles and responsibilities of universities in improving the capacity of the citizens of all countries to address environmental and development issues, such as the continuing widespread degradation of the earth’s environment, the pervasive influence of poverty on the process, and the devastating effects of unsustainable environmental practices (IISD, 2003a).

The Halifax Declaration presents a broad action plan that identifies short- and long-term goals at the local and regional, national and international levels. The scope and focus of the Halifax Declaration is, to a large extent, similar to that of the Talloires Declaration.

3.3 The Swansea Declaration
The Swansea Declaration was the outcome of the Association of Commonwealth Universities' Fifteenth Quinquennial Conference, in August 1993 in Swansea, Wales. It was inspired by the Talloires and Halifax Declarations, and was driven by the disappointment of the insufficient university leaders present in the 1992 United Nations Conference on Environment and Development, And of their minimal contribution to Agenda 21. As with the aforementioned initiatives, the Swansea Declaration was designed to address the
degradation of the Earth’s environment, the pervasive influence of poverty, and the urgent need for sustainable practices. The Swansea Declaration contains the following action points:

1. To urge universities to seek, establish and disseminate a clearer understanding of SD and to encourage more appropriate principles and practices;
2. To utilise resources of the university to encourage a better understanding on the part of governments and the public at large of the inter-related interdependences and international dimensions of SD;
3. To emphasize the ethical obligation of the present generation to overcome unsustainable practices;
4. To enhance the capacity of the university to teach and undertake research in SD principles and literacy;
5. To co-operate with all segments of society;
6. To encourage universities to review their own operations;
7. To request the implementation of the declaration (IISD, 2003b).

3.4 The Kyoto Declaration
The Kyoto Declaration was launched in November 1993 in the 8th Round Table of the International Association of Universities (IAU). It is composed of eight points, of which the first one borrows the words “development which meets the needs of the present without compromising the needs of future generations” of the Brundtland report (WCED, 1987); the second one urges universities to better utilise the natural resources; the third demands the present generation to stop unsustainable practices; the fourth urges educators to teach and to do research on the principle of SD; the fifth urges co-operation with all segments of society; the sixth urges universities to review their operations; the seventh urges them to implement the declaration; and the eight embodies the language and substance of both the Halifax and Swansea declarations (IISD, 2003b).

3.5 The COPERNICUS Charter
The Co-operation Programme in Europe for Research on Nature and Industry through Co-ordinated University Studies (COPERNICUS) The Charter was launched in Geneva, Switzerland in May 1994. The Charter is an inter-university, co-operation programme focused upon the environment and SD. It encompasses more than 320 European universities (COPERNICUS, 1994).
3.6 Global Higher Education for Sustainability Partnership (GHESP)

The Global Higher Education for Sustainability Partnership (GHESP) was formed in 2000, at the joint meeting of the Association of University Leaders for a Sustainable Future (ULSF), COPERNICUS-Campus, the International Association of Universities (IAU), and UNESCO. GHESP seeks to develop and share effective strategies, models and best practices for promoting higher education for sustainability, and it analyses experiences in the south and the north (GHESP, 2003).

According to GHESP, higher education must play a central role in the process of achieving SD. GHESP is designed to promote better understanding, more effective implementation of strategies to incorporate SD into higher educational institutions, to assess the progress of making SD central to curricula, to foster research, outreach and operations, disseminate and promote higher educational initiatives towards SD, to sponsor stakeholder’s consultations, and to demonstrate that it is possible to form a partnership of NGOs working with the UN system to develop and achieve a common goal (GHESP, 2003).

3.7 The Lüneburg Declaration

The Lüneburg Declaration was launched on the International COPERNICUS Conference under the umbrella of GHESP, in Lüneburg, Germany in October 2001. The Declaration:

Calls on higher education institutions, NGO's and other stakeholders to:

a. Ensure the continual review and updating of learning materials to reflect the latest scientific understanding of sustainability;
b. Ensure that the reorientation of teacher education towards sustainable development continue to be given priority as a key component of higher education;
c. Provide continuing education to teachers, decision makers and the public at large on sustainable development;
d. Encourage all educational institutions to include in their activities a strong component of reflection on values and norms with respect to sustainable development;
e. Raise awareness and increase understanding of the importance and relevance of technology assessments and risk assessment;
f. Promote the creative development and implementation of comprehensive sustainability projects in higher education, and all other levels and forms of education;
g. Increase attention to the international dimension and provide more opportunities for inter-cultural exchange in the learning environment;

h. Increase a focus on capacity development and intensified networking among institutions of education; and

i. Promote stronger integration of training and research and closer interaction with stakeholders in the development process.

Calls on governments to ensure that the World Summit on Sustainable Development includes education in general and higher education in particular, in the future international programme of work.

Calls upon the United Nations to:

a. highlight in the Secretary-General’s main policy report the indispensable role of education in general, and higher education in particular, in achieving sustainable development as stated in chapter 36 of Agenda 21.

b. to make education a discussion topic during the multi-stakeholder dialogue sessions to be held during the preparatory committee meetings for the Johannesburg Summit and during the Summit itself.

Calls on UNESCO as task manager for chapter 36 of Agenda 21, in cooperation with UNU and other relevant parts of the United Nations system, to support these efforts concerning the Johannesburg Summit.

Furthermore, the EUA-COPERNICUS, the International Association of Universities (IAU), and the Association of University Leaders for a Sustainable Future (ULSF) commit to achieving the following targets within next five years:

a. Create a global learning environment for higher education for sustainable development;

b. Promote expanded endorsement and full implementation of the Talloires, Kyoto and Copernicus declarations;

c. Produce an action-oriented Toolkit for universities, managers, administrators, faculty and students designed to move from commitment to concrete action. The Toolkit would include:

   ● implementation strategies for colleges and universities depending on size, type, demographic characteristics, etc.;
- strategies for reform in particular areas of university activity, including teaching, research, operations and outreach, or for comprehensive change across all universities activities;
- an inventory of available resources;
- an inventory of best practices and compilation of case studies;

d. Enhance the development of Regional Centres of excellence in both developed and developing countries, and effective networking among them. (UNESCO, 2001)

3.8 The Declaration of Barcelona

The Declaration of Barcelona was launched in October 2004. It calls for multi-disciplinary, systems oriented, critical thinking, and participative and holistic education of engineers. To achieve this, the following element should be reviewed simultaneously: The links between all different levels of the educational systems; the content of courses; teaching strategies; teaching and learning techniques; research methods; training of trainers; evaluation and assessment techniques; the participation of external bodies in developing and evaluating the curricula; and quality control systems (EESD, 2004).

3.9 The Graz Declaration

The Graz Declaration was launched in April 2005, in Graz, Austria, in which it was concluded that the Decade of Education for Sustainable Development (DESD) confronts universities throughout the world with a strong challenge as well as with new opportunities. The Declaration calls on:

1. Universities to give sustainable development, fundamental status in their strategy and their activities, and to promote the creative development and implementation of comprehensive and integrated sustainability actions in relation to learning and teaching, research, internal and external social responsibility. As well, as cooperating more closely with institutions and other stakeholders in communities.

2. Ministers at the Conference of European Ministers responsible for Higher Education should use sustainable development as a framework for the enhancement of the social dimension of European higher education; and

UNESCO and other relevant parts of the United Nations system should support these initiatives in the higher education sector and should promote and support international academic cooperation (Uni Graz et al., 2005). To sum up, The Graz declaration encourage
universities to promote creative development and implementa-tion of comprehensive and integrated sustainability actions in:

- **learning and teaching**
- **research**
- **internal and external social responsibility**

Graz Declaration also fosters co-operation between universities and interaction with community stakeholders.

### 3.10 The Turin Declaration

The Turin Declaration was launched in May 2009 at the G8 University summit in Turin, Italy. The declaration acknowledges that sustainability science is emerging and evolving, and has come to play an increasingly important role in addressing one of the greatest challenges facing humankind. Sustainability cannot be achieved by merely engaging natural sciences but must also engage life sciences, social sciences and humanities. The interdependence and interaction among economics, ethics, energy policy and ecology (4 E’s) is one critical example.

The Presidents attending the 2009 University Summit agreed that universities should foster sustainable and responsible development at the local level as well as at the global level through new approaches within the educational and research systems, and should implement the following:

1. New models of social and economic development consistent with sustainability principles;
2. Ethical approaches to sustainable development;
3. New approaches to energy policy;
4. Focus on sustainable ecosystems.

The participants agreed that strategies need to be developed and employed to implement the agenda, including the following:

1. Broad, global engagement to promote awareness of sustainability issues, including ownership of the concept, partnership with different stakeholders, provision of leadership and guidance to other sectors of society;
2. Restructuring of education and research to incorporate and integrate cutting-edge knowledge, in order to move towards integrated holistic approaches, problem solving, and systems thinking;
3. Governance for strategic development, by providing policy makers with access to high quality education and research, and advocating participative, multi-scale, polycentric approaches to policy making; and


The declaration proposed the following actions:

a) Educate students at all levels in the issues concerning sustainable development;

b) Establish and give priority to research programs focused on sustainable development;

c) Engage students in policy making;

d) Develop partnerships with the private and the non-profit sectors to transfer knowledge and commercialize new technologies that advance sustainable development;

e) Support, inform, encourage and share good governance and policy-making based on sustainable and responsible development principles;

f) Find opportunities for developing countries to be partners in education and research for sustainable development;

g) Promote responsible development as a driving force to create a sustainable economy;

h) Look to universities for scientifically based approaches, and potential actions, in creating public policy on sustainability;

i) Recognize the role played by education and research in the many fields relevant to sustainable development and foster among students, teachers, scholars and leaders, awareness of the responsibility and ethical behavior required to achieve this task;

j) Encourage holistic thinking and an integrated approach to decision making and problem-solving;

k) Increase the amount and urgency of research into sustainable development and enhance the level of financial support for this activity (G8, 2009).

3.11 The Abuja Declaration

The declaration was launched in Abuja, Nigeria in May 2009 at the 12th General Conference of Association of African Universities (AAU). The declaration recognises the sustainability problems in the African continents (such as poverty, disease, conflicts, land degradation,
deforestation, and urbanisation) and the role of higher education in generating knowledge and educating the leaders and educators of tomorrow.

The declaration gives special emphasis on institutional collaboration, especially university-industry-government linkages. It calls for trans-disciplinary approaches in learning and research among African universities, as well as emphasising spiritually, ethics, and morality in the curricula (AAU, 2009).

### 3.12 Overall summary and discussion on the Higher Education SD initiatives

The works of Calder & Clugston (2003), Lozano-Ros (2003), and Wright (2004) have brought to light the following themes of the declarations, charters and partnerships:

- Focus on environmental degradation, threats to society, and unsustainable consumption;
- Ethical or moral obligation of university leaders and faculties to work towards sustainable societies, including the inter-generational perspective;
- Inclusion of SD throughout the curricula in all disciplines;
- Encouragement of SD research;
- Move towards more sustainability orientated university operations;
- Collaboration with other universities;
- Stakeholder, e.g. public, governments, non-governmental organisations (NGOs) and businesses, collaboration, engagement and outreach;
- Trans-disciplinarity across the previous points.

Wright (2004) offered a comprehensive analysis on the emerging themes in the declarations. However, her research was published before the Declaration of Barcelona and the DESD. Two other initiatives that were not considered in her analysis are the Earth Charter and the Ubuntu Declaration, mainly because their scope is the educational sector and not just higher education. Additionally, she did not consider the following themes: (1) Assessment and reporting, where tools such as the Auditing Instrument for Sustainable Higher Education

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3 Some authors (e.g. Wright, 2004; Calder & Clugston, 2003) use the term co-operation; however collaboration is a better-suited term (Lozano, 2007)

4 Wright (2004) uses the term inter-disciplinarity; however trans-disciplinarity is a broader encompassing concept (2003, Roorda, 2001).
(AISHE) (Roorda, 2001), the Graphical Assessment of Sustainability in Universities (GASU) tool (Lozano, 2006a), and the Sustainability Tool for Assessing UNiversities Curricula in Higher-Education (STAUNCH) (Lozano, 2010, Leal Filho et al., 2009) are available; (2) Institutional framework, where SD should be made the ‘Golden Thread’ integrating all of these (Lozano Garcia, et al., 2006) (3) On-campus experiences, by incorporating SD into the day-to-day activities in the university life experience (Lourdel et al., 2005); and (4) Educate the educators (Huisingh and Mebratu, 2000), by multiplying effects and reducing the SD adoption time.

Table 3 shows the comparison of the initiatives’ themes, based on Wright’s (2004) work. It incorporates the aforementioned themes, with the exception of two themes that are overarching: (1) Sustainability issues, i.e. focus on environmental degradation, threats to society, and unsustainable consumption; and (2) the Ethical or moral obligation of university leaders to incorporate and institutionalise SD in their universities.

Table 3 shows that four elements are considered by almost all of the initiatives: Curricula, Collaboration and outreach, Operations, and Research, which is in accord with the systems outlined by Calder & Clugston (2003). Three elements are considered by almost half of the initiatives: Trans-disciplinarity, Universities collaboration, and Educate-the-educators. Finally, three elements are considered by only a small number of the initiatives: On-campus experiences, Assessment and reporting, and the Institutional framework. The institutional framework is only mentioned in the Declaration of Barcelona. Assessment and reporting is mentioned explicitly in GHESP, but in the Declaration of Barcelona and Abuja Declaration is mentioned only as assessment.

Table 3 Comparison of the themes of diverse SD initiatives.

<table>
<thead>
<tr>
<th>Initative</th>
<th>Curricula</th>
<th>Research</th>
<th>Outreach and Coordination</th>
<th>Universities Collaboration</th>
<th>Assessment and Reporting</th>
<th>Trans-disciplinarity</th>
<th>Universities Collaboration</th>
<th>Educate-the-educators</th>
<th>On-campus experiences</th>
<th>Assessment and reporting</th>
<th>Institutional framework</th>
<th>SD through campus experiences</th>
<th>Education and outreach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tallinn Declaration</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>Halifax Declaration</td>
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<td>Kyoto Declaration</td>
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Source: Updating and incorporating new ideas to Wright (2004)
An additional analysis (see Table 4) of the initiatives can be made according to their complexity, number of bullet points\textsuperscript{5}, and length. This analysis provides a guide to the intelligibility of the initiatives. In general, the initiatives tend to be clear, with the exception of the Lüneburg. The Talloires, Halifax, Kyoto, Swansea, COPERNICUS, Graz, and Abuja only have a small number of bullet points and limited number of words, which tends to be easy to understand. The GHESP, Lüneburg, Barcelona, and Turin tend to have considerable more number of bullet points. The number of words of GHESP and Turin is considerably larger than the others.

\begin{table}[h]
\centering
\caption{Comparison of the complexity, length, and bullet points of the initiatives}
\begin{tabular}{|l|c|c|c|c|}
\hline
Effort & Wording & Bullet points & Length & Number of words \\
\hline
Talloires & Clear & 10 & Short & 717 \\
Halifax & Clear & 6 & Short & 652 \\
Kyoto & Clear & 8 & Short & 281 \\
Swansea & Clear & 7 & Short & 740 \\
COPERNICUS & Clear & 10 & Medium & 997 \\
GHESP & Clear & 28 & Very long & 4,869 \\
Lüneburg & Medium complex & 25 in 7 levels & Medium & 955 \\
Barcelona & Clear & 27 & Medium & 911 \\
Graz & Clear & 3 & Short & 672 \\
Turin & Complex & 19 in 3 levels & Long & 1,562 \\
Abuja & Clear & 31 in 4 levels & Medium & 798 \\
\hline
\end{tabular}
\end{table}

Considering both analyses it is possible to observe that from the eight initiatives the ones with the more extensive coverage include: GHESP, the Declaration of Barcelona, the Talloires Declaration, and the Abuja Declaration (9, 6.5, 6, and 6 respectively). GHESP is considerably lengthier than the other two and has 28 bullet points. The Declaration of Barcelona is slightly longer with 27 bullet points, than the Talloires Declaration with ten bullet points. The Talloires has the advantage of being clear, with a relatively small number of bullet points and words, however it does not cover all the themes. The Abuja Declaration has a narrow focus on the African continent.

\textsuperscript{5} The bullet points provide a structure where the key ideas can be shown.
4. Conclusions: Towards a better transfer of the SD meme

In spite of a number of initiatives by HEIs, SD is still considered as an innovative idea in most universities (mainly because of a reliance on Newtonian and Cartesian mental models). Another consideration is that HEIs are organised in separate disciplines, tending to interact poorly among them, lacking a systemic approach, besides giving recognition to this disciplinarity, this has slowed down the spreading of the SD ‘meme’ among all disciplines, scholars, and university leaders.

The different initiatives that have appeared indicate that universities have an ethical or moral obligation to work towards sustainable societies, focusing on environmental degradation, threats to society, and sustainable production and consumption for this and future generations.

Analysing the key elements and principles of the initiatives it can be observed that SD needs to be incorporated in a transdisciplinary manner throughout: (1) curricula; (2) research; (3) operations; (4) outreach and engagement with stakeholders (e.g. public, governments, non-governmental organisations (NGOs) and businesses); (5) collaboration with other universities; (6) assessment and reporting; (7) institutional framework; (8) on-campus life experiences; and (9) educate the educators programmes. These key elements must be integrated systemically in the HEIs in order to provide learning and career value to those participating in the SD transition.

In general, the educational initiatives for SD have followed the societal ones, HEIs tend to be conservative in many ways, frequently only acting or reacting to societal demands. This indicates that the SD meme is being transferred, or is ‘jumping’, from society to universities. From this it can be inferred that, although there have been a number of initiatives to institutionalise SD in higher education, SD is still considered to be an innovation. Therefore, universities and their leaders should become more proactive in engaging with SD and to guarantee that SD is incorporated as a ‘Golden Thread’ throughout the university system, in order to better educate future leaders, entrepreneurs, scholars, and decision makers to think of the implications of their actions towards the environment and societies. Full fledged recognition for those who participate in SD education and research is essential, in order to help to discourage them from “jumping” off the SD wagon.
Although these initiatives were intended to serve as supporting, guiding, and challenging documents throughout university systems, they do not ensure that the signatory institutions apply SD within their systems. There might also be institutions that have not yet signed a declaration or belong to a charter, but, which are, nonetheless, actively engaged with SD on their campuses.

Engaging in any of these initiatives can help to support higher educational institutions (HEIs) on their SD journey. However, for a more complete coverage the following options could be taken: (1) engaging in GHESP and complementing it by incorporating SD as the ‘Golden Thread’ in the institutional framework, and/or (2) combining the Talloires and Barcelona Declarations, and complementing them with collaboration with other HEIs and a more comprehensive view of assessment and reporting. The authors are currently working on investigating the number of signatories for the higher education initiatives, how they are being implemented, and their effectiveness.

Universities and their leaders need to become more proactive, so that they can retake their forefront position in creating and breaking paradigms, and reintegrate sciences, arts, and the different disciplines to help societies become more sustainable.

References


G8 (2009) University Summit Torino Declaration on Education and Research for Sustainable and Responsible Development. Turin, Italy.


LOZANO, R. (2006b) Incorporation and institutionalization of SD into universities: breaking through barriers to change. *Journal of Cleaner Production*, 14, 787-796.


UNI GRAZ, OIKOS, COPERNICUS & TUG (2005) Graz Declaration on Committing Universities to Sustainable Development. Graz, Austria.

